



MATERIAL SUPPORTING THE NOTICE, BUT NOT PART OF THE NOTICE.

**INFORMATION CONCERNING WILDLIFE HABITAT FOR THE WINTER
SURVIVAL OF UNGULATE SPECIES IN BOUNDARY TIMBER SUPPLY AREA,
INCLUDING BOUNDARY WOODLOTS**

This document is intended to provide background information and support to the legal framework of the notice of indicators of the amount, distribution and attributes of wildlife habitat required for the winter survival of ungulate species in the Boundary Timber Supply Area (TSA), and Boundary woodlots. This document is not part of the legal notice. Its purpose is to provide additional information for consideration by delegated decision makers and by those persons required to prepare results and strategies consistent with section 7(1) of the Forest Planning and Practices Regulation and section 9 (3) of the Woodlot Licence Planning and Practices Regulation.

Boundary Timber Supply Area, including Boundary Woodlots

The Kootenay Boundary Land Use Plan – Implementation Strategy (KBLUP-IS) provides strategic direction for the management of ungulate winter range (UWR). The UWR map included in KBLUP-IS was based on the winter ranges of mule deer. Over the last several years (June 2002 to present) a working group of government agency representatives and stakeholders has worked to refine the strategic direction outlined in KBLUP-IS. It is envisioned that these refinements will be formalized through FRPA, Government Actions Regulation (GAR) in the near future. However, as that work represents a more accurate reflection of appropriate mule deer winter range management in the Boundary, specific aspects have been included to allow for transition into the GAR measures.

The significant changes from KBLUP-IS is based on the following:

1. more accurate winter range boundaries, based on modeling and stakeholder input
2. knowledge of local mule deer traditional use patterns
3. identification of planning cells; and
4. new biophysical information (i.e. revised BEC linework).

Amount:

KBLUP-IS identified approximately 67,000 hectares (ha) of ungulate winter range, which has subsequently been acknowledged as mule deer winter range (MDWR). Revisions to MDWR boundaries now depicts 78,860 ha of MDWR in the Boundary (Figure 1). However, for the purposes of this notice, MDWR in parks and protected areas (3,844 ha) and Tree Farm License 8

(8,197 ha) are not included, resulting 66,815 ha of MDWR. The 66,185 ha of MDWR is comprised of 58,138 ha in lands covered by forest licenses, and 8,677 ha within woodlots.

Similar to KBLUP-IS, an ecosystem based approach has been utilized to determine appropriate levels of snow interception cover (SIC) retention. This approach recognizes that SIC requirements are based on snow accumulations. Biogeoclimatic units form the basis for predicting snow accumulation, however, in some instances units have been divided based on elevation and aspect to provide greater accuracy. Table 1 describes the relationship between ‘snowpack zones’ and biogeoclimatic units. Based on the proportional representation of BEC units to the MDWR areas, a total of 9,480 ha of SIC has been determined as being necessary for the applicable MDWR area (Appendix 1).

Table 1: Boundary Snowpack Zones and SIC Retention

Snowpack Zone	BEC Unit	SIC Retention (%)
Shallow	PP IDF _{xh} IDF _{dm} (< 1000 m with aspects of 135-225°)	15
Mopderate	IDF _{dm} (all subzone sites, except those noted above) ICH _{dw} MS	25, except for MS which = 20
Deep	ICH _{mk} ICH _{mw}	40

A key consideration determining the amount of SIC is related to KBLUP-IS recommendations for to ‘fire maintained ecosystems’. As these recommendations supersede direction for winter range, open forest (OF) and open range (OR) areas have been netted out of the MDWR areas. In doing so, SIC is determined based on the net area (see Appendix 1). Consequently, SIC can not be located in either OF or OR areas.

Ministry of Forests Timber Supply Review 2 (TSR2) included a sensitivity analysis on approximately 59,000 ha of MDWR, which included a requirement for 16,490 ha of mature cover. It was assumed that the maximum even flow forecast could be maintained if the mature forest cover requirements were applied. As the notice includes an amount 9,480 ha for SIC, it is assumed that there will not be an impact to timber supply.

There is a great deal of uncertainty relative to the application of KBLUP-IS management direction for MDWR within woodlots. As such, a ‘low risk’ approach has be taken for the notice. This approach should not have an impact to timber supply or MDWR suitability in the short term. It is expected that revisions to SIC requirements in for certain woodlots may occur during works to finalize the GAR. Appendix 1 describes the SIC for each woodlot planning cell, however, where the SIC requirement was greater than 30 ha, there is no requirement to have a SIC of greater than 30 ha.

Distribution:

Figures and spatial information (shapefiles) to support the amount and distribution statements are included in the folders titled “Figures” and “Spatial Data” on the following ftp site:

ftp://ribftp.env.gov.bc.ca/pub/outgoing/cdc_data/Approved_FRPR_sec7_WLPPR_sec9_Notices_and_Supporting_Info/Ungulate_Winter_Range/Timber_Supply_Areas/Boundary_TSA/Supporting_Info/

Inclusion of draft and proposed Ungulate Winter Range boundaries in the supporting information does not prejudice the review and comment that may be ongoing around these Ungulate Winter Ranges. Where Ungulate Winter Ranges have not been through the full review and comment process, MWLAP will continue to work with affected parties to address the Ungulate Winter Range boundaries.

Figure 1 represents the most up to date information on mule deer winter range location in the TSA. MDWR planning cells have been delineated to provide a spatial distribution of winter range attributes, such as forage and cover. In some cases planning cells are discreet winter ranges, however, in the majority of cases planning cells have been delineated to divide relatively large, or overlapping, winter ranges (eg. along major valleys, such as the Granby and Kettle Rivers). Planning cells are not specific to operating area or tenure type. Where a planning cell includes both forest license and TFL8, only the portion of TFL 8 that contributes to the planning cell is used to determine applicable MDWR area and SIC requirements (see appendix 1).

Attributes:

1. Snow interception cover is defined in KBLUP-IS as tree crown attributes that have the capability to intercept snow, and thereby reduce snow accumulations on the ground. As snow interception potential is variable dependent upon tree species, stand density, and crown shape and size, it is important to retain stems that will function in an optimum manner. Mature and intermediate aged Douglas-fir in clumps are best suited to meet this need. Larger clumps or patches with a high canopy closure are most appropriate in areas of higher snow falls.
2. Foraging habitat can be met by areas of high shrub productivity and/or stands that provide arboreal litter-fall, such as lichens and Douglas-fir needles and twigs. The former is provided in wetter sites, as well as, where early seral coniferous forests provide ample browse species. The latter is provided in older aged coniferous stands. Mature, and older, Douglas-fir needles and twigs provide greater nutritional value litter-fall than other coniferous types (species and age). A variety of foraging habitats well distributed throughout the winter range best meets the needs of over-wintering ungulates.
3. Security cover can be met by a variety of vegetation types and topography. A complex topography provides security areas for deer. Coniferous vegetation, a minimum of 2 meters in height, also provides security cover. As slopes increase the need for a greater height in coniferous vegetation is required.
4. The ability of a forest stand to intercept and retain snow pack in the forest canopy is determined by stand age and structural conditions; however, forest age is often used as surrogate to describe snow interception cover habitat. Snow interception cover serves to reduce ground snow depths thereby increasing animal mobility and food availability

without unduly depleting energy stores. It typically yields litter fall in the form of twigs and arboreal lichen that is also an important winter forage requirement for deer.

5. A stand that is younger than the prescribed forest age for snow interception cover is acceptable where it can be field-verified that the younger stand will deliver the required snow interception and forage attributes.
6. In average winters, snow (or sinking) depths should generally be <25 cm (and rarely >50 cm) for deer ranges.

Appendix 1.

Boundary TSA MDWR Area and SIC by Planning Cell

Planning Cell	Gross MDWR Area (ha)	Open Forest/Open Range within Planning Cell (ha)	Net MDWR Area (ha)	Area reduction to account for TFL 8 area in Planning Cell (%)	SIC Retention (ha)
1	167.4	55.6	111.8	0	27.2
2	2005.1	945.3	1059.8	0	240.6
3	1672.6	484.3	1188.3	0	179.4
4	1115.5	434	681.5	85	21.3
6	971.4	597.3	374.2	0	57.6
7	1267.0	560.1	706.9	0	169.7
8	2039.8	613.5	1426.4	5	246.6
9	1863.2	718.4	1144.8	0	273.6
10	841.3	230.6	610.7	0	118.5
11	2420.7	946.9	1473.7	0	352.9
12	1174.3	597.6	576.7	0	136.8
13	329.1	2.5	326.7	0	67.1
14	1594.1	260.2	1233.9	0	305.8
15	525.6	201.7	323.8	0	81.0
16	835.3	110.3	725.0	0	177.7
17	536.9	41.7	495.3	0	121.3
18	33.6	0	33.6	0	9.0
19	495.2	60.4	434.8	0	136.5
20	704.0	248.1	455.9	0	130.4
21	1158.9	433.0	726.0	0	186.6
22	997.8	548.3	449.4	0	111.6
23	1084.1	489.3	594.8	0	140.7
24	817.1	370.3	446.4	0	102.1
25	663.4	284.4	379.1	0	87.2
26	1406.3	647.7	759.7	0	157.8
27	1058.6	285.9	772.7	0	185.6
28	754.1	317.9	436.2	0	105.0
29	1008.1	595.4	412.7	0	98.7
30	834.0	389.3	444.7	0	107.5
31	301.8	7.6	294.2	0	73.5

32	715.6	106.7	608.9	0	127.7
33	560.2	144.5	415.6	0	92.0
34	720.8	332.5	388.4	0	90.6
35	1050.6	542.8	507.8	0	116.3
36	878.7	237.8	640.9	0	144.1
37	551.5	279.7	271.8	0	66.3
38	992.8	408.6	584.1	50	63.1
39	656.9	216.6	440.1	0	109.1
40	319.2	121.1	207.0	35	32.8
41	735.4	284.3	451.1	20	69.4
42	517.0	211.2	305.8	95	3.6
43	652.5	201.6	450.9	70	32.3
44	672.5	119.5	552.9	0	134.9
49	752.4	140.1	612.3	0	139.1
50	810.4	282.2	528.1	15	112.5
51	18.5	0	18.5	0	7.4
52	1175.5	441.6	734.0	80	40.0
53	160.1	71.7	88.4	0	13.3
54	856.7	145.4	711.3	0	146.1
55	534.6	0	534.6	0	155.1
56	333.7	0	333.7	0	82.9
57	336.6	0	336.6	0	84.2
58	401.8	0	401.8	0	101.9
59	501.7	0	501.7	0	124.9
60	766.7	105.5	661.3	0	165.3
61	1441.4	890.3	551.2	0	138.1
62	1034.9	535.8	499.0	0	128.7
63	788.3	252.0	536.3	0	134.7
64	1101.2	483.1	618.1	0	140.9
65	1871.9	897.8	974.2	0	238.9
66	800.6	515.5	285.0	0	48.6
67	685.0	193.0	491.9	0	132.0
68	2479.7	1054.7	1425.0	0	335.1
69	1673.5	854.1	819.5	0	231.8
70	987.8	220.5	767.3	0	143.1
71	43.6	0	43.6	0	13.6
72	34.6	0	34.6	0	8.6
73	973.8	0	973.8	0	213.2
77	98.6	0	98.6	0	25.7
78	58.6	0	58.6	0	14.6
79	126.9	0	126.9	0	31.7
80	781.5	222.2	559.3	0	131.9
81	164.7	0	164.7	0	32.9
82	61.8	0	61.8	0	24.7
83	21.1	0	21.1	0	8.4
84	25.3	0	25.3	0	6.3
85	43.8	0	43.8	0	10.9
86	22.3	0	22.3	0	5.6
87	20.2	0	20.2	0	4.0
88	262.0	58.2	203.8	0	42.6
TSA Total	58,138.0	n/a	n/a		8,710
100	54.4	4.2	50.2	0	12.6

101	82.0	17.1	64.9	0	13.6
102	306.8	98.0	208.8	0	30.0
103	359.1	43.4	315.7	0	30.0
104	155.8	39.1	116.7	0	16.4
105	106.1	42.6	63.5	0	15.9
106	288.2	103.1	201.3	0	30.0
107	38.7	0	38.7	0	8.1
108	565.1	223.7	341.4	0	30.0
109	593.1	439.4	153.7	0	26.9
110	514.4	162.0	352.4	0	30.0
111	390.4	87.2	303.2	0	30.0
112	24.1	0.5	23.6	0	3.9
113	333.6	66.4	267.2	0	30.0
114	90.9	1.4	89.5	0	20.7
116	564.8	176.8	388.0	0	30.0
117	348.5	78.9	269.6	0	30.0
118	325.8	136.5	189.3	0	30.0
119	371.1	165.6	205.5	0	30.0
120	188.7	42.6	146.1	0	17.4
122	97.0	15.1	81.9	0	15.7
123	62.8	22.4	40.4	0	9.8
124	145.8	44.5	101.3	0	23.1
125	43.0	0	43.0	0	16.7
126	241.6	68.8	172.8	0	30.0
128	373.3	97.9	275.4	0	30.0
130	437.3	57.8	379.5	0	30.0
131	209.0	3.6	205.8	0	30.0
132	486.8	0	486.8	0	30.0
133	567.7	284.2	283.5	0	30.0
134	311.2	157.1	154.1	0	30.0
Sub total	8677.2	n/a	n/a		770.8
Total	66,815	n/a	n/a		9,480