

写真で見る事業効果(森林整備)

十勝西部森林管理署  
東大雪支署

作業前

作業後



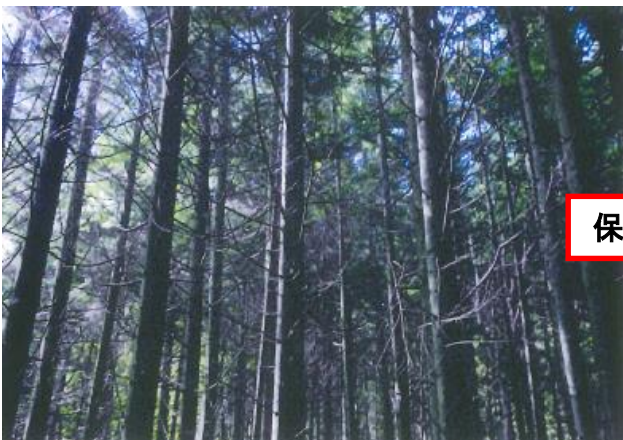
地拵



植付



除伐



保育間伐



# 写真で見る事業効果(路網整備)

十勝西部森林管理署東大雪支署

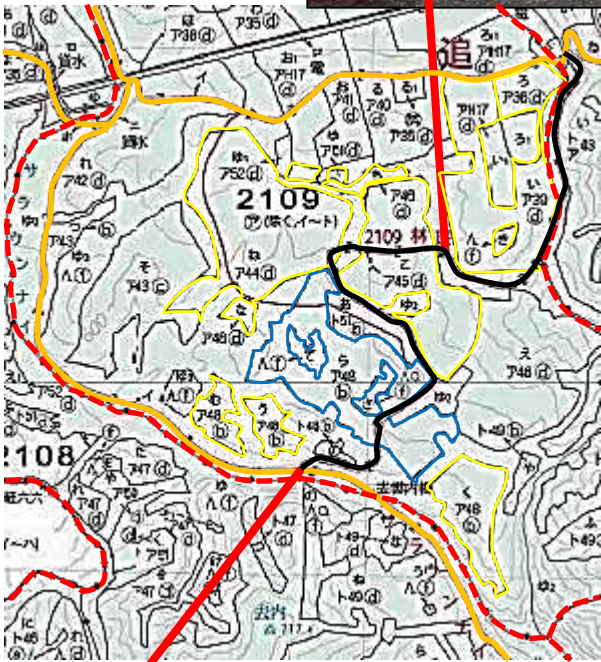
**新設林道工事**

林道名:2109林班林道

施工年度:平成23年度



平成30年度撮影



平成30年度撮影

| 凡 例 |                 |
|-----|-----------------|
|     | 製品生産(保育間伐(活用型)) |
|     | 立木販売(間伐)        |
|     | 林道新設箇所          |
|     | 既設林道            |
|     | 林班界             |

## 費用集計表

事業名: 森林環境保全整備事業

施行箇所: 十勝森林計画区(十勝西部森林官署東大雪支署)

事業実施主体: 十勝西部森林管理署東大雪支署

都道府県名: 北海道

(単位: 千円)

| 年度   | 事業費     | 割引率 | デフレーター | 現在価値額 | 年度        | 事業費  | 割引率 | デフレーター | 現在価値額  |
|------|---------|-----|--------|-------|-----------|------|-----|--------|--------|
| 2008 |         | ×   | 1.4802 |       | 2069      |      | ×   | 0.1353 |        |
| 2009 | 480,693 | ×   | 1.4233 | 103.8 | 659,783   | 2070 |     | ×      | 0.1301 |
| 2010 | 322,546 | ×   | 1.3686 | 105.1 | 420,436   | 2071 |     | ×      | 0.1251 |
| 2011 | 416,688 | ×   | 1.3159 | 105.1 | 522,234   | 2072 |     | ×      | 0.1203 |
| 2012 | 224,610 | ×   | 1.2653 | 104.9 | 271,195   | 2073 |     | ×      | 0.1157 |
| 2013 | 285,916 | ×   | 1.2167 | 103.2 | 337,424   | 2074 |     | ×      | 0.1112 |
| 2014 | 12,486  | ×   | 1.1699 |       | 14,607    | 2075 |     | ×      | 0.1069 |
| 2015 | 10,028  | ×   | 1.1249 |       | 11,280    | 2076 |     | ×      | 0.1028 |
| 2016 | 23,371  | ×   | 1.0816 |       | 25,278    | 2077 |     | ×      | 0.0989 |
| 2017 | 51,000  | ×   | 1.0400 |       | 53,040    | 2078 |     | ×      | 0.0951 |
| 2018 | 47,608  | ×   | 1.0000 | 100.1 | 47,608    | 2079 |     | ×      | 0.0914 |
| 2019 | 148,145 | ×   | 0.9615 |       | 142,441   | 2080 |     | ×      | 0.0879 |
| 2020 | 118,611 | ×   | 0.9246 |       | 109,668   | 2081 |     | ×      | 0.0845 |
| 2021 | 118,611 | ×   | 0.8890 |       | 105,445   | 2082 |     | ×      | 0.0813 |
| 2022 | 105,372 | ×   | 0.8548 |       | 90,072    | 2083 |     | ×      | 0.0781 |
| 2023 | 109,672 | ×   | 0.8219 |       | 90,139    | 2084 |     | ×      | 0.0751 |
| 2024 | 8,858   | ×   | 0.7903 |       | 7,000     | 2085 |     | ×      | 0.0722 |
| 2025 | 8,858   | ×   | 0.7599 |       | 6,731     | 2086 |     | ×      | 0.0695 |
| 2026 | 9,528   | ×   | 0.7307 |       | 6,962     | 2087 |     | ×      | 0.0668 |
| 2027 | 36,776  | ×   | 0.7026 |       | 25,839    | 2088 |     | ×      | 0.0642 |
| 2028 | 66,254  | ×   | 0.6756 |       | 44,761    | 2089 |     | ×      | 0.0617 |
| 2029 | 116,661 | ×   | 0.6496 |       | 75,783    | 2090 |     | ×      | 0.0594 |
| 2030 | 88,018  | ×   | 0.6246 |       | 54,976    | 2091 |     | ×      | 0.0571 |
| 2031 | 80,347  | ×   | 0.6006 |       | 48,256    | 2092 |     | ×      | 0.0549 |
| 2032 | 50,869  | ×   | 0.5775 |       | 29,377    | 2093 |     | ×      | 0.0528 |
| 2033 | 57,870  | ×   | 0.5553 |       | 32,135    | 2094 |     | ×      | 0.0508 |
| 2034 | 7,463   | ×   | 0.5339 |       | 3,984     | 2095 |     | ×      | 0.0488 |
| 2035 | 34,950  | ×   | 0.5134 |       | 17,943    | 2096 |     | ×      | 0.0469 |
| 2036 | 35,620  | ×   | 0.4936 |       | 17,582    | 2097 |     | ×      | 0.0451 |
| 2037 | 64,263  | ×   | 0.4746 |       | 30,499    | 2098 |     | ×      | 0.0434 |
| 2038 | 93,741  | ×   | 0.4564 |       | 42,783    | 2099 |     | ×      | 0.0417 |
| 2039 | 93,741  | ×   | 0.4388 |       | 41,134    | 2100 |     | ×      | 0.0401 |
| 2040 | 65,098  | ×   | 0.4220 |       | 27,471    | 2101 |     | ×      | 0.0386 |
| 2041 | 32,502  | ×   | 0.4057 |       | 13,186    | 2102 |     | ×      | 0.0371 |
| 2042 | 3,024   | ×   | 0.3901 |       | 1,180     | 2103 |     | ×      | 0.0357 |
| 2043 | 10,025  | ×   | 0.3751 |       | 3,760     | 2104 |     | ×      | 0.0343 |
| 2044 | 10,025  | ×   | 0.3607 |       | 3,616     | 2105 |     | ×      | 0.0330 |
| 2045 | 37,512  | ×   | 0.3468 |       | 13,009    | 2106 |     | ×      | 0.0317 |
| 2046 | 35,620  | ×   | 0.3335 |       | 11,879    | 2107 |     | ×      | 0.0305 |
| 2047 | 35,620  | ×   | 0.3207 |       | 11,423    | 2108 |     | ×      | 0.0293 |
| 2048 | 65,098  | ×   | 0.3083 |       | 20,070    |      |     |        | 0.0282 |
| 2049 | 65,098  | ×   | 0.2965 |       | 19,302    |      |     |        | 0.0271 |
| 2050 | 65,080  | ×   | 0.2851 |       | 18,554    |      |     |        | 0.0261 |
| 2051 | 32,432  | ×   | 0.2741 |       | 8,890     |      |     |        | 0.0251 |
| 2052 | 2,761   | ×   | 0.2636 |       | 728       |      |     |        | 0.0241 |
| 2053 | 2,624   | ×   | 0.2534 |       | 665       |      |     |        | 0.0232 |
| 2054 | 2,562   | ×   | 0.2437 |       | 624       |      |     |        | 0.0223 |
| 2055 | 30,049  | ×   | 0.2343 |       | 7,040     |      |     |        | 0.0214 |
| 2056 | 27,487  | ×   | 0.2253 |       | 6,193     |      |     |        | 0.0206 |
| 2057 | 27,487  | ×   | 0.2166 |       | 5,954     |      |     |        | 0.0198 |
| 2058 | 27,487  | ×   | 0.2083 |       | 5,726     |      |     |        | 0.0190 |
| 2059 | 27,487  | ×   | 0.2003 |       | 5,506     |      |     |        | 0.0183 |
| 2060 | 27,487  | ×   | 0.1926 |       | 5,294     |      |     |        | 0.0176 |
| 2061 | 2,562   | ×   | 0.1852 |       | 474       |      |     |        | 0.0169 |
| 2062 | 2,562   | ×   | 0.1780 |       | 456       |      |     |        | 0.0163 |
| 2063 | 2,562   | ×   | 0.1712 |       | 439       |      |     |        | 0.0156 |
| 2064 | 2,562   | ×   | 0.1646 |       | 422       |      |     |        | 0.0150 |
| 2065 | 2,562   | ×   | 0.1583 |       | 406       |      |     |        | 0.0145 |
| 2066 |         | ×   | 0.1522 |       |           |      |     |        | 0.0139 |
| 2067 |         | ×   | 0.1463 |       |           |      |     |        | 0.0134 |
| 2068 |         | ×   | 0.1407 |       |           |      |     |        |        |
| 合 計  |         |     |        |       | 3,578,662 |      |     |        |        |

C= 3,578,662 千円

デフレーター: 厚生労働省毎月勤労統計調査「実質賃金指数-決まって支給する給与(30人以上)」

$$B = \left[ \sum_{t=1}^{T-1} \frac{t}{T \times (1+i)^t} + \sum_{t=T}^Y \frac{1}{(1+i)^t} \right] \times \frac{(f1-f2) \times \alpha \times A \times U}{360}$$

- U: 治水ダムの単位流量調節量当たりの年間減価償却費(円/㎡/sec) 4,190,000
- 出典:「ダム年鑑2018」
- f1: 事業実施前の流出係数 0.55  
浸透能中 緩 要整備森林(疎林)
- 出典:「治山設計」(山口伊佐夫著,1979)
- f2: 事業実施後、T年経過後の流出係数 0.45  
浸透能中 緩 整備済森林
- 出典:「治山設計」(山口伊佐夫著,1979)
- T: 事業実施後、流出係数が安定するのに必要な年数 15
- α: 100年確率時雨量(mm/h) 40
- 出典:北海道の大 rainfall 資料(第12編)(北海道建設部 新得)H23.4.20
- A: 事業対象区域面積(ha) 45.00 ~ 3,479.62
- 360: 単位合わせのための調整値
- Y: 評価期間 100
- t: 経過年数(治山事業の便益の算出に当たっては、各年度の事業費の累計を用いている。  
 ※社会的割引率を考慮するために用いる(1+i)<sup>t</sup>(年数)とは異なる。
- i: 社会的割引率(0.04)

事業効果面積: 経過年ごとに発生する事業対象区域面積に対して、それぞれ流出係数等の安定する期間(t/T)を考慮して面積に換算して年度ごとに累計した面積

| 年度   | 社会的割引率 | 事業対象区域面積 ha | 事業効果面積 ha | 効果額 千円  | 現在価値化 千円 |
|------|--------|-------------|-----------|---------|----------|
| 2008 | 1.4802 |             |           |         |          |
| 2009 | 1.4233 | 1,227.55    | 81.84     | 3,810   | 5,423    |
| 2010 | 1.3686 | 1,845.38    | 204.86    | 9,538   | 13,054   |
| 2011 | 1.3159 | 2,463.21    | 369.08    | 17,183  | 22,611   |
| 2012 | 1.2653 | 3,022.04    | 570.55    | 26,562  | 33,609   |
| 2013 | 1.2167 | 3,479.62    | 802.52    | 37,362  | 45,458   |
| 2014 | 1.1699 | 3,479.62    | 1,034.49  | 48,162  | 56,345   |
| 2015 | 1.1249 | 3,479.62    | 1,266.47  | 58,962  | 66,326   |
| 2016 | 1.0816 | 3,479.62    | 1,498.44  | 69,762  | 75,455   |
| 2017 | 1.0400 | 3,479.62    | 1,730.42  | 80,561  | 83,783   |
| 2018 | 1.0000 | 3,479.62    | 1,962.39  | 91,361  | 91,361   |
| 2019 | 0.9615 | 3,479.62    | 2,194.37  | 102,161 | 98,228   |
| 2020 | 0.9246 | 3,479.62    | 2,426.34  | 112,961 | 104,444  |
| 2021 | 0.8890 | 3,479.62    | 2,658.32  | 123,761 | 110,024  |
| 2022 | 0.8548 | 3,436.36    | 2,849.92  | 132,681 | 113,416  |
| 2023 | 0.8219 | 3,393.10    | 3,038.63  | 141,466 | 116,271  |
| 2024 | 0.7903 | 3,349.84    | 3,145.51  | 146,442 | 115,733  |
| 2025 | 0.7599 | 3,306.58    | 3,211.20  | 149,501 | 113,606  |
| 2026 | 0.7307 | 3,263.32    | 3,235.70  | 150,641 | 110,073  |
| 2027 | 0.7026 | 3,263.32    | 3,263.32  | 151,927 | 106,744  |
| 2028 | 0.6756 | 3,263.32    | 3,263.32  | 151,927 | 102,642  |
| 2029 | 0.6496 | 3,263.32    | 3,263.32  | 151,927 | 98,692   |
| 2030 | 0.6246 | 3,263.32    | 3,263.32  | 151,927 | 94,894   |
| 2031 | 0.6006 | 3,263.32    | 3,263.32  | 151,927 | 91,247   |
| 2032 | 0.5775 | 3,220.06    | 3,220.06  | 149,913 | 86,575   |
| 2033 | 0.5553 | 3,176.80    | 3,176.80  | 147,899 | 82,128   |
| 2034 | 0.5339 | 3,133.54    | 3,133.54  | 145,885 | 77,888   |
| 2035 | 0.5134 | 3,090.28    | 3,090.28  | 143,871 | 73,863   |
| 2036 | 0.4936 | 3,047.02    | 3,047.02  | 141,857 | 70,021   |
| 2037 | 0.4746 | 3,047.02    | 3,047.02  | 141,857 | 67,325   |
| 2038 | 0.4564 | 3,047.02    | 3,047.02  | 141,857 | 64,744   |
| 2039 | 0.4388 | 3,047.02    | 3,047.02  | 141,857 | 62,247   |
| 2040 | 0.4220 | 3,047.02    | 3,047.02  | 141,857 | 59,864   |
| 2041 | 0.4057 | 3,047.02    | 3,047.02  | 141,857 | 57,551   |
| 2042 | 0.3901 | 3,003.76    | 3,003.76  | 139,843 | 54,553   |
| 2043 | 0.3751 | 2,960.50    | 2,960.50  | 137,829 | 51,700   |
| 2044 | 0.3607 | 2,917.24    | 2,917.24  | 135,815 | 48,988   |
| 2045 | 0.3468 | 2,873.98    | 2,873.98  | 133,801 | 46,402   |
| 2046 | 0.3335 | 2,830.72    | 2,830.72  | 131,787 | 43,951   |
| 2047 | 0.3207 | 2,830.72    | 2,830.72  | 131,787 | 42,264   |
| 2048 | 0.3083 | 2,830.72    | 2,830.72  | 131,787 | 40,630   |
| 2049 | 0.2965 | 2,830.72    | 2,830.72  | 131,787 | 39,075   |
| 2050 | 0.2851 | 2,771.72    | 2,771.72  | 129,040 | 36,789   |
| 2051 | 0.2741 | 2,712.72    | 2,712.72  | 126,293 | 34,617   |
| 2052 | 0.2636 | 2,653.72    | 2,653.72  | 123,547 | 32,567   |
| 2053 | 0.2534 | 2,653.72    | 2,653.72  | 123,547 | 31,307   |
| 2054 | 0.2437 | 2,653.72    | 2,653.72  | 123,547 | 30,108   |
| 2055 | 0.2343 | 2,653.72    | 2,653.72  | 123,547 | 28,947   |
| 2056 | 0.2253 | 2,639.30    | 2,639.30  | 122,875 | 27,684   |
| 2057 | 0.2166 | 2,523.88    | 2,523.88  | 117,502 | 25,451   |
| 2058 | 0.2083 | 2,408.46    | 2,408.46  | 112,128 | 23,356   |
| 2059 | 0.2003 | 2,291.66    | 2,291.66  | 106,691 | 21,370   |
| 2060 | 0.1926 | 2,174.86    | 2,174.86  | 101,253 | 19,501   |
| 2061 | 0.1852 | 2,058.06    | 2,058.06  | 95,815  | 17,745   |
| 2062 | 0.1780 | 2,042.26    | 2,042.26  | 95,079  | 16,924   |

|      |        |          |          |        |           |
|------|--------|----------|----------|--------|-----------|
| 2063 | 0.1712 | 2,026.46 | 2,026.46 | 94,344 | 16,152    |
| 2064 | 0.1646 | 2,026.46 | 2,026.46 | 94,344 | 15,529    |
| 2065 | 0.1583 | 2,026.46 | 2,026.46 | 94,344 | 14,935    |
| 2066 | 0.1522 | 2,026.46 | 2,026.46 | 94,344 | 14,359    |
| 2067 | 0.1463 | 1,925.46 | 1,925.46 | 89,642 | 13,115    |
| 2068 | 0.1407 | 1,824.46 | 1,824.46 | 84,940 | 11,951    |
| 2069 | 0.1353 | 1,723.46 | 1,723.46 | 80,237 | 10,856    |
| 2070 | 0.1301 | 1,622.46 | 1,622.46 | 75,535 | 9,827     |
| 2071 | 0.1251 | 1,521.46 | 1,521.46 | 70,833 | 8,861     |
| 2072 | 0.1203 | 1,521.46 | 1,521.46 | 70,833 | 8,521     |
| 2073 | 0.1157 | 1,521.46 | 1,521.46 | 70,833 | 8,195     |
| 2074 | 0.1112 | 1,521.46 | 1,521.46 | 70,833 | 7,877     |
| 2075 | 0.1069 | 1,521.46 | 1,521.46 | 70,833 | 7,572     |
| 2076 | 0.1028 | 1,521.46 | 1,521.46 | 70,833 | 7,282     |
| 2077 | 0.0989 | 1,420.46 | 1,420.46 | 66,131 | 6,540     |
| 2078 | 0.0951 | 1,319.46 | 1,319.46 | 61,429 | 5,842     |
| 2079 | 0.0914 | 1,218.46 | 1,218.46 | 56,727 | 5,185     |
| 2080 | 0.0879 | 1,117.46 | 1,117.46 | 52,024 | 4,573     |
| 2081 | 0.0845 | 1,016.46 | 1,016.46 | 47,322 | 3,999     |
| 2082 | 0.0813 | 1,016.46 | 1,016.46 | 47,322 | 3,847     |
| 2083 | 0.0781 | 1,016.46 | 1,016.46 | 47,322 | 3,696     |
| 2084 | 0.0751 | 1,016.46 | 1,016.46 | 47,322 | 3,554     |
| 2085 | 0.0722 | 1,016.46 | 1,016.46 | 47,322 | 3,417     |
| 2086 | 0.0695 | 1,016.46 | 1,016.46 | 47,322 | 3,289     |
| 2087 | 0.0668 | 1,016.46 | 1,016.46 | 47,322 | 3,161     |
| 2088 | 0.0642 | 1,016.46 | 1,016.46 | 47,322 | 3,038     |
| 2089 | 0.0617 | 1,016.46 | 1,016.46 | 47,322 | 2,920     |
| 2090 | 0.0594 | 1,016.46 | 1,016.46 | 47,322 | 2,811     |
| 2091 | 0.0571 | 1,016.46 | 1,016.46 | 47,322 | 2,702     |
| 2092 | 0.0549 | 1,016.46 | 1,016.46 | 47,322 | 2,598     |
| 2093 | 0.0528 | 1,016.46 | 1,016.46 | 47,322 | 2,499     |
| 2094 | 0.0508 | 1,016.46 | 1,016.46 | 47,322 | 2,404     |
| 2095 | 0.0488 | 1,016.46 | 1,016.46 | 47,322 | 2,309     |
| 2096 | 0.0469 | 915.21   | 915.21   | 42,609 | 1,998     |
| 2097 | 0.0451 | 813.96   | 813.96   | 37,895 | 1,709     |
| 2098 | 0.0434 | 712.71   | 712.71   | 33,181 | 1,440     |
| 2099 | 0.0417 | 611.46   | 611.46   | 28,467 | 1,187     |
| 2100 | 0.0401 | 611.46   | 611.46   | 28,467 | 1,142     |
| 2101 | 0.0386 | 611.46   | 611.46   | 28,467 | 1,099     |
| 2102 | 0.0371 | 611.46   | 611.46   | 28,467 | 1,056     |
| 2103 | 0.0357 | 517.05   | 517.05   | 24,072 | 859       |
| 2104 | 0.0343 | 422.64   | 422.64   | 19,676 | 675       |
| 2105 | 0.0330 | 328.23   | 328.23   | 15,281 | 504       |
| 2106 | 0.0317 | 233.82   | 233.82   | 10,886 | 345       |
| 2107 | 0.0305 | 139.41   | 139.41   | 6,490  | 198       |
| 2108 | 0.0293 | 45.00    | 45.00    | 2,095  | 61        |
| 合計   |        |          |          |        | 3,521,263 |

$$B = \sum_{t=1}^{T-1} \frac{t}{T \times (1+i)^t} + \sum_{t=T}^Y \frac{1}{(1+i)^t} \times \frac{(D2-D1) \times A \times P \times U \times 10}{365 \times 86400}$$

- A: 事業対象区域面積 (ha) 45.00 ~ 3,479.62
- P: 年間平均降雨量 (mm/年)  
出典: 気象庁 統計資料 新得観測所 (1981~2010の平均値) 1,130
- D1: 事業実施前の貯留率  
出典: 「森林の間伐と水収支」(近嵐ら, 1987) 0.51
- D2: 事業実施後、T年経過後の貯留率  
出典: 「森林の間伐と水収支」(近嵐ら, 1987) 0.56
- T: 事業実施後、貯留率が安定するのに必要な年数 15
- U: 開発流量当りの利水ダム年間減価償却費 (円/m3/S)  
出典: 「ダム年鑑2018」 1,058,000,000
- Y: 評価期間 100
- t: 経過年数(治山事業の便益の算出に当たっては、各年度の事業費の累計を用いている。  
※社会的割引率を考慮するために用いる(1+i)<sup>t</sup>のt(年数)とは異なる。
- i: 社会的割引率(0.04)
- 10: 単位合わせのための調整値
- 365: 1年間の日数
- 86400: 1日の秒数

事業効果面積: 経過年ごとに発生する事業対象区域面積に対して、それぞれ貯留率等の安定する期間(t/T)を考慮して面積に換算して年度ごとに累計した面積

| 年度   | 社会的割引率 | 事業対象区域面積 ha | 事業効果面積 ha | 効果額 千円 | 現在価値化 千円 |
|------|--------|-------------|-----------|--------|----------|
| 2008 | 1.4802 |             |           |        |          |
| 2009 | 1.4233 | 1,227.55    | 81.84     | 1,551  | 2,208    |
| 2010 | 1.3686 | 1,845.38    | 204.86    | 3,882  | 5,313    |
| 2011 | 1.3159 | 2,463.21    | 369.08    | 6,993  | 9,202    |
| 2012 | 1.2653 | 3,022.04    | 570.55    | 10,811 | 13,679   |
| 2013 | 1.2167 | 3,479.62    | 802.52    | 15,206 | 18,501   |
| 2014 | 1.1699 | 3,479.62    | 1,034.49  | 19,602 | 22,932   |
| 2015 | 1.1249 | 3,479.62    | 1,266.47  | 23,997 | 26,994   |
| 2016 | 1.0816 | 3,479.62    | 1,498.44  | 28,393 | 30,710   |
| 2017 | 1.0400 | 3,479.62    | 1,730.42  | 32,788 | 34,100   |
| 2018 | 1.0000 | 3,479.62    | 1,962.39  | 37,183 | 37,183   |
| 2019 | 0.9615 | 3,479.62    | 2,194.37  | 41,579 | 39,978   |
| 2020 | 0.9246 | 3,479.62    | 2,426.34  | 45,974 | 42,508   |
| 2021 | 0.8890 | 3,479.62    | 2,658.32  | 50,370 | 44,779   |
| 2022 | 0.8548 | 3,436.36    | 2,849.92  | 54,000 | 46,159   |
| 2023 | 0.8219 | 3,393.10    | 3,038.63  | 57,576 | 47,322   |
| 2024 | 0.7903 | 3,349.84    | 3,145.51  | 59,601 | 47,103   |
| 2025 | 0.7599 | 3,306.58    | 3,211.20  | 60,846 | 46,237   |
| 2026 | 0.7307 | 3,263.32    | 3,235.70  | 61,310 | 44,799   |
| 2027 | 0.7026 | 3,263.32    | 3,263.32  | 61,833 | 43,444   |
| 2028 | 0.6756 | 3,263.32    | 3,263.32  | 61,833 | 41,774   |
| 2029 | 0.6496 | 3,263.32    | 3,263.32  | 61,833 | 40,167   |
| 2030 | 0.6246 | 3,263.32    | 3,263.32  | 61,833 | 38,621   |
| 2031 | 0.6006 | 3,263.32    | 3,263.32  | 61,833 | 37,137   |
| 2032 | 0.5775 | 3,220.06    | 3,220.06  | 61,014 | 35,236   |
| 2033 | 0.5553 | 3,176.80    | 3,176.80  | 60,194 | 33,426   |
| 2034 | 0.5339 | 3,133.54    | 3,133.54  | 59,374 | 31,700   |
| 2035 | 0.5134 | 3,090.28    | 3,090.28  | 58,555 | 30,062   |
| 2036 | 0.4936 | 3,047.02    | 3,047.02  | 57,735 | 28,498   |
| 2037 | 0.4746 | 3,047.02    | 3,047.02  | 57,735 | 27,401   |
| 2038 | 0.4564 | 3,047.02    | 3,047.02  | 57,735 | 26,350   |
| 2039 | 0.4388 | 3,047.02    | 3,047.02  | 57,735 | 25,334   |
| 2040 | 0.4220 | 3,047.02    | 3,047.02  | 57,735 | 24,364   |
| 2041 | 0.4057 | 3,047.02    | 3,047.02  | 57,735 | 23,423   |
| 2042 | 0.3901 | 3,003.76    | 3,003.76  | 56,915 | 22,203   |
| 2043 | 0.3751 | 2,960.50    | 2,960.50  | 56,096 | 21,042   |
| 2044 | 0.3607 | 2,917.24    | 2,917.24  | 55,276 | 19,938   |
| 2045 | 0.3468 | 2,873.98    | 2,873.98  | 54,456 | 18,885   |
| 2046 | 0.3335 | 2,830.72    | 2,830.72  | 53,636 | 17,888   |
| 2047 | 0.3207 | 2,830.72    | 2,830.72  | 53,636 | 17,201   |
| 2048 | 0.3083 | 2,830.72    | 2,830.72  | 53,636 | 16,536   |
| 2049 | 0.2965 | 2,830.72    | 2,830.72  | 53,636 | 15,903   |
| 2050 | 0.2851 | 2,771.72    | 2,771.72  | 52,519 | 14,973   |
| 2051 | 0.2741 | 2,712.72    | 2,712.72  | 51,401 | 14,089   |
| 2052 | 0.2636 | 2,653.72    | 2,653.72  | 50,283 | 13,255   |
| 2053 | 0.2534 | 2,653.72    | 2,653.72  | 50,283 | 12,742   |
| 2054 | 0.2437 | 2,653.72    | 2,653.72  | 50,283 | 12,254   |
| 2055 | 0.2343 | 2,653.72    | 2,653.72  | 50,283 | 11,781   |
| 2056 | 0.2253 | 2,639.30    | 2,639.30  | 50,009 | 11,267   |
| 2057 | 0.2166 | 2,523.88    | 2,523.88  | 47,822 | 10,358   |
| 2058 | 0.2083 | 2,408.46    | 2,408.46  | 45,636 | 9,506    |

|      |        |          |          |        |           |
|------|--------|----------|----------|--------|-----------|
| 2059 | 0.2003 | 2,291.66 | 2,291.66 | 43,422 | 8,697     |
| 2060 | 0.1926 | 2,174.86 | 2,174.86 | 41,209 | 7,937     |
| 2061 | 0.1852 | 2,058.06 | 2,058.06 | 38,996 | 7,222     |
| 2062 | 0.1780 | 2,042.26 | 2,042.26 | 38,697 | 6,888     |
| 2063 | 0.1712 | 2,026.46 | 2,026.46 | 38,397 | 6,574     |
| 2064 | 0.1646 | 2,026.46 | 2,026.46 | 38,397 | 6,320     |
| 2065 | 0.1583 | 2,026.46 | 2,026.46 | 38,397 | 6,078     |
| 2066 | 0.1522 | 2,026.46 | 2,026.46 | 38,397 | 5,844     |
| 2067 | 0.1463 | 1,925.46 | 1,925.46 | 36,484 | 5,338     |
| 2068 | 0.1407 | 1,824.46 | 1,824.46 | 34,570 | 4,864     |
| 2069 | 0.1353 | 1,723.46 | 1,723.46 | 32,656 | 4,418     |
| 2070 | 0.1301 | 1,622.46 | 1,622.46 | 30,742 | 4,000     |
| 2071 | 0.1251 | 1,521.46 | 1,521.46 | 28,829 | 3,607     |
| 2072 | 0.1203 | 1,521.46 | 1,521.46 | 28,829 | 3,468     |
| 2073 | 0.1157 | 1,521.46 | 1,521.46 | 28,829 | 3,336     |
| 2074 | 0.1112 | 1,521.46 | 1,521.46 | 28,829 | 3,206     |
| 2075 | 0.1069 | 1,521.46 | 1,521.46 | 28,829 | 3,082     |
| 2076 | 0.1028 | 1,521.46 | 1,521.46 | 28,829 | 2,964     |
| 2077 | 0.0989 | 1,420.46 | 1,420.46 | 26,915 | 2,662     |
| 2078 | 0.0951 | 1,319.46 | 1,319.46 | 25,001 | 2,378     |
| 2079 | 0.0914 | 1,218.46 | 1,218.46 | 23,087 | 2,110     |
| 2080 | 0.0879 | 1,117.46 | 1,117.46 | 21,174 | 1,861     |
| 2081 | 0.0845 | 1,016.46 | 1,016.46 | 19,260 | 1,627     |
| 2082 | 0.0813 | 1,016.46 | 1,016.46 | 19,260 | 1,566     |
| 2083 | 0.0781 | 1,016.46 | 1,016.46 | 19,260 | 1,504     |
| 2084 | 0.0751 | 1,016.46 | 1,016.46 | 19,260 | 1,446     |
| 2085 | 0.0722 | 1,016.46 | 1,016.46 | 19,260 | 1,391     |
| 2086 | 0.0695 | 1,016.46 | 1,016.46 | 19,260 | 1,339     |
| 2087 | 0.0668 | 1,016.46 | 1,016.46 | 19,260 | 1,287     |
| 2088 | 0.0642 | 1,016.46 | 1,016.46 | 19,260 | 1,236     |
| 2089 | 0.0617 | 1,016.46 | 1,016.46 | 19,260 | 1,188     |
| 2090 | 0.0594 | 1,016.46 | 1,016.46 | 19,260 | 1,144     |
| 2091 | 0.0571 | 1,016.46 | 1,016.46 | 19,260 | 1,100     |
| 2092 | 0.0549 | 1,016.46 | 1,016.46 | 19,260 | 1,057     |
| 2093 | 0.0528 | 1,016.46 | 1,016.46 | 19,260 | 1,017     |
| 2094 | 0.0508 | 1,016.46 | 1,016.46 | 19,260 | 978       |
| 2095 | 0.0488 | 1,016.46 | 1,016.46 | 19,260 | 940       |
| 2096 | 0.0469 | 915.21   | 915.21   | 17,341 | 813       |
| 2097 | 0.0451 | 813.96   | 813.96   | 15,423 | 696       |
| 2098 | 0.0434 | 712.71   | 712.71   | 13,504 | 586       |
| 2099 | 0.0417 | 611.46   | 611.46   | 11,586 | 483       |
| 2100 | 0.0401 | 611.46   | 611.46   | 11,586 | 465       |
| 2101 | 0.0386 | 611.46   | 611.46   | 11,586 | 447       |
| 2102 | 0.0371 | 611.46   | 611.46   | 11,586 | 430       |
| 2103 | 0.0357 | 517.05   | 517.05   | 9,797  | 350       |
| 2104 | 0.0343 | 422.64   | 422.64   | 8,008  | 275       |
| 2105 | 0.0330 | 328.23   | 328.23   | 6,219  | 205       |
| 2106 | 0.0317 | 233.82   | 233.82   | 4,430  | 140       |
| 2107 | 0.0305 | 139.41   | 139.41   | 2,642  | 81        |
| 2108 | 0.0293 | 45.00    | 45.00    | 853    | 25        |
| 合計   |        |          |          |        | 1,433,135 |

$$B = \sum_{t=1}^{T-1} \frac{t}{T \times (1+i)^t} + \sum_{t=T}^Y \frac{1}{(1+i)^t} \times (D2-D1) \times A \times P \times u \times 10$$

$$u = \frac{U_x \times Q_x + U_y \times Q_y}{Q_x + Q_y}$$

|     |  |                  |
|-----|--|------------------|
| Qx: | 全貯留量のうち生活用水使用相当量   | 6.20 億立方         |
| Qy: | 全貯留量-Qx  | 234.24 億立方       |
| A:  | 事業対象区域面積 (ha)  | 45.00 ~ 3,479.62 |
| P:  | 年間平均降雨量 (mm/年)<br>出典: 気象庁 統計資料 新得観測所 (1981~2010の平均値)   | 1,130            |
| T:  | 事業実施後、貯留率が安定するのに必要な年数  | 15               |
| D1: | 事業実施前の貯留率<br>出典: 「森林の間伐と水収支」(近嵐ら、1987)   | 0.51             |
| D2: | 事業実施後、T年経過後の貯留率<br>出典: 「森林の間伐と水収支」(近嵐ら、1987)   | 0.56             |
| Ux: | 単位当たりの上水道供給単価 (円/m <sup>3</sup> )<br>出典: 新得町 上水道料金 (2018)  | 162.14           |
| Uy: | 単位当たりの雨水浄化費 (円/m <sup>3</sup> )<br>出典: 「地球環境・人間生活にかかる農業及び森林の多面的な機能の評価に関する調査研究報告書」(三菱総合研究所 H13.11) 「雨水利用ハンドブック」 | 68.60            |
| u:  | 単位当たりの水質浄化費 (Ux と Uy を用いて Qx と Qy で比例按分して算出)   | 71.01            |
| Y:  | 評価期間   | 100              |
| t:  | 経過年数(治山事業の便益の算出に当たっては、各年度の事業費の累計を用いている。)<br>※社会的割引率を考慮するために用いる(1+i) <sup>t</sup> のt(年数)とは異なる。                  |                  |
| i:  | 社会的割引率(0.04)   |                  |
| 10: | 単位合わせのための調整値   |                  |

事業効果面積: 経過年ごとに発生する事業対象区域面積に対して、それぞれ貯留率等の安定する期間(t/T)を考慮して面積に換算して年度ごとに累計した面積

| 年度   | 社会的割引率 | 事業対象区域面積 ha | 事業効果面積 ha | 効果額 千円  | 現在価値化 千円 |
|------|--------|-------------|-----------|---------|----------|
| 2008 | 1.4802 |             |           |         |          |
| 2009 | 1.4233 | 1,227.55    | 81.84     | 3,282   | 4,671    |
| 2010 | 1.3686 | 1,845.38    | 204.86    | 8,216   | 11,244   |
| 2011 | 1.3159 | 2,463.21    | 369.08    | 14,802  | 19,478   |
| 2012 | 1.2653 | 3,022.04    | 570.55    | 22,882  | 28,953   |
| 2013 | 1.2167 | 3,479.62    | 802.52    | 32,186  | 39,161   |
| 2014 | 1.1699 | 3,479.62    | 1,034.49  | 41,489  | 48,538   |
| 2015 | 1.1249 | 3,479.62    | 1,266.47  | 50,793  | 57,137   |
| 2016 | 1.0816 | 3,479.62    | 1,498.44  | 60,097  | 65,001   |
| 2017 | 1.0400 | 3,479.62    | 1,730.42  | 69,400  | 72,176   |
| 2018 | 1.0000 | 3,479.62    | 1,962.39  | 78,704  | 78,704   |
| 2019 | 0.9615 | 3,479.62    | 2,194.37  | 88,007  | 84,619   |
| 2020 | 0.9246 | 3,479.62    | 2,426.34  | 97,311  | 89,974   |
| 2021 | 0.8890 | 3,479.62    | 2,658.32  | 106,614 | 94,780   |
| 2022 | 0.8548 | 3,436.36    | 2,849.92  | 114,299 | 97,703   |
| 2023 | 0.8219 | 3,393.10    | 3,038.63  | 121,867 | 100,162  |
| 2024 | 0.7903 | 3,349.84    | 3,145.51  | 126,154 | 99,700   |
| 2025 | 0.7599 | 3,306.58    | 3,211.20  | 128,788 | 97,866   |
| 2026 | 0.7307 | 3,263.32    | 3,235.70  | 129,771 | 94,824   |
| 2027 | 0.7026 | 3,263.32    | 3,263.32  | 130,879 | 91,956   |
| 2028 | 0.6756 | 3,263.32    | 3,263.32  | 130,879 | 88,422   |
| 2029 | 0.6496 | 3,263.32    | 3,263.32  | 130,879 | 85,019   |
| 2030 | 0.6246 | 3,263.32    | 3,263.32  | 130,879 | 81,747   |
| 2031 | 0.6006 | 3,263.32    | 3,263.32  | 130,879 | 78,606   |
| 2032 | 0.5775 | 3,220.06    | 3,220.06  | 129,144 | 74,581   |
| 2033 | 0.5553 | 3,176.80    | 3,176.80  | 127,409 | 70,750   |
| 2034 | 0.5339 | 3,133.54    | 3,133.54  | 125,674 | 67,097   |
| 2035 | 0.5134 | 3,090.28    | 3,090.28  | 123,939 | 63,630   |
| 2036 | 0.4936 | 3,047.02    | 3,047.02  | 122,204 | 60,320   |
| 2037 | 0.4746 | 3,047.02    | 3,047.02  | 122,204 | 57,998   |
| 2038 | 0.4564 | 3,047.02    | 3,047.02  | 122,204 | 55,774   |
| 2039 | 0.4388 | 3,047.02    | 3,047.02  | 122,204 | 53,623   |
| 2040 | 0.4220 | 3,047.02    | 3,047.02  | 122,204 | 51,570   |
| 2041 | 0.4057 | 3,047.02    | 3,047.02  | 122,204 | 49,578   |
| 2042 | 0.3901 | 3,003.76    | 3,003.76  | 120,469 | 46,995   |
| 2043 | 0.3751 | 2,960.50    | 2,960.50  | 118,734 | 44,537   |
| 2044 | 0.3607 | 2,917.24    | 2,917.24  | 116,999 | 42,202   |
| 2045 | 0.3468 | 2,873.98    | 2,873.98  | 115,264 | 39,974   |
| 2046 | 0.3335 | 2,830.72    | 2,830.72  | 113,529 | 37,862   |
| 2047 | 0.3207 | 2,830.72    | 2,830.72  | 113,529 | 36,409   |
| 2048 | 0.3083 | 2,830.72    | 2,830.72  | 113,529 | 35,001   |
| 2049 | 0.2965 | 2,830.72    | 2,830.72  | 113,529 | 33,661   |
| 2050 | 0.2851 | 2,771.72    | 2,771.72  | 111,163 | 31,693   |



|      |        |          |          |         |           |
|------|--------|----------|----------|---------|-----------|
| 2051 | 0.2741 | 2,712.72 | 2,712.72 | 108,796 | 29,821    |
| 2052 | 0.2636 | 2,653.72 | 2,653.72 | 106,430 | 28,055    |
| 2053 | 0.2534 | 2,653.72 | 2,653.72 | 106,430 | 26,969    |
| 2054 | 0.2437 | 2,653.72 | 2,653.72 | 106,430 | 25,937    |
| 2055 | 0.2343 | 2,653.72 | 2,653.72 | 106,430 | 24,937    |
| 2056 | 0.2253 | 2,639.30 | 2,639.30 | 105,852 | 23,848    |
| 2057 | 0.2166 | 2,523.88 | 2,523.88 | 101,223 | 21,925    |
| 2058 | 0.2083 | 2,408.46 | 2,408.46 | 96,594  | 20,121    |
| 2059 | 0.2003 | 2,291.66 | 2,291.66 | 91,909  | 18,409    |
| 2060 | 0.1926 | 2,174.86 | 2,174.86 | 87,225  | 16,800    |
| 2061 | 0.1852 | 2,058.06 | 2,058.06 | 82,541  | 15,287    |
| 2062 | 0.1780 | 2,042.26 | 2,042.26 | 81,907  | 14,579    |
| 2063 | 0.1712 | 2,026.46 | 2,026.46 | 81,273  | 13,914    |
| 2064 | 0.1646 | 2,026.46 | 2,026.46 | 81,273  | 13,378    |
| 2065 | 0.1583 | 2,026.46 | 2,026.46 | 81,273  | 12,866    |
| 2066 | 0.1522 | 2,026.46 | 2,026.46 | 81,273  | 12,370    |
| 2067 | 0.1463 | 1,925.46 | 1,925.46 | 77,222  | 11,298    |
| 2068 | 0.1407 | 1,824.46 | 1,824.46 | 73,172  | 10,295    |
| 2069 | 0.1353 | 1,723.46 | 1,723.46 | 69,121  | 9,352     |
| 2070 | 0.1301 | 1,622.46 | 1,622.46 | 65,070  | 8,466     |
| 2071 | 0.1251 | 1,521.46 | 1,521.46 | 61,020  | 7,634     |
| 2072 | 0.1203 | 1,521.46 | 1,521.46 | 61,020  | 7,341     |
| 2073 | 0.1157 | 1,521.46 | 1,521.46 | 61,020  | 7,060     |
| 2074 | 0.1112 | 1,521.46 | 1,521.46 | 61,020  | 6,785     |
| 2075 | 0.1069 | 1,521.46 | 1,521.46 | 61,020  | 6,523     |
| 2076 | 0.1028 | 1,521.46 | 1,521.46 | 61,020  | 6,273     |
| 2077 | 0.0989 | 1,420.46 | 1,420.46 | 56,969  | 5,634     |
| 2078 | 0.0951 | 1,319.46 | 1,319.46 | 52,918  | 5,033     |
| 2079 | 0.0914 | 1,218.46 | 1,218.46 | 48,868  | 4,467     |
| 2080 | 0.0879 | 1,117.46 | 1,117.46 | 44,817  | 3,939     |
| 2081 | 0.0845 | 1,016.46 | 1,016.46 | 40,766  | 3,445     |
| 2082 | 0.0813 | 1,016.46 | 1,016.46 | 40,766  | 3,314     |
| 2083 | 0.0781 | 1,016.46 | 1,016.46 | 40,766  | 3,184     |
| 2084 | 0.0751 | 1,016.46 | 1,016.46 | 40,766  | 3,062     |
| 2085 | 0.0722 | 1,016.46 | 1,016.46 | 40,766  | 2,943     |
| 2086 | 0.0695 | 1,016.46 | 1,016.46 | 40,766  | 2,833     |
| 2087 | 0.0668 | 1,016.46 | 1,016.46 | 40,766  | 2,723     |
| 2088 | 0.0642 | 1,016.46 | 1,016.46 | 40,766  | 2,617     |
| 2089 | 0.0617 | 1,016.46 | 1,016.46 | 40,766  | 2,515     |
| 2090 | 0.0594 | 1,016.46 | 1,016.46 | 40,766  | 2,422     |
| 2091 | 0.0571 | 1,016.46 | 1,016.46 | 40,766  | 2,328     |
| 2092 | 0.0549 | 1,016.46 | 1,016.46 | 40,766  | 2,238     |
| 2093 | 0.0528 | 1,016.46 | 1,016.46 | 40,766  | 2,152     |
| 2094 | 0.0508 | 1,016.46 | 1,016.46 | 40,766  | 2,071     |
| 2095 | 0.0488 | 1,016.46 | 1,016.46 | 40,766  | 1,989     |
| 2096 | 0.0469 | 915.21   | 915.21   | 36,705  | 1,721     |
| 2097 | 0.0451 | 813.96   | 813.96   | 32,645  | 1,472     |
| 2098 | 0.0434 | 712.71   | 712.71   | 28,584  | 1,241     |
| 2099 | 0.0417 | 611.46   | 611.46   | 24,523  | 1,023     |
| 2100 | 0.0401 | 611.46   | 611.46   | 24,523  | 983       |
| 2101 | 0.0386 | 611.46   | 611.46   | 24,523  | 947       |
| 2102 | 0.0371 | 611.46   | 611.46   | 24,523  | 910       |
| 2103 | 0.0357 | 517.05   | 517.05   | 20,737  | 740       |
| 2104 | 0.0343 | 422.64   | 422.64   | 16,950  | 581       |
| 2105 | 0.0330 | 328.23   | 328.23   | 13,164  | 434       |
| 2106 | 0.0317 | 233.82   | 233.82   | 9,378   | 297       |
| 2107 | 0.0305 | 139.41   | 139.41   | 5,591   | 171       |
| 2108 | 0.0293 | 45.00    | 45.00    | 1,805   | 53        |
| 合計   |        |          |          |         | 3,033,421 |

$$B = \sum_{t=1}^{T-1} \frac{t}{T \times (1+i)^t} + \sum_{t=T}^Y \frac{1}{(1+i)^t} \times \frac{(V1-V2) \times A \times U}{1.0}$$

- U: 下流のダムに堆積した1m3の土砂を除去するコスト(円/m3) 4.095  
出典:(一社)ダム水源土砂対策技術研究会「ダム堆積対策工法の概要」2014、国土交通省「平成30年度施工パッケージ型積算方式標準単価表」
- V1: 事業実施前における1ha当りの年間浸食土砂量(m3) 20.00  
出典:「治山全体調査の考え方進め方」**「森林の公益的機能に関する文献要約集」**「森林水文」**「荒廃地等」**
- V2: 事業実施後における1ha当りの年間浸食土砂量(m3) 1.30  
出典:「治山全体調査の考え方進め方」**「森林の公益的機能に関する文献要約集」**「森林水文」**「整備済森林」**
- A: 事業対象区域面積(ha) 45.00 ~ 3,479.62
- T: 事業実施後、年間流出土砂量が安定するのに必要な年数 15
- Y: 評価期間 100
- t: 経過年数(治山事業の便益の算出に当たっては、各年度の事業費の累計を用いている。  
※社会的割引率を考慮するために用いる(1+i)<sup>t</sup>(年数)とは異なる。)
- i: 社会的割引率(0.04)

事業効果面積: 経過年ごとに発生する事業対象区域面積に対して、それぞれ年間流出土砂量等の安定する期間(t/T)を考慮して面積に換算して年度ごとに累計した面積

| 年度   | 社会的割引率 | 事業対象区域面積 ha | 事業効果面積 ha | 効果額 千円  | 現在価値化 千円 |
|------|--------|-------------|-----------|---------|----------|
| 2008 | 1.4802 |             |           |         |          |
| 2009 | 1.4233 | 1,227.55    | 81.84     | 6,267   | 8,920    |
| 2010 | 1.3686 | 1,845.38    | 204.86    | 15,688  | 21,471   |
| 2011 | 1.3159 | 2,463.21    | 369.08    | 28,263  | 37,191   |
| 2012 | 1.2653 | 3,022.04    | 570.55    | 43,691  | 55,282   |
| 2013 | 1.2167 | 3,479.62    | 802.52    | 61,455  | 74,772   |
| 2014 | 1.1699 | 3,479.62    | 1,034.49  | 79,218  | 92,677   |
| 2015 | 1.1249 | 3,479.62    | 1,266.47  | 96,982  | 109,095  |
| 2016 | 1.0816 | 3,479.62    | 1,498.44  | 114,746 | 124,109  |
| 2017 | 1.0400 | 3,479.62    | 1,730.42  | 132,510 | 137,810  |
| 2018 | 1.0000 | 3,479.62    | 1,962.39  | 150,274 | 150,274  |
| 2019 | 0.9615 | 3,479.62    | 2,194.37  | 168,038 | 161,569  |
| 2020 | 0.9246 | 3,479.62    | 2,426.34  | 185,802 | 171,793  |
| 2021 | 0.8890 | 3,479.62    | 2,658.32  | 203,566 | 180,970  |
| 2022 | 0.8548 | 3,436.36    | 2,849.92  | 218,238 | 186,550  |
| 2023 | 0.8219 | 3,393.10    | 3,038.63  | 232,689 | 191,247  |
| 2024 | 0.7903 | 3,349.84    | 3,145.51  | 240,874 | 190,363  |
| 2025 | 0.7599 | 3,306.58    | 3,211.20  | 245,904 | 186,862  |
| 2026 | 0.7307 | 3,263.32    | 3,235.70  | 247,780 | 181,053  |
| 2027 | 0.7026 | 3,263.32    | 3,263.32  | 249,895 | 175,576  |
| 2028 | 0.6756 | 3,263.32    | 3,263.32  | 249,895 | 168,829  |
| 2029 | 0.6496 | 3,263.32    | 3,263.32  | 249,895 | 162,332  |
| 2030 | 0.6246 | 3,263.32    | 3,263.32  | 249,895 | 156,084  |
| 2031 | 0.6006 | 3,263.32    | 3,263.32  | 249,895 | 150,087  |
| 2032 | 0.5775 | 3,220.06    | 3,220.06  | 246,583 | 142,402  |
| 2033 | 0.5553 | 3,176.80    | 3,176.80  | 243,270 | 135,088  |
| 2034 | 0.5339 | 3,133.54    | 3,133.54  | 239,957 | 128,113  |
| 2035 | 0.5134 | 3,090.28    | 3,090.28  | 236,644 | 121,493  |
| 2036 | 0.4936 | 3,047.02    | 3,047.02  | 233,332 | 115,173  |
| 2037 | 0.4746 | 3,047.02    | 3,047.02  | 233,332 | 110,739  |
| 2038 | 0.4564 | 3,047.02    | 3,047.02  | 233,332 | 106,493  |
| 2039 | 0.4388 | 3,047.02    | 3,047.02  | 233,332 | 102,386  |
| 2040 | 0.4220 | 3,047.02    | 3,047.02  | 233,332 | 98,466   |
| 2041 | 0.4057 | 3,047.02    | 3,047.02  | 233,332 | 94,663   |
| 2042 | 0.3901 | 3,003.76    | 3,003.76  | 230,019 | 89,730   |
| 2043 | 0.3751 | 2,960.50    | 2,960.50  | 226,706 | 85,037   |
| 2044 | 0.3607 | 2,917.24    | 2,917.24  | 223,393 | 80,578   |
| 2045 | 0.3468 | 2,873.98    | 2,873.98  | 220,081 | 76,324   |
| 2046 | 0.3335 | 2,830.72    | 2,830.72  | 216,768 | 72,292   |
| 2047 | 0.3207 | 2,830.72    | 2,830.72  | 216,768 | 69,517   |
| 2048 | 0.3083 | 2,830.72    | 2,830.72  | 216,768 | 66,830   |
| 2049 | 0.2965 | 2,830.72    | 2,830.72  | 216,768 | 64,272   |
| 2050 | 0.2851 | 2,771.72    | 2,771.72  | 212,250 | 60,512   |
| 2051 | 0.2741 | 2,712.72    | 2,712.72  | 207,732 | 56,939   |
| 2052 | 0.2636 | 2,653.72    | 2,653.72  | 203,214 | 53,567   |
| 2053 | 0.2534 | 2,653.72    | 2,653.72  | 203,214 | 51,494   |
| 2054 | 0.2437 | 2,653.72    | 2,653.72  | 203,214 | 49,523   |
| 2055 | 0.2343 | 2,653.72    | 2,653.72  | 203,214 | 47,613   |
| 2056 | 0.2253 | 2,639.30    | 2,639.30  | 202,110 | 45,535   |
| 2057 | 0.2166 | 2,523.88    | 2,523.88  | 193,271 | 41,862   |
| 2058 | 0.2083 | 2,408.46    | 2,408.46  | 184,433 | 38,417   |
| 2059 | 0.2003 | 2,291.66    | 2,291.66  | 175,488 | 35,150   |
| 2060 | 0.1926 | 2,174.86    | 2,174.86  | 166,544 | 32,076   |
| 2061 | 0.1852 | 2,058.06    | 2,058.06  | 157,600 | 29,188   |
| 2062 | 0.1780 | 2,042.26    | 2,042.26  | 156,390 | 27,837   |
| 2063 | 0.1712 | 2,026.46    | 2,026.46  | 155,180 | 26,567   |
| 2064 | 0.1646 | 2,026.46    | 2,026.46  | 155,180 | 25,543   |
| 2065 | 0.1583 | 2,026.46    | 2,026.46  | 155,180 | 24,565   |
| 2066 | 0.1522 | 2,026.46    | 2,026.46  | 155,180 | 23,618   |

|      |        |          |          |         |           |
|------|--------|----------|----------|---------|-----------|
| 2067 | 0.1463 | 1,925.46 | 1,925.46 | 147,446 | 21,571    |
| 2068 | 0.1407 | 1,824.46 | 1,824.46 | 139,712 | 19,657    |
| 2069 | 0.1353 | 1,723.46 | 1,723.46 | 131,977 | 17,856    |
| 2070 | 0.1301 | 1,622.46 | 1,622.46 | 124,243 | 16,164    |
| 2071 | 0.1251 | 1,521.46 | 1,521.46 | 116,509 | 14,575    |
| 2072 | 0.1203 | 1,521.46 | 1,521.46 | 116,509 | 14,016    |
| 2073 | 0.1157 | 1,521.46 | 1,521.46 | 116,509 | 13,480    |
| 2074 | 0.1112 | 1,521.46 | 1,521.46 | 116,509 | 12,956    |
| 2075 | 0.1069 | 1,521.46 | 1,521.46 | 116,509 | 12,455    |
| 2076 | 0.1028 | 1,521.46 | 1,521.46 | 116,509 | 11,977    |
| 2077 | 0.0989 | 1,420.46 | 1,420.46 | 108,775 | 10,758    |
| 2078 | 0.0951 | 1,319.46 | 1,319.46 | 101,040 | 9,609     |
| 2079 | 0.0914 | 1,218.46 | 1,218.46 | 93,306  | 8,528     |
| 2080 | 0.0879 | 1,117.46 | 1,117.46 | 85,572  | 7,522     |
| 2081 | 0.0845 | 1,016.46 | 1,016.46 | 77,837  | 6,577     |
| 2082 | 0.0813 | 1,016.46 | 1,016.46 | 77,837  | 6,328     |
| 2083 | 0.0781 | 1,016.46 | 1,016.46 | 77,837  | 6,079     |
| 2084 | 0.0751 | 1,016.46 | 1,016.46 | 77,837  | 5,846     |
| 2085 | 0.0722 | 1,016.46 | 1,016.46 | 77,837  | 5,620     |
| 2086 | 0.0695 | 1,016.46 | 1,016.46 | 77,837  | 5,410     |
| 2087 | 0.0668 | 1,016.46 | 1,016.46 | 77,837  | 5,200     |
| 2088 | 0.0642 | 1,016.46 | 1,016.46 | 77,837  | 4,997     |
| 2089 | 0.0617 | 1,016.46 | 1,016.46 | 77,837  | 4,803     |
| 2090 | 0.0594 | 1,016.46 | 1,016.46 | 77,837  | 4,624     |
| 2091 | 0.0571 | 1,016.46 | 1,016.46 | 77,837  | 4,444     |
| 2092 | 0.0549 | 1,016.46 | 1,016.46 | 77,837  | 4,273     |
| 2093 | 0.0528 | 1,016.46 | 1,016.46 | 77,837  | 4,110     |
| 2094 | 0.0508 | 1,016.46 | 1,016.46 | 77,837  | 3,954     |
| 2095 | 0.0488 | 1,016.46 | 1,016.46 | 77,837  | 3,798     |
| 2096 | 0.0469 | 915.21   | 915.21   | 70,084  | 3,287     |
| 2097 | 0.0451 | 813.96   | 813.96   | 62,331  | 2,811     |
| 2098 | 0.0434 | 712.71   | 712.71   | 54,577  | 2,369     |
| 2099 | 0.0417 | 611.46   | 611.46   | 46,824  | 1,953     |
| 2100 | 0.0401 | 611.46   | 611.46   | 46,824  | 1,878     |
| 2101 | 0.0386 | 611.46   | 611.46   | 46,824  | 1,807     |
| 2102 | 0.0371 | 611.46   | 611.46   | 46,824  | 1,737     |
| 2103 | 0.0357 | 517.05   | 517.05   | 39,594  | 1,414     |
| 2104 | 0.0343 | 422.64   | 422.64   | 32,365  | 1,110     |
| 2105 | 0.0330 | 328.23   | 328.23   | 25,135  | 829       |
| 2106 | 0.0317 | 233.82   | 233.82   | 17,905  | 568       |
| 2107 | 0.0305 | 139.41   | 139.41   | 10,676  | 326       |
| 2108 | 0.0293 | 45.00    | 45.00    | 3,446   | 101       |
| 合計   |        |          |          |         | 5,791,895 |

$$B = \sum_{t=1}^Y \frac{G2 - G1}{Y \times (1+i)^t} \times D \times BEF \times (1+R) \times 0.5 \times \frac{44}{12} \times U$$

|        |   |                                      |                                |                      |
|--------|---|--------------------------------------|--------------------------------|----------------------|
| U:     | 二酸化炭素に関する原単位(円/CO2-ton)<br>出典:東京都層量削減義務による排出量取引制度における仲値(アーガス・メディア・リミテッド(Argus Media Limited)による平成27年10月23日査定価格) |                                      | 5,500                          |                      |
| G1:    | 事業を実施しない場合の当該森林の事業着手年から評価最終年(伐期)までの見込み成長量(m3)又は見込み蓄積量増加分(m3)<br>出典:「林野公共事業における事業評価マニュアル」に基づき、G2の2分の1の成長量として算出   | カラマツ<br>トドマツ<br>トドマツ<br>0<br>0       | 別途<br>別途<br>別途                 |                      |
| G2:    | 事業を実施する場合の当該森林の事業着手年から評価最終年(伐期)までの見込み成長量(m3)又は見込み蓄積量増加分(m3)<br>出典:十勝森林計画区収獲予想表                                  | カラマツ<br>トドマツ<br>トドマツ<br>0<br>0       | 別途<br>別途<br>別途                 |                      |
| Y:     | 評価期間  |                                      | 100                            |                      |
| D:     | 容積密度(t/m <sup>3</sup> )<br>出典:「日本国温室効果ガスインベントリ報告書」(2018年4月)温室効果ガスインベントリオフィス(GIO)編                               | カラマツ<br>トドマツ<br>トドマツ<br>0<br>0       | 0.404<br>0.318<br>0.318        |                      |
| BEF:   | バイオマス拡大係数(地上部バイオマス量/幹バイオマス量)<br>出典:「日本国温室効果ガスインベントリ報告書」(2018年4月)温室効果ガスインベントリオフィス(GIO)編                          | 樹齢20年越<br>樹齢20年越<br>樹齢20年越<br>0<br>0 | カラマツ<br>トドマツ<br>トドマツ<br>0<br>0 | 1.15<br>1.38<br>1.38 |
| R:     | 地上部に対する地下部の比率(地下部バイオマス量/地上部バイオマス量)<br>出典:「日本国温室効果ガスインベントリ報告書」(2018年4月)温室効果ガスインベントリオフィス(GIO)編                    | カラマツ<br>トドマツ<br>トドマツ<br>0<br>0       | 0.29<br>0.21<br>0.21           |                      |
| i:     | 社会的割引率(0.04)  |                                      |                                |                      |
| 0.5:   | 植物中の炭素含有率   |                                      |                                |                      |
| 44/12: | 炭素から二酸化炭素への換算係数   |                                      |                                |                      |

事業効果蓄積(表中央表頭部)の算出は、増加した蓄積を評価期間で割って平均化している。  
(複層林) (天1)

| 年度   | 社会的割引率 | カラマツ     |        | トドマツ     |        | トドマツ     |        | トドマツ     |        | トドマツ     |        | 合計     |          |
|------|--------|----------|--------|----------|--------|----------|--------|----------|--------|----------|--------|--------|----------|
|      |        | 事業効果蓄積m3 | 効果額 千円 | 事業効果蓄積m3 | 効果額 千円 | 事業効果蓄積m3 | 効果額 千円 | 事業効果蓄積m3 | 効果額 千円 | 事業効果蓄積m3 | 効果額 千円 | 効果額 千円 | 現在価値化 千円 |
| 2008 | 1.4802 |          |        |          |        |          |        |          |        |          |        |        |          |
| 2009 | 1.4233 | 320.14   | 1,934  | 1,594.47 | 8,530  | 0.31     | 2      |          |        |          |        | 10,466 | 14,896   |
| 2010 | 1.3686 | 569.97   | 3,443  | 2,272.92 | 12,160 | 0.62     | 3      |          |        |          |        | 15,606 | 21,358   |
| 2011 | 1.3159 | 819.80   | 4,952  | 2,951.37 | 15,790 | 0.93     | 5      |          |        |          |        | 20,747 | 27,301   |
| 2012 | 1.2653 | 969.62   | 5,857  | 3,629.82 | 19,420 | 1.24     | 7      |          |        |          |        | 25,284 | 31,992   |
| 2013 | 1.2167 | 1,119.44 | 6,761  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 28,847 | 35,098   |
| 2014 | 1.1699 | 1,119.44 | 6,761  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 28,847 | 33,748   |
| 2015 | 1.1249 | 1,119.44 | 6,761  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 28,847 | 32,450   |
| 2016 | 1.0816 | 1,119.44 | 6,761  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 28,847 | 31,201   |
| 2017 | 1.0400 | 1,119.44 | 6,761  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 28,847 | 30,001   |
| 2018 | 1.0000 | 1,119.44 | 6,761  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 28,847 | 28,847   |
| 2019 | 0.9615 | 1,119.44 | 6,761  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 28,847 | 27,736   |
| 2020 | 0.9246 | 1,119.44 | 6,761  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 28,847 | 26,672   |
| 2021 | 0.8890 | 1,119.44 | 6,761  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 28,847 | 25,645   |
| 2022 | 0.8548 | 1,086.16 | 6,560  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 28,646 | 24,487   |
| 2023 | 0.8219 | 1,052.88 | 6,359  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 28,445 | 23,379   |
| 2024 | 0.7903 | 1,019.60 | 6,158  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 28,244 | 22,321   |
| 2025 | 0.7599 | 986.32   | 5,957  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 28,043 | 21,310   |
| 2026 | 0.7307 | 953.04   | 5,756  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 27,842 | 20,344   |
| 2027 | 0.7026 | 953.04   | 5,756  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 27,842 | 19,562   |
| 2028 | 0.6756 | 953.04   | 5,756  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 27,842 | 18,810   |
| 2029 | 0.6496 | 953.04   | 5,756  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 27,842 | 18,086   |
| 2030 | 0.6246 | 953.04   | 5,756  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 27,842 | 17,390   |
| 2031 | 0.6006 | 953.04   | 5,756  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 27,842 | 16,722   |
| 2032 | 0.5775 | 912.41   | 5,511  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 27,597 | 15,937   |
| 2033 | 0.5553 | 871.78   | 5,266  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 27,352 | 15,189   |
| 2034 | 0.5339 | 831.15   | 5,020  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 27,106 | 14,472   |
| 2035 | 0.5134 | 790.52   | 4,775  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 26,861 | 13,790   |
| 2036 | 0.4936 | 749.89   | 4,529  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 26,615 | 13,137   |
| 2037 | 0.4746 | 749.89   | 4,529  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 26,615 | 12,631   |
| 2038 | 0.4564 | 749.89   | 4,529  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 26,615 | 12,147   |
| 2039 | 0.4388 | 749.89   | 4,529  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 26,615 | 11,679   |
| 2040 | 0.4220 | 749.89   | 4,529  | 4,126.72 | 22,078 | 1.55     | 8      |          |        |          |        | 26,615 | 11,232   |



$$B = \sum_{t=1}^{T-1} \frac{t}{T \times (1+i)^t} + \sum_{t=T}^Y \frac{1}{(1+i)^t} \times (C1 - C2) \times A \times 0.3 \times \frac{44}{12} \times U$$

$$C1 = \frac{s \times e1}{30}$$

$$C2 = \frac{s \times e2}{30}$$

|        |   |                  |
|--------|---|------------------|
| U:     | 二酸化炭素に関する原単位(円/t-CO2)<br>出典:東京都層量削減義務による排出量取引制度における仲値(アーガス・メディア・リミテッド(Argus Media Limited)による平成27年10月23日査定価格) | 5,500            |
| C1:    | 事業を実施しない場合の年間流出土砂量に含まれる炭素量(t-C/ha) ①事業対象区域  | 0.57             |
| C2:    | 事業を実施した場合の年間流出土砂量に含まれる炭素量(t-C/ha) ①事業対象区域   | 0.04             |
| T:     | 事業実施後、年間流出土砂量が安定するのに必要な年数   | 15               |
| Y:     | ①侵食深が30cmに達するまでの年数(To) 又は ①事業対象区域<br>②評価期間内に侵食深が30cmに達しない場合は評価期間  | 100.00           |
| A:     | ①事業対象区域面積(ha) 又は<br>②保全効果区域面積(ha)   | 45.00 ~ 3,479.62 |
| s:     | 単位面積当たりの土壌平均炭素蓄積量(t-C/ha)<br>出典:「日本国温室効果ガスインベントリ報告書」(2018年4月) 温室効果ガスインベントリオフィス(GIO)編<br>炭素から二酸化炭素への換算係数       | 85.69            |
| 44/12: |   |                  |
| e1::   | 事業を実施しない場合の侵食深(cm/年)<br>出典:「治山全体調査の考え方進め方」<br>「森林の公益的機能に関する文献要約集」<br>「森林水文」                                   | ①事業対象区域 0.200    |
| e2::   | 事業を実施した場合の侵食深(cm/年)<br>出典:「治山全体調査の考え方進め方」<br>「森林の公益的機能に関する文献要約集」<br>「森林水文」                                    | ①事業対象区域 0.013    |
| t:     | 経過年数(治山事業の便益の算出に当たっては、各年度の事業費の累計を用いている。)<br>※社会的割引率を考慮するために用いる(1+i) <sup>t</sup> のt(年数)とは異なる。                 |                  |
| i:     | 社会的割引率(0.04)  |                  |
| 30:    | 土壌炭素の測定深度(cm)   |                  |
| 0.3:   | 流出土砂排出炭素係数  |                  |

| 年度   | 社会的割引率 | 事業対象区域      |           |        | 効果対象区域   |           |        |
|------|--------|-------------|-----------|--------|----------|-----------|--------|
|      |        | 事業対象区域面積 ha | 効果対象面積 ha | 効果額 千円 | 現在価値化 千円 | 効果対象面積 ha | 効果額 千円 |
| 2008 | 1.4802 |             |           |        |          |           |        |
| 2009 | 1.4233 | 1,227.55    | 81.84     | 262    | 373      |           |        |
| 2010 | 1.3686 | 1,845.38    | 204.86    | 657    | 899      |           |        |
| 2011 | 1.3159 | 2,463.21    | 369.08    | 1,184  | 1,558    |           |        |
| 2012 | 1.2653 | 3,022.04    | 570.55    | 1,830  | 2,315    |           |        |
| 2013 | 1.2167 | 3,479.62    | 802.52    | 2,574  | 3,132    |           |        |
| 2014 | 1.1699 | 3,479.62    | 1,034.49  | 3,318  | 3,882    |           |        |
| 2015 | 1.1249 | 3,479.62    | 1,266.47  | 4,062  | 4,569    |           |        |
| 2016 | 1.0816 | 3,479.62    | 1,498.44  | 4,806  | 5,198    |           |        |
| 2017 | 1.0400 | 3,479.62    | 1,730.42  | 5,549  | 5,771    |           |        |
| 2018 | 1.0000 | 3,479.62    | 1,962.39  | 6,293  | 6,293    |           |        |
| 2019 | 0.9615 | 3,479.62    | 2,194.37  | 7,037  | 6,766    |           |        |
| 2020 | 0.9246 | 3,479.62    | 2,426.34  | 7,781  | 7,194    |           |        |
| 2021 | 0.8890 | 3,479.62    | 2,658.32  | 8,525  | 7,579    |           |        |
| 2022 | 0.8548 | 3,436.36    | 2,849.92  | 9,140  | 7,813    |           |        |
| 2023 | 0.8219 | 3,393.10    | 3,038.63  | 9,745  | 8,009    |           |        |
| 2024 | 0.7903 | 3,349.84    | 3,145.51  | 10,088 | 7,973    |           |        |
| 2025 | 0.7599 | 3,306.58    | 3,211.20  | 10,298 | 7,825    |           |        |
| 2026 | 0.7307 | 3,263.32    | 3,235.70  | 10,377 | 7,582    |           |        |
| 2027 | 0.7026 | 3,263.32    | 3,263.32  | 10,465 | 7,353    |           |        |
| 2028 | 0.6756 | 3,263.32    | 3,263.32  | 10,465 | 7,070    |           |        |
| 2029 | 0.6496 | 3,263.32    | 3,263.32  | 10,465 | 6,798    |           |        |
| 2030 | 0.6246 | 3,263.32    | 3,263.32  | 10,465 | 6,536    |           |        |
| 2031 | 0.6006 | 3,263.32    | 3,263.32  | 10,465 | 6,285    |           |        |
| 2032 | 0.5775 | 3,220.06    | 3,220.06  | 10,327 | 5,964    |           |        |
| 2033 | 0.5553 | 3,176.80    | 3,176.80  | 10,188 | 5,657    |           |        |
| 2034 | 0.5339 | 3,133.54    | 3,133.54  | 10,049 | 5,365    |           |        |
| 2035 | 0.5134 | 3,090.28    | 3,090.28  | 9,911  | 5,088    |           |        |
| 2036 | 0.4936 | 3,047.02    | 3,047.02  | 9,772  | 4,823    |           |        |
| 2037 | 0.4746 | 3,047.02    | 3,047.02  | 9,772  | 4,638    |           |        |
| 2038 | 0.4564 | 3,047.02    | 3,047.02  | 9,772  | 4,460    |           |        |
| 2039 | 0.4388 | 3,047.02    | 3,047.02  | 9,772  | 4,288    |           |        |
| 2040 | 0.4220 | 3,047.02    | 3,047.02  | 9,772  | 4,124    |           |        |
| 2041 | 0.4057 | 3,047.02    | 3,047.02  | 9,772  | 3,965    |           |        |

|      |        |          |          |       |         |  |  |   |
|------|--------|----------|----------|-------|---------|--|--|---|
| 2042 | 0.3901 | 3,003.76 | 3,003.76 | 9,633 | 3,758   |  |  |   |
| 2043 | 0.3751 | 2,960.50 | 2,960.50 | 9,494 | 3,561   |  |  |   |
| 2044 | 0.3607 | 2,917.24 | 2,917.24 | 9,356 | 3,375   |  |  |   |
| 2045 | 0.3468 | 2,873.98 | 2,873.98 | 9,217 | 3,196   |  |  |   |
| 2046 | 0.3335 | 2,830.72 | 2,830.72 | 9,078 | 3,028   |  |  |   |
| 2047 | 0.3207 | 2,830.72 | 2,830.72 | 9,078 | 2,911   |  |  |   |
| 2048 | 0.3083 | 2,830.72 | 2,830.72 | 9,078 | 2,799   |  |  |   |
| 2049 | 0.2965 | 2,830.72 | 2,830.72 | 9,078 | 2,692   |  |  |   |
| 2050 | 0.2851 | 2,771.72 | 2,771.72 | 8,889 | 2,534   |  |  |   |
| 2051 | 0.2741 | 2,712.72 | 2,712.72 | 8,700 | 2,385   |  |  |   |
| 2052 | 0.2636 | 2,653.72 | 2,653.72 | 8,510 | 2,243   |  |  |   |
| 2053 | 0.2534 | 2,653.72 | 2,653.72 | 8,510 | 2,156   |  |  |   |
| 2054 | 0.2437 | 2,653.72 | 2,653.72 | 8,510 | 2,074   |  |  |   |
| 2055 | 0.2343 | 2,653.72 | 2,653.72 | 8,510 | 1,994   |  |  |   |
| 2056 | 0.2253 | 2,639.30 | 2,639.30 | 8,464 | 1,907   |  |  |   |
| 2057 | 0.2166 | 2,523.88 | 2,523.88 | 8,094 | 1,753   |  |  |   |
| 2058 | 0.2083 | 2,408.46 | 2,408.46 | 7,724 | 1,609   |  |  |   |
| 2059 | 0.2003 | 2,291.66 | 2,291.66 | 7,349 | 1,472   |  |  |   |
| 2060 | 0.1926 | 2,174.86 | 2,174.86 | 6,975 | 1,343   |  |  |   |
| 2061 | 0.1852 | 2,058.06 | 2,058.06 | 6,600 | 1,222   |  |  |   |
| 2062 | 0.1780 | 2,042.26 | 2,042.26 | 6,550 | 1,166   |  |  |   |
| 2063 | 0.1712 | 2,026.46 | 2,026.46 | 6,499 | 1,113   |  |  |   |
| 2064 | 0.1646 | 2,026.46 | 2,026.46 | 6,499 | 1,070   |  |  |   |
| 2065 | 0.1583 | 2,026.46 | 2,026.46 | 6,499 | 1,029   |  |  |   |
| 2066 | 0.1522 | 2,026.46 | 2,026.46 | 6,499 | 989     |  |  |   |
| 2067 | 0.1463 | 1,925.46 | 1,925.46 | 6,175 | 903     |  |  |   |
| 2068 | 0.1407 | 1,824.46 | 1,824.46 | 5,851 | 823     |  |  |   |
| 2069 | 0.1353 | 1,723.46 | 1,723.46 | 5,527 | 748     |  |  |   |
| 2070 | 0.1301 | 1,622.46 | 1,622.46 | 5,203 | 677     |  |  |   |
| 2071 | 0.1251 | 1,521.46 | 1,521.46 | 4,879 | 610     |  |  |   |
| 2072 | 0.1203 | 1,521.46 | 1,521.46 | 4,879 | 587     |  |  |   |
| 2073 | 0.1157 | 1,521.46 | 1,521.46 | 4,879 | 565     |  |  |   |
| 2074 | 0.1112 | 1,521.46 | 1,521.46 | 4,879 | 543     |  |  |   |
| 2075 | 0.1069 | 1,521.46 | 1,521.46 | 4,879 | 522     |  |  |   |
| 2076 | 0.1028 | 1,521.46 | 1,521.46 | 4,879 | 502     |  |  |   |
| 2077 | 0.0989 | 1,420.46 | 1,420.46 | 4,555 | 450     |  |  |   |
| 2078 | 0.0951 | 1,319.46 | 1,319.46 | 4,232 | 402     |  |  |   |
| 2079 | 0.0914 | 1,218.46 | 1,218.46 | 3,908 | 357     |  |  |   |
| 2080 | 0.0879 | 1,117.46 | 1,117.46 | 3,584 | 315     |  |  |   |
| 2081 | 0.0845 | 1,016.46 | 1,016.46 | 3,260 | 275     |  |  |   |
| 2082 | 0.0813 | 1,016.46 | 1,016.46 | 3,260 | 265     |  |  |   |
| 2083 | 0.0781 | 1,016.46 | 1,016.46 | 3,260 | 255     |  |  |   |
| 2084 | 0.0751 | 1,016.46 | 1,016.46 | 3,260 | 245     |  |  |   |
| 2085 | 0.0722 | 1,016.46 | 1,016.46 | 3,260 | 235     |  |  |   |
| 2086 | 0.0695 | 1,016.46 | 1,016.46 | 3,260 | 227     |  |  |   |
| 2087 | 0.0668 | 1,016.46 | 1,016.46 | 3,260 | 218     |  |  |   |
| 2088 | 0.0642 | 1,016.46 | 1,016.46 | 3,260 | 209     |  |  |   |
| 2089 | 0.0617 | 1,016.46 | 1,016.46 | 3,260 | 201     |  |  |   |
| 2090 | 0.0594 | 1,016.46 | 1,016.46 | 3,260 | 194     |  |  |   |
| 2091 | 0.0571 | 1,016.46 | 1,016.46 | 3,260 | 186     |  |  |   |
| 2092 | 0.0549 | 1,016.46 | 1,016.46 | 3,260 | 179     |  |  |   |
| 2093 | 0.0528 | 1,016.46 | 1,016.46 | 3,260 | 172     |  |  |   |
| 2094 | 0.0508 | 1,016.46 | 1,016.46 | 3,260 | 166     |  |  |   |
| 2095 | 0.0488 | 1,016.46 | 1,016.46 | 3,260 | 159     |  |  |   |
| 2096 | 0.0469 | 915.21   | 915.21   | 2,935 | 138     |  |  |   |
| 2097 | 0.0451 | 813.96   | 813.96   | 2,610 | 118     |  |  |   |
| 2098 | 0.0434 | 712.71   | 712.71   | 2,286 | 99      |  |  |   |
| 2099 | 0.0417 | 611.46   | 611.46   | 1,961 | 82      |  |  |   |
| 2100 | 0.0401 | 611.46   | 611.46   | 1,961 | 79      |  |  |   |
| 2101 | 0.0386 | 611.46   | 611.46   | 1,961 | 76      |  |  |   |
| 2102 | 0.0371 | 611.46   | 611.46   | 1,961 | 73      |  |  |   |
| 2103 | 0.0357 | 517.05   | 517.05   | 1,658 | 59      |  |  |   |
| 2104 | 0.0343 | 422.64   | 422.64   | 1,355 | 46      |  |  |   |
| 2105 | 0.0330 | 328.23   | 328.23   | 1,053 | 35      |  |  |   |
| 2106 | 0.0317 | 233.82   | 233.82   | 750   | 24      |  |  |   |
| 2107 | 0.0305 | 139.41   | 139.41   | 447   | 14      |  |  |   |
| 2108 | 0.0293 | 45.00    | 45.00    | 144   | 4       |  |  |   |
| 合計   |        |          |          |       | 242,561 |  |  | 0 |

$$B = \sum_{t=1}^Y \frac{V_t \times @}{(1+i)^t}$$

Y: 評価期間

100

Vt主: 人工林 主伐量 t年後における伐採材積(m3)  
出典:十勝森林計画区収穫予想表

|      |                 |
|------|-----------------|
| カラマツ | 0.00 ~ 5,002.46 |
| トドマツ | 0.00 ~ 5,780.97 |
| トドマツ | 0.00 ~ 11.42    |
| 0    |                 |
| 0    |                 |

@: 人工林 主伐材 木材市場価格(円/m3)  
出典:十勝西部森林管理署大雪山支署の素材の基準価格(平成29年11月~平成30年10月の平均値)

|      |        |
|------|--------|
| カラマツ | 11,000 |
| トドマツ | 11,700 |
| トドマツ | 11,700 |
| 0    |        |
| 0    |        |

i: 社会的割引率(0.04)

(複層林) (天I)

| 年度   | 社会的割引率 | カラマツ      |        | トドマツ      |        | トドマツ      |        | 事業効果材積 m3 | 効果額 千円 | 事業効果材積 m3 | 効果額 千円 |
|------|--------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|
|      |        | 事業効果材積 m3 | 効果額 千円 | 事業効果材積 m3 | 効果額 千円 | 事業効果材積 m3 | 効果額 千円 |           |        |           |        |
| 2008 | 1.4802 |           |        |           |        |           |        |           |        |           |        |
| 2009 | 1.4233 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2010 | 1.3686 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2011 | 1.3159 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2012 | 1.2653 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2013 | 1.2167 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2014 | 1.1699 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2015 | 1.1249 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2016 | 1.0816 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2017 | 1.0400 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2018 | 1.0000 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2019 | 0.9615 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2020 | 0.9246 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2021 | 0.8890 | 527.75    | 5,805  | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2022 | 0.8548 | 527.75    | 5,805  | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2023 | 0.8219 | 527.75    | 5,805  | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2024 | 0.7903 | 527.75    | 5,805  | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2025 | 0.7599 | 527.75    | 5,805  | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2026 | 0.7307 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2027 | 0.7026 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2028 | 0.6756 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2029 | 0.6496 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2030 | 0.6246 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2031 | 0.6006 | 1,139.89  | 12,539 | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2032 | 0.5775 | 1,139.89  | 12,539 | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2033 | 0.5553 | 1,139.89  | 12,539 | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2034 | 0.5339 | 1,139.89  | 12,539 | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2035 | 0.5134 | 1,139.89  | 12,539 | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2036 | 0.4936 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2037 | 0.4746 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2038 | 0.4564 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2039 | 0.4388 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2040 | 0.4220 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2041 | 0.4057 | 2,063.66  | 22,700 | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2042 | 0.3901 | 2,063.66  | 22,700 | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2043 | 0.3751 | 2,063.66  | 22,700 | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2044 | 0.3607 | 2,063.66  | 22,700 | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2045 | 0.3468 | 2,063.66  | 22,700 | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2046 | 0.3335 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2047 | 0.3207 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2048 | 0.3083 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2049 | 0.2965 | 5,002.46  | 55,027 | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2050 | 0.2851 | 5,002.46  | 55,027 | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2051 | 0.2741 | 5,002.46  | 55,027 | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2052 | 0.2636 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2053 | 0.2534 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2054 | 0.2437 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2055 | 0.2343 | 1,372.21  | 15,094 | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2056 | 0.2253 | 1,372.21  | 15,094 | 2,610.01  | 30,537 | 0.00      | 0      |           |        |           |        |
| 2057 | 0.2166 | 1,372.21  | 15,094 | 2,610.01  | 30,537 | 0.00      | 0      |           |        |           |        |
| 2058 | 0.2083 | 1,503.53  | 16,539 | 2,610.01  | 30,537 | 0.00      | 0      |           |        |           |        |
| 2059 | 0.2003 | 1,503.53  | 16,539 | 2,610.01  | 30,537 | 0.00      | 0      |           |        |           |        |
| 2060 | 0.1926 | 1,503.53  | 16,539 | 2,610.01  | 30,537 | 0.00      | 0      |           |        |           |        |
| 2061 | 0.1852 | 1,503.53  | 16,539 | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2062 | 0.1780 | 1,503.53  | 16,539 | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2063 | 0.1712 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2064 | 0.1646 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2065 | 0.1583 | 0.00      | 0      | 0.00      | 0      | 0.00      | 0      |           |        |           |        |
| 2066 | 0.1522 | 0.00      | 0      | 3,449.06  | 40,354 | 0.00      | 0      |           |        |           |        |



|      |        |      |   |          |        |       |     |  |  |  |  |
|------|--------|------|---|----------|--------|-------|-----|--|--|--|--|
| 2067 | 0.1463 | 0.00 | 0 | 3,449.06 | 40,354 | 0.00  | 0   |  |  |  |  |
| 2068 | 0.1407 | 0.00 | 0 | 3,449.06 | 40,354 | 0.00  | 0   |  |  |  |  |
| 2069 | 0.1353 | 0.00 | 0 | 3,449.06 | 40,354 | 0.00  | 0   |  |  |  |  |
| 2070 | 0.1301 | 0.00 | 0 | 3,449.06 | 40,354 | 0.00  | 0   |  |  |  |  |
| 2071 | 0.1251 | 0.00 | 0 | 0.00     | 0      | 0.00  | 0   |  |  |  |  |
| 2072 | 0.1203 | 0.00 | 0 | 0.00     | 0      | 0.00  | 0   |  |  |  |  |
| 2073 | 0.1157 | 0.00 | 0 | 0.00     | 0      | 0.00  | 0   |  |  |  |  |
| 2074 | 0.1112 | 0.00 | 0 | 0.00     | 0      | 0.00  | 0   |  |  |  |  |
| 2075 | 0.1069 | 0.00 | 0 | 0.00     | 0      | 0.00  | 0   |  |  |  |  |
| 2076 | 0.1028 | 0.00 | 0 | 4,284.08 | 50,124 | 0.00  | 0   |  |  |  |  |
| 2077 | 0.0989 | 0.00 | 0 | 4,284.08 | 50,124 | 0.00  | 0   |  |  |  |  |
| 2078 | 0.0951 | 0.00 | 0 | 4,284.08 | 50,124 | 0.00  | 0   |  |  |  |  |
| 2079 | 0.0914 | 0.00 | 0 | 4,284.08 | 50,124 | 0.00  | 0   |  |  |  |  |
| 2080 | 0.0879 | 0.00 | 0 | 4,284.08 | 50,124 | 0.00  | 0   |  |  |  |  |
| 2081 | 0.0845 | 0.00 | 0 | 0.00     | 0      | 0.00  | 0   |  |  |  |  |
| 2082 | 0.0813 | 0.00 | 0 | 0.00     | 0      | 0.00  | 0   |  |  |  |  |
| 2083 | 0.0781 | 0.00 | 0 | 0.00     | 0      | 0.00  | 0   |  |  |  |  |
| 2084 | 0.0751 | 0.00 | 0 | 0.00     | 0      | 0.00  | 0   |  |  |  |  |
| 2085 | 0.0722 | 0.00 | 0 | 0.00     | 0      | 0.00  | 0   |  |  |  |  |
| 2086 | 0.0695 | 0.00 | 0 | 0.00     | 0      | 0.00  | 0   |  |  |  |  |
| 2087 | 0.0668 | 0.00 | 0 | 0.00     | 0      | 0.00  | 0   |  |  |  |  |
| 2088 | 0.0642 | 0.00 | 0 | 0.00     | 0      | 0.00  | 0   |  |  |  |  |
| 2089 | 0.0617 | 0.00 | 0 | 0.00     | 0      | 0.00  | 0   |  |  |  |  |
| 2090 | 0.0594 | 0.00 | 0 | 0.00     | 0      | 0.00  | 0   |  |  |  |  |
| 2091 | 0.0571 | 0.00 | 0 | 0.00     | 0      | 0.00  | 0   |  |  |  |  |
| 2092 | 0.0549 | 0.00 | 0 | 0.00     | 0      | 0.00  | 0   |  |  |  |  |
| 2093 | 0.0528 | 0.00 | 0 | 0.00     | 0      | 0.00  | 0   |  |  |  |  |
| 2094 | 0.0508 | 0.00 | 0 | 0.00     | 0      | 0.00  | 0   |  |  |  |  |
| 2095 | 0.0488 | 0.00 | 0 | 5,780.97 | 67,637 | 0.00  | 0   |  |  |  |  |
| 2096 | 0.0469 | 0.00 | 0 | 5,780.97 | 67,637 | 0.00  | 0   |  |  |  |  |
| 2097 | 0.0451 | 0.00 | 0 | 5,780.97 | 67,637 | 0.00  | 0   |  |  |  |  |
| 2098 | 0.0434 | 0.00 | 0 | 5,780.97 | 67,637 | 0.00  | 0   |  |  |  |  |
| 2099 | 0.0417 | 0.00 | 0 | 0.00     | 0      | 0.00  | 0   |  |  |  |  |
| 2100 | 0.0401 | 0.00 | 0 | 0.00     | 0      | 0.00  | 0   |  |  |  |  |
| 2101 | 0.0386 | 0.00 | 0 | 0.00     | 0      | 0.00  | 0   |  |  |  |  |
| 2102 | 0.0371 | 0.00 | 0 | 5,390.43 | 63,068 | 0.00  | 0   |  |  |  |  |
| 2103 | 0.0357 | 0.00 | 0 | 5,390.43 | 63,068 | 0.00  | 0   |  |  |  |  |
| 2104 | 0.0343 | 0.00 | 0 | 5,390.43 | 63,068 | 0.00  | 0   |  |  |  |  |
| 2105 | 0.0330 | 0.00 | 0 | 5,390.43 | 63,068 | 0.00  | 0   |  |  |  |  |
| 2106 | 0.0317 | 0.00 | 0 | 5,390.43 | 63,068 | 0.00  | 0   |  |  |  |  |
| 2107 | 0.0305 | 0.00 | 0 | 5,390.43 | 63,068 | 0.00  | 0   |  |  |  |  |
| 2108 | 0.0293 | 0.00 | 0 | 502.44   | 5,879  | 11.42 | 134 |  |  |  |  |
| 合計   |        |      |   |          |        |       |     |  |  |  |  |

| 年度   | 社会的割引率 | 合計     |          |
|------|--------|--------|----------|
|      |        | 効果額 千円 | 現在価値化 千円 |
| 2008 | 1.4802 |        |          |
| 2009 | 1.4233 | 0      | 0        |
| 2010 | 1.3686 | 0      | 0        |
| 2011 | 1.3159 | 0      | 0        |
| 2012 | 1.2653 | 0      | 0        |
| 2013 | 1.2167 | 0      | 0        |
| 2014 | 1.1699 | 0      | 0        |
| 2015 | 1.1249 | 0      | 0        |
| 2016 | 1.0816 | 0      | 0        |
| 2017 | 1.0400 | 0      | 0        |
| 2018 | 1.0000 | 0      | 0        |
| 2019 | 0.9615 | 0      | 0        |
| 2020 | 0.9246 | 0      | 0        |
| 2021 | 0.8890 | 5,805  | 5,161    |
| 2022 | 0.8548 | 5,805  | 4,962    |
| 2023 | 0.8219 | 5,805  | 4,771    |
| 2024 | 0.7903 | 5,805  | 4,588    |
| 2025 | 0.7599 | 5,805  | 4,411    |
| 2026 | 0.7307 | 0      | 0        |
| 2027 | 0.7026 | 0      | 0        |
| 2028 | 0.6756 | 0      | 0        |
| 2029 | 0.6496 | 0      | 0        |
| 2030 | 0.6246 | 0      | 0        |
| 2031 | 0.6006 | 12,539 | 7,531    |
| 2032 | 0.5775 | 12,539 | 7,241    |
| 2033 | 0.5553 | 12,539 | 6,963    |
| 2034 | 0.5339 | 12,539 | 6,695    |
| 2035 | 0.5134 | 12,539 | 6,438    |
| 2036 | 0.4936 | 0      | 0        |
| 2037 | 0.4746 | 0      | 0        |
| 2038 | 0.4564 | 0      | 0        |
| 2039 | 0.4388 | 0      | 0        |
| 2040 | 0.4220 | 0      | 0        |
| 2041 | 0.4057 | 22,700 | 9,209    |
| 2042 | 0.3901 | 22,700 | 8,855    |
| 2043 | 0.3751 | 22,700 | 8,515    |
| 2044 | 0.3607 | 22,700 | 8,188    |
| 2045 | 0.3468 | 22,700 | 7,872    |
| 2046 | 0.3335 | 0      | 0        |
| 2047 | 0.3207 | 0      | 0        |
| 2048 | 0.3083 | 0      | 0        |
| 2049 | 0.2965 | 55,027 | 16,316   |

|      |        |        |         |
|------|--------|--------|---------|
| 2050 | 0.2851 | 55,027 | 15,688  |
| 2051 | 0.2741 | 55,027 | 15,083  |
| 2052 | 0.2636 | 0      | 0       |
| 2053 | 0.2534 | 0      | 0       |
| 2054 | 0.2437 | 0      | 0       |
| 2055 | 0.2343 | 15,094 | 3,537   |
| 2056 | 0.2253 | 45,631 | 10,281  |
| 2057 | 0.2166 | 45,631 | 9,884   |
| 2058 | 0.2083 | 47,076 | 9,806   |
| 2059 | 0.2003 | 47,076 | 9,429   |
| 2060 | 0.1926 | 47,076 | 9,067   |
| 2061 | 0.1852 | 16,539 | 3,063   |
| 2062 | 0.1780 | 16,539 | 2,944   |
| 2063 | 0.1712 | 0      | 0       |
| 2064 | 0.1646 | 0      | 0       |
| 2065 | 0.1583 | 0      | 0       |
| 2066 | 0.1522 | 40,354 | 6,142   |
| 2067 | 0.1463 | 40,354 | 5,904   |
| 2068 | 0.1407 | 40,354 | 5,678   |
| 2069 | 0.1353 | 40,354 | 5,460   |
| 2070 | 0.1301 | 40,354 | 5,250   |
| 2071 | 0.1251 | 0      | 0       |
| 2072 | 0.1203 | 0      | 0       |
| 2073 | 0.1157 | 0      | 0       |
| 2074 | 0.1112 | 0      | 0       |
| 2075 | 0.1069 | 0      | 0       |
| 2076 | 0.1028 | 50,124 | 5,153   |
| 2077 | 0.0989 | 50,124 | 4,957   |
| 2078 | 0.0951 | 50,124 | 4,767   |
| 2079 | 0.0914 | 50,124 | 4,581   |
| 2080 | 0.0879 | 50,124 | 4,406   |
| 2081 | 0.0845 | 0      | 0       |
| 2082 | 0.0813 | 0      | 0       |
| 2083 | 0.0781 | 0      | 0       |
| 2084 | 0.0751 | 0      | 0       |
| 2085 | 0.0722 | 0      | 0       |
| 2086 | 0.0695 | 0      | 0       |
| 2087 | 0.0668 | 0      | 0       |
| 2088 | 0.0642 | 0      | 0       |
| 2089 | 0.0617 | 0      | 0       |
| 2090 | 0.0594 | 0      | 0       |
| 2091 | 0.0571 | 0      | 0       |
| 2092 | 0.0549 | 0      | 0       |
| 2093 | 0.0528 | 0      | 0       |
| 2094 | 0.0508 | 0      | 0       |
| 2095 | 0.0488 | 67,637 | 3,301   |
| 2096 | 0.0469 | 67,637 | 3,172   |
| 2097 | 0.0451 | 67,637 | 3,050   |
| 2098 | 0.0434 | 67,637 | 2,935   |
| 2099 | 0.0417 | 0      | 0       |
| 2100 | 0.0401 | 0      | 0       |
| 2101 | 0.0386 | 0      | 0       |
| 2102 | 0.0371 | 63,068 | 2,340   |
| 2103 | 0.0357 | 63,068 | 2,252   |
| 2104 | 0.0343 | 63,068 | 2,163   |
| 2105 | 0.0330 | 63,068 | 2,081   |
| 2106 | 0.0317 | 63,068 | 1,999   |
| 2107 | 0.0305 | 63,068 | 1,924   |
| 2108 | 0.0293 | 6,013  | 176     |
| 合計   |        |        | 284,189 |

## 便 益 集 計 表

(路網集計分)

事業名：森林環境保全整備事業

都道府県名：北海道

施行箇所：十勝森林計画区(十勝西部森林管理署東大雪支署)

(単位:千円)

| 大 区 分       | 中 区 分       | 評 価 額     | 備 考 |
|-------------|-------------|-----------|-----|
| 木材生産等便益     | 木材生産等経費縮減便益 | 176,293   |     |
|             | 木材利用増進便益    | 597,999   |     |
|             | 木材生産確保・増進便益 | 268,575   |     |
| 森林整備経費縮減等便益 | 造林作業経費縮減便益  | 255       |     |
|             | 森林管理等経費縮減便益 | 45,998    |     |
| 総 便 益 (B)   |             | 1,089,120 |     |
| 総 費 用 (C)   |             | 841,940   | 千円  |

(2109林班林業専用道開設 外)

(注)便益算定方法は代表路線を示しています。



|      |        |        | 合計     |          |
|------|--------|--------|--------|----------|
| 年度   | 社会的割引率 | t/T    | 効果額 千円 | 現在価値化 千円 |
| 2008 | 1.4802 |        |        |          |
| 2009 | 1.4233 | 0.3333 | 0      | 0        |
| 2010 | 1.3686 | 0.6667 | 0      | 0        |
| 2011 | 1.3159 | 1.0000 | 0      | 0        |
| 2012 | 1.2653 | 1.0000 | 0      | 0        |
| 2013 | 1.2167 | 1.0000 | 0      | 0        |
| 2014 | 1.1699 | 1.0000 | 0      | 0        |
| 2015 | 1.1249 | 1.0000 | 0      | 0        |
| 2016 | 1.0816 | 1.0000 | 0      | 0        |
| 2017 | 1.0400 | 1.0000 | 0      | 0        |
| 2018 | 1.0000 | 1.0000 | 0      | 0        |
| 2019 | 0.9615 | 1.0000 | 0      | 0        |
| 2020 | 0.9246 | 1.0000 | 0      | 0        |
| 2021 | 0.8890 | 1.0000 | 0      | 0        |
| 2022 | 0.8548 | 1.0000 | 0      | 0        |
| 2023 | 0.8219 | 1.0000 | 0      | 0        |
| 2024 | 0.7903 | 1.0000 | 0      | 0        |
| 2025 | 0.7599 | 1.0000 | 0      | 0        |
| 2026 | 0.7307 | 1.0000 | 0      | 0        |
| 2027 | 0.7026 | 1.0000 | 0      | 0        |
| 2028 | 0.6756 | 1.0000 | 0      | 0        |
| 2029 | 0.6496 | 1.0000 | 0      | 0        |
| 2030 | 0.6246 | 1.0000 | 0      | 0        |
| 2031 | 0.6006 | 1.0000 | 0      | 0        |
| 2032 | 0.5775 | 1.0000 | 0      | 0        |
| 2033 | 0.5553 | 1.0000 | 0      | 0        |
| 2034 | 0.5339 | 1.0000 | 0      | 0        |
| 2035 | 0.5134 | 1.0000 | 0      | 0        |
| 2036 | 0.4936 | 1.0000 | 973    | 480      |
| 2037 | 0.4746 | 1.0000 | 0      | 0        |
| 2038 | 0.4564 | 1.0000 | 0      | 0        |
| 2039 | 0.4388 | 1.0000 | 6,812  | 2,989    |
| 2040 | 0.4220 | 1.0000 | 0      | 0        |
| 2041 | 0.4057 | 1.0000 | 0      | 0        |
| 2042 | 0.3901 | 1.0000 | 0      | 0        |
| 2043 | 0.3751 | 1.0000 | 0      | 0        |
| 2044 | 0.3607 | 1.0000 | 13,372 | 4,823    |
| 2045 | 0.3468 | 1.0000 | 0      | 0        |
| 2046 | 0.3335 | 1.0000 | 1,057  | 353      |
| 2047 | 0.3207 | 1.0000 | 0      | 0        |
| 2048 | 0.3083 | 1.0000 | 0      | 0        |
| 2049 | 0.2965 | 1.0000 | 0      | 0        |
| 2050 | 0.2851 | 1.0000 | 9,447  | 2,693    |
| 2051 | 0.2741 | 1.0000 | 0      | 0        |
| 合計   |        |        |        | 11,338   |



|      |        | 合計     |          |
|------|--------|--------|----------|
| 年度   | 社会的割引率 | 効果額 千円 | 現在価値化 千円 |
| 2008 | 1.4802 |        |          |
| 2009 | 1.4233 | 0      | 0        |
| 2010 | 1.3686 | 0      | 0        |
| 2011 | 1.3159 | 6,557  | 8,628    |
| 2012 | 1.2653 | 0      | 0        |
| 2013 | 1.2167 | 7,285  | 8,864    |
| 2014 | 1.1699 | 4,073  | 4,765    |
| 2015 | 1.1249 | 0      | 0        |
| 2016 | 1.0816 | 0      | 0        |
| 2017 | 1.0400 | 5,685  | 5,912    |
| 2018 | 1.0000 | 0      | 0        |
| 2019 | 0.9615 | 0      | 0        |
| 2020 | 0.9246 | 0      | 0        |
| 2021 | 0.8890 | 0      | 0        |
| 2022 | 0.8548 | 0      | 0        |
| 2023 | 0.8219 | 0      | 0        |
| 2024 | 0.7903 | 0      | 0        |
| 2025 | 0.7599 | 10,296 | 7,824    |
| 2026 | 0.7307 | 0      | 0        |
| 2027 | 0.7026 | 814    | 572      |
| 2028 | 0.6756 | 0      | 0        |
| 2029 | 0.6496 | 0      | 0        |
| 2030 | 0.6246 | 6,722  | 4,199    |
| 2031 | 0.6006 | 0      | 0        |
| 2032 | 0.5775 | 0      | 0        |
| 2033 | 0.5553 | 11,511 | 6,392    |
| 2034 | 0.5339 | 0      | 0        |
| 2035 | 0.5134 | 0      | 0        |
| 2036 | 0.4936 | 117    | 58       |
| 2037 | 0.4746 | 0      | 0        |
| 2038 | 0.4564 | 0      | 0        |
| 2039 | 0.4388 | 0      | 0        |
| 2040 | 0.4220 | 0      | 0        |
| 2041 | 0.4057 | 0      | 0        |
| 2042 | 0.3901 | 0      | 0        |
| 2043 | 0.3751 | 0      | 0        |
| 2044 | 0.3607 | 0      | 0        |
| 2045 | 0.3468 | 0      | 0        |
| 2046 | 0.3335 | 0      | 0        |
| 2047 | 0.3207 | 0      | 0        |
| 2048 | 0.3083 | 0      | 0        |
| 2049 | 0.2965 | 0      | 0        |
| 2050 | 0.2851 | 0      | 0        |
| 2051 | 0.2741 | 0      | 0        |
| 合計   |        |        | 47,214   |

$$B = \sum_{t=1}^T \frac{t \times (T_0 - T_t) \times M \times @}{T \times (1+i)^t} \times 60 + \sum_{t=T+1}^Y \frac{(T_0 - T_t) \times M \times @}{(1+i)^t} \times 60$$

|     |  |       |
|-----|--|-------|
| T:  | 整備期間(年)  | 3     |
| Y:  | 評価期間   | 43    |
| T0: | 林道を整備する前における森林への往復所要時間(分)  | 196   |
| Tt: | 林道を整備した場合の森林への往復所要時間(分)  | 138   |
| M:  | 管理等の延べ人口数(人/年)   | 55    |
| @:  | 出典: 森林調査10回・月×3人×1ヶ月+森林巡視1回・月×2人×8ヶ月+保全管理等1回・月×1人×9ヶ月<br>賃金単価(円/h・人) | 2,038 |
| i:  | 出典: 平成30年度森林保全整備事業労務単価表(普通作業員)<br>社会的割引率(0.04)                       |       |
| 60: | 単位合わせのための調整値   |       |

| 年度   | 社会的割引率 | t/T    | 効果額 千円 | 現在価値化 千円 |
|------|--------|--------|--------|----------|
| 2008 | 1.4802 |        |        |          |
| 2009 | 1.4233 | 0.3333 | 36     | 51       |
| 2010 | 1.3686 | 0.6667 | 72     | 99       |
| 2011 | 1.3159 | 1.0000 | 108    | 142      |
| 2012 | 1.2653 | 1.0000 | 108    | 137      |
| 2013 | 1.2167 | 1.0000 | 108    | 131      |
| 2014 | 1.1699 | 1.0000 | 108    | 126      |
| 2015 | 1.1249 | 1.0000 | 108    | 121      |
| 2016 | 1.0816 | 1.0000 | 108    | 117      |
| 2017 | 1.0400 | 1.0000 | 108    | 112      |
| 2018 | 1.0000 | 1.0000 | 108    | 108      |
| 2019 | 0.9615 | 1.0000 | 108    | 104      |
| 2020 | 0.9246 | 1.0000 | 108    | 100      |
| 2021 | 0.8890 | 1.0000 | 108    | 96       |
| 2022 | 0.8548 | 1.0000 | 108    | 92       |
| 2023 | 0.8219 | 1.0000 | 108    | 89       |
| 2024 | 0.7903 | 1.0000 | 108    | 85       |
| 2025 | 0.7599 | 1.0000 | 108    | 82       |
| 2026 | 0.7307 | 1.0000 | 108    | 79       |
| 2027 | 0.7026 | 1.0000 | 108    | 76       |
| 2028 | 0.6756 | 1.0000 | 108    | 73       |
| 2029 | 0.6496 | 1.0000 | 108    | 70       |
| 2030 | 0.6246 | 1.0000 | 108    | 67       |
| 2031 | 0.6006 | 1.0000 | 108    | 65       |
| 2032 | 0.5775 | 1.0000 | 108    | 62       |
| 2033 | 0.5553 | 1.0000 | 108    | 60       |
| 2034 | 0.5339 | 1.0000 | 108    | 58       |
| 2035 | 0.5134 | 1.0000 | 108    | 55       |
| 2036 | 0.4936 | 1.0000 | 108    | 53       |
| 2037 | 0.4746 | 1.0000 | 108    | 51       |
| 2038 | 0.4564 | 1.0000 | 108    | 49       |
| 2039 | 0.4388 | 1.0000 | 108    | 47       |
| 2040 | 0.4220 | 1.0000 | 108    | 46       |
| 2041 | 0.4057 | 1.0000 | 108    | 44       |
| 2042 | 0.3901 | 1.0000 | 108    | 42       |
| 2043 | 0.3751 | 1.0000 | 108    | 41       |
| 2044 | 0.3607 | 1.0000 | 108    | 39       |
| 2045 | 0.3468 | 1.0000 | 108    | 37       |
| 2046 | 0.3335 | 1.0000 | 108    | 36       |
| 2047 | 0.3207 | 1.0000 | 108    | 35       |
| 2048 | 0.3083 | 1.0000 | 108    | 33       |
| 2049 | 0.2965 | 1.0000 | 108    | 32       |
| 2050 | 0.2851 | 1.0000 | 108    | 31       |
| 2051 | 0.2741 | 1.0000 | 108    | 30       |
| 合計   |        |        |        | 3,103    |