

**BRITISH COLUMBIA  
MINISTRY OF FORESTS**

**Klinse-za / Twin Sisters Park  
Mackenzie Timber Supply Area**

**Determination of  
Allowable Annual Cut (AAC) Reduction  
and Harvest Profile Specification**

**Effective June 20, 2024**

**Albert Nussbaum, RPF  
Deputy Chief Forester**

## **Objective of this document**

This document is intended to provide an accounting of the factors I have considered and the rationale I have employed as Deputy Chief Forester of British Columbia (BC) in specifying the changes in timber profile and allowable annual cut (AAC) reduction for the Mackenzie Timber Supply Area (TSA) to account for Order in Council (OIC) No. 303/2024.

## **Klinse-za / Twin Sisters Park**

On June 20, 2024, OIC No. 303/2024 was issued expanding the Klinse-za / Twin Sisters Park. The park is located west of Chetwynd and Hudson's Hope in northeastern BC and, after this expansion, is approximately 199 780 hectares in size. It includes two mountains known locally as the Twin Sisters, which are an area of cultural and spiritual significance for Treaty 8 First Nations. The park expansion is the result of a historic 2020 partnership agreement between the governments of BC, Canada, Saúlteau First Nations, and West Moberly First Nations. The agreement commits all partners to take action to help stabilize and increase southern mountain caribou populations to self-sustaining levels in northeastern BC, while considering the effects of this work on surrounding communities.

The Klinse-za / Twin Sisters Park expansion overlaps with the Mackenzie TSA, the Dawson Creek TSA, Tree Farm Licence 48, and Woodlot Licence 0263. This rationale pertains to the park's impact on the Mackenzie TSA.

## **Statutory framework**

Within four months of the effective date of the designation of the Klinse-za / Twin Sisters Park, Part 3 Section 16 of the Deletions and Expropriations (For Parks, Conservancies and Recreation Areas) Regulation requires the chief forester to determine the AAC reduction and new AAC for the Mackenzie TSA described under Part 15 Section 199 of the *Forest Act*. The chief forester must also identify the profile of timber in the TSA before and after the park was designated, identifying the differences in the timber profile. Under Section 18 of the Deletions and Expropriations (For Parks, Conservancies and Recreation Areas) Regulation, the AAC reduction effective date is the effective date of the *Park Act* deletion, June 20, 2024.

## **Methodology**

### Timber Profile

The 2023 Vegetation Resources Inventory (VRI) and timber harvesting land base (THLB) file derived during the 2023 timber supply review (TSR) were used to compare the timber profiles before and after the designation of the Klinse-za / Twin Sisters Park. The 2023 VRI included both disturbance and wildfire updates to December 31, 2023. The THLB is an estimate of the land where timber harvesting is considered both acceptable and economically feasible at the time of the last TSR, given the objectives for all relevant forest values, existing timber quality, market values, and applicable technology.

In the analysis, merchantable growing stock was defined as the live tree volume on the THLB that met the utilization standards and minimum harvestable criteria used in the last TSR. Merchantable volume was used to compare the species composition and age class profile of the THLB before and after the designation and removal of the Klinse-za / Twin Sisters Park.

## Timber Supply Impacts

Two assessment methods were developed to estimate the impact the park designation will have on the timber supply of the Mackenzie TSA. These methods included the THLB ratio and volume contribution method:

1. **THLB ratio method**: The THLB ratio method involved calculating a ratio of the management unit AAC (cubic metres/year) to the total THLB area (hectares) within the management unit, resulting in an estimated AAC contribution per hectare of THLB (cubic metres/year/hectare). This ratio is then multiplied by the THLB area being removed due to the Klinse-za / Twin Sisters Park, deriving an estimated adjustment to be deducted from the current AAC (cubic metres/year). The AAC and the THLB used in deriving the ratio are obtained from the most recent AAC rationale and supporting timber supply analysis for the management unit.

The THLB ratio method assumes that forest attributes (e.g., species composition, age class, and site productivity) within the Klinse-za / Twin Sisters Park are similar to the average across the entire management unit that formed the basis of the AAC determination. This method is described in the Allowable Annual Cut Administration Regulation of the *Forest Act*.

2. **Volume contribution method**: The volume contribution is similar to the THLB ratio method but differs in that the THLB-area is replaced by existing THLB-merchantable timber volume. Specifically, the volume contribution method involved determining the proportion of the merchantable volume within the THLB area being removed due to the Klinse-za / Twin Sisters Park relative to the total merchantable volume within the THLB of the management unit. This proportion is then multiplied by the AAC deriving the estimated adjustment to be deducted from the AAC.

The volume contribution method can be useful where the age class distribution within the designated area differs from the broader management unit, considering the availability of existing mature volume which may better capture short-term timber supply implications.

## **Timber Supply Analysis**

### Timber Profile

The area statistics for the Mackenzie TSA are presented in Table 1.

*Table 1. Mackenzie TSA area statistics*

<b>Mackenzie TSA Area Summary</b>			
<b>TSA Total Area (ha)</b>	<b>TSA Total THLB Area (ha)</b>	<b>Total Area - Park Overlap (ha [%])</b>	<b>THLB Area - Park Overlap (ha [%])</b>
6,410,665	1,228,612	57,679 [0.9]	25,310 [2.1]

In the 2023 Mackenzie TSA AAC determination, the chief forester set a geographic partition for the southwestern portion of the TSA. The southwestern partition area does not overlap with the park, so the profile comparisons are specified for both the entire TSA and for the area outside of the southwestern partition zone.

The species composition of the Mackenzie TSA before and after the removal of the Klinse-za / Twin Sisters Park for the entire Mackenzie TSA is presented in Table 2. The THLB within the park contains 3.0 percent of the coniferous-leading merchantable growing stock and 1.3 percent of the TSA's deciduous-leading merchantable growing stock.

*Table 2. Mackenzie TSA species composition by merchantable growing stock before and after removal of the Klinse-za / Twin Sisters Park*

<b>Mackenzie TSA Merchantable Growing Stock</b>			
<b>Species Category</b>	<b>Before Park Removal (m<sup>3</sup>)</b>	<b>Park Overlap (m<sup>3</sup> [%])</b>	<b>After Park Removal (m<sup>3</sup>)</b>
<b>Coniferous-leading</b>	117,383,650	3,549,747 [3.0]	113,833,903
<b>Deciduous-leading</b>	11,394,909	142,484 [1.3]	11,252,425

The merchantable growing stock by age class for the entire TSA before and after removal of the Klinse-za / Twin Sisters Park is presented in Table 3. The merchantable growing stock in the park primarily overlaps with the 141 to 250 age class and 250 year plus age class.

*Table 3. Mackenzie TSA merchantable growing stock by age class*

<b>Mackenzie TSA Merchantable Growing Stock</b>			
<b>Age Class</b>	<b>Before Park Removal (m<sup>3</sup>)</b>	<b>Park Overlap (m<sup>3</sup> [%])</b>	<b>After Park Removal (m<sup>3</sup>)</b>
1-20	-	-	-
21-40	-	-	-
41-60	-	-	-
61-80	45,720	0 [0.0]	45,720
81-100	12,051,253	55,699 [0.5]	11,995,554
101-120	14,143,238	353,808 [2.5]	13,789,430
121-140	16,801,356	309,750 [1.8]	16,491,606
141-250	76,950,367	2,182,000 [2.8]	74,768,367
250+	8,787,526	790,974 [9.0]	7,996,552

The area statistics for the area outside of the southwestern partition zone are presented in Table 4.

*Table 4. Area outside of the southwestern partition zone area statistics*

<b>Mackenzie TSA Area Summary For the Area Outside of the Southwestern Partition Zone</b>			
<b>TSA Total Area (ha)</b>	<b>TSA Total THLB Area (ha)</b>	<b>Total Area - Park Overlap (ha [%])</b>	<b>THLB Area - Park Overlap (ha [%])</b>
5,605,089	735,953	57,679 [1.0]	25,310 [3.4]

The species composition of the area outside of the southwestern partition zone before and after removal of the Klinse-za / Twin Sisters Park is presented in Table 5. The THLB within the park contains 4.7 percent of the coniferous-leading merchantable growing stock and 1.8 percent of the deciduous-leading merchantable growing stock of the area outside of the southwestern partition zone.

Table 5. Area outside of the southwestern partition zone species composition by merchantable growing stock before and after removal of the Klinse-za / Twin Sisters Park

<b>Mackenzie TSA - Merchantable Growing Stock in the Area Outside of the Southwestern Partition Zone</b>			
<b>Species Category</b>	<b>Before Park Removal (m<sup>3</sup>)</b>	<b>Park Overlap (m<sup>3</sup> [%])</b>	<b>After Park Removal (m<sup>3</sup>)</b>
<b>Coniferous-leading</b>	75,465,061	3,549,747 [4.7]	71,915,314
<b>Deciduous-leading</b>	7,784,158	142,484 [1.8]	7,641,674

The merchantable growing stock by age class for the area outside of the southwestern partition zone before and after the removal of the Klinse-za / Twin Sisters Park is presented in Table 6. The merchantable growing stock in the park primarily overlaps with the 140 to 250 age class and 250 year plus age class.

Table 6. Area outside of the southwestern partition zone merchantable growing stock by age class

<b>Mackenzie TSA - Merchantable Growing Stock in the Area Outside of the Southwestern Partition Zone</b>			
<b>Age Class</b>	<b>Before Park Removal (m<sup>3</sup>)</b>	<b>Park Overlap (m<sup>3</sup> [%])</b>	<b>After Park Removal (m<sup>3</sup>)</b>
1-20	-	-	-
21-40	-	-	-
41-60	-	-	-
61-80	33,612	0 [0.0]	33,612
81-100	5,664,564	55,699 [1.0]	5,608,865
101-120	7,448,321	353,808 [4.8]	7,094,513
121-140	9,394,465	309,750 [3.3]	9,084,715
141-250	53,716,240	2,182,000 [4.1]	51,534,240
250+	6,992,016	790,974 [11.3]	6,201,042

### Timber Supply Impacts

The AAC for the Mackenzie TSA was determined by the chief forester on May 4, 2023, at 2.39 million cubic metres of which a maximum of 1.17 million cubic metres may be harvested in the southwestern partition zone.

The Klinse-za / Twin Sisters Park contains 25 310 hectares of THLB that contribute towards the timber supply of the Mackenzie TSA. The THLB ratio method indicated that removing the park results in an AAC impact reduction of 2.1 percent, while the volume contribution method suggested a 2.9 percent reduction.

Table 7. Mackenzie TSA AAC impact summary

THLB Ratio Method						Volume Contribution Method				
Mackenzie TSA AAC (m <sup>3</sup> )	Park Overlap THLB (ha)	Mackenzie TSA THLB (ha)	Percent Overlap (%)	AAC Reduction (m <sup>3</sup> )	New AAC (m <sup>3</sup> )	Park Overlap Volume (m <sup>3</sup> )	Mackenzie TSA Volume (m <sup>3</sup> )	Percent Overlap (%)	AAC Reduction (m <sup>3</sup> )	New AAC (m <sup>3</sup> )
2,390,000	25,310	1,228,612	2.1%	49,235	2,340,765	3,692,231	128,779,460	2.9%	68,524	2,321,476

## Determination

I have considered and reviewed the adjustment assessments as documented above, including the risks and uncertainties of the information provided. Both methods for assessing the effect of the removal of the Klinse-za / Twin Sisters Park on the timber supply are necessary simplifications that allow for expedient adjustment of the AAC. The THLB ratio method assumes that forest attributes such as age class within the Klinse-za / Twin Sisters Park are similar to the average across the entire TSA. However, the park primarily overlaps with mature stands that contain higher volumes per hectare and I believe the volume contribution method is more indicative of the short-term timber supply impact. Therefore, I will base my decision on the adjustment estimate derived using the volume contribution method.

As the park overlaps with a northern section of the TSA, the AAC reduction will apply to the area outside of the southwestern partition zone, leaving the southwest partition zone of 1.17 million cubic metres unchanged from the 2023 AAC determination.

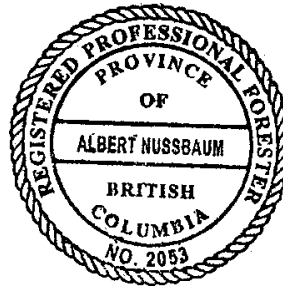
Pursuant to Section 199(1)(b) and (c) of the *Forest Act*, it is my determination that the AAC for the Mackenzie TSA is reduced by 68 524 cubic metres. Effective June 20, 2024, the new AAC for the Mackenzie TSA is 2 321 476 cubic metres, of which a maximum of 1.17 million cubic metres may be harvested in the southwestern partition zone.

Pursuant to Section 199(1)(a), (d), and (e) of the *Forest Act*, I specify the harvest profiles as described in Table 4, Table 5, and Table 6 of this document. It is my opinion that the Park removal does not materially alter the potential harvest profile available to licensees.



Albert Nussbaum, RPF  
Deputy Chief Forester

October 18, 2024



## Appendix 1: Information Sources

In considering all the factors required under Part 15, Division 4 of the *Forest Act*, I have reviewed the following:

### *Legislation*

- Province of BC. *Forest Act* Part 15, Division 3 and 4.
- Province of BC. *Forest Act*. Deletions and Expropriations (For Parks, Conservancies and Recreation Areas) Regulation.
- Order in Council No. 303/2024.  
[https://www.bclaws.gov.bc.ca/civix/document/id/oic/oic\\_cur/0303\\_2024](https://www.bclaws.gov.bc.ca/civix/document/id/oic/oic_cur/0303_2024)
- Order in Council No. 386/2023.  
[https://www.bclaws.gov.bc.ca/civix/document/id/oic/oic\\_cur/0386\\_2023](https://www.bclaws.gov.bc.ca/civix/document/id/oic/oic_cur/0386_2023)

### *Timber supply and other related documents*

- BC Gov News. Major park expansion will better protect sacred sites, caribou habitat.  
<https://news.gov.bc.ca/releases/2024ENV0029-000925>
- BC Parks. Klinse-za / Twin Sisters Park. <https://bcparks.ca/klinse-za-twin-sisters-park/>
- Province of BC. Mackenzie Timber Supply Area Rationale for Allowable Annual Cut (AAC) Determination, Effective May 4, 2023.
- Province of BC. Mackenzie Timber Supply Area Timber Supply Analysis Discussion Paper. July 2022.
- Province of BC. Mackenzie Timber Supply Area Timber Supply Review Data Package. November 2020.
- Provincial Timber Management Goals, Objectives & Targets Report for the Mackenzie Timber Supply Area, July 31, 2024.