

# ORDER OF THE MINISTER OF FORESTS, LANDS, NATURAL RESOURCE OPERATIONS AND RURAL DEVELOPMENT

## *Forest and Range Practices Act*

### *Ministerial Order No.*

### *Wildlife Habitat Area 7-001 for Grizzly Bear (*Ursus arctos*)*

### *Stuart Nechako Forest District*

1. I, Katrine Conroy, Minister of Forests, Lands, Natural Resource Operations and Rural Development, being satisfied that the following described area contains habitat that is necessary to meet the habitat requirements for grizzly bear (*Ursus arctos*); and the habitat requires special management that is not otherwise provided for under the Government Action Regulation (GAR) or another enactment, order that:
  - a) the areas shown on the map attached as Schedule A, with the centre point of the line on the attached Schedule A establishing the area boundaries, as WHA 7-001 and contained in the wildlife habitat area (WHA) spatial layer stored in the British Columbia Geographic Warehouse  
(WHSE\_WILDLIFE\_MANAGEMENT.WCP\_WILDLIFE\_HABITAT\_AREA\_POLY) are established as wildlife habitat area WHA 7-001 for grizzly bear and;
  - b) if there is a discrepancy between the areas shown on the map attached as Schedule A and the WHA spatial layer stored in the British Columbia Geographic Warehouse  
(WHSE\_WILDLIFE\_MANAGEMENT.WCP\_WILDLIFE\_HABITAT\_AREA\_POLY), the areas as detailed in the WHA spatial layer will take precedent.

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*(This part is for administrative purposes only and is not part of the Order.)*

#### **Authority under which Order is made:**

Regulation and section: Government Actions Regulation (B.C. Reg. 582/2004) ss. 9(2), 10(1) and 10(2)

2. The following are established for the WHA:

- a) the general wildlife measures (GWMs) outlined in Schedule 1; and
- b) the objective set out in Schedule 2.

3. Definitions:

Unless otherwise specified, words and expressions not defined in this order have the meaning given to them under the *Forest and Range Practices Act* (FRPA) and the regulations made under it.

In this order and the schedules to this order:

- a) “ant habitat” means habitat features that support the establishment of ant (*Formicidae spp.*) colonies, including a mix of coarse woody debris or stumps other than Douglas-fir with a minimum diameter of 22.5 centimetres and a coarse woody debris length of 50.0 centimetres;
- b) “core” areas are indicated as part of the Schedule A maps and identify where each general wildlife measure applies;
- c) “clump” means a minimum of four Douglas-fir greater than 22.5 centimetres diameter at breast height (dbh) where the spacing between individual trees is not more than 10 metres between any two trees;
- d) “cluster plant” is the silviculture prescription specifying the target number of trees per cluster, inter-tree distances, clusters per hectare, and inter-cluster distances;
- e) “deconstruct” means the treatment of the access structure is deactivated and is treated as part of the net area to be reforested;
- f) “gap” means a non-riparian forest opening of 0.1 to 2.0 hectares in size and containing at least 20 percent cover of Preferred Forage Species determined using the ocular estimation method as defined in the *Field Manual for Describing Terrestrial Ecosystems 2<sup>nd</sup> Edition, 2010, Crown Publications*;
- g) “livestock attractants” means nutritional supplements intended for livestock;
- h) “management” areas are indicated as part of the Schedule A maps and identify where each general wildlife measure applies;
- i) “preferred forage species” includes but is not limited to, black huckleberry (*Vaccinium membranaceum*), black twinberry (*Lonicera involucrata*), common dandelion (*Taraxacum officinale*), cow-parsnip (*Heracleum maximum*), fireweed (*Epilobium angustifolium*), saskatoon (*Amelanchier alnifolia*), thimbleberry (*Rubus parviflorus*), soopolallie (*Shepherdia canadensis*), common horsetail (*Equisetum arvense*), highbush-cranberry (*Viburnum edule*), currants and gooseberries (*Ribes spp.*), red raspberry

(*Rubus idaeus*), red osier dogwood (*Cornus stolonifera*), lady-fern (*Athyria felix-femina*), pea-vine (*Lathyrus spp.*) or kinnikinnick (*Arctostaphylos uva-ursi*);

- j) “visual screening” is the windfirm vegetation and terrain features that provide visual cover for grizzly bears and reduces human disturbance on bears. The required minimum visual cover is measured using a 1m x 1.5m dark surface area at 30m perpendicular distance from the road centreline (50m in case of Leo Creek Forest Service Road) and having no area larger than 0.4 square meters visible during April 15<sup>th</sup>-October 15<sup>th</sup>.

### **Schedule 1 – General Wildlife Measures (GWMs):**

#### *Access*

1. Do not construct roads in the Core zone.
2. Within the Management zone, all access structures must be Deconstructed.
3. Within the Management zone, road construction activities must occur between November 16<sup>th</sup> and April 16<sup>th</sup>.
4. Maintain Visual Screening adjacent to the cleared right-of-way of existing roads until the forest opening is a free growing stand.

#### *Harvesting – Core*

5. Primary forest activities must not result in the removal of forest cover within the Core zone.

#### *Harvesting – Management Zone*

6. The following requirements apply to primary forest activities within each cutblock:
  - a) maintain a minimum of 1 Gap per 4 hectares, averaged over the cutblock until the stand is a free growing stand;
  - b) leave a minimum of 4.0 cubic meters of coarse woody debris per hectare averaged over the cutblock as Ant Habitat in the SBSdw3 02, 03 and 04 site series;
  - c) outside of roads and roadside processing and decking areas, retain all Douglas-fir greater than 52.5 centimetres dbh;

d) outside of the road right of ways, retain all trees within 10 metres of the streambank of S4 streams and S6 streams directly flowing into fish-bearing streams; and

e) harvesting activities may only occur between November 16<sup>th</sup> and April 16<sup>th</sup>.

### *Silviculture*

7. Stocking within the Management zone must meet the following:

Preferred species		Acceptable species		
Consistent with stocking standards as stated in an approved Licensee Forest Stewardship Plan		Consistent with stocking standards as stated in an approved Licensee Forest Stewardship Plan		
Well-spaced trees/hectare <sup>1</sup>				
Site Series	Target preferred and acceptable	Minimum preferred and acceptable	Minimum preferred	Minimum horizontal inter-tree distance (m)
01, 03, 04, 05, 06, 07, 08	800	450	400	1.0
02, 09	700	300	250	1.0
<sup>1</sup> Cluster Plant with a minimum of 30 conifer seedlings per cluster				

8. Do not use domestic sheep, goats or cattle for vegetation management.

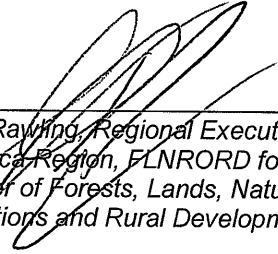
### *Range*

9. Do not place Livestock Attractants within the WHA.

### **Schedule 2 – Objective:**

1. Maintain through time the recruitment of large diameter old Douglas-fir by retaining a range of diverse age and size classes of Douglas-fir in a windfirm and undamaged condition. Trees less than 52.5cm dbh should be retained in undisturbed Clumps.

December 8, 2020  
Date

  
Greg Rawling, Regional Executive Director,  
Omineca Region, FLNRORD for  
Minister of Forests, Lands, Natural Resource  
Operations and Rural Development

## SUPPLEMENTAL DOCUMENT TO WHA 7-001

The following information in the Supplemental Document is provided as background information and support to the order establishing WHA 7-001. The Supplemental Document is not part of the legal order.

### **Additional guidance**

The Tl'o Ba WHA 7-001 is part of the Nation Grizzly Bear Population Unit. A DNA mark-recapture study conducted in 2003 indicated a very low Grizzly Bear density; likely below carrying capacity (Mowat & Fear, 2004). This density was estimated in 2012 at 10 grizzly bears/1,000km<sup>2</sup> (MFLNRO, 2012); higher than the 2003 estimate, but still a low density. Tl'o Ba WHA 7-001 contains critical grizzly bear habitat within this larger Nation Grizzly Bear Population Unit, as indicated by well-used mark trees and trails, access to and use of spawning salmon, and high-quality forage habitat (Ciarniello & de Groot, 2014).

The intent of the Tl'o Ba WHA 7-001 is to manage the supply of suitable forage and denning habitat and mitigate disturbance risk to grizzly bears over time. Maintaining this supply of critical habitat will help to mitigate risks to grizzly bears elsewhere on the local landscape. At the same time, it is important to manage risk to workers and other users within this area.

Grizzly bear habitat elements such as mark trees, mark trails, beds and wallows identified within an area of primary forest activity should be managed appropriately so as to ensure they are not destroyed or rendered ineffective. Maintaining grizzly bear habitat elements could include adjustments of cutblock polygons and road locations. In addition, a habitat feature could be retained within a wildlife tree patch or other retention feature.

A best management practice document has been produced specifically related to the North Area of British Columbia and provides valuable information on strategies that can minimize impacts to grizzly bears from industrial operations (Ministry of Forests, Lands, and Natural Resource Operations, 2014).

**Further to Gap definition:** A suitable gap may contain scattered trees providing that suitable forage density is available. Suitable gap openings associated with wetlands need to exclude any area that would be defined as a wetland. Efforts to maintain and protect existing natural gaps during harvest and site preparation activities should be undertaken. Measures may include the retention of higher stumps for grizzly bear use as 'rub stumps' along the gap edge or anchoring natural gaps to Wildlife Tree Patches.

**Further to GWM 2:** Road development must be considered when evaluating the effects of forest harvest on grizzly bears. Roads are shown to have a significant negative effect on grizzly bear survival and grizzly bear population sustainability (Ciarniello & de Groot, 2014). A road density of 0.6 km/km<sup>2</sup> is a recognized as a critical threshold for grizzly bear habitat in British Columbia (Boulanger & Stenhouse, 2014). Therefore, adherence to

## SUPPLEMENTAL DOCUMENT TO WHA 7-001

road densities less than 0.6 km/km<sup>2</sup> is considered important for maintaining optimal grizzly bear habitat.

The intent of GWM 2 is to manage this risk by not increasing new roads within the WHA. Therefore, all new access structures within the management zone will be temporary in nature and deconstructed. The deconstruction intent is to treat these access structures with silviculture practices consistent with the associated cutblock.

During cutblock design and layout, avoid access structure placement within important foraging areas such as suitable natural gaps. Deconstruction of access structures prior to planting may be treated in a manner that deploys a rough and loose configuration with additional root wads and coarse woody debris placed on the running surface. A description of the process to create a rough and loose surface configuration is described in the document, “*Making sites rough and loose: a soil adjustment technique*” (Polster, 2013). The addition of root wads and other coarse woody debris to the deconstructed road surface will serve to provide ant habitat and may be used to contribute to the GWM 6b) ant habitat within the relevant site series.

**Further to GWM 6b):** Ants can form an important component of grizzly bear diet (Munro et al., 2006). Within TI’o Ba, bear foraging on ant colonies within the core grassland habitat was noted. The intent of GWM 6b) is to enable the provision of suitable ant habitat for important ant species such as carpenter ants (*Camponotus herculeanus*). Carpenter ants require rotting coarse woody debris (CWD) of sufficient diameter in which to start a colony and must select nesting habitat that maximizes heat gain in a cooler climate (Lindgren & MacIsaac, 2002). An ideal nesting substrate should gain heat quickly, be of sufficient mass to hold that heat as air temperature decreases and be elevated above the soil to maximize sun exposure (Higgins et al., 2006). Within the appropriate drier site series, maintaining CWD of sufficient diameter and length may be facilitated through the provision of suitable unburned roadside debris pile(s). The required amount of CWD may be averaged over the total area within the relevant site series within the cutblock. Wherever possible, choose material of a sufficient size and orientation that will remain exposed to the sun as much as possible over time.

**Further to GWM6c):** Rationale for leaving larger, older Douglas-fir (dominant canopy position):

The following information regarding Douglas-fir retention was provided by Bruce Rogers, Research Ecologist, Omineca/North East BC Ministry of Forests, Lands and Natural Resource Operations during an interview with Joanne Vinnedge (Rogers, May 26, 2017) and an email with Ken Sehn (Rogers, 2020). When considering Douglas-fir retention, the application of a 5-meter machine-free zone is important for protection of the sensitive root system and maintaining the trees in an undisturbed clump will serve to retain understory and protect the trees against stressful water deficits (Rogers, 2020). In addition, the retention of high stumps around the tree will provide additional protection

## SUPPLEMENTAL DOCUMENT TO WHA 7-001

from harvest or site preparation damage. Large, older Douglas-fir are often fire veterans that have already endured 1 to 3 stand replacing events and have physiological adaptation to fire disturbance. Compared with co-dominant and suppressed layer trees, dominant trees are better at coping with the stand removal around them and are thus better candidates for single tree retention. For example, dominant Douglas-fir trees have a higher taper with more wind resistance and are better adapted to sudden changes in moisture availability. If left in groups with other species and cohorts they contribute significantly to snow interception capacity and eventually when recruited as CWD they provide optimal habitat for many carnivore prey species (e.g. rodents, mustelids, hares). Tall, dominant Douglas-fir also provide more dispersed seed-rain for natural regeneration which is important for maintaining natural genetic stock. Mature Douglas-fir will have sustained more damage over time than younger cohorts beneath them and may have higher levels of heart rot, a feature that can be present in both live and dead trees.

Large diameter, mature Douglas-fir with heart rot are a key attributes to provide suitable substrate for basal den excavation (Ciarniello et al., 2005). Hodder et al. (2014) noted that bears constructed excavated dens under tree roots in more than 75 % of documented sites in an adjacent study area. The retention of Douglas-fir trees as standing trees, snags and downed logs to serve as current or future grizzly bear denning habitat should be undertaken in a manner that serves to protect and maintain Douglas-fir.

While the intent of GWM 6c) and Objective 1 is to enable the recruitment of suitable grizzly bear denning habitat over time, it is possible that grizzly bear dens may already exist within the WHA management zone. Grizzly bears have been shown to re-use den sites (Ciarniello et al., 2005). Therefore, the possibility of persecution or harm is real.

All identified bear dens within this WHA that are in or contiguous to a cutblock or road should be included within wildlife tree patches or other retention area, with a minimum reserve of 60 metres around the den opening. Information regarding specific locations of dens should be kept secure and confidential, as grizzly bears in dens are extremely vulnerable.

**Further to GWM 6d):** The intent of riparian retention adjacent to S4 or S6 streams within the management zone of WHA 7-001 is to maintain habitat for grizzly bears in the form of improved thermal cover and landscape connectivity. Additional benefits to riparian retention include improved stream channel morphology processes, stream temperature regulation and available fish forage. Kuzkwa River sockeye and other fish species will benefit from increased riparian retention.

Small streams are now being recognised as an increasingly important component of overall watershed condition and function (Tripp et al. 2017). Rex et al. (2011) recommends the retention of all trees within 10 metres of the streambank in low to moderate windthrow hazard areas, and a further buffering of additional retention within 20 metres of the streambank in moderate to high windthrow hazard areas. Within the

## SUPPLEMENTAL DOCUMENT TO WHA 7-001

remainder of the riparian management area, selective harvesting of windthrow-prone trees that would be felled away from the stream could be considered, as well as the retention of non-merchantable conifer trees, understorey deciduous trees, shrubs and herbaceous vegetation. Grizzly bear travel trails adjacent to these streams should be maintained.

**Further to GWM 6a) and GWM 7:** The intent of this 'stocking standards' GWM is to ensure that suitable natural gaps are protected, recruited and maintained through time. A factor of 0.67 has been applied to the recommended stocking standards for the SBSdw3 subzone (Manning *et al.*, 2004) and results fine-tuned through the application of the Tree And Stand Simulator model (TASS).

When cluster planting, a higher number of trees per cluster (minimum 30) will support the maintenance of preferable gaps in the stand. The intent is for gaps to be located in lower lying areas as these are typical locations for favourable forage species recruitment.

The silviculture prescription should specify the target number of trees per cluster, inter-tree distances, clusters per hectare, and inter-cluster distances. The minimum number of trees per cluster should reflect the target stocking levels at free-growing age, estimated tree mortality, and the desired stocking at rotation age. Consider planting a mixture of tree species when the number of trees per cluster is high. Consider locating clusters in areas of more favourable planting sites and avoiding areas of wetter ground and higher suitable grizzly bear forage. Gap maintenance will be important as natural ingress will occur.

Shade-tolerant species clusters should be pruned; trees in the cluster centre will likely self-prune due to the light regime. As stands mature, use thinning or patchy spacing treatments to create partially open canopies (40-60% crown closure) to promote forage production (Manning *et al.* 2004).

The survey methods used to assess the success of meeting the grizzly bear forage objectives should be consistent with existing methods. However, do not stratify areas to units smaller than one hectare or use dispersed stratum methods. In general, more plots will be required to prove obligations are met due to the desired patchy nature of the target stocking. The maximum number of plots required will be 1.5 per hectare. The statistical requirements for these areas will be consistent with existing methods. In addition to meeting the stocking requirement for these stands, it is imperative that gap creation has occurred by the free growing determination stage. To test if adequate gap creation exists, a minimum of 20% (per Standards Unit) of the randomly systematic established plots (50m<sup>2</sup>) must contain less than or equal to one conifer (> 50cm height), or the equivalent of 200 stems per hectare.



## SUPPLEMENTAL DOCUMENT TO WHA 7-001

**Further to Objective 1:** Rationale for leaving younger Douglas-fir (co-dominant canopy position):

The following information regarding Douglas-fir retention was provided by Bruce Rogers, Research Ecologist, Omineca/North East BC Ministry of Forests, Lands and Natural Resource Operations during an interview with Joanne Vinnedge (Rogers, May 26, 2017). Often in denser stands of younger Douglas-fir trees, in which the canopy has not yet opened up (e.g. < 120 years of age), the trees can have biomass ratios (crown to root and crown to lower bole ratios) making them more susceptible to windthrow and moisture stress following stand removal around them. In terms of maintaining habitat suitability over the long term, it is important to maintain younger Douglas-fir trees to provide future recruitment of habitat and a seed source for natural regeneration. In these stands, retaining Douglas-fir in groups and clumps of either single or mixed species will result in greater survival of the retention. Group retention is especially important on wetter receiving sites where younger Douglas-fir have established on raised microsites that typically have limited root anchorage stability or on sites with high wind exposure. Maintaining a machine free zone around single leave-trees will decrease the chance of compaction and damage to roots. Harvest plans that include leaving high stumps around single leave-trees will provide additional protection from harvest or site preparation damage.

**Stand tending and brushing considerations:** Silviculture stand tending activities should seek to ensure a continuous supply of suitable grizzly bear forage habitat over time, as cutblocks are managed. As such, when considering regenerating stands between 3 and 20 years of age, no more than 30 percent of all treatable area eligible for brushing should be brushed in any one year. Areas eligible for brushing may be found within one cutblock or may include a number of cutblock aggregates. Use crop tree-centred brush treatments, avoiding brushing important forage species whenever possible. Future silviculture treatments should be designed for application throughout the rotation, to meet both forage and timber objectives and allow flexibility as the conditions change (BC Ministry of Forests, 2001).

**Further to mineral exploration activities:** The intent of this WHA is to maintain high quality grizzly bear habitat in the core 250-metre riparian reserve on either side of the Kuzkwa River in an undisturbed state. An additional 750-metre management zone around the WHA Core is intended to buffer the core area by limiting road development and will contribute to grizzly bear forage and security cover. The development of new roads, trails or harvesting activity within the identified WHA Core habitat, including the riparian reserve along the Kuzkwa River, places the integrity of this WHA at risk. Considering the level of grizzly bear use associated with this area, there are significant safety concerns for both workers and bears within the WHA Core. If a proponent proposes a development in the TI'o Ba WHA that is inconsistent with the general wildlife measures (GWMs) they

## SUPPLEMENTAL DOCUMENT TO WHA 7-001

must apply for an exemption under the Forest Planning and Practices Regulation (s 92(1)). Exemption requests will be evaluated based on the potential impacts of the proposed development on habitat values, and clear actions taken to avoid, limit or mitigate activities and impacts.

### **References:**

- BC Ministry of Forests (2001). Grizzly Bear habitat in managed forests: silviculture treatments to meet habitat and timber objectives. BC Min. Forests, Res. Section Extension Note 54, Victoria, BC. 7 pp.  
<http://www.for.gov.bc.ca/hfd/pubs/Docs/En/En54.htm>. Accessed May 2020
- BC Ministry of Forests, Lands and Natural Resource Operations (2012). British Columbia Grizzly Bear Population Estimate for 2012.  
[http://www.env.gov.bc.ca/fw/wildlife/docs/Grizzly\\_Bear\\_Pop\\_Est\\_Report\\_Final\\_2012.pdf](http://www.env.gov.bc.ca/fw/wildlife/docs/Grizzly_Bear_Pop_Est_Report_Final_2012.pdf). Accessed May 2020.
- Boulanger, J., & Stenhouse, G.B. (2014). The Impact of Roads on the Demography of Grizzly Bears in Alberta. PLoS ONE 9(12): e115535.  
<https://doi.org/10.1371/journal.pone.0115535>. Accessed May 2020.
- Ciarniello, L. M., Boyce, M. S., Heard, D. C., & Seip, D. R. (2005). Denning Behavior and Den Site Selection of Grizzly Bears along the Parsnip River, British Columbia, Canada. *Ursus*, 16(1), 47–58.  
[https://www.jstor.org/stable/3873058?read-now=1&seq=7#page\\_scan\\_tab\\_contents](https://www.jstor.org/stable/3873058?read-now=1&seq=7#page_scan_tab_contents)
- Ciarniello, L.M., & de Groot, A. (2014). Decision-making support for management of the proposed Tl'ó ba Wildlife Habitat Area. Report prepared for Min. of Forests, Lands, and Natural Resource Operations and Society for Ecosystem Restoration in North Central British Columbia. Prince George, BC. 63pp.
- Higgins, Robert J., Lindgren, B., & Staffan (2006). The fine scale physical attributes of coarse woody debris and effects of surrounding stand structure on its utilization by ants (Hymenoptera: Formicidae) in British Columbia, Canada. Gen. Tech. Rep. SRS-93. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. pp. 67-73.  
<https://www.fs.usda.gov/treearch/pubs/24879>
- Hodder, D.P., C.J. Johnson, R.V. Rea and A. Zedrosser. 2014. *Application of a species distribution model to identify and manage bear den habitat in central British Columbia, Canada*. Wildlife Biology 20: 238-245.
- Lindgren, B., & MacIsaac, A. (2002). A Preliminary Study of Ant Diversity and of Ant Dependence on Dead Wood in Central Interior British Columbia. In *USDA Forest Service*. USDA Forest Service.

## SUPPLEMENTAL DOCUMENT TO WHA 7-001

[https://www.fs.fed.us/psw/publications/documents/gtr-181/011\\_Lindgren.pdf](https://www.fs.fed.us/psw/publications/documents/gtr-181/011_Lindgren.pdf)  
Accessed June 2020.

Manning, Cooper and Associates (2004). Silviculture guidelines and practices for maintaining or recruiting key habitat objectives. Report prep. for Min. Water, Land and Air Protection, Biodiversity Br., Victoria, BC. Draft June 2002. 107 pp.

Ministry of Forests, Lands and Natural Resource Operations (2014). A Compendium of Wildlife Guidelines for Industrial Development Projects in the North Area, British Columbia: Interim Guidance.  
<http://a100.gov.bc.ca/pub/eirs/finishDownloadDocument.do?subdocumentId=9921>. Accessed May 2020.

Mowatt, G., & Fear, D. (2004). Grizzly Bear Density in the Nation River area of British Columbia. Prince George, BC: B.C. Ministry of Water, Land and Air Protection.

Munro, R. H. M., Nielsen, S. E., Price, M. H., Stenhouse, G. B., & Boyce, M. S. (2006). Seasonal and Diel Patterns of Grizzly Bear Diet and Activity in West-Central Alberta. *Journal of Mammalogy*, 87(6), 1112–1121. <https://doi.org/10.1644/05-MAMM-A-410R3.1>

Polster, D. (2013). Making sites rough and loose: a soil adjustment technique. Boreal Reclamation Program, NAIT. Technical note.  
[http://www.nait.ca/docs/Making\\_Site\\_Rough\\_and\\_Loose.pdf](http://www.nait.ca/docs/Making_Site_Rough_and_Loose.pdf). Accessed May 2020.

Rex, J., Maloney D., MacIsaac E., Herunter H., Beaudry P., & Beaudry L. (2011). Small stream riparian retention: the Prince George Small Streams Project. B.C. Min. For. Range, For. Sci. Prog., Victoria, B.C. Extension Note 100.  
[www.for.gov.bc.ca/hfd/pubs/Docs/En/En100.htm](http://www.for.gov.bc.ca/hfd/pubs/Docs/En/En100.htm). Accessed May 2020.

Rogers, B. (2017, May 26). Douglas-fir Retention (interview by J. Vinnedge) [Personal communication].

Rogers, B. (2020). Douglas-fir Machine Free Zones [Email].

Tripp, D., L. Nordin, J. Rex, P. Tschapinski and J. Richardson (2017). The importance of small streams in British Columbia. FREP Extension Note #38. 5 pp.  
[https://www.for.gov.bc.ca/ftp/dsq/external!/publish/Small%20Stream%20Management%20Workshop%20Nanaimo%20Jan31\\_2017/frep-extnt38-smallstreams.pdf](https://www.for.gov.bc.ca/ftp/dsq/external!/publish/Small%20Stream%20Management%20Workshop%20Nanaimo%20Jan31_2017/frep-extnt38-smallstreams.pdf). Accessed May 2020.

## SUPPLEMENTAL DOCUMENT TO WHA 7-001

### **Resources for Additional Information**

BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development.  
(2014). *A Compendium of Wildlife Guidelines for Industrial Development  
Projects in the North Area, British Columbia*. Victoria, British Columbia:  
Province of British Columbia.  
<http://a100.gov.bc.ca/pub/eirs/finishDownloadDocument.do?subdocumentId=9921>

Beaudry, L., M. Martin and J. Paczkowski (2001). Using silviculture to maintain and enhance Grizzly Bear habitat in six variants of the Prince George Forest Region. BC Min. Environ., Lands and Parks, Habitat Br., Victoria, BC. 58 pp.

McCann, R.K. 2012. Best management practices for industrial operations affecting occupied grizzly bear range in north-central British Columbia. Wildlife Infometrics Inc. Report No. 390. Wildlife Infometrics Inc., Mackenzie, British Columbia, Canada.

McKay, T., K. Graham, and G. Stenhouse (2014). Grizzly bears and pipelines: response to unique linear features. Alberta Petroleum Research Fund. Year 2 (2013) Final Report (13-AU-ERPC-03). Pg. 41-49.

Reference Guide for FDP Stocking Standards.  
[https://www.for.gov.bc.ca/ftp/hfp/external!/publish/stocking%20standards%20for%20FDPs/Prince\\_George\\_Region\\_stocking\\_standards.pdf](https://www.for.gov.bc.ca/ftp/hfp/external!/publish/stocking%20standards%20for%20FDPs/Prince_George_Region_stocking_standards.pdf)