

# 1. 森林整備

○ 適切な森林施業により、公益的機能の高度発揮が期待される森林が整備された。

## 人工造林

植栽樹種:トドマツ

整備前 (H21)



整備後 (H21)



現 況 (H27)



## 下刈

植栽樹種:トドマツ

整備前 (H21)



整備後 (H21)



現 況 (H27)



## 間伐(初回間伐)

樹種:トドマツ

(間伐時林齢:26年生)

整備前 (H21)



整備後 (H21)



現 況 (H27)



## 2. 森林管理道整備

- 林道整備により森林へのアクセスが容易となり、間伐等の森林施業が促進された。
- 災害時(高潮や津波等)における迂回路(避難路)としての機能を有している。

### 整備状況

#### くろ いわ 【黒岩線】



開設前(H18)



開設後(H18)

#### さかえ はま 【栄浜線】



開設前(H18)



開設後(H18)

### 利用状況(間伐材の搬出)

(※森林施業の促進状況については、「1. 森林整備」の添付写真参照)

#### 【黒岩線】



#### 【栄浜線】



# 事業費集計表（森林整備事業）

事業名：森林環境保全整備事業（森林整備）

北海道（八雲町）

地域（地区）名：八雲町

（単位：千円）

| 年度  | 事業費     |          |         | 年度  | 事業費     |          |        |
|-----|---------|----------|---------|-----|---------|----------|--------|
|     | 事業費     | 割引率      | 現在価値額   |     | 事業費     | 割引率      | 現在価値額  |
| H16 |         | × 1.5395 |         | H42 | 106,732 | × 0.5553 | 59,268 |
| H17 | 241,285 | × 1.4802 | 357,150 | H43 | 31,695  | × 0.5339 | 16,922 |
| H18 | 207,489 | × 1.4233 | 295,319 | H44 | 123,164 | × 0.5134 | 63,232 |
| H19 | 198,415 | × 1.3686 | 271,551 | H45 | 70,720  | × 0.4936 | 34,907 |
| H20 | 254,009 | × 1.3159 | 334,250 | H46 | 13,068  | × 0.4746 | 6,202  |
| H21 | 245,365 | × 1.2653 | 310,460 | H47 | 173,342 | × 0.4564 | 79,113 |
| H22 | 42,583  | × 1.2167 | 51,811  | H48 | 14,224  | × 0.4388 | 6,241  |
| H23 | 73,287  | × 1.1699 | 85,738  | H49 | 19,959  | × 0.4220 | 8,423  |
| H24 | 53,902  | × 1.1249 | 60,634  | H50 | 14,536  | × 0.4057 | 5,897  |
| H25 | 256,664 | × 1.0816 | 277,608 | H51 | 82,860  | × 0.3901 | 32,324 |
| H26 | 10,545  | × 1.0400 | 10,967  | H52 | 33,461  | × 0.3751 | 12,551 |
| H27 | 24,668  | × 1.0000 | 24,668  | H53 | 63,518  | × 0.3607 | 22,911 |
| H28 | 95,463  | × 0.9615 | 91,788  | H54 | 10,624  | × 0.3468 | 3,684  |
| H29 | 475,224 | × 0.9246 | 439,392 | H55 | 170,357 | × 0.3335 | 56,814 |
| H30 | 88,298  | × 0.8890 | 78,497  | H56 | 10,890  | × 0.3207 | 3,492  |
| H31 | 130,138 | × 0.8548 | 111,242 | H57 | 21,115  | × 0.3083 | 6,510  |
| H32 | 64,643  | × 0.8219 | 53,130  | H58 | 13,356  | × 0.2965 | 3,960  |
| H33 | 283,710 | × 0.7903 | 224,216 | H59 | 16,102  | × 0.2851 | 4,591  |
| H34 | 97,316  | × 0.7599 | 73,950  | H60 | 115,735 | × 0.2741 | 31,723 |
| H35 | 51,083  | × 0.7307 | 37,326  | H61 | 50,643  | × 0.2636 | 13,349 |
| H36 | 90,592  | × 0.7026 | 63,650  | H62 | 18,917  | × 0.2534 | 4,794  |
| H37 | 46,242  | × 0.6756 | 31,241  | H63 | 11,171  | × 0.2437 | 2,722  |
| H38 | 16,569  | × 0.6496 | 10,763  | H64 | 9,356   | × 0.2343 | 2,192  |
| H39 | 196,404 | × 0.6246 | 122,674 | H65 | 4,259   | × 0.2253 | 960    |
| H40 | 15,205  | × 0.6006 | 9,132   | H66 |         | × 0.2166 |        |
| H41 | 58,600  | × 0.5775 | 33,842  | H67 |         | × 0.2083 |        |

# 事業費集計表（森林整備事業）

事業名：森林環境保全整備事業（森林整備）

北海道（八雲町）

地域（地区）名：八雲町

（単位：千円）

| 年度  | 事業費    |         |       | 年度   | 事業費 |         |           |
|-----|--------|---------|-------|------|-----|---------|-----------|
|     | 事業費    | 割引率     | 現在価値額 |      | 事業費 | 割引率     | 現在価値額     |
| H68 |        | ×0.2003 |       | H94  |     | ×0.0722 |           |
| H69 |        | ×0.1926 |       | H95  |     | ×0.0695 |           |
| H70 |        | ×0.1852 |       | H96  |     | ×0.0668 |           |
| H71 |        | ×0.1780 |       | H97  |     | ×0.0642 |           |
| H72 |        | ×0.1712 |       | H98  |     | ×0.0617 |           |
| H73 |        | ×0.1646 |       | H99  |     | ×0.0594 |           |
| H74 |        | ×0.1583 |       | H100 |     | ×0.0571 |           |
| H75 | 31,109 | ×0.1522 | 4,735 |      |     |         |           |
| H76 | 6,063  | ×0.1463 | 887   |      |     |         |           |
| H77 | 4,976  | ×0.1407 | 700   |      |     |         |           |
| H78 | 2,621  | ×0.1353 | 355   |      |     |         |           |
| H79 | 3,878  | ×0.1301 | 505   |      |     |         |           |
| H80 | 1,873  | ×0.1251 | 234   |      |     |         |           |
| H81 |        | ×0.1203 |       |      |     |         |           |
| H82 |        | ×0.1157 |       |      |     |         |           |
| H83 |        | ×0.1112 |       |      |     |         |           |
| H84 |        | ×0.1069 |       |      |     |         |           |
| H85 | 31,109 | ×0.1028 | 3,198 |      |     |         |           |
| H86 | 6,063  | ×0.0989 | 600   |      |     |         |           |
| H87 | 4,976  | ×0.0951 | 473   |      |     |         |           |
| H88 | 2,621  | ×0.0914 | 240   |      |     |         |           |
| H89 | 3,878  | ×0.0879 | 341   |      |     |         |           |
| H90 | 1,873  | ×0.0845 | 158   |      |     |         |           |
| H91 |        | ×0.0813 |       |      |     |         |           |
| H92 |        | ×0.0781 |       |      |     |         |           |
| H93 |        | ×0.0751 |       | 合計   |     |         | 3,956,207 |

事業実施計画期間事業費：H17～H21 1,146,563 千円

総事業費：1,146,563 千円

千円

C= 3,956,207

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

|      |                                                   |                       |
|------|---------------------------------------------------|-----------------------|
| U:   | 治水ダムの単位雨量流出量当たりの年間減価償却費(円/㎡/sec)<br>出典:「ダム年鑑2015」 | 3,730,000             |
| f1:  | 事業実施前の流出係数<br>出典:「治山設計」(山口伊佐夫著,1979)              | 浸透能中 緩 要整備森林(疎林) 0.55 |
| f2:  | 事業実施後、T年経過後の流出係数<br>出典:「治山設計」(山口伊佐夫著,1979)        | 浸透能中 緩 整備済森林 0.45     |
| T:   | 事業実施後、流出係数が安定するのに必要な年数                            | 10                    |
| α:   | 100年確率時雨量(mm/h)<br>出典:北海道の大雨資料                    | 53                    |
| A:   | 事業対象区域面積(ha)                                      | 5.41 ~ 3,825.72       |
| 360: | 単位合わせのための調整値                                      |                       |
| Y:   | 評価期間                                              | 84                    |

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 | 事業効果面積   | 効果額     | 現在価値化   |
|------|--------|----------|----------|---------|---------|
| 2004 | 1.5395 |          |          |         |         |
| 2005 | 1.4802 | 1,755.11 | 175.51   | 9,638   | 14,266  |
| 2006 | 1.4233 | 1,992.43 | 374.75   | 20,579  | 29,290  |
| 2007 | 1.3686 | 2,367.24 | 611.48   | 33,579  | 45,956  |
| 2008 | 1.3159 | 2,475.10 | 858.99   | 47,170  | 62,071  |
| 2009 | 1.2653 | 3,825.72 | 1,241.56 | 68,179  | 86,267  |
| 2010 | 1.2167 | 3,825.72 | 1,624.13 | 89,188  | 108,515 |
| 2011 | 1.1699 | 3,825.72 | 2,006.70 | 110,196 | 128,918 |
| 2012 | 1.1249 | 3,825.72 | 2,389.28 | 131,205 | 147,593 |
| 2013 | 1.0816 | 3,825.72 | 2,771.85 | 152,213 | 164,634 |
| 2014 | 1.0400 | 3,825.72 | 3,154.42 | 173,222 | 180,151 |
| 2015 | 1.0000 | 3,825.72 | 3,361.48 | 184,592 | 184,592 |
| 2016 | 0.9615 | 3,825.72 | 3,544.81 | 194,660 | 187,166 |
| 2017 | 0.9246 | 3,825.72 | 3,690.66 | 202,669 | 187,388 |
| 2018 | 0.8890 | 3,825.72 | 3,825.72 | 210,086 | 186,766 |
| 2019 | 0.8548 | 3,825.72 | 3,825.72 | 210,086 | 179,582 |
| 2020 | 0.8219 | 3,772.60 | 3,772.60 | 207,169 | 170,272 |
| 2021 | 0.7903 | 3,772.60 | 3,772.60 | 207,169 | 163,726 |
| 2022 | 0.7599 | 3,761.16 | 3,761.16 | 206,540 | 156,950 |
| 2023 | 0.7307 | 3,761.16 | 3,761.16 | 206,540 | 150,919 |
| 2024 | 0.7026 | 3,761.16 | 3,761.16 | 206,540 | 145,115 |
| 2025 | 0.6756 | 3,755.28 | 3,755.28 | 206,217 | 139,320 |
| 2026 | 0.6496 | 3,755.28 | 3,755.28 | 206,217 | 133,959 |
| 2027 | 0.6246 | 3,755.28 | 3,755.28 | 206,217 | 128,803 |
| 2028 | 0.6006 | 3,755.28 | 3,755.28 | 206,217 | 123,854 |
| 2029 | 0.5775 | 3,755.28 | 3,755.28 | 206,217 | 119,090 |
| 2030 | 0.5553 | 3,465.40 | 3,465.40 | 190,299 | 105,673 |
| 2031 | 0.5339 | 3,465.40 | 3,465.40 | 190,299 | 101,601 |
| 2032 | 0.5134 | 3,465.40 | 3,465.40 | 190,299 | 97,700  |
| 2033 | 0.4936 | 3,461.16 | 3,461.16 | 190,066 | 93,817  |
| 2034 | 0.4746 | 3,461.16 | 3,461.16 | 190,066 | 90,205  |
| 2035 | 0.4564 | 3,461.16 | 3,461.16 | 190,066 | 86,746  |
| 2036 | 0.4388 | 3,461.16 | 3,461.16 | 190,066 | 83,401  |
| 2037 | 0.4220 | 2,604.51 | 2,604.51 | 143,024 | 60,356  |
| 2038 | 0.4057 | 2,604.51 | 2,604.51 | 143,024 | 58,025  |
| 2039 | 0.3901 | 2,604.51 | 2,604.51 | 143,024 | 55,794  |
| 2040 | 0.3751 | 2,534.93 | 2,534.93 | 139,203 | 52,215  |
| 2041 | 0.3607 | 1,767.51 | 1,767.51 | 97,061  | 35,010  |
| 2042 | 0.3468 | 1,767.51 | 1,767.51 | 97,061  | 33,661  |
| 2043 | 0.3335 | 1,515.67 | 1,515.67 | 83,232  | 27,758  |
| 2044 | 0.3207 | 1,515.67 | 1,515.67 | 83,232  | 26,693  |
| 2045 | 0.3083 | 1,397.77 | 1,397.77 | 76,757  | 23,664  |
| 2046 | 0.2965 | 1,318.90 | 1,318.90 | 72,426  | 21,474  |
| 2047 | 0.2851 | 1,318.90 | 1,318.90 | 72,426  | 20,649  |
| 2048 | 0.2741 | 1,318.90 | 1,318.90 | 72,426  | 19,852  |
| 2049 | 0.2636 | 1,318.90 | 1,318.90 | 72,426  | 19,091  |
| 2050 | 0.2534 | 1,318.90 | 1,318.90 | 72,426  | 18,353  |
| 2051 | 0.2437 | 1,318.90 | 1,318.90 | 72,426  | 17,650  |
| 2052 | 0.2343 | 1,318.90 | 1,318.90 | 72,426  | 16,969  |
| 2053 | 0.2253 | 1,318.90 | 1,318.90 | 72,426  | 16,318  |
| 2054 | 0.2166 | 1,259.44 | 1,259.44 | 69,161  | 14,980  |
| 2055 | 0.2083 | 1,253.45 | 1,253.45 | 68,832  | 14,338  |
| 2056 | 0.2003 | 1,249.04 | 1,249.04 | 68,590  | 13,739  |
| 2057 | 0.1926 | 1,241.45 | 1,241.45 | 68,173  | 13,130  |
| 2058 | 0.1852 | 1,224.91 | 1,224.91 | 67,265  | 12,457  |
| 2059 | 0.1780 | 1,222.91 | 1,222.91 | 67,155  | 11,954  |
| 2060 | 0.1712 | 1,222.91 | 1,222.91 | 67,155  | 11,497  |
| 2061 | 0.1646 | 1,222.91 | 1,222.91 | 67,155  | 11,054  |
| 2062 | 0.1583 | 1,222.91 | 1,222.91 | 67,155  | 10,631  |
| 2063 | 0.1522 | 751.17   | 751.17   | 41,250  | 6,278   |
| 2064 | 0.1463 | 541.41   | 541.41   | 29,731  | 4,350   |

|      |        |        |        |        |           |
|------|--------|--------|--------|--------|-----------|
| 2065 | 0.1407 | 451.94 | 451.94 | 24,818 | 3,492     |
| 2066 | 0.1353 | 375.11 | 375.11 | 20,599 | 2,787     |
| 2067 | 0.1301 | 303.92 | 303.92 | 16,689 | 2,171     |
| 2068 | 0.1251 | 236.50 | 236.50 | 12,987 | 1,625     |
| 2069 | 0.1203 | 145.90 | 145.90 | 8,012  | 964       |
| 2070 | 0.1157 | 145.90 | 145.90 | 8,012  | 927       |
| 2071 | 0.1112 | 145.90 | 145.90 | 8,012  | 891       |
| 2072 | 0.1069 | 145.90 | 145.90 | 8,012  | 856       |
| 2073 | 0.1028 | 145.90 | 145.90 | 8,012  | 824       |
| 2074 | 0.0989 | 145.90 | 145.90 | 8,012  | 792       |
| 2075 | 0.0951 | 145.90 | 145.90 | 8,012  | 762       |
| 2076 | 0.0914 | 145.90 | 145.90 | 8,012  | 732       |
| 2077 | 0.0879 | 145.90 | 145.90 | 8,012  | 704       |
| 2078 | 0.0845 | 145.90 | 145.90 | 8,012  | 677       |
| 2079 | 0.0813 | 145.90 | 145.90 | 8,012  | 651       |
| 2080 | 0.0781 | 145.90 | 145.90 | 8,012  | 626       |
| 2081 | 0.0751 | 145.90 | 145.90 | 8,012  | 602       |
| 2082 | 0.0722 | 145.90 | 145.90 | 8,012  | 578       |
| 2083 | 0.0695 | 145.90 | 145.90 | 8,012  | 557       |
| 2084 | 0.0668 | 56.06  | 56.06  | 3,078  | 206       |
| 2085 | 0.0642 | 38.55  | 38.55  | 2,117  | 136       |
| 2086 | 0.0617 | 24.18  | 24.18  | 1,328  | 82        |
| 2087 | 0.0594 | 16.61  | 16.61  | 912    | 54        |
| 2088 | 0.0571 | 5.41   | 5.41   | 297    | 17        |
| 合計   |        |        |        |        | 4,653,959 |

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

|        |                                                           |                 |
|--------|-----------------------------------------------------------|-----------------|
| A:     | 事業対象区域面積 (ha)                                             | 5.41 ~ 3,825.72 |
| P:     | 年間平均降雨量 (mm/年)<br>出典:「気象庁のアメダス資料」(過去10カ年平均 (H17~H26))     | 1,283           |
| 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            |
| T:     | 事業実施後、流出係数が安定するのに必要な年数                                    | 10              |
| U:     | 開発流量当りの利水ダム年間減価償却費 (円/m <sup>3</sup> /S)<br>出典:「ダム年鑑2015」 | 1,038,000,000   |
| Y:     | 評価期間                                                      | 84              |
| 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 | 事業効果面積   | 効果額    | 現在価値化  |
|-------|--------|----------|----------|--------|--------|
| 2,004 | 1.5395 |          |          |        |        |
| 2,005 | 1.4802 | 1,755.11 | 175.51   | 3,706  | 5,486  |
| 2,006 | 1.4233 | 1,992.43 | 374.75   | 7,913  | 11,263 |
| 2,007 | 1.3686 | 2,367.24 | 611.48   | 12,911 | 17,670 |
| 2,008 | 1.3159 | 2,475.10 | 858.99   | 18,138 | 23,868 |
| 2,009 | 1.2653 | 3,825.72 | 1,241.56 | 26,216 | 33,171 |
| 2,010 | 1.2167 | 3,825.72 | 1,624.13 | 34,294 | 41,726 |
| 2,011 | 1.1699 | 3,825.72 | 2,006.70 | 42,372 | 49,571 |
| 2,012 | 1.1249 | 3,825.72 | 2,389.28 | 50,450 | 56,751 |
| 2,013 | 1.0816 | 3,825.72 | 2,771.85 | 58,528 | 63,304 |
| 2,014 | 1.0400 | 3,825.72 | 3,154.42 | 66,606 | 69,270 |
| 2,015 | 1.0000 | 3,825.72 | 3,361.48 | 70,978 | 70,978 |
| 2,016 | 0.9615 | 3,825.72 | 3,544.81 | 74,849 | 71,967 |
| 2,017 | 0.9246 | 3,825.72 | 3,690.66 | 77,928 | 72,052 |
| 2,018 | 0.8890 | 3,825.72 | 3,825.72 | 80,780 | 71,813 |
| 2,019 | 0.8548 | 3,825.72 | 3,825.72 | 80,780 | 69,051 |
| 2,020 | 0.8219 | 3,772.60 | 3,772.60 | 79,658 | 65,471 |
| 2,021 | 0.7903 | 3,772.60 | 3,772.60 | 79,658 | 62,954 |
| 2,022 | 0.7599 | 3,761.16 | 3,761.16 | 79,417 | 60,349 |
| 2,023 | 0.7307 | 3,761.16 | 3,761.16 | 79,417 | 58,030 |
| 2,024 | 0.7026 | 3,761.16 | 3,761.16 | 79,417 | 55,798 |
| 2,025 | 0.6756 | 3,755.28 | 3,755.28 | 79,293 | 53,570 |
| 2,026 | 0.6496 | 3,755.28 | 3,755.28 | 79,293 | 51,509 |
| 2,027 | 0.6246 | 3,755.28 | 3,755.28 | 79,293 | 49,526 |
| 2,028 | 0.6006 | 3,755.28 | 3,755.28 | 79,293 | 47,623 |
| 2,029 | 0.5775 | 3,755.28 | 3,755.28 | 79,293 | 45,792 |
| 2,030 | 0.5553 | 3,465.40 | 3,465.40 | 73,172 | 40,632 |
| 2,031 | 0.5339 | 3,465.40 | 3,465.40 | 73,172 | 39,067 |
| 2,032 | 0.5134 | 3,465.40 | 3,465.40 | 73,172 | 37,567 |
| 2,033 | 0.4936 | 3,461.16 | 3,461.16 | 73,082 | 36,073 |
| 2,034 | 0.4746 | 3,461.16 | 3,461.16 | 73,082 | 34,685 |
| 2,035 | 0.4564 | 3,461.16 | 3,461.16 | 73,082 | 33,355 |
| 2,036 | 0.4388 | 3,461.16 | 3,461.16 | 73,082 | 32,068 |
| 2,037 | 0.4220 | 2,604.51 | 2,604.51 | 54,994 | 23,207 |
| 2,038 | 0.4057 | 2,604.51 | 2,604.51 | 54,994 | 22,311 |
| 2,039 | 0.3901 | 2,604.51 | 2,604.51 | 54,994 | 21,453 |
| 2,040 | 0.3751 | 2,534.93 | 2,534.93 | 53,525 | 20,077 |
| 2,041 | 0.3607 | 1,767.51 | 1,767.51 | 37,321 | 13,462 |
| 2,042 | 0.3468 | 1,767.51 | 1,767.51 | 37,321 | 12,943 |
| 2,043 | 0.3335 | 1,515.67 | 1,515.67 | 32,003 | 10,673 |
| 2,044 | 0.3207 | 1,515.67 | 1,515.67 | 32,003 | 10,263 |
| 2,045 | 0.3083 | 1,397.77 | 1,397.77 | 29,514 | 9,099  |
| 2,046 | 0.2965 | 1,318.90 | 1,318.90 | 27,849 | 8,257  |
| 2,047 | 0.2851 | 1,318.90 | 1,318.90 | 27,849 | 7,940  |
| 2,048 | 0.2741 | 1,318.90 | 1,318.90 | 27,849 | 7,633  |
| 2,049 | 0.2636 | 1,318.90 | 1,318.90 | 27,849 | 7,341  |
| 2,050 | 0.2534 | 1,318.90 | 1,318.90 | 27,849 | 7,057  |
| 2,051 | 0.2437 | 1,318.90 | 1,318.90 | 27,849 | 6,787  |
| 2,052 | 0.2343 | 1,318.90 | 1,318.90 | 27,849 | 6,525  |
| 2,053 | 0.2253 | 1,318.90 | 1,318.90 | 27,849 | 6,274  |
| 2,054 | 0.2166 | 1,259.44 | 1,259.44 | 26,593 | 5,760  |
| 2,055 | 0.2083 | 1,253.45 | 1,253.45 | 26,467 | 5,513  |
| 2,056 | 0.2003 | 1,249.04 | 1,249.04 | 26,373 | 5,283  |
| 2,057 | 0.1926 | 1,241.45 | 1,241.45 | 26,213 | 5,049  |
| 2,058 | 0.1852 | 1,224.91 | 1,224.91 | 25,864 | 4,790  |
| 2,059 | 0.1780 | 1,222.91 | 1,222.91 | 25,822 | 4,596  |
| 2,060 | 0.1712 | 1,222.91 | 1,222.91 | 25,822 | 4,421  |

|       |        |          |          |        |           |
|-------|--------|----------|----------|--------|-----------|
| 2.061 | 0.1646 | 1,222.91 | 1,222.91 | 25,822 | 4,250     |
| 2.062 | 0.1583 | 1,222.91 | 1,222.91 | 25,822 | 4,088     |
| 2.063 | 0.1522 | 751.17   | 751.17   | 15,861 | 2,414     |
| 2.064 | 0.1463 | 541.41   | 541.41   | 11,432 | 1,673     |
| 2.065 | 0.1407 | 451.94   | 451.94   | 9,543  | 1,343     |
| 2.066 | 0.1353 | 375.11   | 375.11   | 7,920  | 1,072     |
| 2.067 | 0.1301 | 303.92   | 303.92   | 6,417  | 835       |
| 2.068 | 0.1251 | 236.50   | 236.50   | 4,994  | 625       |
| 2.069 | 0.1203 | 145.90   | 145.90   | 3,081  | 371       |
| 2.070 | 0.1157 | 145.90   | 145.90   | 3,081  | 356       |
| 2.071 | 0.1112 | 145.90   | 145.90   | 3,081  | 343       |
| 2.072 | 0.1069 | 145.90   | 145.90   | 3,081  | 329       |
| 2.073 | 0.1028 | 145.90   | 145.90   | 3,081  | 317       |
| 2.074 | 0.0989 | 145.90   | 145.90   | 3,081  | 305       |
| 2.075 | 0.0951 | 145.90   | 145.90   | 3,081  | 293       |
| 2.076 | 0.0914 | 145.90   | 145.90   | 3,081  | 282       |
| 2.077 | 0.0879 | 145.90   | 145.90   | 3,081  | 271       |
| 2.078 | 0.0845 | 145.90   | 145.90   | 3,081  | 260       |
| 2.079 | 0.0813 | 145.90   | 145.90   | 3,081  | 250       |
| 2.080 | 0.0781 | 145.90   | 145.90   | 3,081  | 241       |
| 2.081 | 0.0751 | 145.90   | 145.90   | 3,081  | 231       |
| 2.082 | 0.0722 | 145.90   | 145.90   | 3,081  | 222       |
| 2.083 | 0.0695 | 145.90   | 145.90   | 3,081  | 214       |
| 2.084 | 0.0668 | 56.06    | 56.06    | 1,184  | 79        |
| 2.085 | 0.0642 | 38.55    | 38.55    | 814    | 52        |
| 2.086 | 0.0617 | 24.18    | 24.18    | 511    | 32        |
| 2.087 | 0.0594 | 16.61    | 16.61    | 351    | 21        |
| 2.088 | 0.0571 | 5.41     | 5.41     | 114    | 7         |
| 합계    |        |          |          |        | 1,789,500 |

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

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

|     |                                                                                                                               |                 |
|-----|-------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Qx: | 全貯留量のうち生活用水使用相当量                                                                                                              | 6.20 億          |
| Qy: | 全貯留量－Qx                                                                                                                       | 234.24 億        |
| A:  | 事業対象区域面積 (ha)                                                                                                                 | 5.41 ～ 3,825.72 |
| P:  | 年間平均降雨量 (mm/年)<br>出典:「気象庁のアメダス資料」(過去10カ年平均 (H17～H26))                                                                         | 1,283           |
| T:  | 事業実施後、貯留率が安定するのに必要な年数                                                                                                         | 10              |
| 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/m3)<br>出典:八雲町の上水道供給原価                                                                                        | 200.00          |
| Uy: | 単位当たりの雨水浄化費 (円/m3)                                                                                                            | 68.60           |
| u:  | 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」<br>単位当たりの水質浄化費 (U x と U y を用いて Q x と Q y で比例按分して算出) | 71.99           |
| Y:  | 評価期間                                                                                                                          | 84              |
| 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 | 事業効果面積   | 効果額     | 現在価値化   |
|------|--------|----------|----------|---------|---------|
| 2004 | 1.5395 |          |          |         |         |
| 2005 | 1.4802 | 1,755.11 | 175.51   | 8,105   | 11,997  |
| 2006 | 1.4233 | 1,992.43 | 374.75   | 17,307  | 24,633  |
| 2007 | 1.3686 | 2,367.24 | 611.48   | 28,239  | 38,648  |
| 2008 | 1.3159 | 2,475.10 | 858.99   | 39,670  | 52,202  |
| 2009 | 1.2653 | 3,825.72 | 1,241.56 | 57,338  | 72,550  |
| 2010 | 1.2167 | 3,825.72 | 1,624.13 | 75,006  | 91,260  |
| 2011 | 1.1699 | 3,825.72 | 2,006.70 | 92,674  | 108,419 |
| 2012 | 1.1249 | 3,825.72 | 2,389.28 | 110,342 | 124,124 |
| 2013 | 1.0816 | 3,825.72 | 2,771.85 | 128,009 | 138,455 |
| 2014 | 1.0400 | 3,825.72 | 3,154.42 | 145,677 | 151,504 |
| 2015 | 1.0000 | 3,825.72 | 3,361.48 | 155,240 | 155,240 |
| 2016 | 0.9615 | 3,825.72 | 3,544.81 | 163,706 | 157,403 |
| 2017 | 0.9246 | 3,825.72 | 3,690.66 | 170,442 | 157,591 |
| 2018 | 0.8890 | 3,825.72 | 3,825.72 | 176,679 | 157,068 |
| 2019 | 0.8548 | 3,825.72 | 3,825.72 | 176,679 | 151,025 |
| 2020 | 0.8219 | 3,772.60 | 3,772.60 | 174,226 | 143,196 |
| 2021 | 0.7903 | 3,772.60 | 3,772.60 | 174,226 | 137,691 |
| 2022 | 0.7599 | 3,761.16 | 3,761.16 | 173,698 | 131,993 |
| 2023 | 0.7307 | 3,761.16 | 3,761.16 | 173,698 | 126,921 |
| 2024 | 0.7026 | 3,761.16 | 3,761.16 | 173,698 | 122,040 |
| 2025 | 0.6756 | 3,755.28 | 3,755.28 | 173,426 | 117,167 |
| 2026 | 0.6496 | 3,755.28 | 3,755.28 | 173,426 | 112,658 |
| 2027 | 0.6246 | 3,755.28 | 3,755.28 | 173,426 | 108,322 |
| 2028 | 0.6006 | 3,755.28 | 3,755.28 | 173,426 | 104,160 |
| 2029 | 0.5775 | 3,755.28 | 3,755.28 | 173,426 | 100,154 |
| 2030 | 0.5553 | 3,465.40 | 3,465.40 | 160,039 | 88,870  |
| 2031 | 0.5339 | 3,465.40 | 3,465.40 | 160,039 | 85,445  |
| 2032 | 0.5134 | 3,465.40 | 3,465.40 | 160,039 | 82,164  |
| 2033 | 0.4936 | 3,461.16 | 3,461.16 | 159,843 | 78,899  |
| 2034 | 0.4746 | 3,461.16 | 3,461.16 | 159,843 | 75,861  |
| 2035 | 0.4564 | 3,461.16 | 3,461.16 | 159,843 | 72,952  |
| 2036 | 0.4388 | 3,461.16 | 3,461.16 | 159,843 | 70,139  |
| 2037 | 0.4220 | 2,604.51 | 2,604.51 | 120,281 | 50,759  |
| 2038 | 0.4057 | 2,604.51 | 2,604.51 | 120,281 | 48,798  |
| 2039 | 0.3901 | 2,604.51 | 2,604.51 | 120,281 | 46,922  |
| 2040 | 0.3751 | 2,534.93 | 2,534.93 | 117,068 | 43,912  |
| 2041 | 0.3607 | 1,767.51 | 1,767.51 | 81,627  | 29,443  |
| 2042 | 0.3468 | 1,767.51 | 1,767.51 | 81,627  | 28,308  |
| 2043 | 0.3335 | 1,515.67 | 1,515.67 | 69,997  | 23,344  |
| 2044 | 0.3207 | 1,515.67 | 1,515.67 | 69,997  | 22,448  |
| 2045 | 0.3083 | 1,397.77 | 1,397.77 | 64,552  | 19,901  |
| 2046 | 0.2965 | 1,318.90 | 1,318.90 | 60,909  | 18,060  |
| 2047 | 0.2851 | 1,318.90 | 1,318.90 | 60,909  | 17,365  |
| 2048 | 0.2741 | 1,318.90 | 1,318.90 | 60,909  | 16,695  |
| 2049 | 0.2636 | 1,318.90 | 1,318.90 | 60,909  | 16,056  |
| 2050 | 0.2534 | 1,318.90 | 1,318.90 | 60,909  | 15,434  |
| 2051 | 0.2437 | 1,318.90 | 1,318.90 | 60,909  | 14,844  |
| 2052 | 0.2343 | 1,318.90 | 1,318.90 | 60,909  | 14,271  |

|      |        |          |          |        |           |
|------|--------|----------|----------|--------|-----------|
| 2053 | 0.2253 | 1,318.90 | 1,318.90 | 60,909 | 13,723    |
| 2054 | 0.2166 | 1,259.44 | 1,259.44 | 58,163 | 12,598    |
| 2055 | 0.2083 | 1,253.45 | 1,253.45 | 57,887 | 12,058    |
| 2056 | 0.2003 | 1,249.04 | 1,249.04 | 57,683 | 11,554    |
| 2057 | 0.1926 | 1,241.45 | 1,241.45 | 57,333 | 11,042    |
| 2058 | 0.1852 | 1,224.91 | 1,224.91 | 56,569 | 10,477    |
| 2059 | 0.1780 | 1,222.91 | 1,222.91 | 56,476 | 10,053    |
| 2060 | 0.1712 | 1,222.91 | 1,222.91 | 56,476 | 9,669     |
| 2061 | 0.1646 | 1,222.91 | 1,222.91 | 56,476 | 9,296     |
| 2062 | 0.1583 | 1,222.91 | 1,222.91 | 56,476 | 8,940     |
| 2063 | 0.1522 | 751.17   | 751.17   | 34,691 | 5,280     |
| 2064 | 0.1463 | 541.41   | 541.41   | 25,003 | 3,658     |
| 2065 | 0.1407 | 451.94   | 451.94   | 20,871 | 2,937     |
| 2066 | 0.1353 | 375.11   | 375.11   | 17,323 | 2,344     |
| 2067 | 0.1301 | 303.92   | 303.92   | 14,036 | 1,826     |
| 2068 | 0.1251 | 236.50   | 236.50   | 10,922 | 1,366     |
| 2069 | 0.1203 | 145.90   | 145.90   | 6,738  | 811       |
| 2070 | 0.1157 | 145.90   | 145.90   | 6,738  | 780       |
| 2071 | 0.1112 | 145.90   | 145.90   | 6,738  | 749       |
| 2072 | 0.1069 | 145.90   | 145.90   | 6,738  | 720       |
| 2073 | 0.1028 | 145.90   | 145.90   | 6,738  | 693       |
| 2074 | 0.0989 | 145.90   | 145.90   | 6,738  | 666       |
| 2075 | 0.0951 | 145.90   | 145.90   | 6,738  | 641       |
| 2076 | 0.0914 | 145.90   | 145.90   | 6,738  | 616       |
| 2077 | 0.0879 | 145.90   | 145.90   | 6,738  | 592       |
| 2078 | 0.0845 | 145.90   | 145.90   | 6,738  | 569       |
| 2079 | 0.0813 | 145.90   | 145.90   | 6,738  | 548       |
| 2080 | 0.0781 | 145.90   | 145.90   | 6,738  | 526       |
| 2081 | 0.0751 | 145.90   | 145.90   | 6,738  | 506       |
| 2082 | 0.0722 | 145.90   | 145.90   | 6,738  | 486       |
| 2083 | 0.0695 | 145.90   | 145.90   | 6,738  | 468       |
| 2084 | 0.0668 | 56.06    | 56.06    | 2,589  | 173       |
| 2085 | 0.0642 | 38.55    | 38.55    | 1,780  | 114       |
| 2086 | 0.0617 | 24.18    | 24.18    | 1,117  | 69        |
| 2087 | 0.0594 | 16.61    | 16.61    | 767    | 46        |
| 2088 | 0.0571 | 5.41     | 5.41     | 250    | 14        |
| 合計   |        |          |          |        | 3,913,919 |

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

|     |                                          |                 |
|-----|------------------------------------------|-----------------|
| U:  | 1m3の土砂を保全するために要する単位当たりの砂防ダム建設コスト(円/m3)   | 5,600           |
| 出典: | 「砂防便覧」平成20年版                             |                 |
| V1: | 事業実施前における1ha当りの年間浸食土砂量(m3)               | 荒廃地等 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」 |                 |
| V2: | 事業実施後における1ha当りの年間浸食土砂量(m3)               | 整備済森林 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」 |                 |
| A:  | 事業対象区域面積(ha)                             | 5.41 ~ 3,825.72 |
| T:  | 事業実施後、流出係数が安定するのに必要な年数                   | 10              |
| Y:  | 評価期間                                     | 84              |

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 | 事業効果面積   | 効果額     | 現在価値化   |
|------|--------|----------|----------|---------|---------|
| 2004 | 1.5395 |          |          |         |         |
| 2005 | 1.4802 | 1,755.11 | 175.51   | 18,380  | 27,206  |
| 2006 | 1.4233 | 1,992.43 | 374.75   | 39,244  | 55,856  |
| 2007 | 1.3686 | 2,367.24 | 611.48   | 64,034  | 87,637  |
| 2008 | 1.3159 | 2,475.10 | 858.99   | 89,953  | 118,369 |
| 2009 | 1.2653 | 3,825.72 | 1,241.56 | 130,016 | 164,509 |
| 2010 | 1.2167 | 3,825.72 | 1,624.13 | 170,079 | 206,935 |
| 2011 | 1.1699 | 3,825.72 | 2,006.70 | 210,142 | 245,845 |
| 2012 | 1.1249 | 3,825.72 | 2,389.28 | 250,205 | 281,456 |
| 2013 | 1.0816 | 3,825.72 | 2,771.85 | 290,268 | 313,954 |
| 2014 | 1.0400 | 3,825.72 | 3,154.42 | 330,331 | 343,544 |
| 2015 | 1.0000 | 3,825.72 | 3,361.48 | 352,014 | 352,014 |
| 2016 | 0.9615 | 3,825.72 | 3,544.81 | 371,213 | 356,921 |
| 2017 | 0.9246 | 3,825.72 | 3,690.66 | 386,486 | 357,345 |
| 2018 | 0.8890 | 3,825.72 | 3,825.72 | 400,629 | 356,159 |
| 2019 | 0.8548 | 3,825.72 | 3,825.72 | 400,629 | 342,458 |
| 2020 | 0.8219 | 3,772.60 | 3,772.60 | 395,067 | 324,706 |
| 2021 | 0.7903 | 3,772.60 | 3,772.60 | 395,067 | 312,221 |
| 2022 | 0.7599 | 3,761.16 | 3,761.16 | 393,869 | 299,301 |
| 2023 | 0.7307 | 3,761.16 | 3,761.16 | 393,869 | 287,800 |
| 2024 | 0.7026 | 3,761.16 | 3,761.16 | 393,869 | 276,732 |
| 2025 | 0.6756 | 3,755.28 | 3,755.28 | 393,253 | 265,682 |
| 2026 | 0.6496 | 3,755.28 | 3,755.28 | 393,253 | 255,457 |
| 2027 | 0.6246 | 3,755.28 | 3,755.28 | 393,253 | 245,626 |
| 2028 | 0.6006 | 3,755.28 | 3,755.28 | 393,253 | 236,188 |
| 2029 | 0.5775 | 3,755.28 | 3,755.28 | 393,253 | 227,104 |
| 2030 | 0.5553 | 3,465.40 | 3,465.40 | 362,897 | 201,517 |
| 2031 | 0.5339 | 3,465.40 | 3,465.40 | 362,897 | 193,751 |
| 2032 | 0.5134 | 3,465.40 | 3,465.40 | 362,897 | 186,311 |
| 2033 | 0.4936 | 3,461.16 | 3,461.16 | 362,453 | 178,907 |
| 2034 | 0.4746 | 3,461.16 | 3,461.16 | 362,453 | 172,020 |
| 2035 | 0.4564 | 3,461.16 | 3,461.16 | 362,453 | 165,424 |
| 2036 | 0.4388 | 3,461.16 | 3,461.16 | 362,453 | 159,044 |
| 2037 | 0.4220 | 2,604.51 | 2,604.51 | 272,744 | 115,098 |
| 2038 | 0.4057 | 2,604.51 | 2,604.51 | 272,744 | 110,652 |
| 2039 | 0.3901 | 2,604.51 | 2,604.51 | 272,744 | 106,397 |
| 2040 | 0.3751 | 2,534.93 | 2,534.93 | 265,458 | 99,573  |
| 2041 | 0.3607 | 1,767.51 | 1,767.51 | 185,094 | 66,763  |
| 2042 | 0.3468 | 1,767.51 | 1,767.51 | 185,094 | 64,191  |
| 2043 | 0.3335 | 1,515.67 | 1,515.67 | 158,721 | 52,933  |
| 2044 | 0.3207 | 1,515.67 | 1,515.67 | 158,721 | 50,902  |
| 2045 | 0.3083 | 1,397.77 | 1,397.77 | 146,374 | 45,127  |
| 2046 | 0.2965 | 1,318.90 | 1,318.90 | 138,115 | 40,951  |
| 2047 | 0.2851 | 1,318.90 | 1,318.90 | 138,115 | 39,377  |
| 2048 | 0.2741 | 1,318.90 | 1,318.90 | 138,115 | 37,857  |
| 2049 | 0.2636 | 1,318.90 | 1,318.90 | 138,115 | 36,407  |
| 2050 | 0.2534 | 1,318.90 | 1,318.90 | 138,115 | 34,998  |
| 2051 | 0.2437 | 1,318.90 | 1,318.90 | 138,115 | 33,659  |
| 2052 | 0.2343 | 1,318.90 | 1,318.90 | 138,115 | 32,360  |
| 2053 | 0.2253 | 1,318.90 | 1,318.90 | 138,115 | 31,117  |
| 2054 | 0.2166 | 1,259.44 | 1,259.44 | 131,889 | 28,567  |
| 2055 | 0.2083 | 1,253.45 | 1,253.45 | 131,261 | 27,342  |
| 2056 | 0.2003 | 1,249.04 | 1,249.04 | 130,799 | 26,199  |
| 2057 | 0.1926 | 1,241.45 | 1,241.45 | 130,005 | 25,039  |
| 2058 | 0.1852 | 1,224.91 | 1,224.91 | 128,273 | 23,756  |
| 2059 | 0.1780 | 1,222.91 | 1,222.91 | 128,063 | 22,795  |
| 2060 | 0.1712 | 1,222.91 | 1,222.91 | 128,063 | 21,924  |
| 2061 | 0.1646 | 1,222.91 | 1,222.91 | 128,063 | 21,079  |
| 2062 | 0.1583 | 1,222.91 | 1,222.91 | 128,063 | 20,272  |
| 2063 | 0.1522 | 751.17   | 751.17   | 78,663  | 11,973  |
| 2064 | 0.1463 | 541.41   | 541.41   | 56,696  | 8,295   |
| 2065 | 0.1407 | 451.94   | 451.94   | 47,327  | 6,659   |
| 2066 | 0.1353 | 375.11   | 375.11   | 39,282  | 5,315   |
| 2067 | 0.1301 | 303.92   | 303.92   | 31,827  | 4,141   |
| 2068 | 0.1251 | 236.50   | 236.50   | 24,766  | 3,098   |

|      |        |        |        |        |           |
|------|--------|--------|--------|--------|-----------|
| 2069 | 0.1203 | 145.90 | 145.90 | 15,279 | 1,838     |
| 2070 | 0.1157 | 145.90 | 145.90 | 15,279 | 1,768     |
| 2071 | 0.1112 | 145.90 | 145.90 | 15,279 | 1,699     |
| 2072 | 0.1069 | 145.90 | 145.90 | 15,279 | 1,633     |
| 2073 | 0.1028 | 145.90 | 145.90 | 15,279 | 1,571     |
| 2074 | 0.0989 | 145.90 | 145.90 | 15,279 | 1,511     |
| 2075 | 0.0951 | 145.90 | 145.90 | 15,279 | 1,453     |
| 2076 | 0.0914 | 145.90 | 145.90 | 15,279 | 1,397     |
| 2077 | 0.0879 | 145.90 | 145.90 | 15,279 | 1,343     |
| 2078 | 0.0845 | 145.90 | 145.90 | 15,279 | 1,291     |
| 2079 | 0.0813 | 145.90 | 145.90 | 15,279 | 1,242     |
| 2080 | 0.0781 | 145.90 | 145.90 | 15,279 | 1,193     |
| 2081 | 0.0751 | 145.90 | 145.90 | 15,279 | 1,147     |
| 2082 | 0.0722 | 145.90 | 145.90 | 15,279 | 1,103     |
| 2083 | 0.0695 | 145.90 | 145.90 | 15,279 | 1,062     |
| 2084 | 0.0668 | 56.06  | 56.06  | 5,871  | 392       |
| 2085 | 0.0642 | 38.55  | 38.55  | 4,037  | 259       |
| 2086 | 0.0617 | 24.18  | 24.18  | 2,532  | 156       |
| 2087 | 0.0594 | 16.61  | 16.61  | 1,739  | 103       |
| 2088 | 0.0571 | 5.41   | 5.41   | 567    | 32        |
| 合計   |        |        |        |        | 8,875,008 |

$$B = \sum_{t=11}^Y \frac{V \times U}{(1+i)^t}$$

$$V = 0.01 \times A \times R \times N \times H \times 10,000$$

|         |                                                           |                  |
|---------|-----------------------------------------------------------|------------------|
| U:      | 1m3の土砂を保全するために要する単位当たりの砂防ダム建設コスト(円/m3)<br>出典:「砂防便覧」平成20年版 | 5,600            |
| V:      | 崩壊見込み量(m3/年)                                              | 0.00 ~ 12,457.35 |
| A:      | 事業対象区域面積(ha)                                              | 5.41 ~ 3,825.72  |
| R:      | 流域内崩壊率<br>出典:「治山全体調査」S42からS46                             | 1 渡島地区 0.0169    |
| N:      | 雨量比=50年確率日雨量/既往最大日雨量<br>出典:北海道の大雨資料                       | 0.9175           |
| H:      | 平均崩壊深(m)<br>出典:「土砂くずれ防災のはなし」(仲野防災技術研究所)                   | 2.1              |
| Y:      | 評価期間                                                      | 84               |
| 10,000: | 単位合わせのための調整値                                              |                  |

| 年度   | 社会的割引率 | 事業対象区域面積 | 崩壊見込み量    | 効果額    | 現在価値化  |
|------|--------|----------|-----------|--------|--------|
| 2004 | 1.5395 |          |           |        |        |
| 2005 | 1.4802 | 1,755.11 | 0.00      | 0      | 0      |
| 2006 | 1.4233 | 1,992.43 | 0.00      | 0      | 0      |
| 2007 | 1.3686 | 2,367.24 | 0.00      | 0      | 0      |
| 2008 | 1.3159 | 2,475.10 | 0.00      | 0      | 0      |
| 2009 | 1.2653 | 3,825.72 | 0.00      | 0      | 0      |
| 2010 | 1.2167 | 3,825.72 | 0.00      | 0      | 0      |
| 2011 | 1.1699 | 3,825.72 | 0.00      | 0      | 0      |
| 2012 | 1.1249 | 3,825.72 | 0.00      | 0      | 0      |
| 2013 | 1.0816 | 3,825.72 | 0.00      | 0      | 0      |
| 2014 | 1.0400 | 3,825.72 | 0.00      | 0      | 0      |
| 2015 | 1.0000 | 3,825.72 | 5,715.01  | 32,004 | 32,004 |
| 2016 | 0.9615 | 3,825.72 | 6,487.77  | 36,332 | 34,933 |
| 2017 | 0.9246 | 3,825.72 | 7,708.23  | 43,166 | 39,911 |
| 2018 | 0.8890 | 3,825.72 | 8,059.44  | 45,133 | 40,123 |
| 2019 | 0.8548 | 3,825.72 | 12,457.35 | 69,761 | 59,632 |
| 2020 | 0.8219 | 3,772.60 | 12,284.38 | 68,793 | 56,541 |
| 2021 | 0.7903 | 3,772.60 | 12,284.38 | 68,793 | 54,367 |
| 2022 | 0.7599 | 3,761.16 | 12,247.13 | 68,584 | 52,117 |
| 2023 | 0.7307 | 3,761.16 | 12,247.13 | 68,584 | 50,114 |
| 2024 | 0.7026 | 3,761.16 | 12,247.13 | 68,584 | 48,187 |
| 2025 | 0.6756 | 3,755.28 | 12,227.98 | 68,477 | 46,263 |
| 2026 | 0.6496 | 3,755.28 | 12,227.98 | 68,477 | 44,483 |
| 2027 | 0.6246 | 3,755.28 | 12,227.98 | 68,477 | 42,771 |
| 2028 | 0.6006 | 3,755.28 | 12,227.98 | 68,477 | 41,127 |
| 2029 | 0.5775 | 3,755.28 | 12,227.98 | 68,477 | 39,545 |
| 2030 | 0.5553 | 3,465.40 | 11,284.07 | 63,191 | 35,090 |
| 2031 | 0.5339 | 3,465.40 | 11,284.07 | 63,191 | 33,738 |
| 2032 | 0.5134 | 3,465.40 | 11,284.07 | 63,191 | 32,442 |
| 2033 | 0.4936 | 3,461.16 | 11,270.26 | 63,113 | 31,153 |
| 2034 | 0.4746 | 3,461.16 | 11,270.26 | 63,113 | 29,953 |
| 2035 | 0.4564 | 3,461.16 | 11,270.26 | 63,113 | 28,805 |
| 2036 | 0.4388 | 3,461.16 | 11,270.26 | 63,113 | 27,694 |
| 2037 | 0.4220 | 2,604.51 | 8,480.83  | 47,493 | 20,042 |
| 2038 | 0.4057 | 2,604.51 | 8,480.83  | 47,493 | 19,268 |
| 2039 | 0.3901 | 2,604.51 | 8,480.83  | 47,493 | 18,527 |
| 2040 | 0.3751 | 2,534.93 | 8,254.26  | 46,224 | 17,339 |
| 2041 | 0.3607 | 1,767.51 | 5,755.38  | 32,230 | 11,625 |
| 2042 | 0.3468 | 1,767.51 | 5,755.38  | 32,230 | 11,177 |
| 2043 | 0.3335 | 1,515.67 | 4,935.34  | 27,638 | 9,217  |
| 2044 | 0.3207 | 1,515.67 | 4,935.34  | 27,638 | 8,864  |
| 2045 | 0.3083 | 1,397.77 | 4,551.43  | 25,488 | 7,858  |
| 2046 | 0.2965 | 1,318.90 | 4,294.61  | 24,050 | 7,131  |
| 2047 | 0.2851 | 1,318.90 | 4,294.61  | 24,050 | 6,857  |
| 2048 | 0.2741 | 1,318.90 | 4,294.61  | 24,050 | 6,592  |
| 2049 | 0.2636 | 1,318.90 | 4,294.61  | 24,050 | 6,340  |
| 2050 | 0.2534 | 1,318.90 | 4,294.61  | 24,050 | 6,094  |
| 2051 | 0.2437 | 1,318.90 | 4,294.61  | 24,050 | 5,861  |
| 2052 | 0.2343 | 1,318.90 | 4,294.61  | 24,050 | 5,635  |
| 2053 | 0.2253 | 1,318.90 | 4,294.61  | 24,050 | 5,418  |
| 2054 | 0.2166 | 1,259.44 | 4,101.00  | 22,966 | 4,974  |
| 2055 | 0.2083 | 1,253.45 | 4,081.50  | 22,856 | 4,761  |
| 2056 | 0.2003 | 1,249.04 | 4,067.14  | 22,776 | 4,562  |
| 2057 | 0.1926 | 1,241.45 | 4,042.43  | 22,638 | 4,360  |
| 2058 | 0.1852 | 1,224.91 | 3,988.57  | 22,336 | 4,137  |
| 2059 | 0.1780 | 1,222.91 | 3,982.06  | 22,300 | 3,969  |
| 2060 | 0.1712 | 1,222.91 | 3,982.06  | 22,300 | 3,818  |
| 2061 | 0.1646 | 1,222.91 | 3,982.06  | 22,300 | 3,671  |
| 2062 | 0.1583 | 1,222.91 | 3,982.06  | 22,300 | 3,530  |

|      |        |        |          |        |           |
|------|--------|--------|----------|--------|-----------|
| 2063 | 0.1522 | 751.17 | 2,445.98 | 13,697 | 2,085     |
| 2064 | 0.1463 | 541.41 | 1,762.96 | 9,873  | 1,444     |
| 2065 | 0.1407 | 451.94 | 1,471.62 | 8,241  | 1,160     |
| 2066 | 0.1353 | 375.11 | 1,221.45 | 6,840  | 925       |
| 2067 | 0.1301 | 303.92 | 989.64   | 5,542  | 721       |
| 2068 | 0.1251 | 236.50 | 770.11   | 4,313  | 540       |
| 2069 | 0.1203 | 145.90 | 475.09   | 2,661  | 320       |
| 2070 | 0.1157 | 145.90 | 475.09   | 2,661  | 308       |
| 2071 | 0.1112 | 145.90 | 475.09   | 2,661  | 296       |
| 2072 | 0.1069 | 145.90 | 475.09   | 2,661  | 284       |
| 2073 | 0.1028 | 145.90 | 475.09   | 2,661  | 274       |
| 2074 | 0.0989 | 145.90 | 475.09   | 2,661  | 263       |
| 2075 | 0.0951 | 145.90 | 475.09   | 2,661  | 253       |
| 2076 | 0.0914 | 145.90 | 475.09   | 2,661  | 243       |
| 2077 | 0.0879 | 145.90 | 475.09   | 2,661  | 234       |
| 2078 | 0.0845 | 145.90 | 475.09   | 2,661  | 225       |
| 2079 | 0.0813 | 145.90 | 475.09   | 2,661  | 216       |
| 2080 | 0.0781 | 145.90 | 475.09   | 2,661  | 208       |
| 2081 | 0.0751 | 145.90 | 475.09   | 2,661  | 200       |
| 2082 | 0.0722 | 145.90 | 475.09   | 2,661  | 192       |
| 2083 | 0.0695 | 145.90 | 475.09   | 2,661  | 185       |
| 2084 | 0.0668 | 56.06  | 182.55   | 1,022  | 68        |
| 2085 | 0.0642 | 38.55  | 125.53   | 703    | 45        |
| 2086 | 0.0617 | 24.18  | 78.74    | 441    | 27        |
| 2087 | 0.0594 | 16.61  | 54.09    | 303    | 18        |
| 2088 | 0.0571 | 5.41   | 17.62    | 99     | 6         |
| 合計   |        |        |          |        | 1,123,360 |

$$B = \sum_{t=1}^Y \frac{V2 - V1}{Y \times (1+i)^t} \times D \times BEF \times (1+R) \times 0.5 \times \frac{44}{12} \times U$$

|        |                                                                                              |                                                                                                                                        |
|--------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| U:     | 二酸化炭素に関する原単位 (円/CO <sub>2</sub> -ton)<br>出典:「二酸化炭素地中貯留技術研究開発成果報告書」(財)地球環境産業技術研究機構(平成18年3月)   | 6,046                                                                                                                                  |
| V1:    | 事業を実施しない場合の評価最終年の当該森林の見込蓄積量(m <sup>3</sup> )<br>出典:北海道作成の蓄積テーブル                              | スギ<br>カラマツ<br>トドマツ<br>その他針葉樹(1)<br>その他広葉樹(3)<br>別途<br>別途<br>別途<br>別途<br>別途                                                             |
| V2:    | 事業を実施する場合の評価最終年の当該森林の見込蓄積量(m <sup>3</sup> )<br>出典:北海道作成の蓄積テーブル                               | スギ<br>カラマツ<br>トドマツ<br>その他針葉樹(1)<br>その他広葉樹(3)<br>別途<br>別途<br>別途<br>別途<br>別途                                                             |
| Y:     | 評価期間                                                                                         | 84                                                                                                                                     |
| 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」(2015年4月)温室効果ガスインベントリオフィス(GIO)編            | スギ<br>カラマツ<br>トドマツ<br>その他針葉樹(1)<br>その他広葉樹(3)<br>0.314<br>0.404<br>0.318<br>0.352<br>0.624                                              |
| 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」(2015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>樹齢20年越<br>樹齢20年越<br>スギ<br>カラマツ<br>トドマツ<br>その他針葉樹(1)<br>その他広葉樹(3)<br>1.23<br>1.15<br>1.38<br>1.32<br>1.26 |
| 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」(2015年4月)温室効果ガスインベントリオフィス(GIO)編 | スギ<br>カラマツ<br>トドマツ<br>その他針葉樹(1)<br>その他広葉樹(3)<br>0.25<br>0.29<br>0.21<br>0.34<br>0.26                                                   |
| 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                                                                              |                                                                                                                                        |

|      |        | スギ       |        | カラマツ   |       | トドマツ     |        | その他針葉樹(1) |     | その他広葉樹(3) |       | 合計     |        |
|------|--------|----------|--------|--------|-------|----------|--------|-----------|-----|-----------|-------|--------|--------|
| 年度   | 社会的割引率 | 事業効果蓄積   | 効果額    | 事業効果蓄積 | 効果額   | 事業効果蓄積   | 効果額    | 事業効果蓄積    | 効果額 | 事業効果蓄積    | 効果額   | 効果額    | 現在価値化  |
| 2004 | 1.5395 |          |        |        |       |          |        |           |     |           |       |        |        |
| 2005 | 1.4802 | 1,230.49 | 6,583  | 247.42 | 1,643 | 4,077.51 | 24,017 | 46.65     | 322 | 101.03    | 1,109 | 33,674 | 49,844 |
| 2006 | 1.4233 | 1,914.13 | 10,241 | 261.88 | 1,739 | 4,196.67 | 24,718 | 46.65     | 322 | 114.41    | 1,256 | 38,276 | 54,478 |
| 2007 | 1.3686 | 2,331.60 | 12,474 | 286.78 | 1,904 | 4,348.18 | 25,611 | 46.65     | 322 | 209.45    | 2,300 | 42,611 | 58,317 |
| 2008 | 1.3159 | 2,382.75 | 12,748 | 379.13 | 2,517 | 4,516.31 | 26,601 | 46.65     | 322 | 219.88    | 2,414 | 44,602 | 58,692 |
| 2009 | 1.2653 | 2,607.52 | 13,950 | 445.26 | 2,957 | 8,256.19 | 48,629 | 46.65     | 322 | 358.63    | 3,938 | 69,796 | 88,313 |
| 2010 | 1.2167 | 2,607.52 | 13,950 | 445.26 | 2,957 | 8,256.19 | 48,629 | 46.65     | 322 | 358.63    | 3,938 | 69,796 | 84,921 |
| 2011 | 1.1699 | 2,607.52 | 13,950 | 445.26 | 2,957 | 8,256.19 | 48,629 | 46.65     | 322 | 358.63    | 3,938 | 69,796 | 81,654 |
| 2012 | 1.1249 | 2,607.52 | 13,950 | 445.26 | 2,957 | 8,256.19 | 48,629 | 46.65     | 322 | 358.63    | 3,938 | 69,796 | 78,514 |
| 2013 | 1.0816 | 2,607.52 | 13,950 | 445.26 | 2,957 | 8,256.19 | 48,629 | 46.65     | 322 | 358.63    | 3,938 | 69,796 | 75,491 |
| 2014 | 1.0400 | 2,607.52 | 13,950 | 445.26 | 2,957 | 8,256.19 | 48,629 | 46.65     | 322 | 358.63    | 3,938 | 69,796 | 72,588 |
| 2015 | 1.0000 | 2,607.52 | 13,950 | 445.26 | 2,957 | 8,256.19 | 48,629 | 46.65     | 322 | 358.63    | 3,938 | 69,796 | 69,796 |
| 2016 | 0.9615 | 2,607.52 | 13,950 | 445.26 | 2,957 | 8,256.19 | 48,629 | 46.65     | 322 | 358.63    | 3,938 | 69,796 | 67,109 |
| 2017 | 0.9246 | 2,607.52 | 13,950 | 445.26 | 2,957 | 8,256.19 | 48,629 | 46.65     | 322 | 358.63    | 3,938 | 69,796 | 64,533 |
| 2018 | 0.8890 | 2,607.52 | 13,950 | 445.26 | 2,957 | 8,256.19 | 48,629 | 46.65     | 322 | 358.63    | 3,938 | 69,796 | 62,049 |
| 2019 | 0.8548 | 2,607.52 | 13,950 | 445.26 | 2,957 | 8,256.19 | 48,629 | 46.65     | 322 | 358.63    | 3,938 | 69,796 | 59,662 |
| 2020 | 0.8219 | 2,607.52 | 13,950 | 445.26 | 2,957 | 8,256.19 | 48,629 | 46.65     | 322 | 339.31    | 3,726 | 69,584 | 57,191 |
| 2021 | 0.7903 | 2,607.52 | 13,950 | 445.26 | 2,957 | 8,256.19 | 48,629 | 46.65     | 322 | 339.31    | 3,726 | 69,584 | 54,992 |
| 2022 | 0.7599 | 2,607.52 | 13,950 | 408.74 | 2,714 | 8,256.19 | 48,629 | 46.65     | 322 | 339.31    | 3,726 | 69,341 | 52,692 |
| 2023 | 0.7307 | 2,607.52 | 13,950 | 408.74 | 2,714 | 8,256.19 | 48,629 | 46.65     | 322 | 339.31    | 3,726 | 69,341 | 50,667 |
| 2024 | 0.7026 | 2,607.52 | 13,950 | 408.74 | 2,714 | 8,256.19 | 48,629 | 46.65     | 322 | 339.31    | 3,726 | 69,341 | 48,719 |
| 2025 | 0.6756 | 2,607.52 | 13,950 | 408.74 | 2,714 | 8,256.19 | 48,629 | 39.74     | 274 | 339.31    | 3,726 | 69,293 | 46,814 |
| 2026 | 0.6496 | 2,607.52 | 13,950 | 408.74 | 2,714 | 8,256.19 | 48,629 | 39.74     | 274 | 339.31    | 3,726 | 69,293 | 45,013 |
| 2027 | 0.6246 | 2,607.52 | 13,950 | 408.74 | 2,714 | 8,256.19 | 48,629 | 39.74     | 274 | 339.31    | 3,726 | 69,293 | 43,280 |
| 2028 | 0.6006 | 2,607.52 | 13,950 | 408.74 | 2,714 | 8,256.19 | 48,629 | 39.74     | 274 | 339.31    | 3,726 | 69,293 | 41,617 |
| 2029 | 0.5775 | 2,607.52 | 13,950 | 408.74 | 2,714 | 8,256.19 | 48,629 | 39.74     | 274 | 339.31    | 3,726 | 69,293 | 40,017 |
| 2030 | 0.5553 | 2,607.52 | 13,950 | 370.64 | 2,461 | 8,256.19 | 48,629 | 39.74     | 274 | 224.92    | 2,470 | 67,784 | 37,640 |
| 2031 | 0.5339 | 2,607.52 | 13,950 | 370.64 | 2,461 | 8,256.19 | 48,629 | 39.74     | 274 | 224.92    | 2,470 | 67,784 | 36,190 |
| 2032 | 0.5134 | 2,607.52 | 13,950 | 370.64 | 2,461 | 8,256.19 | 48,629 | 39.74     | 274 | 224.92    | 2,470 | 67,784 | 34,800 |
| 2033 | 0.4936 | 2,607.52 | 13,950 | 370.64 | 2,461 | 8,256.19 | 48,629 | 34.52     | 238 | 224.92    | 2,470 | 67,748 | 33,440 |
| 2034 | 0.4746 | 2,607.52 | 13,950 | 370.64 | 2,461 | 8,256.19 | 48,629 | 34.52     | 238 | 224.92    | 2,470 | 67,748 | 32,153 |
| 2035 | 0.4564 | 2,607.52 | 13,950 | 370.64 | 2,461 | 8,256.19 | 48,629 | 34.52     | 238 | 224.92    | 2,470 | 67,748 | 30,920 |
| 2036 | 0.4388 | 2,607.52 | 13,950 | 370.64 | 2,461 | 8,256.19 | 48,629 | 34.52     | 238 | 224.92    | 2,470 | 67,748 | 29,728 |
| 2037 | 0.4220 | 2,607.52 | 13,950 | 370.64 | 2,461 | 4,789.07 | 28,208 | 34.52     | 238 | 224.92    | 2,470 | 47,327 | 19,972 |
| 2038 | 0.4057 | 2,607.52 | 13,950 | 370.64 | 2,461 | 4,789.07 | 28,208 | 34.52     | 238 | 224.92    | 2,470 | 47,327 | 19,201 |
| 2039 | 0.3901 | 2,607.52 | 13,950 | 370.64 | 2,461 | 4,789.07 | 28,208 | 34.52     | 238 | 224.92    | 2,470 | 47,327 | 18,462 |
| 2040 | 0.3751 | 2,362.63 | 12,640 | 347.59 | 2,308 | 4,789.07 | 28,208 | 34.52     | 238 | 224.92    | 2,470 | 45,864 | 17,204 |
| 2041 | 0.3607 | 2,024.99 | 10,834 | 318.83 | 2,117 | 2,446.45 | 14,410 | 34.52     | 238 | 224.92    | 2,470 | 30,069 | 10,846 |
| 2042 | 0.3468 | 2,024.99 | 10,834 | 318.83 | 2,117 | 2,446.45 | 14,410 | 34.52     | 238 | 224.92    | 2,470 | 30,069 | 10,428 |

|      |        |          |       |        |       |          |        |       |     |        |       |        |           |
|------|--------|----------|-------|--------|-------|----------|--------|-------|-----|--------|-------|--------|-----------|
| 2043 | 0.3335 | 1,822.50 | 9,750 | 318.83 | 2,117 | 2,446.45 | 14,410 | 34.52 | 238 | 136.93 | 1,503 | 28,018 | 9,344     |
| 2044 | 0.3207 | 1,822.50 | 9,750 | 318.83 | 2,117 | 2,446.45 | 14,410 | 34.52 | 238 | 136.93 | 1,503 | 28,018 | 8,985     |
| 2045 | 0.3083 | 1,371.53 | 7,338 | 318.83 | 2,117 | 2,446.45 | 14,410 | 34.52 | 238 | 136.93 | 1,503 | 25,606 | 7,894     |
| 2046 | 0.2965 | 1,062.95 | 5,687 | 318.83 | 2,117 | 2,446.45 | 14,410 | 34.52 | 238 | 136.93 | 1,503 | 23,955 | 7,103     |
| 2047 | 0.2851 | 1,062.95 | 5,687 | 318.83 | 2,117 | 2,446.45 | 14,410 | 34.52 | 238 | 136.93 | 1,503 | 23,955 | 6,830     |
| 2048 | 0.2741 | 1,062.95 | 5,687 | 318.83 | 2,117 | 2,446.45 | 14,410 | 34.52 | 238 | 136.93 | 1,503 | 23,955 | 6,566     |
| 2049 | 0.2636 | 1,062.95 | 5,687 | 318.83 | 2,117 | 2,446.45 | 14,410 | 34.52 | 238 | 136.93 | 1,503 | 23,955 | 6,315     |
| 2050 | 0.2534 | 1,062.95 | 5,687 | 318.83 | 2,117 | 2,446.45 | 14,410 | 34.52 | 238 | 136.93 | 1,503 | 23,955 | 6,070     |
| 2051 | 0.2437 | 1,062.95 | 5,687 | 318.83 | 2,117 | 2,446.45 | 14,410 | 34.52 | 238 | 136.93 | 1,503 | 23,955 | 5,838     |
| 2052 | 0.2343 | 1,062.95 | 5,687 | 318.83 | 2,117 | 2,446.45 | 14,410 | 34.52 | 238 | 136.93 | 1,503 | 23,955 | 5,613     |
| 2053 | 0.2253 | 1,062.95 | 5,687 | 318.83 | 2,117 | 2,446.45 | 14,410 | 34.52 | 238 | 136.93 | 1,503 | 23,955 | 5,397     |
| 2054 | 0.2166 | 1,062.95 | 5,687 | 119.82 | 796   | 2,446.45 | 14,410 | 34.52 | 238 | 136.93 | 1,503 | 22,634 | 4,903     |
| 2055 | 0.2083 | 1,062.95 | 5,687 | 100.17 | 665   | 2,446.45 | 14,410 | 34.52 | 238 | 136.93 | 1,503 | 22,503 | 4,687     |
| 2056 | 0.2003 | 1,062.95 | 5,687 | 85.71  | 569   | 2,446.45 | 14,410 | 34.52 | 238 | 136.93 | 1,503 | 22,407 | 4,488     |
| 2057 | 0.1926 | 1,062.95 | 5,687 | 60.81  | 404   | 2,446.45 | 14,410 | 34.52 | 238 | 136.93 | 1,503 | 22,242 | 4,284     |
| 2058 | 0.1852 | 1,062.95 | 5,687 | 6.56   | 44    | 2,446.45 | 14,410 | 34.52 | 238 | 136.93 | 1,503 | 21,882 | 4,053     |
| 2059 | 0.1780 | 1,062.95 | 5,687 | 0.00   | 0     | 2,446.45 | 14,410 | 34.52 | 238 | 136.93 | 1,503 | 21,838 | 3,887     |
| 2060 | 0.1712 | 1,062.95 | 5,687 | 0.00   | 0     | 2,446.45 | 14,410 | 34.52 | 238 | 136.93 | 1,503 | 21,838 | 3,739     |
| 2061 | 0.1646 | 1,062.95 | 5,687 | 0.00   | 0     | 2,446.45 | 14,410 | 34.52 | 238 | 136.93 | 1,503 | 21,838 | 3,595     |
| 2062 | 0.1583 | 1,062.95 | 5,687 | 0.00   | 0     | 2,446.45 | 14,410 | 34.52 | 238 | 136.93 | 1,503 | 21,838 | 3,457     |
| 2063 | 0.1522 | 1,062.95 | 5,687 | 0.00   | 0     | 856.36   | 5,044  | 34.52 | 238 | 136.93 | 1,503 | 12,472 | 1,898     |
| 2064 | 0.1463 | 429.03   | 2,295 | 0.00   | 0     | 856.36   | 5,044  | 0.00  | 0   | 136.93 | 1,503 | 8,842  | 1,294     |
| 2065 | 0.1407 | 283.43   | 1,516 | 0.00   | 0     | 711.56   | 4,191  | 0.00  | 0   | 136.93 | 1,503 | 7,210  | 1,014     |
| 2066 | 0.1353 | 153.26   | 820   | 0.00   | 0     | 592.40   | 3,489  | 0.00  | 0   | 136.93 | 1,503 | 5,812  | 786       |
| 2067 | 0.1301 | 73.43    | 393   | 0.00   | 0     | 440.89   | 2,597  | 0.00  | 0   | 136.93 | 1,503 | 4,493  | 585       |
| 2068 | 0.1251 | 22.28    | 119   | 0.00   | 0     | 272.76   | 1,607  | 0.00  | 0   | 136.93 | 1,503 | 3,229  | 404       |
| 2069 | 0.1203 | 0.00     | 0     | 0.00   | 0     | 0.00     | 0      | 0.00  | 0   | 136.93 | 1,503 | 1,503  | 181       |
| 2070 | 0.1157 | 0.00     | 0     | 0.00   | 0     | 0.00     | 0      | 0.00  | 0   | 136.93 | 1,503 | 1,503  | 174       |
| 2071 | 0.1112 | 0.00     | 0     | 0.00   | 0     | 0.00     | 0      | 0.00  | 0   | 136.93 | 1,503 | 1,503  | 167       |
| 2072 | 0.1069 | 0.00     | 0     | 0.00   | 0     | 0.00     | 0      | 0.00  | 0   | 136.93 | 1,503 | 1,503  | 161       |
| 2073 | 0.1028 | 0.00     | 0     | 0.00   | 0     | 0.00     | 0      | 0.00  | 0   | 136.93 | 1,503 | 1,503  | 155       |
| 2074 | 0.0989 | 0.00     | 0     | 0.00   | 0     | 0.00     | 0      | 0.00  | 0   | 136.93 | 1,503 | 1,503  | 149       |
| 2075 | 0.0951 | 0.00     | 0     | 0.00   | 0     | 0.00     | 0      | 0.00  | 0   | 136.93 | 1,503 | 1,503  | 143       |
| 2076 | 0.0914 | 0.00     | 0     | 0.00   | 0     | 0.00     | 0      | 0.00  | 0   | 136.93 | 1,503 | 1,503  | 137       |
| 2077 | 0.0879 | 0.00     | 0     | 0.00   | 0     | 0.00     | 0      | 0.00  | 0   | 136.93 | 1,503 | 1,503  | 132       |
| 2078 | 0.0845 | 0.00     | 0     | 0.00   | 0     | 0.00     | 0      | 0.00  | 0   | 136.93 | 1,503 | 1,503  | 127       |
| 2079 | 0.0813 | 0.00     | 0     | 0.00   | 0     | 0.00     | 0      | 0.00  | 0   | 136.93 | 1,503 | 1,503  | 122       |
| 2080 | 0.0781 | 0.00     | 0     | 0.00   | 0     | 0.00     | 0      | 0.00  | 0   | 136.93 | 1,503 | 1,503  | 117       |
| 2081 | 0.0751 | 0.00     | 0     | 0.00   | 0     | 0.00     | 0      | 0.00  | 0   | 136.93 | 1,503 | 1,503  | 113       |
| 2082 | 0.0722 | 0.00     | 0     | 0.00   | 0     | 0.00     | 0      | 0.00  | 0   | 136.93 | 1,503 | 1,503  | 109       |
| 2083 | 0.0695 | 0.00     | 0     | 0.00   | 0     | 0.00     | 0      | 0.00  | 0   | 136.93 | 1,503 | 1,503  | 104       |
| 2084 | 0.0668 | 0.00     | 0     | 0.00   | 0     | 0.00     | 0      | 0.00  | 0   | 52.21  | 573   | 573    | 38        |
| 2085 | 0.0642 | 0.00     | 0     | 0.00   | 0     | 0.00     | 0      | 0.00  | 0   | 35.90  | 394   | 394    | 25        |
| 2086 | 0.0617 | 0.00     | 0     | 0.00   | 0     | 0.00     | 0      | 0.00  | 0   | 22.52  | 247   | 247    | 15        |
| 2087 | 0.0594 | 0.00     | 0     | 0.00   | 0     | 0.00     | 0      | 0.00  | 0   | 15.47  | 170   | 170    | 10        |
| 2088 | 0.0571 | 0.00     | 0     | 0.00   | 0     | 0.00     | 0      | 0.00  | 0   | 5.04   | 55    | 55     | 3         |
| 合計   |        |          |       |        |       |          |        |       |     |        |       |        | 1,959,158 |

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

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

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

|        |                                                                                                          |                 |
|--------|----------------------------------------------------------------------------------------------------------|-----------------|
| U:     | 二酸化炭素に関する原単位 (円/t-CO <sub>2</sub> )<br>出典:「二酸化炭素地中貯留技術研究開発成果報告書」(財)地球環境産業技術研究機構(平成18年3月)                 | 6,046           |
| 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、流出係数が安定するのに必要な年数                                                                                   | 10              |
| Y:     | ①侵食深が30cmに達するまでの年数(T <sub>0</sub> ) 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                            | 84.00           |
| A:     | ①事業対象区域面積(ha) 又は<br>②保全効果区域面積(ha)                                                                        | 5.41 ~ 3,825.72 |
| 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」(2015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 | 85.33           |
| 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」「森林の公益的機能に関する文献要約集」「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」「森林の公益的機能に関する文献要約集」「森林水文」 ①事業対象区域                               | 0.013           |
| 30:    | 土壌炭素の測定深度 (cm)                                                                                           |                 |
| 0.3:   | 流出土砂排出炭素係数                                                                                               |                 |

|      |        | 事業対象区域   |          |        |        |        |     |       |
|------|--------|----------|----------|--------|--------|--------|-----|-------|
| 年度   | 社会的割引率 | 事業対象区域面積 | 効果対象面積   | 効果額    | 現在価値化  | 効果対象面積 | 効果額 | 現在価値化 |
| 2004 | 1.5395 |          |          |        |        |        |     |       |
| 2005 | 1.4802 | 1,755.11 | 175.51   | 619    | 916    |        |     |       |
| 2006 | 1.4233 | 1,992.43 | 374.75   | 1,321  | 1,880  |        |     |       |
| 2007 | 1.3686 | 2,367.24 | 611.48   | 2,155  | 2,949  |        |     |       |
| 2008 | 1.3159 | 2,475.10 | 858.99   | 3,028  | 3,985  |        |     |       |
| 2009 | 1.2653 | 3,825.72 | 1,241.56 | 4,376  | 5,537  |        |     |       |
| 2010 | 1.2167 | 3,825.72 | 1,624.13 | 5,725  | 6,966  |        |     |       |
| 2011 | 1.1699 | 3,825.72 | 2,006.70 | 7,074  | 8,276  |        |     |       |
| 2012 | 1.1249 | 3,825.72 | 2,389.28 | 8,422  | 9,474  |        |     |       |
| 2013 | 1.0816 | 3,825.72 | 2,771.85 | 9,771  | 10,568 |        |     |       |
| 2014 | 1.0400 | 3,825.72 | 3,154.42 | 11,119 | 11,564 |        |     |       |
| 2015 | 1.0000 | 3,825.72 | 3,361.48 | 11,849 | 11,849 |        |     |       |
| 2016 | 0.9615 | 3,825.72 | 3,544.81 | 12,495 | 12,014 |        |     |       |
| 2017 | 0.9246 | 3,825.72 | 3,690.66 | 13,010 | 12,029 |        |     |       |
| 2018 | 0.8890 | 3,825.72 | 3,825.72 | 13,486 | 11,989 |        |     |       |
| 2019 | 0.8548 | 3,825.72 | 3,825.72 | 13,486 | 11,528 |        |     |       |
| 2020 | 0.8219 | 3,772.60 | 3,772.60 | 13,298 | 10,930 |        |     |       |
| 2021 | 0.7903 | 3,772.60 | 3,772.60 | 13,298 | 10,509 |        |     |       |
| 2022 | 0.7599 | 3,761.16 | 3,761.16 | 13,258 | 10,075 |        |     |       |
| 2023 | 0.7307 | 3,761.16 | 3,761.16 | 13,258 | 9,688  |        |     |       |
| 2024 | 0.7026 | 3,761.16 | 3,761.16 | 13,258 | 9,315  |        |     |       |
| 2025 | 0.6756 | 3,755.28 | 3,755.28 | 13,237 | 8,943  |        |     |       |
| 2026 | 0.6496 | 3,755.28 | 3,755.28 | 13,237 | 8,599  |        |     |       |
| 2027 | 0.6246 | 3,755.28 | 3,755.28 | 13,237 | 8,268  |        |     |       |
| 2028 | 0.6006 | 3,755.28 | 3,755.28 | 13,237 | 7,950  |        |     |       |
| 2029 | 0.5775 | 3,755.28 | 3,755.28 | 13,237 | 7,644  |        |     |       |
| 2030 | 0.5553 | 3,465.40 | 3,465.40 | 12,216 | 6,784  |        |     |       |
| 2031 | 0.5339 | 3,465.40 | 3,465.40 | 12,216 | 6,522  |        |     |       |
| 2032 | 0.5134 | 3,465.40 | 3,465.40 | 12,216 | 6,272  |        |     |       |
| 2033 | 0.4936 | 3,461.16 | 3,461.16 | 12,201 | 6,022  |        |     |       |
| 2034 | 0.4746 | 3,461.16 | 3,461.16 | 12,201 | 5,791  |        |     |       |
| 2035 | 0.4564 | 3,461.16 | 3,461.16 | 12,201 | 5,569  |        |     |       |
| 2036 | 0.4388 | 3,461.16 | 3,461.16 | 12,201 | 5,354  |        |     |       |
| 2037 | 0.4220 | 2,604.51 | 2,604.51 | 9,181  | 3,874  |        |     |       |
| 2038 | 0.4057 | 2,604.51 | 2,604.51 | 9,181  | 3,725  |        |     |       |
| 2039 | 0.3901 | 2,604.51 | 2,604.51 | 9,181  | 3,582  |        |     |       |
| 2040 | 0.3751 | 2,534.93 | 2,534.93 | 8,936  | 3,352  |        |     |       |
| 2041 | 0.3607 | 1,767.51 | 1,767.51 | 6,230  | 2,247  |        |     |       |
| 2042 | 0.3468 | 1,767.51 | 1,767.51 | 6,230  | 2,161  |        |     |       |
| 2043 | 0.3335 | 1,515.67 | 1,515.67 | 5,343  | 1,782  |        |     |       |

|      |        |          |          |       |         |  |  |   |
|------|--------|----------|----------|-------|---------|--|--|---|
| 2044 | 0.3207 | 1,515.67 | 1,515.67 | 5,343 | 1,714   |  |  |   |
| 2045 | 0.3083 | 1,397.77 | 1,397.77 | 4,927 | 1,519   |  |  |   |
| 2046 | 0.2965 | 1,318.90 | 1,318.90 | 4,649 | 1,378   |  |  |   |
| 2047 | 0.2851 | 1,318.90 | 1,318.90 | 4,649 | 1,325   |  |  |   |
| 2048 | 0.2741 | 1,318.90 | 1,318.90 | 4,649 | 1,274   |  |  |   |
| 2049 | 0.2636 | 1,318.90 | 1,318.90 | 4,649 | 1,225   |  |  |   |
| 2050 | 0.2534 | 1,318.90 | 1,318.90 | 4,649 | 1,178   |  |  |   |
| 2051 | 0.2437 | 1,318.90 | 1,318.90 | 4,649 | 1,133   |  |  |   |
| 2052 | 0.2343 | 1,318.90 | 1,318.90 | 4,649 | 1,089   |  |  |   |
| 2053 | 0.2253 | 1,318.90 | 1,318.90 | 4,649 | 1,047   |  |  |   |
| 2054 | 0.2166 | 1,259.44 | 1,259.44 | 4,440 | 962     |  |  |   |
| 2055 | 0.2083 | 1,253.45 | 1,253.45 | 4,418 | 920     |  |  |   |
| 2056 | 0.2003 | 1,249.04 | 1,249.04 | 4,403 | 882     |  |  |   |
| 2057 | 0.1926 | 1,241.45 | 1,241.45 | 4,376 | 843     |  |  |   |
| 2058 | 0.1852 | 1,224.91 | 1,224.91 | 4,318 | 800     |  |  |   |
| 2059 | 0.1780 | 1,222.91 | 1,222.91 | 4,311 | 767     |  |  |   |
| 2060 | 0.1712 | 1,222.91 | 1,222.91 | 4,311 | 738     |  |  |   |
| 2061 | 0.1646 | 1,222.91 | 1,222.91 | 4,311 | 710     |  |  |   |
| 2062 | 0.1583 | 1,222.91 | 1,222.91 | 4,311 | 682     |  |  |   |
| 2063 | 0.1522 | 751.17   | 751.17   | 2,648 | 403     |  |  |   |
| 2064 | 0.1463 | 541.41   | 541.41   | 1,908 | 279     |  |  |   |
| 2065 | 0.1407 | 451.94   | 451.94   | 1,593 | 224     |  |  |   |
| 2066 | 0.1353 | 375.11   | 375.11   | 1,322 | 179     |  |  |   |
| 2067 | 0.1301 | 303.92   | 303.92   | 1,071 | 139     |  |  |   |
| 2068 | 0.1251 | 236.50   | 236.50   | 834   | 104     |  |  |   |
| 2069 | 0.1203 | 145.90   | 145.90   | 514   | 62      |  |  |   |
| 2070 | 0.1157 | 145.90   | 145.90   | 514   | 59      |  |  |   |
| 2071 | 0.1112 | 145.90   | 145.90   | 514   | 57      |  |  |   |
| 2072 | 0.1069 | 145.90   | 145.90   | 514   | 55      |  |  |   |
| 2073 | 0.1028 | 145.90   | 145.90   | 514   | 53      |  |  |   |
| 2074 | 0.0989 | 145.90   | 145.90   | 514   | 51      |  |  |   |
| 2075 | 0.0951 | 145.90   | 145.90   | 514   | 49      |  |  |   |
| 2076 | 0.0914 | 145.90   | 145.90   | 514   | 47      |  |  |   |
| 2077 | 0.0879 | 145.90   | 145.90   | 514   | 45      |  |  |   |
| 2078 | 0.0845 | 145.90   | 145.90   | 514   | 43      |  |  |   |
| 2079 | 0.0813 | 145.90   | 145.90   | 514   | 42      |  |  |   |
| 2080 | 0.0781 | 145.90   | 145.90   | 514   | 40      |  |  |   |
| 2081 | 0.0751 | 145.90   | 145.90   | 514   | 39      |  |  |   |
| 2082 | 0.0722 | 145.90   | 145.90   | 514   | 37      |  |  |   |
| 2083 | 0.0695 | 145.90   | 145.90   | 514   | 36      |  |  |   |
| 2084 | 0.0668 | 56.06    | 56.06    | 198   | 13      |  |  |   |
| 2085 | 0.0642 | 38.55    | 38.55    | 136   | 9       |  |  |   |
| 2086 | 0.0617 | 24.18    | 24.18    | 85    | 5       |  |  |   |
| 2087 | 0.0594 | 16.61    | 16.61    | 59    | 4       |  |  |   |
| 2088 | 0.0571 | 5.41     | 5.41     | 19    | 1       |  |  |   |
| 合計   |        |          |          |       | 298,743 |  |  | 0 |

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

Y: 評価期間

84

Vt主: 人工林 主伐量 t年後における伐採材積(m3)  
出典:北海道作成の蓄積テーブル

|           |                   |
|-----------|-------------------|
| スギ        | 0.00 ~ 63,582.14  |
| カラマツ      | 0.00 ~ 16,577.45  |
| トドマツ      | 0.00 ~ 156,782.79 |
| その他針葉樹(1) | 0.00 ~ 3,461.88   |
| その他広葉樹(3) | 0.00 ~ 9,370.31   |

@: 人工林 主伐材 木材市場価格(円/㎡)  
出典:「北海道木材市況調査」(過去5力年の平均(H22~H26))

|           |        |
|-----------|--------|
| スギ        | 9,300  |
| カラマツ      | 9,700  |
| トドマツ      | 12,200 |
| その他針葉樹(1) | 9,700  |
| その他広葉樹(3) | 14,300 |

|      |        | スギ        |         | カラマツ      |         | トドマツ      |           | その他針葉樹(1) |        | その他広葉樹(3) |        |
|------|--------|-----------|---------|-----------|---------|-----------|-----------|-----------|--------|-----------|--------|
| 年度   | 社会的割引率 | 事業効果材積    | 効果額     | 事業効果材積    | 効果額     | 事業効果材積    | 効果額       | 事業効果材積    | 効果額    | 事業効果材積    | 効果額    |
| 2004 | 1.5395 |           |         |           |         |           |           |           |        |           |        |
| 2005 | 1.4802 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2006 | 1.4233 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2007 | 1.3686 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2008 | 1.3159 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2009 | 1.2653 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2010 | 1.2167 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2011 | 1.1699 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2012 | 1.1249 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2013 | 1.0816 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2014 | 1.0400 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2015 | 1.0000 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2016 | 0.9615 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2017 | 0.9246 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2018 | 0.8890 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2019 | 0.8548 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 148.48    | 2,123  |
| 2020 | 0.8219 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2021 | 0.7903 | 0.00      | 0       | 544.44    | 5,281   | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2022 | 0.7599 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2023 | 0.7307 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2024 | 0.7026 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 159.89    | 1,551  | 0.00      | 0      |
| 2025 | 0.6756 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2026 | 0.6496 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2027 | 0.6246 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2028 | 0.6006 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2029 | 0.5775 | 0.00      | 0       | 1,155.00  | 11,204  | 0.00      | 0         | 0.00      | 0      | 1,552.47  | 22,200 |
| 2030 | 0.5553 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2031 | 0.5339 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2032 | 0.5134 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 234.23    | 2,272  | 0.00      | 0      |
| 2033 | 0.4936 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2034 | 0.4746 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2035 | 0.4564 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2036 | 0.4388 | 0.00      | 0       | 0.00      | 0       | #####     | 1,430,360 | 0.00      | 0      | 0.00      | 0      |
| 2037 | 0.4220 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2038 | 0.4057 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2039 | 0.3901 | 13,193.30 | 122,698 | 956.66    | 9,280   | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2040 | 0.3751 | 17,656.85 | 164,209 | 1,643.31  | 15,940  | #####     | 1,650,036 | 0.00      | 0      | 0.00      | 0      |
| 2041 | 0.3607 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2042 | 0.3468 | 9,968.46  | 92,707  | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 3,719.42  | 53,188 |
| 2043 | 0.3335 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2044 | 0.3207 | 29,862.46 | 277,721 | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2045 | 0.3083 | 19,976.70 | 185,783 | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2046 | 0.2965 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2047 | 0.2851 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2048 | 0.2741 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2049 | 0.2636 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2050 | 0.2534 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2051 | 0.2437 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2052 | 0.2343 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2053 | 0.2253 | 0.00      | 0       | 16,577.45 | 160,801 | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2054 | 0.2166 | 0.00      | 0       | 1,670.01  | 16,199  | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2055 | 0.2083 | 0.00      | 0       | 1,229.51  | 11,926  | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2056 | 0.2003 | 0.00      | 0       | 2,116.09  | 20,526  | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2057 | 0.1926 | 0.00      | 0       | 4,611.35  | 44,730  | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2058 | 0.1852 | 0.00      | 0       | 557.60    | 5,409   | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2059 | 0.1780 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2060 | 0.1712 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2061 | 0.1646 | 0.00      | 0       | 0.00      | 0       | 0.00      | 0         | 0.00      | 0      | 0.00      | 0      |
| 2062 | 0.1583 | 0.00      | 0       | 0.00      | 0       | #####     | 1,912,750 | 0.00      | 0      | 0.00      | 0      |
| 2063 | 0.1522 | 63,582.14 | 591,314 | 0.00      | 0       | 0.00      | 0         | 3,461.88  | 33,580 | 0.00      | 0      |
| 2064 | 0.1463 | 14,850.89 | 138,113 | 0.00      | 0       | 14,769.63 | 180,189   | 0.00      | 0      | 0.00      | 0      |
| 2065 | 0.1407 | 13,277.75 | 123,483 | 0.00      | 0       | 12,154.04 | 148,279   | 0.00      | 0      | 0.00      | 0      |

|      |        |          |        |      |   |           |         |      |   |      |   |
|------|--------|----------|--------|------|---|-----------|---------|------|---|------|---|
| 2066 | 0.1353 | 8,142.76 | 75,728 | 0.00 | 0 | 15,454.28 | 188,542 | 0.00 | 0 | 0.00 | 0 |
| 2067 | 0.1301 | 5,217.44 | 48,522 | 0.00 | 0 | 17,149.26 | 209,221 | 0.00 | 0 | 0.00 | 0 |
| 2068 | 0.1251 | 2,272.32 | 21,133 | 0.00 | 0 | 27,821.02 | 339,416 | 0.00 | 0 | 0.00 | 0 |
| 合計   |        |          |        |      |   |           |         |      |   |      |   |

|      |        | 合計        |           |
|------|--------|-----------|-----------|
| 年度   | 社会の割引率 | 効果額       | 現在価値化     |
| 2004 | 1.5395 |           |           |
| 2005 | 1.4802 | 0         | 0         |
| 2006 | 1.4233 | 0         | 0         |
| 2007 | 1.3686 | 0         | 0         |
| 2008 | 1.3159 | 0         | 0         |
| 2009 | 1.2653 | 0         | 0         |
| 2010 | 1.2167 | 0         | 0         |
| 2011 | 1.1699 | 0         | 0         |
| 2012 | 1.1249 | 0         | 0         |
| 2013 | 1.0816 | 0         | 0         |
| 2014 | 1.0400 | 0         | 0         |
| 2015 | 1.0000 | 0         | 0         |
| 2016 | 0.9615 | 0         | 0         |
| 2017 | 0.9246 | 0         | 0         |
| 2018 | 0.8890 | 0         | 0         |
| 2019 | 0.8548 | 2,123     | 1,815     |
| 2020 | 0.8219 | 0         | 0         |
| 2021 | 0.7903 | 5,281     | 4,174     |
| 2022 | 0.7599 | 0         | 0         |
| 2023 | 0.7307 | 0         | 0         |
| 2024 | 0.7026 | 1,551     | 1,090     |
| 2025 | 0.6756 | 0         | 0         |
| 2026 | 0.6496 | 0         | 0         |
| 2027 | 0.6246 | 0         | 0         |
| 2028 | 0.6006 | 0         | 0         |
| 2029 | 0.5775 | 33,404    | 19,291    |
| 2030 | 0.5553 | 0         | 0         |
| 2031 | 0.5339 | 0         | 0         |
| 2032 | 0.5134 | 2,272     | 1,166     |
| 2033 | 0.4936 | 0         | 0         |
| 2034 | 0.4746 | 0         | 0         |
| 2035 | 0.4564 | 0         | 0         |
| 2036 | 0.4388 | 1,430,360 | 627,642   |
| 2037 | 0.4220 | 0         | 0         |
| 2038 | 0.4057 | 0         | 0         |
| 2039 | 0.3901 | 131,978   | 51,485    |
| 2040 | 0.3751 | 1,830,185 | 686,502   |
| 2041 | 0.3607 | 0         | 0         |
| 2042 | 0.3468 | 145,895   | 50,596    |
| 2043 | 0.3335 | 0         | 0         |
| 2044 | 0.3207 | 277,721   | 89,065    |
| 2045 | 0.3083 | 185,783   | 57,277    |
| 2046 | 0.2965 | 0         | 0         |
| 2047 | 0.2851 | 0         | 0         |
| 2048 | 0.2741 | 0         | 0         |
| 2049 | 0.2636 | 0         | 0         |
| 2050 | 0.2534 | 0         | 0         |
| 2051 | 0.2437 | 0         | 0         |
| 2052 | 0.2343 | 0         | 0         |
| 2053 | 0.2253 | 160,801   | 36,228    |
| 2054 | 0.2166 | 16,199    | 3,509     |
| 2055 | 0.2083 | 11,926    | 2,484     |
| 2056 | 0.2003 | 20,526    | 4,111     |
| 2057 | 0.1926 | 44,730    | 8,615     |
| 2058 | 0.1852 | 5,409     | 1,002     |
| 2059 | 0.1780 | 0         | 0         |
| 2060 | 0.1712 | 0         | 0         |
| 2061 | 0.1646 | 0         | 0         |
| 2062 | 0.1583 | 1,912,750 | 302,788   |
| 2063 | 0.1522 | 624,894   | 95,109    |
| 2064 | 0.1463 | 318,302   | 46,568    |
| 2065 | 0.1407 | 271,762   | 38,237    |
| 2066 | 0.1353 | 264,270   | 35,756    |
| 2067 | 0.1301 | 257,743   | 33,532    |
| 2068 | 0.1251 | 360,549   | 45,105    |
| 合計   |        |           | 2,257,731 |

整理番号

1

## 便 益 集 計 表

(路網分)

事業名: 森林環境保全整備事業

都道府県名: 北海道

地域(地区)名: 八雲町<sup>やくもちょう</sup>

(単位: 千円)

| 大 区 分       | 中 区 分       | 評価額     | 備 考 |
|-------------|-------------|---------|-----|
| 水源かん養便益     | 洪水防止便益      | 78,860  |     |
|             | 流域貯水便益      | 30,322  |     |
|             | 水質浄化便益      | 66,320  |     |
| 山地保全便益      | 土砂流出防止便益    | 150,383 |     |
|             | 土砂崩壊防止便益    | 17,744  |     |
| 環境保全便益      | 炭素固定便益      | 36,830  |     |
| 木材生産等便益     | 木材生産経費縮減便益  | 6,216   |     |
|             | 木材生産確保・増進便益 | 20,380  |     |
| 森林整備経費縮減等便益 | 造林作業経費縮減便益  | 267     |     |
| 総 便 益 (B)   |             | 407,322 |     |
| 総 費 用 (C)   |             | 406,026 |     |

(注)便益額算定方法は、代表路線を表示しています。

# 事業費集計表

事業名: 森林環境保全整備事業 (路網整備)

① 黒 岩 線

地域(地区)名: 八雲町

(単位:千円)

| 年度  | 事業費     |          |         | 年度  | 事業費    |          |           |
|-----|---------|----------|---------|-----|--------|----------|-----------|
|     | 事業費     | 割引率      | 現在価値額   |     | 事業費    | 割引率      | 現在価値額     |
| H8  |         | × 2.1068 |         | H34 | 7,364  | × 0.7599 | 5,596     |
| H9  | 67,109  | × 2.0258 | 135,949 | H35 | 7,284  | × 0.7307 | 5,322     |
| H10 | 90,466  | × 1.9479 | 176,219 | H36 | 11,471 | × 0.7026 | 8,060     |
| H11 | 109,067 | × 1.8730 | 204,282 | H37 | 10,580 | × 0.6756 | 7,148     |
| H12 | 108,339 | × 1.8009 | 195,108 | H38 | 8,797  | × 0.6496 | 5,715     |
| H13 | 85,666  | × 1.7317 | 148,348 | H39 | 6,424  | × 0.6246 | 4,012     |
| H14 | 79,999  | × 1.6651 | 133,206 | H40 | 5,039  | × 0.6006 | 3,026     |
| H15 | 65,067  | × 1.6010 | 104,172 | H41 | 5,812  | × 0.5775 | 3,356     |
| H16 | 80,291  | × 1.5395 | 123,608 | H42 | 5,289  | × 0.5553 | 2,937     |
| H17 | 75,045  | × 1.4802 | 111,082 | H43 | 4,039  | × 0.5339 | 2,156     |
| H18 | 48,107  | × 1.4233 | 68,471  | H44 | 1,165  | × 0.5134 | 598       |
| H19 | 13,435  | × 1.3686 | 18,387  | H45 | 2,269  | × 0.4936 | 1,120     |
| H20 | 14,308  | × 1.3159 | 18,828  | H46 | 2,069  | × 0.4746 | 982       |
| H21 | 13,195  | × 1.2653 | 16,696  | H47 | 819    | × 0.4564 | 374       |
| H22 | 19,301  | × 1.2167 | 23,484  | H48 | 126    | × 0.4388 | 55        |
| H23 | 18,100  | × 1.1699 | 21,175  | H49 | 126    | × 0.4220 | 53        |
| H24 | 9,375   | × 1.1249 | 10,546  | H50 | 126    | × 0.4057 | 51        |
| H25 | 12,483  | × 1.0816 | 13,502  | H51 | 126    | × 0.3901 | 49        |
| H26 | 11,278  | × 1.0400 | 11,729  | H52 | 126    | × 0.3751 | 47        |
| H27 | 7,883   | × 1.0000 | 7,883   | H53 | 126    | × 0.3607 | 45        |
| H28 | 8,842   | × 0.9615 | 8,502   | H54 | 126    | × 0.3468 | 44        |
| H29 | 8,526   | × 0.9246 | 7,883   | H55 | 126    | × 0.3335 | 42        |
| H30 | 12,361  | × 0.8890 | 10,989  | H56 | 126    | × 0.3207 | 40        |
| H31 | 11,177  | × 0.8548 | 9,554   | H57 | 126    | × 0.3083 | 39        |
| H32 | 10,134  | × 0.8219 | 8,329   | H58 | 126    | × 0.2965 | 37        |
| H33 | 6,480   | × 0.7903 | 5,121   | 合計  |        |          | 1,643,957 |

事業実施計画期間事業費: H17~H21 164,090 千円 総費用(C)=(74801÷641129)×1643957

事業実施計画期間維持管理費: H17~H21 594 千円 内維持管理費=(74801÷641129)×4574

事業実施計画期間森林整備費: H17~H21 88,695 千円

総事業費: H17~H21 74,801 千円

全体計画総事業費: 641,129 千円

C= 191,802

# 事業費集計表

事業名: 森林環境保全整備事業 (路網整備)

② 栄 浜 線

地域(地区)名: 八雲町

(単位:千円)

| 年度  | 事業費     |          |         | 年度  | 事業費    |          |         |
|-----|---------|----------|---------|-----|--------|----------|---------|
|     | 事業費     | 割引率      | 現在価値額   |     | 事業費    | 割引率      | 現在価値額   |
| H15 |         | × 1.6010 |         | H41 | 14,867 | × 0.5775 | 8,586   |
| H16 | 210,238 | × 1.5395 | 323,661 | H42 | 6,832  | × 0.5553 | 3,794   |
| H17 | 30,830  | × 1.4802 | 45,635  | H43 | 3,542  | × 0.5339 | 1,891   |
| H18 | 35,437  | × 1.4233 | 50,437  | H44 | 4,601  | × 0.5134 | 2,362   |
| H19 | 23,963  | × 1.3686 | 32,796  | H45 | 4,117  | × 0.4936 | 2,032   |
| H20 | 25,851  | × 1.3159 | 34,017  | H46 | 791    | × 0.4746 | 375     |
| H21 | 642     | × 1.2653 | 812     | H47 | 2,445  | × 0.4564 | 1,116   |
| H22 | 642     | × 1.2167 | 781     | H48 | 1,798  | × 0.4388 | 789     |
| H23 | 983     | × 1.1699 | 1,150   | H49 | 151    | × 0.4220 | 64      |
| H24 | 1,621   | × 1.1249 | 1,823   | H50 | 14,833 | × 0.4057 | 6,018   |
| H25 | 560     | × 1.0816 | 606     | H51 | 1,182  | × 0.3901 | 461     |
| H26 | 560     | × 1.0400 | 582     | H52 | 13,029 | × 0.3751 | 4,887   |
| H27 | 6,490   | × 1.0000 | 6,490   | H53 | 952    | × 0.3607 | 343     |
| H28 | 936     | × 0.9615 | 900     | H54 | 3,331  | × 0.3468 | 1,155   |
| H29 | 936     | × 0.9246 | 865     | H55 | 1,521  | × 0.3335 | 507     |
| H30 | 2,901   | × 0.8890 | 2,579   | H56 | 17,505 | × 0.3207 | 5,614   |
| H31 | 6,988   | × 0.8548 | 5,973   | H57 | 815    | × 0.3083 | 251     |
| H32 | 1,148   | × 0.8219 | 944     | H58 | 10,080 | × 0.2965 | 2,989   |
| H33 | 3,018   | × 0.7903 | 2,385   | H59 | 1,032  | × 0.2851 | 294     |
| H34 | 6,161   | × 0.7599 | 4,682   | H60 | 1,731  | × 0.2741 | 474     |
| H35 | 1,298   | × 0.7307 | 948     | H61 |        |          |         |
| H36 | 35,681  | × 0.7026 | 25,069  | H62 |        |          |         |
| H37 | 4,290   | × 0.6756 | 2,898   | H63 |        |          |         |
| H38 | 29,843  | × 0.6496 | 19,386  | H64 |        |          |         |
| H39 | 8,338   | × 0.6246 | 5,208   | H65 |        |          |         |
| H40 | 11,509  | × 0.6006 | 6,912   | 合計  |        |          | 621,541 |

事業実施計画期間事業費: H17~H21 116,723 千円 総費用(C)=(108683÷315329)×621541

事業実施計画期間維持管理費: H17~H21 518 千円 内維持管理費=(108683÷315329)×3556

事業実施計画期間森林整備費: H17~H21 7,522 千円

総事業費: H17~H21 108,683 千円

全体計画総事業費: 315,329 千円

C= 214,224

効果額集計表

| 事業名       |                  | 森林環境保全整備事業     | 都道府県名     | 北海道     | 地域(地区)名   | 栄浜線       |
|-----------|------------------|----------------|-----------|---------|-----------|-----------|
| 路線名等      |                  | 栄浜線            |           |         | 計画期間      | H17 ~ H20 |
| 区分        | 項目               |                | 効果額(事業全体) |         | 効果額(計画期間) |           |
|           |                  |                | 現在価格      |         | 現在価格      |           |
|           |                  |                | (千円)      |         | (千円)      |           |
| 水源かん養便益   | 洪水防止便益           |                | 123,902   | 42,705  |           |           |
|           | 流域貯水便益           |                | 47,640    | 16,420  |           |           |
|           | 水質浄化便益           |                | 104,203   | 35,915  |           |           |
|           | 小計               |                | 275,745   | 95,040  |           |           |
| 山地保全便益    | 土砂流出防止便益         |                | 236,281   | 81,438  |           |           |
|           | 土砂崩壊防止便益         |                | 25,507    | 8,791   |           |           |
|           | 小計               |                | 261,788   | 90,229  |           |           |
| 環境保全便益    | 炭素固定便益           |                | 54,908    | 18,925  |           |           |
|           | 気候緩和便益           |                |           |         |           |           |
|           | 騒音軽減便益           |                |           |         |           |           |
|           | 飛砂軽減便益           |                |           |         |           |           |
|           | 風害軽減便益           |                |           |         |           |           |
|           | 大気浄化便益           |                |           |         |           |           |
|           | 霧害軽減便益           |                |           |         |           |           |
|           | 火災防備便益           |                |           |         |           |           |
|           | 漁場保全便益           |                |           |         |           |           |
|           | 生物多様性の保全便益       |                |           |         |           |           |
|           | 保健休養便益           |                |           |         |           |           |
|           | 小計               |                | 54,908    | 18,925  |           |           |
| 木材生産等便益   | 木材生産経費縮減便益       |                | 17,162    | 5,915   |           |           |
|           | 木材利用増進便益         |                |           |         |           |           |
|           | 木材生産確保・増進便益      |                | 14,404    | 4,965   |           |           |
|           |                  | 森林整備分<br>路網整備分 | 14,404    | 4,965   |           |           |
|           | 小計               |                | 31,566    | 10,880  |           |           |
| 森林整備      | 造林作業経費縮減便益       |                | 755       | 260     |           |           |
|           |                  | 歩行時間等経費縮減便益    | 755       | 260     |           |           |
| 経費縮減等便益   | 治山経費縮減便益         |                |           |         |           |           |
|           | 森林管理等経費縮減便益      |                |           |         |           |           |
|           | 森林整備促進便益         |                |           |         |           |           |
|           | 小計               |                | 755       | 260     |           |           |
| 一般交通便益    | 走行時間短縮便益         |                |           |         |           |           |
|           | 走行経費減少便益         |                |           |         |           |           |
|           | 小計               |                |           |         |           |           |
| 森林の総合利用便益 | アクセス時間短縮等便益      | アクセス時間短縮便益     |           |         |           |           |
|           |                  | アクセス経費減少便益     |           |         |           |           |
|           |                  |                |           |         |           |           |
|           | ふれあい機会創出便益       |                |           |         |           |           |
|           | フォレストアメニティ施設利用便益 |                |           |         |           |           |
|           | 利用確保便益           |                |           |         |           |           |
|           | 施設滞在便益           |                |           |         |           |           |
|           | 副産物増大便益          |                |           |         |           |           |
|           | 小計               |                |           |         |           |           |
| 災害等軽減便益   | 災害時迂回路等確保便益      |                |           |         |           |           |
|           | 防火帯便益            |                |           |         |           |           |
|           | 災害復旧経費縮減便益       |                |           |         |           |           |
|           | 小計               |                |           |         |           |           |
| 維持管理費縮減便益 |                  |                |           |         |           |           |
| 山村環境整備便益  | 生活用水確保便益         |                |           |         |           |           |
|           | 生活排水浄化便益         |                |           |         |           |           |
|           |                  | し尿処理経費等縮減便益    |           |         |           |           |
|           |                  | 浄化槽設置経費縮減便益    |           |         |           |           |
|           |                  | 集落内臭気防止便益      |           |         |           |           |
|           | 集落内除雪便益          |                |           |         |           |           |
|           | 土地創出便益           |                |           |         |           |           |
|           | 生活安定確保便益         |                |           |         |           |           |
|           | 小計               |                |           |         |           |           |
| その他の便益    | 通行安全確保便益         |                |           |         |           |           |
|           | 環境保全確保便益         |                |           |         |           |           |
|           | 森林内施設管理経費縮減便益    |                |           |         |           |           |
|           | ボランティア誘発便益       |                |           |         |           |           |
|           | 小計               |                |           |         |           |           |
| 合計        |                  |                | 624,762   | 215,334 | 総便益(B)    |           |

$$B = \sum_{t=1}^T \frac{t \times (C_o - C_T) \times V_t}{T \times (1 + i)^t} + \sum_{t=T+1}^Y \frac{(C_o - C_T) \times V_t}{(1 + i)^t}$$

|     |                                                   |                                      |                                                              |
|-----|---------------------------------------------------|--------------------------------------|--------------------------------------------------------------|
| T:  | 整備期間(年)                                           |                                      | 5                                                            |
| Y:  | 評価期間                                              |                                      | 45                                                           |
| Co: | 整備前の伐採・搬出等経費(円／m3)<br>出典:北海道森林土木事業適用単価表           | カラマツ<br>トドマツ<br>スギ<br>その他広葉樹(3)<br>0 | 11,976<br>11,976<br>11,976<br>11,976                         |
| CT: | 整備後の伐採・搬出等経費(円／m3)<br>出典:北海道森林土木事業適用単価表           | カラマツ<br>トドマツ<br>スギ<br>その他広葉樹(3)<br>0 | 6,360<br>6,360<br>6,360<br>6,360                             |
| Vt: | 路網整備前からの利用区域の t 年後における伐採材積(m3)<br>出典:北海道作成の蓄積テーブル | カラマツ<br>トドマツ<br>スギ<br>その他広葉樹(3)<br>0 | 0.00 ～ 0.00<br>0.00 ～ 2,295.75<br>0.00 ～ 0.00<br>0.00 ～ 0.00 |

|      |        |        | カラマツ   |     | トドマツ     |        | スギ     |     | その他広葉樹(3) |     |        |     |
|------|--------|--------|--------|-----|----------|--------|--------|-----|-----------|-----|--------|-----|
| 年度   | 社会的割引率 | t/T    | 事業効果材積 | 効果額 | 事業効果材積   | 効果額    | 事業効果材積 | 効果額 | 事業効果材積    | 効果額 | 事業効果材積 | 効果額 |
| 2003 | 1.6010 |        |        |     |          |        |        |     |           |     |        |     |
| 2004 | 1.5395 | 0.2000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2005 | 1.4802 | 0.4000 | 0.00   | 0   | 441.49   | 992    | 0.00   | 0   | 0.00      | 0   |        |     |
| 2006 | 1.4233 | 0.6000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2007 | 1.3686 | 0.8000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2008 | 1.3159 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2009 | 1.2653 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2010 | 1.2167 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2011 | 1.1699 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2012 | 1.1249 | 1.0000 | 0.00   | 0   | 63.07    | 354    | 0.00   | 0   | 0.00      | 0   |        |     |
| 2013 | 1.0816 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2014 | 1.0400 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2015 | 1.0000 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2016 | 0.9615 | 1.0000 | 0.00   | 0   | 1,690.28 | 9,493  | 0.00   | 0   | 0.00      | 0   |        |     |
| 2017 | 0.9246 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2018 | 0.8890 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2019 | 0.8548 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2020 | 0.8219 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2021 | 0.7903 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2022 | 0.7599 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2023 | 0.7307 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2024 | 0.7026 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2025 | 0.6756 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2026 | 0.6496 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2027 | 0.6246 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2028 | 0.6006 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2029 | 0.5775 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2030 | 0.5553 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2031 | 0.5339 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2032 | 0.5134 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2033 | 0.4936 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2034 | 0.4746 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2035 | 0.4564 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2036 | 0.4388 | 1.0000 | 0.00   | 0   | 25.23    | 142    | 0.00   | 0   | 0.00      | 0   |        |     |
| 2037 | 0.4220 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2038 | 0.4057 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2039 | 0.3901 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2040 | 0.3751 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2041 | 0.3607 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2042 | 0.3468 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2043 | 0.3335 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2044 | 0.3207 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 2045 | 0.3083 | 1.0000 | 0.00   | 0   | 2,295.75 | 12,893 | 0.00   | 0   | 0.00      | 0   |        |     |
| 2046 | 0.2965 | 1.0000 | 0.00   | 0   | 1,110.03 | 6,234  | 0.00   | 0   | 0.00      | 0   |        |     |
| 2047 | 0.2851 | 1.0000 | 0.00   | 0   | 176.60   | 992    | 0.00   | 0   | 0.00      | 0   |        |     |
| 2048 | 0.2741 | 1.0000 | 0.00   | 0   | 0.00     | 0      | 0.00   | 0   | 0.00      | 0   |        |     |
| 合計   |        |        |        |     |          |        |        |     |           |     |        |     |

|      |        |        | 合計     |        |
|------|--------|--------|--------|--------|
| 年度   | 社会の割引率 | t/T    | 効果額    | 現在価値化  |
| 2003 | 1.6010 |        |        |        |
| 2004 | 1.5395 | 0.2000 | 0      | 0      |
| 2005 | 1.4802 | 0.4000 | 992    | 1,468  |
| 2006 | 1.4233 | 0.6000 | 0      | 0      |
| 2007 | 1.3686 | 0.8000 | 0      | 0      |
| 2008 | 1.3159 | 1.0000 | 0      | 0      |
| 2009 | 1.2653 | 1.0000 | 0      | 0      |
| 2010 | 1.2167 | 1.0000 | 0      | 0      |
| 2011 | 1.1699 | 1.0000 | 0      | 0      |
| 2012 | 1.1249 | 1.0000 | 354    | 398    |
| 2013 | 1.0816 | 1.0000 | 0      | 0      |
| 2014 | 1.0400 | 1.0000 | 0      | 0      |
| 2015 | 1.0000 | 1.0000 | 0      | 0      |
| 2016 | 0.9615 | 1.0000 | 9,493  | 9,128  |
| 2017 | 0.9246 | 1.0000 | 0      | 0      |
| 2018 | 0.8890 | 1.0000 | 0      | 0      |
| 2019 | 0.8548 | 1.0000 | 0      | 0      |
| 2020 | 0.8219 | 1.0000 | 0      | 0      |
| 2021 | 0.7903 | 1.0000 | 0      | 0      |
| 2022 | 0.7599 | 1.0000 | 0      | 0      |
| 2023 | 0.7307 | 1.0000 | 0      | 0      |
| 2024 | 0.7026 | 1.0000 | 0      | 0      |
| 2025 | 0.6756 | 1.0000 | 0      | 0      |
| 2026 | 0.6496 | 1.0000 | 0      | 0      |
| 2027 | 0.6246 | 1.0000 | 0      | 0      |
| 2028 | 0.6006 | 1.0000 | 0      | 0      |
| 2029 | 0.5775 | 1.0000 | 0      | 0      |
| 2030 | 0.5553 | 1.0000 | 0      | 0      |
| 2031 | 0.5339 | 1.0000 | 0      | 0      |
| 2032 | 0.5134 | 1.0000 | 0      | 0      |
| 2033 | 0.4936 | 1.0000 | 0      | 0      |
| 2034 | 0.4746 | 1.0000 | 0      | 0      |
| 2035 | 0.4564 | 1.0000 | 0      | 0      |
| 2036 | 0.4388 | 1.0000 | 142    | 62     |
| 2037 | 0.4220 | 1.0000 | 0      | 0      |
| 2038 | 0.4057 | 1.0000 | 0      | 0      |
| 2039 | 0.3901 | 1.0000 | 0      | 0      |
| 2040 | 0.3751 | 1.0000 | 0      | 0      |
| 2041 | 0.3607 | 1.0000 | 0      | 0      |
| 2042 | 0.3468 | 1.0000 | 0      | 0      |
| 2043 | 0.3335 | 1.0000 | 0      | 0      |
| 2044 | 0.3207 | 1.0000 | 0      | 0      |
| 2045 | 0.3083 | 1.0000 | 12,893 | 3,975  |
| 2046 | 0.2965 | 1.0000 | 6,234  | 1,848  |
| 2047 | 0.2851 | 1.0000 | 992    | 283    |
| 2048 | 0.2741 | 1.0000 | 0      | 0      |
| 合計   |        |        |        | 17,162 |

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

Y: 評価期間

45

Vt主: 主伐量 林道を整備した場合の t 年後における伐採材積(m3)  
出典:北海道作成の蓄積テーブル

|           |               |
|-----------|---------------|
| カラマツ      | 0.00 ~ 9.38   |
| トドマツ      | 0.00 ~ 108.08 |
| スギ        | 0.00 ~ 564.18 |
| その他広葉樹(3) | 0.00 ~ 0.00   |
| 0         |               |

Vt間: 間伐量 林道を整備した場合の t 年後における伐採材積(m3)  
出典:北海道作成の蓄積テーブル

|           |               |
|-----------|---------------|
| カラマツ      | 0.00 ~ 436.41 |
| トドマツ      | 0.00 ~ 377.32 |
| スギ        | 0.00 ~ 0.00   |
| その他広葉樹(3) | 0.00 ~ 0.00   |
| 0         |               |

@: 主伐材 木材市場価格(円/m3)  
出典:「北海道木材市況調査」(過去5ヶ年の平均(H22~H26))

|           |        |
|-----------|--------|
| カラマツ      | 9,700  |
| トドマツ      | 12,200 |
| スギ        | 9,300  |
| その他広葉樹(3) | 14,300 |
| 0         |        |

@: 間伐材 木材市場価格(円/m3)  
出典:「北海道木材市況調査」(過去5ヶ年の平均(H22~H26))

|           |        |
|-----------|--------|
| カラマツ      | 9,000  |
| トドマツ      | 10,800 |
| スギ        | 8,200  |
| その他広葉樹(3) | 14,300 |
| 0         |        |

|      |        | 主伐   |     |        |       |        |       |           |     |      |     |
|------|--------|------|-----|--------|-------|--------|-------|-----------|-----|------|-----|
|      |        | カラマツ |     | トドマツ   |       | スギ     |       | その他広葉樹(3) |     |      |     |
| 年度   | 社会的割引率 | 伐採材積 | 効果額 | 伐採材積   | 効果額   | 伐採材積   | 効果額   | 伐採材積      | 効果額 | 伐採材積 | 効果額 |
| 2003 | 1.6010 |      |     |        |       |        |       |           |     |      |     |
| 2004 | 1.5395 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2005 | 1.4802 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2006 | 1.4233 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2007 | 1.3686 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2008 | 1.3159 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2009 | 1.2653 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2010 | 1.2167 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2011 | 1.1699 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2012 | 1.1249 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2013 | 1.0816 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2014 | 1.0400 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2015 | 1.0000 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2016 | 0.9615 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2017 | 0.9246 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2018 | 0.8890 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2019 | 0.8548 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2020 | 0.8219 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2021 | 0.7903 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2022 | 0.7599 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2023 | 0.7307 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2024 | 0.7026 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2025 | 0.6756 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2026 | 0.6496 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2027 | 0.6246 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2028 | 0.6006 | 9.38 | 91  | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2029 | 0.5775 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2030 | 0.5553 | 0.00 | 0   | 21.63  | 264   | 0.00   | 0     | 0.00      | 0   |      |     |
| 2031 | 0.5339 | 0.00 | 0   | 0.00   | 0     | 564.18 | 5,247 | 0.00      | 0   |      |     |
| 2032 | 0.5134 | 0.00 | 0   | 0.00   | 0     | 203.53 | 1,893 | 0.00      | 0   |      |     |
| 2033 | 0.4936 | 0.00 | 0   | 0.00   | 0     | 371.25 | 3,453 | 0.00      | 0   |      |     |
| 2034 | 0.4746 | 0.00 | 0   | 0.00   | 0     | 236.01 | 2,195 | 0.00      | 0   |      |     |
| 2035 | 0.4564 | 0.00 | 0   | 0.00   | 0     | 84.86  | 789   | 0.00      | 0   |      |     |
| 2036 | 0.4388 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2037 | 0.4220 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2038 | 0.4057 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2039 | 0.3901 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2040 | 0.3751 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2041 | 0.3607 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2042 | 0.3468 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2043 | 0.3335 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2044 | 0.3207 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2045 | 0.3083 | 0.00 | 0   | 108.08 | 1,319 | 0.00   | 0     | 0.00      | 0   |      |     |
| 2046 | 0.2965 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2047 | 0.2851 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 2048 | 0.2741 | 0.00 | 0   | 0.00   | 0     | 0.00   | 0     | 0.00      | 0   |      |     |
| 合計   |        |      |     |        |       |        |       |           |     |      |     |

|      |        | 間伐     |       |        |       |      |     |           |     |      |     |
|------|--------|--------|-------|--------|-------|------|-----|-----------|-----|------|-----|
|      |        | カラマツ   |       | トドマツ   |       | スギ   |     | その他広葉樹(3) |     |      |     |
| 年度   | 社会的割引率 | 伐採材積   | 効果額   | 伐採材積   | 効果額   | 伐採材積 | 効果額 | 伐採材積      | 効果額 | 伐採材積 | 効果額 |
| 2003 | 1.6010 |        |       |        |       |      |     |           |     |      |     |
| 2004 | 1.5395 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2005 | 1.4802 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2006 | 1.4233 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2007 | 1.3686 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2008 | 1.3159 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2009 | 1.2653 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2010 | 1.2167 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2011 | 1.1699 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2012 | 1.1249 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2013 | 1.0816 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2014 | 1.0400 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2015 | 1.0000 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2016 | 0.9615 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2017 | 0.9246 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2018 | 0.8890 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2019 | 0.8548 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2020 | 0.8219 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2021 | 0.7903 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2022 | 0.7599 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2023 | 0.7307 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2024 | 0.7026 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2025 | 0.6756 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2026 | 0.6496 | 0.00   | 0     | 11.02  | 119   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2027 | 0.6246 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2028 | 0.6006 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2029 | 0.5775 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2030 | 0.5553 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2031 | 0.5339 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2032 | 0.5134 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2033 | 0.4936 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2034 | 0.4746 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2035 | 0.4564 | 0.00   | 0     | 175.99 | 1,901 | 0.00 | 0   | 0.00      | 0   |      |     |
| 2036 | 0.4388 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2037 | 0.4220 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2038 | 0.4057 | 0.00   | 0     | 16.81  | 182   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2039 | 0.3901 | 436.41 | 3,928 | 57.87  | 625   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2040 | 0.3751 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2041 | 0.3607 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2042 | 0.3468 | 219.30 | 1,974 | 170.87 | 1,845 | 0.00 | 0   | 0.00      | 0   |      |     |
| 2043 | 0.3335 | 0.00   | 0     | 217.06 | 2,344 | 0.00 | 0   | 0.00      | 0   |      |     |
| 2044 | 0.3207 | 0.00   | 0     | 377.32 | 4,075 | 0.00 | 0   | 0.00      | 0   |      |     |
| 2045 | 0.3083 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 2046 | 0.2965 | 0.00   | 0     | 143.82 | 1,553 | 0.00 | 0   | 0.00      | 0   |      |     |
| 2047 | 0.2851 | 0.00   | 0     | 80.51  | 870   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2048 | 0.2741 | 0.00   | 0     | 0.00   | 0     | 0.00 | 0   | 0.00      | 0   |      |     |
| 合計   |        |        |       |        |       |      |     |           |     |      |     |

|      |        | 合計    |        |
|------|--------|-------|--------|
| 年度   | 社会の割引率 | 効果額   | 現在価値化  |
| 2003 | 1.6010 |       |        |
| 2004 | 1.5395 | 0     | 0      |
| 2005 | 1.4802 | 0     | 0      |
| 2006 | 1.4233 | 0     | 0      |
| 2007 | 1.3686 | 0     | 0      |
| 2008 | 1.3159 | 0     | 0      |
| 2009 | 1.2653 | 0     | 0      |
| 2010 | 1.2167 | 0     | 0      |
| 2011 | 1.1699 | 0     | 0      |
| 2012 | 1.1249 | 0     | 0      |
| 2013 | 1.0816 | 0     | 0      |
| 2014 | 1.0400 | 0     | 0      |
| 2015 | 1.0000 | 0     | 0      |
| 2016 | 0.9615 | 0     | 0      |
| 2017 | 0.9246 | 0     | 0      |
| 2018 | 0.8890 | 0     | 0      |
| 2019 | 0.8548 | 0     | 0      |
| 2020 | 0.8219 | 0     | 0      |
| 2021 | 0.7903 | 0     | 0      |
| 2022 | 0.7599 | 0     | 0      |
| 2023 | 0.7307 | 0     | 0      |
| 2024 | 0.7026 | 0     | 0      |
| 2025 | 0.6756 | 0     | 0      |
| 2026 | 0.6496 | 119   | 77     |
| 2027 | 0.6246 | 0     | 0      |
| 2028 | 0.6006 | 91    | 55     |
| 2029 | 0.5775 | 0     | 0      |
| 2030 | 0.5553 | 264   | 147    |
| 2031 | 0.5339 | 5,247 | 2,801  |
| 2032 | 0.5134 | 1,893 | 972    |
| 2033 | 0.4936 | 3,453 | 1,704  |
| 2034 | 0.4746 | 2,195 | 1,042  |
| 2035 | 0.4564 | 2,690 | 1,228  |
| 2036 | 0.4388 | 0     | 0      |
| 2037 | 0.4220 | 0     | 0      |
| 2038 | 0.4057 | 182   | 74     |
| 2039 | 0.3901 | 4,553 | 1,776  |
| 2040 | 0.3751 | 0     | 0      |
| 2041 | 0.3607 | 0     | 0      |
| 2042 | 0.3468 | 3,819 | 1,324  |
| 2043 | 0.3335 | 2,344 | 782    |
| 2044 | 0.3207 | 4,075 | 1,307  |
| 2045 | 0.3083 | 1,319 | 407    |
| 2046 | 0.2965 | 1,553 | 460    |
| 2047 | 0.2851 | 870   | 248    |
| 2048 | 0.2741 | 0     | 0      |
| 合計   |        |       | 14,404 |

$$B = \sum_{t=1}^T \frac{t \times (C_o - C_T) \times V_t}{T \times (1 + i)^t} + \sum_{t=T+1}^Y \frac{(C_o - C_T) \times V_t}{(1 + i)^t}$$

T: 整備期間(年)

5

Y: 評価期間

45

Co: 整備前の造林等経費(円/ha)  
出典:北海道造林事業実績

|        | 植栽        | 下刈(全刈) | 除伐      | つる切り    | 間伐      |
|--------|-----------|--------|---------|---------|---------|
| カラマツ   | 553,271   | 77,574 | 185,037 | 152,176 | 347,995 |
| トドマツ   | 744,003   | 77,574 | 185,037 | 152,176 | 347,995 |
| スギ     | 881,133   | 77,574 | 185,037 | 152,176 | 347,995 |
| その他広葉樹 | 1,057,840 | 77,574 | 185,037 | 152,176 | 347,995 |
| 0      |           |        |         |         |         |

CT: 整備後の造林等経費(円/ha)  
出典:北海道造林事業実績

|        | 植栽        | 下刈(全刈) | 除伐      | つる切り    | 間伐      |
|--------|-----------|--------|---------|---------|---------|
| カラマツ   | 526,296   | 75,452 | 183,317 | 151,334 | 346,275 |
| トドマツ   | 717,028   | 75,452 | 183,317 | 151,334 | 346,275 |
| スギ     | 854,158   | 75,452 | 183,317 | 151,334 | 346,275 |
| その他広葉樹 | 1,030,865 | 75,452 | 183,317 | 151,334 | 346,275 |
| 0      |           |        |         |         |         |

Vt: 林道が整備されない場合の t 年後の造林面積(ha)

0.00 ~ 36.48

|      |        |        | 植栽   |     |      |     |      |     |           |     |      |     |
|------|--------|--------|------|-----|------|-----|------|-----|-----------|-----|------|-----|
|      |        |        | カラマツ |     | トドマツ |     | スギ   |     | その他広葉樹(3) |     |      |     |
| 年度   | 社会的割引率 | t/T    | 造林面積 | 効果額 | 造林面積 | 効果額 | 造林面積 | 効果額 | 造林面積      | 効果額 | 造林面積 | 効果額 |
| 2003 | 1.6010 |        |      |     |      |     |      |     |           |     |      |     |
| 2004 | 1.5395 | 0.2000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2005 | 1.4802 | 0.4000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2006 | 1.4233 | 0.6000 | 0.00 | 0   | 1.40 | 23  | 0.00 | 0   | 0.00      | 0   |      |     |
| 2007 | 1.3686 | 0.8000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2008 | 1.3159 | 1.0000 | 0.00 | 0   | 0.31 | 8   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2009 | 1.2653 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2010 | 1.2167 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2011 | 1.1699 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2012 | 1.1249 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2013 | 1.0816 | 1.0000 | 0.00 | 0   | 0.20 | 5   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2014 | 1.0400 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2015 | 1.0000 | 1.0000 | 0.44 | 12  | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2016 | 0.9615 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2017 | 0.9246 | 1.0000 | 0.00 | 0   | 5.36 | 145 | 0.00 | 0   | 0.00      | 0   |      |     |
| 2018 | 0.8890 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2019 | 0.8548 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2020 | 0.8219 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2021 | 0.7903 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2022 | 0.7599 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2023 | 0.7307 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2024 | 0.7026 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2025 | 0.6756 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2026 | 0.6496 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2027 | 0.6246 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2028 | 0.6006 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2029 | 0.5775 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2030 | 0.5553 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2031 | 0.5339 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2032 | 0.5134 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2033 | 0.4936 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2034 | 0.4746 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2035 | 0.4564 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2036 | 0.4388 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2037 | 0.4220 | 1.0000 | 0.00 | 0   | 0.08 | 2   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2038 | 0.4057 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2039 | 0.3901 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2040 | 0.3751 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2041 | 0.3607 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2042 | 0.3468 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2043 | 0.3335 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2044 | 0.3207 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2045 | 0.3083 | 1.0000 | 0.00 | 0   | 0.00 | 0   | 0.00 | 0   | 0.00      | 0   |      |     |
| 2046 | 0.2965 | 1.0000 | 0.00 | 0   | 7.28 | 196 | 0.00 | 0   | 0.00      | 0   |      |     |
| 2047 | 0.2851 | 1.0000 | 0.00 | 0   | 3.52 | 95  | 0.00 | 0   | 0.00      | 0   |      |     |
| 2048 | 0.2741 | 1.0000 | 0.00 | 0   | 0.56 | 15  | 0.00 | 0   | 0.00      | 0   |      |     |
| 合計   |        |        |      |     |      |     |      |     |           |     |      |     |

|      |        |        | 下刈(全刈) |     | 除伐    |     | つる切り  |     | 間伐   |     |      |     |
|------|--------|--------|--------|-----|-------|-----|-------|-----|------|-----|------|-----|
| 年度   | 社会的割引率 | t/T    | 造林面積   | 効果額 | 造林面積  | 効果額 | 造林面積  | 効果額 | カラマツ |     | トドマツ |     |
|      |        |        | 造林面積   | 効果額 | 造林面積  | 効果額 | 造林面積  | 効果額 | 造林面積 | 効果額 | 造林面積 | 効果額 |
| 2003 | 1.6010 |        |        |     |       |     |       |     |      |     |      |     |
| 2004 | 1.5395 | 0.2000 | 3.20   | 1   | 7.00  | 2   | 7.00  | 1   | 0.00 | 0   | 3.83 | 1   |
| 2005 | 1.4802 | 0.4000 | 1.24   | 1   | 15.80 | 11  | 15.80 | 5   | 0.00 | 0   | 2.84 | 2   |
| 2006 | 1.4233 | 0.6000 | 3.76   | 5   | 12.16 | 13  | 12.16 | 6   | 0.00 | 0   | 0.00 | 0   |
| 2007 | 1.3686 | 0.8000 | 3.08   | 5   | 10.97 | 15  | 10.97 | 7   | 0.00 | 0   | 0.00 | 0   |
| 2008 | 1.3159 | 1.0000 | 2.96   | 6   | 8.40  | 14  | 8.40  | 7   | 0.00 | 0   | 0.12 | 0   |
| 2009 | 1.2653 | 1.0000 | 3.59   | 8   | 5.38  | 9   | 5.38  | 5   | 0.00 | 0   | 0.00 | 0   |
| 2010 | 1.2167 | 1.0000 | 3.59   | 8   | 4.08  | 7   | 4.08  | 3   | 0.00 | 0   | 0.00 | 0   |
| 2011 | 1.1699 | 1.0000 | 3.59   | 8   | 0.60  | 1   | 0.60  | 1   | 0.00 | 0   | 7.40 | 13  |
| 2012 | 1.1249 | 1.0000 | 3.59   | 8   | 1.96  | 3   | 1.96  | 2   | 0.00 | 0   | 9.52 | 16  |
| 2013 | 1.0816 | 1.0000 | 0.91   | 2   | 0.76  | 1   | 0.76  | 1   | 0.08 | 0   | 5.53 | 10  |
| 2014 | 1.0400 | 1.0000 | 0.91   | 2   | 0.28  | 0   | 0.28  | 0   | 0.00 | 0   | 3.88 | 7   |
| 2015 | 1.0000 | 1.0000 | 0.64   | 1   | 0.24  | 0   | 0.24  | 0   | 0.00 | 0   | 3.34 | 6   |
| 2016 | 0.9615 | 1.0000 | 0.64   | 1   | 0.08  | 0   | 0.08  | 0   | 0.00 | 0   | 2.52 | 4   |
| 2017 | 0.9246 | 1.0000 | 6.00   | 13  | 1.76  | 3   | 1.76  | 1   | 0.00 | 0   | 0.80 | 1   |
| 2018 | 0.8890 | 1.0000 | 6.00   | 13  | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 1.96 | 3   |
| 2019 | 0.8548 | 1.0000 | 6.00   | 13  | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 0.36 | 1   |
| 2020 | 0.8219 | 1.0000 | 5.36   | 11  | 1.40  | 2   | 1.40  | 1   | 0.00 | 0   | 0.08 | 0   |
| 2021 | 0.7903 | 1.0000 | 5.36   | 11  | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 0.24 | 0   |
| 2022 | 0.7599 | 1.0000 | 5.36   | 11  | 0.31  | 1   | 0.31  | 0   | 0.00 | 0   | 0.08 | 0   |
| 2023 | 0.7307 | 1.0000 | 5.36   | 11  | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 1.76 | 3   |
| 2024 | 0.7026 | 1.0000 | 0.00   | 0   | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 0.00 | 0   |
| 2025 | 0.6756 | 1.0000 | 0.00   | 0   | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 0.00 | 0   |
| 2026 | 0.6496 | 1.0000 | 0.00   | 0   | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 1.40 | 2   |
| 2027 | 0.6246 | 1.0000 | 0.00   | 0   | 0.20  | 0   | 0.20  | 0   | 0.00 | 0   | 0.00 | 0   |
| 2028 | 0.6006 | 1.0000 | 0.00   | 0   | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 0.31 | 1   |
| 2029 | 0.5775 | 1.0000 | 0.00   | 0   | 0.44  | 1   | 0.44  | 0   | 0.00 | 0   | 0.00 | 0   |
| 2030 | 0.5553 | 1.0000 | 0.00   | 0   | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 0.00 | 0   |
| 2031 | 0.5339 | 1.0000 | 0.00   | 0   | 5.36  | 9   | 5.36  | 5   | 0.00 | 0   | 0.00 | 0   |
| 2032 | 0.5134 | 1.0000 | 0.00   | 0   | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 0.00 | 0   |
| 2033 | 0.4936 | 1.0000 | 0.00   | 0   | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 0.20 | 0   |
| 2034 | 0.4746 | 1.0000 | 0.00   | 0   | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 0.00 | 0   |
| 2035 | 0.4564 | 1.0000 | 0.00   | 0   | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 0.00 | 0   |
| 2036 | 0.4388 | 1.0000 | 0.00   | 0   | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 0.00 | 0   |
| 2037 | 0.4220 | 1.0000 | 0.08   | 0   | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 5.36 | 9   |
| 2038 | 0.4057 | 1.0000 | 0.08   | 0   | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 0.00 | 0   |
| 2039 | 0.3901 | 1.0000 | 0.08   | 0   | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 0.00 | 0   |
| 2040 | 0.3751 | 1.0000 | 0.08   | 0   | 0.00  | 0   | 0.00  | 0   | 0.44 | 1   | 0.00 | 0   |
| 2041 | 0.3607 | 1.0000 | 0.08   | 0   | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 0.00 | 0   |
| 2042 | 0.3468 | 1.0000 | 0.08   | 0   | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 0.00 | 0   |
| 2043 | 0.3335 | 1.0000 | 0.08   | 0   | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 0.00 | 0   |
| 2044 | 0.3207 | 1.0000 | 0.00   | 0   | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 0.00 | 0   |
| 2045 | 0.3083 | 1.0000 | 0.00   | 0   | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 0.00 | 0   |
| 2046 | 0.2965 | 1.0000 | 7.28   | 15  | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 0.00 | 0   |
| 2047 | 0.2851 | 1.0000 | 10.80  | 23  | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 0.00 | 0   |
| 2048 | 0.2741 | 1.0000 | 11.36  | 24  | 0.00  | 0   | 0.00  | 0   | 0.00 | 0   | 0.00 | 0   |
| 合計   |        |        |        |     |       |     |       |     |      |     |      |     |

|      |        |        | 間伐    |     |           |     |      |     | 合計    |     |       |
|------|--------|--------|-------|-----|-----------|-----|------|-----|-------|-----|-------|
| 年度   | 社会的割引率 | t/T    | スギ    |     | その他広葉樹(3) |     |      |     | 造林面積  | 効果額 | 現在価値化 |
|      |        |        | 造林面積  | 効果額 | 造林面積      | 効果額 | 造林面積 | 効果額 |       |     |       |
| 2003 | 1.6010 |        |       |     |           |     |      |     |       |     |       |
| 2004 | 1.5395 | 0.2000 | 1.56  | 1   | 0.00      | 0   |      |     | 22.59 | 6   | 9     |
| 2005 | 1.4802 | 0.4000 | 0.80  | 1   | 0.00      | 0   |      |     | 36.48 | 20  | 30    |
| 2006 | 1.4233 | 0.6000 | 0.36  | 0   | 0.00      | 0   |      |     | 29.84 | 47  | 67    |
| 2007 | 1.3686 | 0.8000 | 0.00  | 0   | 0.00      | 0   |      |     | 25.02 | 27  | 37    |
| 2008 | 1.3159 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 20.19 | 35  | 46    |
| 2009 | 1.2653 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 14.35 | 22  | 28    |
| 2010 | 1.2167 | 1.0000 | 0.08  | 0   | 0.00      | 0   |      |     | 11.83 | 18  | 22    |
| 2011 | 1.1699 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 12.19 | 23  | 27    |
| 2012 | 1.1249 | 1.0000 | 4.92  | 8   | 0.00      | 0   |      |     | 21.95 | 37  | 42    |
| 2013 | 1.0816 | 1.0000 | 7.00  | 12  | 0.00      | 0   |      |     | 15.24 | 31  | 34    |
| 2014 | 1.0400 | 1.0000 | 1.08  | 2   | 0.00      | 0   |      |     | 6.43  | 11  | 11    |
| 2015 | 1.0000 | 1.0000 | 0.52  | 1   | 0.00      | 0   |      |     | 5.42  | 20  | 20    |
| 2016 | 0.9615 | 1.0000 | 5.44  | 9   | 0.00      | 0   |      |     | 8.76  | 14  | 13    |
| 2017 | 0.9246 | 1.0000 | 14.76 | 25  | 0.00      | 0   |      |     | 30.44 | 188 | 174   |
| 2018 | 0.8890 | 1.0000 | 1.24  | 2   | 0.00      | 0   |      |     | 9.20  | 18  | 16    |
| 2019 | 0.8548 | 1.0000 | 1.56  | 3   | 0.00      | 0   |      |     | 7.92  | 17  | 15    |
| 2020 | 0.8219 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 8.24  | 14  | 12    |
| 2021 | 0.7903 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 5.60  | 11  | 9     |
| 2022 | 0.7599 | 1.0000 | 0.40  | 1   | 0.00      | 0   |      |     | 6.46  | 13  | 10    |
| 2023 | 0.7307 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 7.12  | 14  | 10    |
| 2024 | 0.7026 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 0.00  | 0   | 0     |
| 2025 | 0.6756 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 0.00  | 0   | 0     |
| 2026 | 0.6496 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 1.40  | 2   | 1     |
| 2027 | 0.6246 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 0.40  | 0   | 0     |
| 2028 | 0.6006 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 0.31  | 1   | 1     |
| 2029 | 0.5775 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 0.88  | 1   | 1     |
| 2030 | 0.5553 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 0.00  | 0   | 0     |
| 2031 | 0.5339 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 10.72 | 14  | 7     |
| 2032 | 0.5134 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 0.00  | 0   | 0     |
| 2033 | 0.4936 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 0.20  | 0   | 0     |
| 2034 | 0.4746 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 0.00  | 0   | 0     |
| 2035 | 0.4564 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 0.00  | 0   | 0     |
| 2036 | 0.4388 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 0.00  | 0   | 0     |
| 2037 | 0.4220 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 5.52  | 11  | 5     |
| 2038 | 0.4057 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 0.08  | 0   | 0     |
| 2039 | 0.3901 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 0.08  | 0   | 0     |
| 2040 | 0.3751 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 0.52  | 1   | 0     |
| 2041 | 0.3607 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 0.08  | 0   | 0     |
| 2042 | 0.3468 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 0.08  | 0   | 0     |
| 2043 | 0.3335 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 0.08  | 0   | 0     |
| 2044 | 0.3207 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 0.00  | 0   | 0     |
| 2045 | 0.3083 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 0.00  | 0   | 0     |
| 2046 | 0.2965 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 14.56 | 211 | 63    |
| 2047 | 0.2851 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 14.32 | 118 | 34    |
| 2048 | 0.2741 | 1.0000 | 0.00  | 0   | 0.00      | 0   |      |     | 11.92 | 39  | 11    |
| 合計   |        |        |       |     |           |     |      |     |       |     | 755   |

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

|      |                                                       |                       |
|------|-------------------------------------------------------|-----------------------|
| U:   | 治水ダムの単位雨量流出量当たりの年間減価償却費(円/㎡/sec)                      | 3,730,000             |
| f1:  | 事業実施前の流出係数<br>出典:「ダム年鑑2015」                           | 浸透能中 緩 要整備森林(疎林) 0.55 |
| f2:  | 事業実施後、T年経過後の流出係数<br>出典:「治山設計」(山口伊佐夫著,1979)            | 浸透能中 緩 整備済森林 0.45     |
| T:   | 事業実施後、流出係数が安定するのに必要な年数                                | 10                    |
| α:   | 100年確率時雨量(mm/h)<br>出典:「気象庁のアメダス資料」(過去10カ年平均(H17~H26)) | 53                    |
| A:   | 事業対象区域面積(ha)                                          | 5.97 ~ 256.13         |
| 360: | 単位合わせのための調整値                                          |                       |
| Y:   | 評価期間                                                  | 45                    |

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 | 事業効果面積 | 効果額    | 現在価値化   |
|------|--------|----------|--------|--------|---------|
| 2003 | 1.6010 |          |        |        |         |
| 2004 | 1.5395 | 5.97     | 0.60   | 33     | 51      |
| 2005 | 1.4802 | 5.97     | 1.19   | 65     | 96      |
| 2006 | 1.4233 | 5.97     | 1.79   | 98     | 139     |
| 2007 | 1.3686 | 8.97     | 2.69   | 148    | 203     |
| 2008 | 1.3159 | 12.96    | 3.99   | 219    | 288     |
| 2009 | 1.2653 | 12.96    | 5.28   | 290    | 367     |
| 2010 | 1.2167 | 12.96    | 6.58   | 361    | 439     |
| 2011 | 1.1699 | 13.39    | 7.92   | 435    | 509     |
| 2012 | 1.1249 | 14.87    | 9.41   | 517    | 582     |
| 2013 | 1.0816 | 14.87    | 10.89  | 598    | 647     |
| 2014 | 1.0400 | 14.87    | 11.77  | 646    | 672     |
| 2015 | 1.0000 | 23.84    | 13.57  | 745    | 745     |
| 2016 | 0.9615 | 32.59    | 16.22  | 891    | 857     |
| 2017 | 0.9246 | 37.58    | 19.10  | 1,049  | 970     |
| 2018 | 0.8890 | 49.42    | 22.73  | 1,248  | 1,109   |
| 2019 | 0.8548 | 62.30    | 27.67  | 1,519  | 1,298   |
| 2020 | 0.8219 | 73.48    | 33.72  | 1,852  | 1,522   |
| 2021 | 0.7903 | 74.92    | 39.88  | 2,190  | 1,731   |
| 2022 | 0.7599 | 79.84    | 46.38  | 2,547  | 1,935   |
| 2023 | 0.7307 | 79.84    | 52.86  | 2,903  | 2,121   |
| 2024 | 0.7026 | 123.82   | 63.78  | 3,502  | 2,461   |
| 2025 | 0.6756 | 135.48   | 74.93  | 4,115  | 2,780   |
| 2026 | 0.6496 | 169.31   | 88.59  | 4,865  | 3,160   |
| 2027 | 0.6246 | 171.81   | 102.02 | 5,602  | 3,499   |
| 2028 | 0.6006 | 175.85   | 114.22 | 6,272  | 3,767   |
| 2029 | 0.5775 | 179.81   | 125.83 | 6,910  | 3,991   |
| 2030 | 0.5553 | 243.06   | 142.87 | 7,846  | 4,357   |
| 2031 | 0.5339 | 243.54   | 159.77 | 8,774  | 4,684   |
| 2032 | 0.5134 | 235.03   | 167.72 | 9,210  | 4,728   |
| 2033 | 0.4936 | 231.96   | 181.07 | 9,943  | 4,908   |
| 2034 | 0.4746 | 226.36   | 187.53 | 10,298 | 4,887   |
| 2035 | 0.4564 | 256.13   | 198.18 | 10,883 | 4,967   |
| 2036 | 0.4388 | 254.85   | 207.74 | 11,408 | 5,006   |
| 2037 | 0.4220 | 254.85   | 218.31 | 11,988 | 5,059   |
| 2038 | 0.4057 | 254.85   | 228.43 | 12,544 | 5,089   |
| 2039 | 0.3901 | 254.85   | 238.14 | 13,077 | 5,101   |
| 2040 | 0.3751 | 254.85   | 241.52 | 13,263 | 4,975   |
| 2041 | 0.3607 | 254.85   | 244.85 | 13,446 | 4,850   |
| 2042 | 0.3468 | 254.85   | 248.18 | 13,629 | 4,727   |
| 2043 | 0.3335 | 248.61   | 245.28 | 13,469 | 4,492   |
| 2044 | 0.3207 | 248.61   | 248.61 | 13,652 | 4,378   |
| 2045 | 0.3083 | 246.49   | 246.49 | 13,536 | 4,173   |
| 2046 | 0.2965 | 246.49   | 246.49 | 13,536 | 4,013   |
| 2047 | 0.2851 | 246.49   | 246.49 | 13,536 | 3,859   |
| 2048 | 0.2741 | 246.49   | 246.49 | 13,536 | 3,710   |
| 合計   |        |          |        |        | 123,902 |

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

|        |                                                       |               |
|--------|-------------------------------------------------------|---------------|
| A:     | 事業対象区域面積 (ha)                                         | 5.97 ~ 256.13 |
| P:     | 年間平均降雨量 (mm/年)<br>出典:「気象庁のアメダス資料」(過去10カ年平均 (H17~H26)) | 1,283         |
| 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          |
| T:     | 事業実施後、流出係数が安定するのに必要な年数                                | 10            |
| U:     | 開発流量当りの利水ダム年間減価償却費 (円/㎡/S)<br>出典:「ダム年鑑2015」           | 1,038,000,000 |
| Y:     | 評価期間                                                  | 45            |
| 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 | 事業効果面積 | 効果額   | 現在価値化  |
|-------|--------|----------|--------|-------|--------|
| 2,003 | 1.6010 |          |        |       |        |
| 2,004 | 1.5395 | 5.97     | 0.60   | 13    | 20     |
| 2,005 | 1.4802 | 5.97     | 1.19   | 25    | 37     |
| 2,006 | 1.4233 | 5.97     | 1.79   | 38    | 54     |
| 2,007 | 1.3686 | 8.97     | 2.69   | 57    | 78     |
| 2,008 | 1.3159 | 12.96    | 3.99   | 84    | 111    |
| 2,009 | 1.2653 | 12.96    | 5.28   | 111   | 140    |
| 2,010 | 1.2167 | 12.96    | 6.58   | 139   | 169    |
| 2,011 | 1.1699 | 13.39    | 7.92   | 167   | 195    |
| 2,012 | 1.1249 | 14.87    | 9.41   | 199   | 224    |
| 2,013 | 1.0816 | 14.87    | 10.89  | 230   | 249    |
| 2,014 | 1.0400 | 14.87    | 11.77  | 249   | 259    |
| 2,015 | 1.0000 | 23.84    | 13.57  | 287   | 287    |
| 2,016 | 0.9615 | 32.59    | 16.22  | 342   | 329    |
| 2,017 | 0.9246 | 37.58    | 19.10  | 403   | 373    |
| 2,018 | 0.8890 | 49.42    | 22.73  | 480   | 427    |
| 2,019 | 0.8548 | 62.30    | 27.67  | 584   | 499    |
| 2,020 | 0.8219 | 73.48    | 33.72  | 712   | 585    |
| 2,021 | 0.7903 | 74.92    | 39.88  | 842   | 665    |
| 2,022 | 0.7599 | 79.84    | 46.38  | 979   | 744    |
| 2,023 | 0.7307 | 79.84    | 52.86  | 1,116 | 815    |
| 2,024 | 0.7026 | 123.82   | 63.78  | 1,347 | 946    |
| 2,025 | 0.6756 | 135.48   | 74.93  | 1,582 | 1,069  |
| 2,026 | 0.6496 | 169.31   | 88.59  | 1,871 | 1,215  |
| 2,027 | 0.6246 | 171.81   | 102.02 | 2,154 | 1,345  |
| 2,028 | 0.6006 | 175.85   | 114.22 | 2,412 | 1,449  |
| 2,029 | 0.5775 | 179.81   | 125.83 | 2,657 | 1,534  |
| 2,030 | 0.5553 | 243.06   | 142.87 | 3,017 | 1,675  |
| 2,031 | 0.5339 | 243.54   | 159.77 | 3,374 | 1,801  |
| 2,032 | 0.5134 | 235.03   | 167.72 | 3,541 | 1,818  |
| 2,033 | 0.4936 | 231.96   | 181.07 | 3,823 | 1,887  |
| 2,034 | 0.4746 | 226.36   | 187.53 | 3,960 | 1,879  |
| 2,035 | 0.4564 | 256.13   | 198.18 | 4,185 | 1,910  |
| 2,036 | 0.4388 | 254.85   | 207.74 | 4,386 | 1,925  |
| 2,037 | 0.4220 | 254.85   | 218.31 | 4,610 | 1,945  |
| 2,038 | 0.4057 | 254.85   | 228.43 | 4,823 | 1,957  |
| 2,039 | 0.3901 | 254.85   | 238.14 | 5,028 | 1,961  |
| 2,040 | 0.3751 | 254.85   | 241.52 | 5,100 | 1,913  |
| 2,041 | 0.3607 | 254.85   | 244.85 | 5,170 | 1,865  |
| 2,042 | 0.3468 | 254.85   | 248.18 | 5,240 | 1,817  |
| 2,043 | 0.3335 | 248.61   | 245.28 | 5,179 | 1,727  |
| 2,044 | 0.3207 | 248.61   | 248.61 | 5,249 | 1,683  |
| 2,045 | 0.3083 | 246.49   | 246.49 | 5,205 | 1,605  |
| 2,046 | 0.2965 | 246.49   | 246.49 | 5,205 | 1,543  |
| 2,047 | 0.2851 | 246.49   | 246.49 | 5,205 | 1,484  |
| 2,048 | 0.2741 | 246.49   | 246.49 | 5,205 | 1,427  |
| 合計    |        |          |        |       | 47,640 |

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

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

|     |                                                                                                                               |               |
|-----|-------------------------------------------------------------------------------------------------------------------------------|---------------|
| Qx: | 全貯留量のうち生活用水使用相当量                                                                                                              | 6.20 億        |
| Qy: | 全貯留量－Qx                                                                                                                       | 234.24 億      |
| A:  | 事業対象区域面積 (ha)                                                                                                                 | 5.97 ～ 256.13 |
| P:  | 年間平均降雨量 (mm/年)<br>出典:「気象庁のアメダス資料」(過去10カ年平均 (H17～H26))                                                                         | 1,283         |
| T:  | 事業実施後、貯留率が安定するのに必要な年数                                                                                                         | 10            |
| 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/㎥)<br>出典:八雲町の上水道供給原価                                                                                         | 200.00        |
| Uy: | 単位当たりの雨水浄化費 (円/㎥)                                                                                                             | 68.60         |
| u:  | 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」<br>単位当たりの水質浄化費 (U x と U y を用いて Q x と Q y で比例按分して算出) | 71.99         |
| Y:  | 評価期間                                                                                                                          | 45            |
| 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 | 事業効果面積 | 効果額    | 現在価値化   |
|------|--------|----------|--------|--------|---------|
| 2003 | 1.6010 |          |        |        |         |
| 2004 | 1.5395 | 5.97     | 0.60   | 28     | 43      |
| 2005 | 1.4802 | 5.97     | 1.19   | 55     | 81      |
| 2006 | 1.4233 | 5.97     | 1.79   | 83     | 118     |
| 2007 | 1.3686 | 8.97     | 2.69   | 124    | 170     |
| 2008 | 1.3159 | 12.96    | 3.99   | 184    | 242     |
| 2009 | 1.2653 | 12.96    | 5.28   | 244    | 309     |
| 2010 | 1.2167 | 12.96    | 6.58   | 304    | 370     |
| 2011 | 1.1699 | 13.39    | 7.92   | 366    | 428     |
| 2012 | 1.1249 | 14.87    | 9.41   | 435    | 489     |
| 2013 | 1.0816 | 14.87    | 10.89  | 503    | 544     |
| 2014 | 1.0400 | 14.87    | 11.77  | 544    | 566     |
| 2015 | 1.0000 | 23.84    | 13.57  | 627    | 627     |
| 2016 | 0.9615 | 32.59    | 16.22  | 749    | 720     |
| 2017 | 0.9246 | 37.58    | 19.10  | 882    | 815     |
| 2018 | 0.8890 | 49.42    | 22.73  | 1,050  | 933     |
| 2019 | 0.8548 | 62.30    | 27.67  | 1,278  | 1,092   |
| 2020 | 0.8219 | 73.48    | 33.72  | 1,557  | 1,280   |
| 2021 | 0.7903 | 74.92    | 39.88  | 1,842  | 1,456   |
| 2022 | 0.7599 | 79.84    | 46.38  | 2,142  | 1,628   |
| 2023 | 0.7307 | 79.84    | 52.86  | 2,441  | 1,784   |
| 2024 | 0.7026 | 123.82   | 63.78  | 2,945  | 2,069   |
| 2025 | 0.6756 | 135.48   | 74.93  | 3,460  | 2,338   |
| 2026 | 0.6496 | 169.31   | 88.59  | 4,091  | 2,658   |
| 2027 | 0.6246 | 171.81   | 102.02 | 4,711  | 2,942   |
| 2028 | 0.6006 | 175.85   | 114.22 | 5,275  | 3,168   |
| 2029 | 0.5775 | 179.81   | 125.83 | 5,811  | 3,356   |
| 2030 | 0.5553 | 243.06   | 142.87 | 6,598  | 3,664   |
| 2031 | 0.5339 | 243.54   | 159.77 | 7,378  | 3,939   |
| 2032 | 0.5134 | 235.03   | 167.72 | 7,746  | 3,977   |
| 2033 | 0.4936 | 231.96   | 181.07 | 8,362  | 4,127   |
| 2034 | 0.4746 | 226.36   | 187.53 | 8,661  | 4,111   |
| 2035 | 0.4564 | 256.13   | 198.18 | 9,152  | 4,177   |
| 2036 | 0.4388 | 254.85   | 207.74 | 9,594  | 4,210   |
| 2037 | 0.4220 | 254.85   | 218.31 | 10,082 | 4,255   |
| 2038 | 0.4057 | 254.85   | 228.43 | 10,549 | 4,280   |
| 2039 | 0.3901 | 254.85   | 238.14 | 10,998 | 4,290   |
| 2040 | 0.3751 | 254.85   | 241.52 | 11,154 | 4,184   |
| 2041 | 0.3607 | 254.85   | 244.85 | 11,308 | 4,079   |
| 2042 | 0.3468 | 254.85   | 248.18 | 11,461 | 3,975   |
| 2043 | 0.3335 | 248.61   | 245.28 | 11,328 | 3,778   |
| 2044 | 0.3207 | 248.61   | 248.61 | 11,481 | 3,682   |
| 2045 | 0.3083 | 246.49   | 246.49 | 11,383 | 3,509   |
| 2046 | 0.2965 | 246.49   | 246.49 | 11,383 | 3,375   |
| 2047 | 0.2851 | 246.49   | 246.49 | 11,383 | 3,245   |
| 2048 | 0.2741 | 246.49   | 246.49 | 11,383 | 3,120   |
| 合計   |        |          |        |        | 104,203 |

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

|     |                                          |               |
|-----|------------------------------------------|---------------|
| U:  | 1m3の土砂を保全するために要する単位当たりの砂防ダム建設コスト(円/m3)   | 5,600         |
| 出典: | 「砂防便覧」平成20年版                             |               |
| V1: | 事業実施前における1ha当りの年間浸食土砂量(m3)               | 荒廃地等 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」 |               |
| V2: | 事業実施後における1ha当りの年間浸食土砂量(m3)               | 整備済森林 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」 |               |
| A:  | 事業対象区域面積(ha)                             | 5.97 ~ 256.13 |
| T:  | 事業実施後、流出係数が安定するのに必要な年数                   | 10            |
| Y:  | 評価期間                                     | 45            |

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 | 事業効果面積 | 効果額    | 現在価値化   |
|------|--------|----------|--------|--------|---------|
| 2003 | 1.6010 |          |        |        |         |
| 2004 | 1.5395 | 5.97     | 0.60   | 63     | 97      |
| 2005 | 1.4802 | 5.97     | 1.19   | 125    | 185     |
| 2006 | 1.4233 | 5.97     | 1.79   | 187    | 266     |
| 2007 | 1.3686 | 8.97     | 2.69   | 282    | 386     |
| 2008 | 1.3159 | 12.96    | 3.99   | 418    | 550     |
| 2009 | 1.2653 | 12.96    | 5.28   | 553    | 700     |
| 2010 | 1.2167 | 12.96    | 6.58   | 689    | 838     |
| 2011 | 1.1699 | 13.39    | 7.92   | 829    | 970     |
| 2012 | 1.1249 | 14.87    | 9.41   | 985    | 1,108   |
| 2013 | 1.0816 | 14.87    | 10.89  | 1,140  | 1,233   |
| 2014 | 1.0400 | 14.87    | 11.77  | 1,233  | 1,282   |
| 2015 | 1.0000 | 23.84    | 13.57  | 1,421  | 1,421   |
| 2016 | 0.9615 | 32.59    | 16.22  | 1,699  | 1,634   |
| 2017 | 0.9246 | 37.58    | 19.10  | 2,000  | 1,849   |
| 2018 | 0.8890 | 49.42    | 22.73  | 2,380  | 2,116   |
| 2019 | 0.8548 | 62.30    | 27.67  | 2,898  | 2,477   |
| 2020 | 0.8219 | 73.48    | 33.72  | 3,531  | 2,902   |
| 2021 | 0.7903 | 74.92    | 39.88  | 4,176  | 3,300   |
| 2022 | 0.7599 | 79.84    | 46.38  | 4,857  | 3,691   |
| 2023 | 0.7307 | 79.84    | 52.86  | 5,535  | 4,044   |
| 2024 | 0.7026 | 123.82   | 63.78  | 6,679  | 4,693   |
| 2025 | 0.6756 | 135.48   | 74.93  | 7,847  | 5,301   |
| 2026 | 0.6496 | 169.31   | 88.59  | 9,277  | 6,026   |
| 2027 | 0.6246 | 171.81   | 102.02 | 10,684 | 6,673   |
| 2028 | 0.6006 | 175.85   | 114.22 | 11,961 | 7,184   |
| 2029 | 0.5775 | 179.81   | 125.83 | 13,177 | 7,610   |
| 2030 | 0.5553 | 243.06   | 142.87 | 14,961 | 8,308   |
| 2031 | 0.5339 | 243.54   | 159.77 | 16,731 | 8,933   |
| 2032 | 0.5134 | 235.03   | 167.72 | 17,564 | 9,017   |
| 2033 | 0.4936 | 231.96   | 181.07 | 18,962 | 9,360   |
| 2034 | 0.4746 | 226.36   | 187.53 | 19,638 | 9,320   |
| 2035 | 0.4564 | 256.13   | 198.18 | 20,753 | 9,472   |
| 2036 | 0.4388 | 254.85   | 207.74 | 21,755 | 9,546   |
| 2037 | 0.4220 | 254.85   | 218.31 | 22,861 | 9,647   |
| 2038 | 0.4057 | 254.85   | 228.43 | 23,921 | 9,705   |
| 2039 | 0.3901 | 254.85   | 238.14 | 24,938 | 9,728   |
| 2040 | 0.3751 | 254.85   | 241.52 | 25,292 | 9,487   |
| 2041 | 0.3607 | 254.85   | 244.85 | 25,641 | 9,249   |
| 2042 | 0.3468 | 254.85   | 248.18 | 25,989 | 9,013   |
| 2043 | 0.3335 | 248.61   | 245.28 | 25,686 | 8,566   |
| 2044 | 0.3207 | 248.61   | 248.61 | 26,034 | 8,349   |
| 2045 | 0.3083 | 246.49   | 246.49 | 25,812 | 7,958   |
| 2046 | 0.2965 | 246.49   | 246.49 | 25,812 | 7,653   |
| 2047 | 0.2851 | 246.49   | 246.49 | 25,812 | 7,359   |
| 2048 | 0.2741 | 246.49   | 246.49 | 25,812 | 7,075   |
| 合計   |        |          |        |        | 236,281 |

$$B = \sum_{t=11}^Y \frac{V \times U}{(1+i)^t}$$

$$V = 0.01 \times A \times R \times N \times H \times 10,000$$

|         |                                                           |                  |
|---------|-----------------------------------------------------------|------------------|
| U:      | 1m3の土砂を保全するために要する単位当たりの砂防ダム建設コスト(円/m3)<br>出典:「砂防便覧」平成20年版 | 5,600            |
| V:      | 崩壊見込み量(m3/年)                                              | 0.00 ~ 802.63    |
| A:      | 事業対象区域面積(ha)                                              | 5.97 ~ 256.13    |
| R:      | 流域内崩壊率<br>出典:「治山全体調査」S42からS46                             | 1 渡島地区 0.0169    |
| N:      | 雨量比=50年確率日雨量/既往最大日雨量<br>出典:北海道の大雨資料                       | 178 / 194 0.9175 |
| H:      | 平均崩壊深(m)<br>出典:土砂くずれ防災のはなし(仲野昭治郎著)                        | 2.1              |
| Y:      | 評価期間                                                      | 45               |
| 10,000: | 単位合わせのための調整値                                              |                  |

| 年度   | 社会的割引率 | 事業対象区域面積 | 崩壊見込み量 | 効果額   | 現在価値化  |
|------|--------|----------|--------|-------|--------|
| 2003 | 1.6010 |          |        |       |        |
| 2004 | 1.5395 | 5.97     | 0.00   | 0     | 0      |
| 2005 | 1.4802 | 5.97     | 0.00   | 0     | 0      |
| 2006 | 1.4233 | 5.97     | 0.00   | 0     | 0      |
| 2007 | 1.3686 | 8.97     | 0.00   | 0     | 0      |
| 2008 | 1.3159 | 12.96    | 0.00   | 0     | 0      |
| 2009 | 1.2653 | 12.96    | 0.00   | 0     | 0      |
| 2010 | 1.2167 | 12.96    | 0.00   | 0     | 0      |
| 2011 | 1.1699 | 13.39    | 0.00   | 0     | 0      |
| 2012 | 1.1249 | 14.87    | 0.00   | 0     | 0      |
| 2013 | 1.0816 | 14.87    | 0.00   | 0     | 0      |
| 2014 | 1.0400 | 14.87    | 19.44  | 109   | 113    |
| 2015 | 1.0000 | 23.84    | 19.44  | 109   | 109    |
| 2016 | 0.9615 | 32.59    | 19.44  | 109   | 105    |
| 2017 | 0.9246 | 37.58    | 29.21  | 164   | 152    |
| 2018 | 0.8890 | 49.42    | 42.20  | 236   | 210    |
| 2019 | 0.8548 | 62.30    | 42.20  | 236   | 202    |
| 2020 | 0.8219 | 73.48    | 42.20  | 236   | 194    |
| 2021 | 0.7903 | 74.92    | 43.60  | 244   | 193    |
| 2022 | 0.7599 | 79.84    | 48.42  | 271   | 206    |
| 2023 | 0.7307 | 79.84    | 48.42  | 271   | 198    |
| 2024 | 0.7026 | 123.82   | 48.42  | 271   | 190    |
| 2025 | 0.6756 | 135.48   | 77.63  | 435   | 294    |
| 2026 | 0.6496 | 169.31   | 106.12 | 594   | 386    |
| 2027 | 0.6246 | 171.81   | 122.36 | 685   | 428    |
| 2028 | 0.6006 | 175.85   | 159.35 | 892   | 536    |
| 2029 | 0.5775 | 179.81   | 200.51 | 1,123 | 649    |
| 2030 | 0.5553 | 243.06   | 236.92 | 1,327 | 737    |
| 2031 | 0.5339 | 243.54   | 241.61 | 1,353 | 722    |
| 2032 | 0.5134 | 235.03   | 229.92 | 1,288 | 661    |
| 2033 | 0.4936 | 231.96   | 219.92 | 1,232 | 608    |
| 2034 | 0.4746 | 226.36   | 344.90 | 1,931 | 916    |
| 2035 | 0.4564 | 256.13   | 371.28 | 2,079 | 949    |
| 2036 | 0.4388 | 254.85   | 477.27 | 2,673 | 1,173  |
| 2037 | 0.4220 | 254.85   | 485.41 | 2,718 | 1,147  |
| 2038 | 0.4057 | 254.85   | 500.13 | 2,801 | 1,136  |
| 2039 | 0.3901 | 254.85   | 513.80 | 2,877 | 1,122  |
| 2040 | 0.3751 | 254.85   | 719.76 | 4,031 | 1,512  |
| 2041 | 0.3607 | 254.85   | 721.32 | 4,039 | 1,457  |
| 2042 | 0.3468 | 254.85   | 721.32 | 4,039 | 1,401  |
| 2043 | 0.3335 | 248.61   | 701.00 | 3,926 | 1,309  |
| 2044 | 0.3207 | 248.61   | 701.00 | 3,926 | 1,259  |
| 2045 | 0.3083 | 246.49   | 802.63 | 4,495 | 1,386  |
| 2046 | 0.2965 | 246.49   | 802.63 | 4,495 | 1,333  |
| 2047 | 0.2851 | 246.49   | 802.63 | 4,495 | 1,282  |
| 2048 | 0.2741 | 246.49   | 802.63 | 4,495 | 1,232  |
| 合計   |        |          |        |       | 25,507 |

$$B = \sum_{t=1}^Y \frac{V2-V1}{Y \times (1+i)^t} \times D \times BEF \times (1+R) \times 0.5 \times \frac{44}{12} \times U$$

|        |                                                                                               |                                                                                                              |
|--------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| U:     | 二酸化炭素に関する原単位(円/CO2-ton)<br>出典:「二酸化炭素地中貯留技術研究開発成果報告書」(財)地球環境産業技術研究機構(平成18年3月)                  | 6,046                                                                                                        |
| V1:    | 事業を実施しない場合の評価最終年の当該森林の見込蓄積量(m3)<br>出典:北海道作成の蓄積テーブル                                            | カラマツ<br>トドマツ<br>スギ<br>その他広葉樹(3)<br>0<br>別途<br>別途<br>別途<br>別途                                                 |
| V2:    | 事業を実施する場合の評価最終年の当該森林の見込蓄積量(m3)<br>出典:北海道作成の蓄積テーブル                                             | カラマツ<br>トドマツ<br>スギ<br>その他広葉樹(3)<br>0<br>別途<br>別途<br>別途<br>別途                                                 |
| Y:     | 評価期間                                                                                          | 45                                                                                                           |
| 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」(2015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>スギ<br>その他広葉樹(3)<br>0<br>0.404<br>0.318<br>0.314<br>0.624                                     |
| 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」(2015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>樹齢20年越<br>カラマツ<br>トドマツ<br>スギ<br>その他広葉樹(3)<br>0<br>1.15<br>1.38<br>1.23<br>1.26 |
| 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」(2015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>スギ<br>その他広葉樹(3)<br>0<br>0.29<br>0.21<br>0.25<br>0.26                                         |
| 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                                                                               |                                                                                                              |

|      |        | カラマツ   |     | トドマツ   |       | スギ     |     | その他広葉樹(3) |     |        |     | 合計    |        |
|------|--------|--------|-----|--------|-------|--------|-----|-----------|-----|--------|-----|-------|--------|
| 年度   | 社会的割引率 | 事業効果蓄積 | 効果額 | 事業効果蓄積 | 効果額   | 事業効果蓄積 | 効果額 | 事業効果蓄積    | 効果額 | 事業効果蓄積 | 効果額 | 効果額   | 現在価値化  |
| 2003 | 1.6010 |        |     |        |       |        |     |           |     |        |     |       |        |
| 2004 | 1.5395 | 18.16  | 121 | 0.00   | 0     | 0.00   | 0   | 0.00      | 0   |        |     | 121   | 186    |
| 2005 | 1.4802 | 18.16  | 121 | 0.00   | 0     | 0.00   | 0   | 0.00      | 0   |        |     | 121   | 179    |
| 2006 | 1.4233 | 18.16  | 121 | 0.00   | 0     | 0.00   | 0   | 0.00      | 0   |        |     | 121   | 172    |
| 2007 | 1.3686 | 27.29  | 181 | 0.00   | 0     | 0.00   | 0   | 0.00      | 0   |        |     | 181   | 248    |
| 2008 | 1.3159 | 27.29  | 181 | 13.46  | 79    | 0.00   | 0   | 0.00      | 0   |        |     | 260   | 342    |
| 2009 | 1.2653 | 27.29  | 181 | 13.46  | 79    | 0.00   | 0   | 0.00      | 0   |        |     | 260   | 329    |
| 2010 | 1.2167 | 27.29  | 181 | 13.46  | 79    | 0.00   | 0   | 0.00      | 0   |        |     | 260   | 316    |
| 2011 | 1.1699 | 27.29  | 181 | 14.91  | 88    | 0.00   | 0   | 0.00      | 0   |        |     | 269   | 315    |
| 2012 | 1.1249 | 27.29  | 181 | 19.90  | 117   | 0.00   | 0   | 0.00      | 0   |        |     | 298   | 335    |
| 2013 | 1.0816 | 27.29  | 181 | 19.90  | 117   | 0.00   | 0   | 0.00      | 0   |        |     | 298   | 322    |
| 2014 | 1.0400 | 27.29  | 181 | 19.90  | 117   | 0.00   | 0   | 0.00      | 0   |        |     | 298   | 310    |
| 2015 | 1.0000 | 41.28  | 274 | 34.64  | 204   | 0.00   | 0   | 0.00      | 0   |        |     | 478   | 478    |
| 2016 | 0.9615 | 41.34  | 274 | 34.64  | 204   | 41.09  | 220 | 0.00      | 0   |        |     | 698   | 671    |
| 2017 | 0.9246 | 41.34  | 274 | 43.02  | 253   | 57.23  | 306 | 0.47      | 5   |        |     | 838   | 775    |
| 2018 | 0.8890 | 51.31  | 341 | 43.02  | 253   | 91.07  | 487 | 0.47      | 5   |        |     | 1,086 | 965    |
| 2019 | 0.8548 | 70.29  | 467 | 53.41  | 315   | 111.56 | 597 | 0.47      | 5   |        |     | 1,384 | 1,183  |
| 2020 | 0.8219 | 75.22  | 499 | 53.41  | 315   | 119.24 | 638 | 1.69      | 19  |        |     | 1,471 | 1,209  |
| 2021 | 0.7903 | 79.60  | 529 | 53.41  | 315   | 119.24 | 638 | 1.69      | 19  |        |     | 1,501 | 1,186  |
| 2022 | 0.7599 | 79.60  | 529 | 70.00  | 412   | 119.24 | 638 | 1.69      | 19  |        |     | 1,598 | 1,214  |
| 2023 | 0.7307 | 79.60  | 529 | 70.00  | 412   | 119.24 | 638 | 1.69      | 19  |        |     | 1,598 | 1,168  |
| 2024 | 0.7026 | 79.60  | 529 | 218.33 | 1,286 | 119.24 | 638 | 1.69      | 19  |        |     | 2,472 | 1,737  |
| 2025 | 0.6756 | 79.60  | 529 | 218.33 | 1,286 | 119.24 | 638 | 4.33      | 48  |        |     | 2,501 | 1,690  |
| 2026 | 0.6496 | 99.80  | 663 | 310.03 | 1,826 | 119.24 | 638 | 4.33      | 48  |        |     | 3,175 | 2,062  |
| 2027 | 0.6246 | 99.80  | 663 | 318.46 | 1,876 | 119.24 | 638 | 4.33      | 48  |        |     | 3,225 | 2,014  |
| 2028 | 0.6006 | 99.80  | 663 | 329.83 | 1,943 | 119.24 | 638 | 4.33      | 48  |        |     | 3,292 | 1,977  |
| 2029 | 0.5775 | 100.47 | 667 | 343.19 | 2,021 | 119.24 | 638 | 4.33      | 48  |        |     | 3,374 | 1,948  |
| 2030 | 0.5553 | 100.47 | 667 | 343.19 | 2,021 | 119.24 | 638 | 21.19     | 233 |        |     | 3,559 | 1,976  |
| 2031 | 0.5339 | 100.47 | 667 | 344.81 | 2,031 | 119.24 | 638 | 21.19     | 233 |        |     | 3,569 | 1,905  |
| 2032 | 0.5134 | 100.47 | 667 | 344.81 | 2,031 | 78.15  | 418 | 21.19     | 233 |        |     | 3,349 | 1,719  |
| 2033 | 0.4936 | 100.47 | 667 | 344.81 | 2,031 | 62.01  | 332 | 21.19     | 233 |        |     | 3,263 | 1,611  |
| 2034 | 0.4746 | 100.47 | 667 | 344.81 | 2,031 | 28.17  | 151 | 21.19     | 233 |        |     | 3,082 | 1,463  |
| 2035 | 0.4564 | 100.47 | 667 | 344.81 | 2,031 | 7.68   | 41  | 28.98     | 318 |        |     | 3,057 | 1,395  |
| 2036 | 0.4388 | 100.47 | 667 | 344.81 | 2,031 | 0.00   | 0   | 28.98     | 318 |        |     | 3,016 | 1,323  |
| 2037 | 0.4220 | 100.47 | 667 | 344.81 | 2,031 | 0.00   | 0   | 28.98     | 318 |        |     | 3,016 | 1,273  |
| 2038 | 0.4057 | 100.47 | 667 | 344.81 | 2,031 | 0.00   | 0   | 28.98     | 318 |        |     | 3,016 | 1,224  |
| 2039 | 0.3901 | 100.47 | 667 | 344.81 | 2,031 | 0.00   | 0   | 28.98     | 318 |        |     | 3,016 | 1,177  |
| 2040 | 0.3751 | 100.47 | 667 | 344.81 | 2,031 | 0.00   | 0   | 28.98     | 318 |        |     | 3,016 | 1,131  |
| 2041 | 0.3607 | 100.47 | 667 | 344.81 | 2,031 | 0.00   | 0   | 28.98     | 318 |        |     | 3,016 | 1,088  |
| 2042 | 0.3468 | 100.47 | 667 | 344.81 | 2,031 | 0.00   | 0   | 28.98     | 318 |        |     | 3,016 | 1,046  |
| 2043 | 0.3335 | 90.50  | 601 | 344.81 | 2,031 | 0.00   | 0   | 28.98     | 318 |        |     | 2,950 | 984    |
| 2044 | 0.3207 | 90.50  | 601 | 344.81 | 2,031 | 0.00   | 0   | 28.98     | 318 |        |     | 2,950 | 946    |
| 2045 | 0.3083 | 85.57  | 568 | 340.30 | 2,004 | 0.00   | 0   | 28.98     | 318 |        |     | 2,890 | 891    |
| 2046 | 0.2965 | 85.57  | 568 | 340.30 | 2,004 | 0.00   | 0   | 28.98     | 318 |        |     | 2,890 | 857    |
| 2047 | 0.2851 | 85.57  | 568 | 340.30 | 2,004 | 0.00   | 0   | 28.98     | 318 |        |     | 2,890 | 824    |
| 2048 | 0.2741 | 85.57  | 568 | 340.30 | 2,004 | 0.00   | 0   | 28.98     | 318 |        |     | 2,890 | 792    |
| 合計   |        |        |     |        |       |        |     |           |     |        |     |       | 46,956 |

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

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

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

|        |                                                                                                         |                              |
|--------|---------------------------------------------------------------------------------------------------------|------------------------------|
| U:     | 二酸化炭素に関する原単位(円/t-CO <sub>2</sub> )<br>出典:「二酸化炭素地中貯留技術研究開発成果報告書」(財)地球環境産業技術研究機構(平成18年3月)                 | 6,046                        |
| 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、流出係数が安定するのに必要な年数                                                                                  | 10                           |
| Y:     | ①侵食深が30cmに達するまでの年数(T <sub>0</sub> ) 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                           | 45.00                        |
| A:     | ①事業対象区域面積(ha) 又は<br>②保全効果区域面積(ha)                                                                       | 5.97 ~ 256.13                |
| 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」(2015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 | 85.33                        |
| 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」「森林の公益的機能に関する文献要約集」「森林水文」                                     | ①事業対象区域 荒廃地等 0.200<br>荒廃地等   |
| 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」「森林の公益的機能に関する文献要約集」「森林水文」                                      | ①事業対象区域 整備済森林 0.013<br>整備済森林 |
| 30:    | 土壌炭素の測定深度(cm)                                                                                           |                              |
| 0.3:   | 流出土砂排出炭素係数                                                                                              |                              |

|      |        | 事業対象区域   |        |     |       |        |     |       |
|------|--------|----------|--------|-----|-------|--------|-----|-------|
| 年度   | 社会的割引率 | 事業対象区域面積 | 効果対象面積 | 効果額 | 現在価値化 | 効果対象面積 | 効果額 | 現在価値化 |
| 2003 | 1.6010 |          |        |     |       |        |     |       |
| 2004 | 1.5395 | 5.97     | 0.60   | 2   | 3     |        |     |       |
| 2005 | 1.4802 | 5.97     | 1.19   | 4   | 6     |        |     |       |
| 2006 | 1.4233 | 5.97     | 1.79   | 6   | 9     |        |     |       |
| 2007 | 1.3686 | 8.97     | 2.69   | 9   | 12    |        |     |       |
| 2008 | 1.3159 | 12.96    | 3.98   | 14  | 18    |        |     |       |
| 2009 | 1.2653 | 12.96    | 5.28   | 19  | 24    |        |     |       |
| 2010 | 1.2167 | 12.96    | 6.58   | 23  | 28    |        |     |       |
| 2011 | 1.1699 | 13.39    | 7.92   | 28  | 33    |        |     |       |
| 2012 | 1.1249 | 14.87    | 9.40   | 33  | 37    |        |     |       |
| 2013 | 1.0816 | 14.87    | 10.89  | 38  | 41    |        |     |       |
| 2014 | 1.0400 | 14.87    | 11.78  | 42  | 44    |        |     |       |
| 2015 | 1.0000 | 23.84    | 13.57  | 48  | 48    |        |     |       |
| 2016 | 0.9615 | 32.59    | 16.23  | 57  | 55    |        |     |       |
| 2017 | 0.9246 | 37.58    | 19.09  | 67  | 62    |        |     |       |
| 2018 | 0.8890 | 49.42    | 22.74  | 80  | 71    |        |     |       |
| 2019 | 0.8548 | 62.30    | 27.67  | 98  | 84    |        |     |       |
| 2020 | 0.8219 | 73.48    | 33.72  | 119 | 98    |        |     |       |
| 2021 | 0.7903 | 74.92    | 39.87  | 141 | 111   |        |     |       |
| 2022 | 0.7599 | 79.84    | 46.37  | 163 | 124   |        |     |       |
| 2023 | 0.7307 | 79.84    | 52.87  | 186 | 136   |        |     |       |
| 2024 | 0.7026 | 123.82   | 63.76  | 225 | 158   |        |     |       |
| 2025 | 0.6756 | 135.48   | 74.93  | 264 | 178   |        |     |       |
| 2026 | 0.6496 | 169.31   | 88.60  | 312 | 203   |        |     |       |
| 2027 | 0.6246 | 171.81   | 102.02 | 360 | 225   |        |     |       |
| 2028 | 0.6006 | 175.85   | 114.23 | 403 | 242   |        |     |       |
| 2029 | 0.5775 | 179.81   | 125.82 | 444 | 256   |        |     |       |
| 2030 | 0.5553 | 243.06   | 142.85 | 504 | 280   |        |     |       |
| 2031 | 0.5339 | 243.54   | 159.78 | 563 | 301   |        |     |       |
| 2032 | 0.5134 | 235.03   | 167.71 | 591 | 303   |        |     |       |
| 2033 | 0.4936 | 231.96   | 181.08 | 638 | 315   |        |     |       |
| 2034 | 0.4746 | 226.36   | 187.53 | 661 | 314   |        |     |       |
| 2035 | 0.4564 | 256.13   | 198.18 | 699 | 319   |        |     |       |
| 2036 | 0.4388 | 254.85   | 207.73 | 732 | 321   |        |     |       |
| 2037 | 0.4220 | 254.85   | 218.31 | 770 | 325   |        |     |       |
| 2038 | 0.4057 | 254.85   | 228.43 | 805 | 327   |        |     |       |
| 2039 | 0.3901 | 254.85   | 238.14 | 839 | 327   |        |     |       |
| 2040 | 0.3751 | 254.85   | 241.52 | 851 | 319   |        |     |       |
| 2041 | 0.3607 | 254.85   | 244.85 | 863 | 311   |        |     |       |
| 2042 | 0.3468 | 254.85   | 248.18 | 875 | 303   |        |     |       |
| 2043 | 0.3335 | 248.61   | 245.28 | 865 | 288   |        |     |       |
| 2044 | 0.3207 | 248.61   | 248.61 | 876 | 281   |        |     |       |
| 2045 | 0.3083 | 246.49   | 246.49 | 869 | 268   |        |     |       |
| 2046 | 0.2965 | 246.49   | 246.49 | 869 | 258   |        |     |       |
| 2047 | 0.2851 | 246.49   | 246.49 | 869 | 248   |        |     |       |
| 2048 | 0.2741 | 246.49   | 246.49 | 869 | 238   |        |     |       |
| 合計   |        |          |        |     | 7,952 |        |     | 0     |