

BC Wildfire Management Branch Rehabilitation Standard Operating Guidelines

Subject :

Wildfire Rehabilitation

FLNRO Wildfire
Management
Branch

Library :
Rehab SOG

Chapter Ref :
Provincial

Section:
Fire
Operations

File :
SOG

Purpose

To provide guidance to BC Wildfire Management Branch personnel and other Natural Resource Sector representatives with respect to the rehabilitation of damage from fire control activities.

Scope

These guidelines are to be considered on rehabilitation of wildfires throughout the Province of British Columbia. It is expected that where variances occur from these guidelines, staff will document such variances and record this information on file. These guidelines are intended to address Wildfire Act and Regulation requirements for rehabilitation. Policy and procedures regarding Post-Wildfire Natural Hazards to address the impacts from wildfire on the landscape are outlined in Ministry Policy 9.7.

Application

The Government **may**, by legislation, rehabilitate sites when fire control or fire suppression operations have been carried out. Once an official has declared that the fire is under control, provisions in the *Forest and Range Practices Act* apply. (see Appendix 1)

There are four distinct impacts that may have to be addressed as a result of a wildfire:

1. Damage from fire control operations on Crown land.
2. Damage from fire control operations on private land and other land.
3. Wildfire damage on private land and other land.
4. Wildfire damage on Crown land.

There are three main components to address in fire rehabilitation:

1. Fire control damage from disturbance created by fire suppression operations. The primary responsibility to address this component is assigned to BC Wildfire Management Branch. This type of damage includes machine and hand guards, fire access roads and trails, breached barriers, stream crossings, staging areas and sumps. The activities to

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address this damage is covered by the Wildfire Act and Regulations and is funded under the direct fire budget.

2. The potential impact to public safety, buildings and infrastructure from post-wildfire natural hazards. These are natural hazards created by the combustion of forest and rangeland fuels. The primary responsibility to address this component is assigned to the appropriate Government Ministry and may involve Wildfire Management Branch, Regional and District Specialists and local Governments. This component is addressed in the Standard Operating Procedure for Post-Wildfire Natural Hazards Management.

3. The impacts to resources and improvements from the burning wildfire. The primary responsibility to address this component is assigned to the appropriate Land Manager. These impacts include but are not limited to, damage to merchantable timber, destruction of silviculture investments, damages to range and recreational or other improvements, damage to soils and forest cover, damage to community watersheds and other detrimental wildfire effects. The activities to address these impacts are not covered in the Wildfire Act and Regulation and are not normally funded through the direct fire budget.

This Standard Operating Guideline is intended to address the damage from fire control operations on all lands and create awareness of the other components that should be considered when planning and coordinating rehabilitation activities.

Regardless of primary responsibility, it is imperative that the BC Wildfire Management Branch and Land Managers work in a coordinated effort to ensure that the impacts from wildfire and wildfire control are addressed effectively. Early sharing of information and dialogue with affected stakeholders is required.

Definitions

Rehabilitation: for the purposes of the Wildfire Act and Regulation includes the reduction of fuel hazards and stabilization of fire access trails, fireguards and other fire control works to ensure that natural drainage patterns are maintained.

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Site Rehabilitation Plan: a plan that specifies measures for minimizing any fuel hazard created as a result of fire control operations and maintaining natural drainage patterns to minimize surface erosion by stabilizing and re-vegetating soil disturbed or exposed by heavy equipment, stabilizing the stream channel and stream beds at stream crossings and stabilizing sump and dam locations that were created for the purpose of carrying out fire control.

Organization:

The Incident Commander (IC) is responsible for rehabilitation planning, ultimately the responsibility for rehabilitation will fall to the Fire Zone Protection Officer. On smaller fires the IC may assume the responsibilities of the Rehabilitation Specialists (RS), but on larger fires a RS is usually assigned the responsibility.

On large fires, a RS will be assigned to the fire as soon as possible. This position is responsible for overall coordination of fire rehabilitation planning and includes:

- Ensuring the spatial data of damage from fire control activities is collected and mapped.
- Ensuring that all stakeholders and private land owners with interests impacted by suppression damage are identified and information shared appropriately.
- Reviewing the Fire Management Plan.
- Working with Land Manager(s) on plan development and forwarding the completed plan to the Land Manager.
- Ensuring rehabilitation activities associated with Occupancy Agreements are completed.
- Coordinating a team of forest professionals, technical specialists, field supervisors, task force leaders and equipment operators.
- Coordinating and overseeing assessments, work plans, inventories and field work.
- Developing the rehabilitation plan (FS 129) and schedules.
- Ensuring rehabilitation commences as soon as it is practicable.
- Ensuring work is completed to an acceptable standard.
- Ensuring adequate resource and cost tracking and reporting

Once completed, rehabilitation plans are implemented by the Operations Section. On smaller fires the Operations Chief may implement these plans directly through his/her existing organization. On

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larger more complex fires it may be more efficient and expedient to establish a rehabilitation branch or group to complete these works. (*Persons supervising rehabilitation plan implementation should have experience supervising equipment and knowledgeable with rehabilitation prescriptions, familiar with road deactivation specifications and forest values that are protected under legislation.*)

To ensure continuity for the Fire Zone, the RS should work closely with the Zone, in certain situations it may be appropriate for the RS to report to the Forest Protection Officer (See Appendix 11 - Fire Rehabilitation Organization Chart).

Rehabilitation Planning:

Rehabilitation plans range from simple, two-page forms to binders of detailed site plans and work schedules, depending on the size and impact of a fire. The RS should be developing the Rehabilitation Plan the moment work commences to allow for earliest submission and approval by the Fire Center Manager as possible. The RS should consult the approved Fire Management Plan for the fire zone area, any values mapping available, (WMB geomatics)

Many of the components of fire rehabilitation planning fall under the practice of Professional Forestry as described in the *Forester's Act (SBC 2003)* and requires the work be done by the appropriate professional within their scope of practice and experience. Additionally there are aspects of the plan that require input from other professionals and specialists (I.E. Biologist, archaeologists and geomorphologists). It is imperative that the appropriate professional completes, signs and seals the component of the plan requiring professional oversight.

A site rehabilitation workplan should be prepared for each land jurisdiction using a *Schedule A: Site Rehabilitation Workplan* (Appendix 5). All site rehabilitation workplans are to be signed by the person completing the plan and the IC or Forest Protection Officer with signing authority. Once completed, the Schedule 'A's are then summarized on the *Fire Suppression Rehabilitation Plan* (Appendix 4).

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The Fire Centre Manager may delegate the authority to approve a Fire Suppression Rehabilitation Plan to the Zone Forest Protection Officer where the total estimated cost for rehabilitation on the incident does not exceed \$10,000.

In certain situations, to expedite the budgetary process, the one page Fire Suppression Rehabilitation Plan (Appendix 4) can be completed and signed off by the IC and Fire Centre Manager prior to the completion of the various schedules.

The Schedule B: Incremental Rehabilitation Workplan (Appendix 6) is to be completed for rehabilitation on Crown Lands **not** covered under Sections 16 and 17 of the Wildfire Regulation, that resulted from fire control measures or from the effects of the wildfire. In most instances, the Schedule B is completed by the Land Manager or designate. It is expected that the Land Manager and Wildfire Management Branch representatives will work together to determine who will lead the Schedule B planning and implementation. A separate Schedule B is required for each land jurisdiction. All Schedule B's must be signed by the person completing it, the land manager, and the Minister or designate. Funding for Schedule B works must be approved by the Minister or his designate. **The Schedule B is not to be used for rehabilitation works on Private Land.**

Timing of Rehabilitation Work:

Give immediate consideration to rehabilitating damage from fire control on Crown land. **In accordance with Section 16 and 17 of the Wildfire Regulation, damage caused by fire control or suppression action, shall be given immediate consideration for rehabilitation to prevent further environmental damage. Address the highest priorities with potential for consequences to life, property and public safety.**

Rehabilitation work often begins before rehabilitation plans are approved, and the legislation does not prohibit that. Rehabilitation often begins before the fire is completely out. On large fires, it may be possible to begin rehabilitating the area where the fire started while the fire continues to burn elsewhere. Generally, the goal is to begin rehabilitation work as soon as possible and to take advantage of site repairs during de-mob of extinguished portions of the fire. In many situations, to be fiscally and environmentally responsible, suppression equipment is utilized to address high

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priority rehabilitation sites, prior to leaving the area. Ideally, work is completed before winter sets in; however that is not always possible.

Private Land:

The government has a responsibility to rehabilitate damage from fire control operations on private and other land to the same standard as on Crown Land. All decisions regarding rehabilitation or claims and compensation are determined by the Wildfire Act and Regulations (see Appendix 8 – Guidelines for Private Land Rehabilitation). The Claims and Litigation Manager must be involved in any decision to compensate private landowners and tenants for associated losses that cannot be rehabilitated and to address damage beyond the legal obligations outlined in *the Wildfire Act and Regulations* (see Appendix 9 – Guidelines for Engaging the Claims and Litigation Manager). The government assumes no responsibility for damage caused by wildfire on private or other land.

The Claims and Litigation Manager will address claims and compensation requests for damage to improvements on private land (burned/damaged fence lines, irrigation ditches or pipes, roads and bridges, buildings and forest cover). If improvements were damaged in order to gain access to the fire or to construct a machine guard or other fire control activity, the landowner or tenant may be offered appropriate repairs, replacement, or financial compensation (as negotiated by the Claims and Litigation Manager).

In no case should fire suppression program funds be used for rehabilitation or compensation in excess of what is specified in the Wildfire Act and Regulations.

As described in the *Wildfire Act* damage to private land does not normally include damage associated with the following:

- indirect or consequential damage to property;
- reforestation costs;
- lost opportunities;
- aesthetics;

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- foreseeable losses.

Wildfire may be suspected of reducing the water supply (I.E. lowering the water table). Claims or requests for assistance often follow. Compensation for this type of damage is not normally considered however requests should be forwarded to the Claims and Litigation Manager.

When doing rehabilitation work on private land, pictures must be taken that document the damage prior to work commencing (work required) and after the work is completed (work done), in the event of legal action at a later date.

Back-Burns on Private Lands:

The Claims and Litigation Manager will address claims and compensation for timber or improvements damaged as a result of a back burn **to control the fire**.

It is critical that good records are kept in all ignition operations so we are able to provide the Claims and Litigation Manager with the following information:

- location of the private property;
- when was the backburn started;
- who supervised the burning;
- where was the wildfire when the back burn was started;
- photographs pre and post ignition.

Information Sharing and Consultation:

Work with the respective landowners or managers in developing a practical rehabilitation plan. It is vitally important to the success of each site rehabilitation plan to identify the landowner and/or manager early in the process, and to involve them in rehabilitation planning.

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For private lands, consult the landowner for fixed property, or the tenant for damage to tenant property. Consider the possibility that others may jointly own a single private parcel, and all should be consulted. If in doubt, ask to see the record of title to confirm ownership. For lands owned by local government, consult the administrator for the city or regional district.

All Section 16 and 17 rehabilitation planning on Crown land must include consultation with the FLNRO District Manager, BCTS Woodlands Manager or other Land Managers or designates. Tenure holder’s issues/concerns are usually addressed through the agency responsible for the issuance of the tenure.

Forest tenure holders and forest industry personnel are often involved in fire suppression operations and have first hand knowledge of site and stand conditions. They may also have tenure obligations or investments impacted by fire control activities. Involving them in planning and operational activities can help alleviate the economic impact to investments and provide valuable operational intelligence.

If rehabilitation involves a provincial park, contact the local BC Parks Manager to jointly develop a rehabilitation plan that meets their standards.

Most federal lands affected by wildfire suppression will include either Indian Reserves’s, Department of National Defence or Parks Canada. Where our participation is required for rehabilitation, BC Wildfire Management Branch staff will work cooperatively with these agencies.

If rehabilitation of fire control damage is required on First Nations land, the Band office should be contacted for coordination. If the fire originates on IR lands, then the existing agreement with Aboriginal Affairs and Northern Development Canada (AANC) applies and all costs are recoverable. On other lands where important archaeological site(s) have been identified, it is important to ensure the Indian Band(s)’s representative(s) are present during any site inspections to assist and oversee any rehabilitation workplans.

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Contact with Fisheries and Oceans Canada (FOC), Ministry of Environment, Local environmental groups, and Fish and Game protective associations, should be made in the early stages of the fire. Early discussions with the other resource users and regulatory agencies by the RS may prevent costly and avoidable damage. By employing their knowledge, addressing their concerns and understanding the rules and regulations, complications and conflict will be prevented at a later time.

Many other stakeholders may play important roles in rehabilitation planning and should be consulted early and regularly in the process. Examples include railroad companies and utilities.

Data Collection of Disturbances by Suppression Activities:

Get started as early as possible acquiring an inventory of machine guards, roads and other cleared/modified areas. The data collected around the fire will become the base for the fire rehabilitation plan.

In cooperation with the Incident Management Team begin GPS traversing as soon as possible and work to have this info incorporated onto the land ownership database. Use in-house GIS capabilities and local government data bases if available.

Ensure all aspects of the rehabilitation plan are addressed in the Turnover Plan. (See Appendix 12 - Data Collection of Disturbances by Suppression Activities).

Fire Suppression Damage – Wildfire Management Branch responsibility:

1. Coordination of Salvage Activities and Disposition of Timber

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When roads, trails and fireguards are built for suppression purposes, merchantable timber is harvested and piled, and there are often opportunities to salvage timber after the fire. Consult with the local District Manager and BCTS Manager for coordination of timber salvage opportunities and timing.(See Appendix 7 for Guidelines for Removing and Decking Timber from Fire Guards).

Timber located within Provincial Parks can only be disposed of in accordance with the Forest Act.

2. Grass Seeding

All fire suppression disturbance must be inspected and should have the necessary treatments to ensure natural drainage patterns are maintained to minimize surface soil erosion. Grass seeding to establish vegetation should be applied to priority sites where native vegetation will be slow to recover and sites with a potential for surface soil erosion. Grass seeding should be considered along with other measures such as water barring, crossing ditching and mulching.

The local Forest District/Regional Agrologist should be consulted for appropriate grass seed mixes, application rates, and seed tendering and contract templates. Ideally seed issues should be addressed before a fire starts so that once rehabilitation begins, all stakeholders have already agreed on the appropriate seed use mix and application rate.

Grass seed procurement should be ordered through Provincial Grass Seed Standing Offer.

3. Damage to Infrastructure on Crown Land: for example, fences, gates, cattleguards, bridges, culverts, etc

Heavy machinery may have damaged a bridge or culvert while crossing it, or damaged other structures while undertaking suppression activities. A Schedule A: Site Rehabilitation Workplan is completed in this instance to detail those works necessary to restore natural drainage. Any decision to repair or replace a structure should examine a number of

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alternatives that include the lowest-cost option. Any new construction must meet all legal requirements (FRPA, FOC).

Decisions to replace or repair structures on Crown Lands or resource roads should be made in consultation with Ministry Engineering staff.

Any major repairs or compensation for damages on private land will be done in consultation with the Claims and Litigation Manager. (See Appendix 9 – Guidelines for Engaging the Claims and Litigation Manager).

4. Damage to Infrastructure on Private Land: for example roads, driveways, fences, gates, cattleguards, etc.

Where the travel or use of heavy machinery has damaged a road or driveway during fire suppression, rehabilitation personnel may undertake reasonable activities to repair the damage. This may include ditching, adding water bars or gravelling and grading the surfaces.

Any major repairs or compensation for damages on private land will be done in consultation with the Claims and Litigation Manager.

5. Stabilizing and Restoring Watercourse Crossings

Where machine guards, roads, or trails crossed a watercourse, the natural drainage patterns may have been disturbed. Other legislative statutes come into play when fire control and suppression activities cross a streams with heavy equipment. They include:

- *The Water Act and Regulations:*
- *The Fisheries Act* (Federal) and their subsequent regulations:
- *The Drinking Water Protection Act.*
- *The Fish Protection Act* (Provincial)

There is no provision for emergency work in the *Federal Fisheries Act*, so practicing due diligence is paramount in our action. The FOC recognizes that access to remote areas is

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required to fight and control forest fires, and crossing streams is part of gaining access. Contact with FOC should be done by telephone as soon as possible, but preferably prior to any work being done. (See Appendix 10 - Guidelines for Stabilizing and Restoring Watercourse Crossings)

6. Cultural Heritage Information

Wildfire Management Branch staff must be aware of the location of archaeological interests. Contact MFLNRO First Nations Forester / Consultation Coordinator or work directly with the First Nations Band as early in the incident as possible.

Cultural heritage values such as First Nations' village or burial sites can be severely impacted by fire suppression activities. When building a fire guard, a heavy equipment operator may not realize they are working in a sensitive area. Ideally, the operator (line locator) should know the location of cultural heritage values so that sensitive sites can be avoided. First Nations may be reluctant to provide such information to government staff, preferring that the location of these sites be kept secret so they are not disturbed. It is important the location of these sites remain confidential and staff use the information for the purpose intended.

In some cases the Wildfire Management Branch may fund archaeological field reconnaissance for fire control or fire suppression purposes. The purpose of the reconnaissance is to determine if archaeological resources are present, and if so, to recommend appropriate management techniques during rehabilitation. Such surveys are useful for minimizing additional damage, but it is preferable to have such information available in advance when planning the location of fire guards so that impacts can be avoided rather than mitigated later.

If the archaeological assessment conducted by BC Wildfire Management Branch determines that a potentially high site has been disturbed by actions taken for fire control or suppression operations, BC Wildfire Management Branch will contract the services of an archaeologist and First Nation representative to complete the site inspection.

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7. Demobilizing Camps and Other Incident Facilities

Where it was deemed necessary to construct incident facilities, such as camps, retardant sites, or garbage bins, they should be dismantled and removed from the site. Land Occupancy Agreements must be in place for these areas including pictures pre and post occupation. The RS, in consultation with the section chiefs should ensure any rehabilitation commitments related to Occupancy Agreements are addressed on a priority basis.

The demobilization of camps and other incident facilities must be included in the Demobilization Plan. The IC is responsible to implement the plan, ensure sites are restored and all environmental concerns have been addressed. This should include the removal of all litter, debris and waste material.

In addition to the clean up of slash, campsites should be left in a neat and tidy state, free of building materials or other debris, such as woodchips used in the control of dust and mud. All refuse should be gathered and removed to an approved dumpsite. All structures must be dismantled and/or removed. Environmental concerns resulting from the camp, such as erosion potential, damaged/obstructed drainages, compacted soils, gouges or ruts, must be addressed as part of the demob plan.

Most fire retardant mixing sites are established under contract. Very seldom do they consist of pits. They are usually free-standing tanks established well away from natural water sources. The contracts include demobilization and cleanup. Contact the Fire Centre or Aviation Management for contractor names and phone numbers. On the very rare occasion where pits are used, they should be filled in, ensuring that the retardant is buried deep enough to prevent it from entering a water course. The slash should be disposed of in the same manner as on control lines and campsites.

After fire operations are completed, all sump locations should be filled and the site restored to as natural a state as possible. If there is any type of dam constructed, it should be emptied and removed to restore the area to a natural state. Should this task be difficult, contact the

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FLNRO Engineering Officer and applicable fish/habitat official for advice on how to deal with it.

Rehabilitating Wildfire Impacts outside of Wildfire Act and Regulation requirements - Land Manager responsibility :

This section examines rehabilitation resulting from fire or fire suppression damage, that is not covered by Sections 16 or 17 of the Wildfire Regulation. Funding is not normally provided through the fire suppression vote, but cost limited risk mitigation treatments may be funded in accordance with Policy 9.7 Post-Wildfire Natural Hazards Risk Management. Larger scale risk mitigation treatments may also be conducted by other agencies in consultation with the Land Manager, local government, Emergency Management BC and other stakeholders.

Post-Wildfire Natural Hazard Risk Management

The FLNRO may undertake cost limited treatments within the area impacted by the wildfire to help mitigate increased risk to public safety, buildings and infrastructure from severe soil erosion, landslide and flooding events after wildfire. The Standard Operating Procedure for Post Wildfire Natural Hazards Risk Analysis (SOP) guides the identification, analysis evaluation and mitigation of post-wildfire hazards. The SOP provides funding guidelines for eligible activities. Post-wildfire natural hazard risk analysis and mitigation treatments must be cost effective and where practicable carried out in conjunction with the rehabilitation of damage from fire suppression activities. This work will normally be lead by FLNRO Branch and Regional Specialists assigned to screen fires, analyze the risk and complete reports. The mitigation work will de detailed in the Schedule B: Incremental Rehabilitation Workplan.

The Schedule B: Incremental Rehabilitation Workplan:

This plan may be completed for rehabilitation on Crown lands **not** covered under Sections 16 and 17 of the Wildfire Regulation, that resulted from fire control measures or from the effects of the wildfire. A separate Schedule B is to be completed for each land jurisdiction. All Schedule B's must be signed by the person completing the schedule, the land manager, and the Minister or his

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designate: it is then attached to the FS 129 Fire Suppression Rehabilitation Plan. As is the case with Schedule A, certain aspects of the Schedule B may involve the work of forest and other professionals and specialists. It is important that the appropriate professional signs off on their work. The Schedule B is not to be used for rehabilitation works on private land.

1. Restoring Water Courses and Riparian Areas Damaged by Wildfire

Where the fire damaged vegetation in watercourses and riparian areas, the FLNRO District may work with the landowner or manager to reduce the severity of environmental impacts.

Consideration may be required for the rehabilitation of burned over areas to ensure site productivity and environmental integrity may have to be carried out. This could involve the planting of the site, seeding it to grass, or replacing burned out bridges.

Consult with the Land Manager to confirm what actions they will be taking to address timber and other vegetation damaged by the wildfire. Consult with a hydrologist, MoE and FOC before undertaking work in channels.

2. Re-vegetating Steep Slopes, Erodible Soils, High Fire Intensity Areas

Stabilizing areas burned by the wildfire may require re-vegetation, using grass seed, saplings, or other techniques and treatments. Soil, water and vegetation specialists must be consulted prior to any treatment. Within the Natural Resource Sector and throughout government there are a number of Ecologists, Soil Scientists, Range Agrologists and Geomorphologists available to assist in the assessing, inventorying, planning and implementing rehabilitation of these areas.

The fact that fires that occur on other lands not managed by the FLNRO Manger makes it extremely important that these other land managers are aware of their responsibilities around damage caused by wildfire as opposed to damage caused by fire suppression and control operations. Examples are Provincial Parks, municipal watersheds, Indian Reserve lands, and municipalities. Any

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rehabilitation costs in these areas, other than required as per Sections 16 and 17 of the Regs, are the responsibility of the land manager.

The Fire Centre as per Section 17 of the Wildfire Regulation may only authorize rehabilitation resulting from fire control and suppression operations. If, in the opinion of the Fire Centre Manager, it is appropriate to rehabilitate or compensate for damage as a result of the wildfire, approval must first be obtained from the Director, BC Wildfire Management Branch.

3. Damage to Crown Infrastructure – not affecting natural drainage.

The wildfire or resulting fire suppression actions may damage range fences, bridges, culverts and other structures on Crown Land. A Schedule B is completed to record the damage and provide an estimate for repair.

3. Access closures, permanent deactivation, running surface maintenance

Access closures, permanent deactivation, running surface maintenance (i.e.: grading) will be determined through a separate Access Management Planning process facilitated by the Land Manager.

4. Archaeological Assessments (Wildfire Area)

The fire may damage archaeological sites or make them more visible due to the elimination of the vegetation. The Land Manager is responsible to consult with First Nations to determine archaeological values. These assessments are not funded from the fire suppression vote.

Tracking of Rehabilitation Costs:

Ensure accurate accounting of costs associated with rehabilitation activities being conducted in conjunction with fire suppression operation. Often there is a need to breakdown the rehabilitation cost from suppression costs and report separately. This is particularly important as there may be

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cost recovery available from the federal government through Emergency Management BC. Rehabilitation costs must be reported with the daily estimated costs as per other fire suppression costs.

Fireline supervisory staff must be provide with the appropriate project numbers for Daily Time Reports for all personell and equipment undertaking rehabilitation activities.

PLEASE CONTACT THE INCIDENT FINANCE CHIEF OR CORPORATE SERVICES OFFICER FOR THE CHART OF ACCOUNTS AND PROJECT CODING APPROVED FOR THE YEAR OF OPERATION

Post-Work Inspection:

When the rehabilitation work is completed, a qualified person should be asked to review the results and, if acceptable, initial the appropriate line on the FS129(A) or FS129(B); this is commonly the Rehabilitation Specialist, Rehabilitation Branch Director, Zone or District representative. . The Official who approved the plan, has the responsibility to ensure the Wildfire legislative requirements are met and completed to the standards identified. It is recommended practice to have the professional who signed off the original work plans complete the post work inspection where possible.

The original completed and signed Rehabilitation Site Plans are filed at the Fire Centre with copies going to the Fire Zone and the appropriate land manager. Original copies should be scanned and electronically filed on the fire file in the Provincial Incidents Drive. The Zone Forest Protection Officer in consultation with the land manager and staff involved with post wildfire hazard and risk assessment will need to determine a monitoring and inspection regime to examine the effectiveness of rehabilitation operations and to ensure that legislated requirements are met. Typically inspections are conducted the first Spring post rehabilitation operations but may need to continue over subsequent years based on factors such as:

- Overall level of disturbance.

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FLNRO Wildfire Management Branch	Library : Rehab SOG	Chapter Ref : Provincial	Section: Fire Operations	File : SOG
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- Soil and water conditions post rehab.
- Values at risk.
- Professional recommendations resulting from hazard and risk assessments.

Rehabilitation Training:

The BC Wildfire Management Branch developed a very comprehensive fire rehabilitation course S-346 to address these procedures. Its goal is to give staff an understanding of the potential environmental impacts of suppression activities and demonstrate how to mitigate those impacts and reduce overall costs to government.

It is important that line scouts are properly trained and familiar with the environmental issues. When deciding the location of fireguards, an experienced line locator with knowledge of the fire, local terrain, equipment capabilities and forest values identified in the fire analysis strategy can significantly reduce the amount of rehabilitation that will ultimately be required.

It is just as important that the equipment operators are also properly instructed. A little education and initial supervision will result in better guard, less damage and more effective site restoration at a later date.

Fire rehabilitation training may be delivered to the following target positions:

1. Incident Commander, Operations Chief, Forest Protection Officer, Senior Protection Officers, Rehabilitation Specialists, Rehabilitation Branch Directors and Group Supervisors;
2. Task Force Leaders, Division Supervisors, Applicable District Staff;
3. Line Locators and Equipment Operators

Assorted References:

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BC Wildfire Management Branch Rehabilitation Standard Operating Guidelines

Subject :
Wildfire Rehabilitation

FLNRO Wildfire
Management
Branch

Library :
Rehab SOG

Chapter Ref :
Provincial

Section:
Fire
Operations

File :
SOG

- Wildfire Regulation - <http://www.bclaws.ca/>
- Wildfire Act - <http://www.bclaws.ca/>
- Forest and Range Practises Act – Sec. 49 - <http://www.bclaws.ca/>
- Forest Practices Board – Post-fire Site Rehabilitation Special Investigation <http://www.fpb.gov.bc.ca/publications.aspx?id=2648>
- Ministry of Finance
<http://www.fin.gov.bc.ca/ocg/fmb/manuals/manuals.htm>
- Water Act and Water Protection Act <http://www.bclaws.ca/>
- Drinking Water Protection Act <http://www.bclaws.ca/>
- Canada Federal Fisheries Act
<http://laws-lois.justice.gc.ca/eng/acts/F-14/>
- Best Practices Soil Conservation
Guidelines <http://www.for.gov.bc.ca/tasb/legsregs/fpc/fpcguide/guidetoc.htm>
- Targeted Invasive Plant Solutions <http://www.invasiveplantcouncilbc.ca/>

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Date :
May 2015

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2015

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Appendix 1

Forest Legislation References

WILDFIRE ACT:

Government may carry out fire control

- 9 (1) The government may enter on any land and carry out fire control if an official considers that a fire on or near the land endangers life or threatens forest land or grass land.
- (2) At the request of a local government, the government may enter on land and carry out fire control within the local government's boundaries or jurisdiction.
- (3) After carrying out fire control under subsection (1), the government may remain on that land or re-enter the land for the purposes of investigating the cause of a fire, rehabilitating the land or for other prescribed purposes.**
- (4) If the government enters on private land to carry out fire control on other land, the government must compensate the owner of the private land and any tenant of the private land for damage caused to the private land by the government in carrying out the fire control.**
- (5) If the government enters on private land to carry out fire control on that land, the government, in prescribed circumstances, must compensate the owner of the private land and any tenant of the private land for damage caused to the private land by the government in carrying out the fire control.**
- (6) In accordance with prescribed requirements, the government may rehabilitate land damaged by fire control carried out under this section.**

WILDFIRE REGULATION

Compensation

- 15 (1) In sections 9 (4) and (5) of the Act, "**damage caused to the private land**" means damage that is caused to private land as established by proof of loss by the owner or the tenant but does not include damage associated with
- (a) indirect or consequential damage to property,
 - (b) reforestation costs,
 - (c) lost opportunities,

(d) aesthetics, or

(e) foreseeable losses.

(2) For the purpose of section 9 (5) of the Act, the prescribed circumstances are that

(a) if the fire was on the private land, the damage was avoidable damage caused by fire control carried out by the government, or

(b) if the fire was not on the private land, the damage was caused by fire control carried out by the government.

Rehabilitation if government carries out fire control

17 For the purposes of section 9 (6) of the Act, the prescribed requirements, applicable if the government exercises the discretion under that subsection to rehabilitate land, are that, as soon as practicable,

(a) a fire hazard assessment must be carried out,

(b) a site rehabilitation plan must be prepared that specifies measures for

(i) minimizing any fuel hazard created as a result of fire control operations, and

(ii) maintaining natural drainage patterns for all of the fire control works to minimize surface soil erosion by

(A) stabilizing and re-vegetating soil disturbed or exposed by heavy equipment,

(B) stabilizing the stream channel and stream bed at stream crossings, and

(C) stabilizing sump and dam locations that were created for the purpose of carrying out fire control, and

(c) the measures specified in the site rehabilitation plan must be implemented.

FOREST AND RANGE PRACTICES ACT (excerpts)

1 (1) "forest practice" means a prescribed activity that is carried out by

- (a) the government,
- (b) a holder of an agreement under the *Forest Act*, or
- (c) a person in a prescribed category of persons

on private land, subject to a tree farm licence, a community forest agreement or a woodlot licence, or on Crown forest land;

Exemption for fighting out of control fire

49 A person does not contravene this Act or the regulations by doing or omitting to do something that is reasonably necessary to control a fire, unless the person knows or reasonably ought to know, that an official has declared that the fire is under control.

Unauthorized timber harvesting

52 (1) A person must not cut, damage or destroy Crown timber unless authorized to do so

- (b) by the minister, for silviculture, stand tending, forest health, abating a fire hazard related to wildfires or another purpose,
- (b.1) under the *Wildfire Act*,

Activities and categories of persons prescribed for forest practices

1.2 (1) The following activities are prescribed for the purposes of the definition of "forest practice" in section 1 (1) of the Act:

- (a) timber harvesting, road construction, road maintenance, road use, road deactivation, silviculture treatments, botanical forest product collecting and fire use, control and suppression;

(2) The following categories of persons are prescribed for the purposes of paragraph (c) of the definition of "forest practice" in section 1 (1) of the Act:

- (a) contractors, employees and agents of a holder of an agreement under the *Forest Act* or the *Range Act*;
- (b) persons with an obligation to establish a free growing stand in accordance with an agreement made under section 29.1 of the Act.

Damage to the environment

3 (1) For the purpose of section 46 (1) and (1.1) [*protection of the environment*] of the Act, "**damage**" means any of the following that adversely alters an ecosystem:

- (a) a landslide;
- (b) a gully process on the Coast;
- (c) a fan destabilization on the Coast;
- (d) soil disturbance;
- (e) the deposit into a stream, wetland or lake of
 - (i) a petroleum product,
 - (ii) a fluid used to service industrial equipment, or
 - (iii) any other similar harmful substance;
- (f) a debris torrent that enters a fish stream;
- (g) changes to soil.

(2) A person who is carrying out fire control or suppression in accordance with an enactment is exempt from section 46 of the Act.

Appendix 2

Wildfire Management Branch Fire Rehabilitation Responsibilities

Zone Forest Protection Officer – Provides local input to the Incident Commander (IC) to ensure a rehabilitation plan is completed on all wildfires that have had fire suppression damage. This may include assigning Zone staff to be part of the Fire Management Team.

Incident Commander – Under the direction of the RWCO and in consultation with the Zone Forest Protection Officer, completes rehabilitation of fire suppression damage to environmental and legislative standards.

Fire Rehabilitation Specialist – Plans rehabilitation activities, during and after fire suppression. This includes advising the Incident Commander on best practices so that environmental impacts are reduced and costs associated with repairing the damage are minimized and preparing the rehabilitation plan.

Liaison Officer – Advises the Rehabilitation Specialist (RS) of concerns of Land Managers, First Nation leaders, landowner, local government and environmental agencies. Depending on the complexity of the fire, the RS may assume this role.

Private Land Negotiators (Risk Management Branch)- Reporting to the RS; this position is responsible to assess suppression damage on private lands and facilitate agreements with private landowner or his representative, for rehabilitation work required to repair the damage done during suppression activities.

Geo-Tech Engineer - Reporting to the RS, this position is responsible for slope stability assessments, site-specific prescriptions, providing advice on guard location, liaison with Risk Assessment Consultants.

Task Force Leaders – Working in the operations section, coordinate and supervise a team of equipment operators and crews ensuring rehab works are conducted according to Ministry standard and the approved Site Rehabilitation Work Plan.

Rehab Branch Director – On larger more complex fires, this position may be filled to coordinate and implement rehabilitation activities. This may be the same person as the Fire Rehabilitation Specialist, but in this role reports to the Operations Section.

Fire Centre Rehabilitation Coordinator - When there are multiple large fires in multiple fire zones this position may be filled to coordinate rehabilitation planning and implementation activities under the direction of the RWCO.

Appendix 3

Branch, Region, District and BCTS Fire Rehabilitation Responsibilities

When there are extensive fire rehabilitation demands on the Ministry, it is recommended that each Regional and or District Office and BCTS Business Areas assigns a primary contact for rehabilitation activities and coordination of communications with WMB.

Branch or Regional Specialists – Specific to Post Wildfire Natural Hazards Risk Management specialists will be appointed by the Regional Executive Director to monitor summary wildfire data and information. The objective is to identify candidate wildfires that require further professional review to confirm that those wildfires will require risk analyses and undertake risk control planning.

MFLNRO District Manager – Overall responsibility to ensure district objectives are considered during the development of the Fire Suppression Rehabilitation Plan.

District Range Officer – Review impacts to Range Tenures and improvements, including fencing and natural barriers. Review and contribute to the implementation of a seeding plan for fireguards and larger areas that may require seeding to reduce erosion. Work with ranchers to review access and fencing requirements for cattle management considering new trails, roads and fire impacts.

First Nations Forester / Consultation Coordinator – Provide advice on which FN's are impacted and their specific areas of interest. Review archaeological inventory and/or maps for potential impacts from fire suppression activities and/or wildfire damage. Coordinate consultation activities as required.

District or Regional Engineering Officer – Assess fire suppression impacts on resource road systems. Complete access management plans. Consider overall access requirements and options for old roads and new trails.

District Stewardship Officer – Review higher level plans and objectives such as community watershed and stakeholder issues during the development of the fire suppression rehabilitation plan. Assess impacts to TSA objectives and timber supply.

District Stewardship Forester – Review damage to immature crown forests. Assess damage to plantations, both Free to Grow and younger stands. Prepare a plan for reforestation of damaged plantations.

District Tenures Officer – Complete timber inventories. Manage the issuance of harvesting authorities to salvage timber and review of existing permits that must be amended.

Small Scale Salvage Technician – Manage the issuance of tenures for minor salvage volumes.

BCTS Woodlands Manager – Overall responsibility to ensure Business area objectives are considered during the development of the Fire Suppression Rehabilitation Plan.

BCTS Woodlands Supervisor – Reviews impacts to BCTS developments and investments and coordinates operations for timber salvage and site rehabilitation.

FIRE SUPPRESSION REHABILITATION PLAN

FIRE NO.	FIRE NAME	FIRE CENTRE
FIRE ZONE	Ha.	ATTACHED SCHEDULES of

Summary Estimates by Damage Category & Performance Measures:		Cost Estimate \$
A	MACHINE GUARDS, ACCESS ROADS AND TRAILS (include costs for specific materials (Km)	
B	HAND GUARDS AND TRAILS (Km)	
C	CAMPS, HELIPORTS, STAGING AREAS AND OTHER INCIDENT FACILITIES (# Sites)	
D	DAMS, SUMPS, PUMPING SITES & OTHER DISTURBANCES (# Sites)	
E	INCREMENTAL AND OTHER CONSIDERATIONS (Schedule B) (Ha)	
F	ADMINISTRATION AND PLANNING (specialist referrals, Geomatics, stakeholder referrals, access costs) (Days)	
G	POST WORK INSPECTIONS (include inspections into subsequent years) (# sites)	
Total Cost Estimate for Fire		_____

Summary Estimates by Land Jurisdiction:		Cost Estimate \$
1	PRIVATE LAND (Ha)	
2	LOCAL GOVERNMENT LAND (Ha)	
3	OCCUPIED CROWN LAND (Ha)	
4	VACANT CROWN LAND (Ha)	
5	BC PARKS LAND (Ha)	
6	FEDERAL LAND (Ha)	
7	INDIAN RESERVES (Ha)	
8	OTHER LAND (eg. Treaty Lands) (Ha)	
Total Cost Estimate for Fire		_____

<p style="text-align: center;">_____ (Incident Commander's or Zone Protection Officer's Signature)</p> <p>Date Submitted: _____ (yyyy-mm-dd)</p>		<p style="text-align: center;">_____ (Fire Centre Manager's Signature)</p> <p>Date Approved: _____ (yyyy-mm-dd)</p>
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Instructions for Fire Suppression Rehabilitation Plan

The Fire Suppression Rehabilitation Plan (FSRP) summarizes the fire's rehabilitation program by category and land jurisdiction, estimates implementation costs, and provide performance measures to track progress. It provides the Fire Centre Manager with an overview of the rehabilitation work required, budget demands, and allows for approval to spend fire suppression vote funds to complete the work. Specific details are in the Schedule's for each land jurisdiction eg. Occupied Crown Land, BC Parks, Indian Reserves, etc. The FSRP is submitted by the Incident Commander or Forest Protection Officer to the Fire Centre Manager for approval. If a Schedule B's for other than direct fire funding should be provided for each separate funding authority and that land manager's signature.

Fire No. – This is the official fire number designated by the Fire Centre for that fiscal year.

Sample Entry: [C50125](#)

Fire Name. – This is the official fire name designated by the Fire Centre for that fiscal year.

Sample Entry: [Lonesome Lake](#)

Fire Centre – Indicate the Fire Centre

Sample Entry: [Cariboo](#)

Fire Zone – Indicate the Fire Zone

Sample Entry: [Chilcotin](#)

Area (Ha) - This is the total gross area in hectares of the fire to include all land jurisdictions.

Sample Entry: [22,745 Ha](#)

Attached Schedules ____ of ____ – This is a summary of the total schedules “A” and “B” that provide the details by land jurisdiction. The schedules may be attached to the Fire Suppression Rehabilitation Plan (FSRP) when submitted for approval.,.

Sample Entry: [_4_ of _4_](#)

Summary Estimates by Damage Category & Performance Measures:

A Machine Guards, Access Roads and Trails – The total kilometres of disturbed areas, resulting from heavy equipment in constructing fire guards, access roads, trails and other structures for fire suppression purposes. An estimate of the total costs, excluding administration and/or planning costs, required to rehabilitate these areas is also provided. Include costs of specific resources (grass seed, new tools, matting, bioengineering materials)

Sample Entry: [\(65 km\)](#) - [\\$160,000](#)

B Hand Guards and Trails – The total kilometres of disturbed areas, resulting from hand guards and access trails that may require rehabilitation are in this category. An estimate of the total costs, excluding administration and/or planning costs, required to rehabilitate these areas is also provided. Include costs of specific resources (grass seed, new tools, matting, bioengineering materials)

Sample Entry: [\(10 km\)](#) - [\\$2,000](#)

C Camps, Helispots, Staging Areas and Other Incident Facilities – The total number of disturbed sites to be reasonably returned to their prior condition. Such sites may include the Incident Command Post, Camps, Staging Areas, Helibases, Helispots, Retardant Pits, and First Aid Stations where not required by demob. An estimate of the total costs, excluding administration and/or planning costs, required to rehabilitate these areas is also provided. Include costs of specific resources (grass seed, new tools, matting, bioengineering materials)

Sample Entry: (6 sites) - \$1,200

D Dams, Sumps, Pumping Sites & Other Disturbances – The total number of disturbed sites to be reasonably returned to their prior condition. Such sites include Dams, Sumps, Pumping Sites & Other Disturbances required for fire suppression activities. An estimate of the total costs, excluding administration and/or planning costs, required to rehabilitate these areas is also provided. Include costs of specific resources (grass seed, new tools, matting, bioengineering materials)

Sample Entry: (3 sites) - \$4,500

E Incremental and Other Considerations – The total number of hectares required beyond the basic rehabilitation specified in Section 16 &17 of the Wildfire Regulation. This rehabilitation may be required as a result of fire control measures or may result from the effects of the wildfire. Please refer to policy in completing Schedule B.

Sample Entry: (60 Ha) - \$18,000

F Administration and Planning – The total number of person days associated with administration and planning. Costs can include consultants required for mapping, surveys and other misc. assessments.

Sample Entry: (25 Days) - \$12,500

G Post Inspection – The cost estimate for post inspections predicted. 1 post freshet inspection for the following year or possible for a series of post inspections base on events (I.E. significant rain events) or once re-vegetation or result expected are attained. Include access cost if requires extra costs (helicopter access)

Summary Estimates by Land Jurisdiction:

This section is used to summarize an individual wildfire's rehabilitation program by land jurisdiction, estimate costs for implementing the plan, and provide performance measures to track progress. Specific details are provided in the Schedule(s) for each land jurisdiction (Occupied Crown Land, BC Parks, Indian Reserves, etc.).

The summary will include a roll-up of all the schedules with a tally of HA and costs associated to those codes listed above. Administration and Planning is a summary of the total days for administration and planning and estimated costs.

Sample Entry for Private Land: (60 Ha) - \$18,000

Administration and Planning: (20 days) - \$9,000

Incident Commander or Forest Protection Officer's Signature – submitted by the Incident Commander or Forest Protection Officer to the Fire Centre Manager for approval.

Fire Centre Manager – approved by the Fire Centre Manager who is delegated authority by the Minister for direct fire vote only.

SCHEDULE A: SITE REHABILITATION WORKPLAN

FIRE NO.	FIRE ZONE	AREA (Ha)	PROJECT NO.
----------	-----------	-----------	-------------

LAND MANAGER	PHONE NO.
MAILING ADDRESS	
LEGAL DESCRIPTION OF PROPERTY:	
LAND JURISDICTION <input type="checkbox"/> OCCUPIED CROWN LAND <input type="checkbox"/> BC PARKS <input type="checkbox"/> PRIVATE <input type="checkbox"/> LOCAL GOVERNMENT <input type="checkbox"/> VACANT CROWN LAND <input type="checkbox"/> INDIAN RESERVES <input type="checkbox"/> FEDERAL <input type="checkbox"/> OTHER _____	

Legal Obligations:

Wildfire Act - Section 6 (Industrial activities)

Wildfire Act - Section 9 (Government may carry out fire control)

Wildfire Regulation – Regulation - Section 16 (Rehabilitation if a person carries out fire control)

Wildfire Regulation – Section 17 (Rehabilitation if government carries out fire control)

(Quantify in units, such as cubic metres of timber, metres of road repair, or kg of grass seed.)

		Post-Work Inspection Initials. Date _____	Cost Estimate \$
A	MACHINE GUARDS, ACCESS ROADS AND TRAILS (_____ Km)	Subtotal	_____
1	ADDRESS FUEL HAZARD AND NATURAL DRAINAGE OBSTACLES		
2	STABILIZE OR RESTORE SURFACE TO ADDRESS EROSION CONCERNS (de-berm overburden, level, cross-ditch, de-compaction, re-vegetation, access management – recreation, wildlife, cattle)		
3	REPLACE OR REPAIR DAMAGED STRUCTURES (culvert, bridge, roads or other structure where there are concerns for erosion or stabilization)		
4	STABILIZE OR RESTORE WATERCOURSE CROSSINGS		
B	HAND GUARDS AND TRAILS (_____ Km)	Subtotal	_____

1	CROSS-DRAIN STEEP GRADIENTS AND ERODIBLE SOILS & RE-VEGETATE TO CONTROL EROSION		
C	CAMPS, HELISPOTS, STAGING AREAS & OTHER INCIDENT FACILITIES (____ # Sites)	Subtotal	_____
1	DISPOSE OF SLASH & DEBRIS (lop and scatter, bury, burn)		
2	STABILIZE OR RESTORE SURFACE (level overburden, de-compaction, re-vegetation for erosion control)		
D	DAMS, SUMPS, PUMPING SITES & OTHER DISTURBANCES (____ # Sites)	Subtotal	_____
1	REMOVE AND DISPOSE OF SLASH AND DEBRIS (RESTORE ORIGINAL CHANNEL AND RE-VEGETATE FOR EROSION CONTROL)		
E	OTHER CONSIDERATIONS (____ Ha)	Subtotal	_____
1	OTHER (SPECIFY – POST WORK INSPECTION REGIME, PROFESSIONAL ASSESSMENTS OR SIGN OFF REQUIREMENTS.)		
TOTAL COST ESTIMATES _____			
COMMENTS			
ATTACHMENTS			
1	PHOTOS (NUMBER AND DESCRIBE EACH PHOTOGRAPH)		

2	MAP OR SKETCH (DETAIL WORK AND FEATURES ON MAP, 1:15 000 TO 50 000)
3	OTHER (DESCRIBE)

<p>Name:</p> <p>_____</p> <p style="text-align: center;"><i>(Completed By Signature:)</i></p> <p>Professional Designation and Number:</p> <p>_____</p> <p>Date Completed:</p> <p style="text-align: center;"><i>(yyyy-mm-dd)</i></p>	<p>Name:</p> <p>_____</p> <p style="text-align: center;"><i>(Land Manager / Land Owner:)</i></p> <p>Date Approved:</p> <p style="text-align: center;"><i>(yy-mm-dd)</i></p> <p>Date Referred:</p>	<p>Name:</p> <p>_____</p> <p style="text-align: center;"><i>(Incident Commander or Zone Protection Officer's Signature)</i></p> <p>Date Approved:</p> <p style="text-align: center;"><i>(yy-mm-dd)</i></p>
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Instructions for Schedule A: Site Rehabilitation Workplan

The Schedule A: Site Rehabilitation Workplan (SRW) summarizes the fire site rehabilitation program by category and land jurisdiction, estimates implementation costs, and provide performance measures to track progress and supporting documentation (maps, photos, work schedules, prescriptions). One Schedule A is required for each land jurisdiction (Occupied Crown Land, BC Parks, Indian Reserves, etc.). The majority of the fires on crown land may only require one Schedule A. All signed Schedule A's are appended to the Fire Suppression Rehabilitation Plan (FSRP), and forwarded to the Incident Commander / Forest Protection Officer and Fire Centre Manager for approval. ~~The Schedule A may be developed and approved after the FSRP is approved to accommodate complex fire requirements.~~

Fire No. – This is the official fire number designated by the Fire Centre for that fiscal year.

Sample Entry: [K20627](#)

Fire Zone – Indicate the fire zone name.

Sample Entry: [Kamloops](#)

Project No. – This number is assigned by the Rehabilitation Specialist to track the expenditures by land jurisdiction. There should be a separate Schedule A for each project, and a unique project number for each jurisdiction by Fire Centre. The Fire Centre Finance staff will provide the project number.

Area (Ha) - The total gross fire area in hectares of the land jurisdiction.

Land Owner or Manager – The full legal name of the landowner or land manager with responsibility for the land. There should be only one land owner or manager identified.

Phone No. – The full telephone number including the area code.

Mailing Address – Include the complete mailing address, with postal code.

Legal Description of Property – For private landowners, the acceptable property description is usually included on their annual property tax or assessment forms. For other types of land, such as a provincial park, the full legal name of the land may suffice. In the case of tenured crown land, include the license holder, e.g., [Weyerhaeuser Forest License - A18694 - Cutting Permit 15](#).

Land Jurisdiction – Indicate by an “X” the appropriate type of land considered in the Project. There should be only one type shown.

Post-Work Inspection – It is a preferred that the Forest Professional responsible for the rehabilitation is expected to initial this box, or designate, when works are completed.

Cost Estimate – Amounts in this column include estimates of costs to undertake measures to works prescribed to complete basic rehabilitation requirements.

Summary Estimates by Damage Category & Performance Measures:

A Machine Guards, Access Roads and Trails – This category includes all damages resulting from heavy equipment in constructing fire guards and accessing areas to construct guards, trails and other structures for fire suppression purposes. The performance measure is number of kilometers.

A1 Address Fuel Hazard and Natural Drainage Obstacles – Where a fire hazard was created as a result of fire suppression or rehabilitation activities, arrange to dispose of the hazard. Where damaged timber from fire suppression activities created an obstacle to natural drainage features, the timber should be addressed. Some remedial measures include timber removal from the site, lop and scatter, burying, piling and burning of slash. Measurement may be expressed in machine-hours or person-days.

Hazard

Sample Entry: "Trail B, slash accumulations as a result of heavy equipment operation resulting in a hazard. Slash should be piled and burnt to reduce the hazard before March 31, 2005. Estimate: 2 day machine time, 1 person-day labour."

Sample Entry: "Trail A Sections 1-12. Fall all trees damaged by heavy equipment that pose a risk as per the "Wildfire Danger Tree" assessment level. Estimate: 5 DTA/Faller Days."

Natural Drainage

Sample Entry: "Trail B will be 100% deactivated due to instability concerns adjacent to the McGillivray river. Timber felled and damaged as a result of fire suppression activities within the riparian zone adjacent to the McGillivray River, will be skidded to a landing at the junction of trail A and Trail B. Estimate 200 m³, 1 DTA/Faller day, 2 days of skidder time."

A2 Stabilize or Restore Surface – Where machine actions have disturbed the landscape, rehab personnel may coordinate action to stabilize the surface soils to minimize the potential for erosion. This activity may include re-vegetating guards, roads, and trails with grass seed or appropriate saplings. The landowner or manager may also indicate the need to close access to certain areas to wildlife and human intruders. Units may include machine-hours, person-days, and kg of grass seed and refer to grass seed mix and application rates.

Sample Entry: "All guards and skid trails require levelling of overburden, re-contouring, cross ditching, de-compacting on fields and re-vegetating (seeding) with Chicotin Erosion control Dry Mix @ 11.kg ha for trails and guards and Kamloops range mix #2 @ 20 kg/ha for fields for erosion control. Access should be closed where desired by the owner. Estimate: 2 days machine time, 4 person-hours for seeding, 50 kg seed."

A3 Replace or Repair Damaged Structures – Heavy machinery may have damaged a culvert, bridge, road, or other structures while undertaking suppression activities effecting natural drainage patterns or contributing to surface soil erosion. (please refer to the Wildfire Act, Forest and Range Practices Act). The decision to remove, repair or replace damaged structures should examine a number of alternatives that include the lowest-cost option. Before any work is undertaken to remove, repair or replace a damaged structure, the land owner/manager should be consulted to ensure the work is planned to an adequate standard. It is also important to repair the damage to an approximate value that existed before the damage, and not to provide repair or replacement that exceeds the previous value.

Decisions to replace or repair structures may benefit from the opinions of a professional. Contact the Fire Centre for a list of pre-approved engineers and consultants. Units may include machine-hours, person-days, consultant costs, and dollar value of materials purchased.

Sample Entry: "A bridge on the main access road onto the property was damaged resulting in beyond repair impacting natural drainage and creating erosion, and should be inspected by a Forest Service engineer before being replaced. Estimate: 1 day for contracted engineering assessment, estimated at \$1,000."

A4 Stabilize or Restore Watercourse Crossings – Where machine guards, roads, or trails crossed a watercourse, the natural drainage patterns may have been disturbed. Rehabilitation Specialist coordinates the action required to return the watercourse as nearly as reasonable to its natural setting. Units should be expressed in terms of machine-hours or person-days.

Sample Entry: "Natural drainage at 3 crossings on one water course should be restored on all guards. Estimate: 1 hour machine time, 1 person-hour for supervision. Grass seed with Chilcotin Wet Mix (see attached grass seed mix information) at 11 kg/ha application for 10 metres on either side of high water mark for each crossing to control erosion. "

B Hand Guards and Trails – Fire control or suppression operations may have called for hand guards and access trails that may require rehabilitation. The performance measure is number of kilometers.

B1 Cross-Drain Steep Gradients and Erodible Soils & Revegetate – Where hand guards or trails have changed natural drainage patterns, measures should be taken to prevent erosion from surface run-off. Units for this work should address the length of guards or trails and the person-days required.

Sample Entry: “Natural drainage should be restored on about 800 m of hand guards to limit erosion. The guards will be grass seeded at a rate of 15kg/ha. Estimate: 16 person-days labour.”

C Camps, Helispots, Staging Areas and Other Incident Facilities – Schedule A rehabilitation includes assessing sites for slash hazard and re-establishing drainage and address stabilization for incident facilities to prior conditions. It does not include “grooming or aesthetic” works(should be part of original land use agreement or Schedule B). Such sites may include the Incident Command Post, Camps, Staging Areas, Helibases, Helispots, Retardant Pits, and First Aid Stations where not required by demobilization. The performance measure is number of sites.

C1 Dispose of Hazard and Debris – Where the establishment of incident facilities generated slash, the Rehab. Specialist arranges for disposal of any hazard. This includes trees that were dropped to enhance safety of air operations at or near helibases and helispots. Slash disposal may include lop and scatter, burying slash, and burning slash or remove timber at a later date. Measurement units may be expressed in machine-hours or person-days of effort required.

Sample Entry: “All slash at the helibase should be gathered and piled with debris from salvaged timber for disposal by chipping or burning. Estimate: 8-person-hours labour.”

C2 Stabilize or Restore Surface – Where establishment of incident facilities resulted in disturbance to the landscape, the Rehab. Specialist would coordinate action needed to return the surface to its original configuration. The land owner or manager may also request measures to close wildlife and human access to the site. Units of measure may include machine-hours and person-days.

Sample Entry: “The Camp requires de-compaction of fields to address erosion potential. Access should be closed where desired by the owner. Estimate: ½ day machine time, 16 person-hours of labour.”

D Dams, Sumps, Pumping Sites & Other Disturbances – Rehabilitation includes returning the sites used for Dams, Sumps, Pumping Sites & Other Disturbances as close to their prior condition as possible. Water courses include channels that may be dry at present but would likely carry substantial flows with seasonal rainfall. The performance measure is number of sites.

D1 Remove Slash and Debris – For all timber and other vegetation damaged by the fire suppression activity. Consult with a hydrologist and appropriate habitat specialist(s) before undertaking work in channels to determine if the work is required to address erosion potential. Measurement units may be expressed in machine-hours or person-days for the effort required.

Sample Entry: “Remove slash and debris along 250 m of Edwards Creek, and burn slash in the fall. Estimate: 16 person-hours.”

D2 Restore and Re-vegetate Water Courses – Protecting damaged wetlands from further impact may require work on the ground to protect and repair the stream banks and to restore channel stability. Units may include machine-hours or person-days. Again consult with appropriate habitat specialist(s) in development of workplan.

Sample Entry: “Hydro-seed riparian areas, planting of willow to enhance stream bank stabilization along 400rd. Estimate: Hydroseeding at 4 hours, 16 person-hours of labour.”

E Other Considerations – There may be other considerations to address such as safety concerns, other erosion concerns, access corridors, or minor wildfire damage, or impact to higher-level plans, that requires rehabilitation in addition to the above categories. The performance measure is number of hectares.

E1 Other (Specify) – Other considerations may include any action with a time or cost element to repair fire suppression damage. Indicate the appropriate Hectares of the work required. Should include post inspection costs and estimate of number of inspections expected and expected costs (helicopter access, specialist required)

Sample Entry: “Conduct risk assessment of possible increased potential for landslide or flooding associated with the fire suppression actions.

Post rehab work inspections will be required after significant rain events (>15 mils in 24 hours) and during and post spring freshets until a professional assessment has determined that the area has been stabilized to pre-suppression status or a low erosion hazard exists. Estimate: 20 person-hours.”

Areas re-vegetated along 400rd using hydroseed (E1) and seeding in A2 and A4 should be inspected in April 2011 to ensure effectiveness.(include costs of inspections)

Comments – This area is reserved for additional information regarding other areas of concern.

Total Cost Estimates – This row sums the costs associated with each lettered category in the rows above, such as “A,” “B,” and “C.”

Attachments – In addition to the basic form, each Schedule A may have a number of attachments that support the proposed rehabilitation activities.

Attachment 1, Photos – Indicated on the form if photographs are attached. Be sure to number and describe each photograph.

Sample Entry: “Photos 1 through 23 and descriptions.”

Attachment 2, Map or Sketch – Wherever possible, the proposed rehab works should be sketched on a map or blank sheet of paper to describe the actions required. Detail the work to be accomplished and key features on a map, using a scale ranging from 1:15 000 to 1:50 000.

Sample Entry: “Map A shows where water bars to be established.”

Attachment 3, Other – Describe other attachments, as appropriate.

Completed By Signature and Date – The person responsible for completing the Schedule “A”, usually the Rehabilitation Specialist. Print name and state professional designation (RPF, RFT, P. Eng etc and state number)

Land Manager / Land Owner Signature and Date – The signature of the land manager/land owner or designate signs indicating their approval of the work plan is preferred (a best practice) but work may proceed prior to approval if required.

Examples of reasoning for works completed prior to approval: The work or portion were completed concurrent with fire suppression operations and simple in nature, reviewed and approved by the IC or designate. Timing of work results in a significant reduction in costs (available equipment/personnel) or a delay might result in an increased potential for increased damages, environmental or other.

Incident Commander or Zone Protection Officer’s Signature – The Incident Commander or Forest Protection Officer who is the designated authority. The approved schedule is included with all the other Schedule “A’s ” by land jurisdiction, and attached to the Fire Suppression Rehabilitation Plan for approval.

END

SCHEDULE B: INCREMENTAL REHABILITATION WORKPLAN

FIRE NO.	FIRE ZONE	AREA (Ha)	PROJECT NO.
----------	-----------	-----------	-------------

LAND MANAGER	PHONE NO.
MAILING ADDRESS	
LEGAL DESCRIPTION OF PROPERTY:	
LAND JURISDICTION <input type="checkbox"/> OCCUPIED CROWN LAND <input type="checkbox"/> BC PARKS <input type="checkbox"/> VACANT CROWN LAND <input type="checkbox"/> OTHER _____	

Other rehabilitation may be required as a result of fire control measures or from the effects of the wildfire. This rehabilitation is not covered by the provisions in Sections 16 or 17 of the Wildfire Regulation.

		Post-Work Inspection	Cost Estimate \$
		Initials	
		Date	

A	WILDFIRE DAMAGE	Subtotal	_____
	(_____ Ha)		
1	HIGH INTENSITY FIRE AREAS (degraded steep slopes, water impacts)		
2	INFRASTRUCTURE (Range fences, gates, water holes, cattle guards, driveways, culverts, bridges, other infrastructure)		
3	EXPOSED MINERAL SOIL (grass seeding for evasive plants or range establishment or erosion control)		

4	OTHER FOREST RESOURCE AND GRASSLAND VALUES (Natural Range Barriers)		
B	SUPPRESSION DAMAGE (_____ # Sites/Ha)	Subtotal	_____
1	HIGH INTENSITY FIRE AREAS (degraded steep slopes, water impacts)		
2	INFRASTRUCTURE (Range fences, gates, water holes, cattle guards, driveways, culverts, bridges, other infrastructure damaged by suppression equipment)		
3	EXPOSED MINERAL SOIL (grass seeding for evasive plants or range establishment)		
		TOTAL COST ESTIMATES	_____
COMMENTS			
ATTACHMENTS AND SIGNATURES			
1	PHOTOS (NUMBER AND DESCRIBE EACH PHOTOGRAPH)		

2	MAP OR SKETCH (DETAIL WORK AND FEATURES ON MAP, 1:15 000 TO 50 000)
3	OTHER (DESCRIBE)

<p>Name: _____</p> <p style="text-align: center;"><i>(Completed By Signature:)</i></p> <p>Professional Designation and Number: _____</p> <p>Date Completed: _____ <i>(yyyy-mm-dd)</i></p>	<p>Name: _____</p> <p style="text-align: center;"><i>(Approved by Land Manager)</i></p> <p>Date Completed: _____ <i>(yy-mm-dd)</i></p> <p>Date Referred: _____</p>	<p>Name: _____</p> <p style="text-align: center;"><i>(Incident Commander or Zone Protection Officer's Signature)</i></p> <p>Date Approved: _____ <i>(yy-mm-dd)</i></p>
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Instructions for Schedule B: Incremental Rehabilitation Workplan

The Schedule B: Incremental Rehabilitation Workplan (IRW) summarizes the incremental fire site rehabilitation program (above and beyond Section 16 and 17 of the Wildfire Regulation) by category, estimates implementation costs, and provides supporting information of the projected work (maps, photos, prescriptions). At least one Schedule B is required for each land jurisdiction (BC Parks, Crown, etc.) All signed Schedule B's are attached to the Fire Suppression Rehabilitation Plan, and is forwarded to the Expense Authority or his designate for approval. i.e. Direct Fire would be the Executive Director of WMB or his designate (Likely Fire Centre Manager),

Fire No. – This is the official fire number designated by the Fire Centre for that fiscal year.

Sample Entry: [K20627](#)

Fire Zone – Indicate the fire zone name.

Sample Entry: [Kamloops](#)

Project No. – This number is assigned by the Rehabilitation Specialist to track the expenditures by land jurisdiction. There should be a separate Schedule B for each project, and a unique project number for each jurisdiction by Fire Centre. The Fire Centre Finance staff will assist in the development of appropriate project numbers.

Area (Ha) – The total gross fire area in hectares of the land jurisdiction.

Land Manager – The full legal name of the land manager with responsibility for the land. There should be only one land manager identified.

Phone No. – The full telephone number including the area code.

Mailing Address – Include the complete mailing address, with postal code.

Legal Description of Property – The full legal name of the land. In the case of occupied crown land, include the license holder, e.g., [Weyerhaeuser Forest License - A18694 - Cutting Permit 15](#).

Land Jurisdiction – Indicate by an “X” the appropriate type of land considered in the Project. There should be only one type identified.

Post-Work Inspection – It is a preferred that the Forest Professional responsible for the rehabilitation is expected to initial this box, or designate, when works are completed.

Cost Estimate – Amounts in this column include estimates of costs to undertake works to address the incremental activities.

Summary Estimates by Damage Category & Performance Measures:

A Wildfire Damage – This category includes all damage caused by the Wildfire that may impact natural drainage features or create erosion problems. The performance measure is number of hectares.

A1 High Intensity Fire Areas – Areas heavily impacted by the wildfire that need to be addressed in order to reduce impacts to natural drainage features and reduce erosion potential. Some examples of rehabilitation actions include Aerial Grass Seeding of the burn area. The units of measure usually are kg/Ha of grass seed applied “cubic metres.”

Sample Entry: “Approximately 8,210 Ha of the steepest ground most severely burned areas requires aerial grass seeding of 15kg/ha. Estimate: 123,150 kg of seed.”

A2 Infrastructure – Where the wildfire has damaged culverts, bridges, roads, range fences and improvements, or other structures. The decision to repair or replace a structure should examine a number of alternatives that include

the lowest-cost option. It is also important to repair the damage to an approximate value that existed before the damage, and not to provide repair or replacement that exceeds the previous value.

Sample Entry: “one burned fence 6.5 km in length, between crown range units, to be replaced. Estimate: 2 day machine time, 12 person-day labour.”

A3 Exposed Mineral Soil (Invasive Plants) – Where there is exposed mineral soil that will contribute to erosion or the spread of noxious weeds, rehab personnel may coordinate action to reduce the encroachment and spread of the weeds. This activity may include re-vegetating existing roads, and trails with grass seed. The landowner or manager may also indicate the need to rehabilitate rangeland. Units may include machine-hours, person-days, and kg of grass seed and specific grass seed mix used.

Sample Entry: “All disturbed areas are required to be re-vegetated (seeding). Access should be closed where desired by the owner. Estimate: 2 days machine time, 4 person-hours for seeding, 50 kg seed.” Utilizing Kamloops Range #2 mix @ 15 kg/ha and to be seeded prior to Sept 30.

A4 Other Resource Values – any other forest resource values that may have been impacted by the wildfire. Decisions to treat those areas may benefit from the opinions of a professional. Contact the Fire Centre Rehab Coordinator for a list of pre-approved engineers and consultants. Units may include machine-hours, person-days, consultant costs, and dollar value of materials purchased.

B Suppression Damage – This category includes all damage caused by heavy equipment in constructing fire guards, accessing areas to build such guards, and other access roads and trails used in fire suppression that do not impact natural drainage patterns and do not adversely contribute to surface soil erosion. The performance measure is number of sites or hectares.

B1 Infrastructure – Where fire suppression actions have damaged culverts, bridges, roads, range fences and improvements, or other structures. The decision to repair or replace a structure should examine a number of alternatives that include the lowest-cost option.

Sample Entry: “one fence 50m in length was damaged by heavy machinery that needs to be repaired. Estimate: 2 day machine time, 12 person-day labour.”

B2 Other Suppression Damage – There may be other Suppression Damage not within WMB's mandate to address such as safety concerns, other erosion concerns, access corridors, or minor wildfire damage that requires rehabilitation beyond the categories shown above.

B3 EXPOSED MINERAL SOIL – SUPPRESSION OPERATIONS MAY HAVE EXPOSED MINERAL SOIL THAT MIGHT REQUIRE RE-VEGETATION TO REDUCE INFILTRATION OF NOXIOUS WEEDS OR BE REQUIRED TO RE-ESTABLISH A GRAZING CROP. THIS IS OUTSIDE THE WMB'S MANDATE. BE SPECIFIC TO GRASS MIXES AND APPLICATION RATES.

Comments – This area is reserved to provide information regarding some of the wildfire effects that could be an environmental risk, and should be considered for alternate funding sources.

Total Cost Estimates – This row sums the costs associated with each lettered category in the rows above, such as “A,” “B,” and “C.”

Attachments – In addition to the basic form, each Schedule A may have a number of attachments that support the claims of damage and the proposed rehabilitation activities.

Attachment 1, Photos – Indicated on the form if photographs are attached. Be sure to number and describe each photograph.

Sample Entry: “Photos 1 through 23 and descriptions.”

Attachment 2, Map or Sketch – Wherever possible, the proposed rehab works should be sketched on a map or blank sheet of paper to describe the actions required. Detail the work to be accomplished and key features on a map, using a scale ranging from 1:15 000 to 1:50 000.

Sample Entry: “Map A shows where fences and gates are to be replaced.”

Attachment 3, Other – Describe other attachments, as appropriate.

Completed By Signature and Date – The person responsible for completing the Schedule “B”, usually the Rehab. Specialist for the fire should be the first person to sign the form as being complete, in the space provided at the bottom of the form.

Land Manager / Land Owner Signature and Date – The name of the Land Manager or approved designate signs indicating their approval of the work plan. A land manager approval must be obtained for works charged against an appropriation over which they have been delegated authority.

Minister or Designate – Usually the Fire Centre Manager who is delegated authority by the Minister to approve expense incurred for direct fire vote. Please see policy for guidance.

END

Appendix 7

Guidelines for Removing and Decking Timber from Fire Guards

The removal of merchantable timber from fireguards is vital if rehabilitation is to be completed on environmentally sensitive guards prior to spring breakup. It is critical to establish communication with the District and/or BCTS Tenure Forester as early as possible. In order to expedite this workload, BC Wildfire Management Branch staff may initiate the work to pull, skid and deck merchantable timber damaged and pushed over during fireguard construction. This work may be completed and supervised by a Task Force Leader with guidance from the Rehab Specialist (RS). In the event this work is to be completed under agreements with a Major Licensee or the Timber Sales Program, then the appropriate Tenure Forester (BCTS or District) will be assigned this responsibility.

Where Wildfire Management Branch will be responsible for forwarding merchantable timber from the guard the work will include:

- Bucking root wads off logs where practicable.
- Skidding logs off guards to the nearest landing, designated site or access trail. Excessive skid distances will require approval from the Rehabilitation Specialist.
- Decking on the landing when required.

Wildfire Management Branch ***will not*** undertake:

- Processing of timber.
- Loading and transporting timber.
- Skidding and decking of feller bunched timber retrievable along main access roads.
- Skidding of previously decked timber.

Guidelines:

- Whenever possible root wads and other coarse woody debris will be left on site.
- Landings may be required to store some of this timber. These temporary landings may have to be built along access roads, built as small as possible, and whenever possible, built in consultation with the Licensees for future salvage use.
- Coniferous trees will have priority for timber removal from fireguards. Deciduous and non-merchantable timber will be left for coarse woody debris when suitable.
- Timber that was felled and burned over will have to be assessed very closely for merchantability. If the timber is non-merchantable, it should be left on site for coarse woody debris.
- Timber will be decked, with minimum processing, off fireguards, where it can be reached with conventional logging equipment after guard rehabilitation is complete.
- If timber is already decked along a fireguard that section of fireguard will have to be left accessible until the timber is removed.
- Bunched timber along roadways that is non-merchantable because of timber quality, excessive burning or other reasons will be left as coarse woody debris, or buried, burned, scattered or skidded to a suitable site for disposal if required for silvicultural purposes.

Appendix 8

Guidelines for Non Crown Lands Rehabilitation

Rehabilitation on Private Lands may involve claims and compensation requests on non-crown lands from fire control operations and the wildfire itself.

BC Wildfire Management Branch Fire Centre Rehabilitation Coordinator manages rehabilitation and the Risk and Litigation Manager, manages claims and compensation requests for the Wildfire Management Branch.

When a potential claim is identified, Wildfire Management Branch staff should not discuss compensation or the claims process with the property owners. All potential claimants must be informed that they will be contacted by the Risk and Litigation Manager. (See Appendix 9 Guidelines for Engaging Claims and Litigation Manager)

All non crown lands rehabilitation planning and implementation will follow the Rehabilitation Standard Operating Guidelines. As with any rehabilitation planning and implementation work, the appropriate professionals must be consulted and complete the work according to the required scope of practice.

Principles

- Wildfire Management Branch will meet the legislative obligation as outlined in the Wildfire Act and Wildfire Regulations. (Section 9 of the WFA and Sections 15 and 17 of the WFR)
- Our primary rehabilitation focus is on mitigating the potential for soil erosion by: Stabilizing and re-vegetating soil disturbed or exposed by heavy equipment; stabilizing stream channels and stream bed at stream crossing; and stabilizing sump and dam locations that were created for the purpose of carrying out fire control.

Rehabilitation Planning

Where possible use local WMB staff or District TEAM staff to act as rehabilitation coordinator and rehabilitation specialist as rehabilitation, at times, can carry on much longer than the fire control operations. Continuity of the contact person is critical on non crown land areas.

Meet with the property owner on-site whenever possible to review the damage requiring rehabilitation. In some cases an agreement can be reached with the Schedule 'A' completed and signed before you leave. It is appropriate to use the fax to have the Schedule 'A' signed and returned to you. Faxed signatures are legal.

If it is impossible to make contact with the registered owner, then it is appropriate to deal with a representative of the owner. You will have to ascertain the authority this person has to represent the owner or owners.

It is our objective to reach an agreement with the landowner or his/her representative. There may be cases where this cannot occur and where some of the work involves critical measures to mitigate the potential for erosion or other environmental concerns. In these cases it is important to document the efforts taken to reach an agreement. In order to meet our legislative obligations, a Site Rehabilitation

Workplan (FS 129A) will have to be prepared with the best information available. The owner should be advised in writing of our intentions and work should proceed. The Wildfire Act allows the government to remain or re-enter on private land to rehabilitate the land. See example letter below.

The (enter zone name here) Fire Zone of Wildfire Management Branch have been attempting to prepare and obtain an agreement on a Site Rehabilitation Plan for the above noted property.

Section 16 and 17 of the Wildfire Regulation describes requirements for the rehabilitation and stabilization of disturbances from fire control operations.

The Wildfire Management Branch has identified the potential for erosion on this property as a result of our constructed machine guard. It will be our intention to hire the appropriate equipment and crews and proceed as soon as possible with those rehabilitation measures necessary to address erosion potential and other environmental concerns.

Based on our field inspection and on discussions with you, we have prepared the attached Site Rehabilitation Plan (FS 129A) for your signature.

Wildfire Management Branch officials will be guided by this plan and if you have any further comment please contact the undersigned.

Completing Works

Under the supervision of the Rehabilitation Coordinator any small, low cost, low risk projects, or for specialized or easily defined work, it may be best to reach an agreement with the landowner to have him/her undertake or contract the work. Document the work to be undertaken, the agreed to costs and have the landowner sign off that the work they undertake themselves relieves the government of any obligations.

Stat hire rate or quotes may be used where the landowner has agreed to do the work. You will also need to have appropriate receiving authority to sign that the Goods and Services have been received. The person doing the work must submit an invoice for payment.

Prior to making any commitments for reimbursement of costs, consult with the Fire Centre. Fire cause and origin must be considered before making any commitments.

Every effort must be made on non crown rehabilitation work to have the landowner acknowledge that the rehabilitation work, as outlined in the plan, has been completed to legislative requirements.

The WMB will accept acknowledgement by email, letter or FS129A signatures.

This acknowledgement must be put on the file.

Appendix 9

Guidelines for Engaging the Risk and Litigation Manager

The Risk and Litigation Manager will manage all claims for compensation.

The Rehabilitation Coordinator, in consultation with the Incident Commander or Zone Forest Protection Officer, must inform the Regional Wildfire Coordination Officer (RWCO) when:

- The landowner/tenant is seeking compensation;
- There is damage to lands where Section 16 & 17 of the Wildfire Regulations would not apply.

There are disputes with the landowner pertaining to Rehabilitation.

The RWCO will contact the SPOFM and then the SPOFM will contact the Claims and Litigation Manager for assistance. The SPOFM will also inform the PWCO that the Risk and Litigation Manager has been notified.

Investigation of a Claim for Compensation

Working with the Fire Centre Rehabilitation Coordinator, the Risk and Litigation Manager will determine the cause and extent of the damage and will confirm if the claimant is entitled to compensation as per the provisions set out in the Wildfire Act - Section 9 (4) (5) (Government may Carry Out Fire Control) and the Wildfire Regulation – Section 15 (Compensation).

Appendix 10

Guidelines for Stabilizing and Restoring Watercourse Crossings

All streams should be considered sensitive and damage to streams and stream banks should be avoided wherever possible. However in emergency situations it may be necessary to cross streams to establish control lines. Where streams have been disturbed consultation with MNRO staff responsible for water stewardship and ecosystem specialists can help develop strategies for rehabilitation.

All stream crossings should have the banks restored and stabilized. In most cases this will require hand clearing to remove fine particles, limbs, and other debris. Removal of large debris, logs, and rocks, should only be undertaken where this material was deposited as a result of protection activities. If large debris is to be removed, use a back-hoe to lift the debris out of the stream rather than push it out with a bulldozer. Ensure that all material is placed above the high water buffer. Trees pushed into stream channels, lakes or ponds as a result of control lines or access road construction should be removed by lifting the entire tree free of the channel or water body, or by bucking out and removing the offending sections, whichever is the most economical.

Fire control lines should rarely be constructed parallel to streams. In the event it does occur, the best method of removing the material side cast into the stream is to lift the trees out and use a back-hoe to remove the stumps, soil, and rocks. It is important to not disturb the area further during rehabilitation.

MNRO regions have documented timing windows (work windows) for in-stream works affecting Fish Streams. This is the working paper for legislative statutes and authorities. The work windows identify when in-stream works can occur at a period of time when activities are considered to pose the “least risk” to fish and fish habitat. Care must be taken even during identified work windows not to create unnecessary impacts to the stream and stream banks.

It is not always possible to meet the timing window requirements in emergency situations. All staff must endeavour to meet the requirements when the emergency has passed and operations are strictly for rehabilitation. Consultation with the local MNRO staff including Ecosystem and Fish and Wildlife section staff is necessary.

Where water quality objectives must be maintained (i.e., in community watersheds or downstream domestic use), there may be other timing considerations depending on site-specific circumstances. Consult with MNRO Water Stewardship staff to develop rehabilitation strategies.

Damage to stream channels or fish habitat, or introduction of deleterious substances to a stream, must be reported to MNRO and FOC immediately. This includes activities that have occurred, for any reason, outside of the prescribed measures and timing windows.

In some circumstances immediate action will be required to protect roads, stream environments, and crossing structures from catastrophic damage. Should consultation on conservation measures prove impossible due to an immediate need to prevent damage, the extent of emergency activity must be reported in writing and with a map to MNRO and Fisheries and Oceans Canada (FOC) within 72 hours. Staff may also call the provincial RAPP line to report these incidents at 1-877-952-7277.

BC Wildfire Management Branch Staff must also be aware of impacts that fire control and rehabilitation activities can have on drinking water supplies. The Ministry of Health, through authority delegated to their Drinking Water Officers, is the agency responsible for drinking water supplies. Drinking Water Officers can be contacted through the local Ministry of Health office.

Web based resource material (links may change as MNRO structural changes are implemented)

Water Stewardship and Regional Timing Windows:

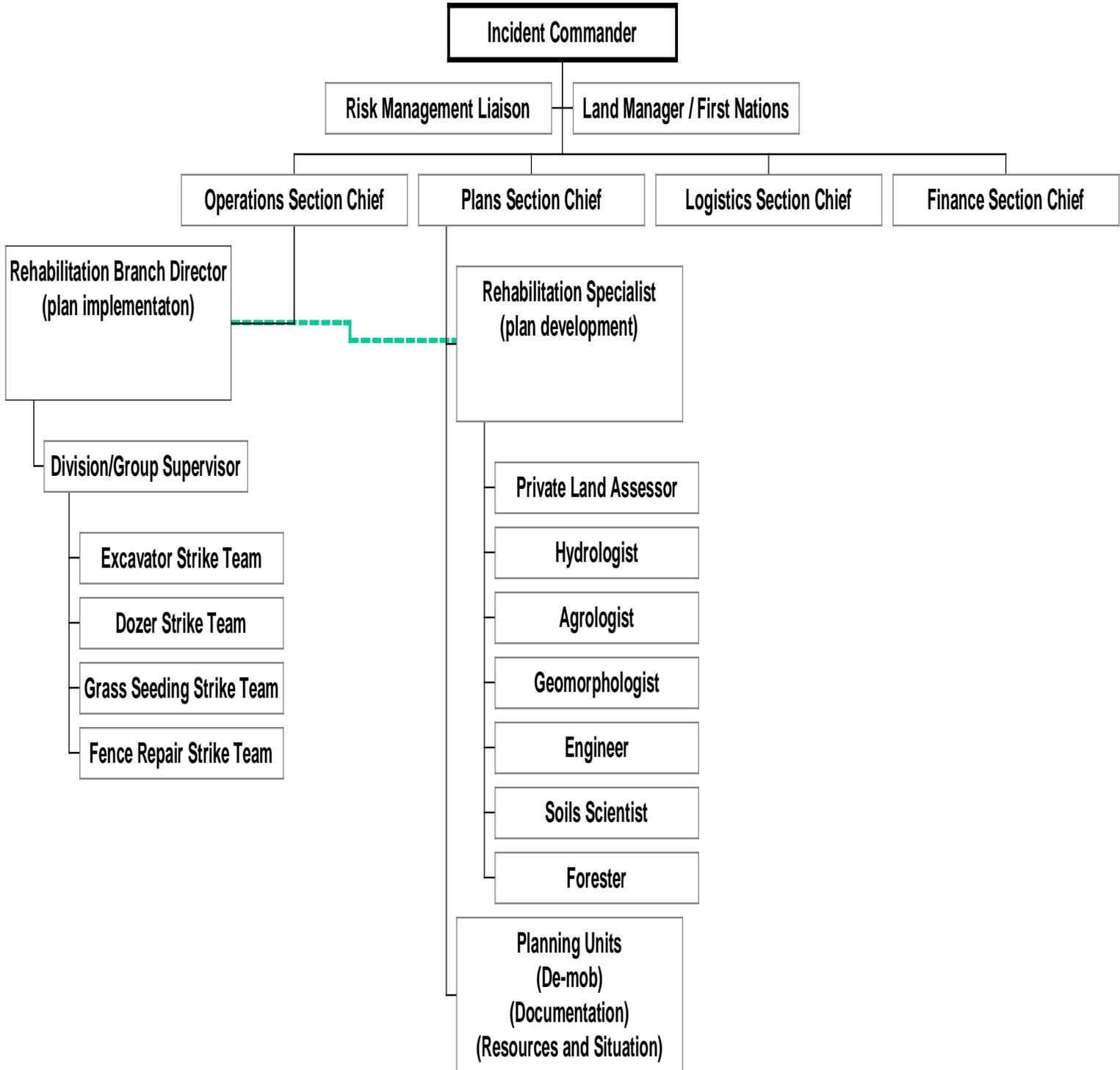
http://www.env.gov.bc.ca/wsd/water_rights/licence_application/section9/index.html

Provincial Guidelines and Best Practices:

<http://www.env.gov.bc.ca/wld/BMP/bmpintro.html>

Appendix 11
Fire Rehabilitation Organization Chart Example

The organization will vary dependant on the complexity of the work and personnel required.



Appendix 12

Ribboning and Data Collection Standards

The data to be collected around the fire will become the base for the fire rehabilitation plan on both crown land and non-crown lands. If Ministry resources are insufficient to complete the collection of data, the work can be contracted through approved Government procurement methods.

The following list of data should be collected for use in the rehabilitation plan:

- Fire perimeter (if not already confirmed by AWIS or RAM)
- All guards/roads within or outside the fire area
- Stream crossings
- Helipads, Staging areas, Sumps, dams, water containment structures

GPS data to collect regarding roads/guards should be categorized as follows:

- Existing roads (FSRs, highways, private roads) that were used as fire guard
- Heavily used roads (roads where use for wildfire response had an impact)
- Modified roads (existing roads that have been modified to meet wildfire response objectives)
- Guard width: Guard <5 m; Guard 5 - 10m; Guard 10+m
- Other cleared or modified areas (staging areas, safety zones, etc.) including area estimates in hectares

Additionally, data should be collected (including photos) in areas where site disturbance comes in contact with infrastructure. It should also be noted if items were damaged due to fire suppression activities or wildfire. These items include but are not limited to:

- Signs, fences, gates, cattle guards
- Water developments (intakes, irrigation ditches, water holes, etc.)
- Private land (and improvements on that land)
- Damage to road R/W including damage to bridges, culverts or road prism etc.

Other information that must be noted and GPS'd in order to aid in the development of a rehab plan include:

- Areas with steep slopes, gullied terrain and/or sensitive soils (areas that show signs of instability).
- Water features (creeks, rivers, lakes, wetlands and riparian areas) and the impact upon the water feature.
- Method of guard clearing (pushover vs. bunching/falling).
- Potential natural range barrier breaches if range tenure exists
- Archaeological sites/features and other cultural heritage resources
- Wildlife features
- Areas with observed noxious weeds
- Location, species composition and rough volumes of standing and decked timber.
- Whether existing road was deactivated and to what extent (exp. Access blocked, waterbars impassable by vehicle or ATV, etc.). Ensure deactivation features are GPS'd. Note - it is best if this information is captured prior to guard building.

Rehabilitation features (as mentioned in the points above) should be GPS'd, marked in the field, and identified on a map. Marking of these features should be done in a manner that ensures easy identification that lasts for multiple years (see ribboning standards below).

Additional information should be collected on infrastructure lost or damaged due to wild fires (non-suppression damage) as this could be required to complete the Schedule B.

Work with the Incident or Fire Centre Plans Section to produce maps at an appropriate scale to enable effective implementation. Copies of these maps must meet WMB Provincial GIS mapping standards.

Appendix 12

Ribboning and Data Collection Standards

RIBBONING STANDARD

The following ribboning standards were created to promote consistency and avoid issues with other fireline activities/features such as danger tree hazard, etc.

Feature	Ribbon Colour	Specifications
POC (point of commencement) and POT (point of termination) of guard/guard type	Three <i>Pink</i>	Mark ribbon with "POT or POC; guard id; date; initials." This should be done even if no work is required.
Water Bars and Cross Ditches	" <i>Water Bar</i> " and " <i>Cross Ditch</i> " text ribbon	Hang ribbon on either side of road and ensure placement reflects any angle requirement. If this ribbon is not available, order from warehouse and/or use alternative and make note of change.
Streams	<i>Pink and Blue</i>	Pink and blue tied together on both sides of road, guard, etc. with stream ID and classification (if known) marked on ribbon. All streams, NCD's, and other water features must be ribboned.
Other Features (e.g. Safety zones, Heli Pad, Cattle guard, etc.)	<i>Pink</i>	Hang ribbon or banner.
Sections requiring work	<i>Pink</i>	Hang banner that is tied to ground (angled) at start and finish of section. Ensure POC and POT is noted on ribbon along with section identifier and prescription action abbreviation.
Sump Site	<i>Blue and White Candy Stripe</i>	Hang banner.

NOTES:

- Avoid lime green, orange, and yellow ribbon to avoid confusion with danger tree assessment ribbon.
- If line locating ribbon is conflicting with rehab ribbon, rip it out or use alternative colour and make note of change.
- Ensure site identification and prescription action abbreviation is noted on ribbon for each site/feature/section using a permanent black marker.
- Ensure POC and POT is noted for each guard and prescription section (e.g. pull back section).
- See the "Wildfire Rehabilitation Prescription Features and Actions" table below.

GPS DATA NAMING CONVENTION

Ensuring that all tracks and waypoints are identified, named appropriately, exported, and filed to the correct folder minimizes inefficiencies and the potential for missed features or sections requiring works.

Tracks – identification; feature type or prescription action abbreviation; initials.

Waypoints – identification; feature type or prescription action abbreviation; initials.

Note: See the "Wildfire Rehabilitation Prescription Features and Actions" section below.

PHOTO NAMING CONVENTION

It is important that adequate photos are taken and named correctly to ensure that they can be matched with the corresponding feature or rehab action in the rehab plan. The following photo information was from the Wildfire Management Branch's 2015 *Information Governance Manual*.

Appendix 12

Ribboning and Data Collection Standards

Naming Convention <i>YY means last two numbers of the year</i>	Example
YY Incident # Photo Date (MMM DD) Time short description Last Name of the person who took photo	14 71DG073 Photo Jun 27 1315 proximity to trigger point 4P72

Please consider the following:

- All photos taken must be filed;
- All retained photos must be named as shown in the table above;
- Camera must be set correctly—time & date, and resolution to a reasonable size (suggest 768 x 1024-higher for origin and cause or as required);
- Must indicate photographer’s name, fire number, location (north, south side of fire, section of guard, etc.), and the date and time;
- If require more information for photos, include photo log (this is recommended to capture rehabilitation specifics);
- If a photo is not named properly, it has no value as a record;
- Post-rehabilitation photos are also important to obtain, particularly where any value was impacted, and in areas or sites with high environmental or cultural significance.

NOTE TAKING SPECIFICATIONS

Records management is a key component of the Wildfire Management Branch’s core policy. The following points refer to specific rehab note taking considerations. Please refer to the Wildfire Management Branch’s *2015 Information Governance Manual* for general records management guidance.

- Ensure all points of interest are identified and adequate notes are taken.
- Provide a brief rationale for guard/road or features that have been identified as not requiring rehab work, and provide photo(s). If features or sections are similar, a photo representing the majority would suffice.
- Ensure wildfire name, date, page number, and name of person(s) collecting data are located on all field notes.
- Submit all original field notes and photos.
- If timber is decked along a fireguard, take a waypoint, photo(s) and provide a description (see **Appendix 7** for additional information).

PLAN SPECIFICATIONS

Rehabilitation plan instructions can be found directly on the FS 129, and FS 129 A & B forms. In addition to these instructions, please ensure the following:

- A Prescription Summary is attached that identifies feature/section and prescription specifications,
- A photo appendix is attached (if separate from Prescription Summary) containing features or rehab sections of note. Ensure they are labeled as per the photo naming convention noted above, and
- A detailed sketch is included for any works requiring more complex rehab.

FEATURE TYPE AND REHAB PRESCRIPTION ACTIONS ABBREVIATIONS

The abbreviations found in the table below are meant to streamline field work and data collection.

Appendix 12

Ribboning and Data Collection Standards

WILDFIRE REHABILITATION PRESCRIPTION FEATURES AND ACTIONS			
WORK DESCRIPTION	ACTION	ABBREVIATION	
FEATURE TYPE	Camp	CP	
	Cattle Guard	CG	
	Cleared Area	CA	
	Cross Ditch (Existing)	CDE	
	Cross Ditch (Filled)	CDF	
	Decked wood	DW	
	Existing Deactivation	ED	
	Fence	FE	
	Guard (Fuel Free)	GFF	
	Guard (Hand)	GH	
	Guard (Machine)	GM	
	Heli-Pad	HP	
	Other Disturbance	OD	
	Pipeline	PP	
	Road (Heavily used)	RHU	
	Road (Existing modified)	REM	
	Safety Zone	SZ	
	Sign	SN	
Staging Area	SA		
Stream Crossing	SC		
Sump	SP		
MISCELLANEOUS	No Action Required	NA	
	Block access	BA	
	Construct access	CA	
	Travel Time	WS	
	Supply and install warning signs	H	
	Helicopter Landing Pad	RM	
Remove and dispose of Metal products			
WATER CONTROL	CULVERTS	Clean or repair culvert	CC
		Install metal culvert	MC
		Install wood culvert	WC
		Remove and dispose culvert	RC
	OPEN CROSS DRAINAGE	Install cross ditch	X
		Install waterbar	W
		Construct ford	F
		Construct rock ford (squamish culvert)	SO
	DITCHES	Install ditch	ID
		Clean ditch	D
		Install/repair ditch block	DB
		Install rock check dam	C
	Install French Drain	FD	

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WILDFIRE REHABILITATION PRESCRIPTION FEATURES AND ACTIONS		
WORK DESCRIPTION	ACTION	ABBREVIATION
ROAD/TRAIL WORKS <div style="text-align: right; padding-right: 20px;">GRADING</div> <div style="text-align: right; padding-right: 20px;">EXCAVATION</div> <div style="text-align: right; padding-right: 20px;">EROSION PROTECTION</div>	Remove or breach windrows/berms	RW
	Inslope Road/Trail	IS
	Outslope Road/Trail	OS
	Scarify surface (ripping)	SR
	Pullback fill material	P
	Pullback landing fill material	PL
	Pullback and remove fill material from gully	PG
	End haul spoil material	EH
	Pulldown overhang cut	PO
	Pullback and scatter woody debris	PWD
	Chip woody debris	CWD
	Pile and burn woody debris	PBD
	Supply and place armouring material	AM
	Supply install and later remove silt fence	SF
Construct and maintain settling pond	SP	
Supply, install and later remove straw bales	SB	
STRUCTURES	Repair bridge	RPB
	Remove bridge	RB
	Replace bridge	RLB
	Construct retaining/breast walls	CRW
	Construct river ford	RF
SLOPE TREATMENTS	Contour felled logs	CF
	Mulch	MU
	Slash Spreading	SS
	Temporary Fencing	TP
	Straw Wattles	SW
	Geotextile or Geowebbing	GE
REVEGETATION	Silt fencing	SF
	Dry seed	DS
	Hydroseed	HS
	Wet seed	WS
	Aerial hydroseed	AHS
	Plant seedlings	PSD
	Plant cuttings	PC

Rehabilitation Checklist

Fire # _____

Date: _____

Y	N	PLANNING – Rehabilitation Specialist	Comments and Date
		Obtain briefing from Incident Commander / Operations Chief.	
		Start Inventory of Fire Suppression impacted sites. (GPS guards & other damaged sites & Arch View Mapping)	
		If Private Land involved, obtain landowner / tenant information and establish contact with affected landowner / tenant. Consider assigning a liaison to address private land concerns.	
		Consult Claims and Litigation Manager to interview impacted private land owners to determine compensation requirements.	
		Obtain and review local Fire Management Plan	
		Conduct Overview Risk Assessment with soil erosion specialists to determine priority rehabilitation sites.	
		Establish inter-Ministry / Other Agency Contacts. Determine Roles and Responsibilities.	
		Engage with local First Nations directly or through District Consultation Coordinator	
		Attend Planning meeting to provide goals, objectives and performance targets.	
		Gather all relevant inventory data (mapping) for project area. Contact Major Licensees, District Office, BCTS, other MNRO)	
		Establish timber removal authority with the Land Manager.	
		Ensure field assessments are taking place (Terrain stability, Archeological, Fisheries) by the appropriate professional.	
		Develop Fire Suppression Rehabilitation plan with I/C and/or Planning Section Chief	
		Obtain project coding from Finance Section	
		Ensure Rehab Plan and Schedules are signed off by authorized Land Manager, Fire Centre Manager, IC or designate and copies are filed and distributed	
		Upon completion of operations – ensure Post Work Inspections are completed and the workplan signed off. Consult ZFPO.	
		Scan and file original signed copies in the Fire File on the Incident Drive \\Bellagio\incident\$	
		OPERATIONS – Rehab Branch Director	
		Review Rehabilitation Plan with Rehab Specialist and Operations Chief.	
		Ensure appropriate resources (including specialized personnel) are assigned to the Rehabilitation Branch.	
		Ensure all operations are conducted safely and as per the Safe Work Standards and Safe work procedures.	
		Address high priorities first (potential for impacts to public health and safety). In some cases it may be before the rehabilitation plan has been completed.	
		Document progress; wherever possible ensure there are before and after photos.	
		Arrange follow-up inspections of completed works and document.	
		Maintain manifests of all personnel and equipment.	
		Ensure Daily Time Reports are completed and coded correctly.	