

様式3-様式4

費用集計表  
(森林整備事業)

事業名： 水源林造成事業  
施工箇所： 菊池・球磨川広域流域 50年経過契約地

(単位:千円)

| 年度   | 事業費       | 割引率      | デフレーター | 現在価値額      | 年度   | 事業費           | 割引率      | デフレーター | 現在価値額 |
|------|-----------|----------|--------|------------|------|---------------|----------|--------|-------|
| 1970 |           | × 7.3910 |        |            | 2031 | 0             | × 0.6756 |        | 0     |
| 1971 | 2,259,305 | × 7.1067 |        | 16,056,203 | 2032 | 0             | × 0.6496 |        | 0     |
| 1972 | 543,804   | × 6.8333 |        | 3,715,976  | 2033 | 0             | × 0.6246 |        | 0     |
| 1973 | 437,264   | × 6.5705 |        | 2,873,043  | 2034 | 0             | × 0.6006 |        | 0     |
| 1974 | 324,005   | × 6.3178 |        | 2,046,999  | 2035 | 0             | × 0.5775 |        | 0     |
| 1975 | 240,745   | × 6.0748 |        | 1,462,478  | 2036 | 0             | × 0.5553 |        | 0     |
| 1976 | 222,184   | × 5.8412 |        | 1,297,821  | 2037 | 0             | × 0.5339 |        | 0     |
| 1977 | 0         | × 5.6165 |        | 0          | 2038 | 0             | × 0.5134 |        | 0     |
| 1978 | 94,469    | × 5.4005 |        | 510,180    | 2039 | 0             | × 0.4936 |        | 0     |
| 1979 | 0         | × 5.1928 |        | 0          | 2040 | 0             | × 0.4746 |        | 0     |
| 1980 | 87,703    | × 4.9931 |        | 437,910    | 2041 | 0             | × 0.4564 |        | 0     |
| 1981 | 7,608     | × 4.8010 |        | 36,526     | 2042 | 0             | × 0.4388 |        | 0     |
| 1982 | 269,358   | × 4.6164 |        | 1,243,464  | 2043 | 0             | × 0.4220 |        | 0     |
| 1983 | 0         | × 4.4388 |        | 0          | 2044 | 0             | × 0.4057 |        | 0     |
| 1984 | 402,617   | × 4.2681 |        | 1,718,410  | 2045 | 0             | × 0.3901 |        | 0     |
| 1985 | 0         | × 4.1039 |        | 0          | 2046 | 0             | × 0.3751 |        | 0     |
| 1986 | 46,946    | × 3.9461 |        | 185,254    | 2047 | 0             | × 0.3607 |        | 0     |
| 1987 | 0         | × 3.7943 |        | 0          | 2048 | 0             | × 0.3468 |        | 0     |
| 1988 | 99,664    | × 3.6484 |        | 363,614    | 2049 | 0             | × 0.3335 |        | 0     |
| 1989 | 0         | × 3.5081 |        | 0          | 2050 | 0             | × 0.3207 |        | 0     |
| 1990 | 210,099   | × 3.3731 |        | 708,685    |      |               |          |        |       |
| 1991 | 156,227   | × 3.2434 |        | 506,707    |      |               |          |        |       |
| 1992 | 0         | × 3.1187 |        | 0          |      |               |          |        |       |
| 1993 | 0         | × 2.9987 |        | 0          |      |               |          |        |       |
| 1994 | 0         | × 2.8834 |        | 0          |      |               |          |        |       |
| 1995 | 0         | × 2.7725 |        | 0          |      |               |          |        |       |
| 1996 | 286,078   | × 2.6658 |        | 762,627    |      |               |          |        |       |
| 1997 | 0         | × 2.5633 |        | 0          |      |               |          |        |       |
| 1998 | 0         | × 2.4647 |        | 0          |      |               |          |        |       |
| 1999 | 0         | × 2.3699 |        | 0          |      |               |          |        |       |
| 2000 | 0         | × 2.2788 |        | 0          |      |               |          |        |       |
| 2001 | 0         | × 2.1911 |        | 0          |      |               |          |        |       |
| 2002 | 0         | × 2.1068 |        | 0          |      |               |          |        |       |
| 2003 | 0         | × 2.0258 |        | 0          |      |               |          |        |       |
| 2004 | 0         | × 1.9479 |        | 0          |      |               |          |        |       |
| 2005 | 0         | × 1.8730 |        | 0          |      |               |          |        |       |
| 2006 | 0         | × 1.8009 |        | 0          |      |               |          |        |       |
| 2007 | 0         | × 1.7317 |        | 0          |      |               |          |        |       |
| 2008 | 0         | × 1.6651 |        | 0          |      |               |          |        |       |
| 2009 | 0         | × 1.6010 |        | 0          |      |               |          |        |       |
| 2010 | 0         | × 1.5395 |        | 0          |      |               |          |        |       |
| 2011 | 454,534   | × 1.4802 |        | 672,801    |      |               |          |        |       |
| 2012 | 0         | × 1.4233 |        | 0          |      |               |          |        |       |
| 2013 | 0         | × 1.3686 |        | 0          |      |               |          |        |       |
| 2014 | 0         | × 1.3159 |        | 0          |      |               |          |        |       |
| 2015 | 0         | × 1.2653 |        | 0          |      |               |          |        |       |
| 2016 | 0         | × 1.2167 |        | 0          |      |               |          |        |       |
| 2017 | 0         | × 1.1699 |        | 0          |      |               |          |        |       |
| 2018 | 0         | × 1.1249 |        | 0          |      |               |          |        |       |
| 2019 | 0         | × 1.0816 |        | 0          |      |               |          |        |       |
| 2020 | 0         | × 1.0400 |        | 0          |      |               |          |        |       |
| 2021 | 0         | × 1.0000 |        | 0          |      |               |          |        |       |
| 2022 | 0         | × 0.9615 |        | 0          |      |               |          |        |       |
| 2023 | 0         | × 0.9246 |        | 0          |      |               |          |        |       |
| 2024 | 0         | × 0.8890 |        | 0          |      |               |          |        |       |
| 2025 | 0         | × 0.8548 |        | 0          |      |               |          |        |       |
| 2026 | 412,221   | × 0.8219 |        | 338,804    |      |               |          |        |       |
| 2027 | 0         | × 0.7903 |        | 0          |      |               |          |        |       |
| 2028 | 0         | × 0.7599 |        | 0          |      |               |          |        |       |
| 2029 | 0         | × 0.7307 |        | 0          |      |               |          |        |       |
| 2030 | 0         | × 0.7026 |        | 0          |      |               |          |        |       |
|      |           |          |        |            | 合 計  | 34,937,502    |          |        |       |
|      |           |          |        |            | C =  | 34,937,502 千円 |          |        |       |

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

- U: 治水ダムの単位流量調節量当たりの年間減価償却費(円/㎡/sec) 4,190,000  
出典:「ダム年鑑2019」
- f1: 事業実施前の流出係数 

|      |   |           |
|------|---|-----------|
| 浸透能大 | 急 | 要整備森林(疎林) |
|------|---|-----------|

 0.55  
出典:「治山設計」(山口伊佐夫著,1979)
- f2: 事業実施後、T年経過後の流出係数 

|      |   |       |
|------|---|-------|
| 浸透能大 | 急 | 整備済森林 |
|------|---|-------|

 0.45  
出典:「治山設計」(山口伊佐夫著,1979)
- T: 事業実施後、流出係数が安定するのに必要な年数 10
- α: 100年確率時雨量(mm/h) 99.60  
出典:気象統計情報(気象庁):本広域流域内の気象庁HP観測所データ(鹿北観測所ほか14観測所)を使用。本データは、各観測所の気象データ(2016~2020年)を基に確率雨量計算にて算定。事業箇所が所在する市町村に所在する15観測所の平均値にて算定。
- A: 事業対象区域面積(ha) 1,021.37 ~ 1,021.37
- 360: 単位合わせのための調整値
- Y: 評価期間 80
- t: 経過年数(治山事業の便益の算出に当たっては、各年度の事業費の累計を用いている。)  
※社会的割引率を考慮するために用いる(1+i)<sup>t</sup>(年数)とは異なる。
- i: 社会的割引率(0.04)

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

| 年度   | 社会的割引率 | 事業対象区域面積 ha | 事業効果面積 ha | 効果額 千円  | 現在価値化 千円 |
|------|--------|-------------|-----------|---------|----------|
| 1970 | 7.3910 |             |           |         |          |
| 1971 | 7.1067 | 1,021.37    | 102.14    | 11,840  | 84,143   |
| 1972 | 6.8333 | 1,021.37    | 204.27    | 23,680  | 161,813  |
| 1973 | 6.5705 | 1,021.37    | 306.41    | 35,520  | 233,384  |
| 1974 | 6.3178 | 1,021.37    | 408.55    | 47,360  | 299,211  |
| 1975 | 6.0748 | 1,021.37    | 510.69    | 59,200  | 359,628  |
| 1976 | 5.8412 | 1,021.37    | 612.82    | 71,040  | 414,959  |
| 1977 | 5.6165 | 1,021.37    | 714.96    | 82,880  | 465,496  |
| 1978 | 5.4005 | 1,021.37    | 817.10    | 94,720  | 511,535  |
| 1979 | 5.1928 | 1,021.37    | 919.23    | 106,560 | 553,345  |
| 1980 | 4.9931 | 1,021.37    | 1,021.37  | 118,400 | 591,183  |
| 1981 | 4.8010 | 1,021.37    | 1,021.37  | 118,400 | 568,438  |
| 1982 | 4.6164 | 1,021.37    | 1,021.37  | 118,400 | 546,582  |
| 1983 | 4.4388 | 1,021.37    | 1,021.37  | 118,400 | 525,554  |
| 1984 | 4.2681 | 1,021.37    | 1,021.37  | 118,400 | 505,343  |
| 1985 | 4.1039 | 1,021.37    | 1,021.37  | 118,400 | 485,902  |
| 1986 | 3.9461 | 1,021.37    | 1,021.37  | 118,400 | 467,218  |
| 1987 | 3.7943 | 1,021.37    | 1,021.37  | 118,400 | 449,245  |
| 1988 | 3.6484 | 1,021.37    | 1,021.37  | 118,400 | 431,971  |
| 1989 | 3.5081 | 1,021.37    | 1,021.37  | 118,400 | 415,359  |
| 1990 | 3.3731 | 1,021.37    | 1,021.37  | 118,400 | 399,375  |
| 1991 | 3.2434 | 1,021.37    | 1,021.37  | 118,400 | 384,019  |
| 1992 | 3.1187 | 1,021.37    | 1,021.37  | 118,400 | 369,254  |
| 1993 | 2.9987 | 1,021.37    | 1,021.37  | 118,400 | 355,046  |
| 1994 | 2.8834 | 1,021.37    | 1,021.37  | 118,400 | 341,395  |
| 1995 | 2.7725 | 1,021.37    | 1,021.37  | 118,400 | 328,264  |
| 1996 | 2.6658 | 1,021.37    | 1,021.37  | 118,400 | 315,631  |
| 1997 | 2.5633 | 1,021.37    | 1,021.37  | 118,400 | 303,495  |
| 1998 | 2.4647 | 1,021.37    | 1,021.37  | 118,400 | 291,820  |
| 1999 | 2.3699 | 1,021.37    | 1,021.37  | 118,400 | 280,596  |
| 2000 | 2.2788 | 1,021.37    | 1,021.37  | 118,400 | 269,810  |
| 2001 | 2.1911 | 1,021.37    | 1,021.37  | 118,400 | 259,426  |
| 2002 | 2.1068 | 1,021.37    | 1,021.37  | 118,400 | 249,445  |
| 2003 | 2.0258 | 1,021.37    | 1,021.37  | 118,400 | 239,855  |
| 2004 | 1.9479 | 1,021.37    | 1,021.37  | 118,400 | 230,631  |
| 2005 | 1.8730 | 1,021.37    | 1,021.37  | 118,400 | 221,763  |
| 2006 | 1.8009 | 1,021.37    | 1,021.37  | 118,400 | 213,227  |
| 2007 | 1.7317 | 1,021.37    | 1,021.37  | 118,400 | 205,033  |
| 2008 | 1.6651 | 1,021.37    | 1,021.37  | 118,400 | 197,148  |
| 2009 | 1.6010 | 1,021.37    | 1,021.37  | 118,400 | 189,558  |
| 2010 | 1.5395 | 1,021.37    | 1,021.37  | 118,400 | 182,277  |
| 2011 | 1.4802 | 1,021.37    | 1,021.37  | 118,400 | 175,256  |
| 2012 | 1.4233 | 1,021.37    | 1,021.37  | 118,400 | 168,519  |
| 2013 | 1.3686 | 1,021.37    | 1,021.37  | 118,400 | 162,042  |
| 2014 | 1.3159 | 1,021.37    | 1,021.37  | 118,400 | 155,803  |
| 2015 | 1.2653 | 1,021.37    | 1,021.37  | 118,400 | 149,812  |
| 2016 | 1.2167 | 1,021.37    | 1,021.37  | 118,400 | 144,057  |
| 2017 | 1.1699 | 1,021.37    | 1,021.37  | 118,400 | 138,516  |
| 2018 | 1.1249 | 1,021.37    | 1,021.37  | 118,400 | 133,188  |
| 2019 | 1.0816 | 1,021.37    | 1,021.37  | 118,400 | 128,061  |
| 2020 | 1.0400 | 1,021.37    | 1,021.37  | 118,400 | 123,136  |
| 2021 | 1.0000 | 1,021.37    | 1,021.37  | 118,400 | 118,400  |
| 2022 | 0.9615 | 1,021.37    | 1,021.37  | 118,400 | 113,842  |
| 2023 | 0.9246 | 1,021.37    | 1,021.37  | 118,400 | 109,473  |



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

- A: 事業対象区域面積 (ha) 1,021.37 ~ 1,021.37
- P: 年間平均降水量 (mm/年) 2,509  
出典: 気象統計情報(気象庁): 本広域流域内の気象庁HP観測所データ(鹿北観測所ほか13観測所)を使用。本データは、気象庁HP公表の年降水量の平年値(1991~2020年)を基に算定。事業箇所が所在する市町村に所在する14観測所の平均値にて算定。
- D1: 事業実施前の貯留率 0.51  
出典: 「森林の間伐と水収支」(近嵐ら、1987)
- D2: 事業実施後、T年経過後の貯留率 0.56  
出典: 「森林の間伐と水収支」(近嵐ら、1987)
- T: 事業実施後、流出係数が安定するのに必要な年数 10
- U: 開発水量当りの利水ダム年間減価償却費(円/m3/S) 1,058,000,000  
出典: 「ダム年鑑2019」
- Y: 評価期間 80
- t: 経過年数(治山事業の便益の算出に当たっては、各年度の事業費の累計を用いている。  
※社会的割引率を考慮するために用いる(1+i)<sup>t</sup>(年数)とは異なる。
- i: 社会的割引率(0.04)
- 10: 単位合わせのための調整値 10
- 365: 1年間の日数 365
- 86400: 1日の秒数 86,400

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毎に累計した面積

| 年度   | 社会的割引率 | 事業対象区域面積 ha | 事業効果面積 ha | 効果額 千円 | 現在価値化 千円 |
|------|--------|-------------|-----------|--------|----------|
| 1970 | 7.3910 |             |           |        |          |
| 1971 | 7.1067 | 1,021.37    | 102.14    | 4,299  | 30,552   |
| 1972 | 6.8333 | 1,021.37    | 204.27    | 8,597  | 58,746   |
| 1973 | 6.5705 | 1,021.37    | 306.41    | 12,896 | 84,733   |
| 1974 | 6.3178 | 1,021.37    | 408.55    | 17,195 | 108,635  |
| 1975 | 6.0748 | 1,021.37    | 510.69    | 21,493 | 130,566  |
| 1976 | 5.8412 | 1,021.37    | 612.82    | 25,792 | 150,656  |
| 1977 | 5.6165 | 1,021.37    | 714.96    | 30,090 | 169,000  |
| 1978 | 5.4005 | 1,021.37    | 817.10    | 34,389 | 185,718  |
| 1979 | 5.1928 | 1,021.37    | 919.23    | 38,688 | 200,899  |
| 1980 | 4.9931 | 1,021.37    | 1,021.37  | 42,986 | 214,633  |
| 1981 | 4.8010 | 1,021.37    | 1,021.37  | 42,986 | 206,376  |
| 1982 | 4.6164 | 1,021.37    | 1,021.37  | 42,986 | 198,441  |
| 1983 | 4.4388 | 1,021.37    | 1,021.37  | 42,986 | 190,806  |
| 1984 | 4.2681 | 1,021.37    | 1,021.37  | 42,986 | 183,469  |
| 1985 | 4.1039 | 1,021.37    | 1,021.37  | 42,986 | 176,410  |
| 1986 | 3.9461 | 1,021.37    | 1,021.37  | 42,986 | 169,627  |
| 1987 | 3.7943 | 1,021.37    | 1,021.37  | 42,986 | 163,102  |
| 1988 | 3.6484 | 1,021.37    | 1,021.37  | 42,986 | 156,830  |
| 1989 | 3.5081 | 1,021.37    | 1,021.37  | 42,986 | 150,799  |
| 1990 | 3.3731 | 1,021.37    | 1,021.37  | 42,986 | 144,996  |
| 1991 | 3.2434 | 1,021.37    | 1,021.37  | 42,986 | 139,421  |
| 1992 | 3.1187 | 1,021.37    | 1,021.37  | 42,986 | 134,060  |
| 1993 | 2.9987 | 1,021.37    | 1,021.37  | 42,986 | 128,902  |
| 1994 | 2.8834 | 1,021.37    | 1,021.37  | 42,986 | 123,946  |
| 1995 | 2.7725 | 1,021.37    | 1,021.37  | 42,986 | 119,179  |
| 1996 | 2.6658 | 1,021.37    | 1,021.37  | 42,986 | 114,592  |
| 1997 | 2.5633 | 1,021.37    | 1,021.37  | 42,986 | 110,186  |
| 1998 | 2.4647 | 1,021.37    | 1,021.37  | 42,986 | 105,948  |
| 1999 | 2.3699 | 1,021.37    | 1,021.37  | 42,986 | 101,873  |
| 2000 | 2.2788 | 1,021.37    | 1,021.37  | 42,986 | 97,956   |
| 2001 | 2.1911 | 1,021.37    | 1,021.37  | 42,986 | 94,187   |
| 2002 | 2.1068 | 1,021.37    | 1,021.37  | 42,986 | 90,563   |
| 2003 | 2.0258 | 1,021.37    | 1,021.37  | 42,986 | 87,081   |
| 2004 | 1.9479 | 1,021.37    | 1,021.37  | 42,986 | 83,732   |
| 2005 | 1.8730 | 1,021.37    | 1,021.37  | 42,986 | 80,513   |
| 2006 | 1.8009 | 1,021.37    | 1,021.37  | 42,986 | 77,413   |
| 2007 | 1.7317 | 1,021.37    | 1,021.37  | 42,986 | 74,439   |
| 2008 | 1.6651 | 1,021.37    | 1,021.37  | 42,986 | 71,576   |
| 2009 | 1.6010 | 1,021.37    | 1,021.37  | 42,986 | 68,821   |
| 2010 | 1.5395 | 1,021.37    | 1,021.37  | 42,986 | 66,177   |
| 2011 | 1.4802 | 1,021.37    | 1,021.37  | 42,986 | 63,628   |
| 2012 | 1.4233 | 1,021.37    | 1,021.37  | 42,986 | 61,182   |
| 2013 | 1.3686 | 1,021.37    | 1,021.37  | 42,986 | 58,831   |
| 2014 | 1.3159 | 1,021.37    | 1,021.37  | 42,986 | 56,565   |
| 2015 | 1.2653 | 1,021.37    | 1,021.37  | 42,986 | 54,390   |
| 2016 | 1.2167 | 1,021.37    | 1,021.37  | 42,986 | 52,301   |
| 2017 | 1.1699 | 1,021.37    | 1,021.37  | 42,986 | 50,289   |
| 2018 | 1.1249 | 1,021.37    | 1,021.37  | 42,986 | 48,355   |
| 2019 | 1.0816 | 1,021.37    | 1,021.37  | 42,986 | 46,494   |

|      |        |          |          |        |           |
|------|--------|----------|----------|--------|-----------|
| 2020 | 1.0400 | 1,021.37 | 1,021.37 | 42,986 | 44,705    |
| 2021 | 1.0000 | 1,021.37 | 1,021.37 | 42,986 | 42,986    |
| 2022 | 0.9615 | 1,021.37 | 1,021.37 | 42,986 | 41,331    |
| 2023 | 0.9246 | 1,021.37 | 1,021.37 | 42,986 | 39,745    |
| 2024 | 0.8890 | 1,021.37 | 1,021.37 | 42,986 | 38,215    |
| 2025 | 0.8548 | 1,021.37 | 1,021.37 | 42,986 | 36,744    |
| 2026 | 0.8219 | 1,021.37 | 1,021.37 | 42,986 | 35,330    |
| 2027 | 0.7903 | 1,021.37 | 1,021.37 | 42,986 | 33,972    |
| 2028 | 0.7599 | 1,021.37 | 1,021.37 | 42,986 | 32,665    |
| 2029 | 0.7307 | 1,021.37 | 1,021.37 | 42,986 | 31,410    |
| 2030 | 0.7026 | 1,021.37 | 1,021.37 | 42,986 | 30,202    |
| 2031 | 0.6756 | 1,021.37 | 1,021.37 | 42,986 | 29,041    |
| 2032 | 0.6496 | 1,021.37 | 1,021.37 | 42,986 | 27,924    |
| 2033 | 0.6246 | 1,021.37 | 1,021.37 | 42,986 | 26,849    |
| 2034 | 0.6006 | 1,021.37 | 1,021.37 | 42,986 | 25,817    |
| 2035 | 0.5775 | 1,021.37 | 1,021.37 | 42,986 | 24,824    |
| 2036 | 0.5553 | 1,021.37 | 1,021.37 | 42,986 | 23,870    |
| 2037 | 0.5339 | 1,021.37 | 1,021.37 | 42,986 | 22,950    |
| 2038 | 0.5134 | 1,021.37 | 1,021.37 | 42,986 | 22,069    |
| 2039 | 0.4936 | 1,021.37 | 1,021.37 | 42,986 | 21,218    |
| 2040 | 0.4746 | 1,021.37 | 1,021.37 | 42,986 | 20,401    |
| 2041 | 0.4564 | 1,021.37 | 1,021.37 | 42,986 | 19,619    |
| 2042 | 0.4388 | 1,021.37 | 1,021.37 | 42,986 | 18,862    |
| 2043 | 0.4220 | 1,021.37 | 1,021.37 | 42,986 | 18,140    |
| 2044 | 0.4057 | 1,021.37 | 1,021.37 | 42,986 | 17,439    |
| 2045 | 0.3901 | 1,021.37 | 1,021.37 | 42,986 | 16,769    |
| 2046 | 0.3751 | 1,021.37 | 1,021.37 | 42,986 | 16,124    |
| 2047 | 0.3607 | 1,021.37 | 1,021.37 | 42,986 | 15,505    |
| 2048 | 0.3468 | 1,021.37 | 1,021.37 | 42,986 | 14,908    |
| 2049 | 0.3335 | 1,021.37 | 1,021.37 | 42,986 | 14,336    |
| 2050 | 0.3207 | 1,021.37 | 1,021.37 | 42,986 | 13,786    |
| 合計   |        |          |          |        | 6,355,350 |

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

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

|     |   |                     |
|-----|---|---------------------|
| Qx: | 全貯留量のうち生活用水使用相当量  | 5.40 億立方            |
| Qy: | 全貯留量 - Qx   | 163.91 億立方          |
| A:  | 事業対象区域面積 (ha)   | 1,021.37 ~ 1,021.37 |
| P:  | 年間平均降水量 (mm/年)  | 2,509               |
| 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   | 0.51                |
| D2: | 事業実施後、T年経過後の貯留率   | 0.56                |
| Ux: | 単位当たりの上水道供給単価 (円/m <sup>3</sup> )   | 89.20               |
| Uy: | 単位当たりの雨水浄化費 (円/m <sup>3</sup> )   | 122.10              |
| u:  | 単位当たりの水質浄化費 (Ux と Uy を用いて Qx と Qy で比例按分して算出)  | 89.20               |
| t:  | 経過年数(治山事業の便益の算出に当たっては、各年度の事業費の累計を用いている。)<br>※社会的割引率を考慮するために用いる(1+i) <sup>t</sup> のt(年数)とは異なる。 |                     |
| i:  | 社会的割引率(0.04)  |                     |
| Y:  | 評価期間  | 80                  |
| 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毎に累計した面積

| 年度   | 社会的割引率 | 事業対象区域面積 ha | 事業効果面積 ha | 効果額 千円  | 現在価値化 千円 |
|------|--------|-------------|-----------|---------|----------|
| 1970 | 7.3910 |             |           |         |          |
| 1971 | 7.1067 | 1,021.37    | 102.14    | 11,429  | 81,222   |
| 1972 | 6.8333 | 1,021.37    | 204.27    | 22,858  | 156,196  |
| 1973 | 6.5705 | 1,021.37    | 306.41    | 34,288  | 225,289  |
| 1974 | 6.3178 | 1,021.37    | 408.55    | 45,717  | 288,831  |
| 1975 | 6.0748 | 1,021.37    | 510.69    | 57,146  | 347,151  |
| 1976 | 5.8412 | 1,021.37    | 612.82    | 68,575  | 400,560  |
| 1977 | 5.6165 | 1,021.37    | 714.96    | 80,005  | 449,348  |
| 1978 | 5.4005 | 1,021.37    | 817.10    | 91,434  | 493,789  |
| 1979 | 5.1928 | 1,021.37    | 919.23    | 102,863 | 534,147  |
| 1980 | 4.9931 | 1,021.37    | 1,021.37  | 114,292 | 570,671  |
| 1981 | 4.8010 | 1,021.37    | 1,021.37  | 114,292 | 548,716  |
| 1982 | 4.6164 | 1,021.37    | 1,021.37  | 114,292 | 527,618  |
| 1983 | 4.4388 | 1,021.37    | 1,021.37  | 114,292 | 507,319  |
| 1984 | 4.2681 | 1,021.37    | 1,021.37  | 114,292 | 487,810  |
| 1985 | 4.1039 | 1,021.37    | 1,021.37  | 114,292 | 469,043  |
| 1986 | 3.9461 | 1,021.37    | 1,021.37  | 114,292 | 451,008  |
| 1987 | 3.7943 | 1,021.37    | 1,021.37  | 114,292 | 433,658  |
| 1988 | 3.6484 | 1,021.37    | 1,021.37  | 114,292 | 416,983  |
| 1989 | 3.5081 | 1,021.37    | 1,021.37  | 114,292 | 400,948  |
| 1990 | 3.3731 | 1,021.37    | 1,021.37  | 114,292 | 385,518  |
| 1991 | 3.2434 | 1,021.37    | 1,021.37  | 114,292 | 370,695  |
| 1992 | 3.1187 | 1,021.37    | 1,021.37  | 114,292 | 356,442  |
| 1993 | 2.9987 | 1,021.37    | 1,021.37  | 114,292 | 342,727  |
| 1994 | 2.8834 | 1,021.37    | 1,021.37  | 114,292 | 329,550  |
| 1995 | 2.7725 | 1,021.37    | 1,021.37  | 114,292 | 316,875  |
| 1996 | 2.6658 | 1,021.37    | 1,021.37  | 114,292 | 304,680  |
| 1997 | 2.5633 | 1,021.37    | 1,021.37  | 114,292 | 292,965  |
| 1998 | 2.4647 | 1,021.37    | 1,021.37  | 114,292 | 281,695  |
| 1999 | 2.3699 | 1,021.37    | 1,021.37  | 114,292 | 270,861  |
| 2000 | 2.2788 | 1,021.37    | 1,021.37  | 114,292 | 260,449  |
| 2001 | 2.1911 | 1,021.37    | 1,021.37  | 114,292 | 250,425  |
| 2002 | 2.1068 | 1,021.37    | 1,021.37  | 114,292 | 240,790  |
| 2003 | 2.0258 | 1,021.37    | 1,021.37  | 114,292 | 231,533  |
| 2004 | 1.9479 | 1,021.37    | 1,021.37  | 114,292 | 222,629  |
| 2005 | 1.8730 | 1,021.37    | 1,021.37  | 114,292 | 214,069  |
| 2006 | 1.8009 | 1,021.37    | 1,021.37  | 114,292 | 205,828  |
| 2007 | 1.7317 | 1,021.37    | 1,021.37  | 114,292 | 197,919  |
| 2008 | 1.6651 | 1,021.37    | 1,021.37  | 114,292 | 190,308  |
| 2009 | 1.6010 | 1,021.37    | 1,021.37  | 114,292 | 182,981  |
| 2010 | 1.5395 | 1,021.37    | 1,021.37  | 114,292 | 175,953  |

|      |        |          |          |         |            |
|------|--------|----------|----------|---------|------------|
| 2011 | 1.4802 | 1,021.37 | 1,021.37 | 114,292 | 169,175    |
| 2012 | 1.4233 | 1,021.37 | 1,021.37 | 114,292 | 162,672    |
| 2013 | 1.3686 | 1,021.37 | 1,021.37 | 114,292 | 156,420    |
| 2014 | 1.3159 | 1,021.37 | 1,021.37 | 114,292 | 150,397    |
| 2015 | 1.2653 | 1,021.37 | 1,021.37 | 114,292 | 144,614    |
| 2016 | 1.2167 | 1,021.37 | 1,021.37 | 114,292 | 139,059    |
| 2017 | 1.1699 | 1,021.37 | 1,021.37 | 114,292 | 133,710    |
| 2018 | 1.1249 | 1,021.37 | 1,021.37 | 114,292 | 128,567    |
| 2019 | 1.0816 | 1,021.37 | 1,021.37 | 114,292 | 123,618    |
| 2020 | 1.0400 | 1,021.37 | 1,021.37 | 114,292 | 118,864    |
| 2021 | 1.0000 | 1,021.37 | 1,021.37 | 114,292 | 114,292    |
| 2022 | 0.9615 | 1,021.37 | 1,021.37 | 114,292 | 109,892    |
| 2023 | 0.9246 | 1,021.37 | 1,021.37 | 114,292 | 105,674    |
| 2024 | 0.8890 | 1,021.37 | 1,021.37 | 114,292 | 101,606    |
| 2025 | 0.8548 | 1,021.37 | 1,021.37 | 114,292 | 97,697     |
| 2026 | 0.8219 | 1,021.37 | 1,021.37 | 114,292 | 93,937     |
| 2027 | 0.7903 | 1,021.37 | 1,021.37 | 114,292 | 90,325     |
| 2028 | 0.7599 | 1,021.37 | 1,021.37 | 114,292 | 86,850     |
| 2029 | 0.7307 | 1,021.37 | 1,021.37 | 114,292 | 83,513     |
| 2030 | 0.7026 | 1,021.37 | 1,021.37 | 114,292 | 80,302     |
| 2031 | 0.6756 | 1,021.37 | 1,021.37 | 114,292 | 77,216     |
| 2032 | 0.6496 | 1,021.37 | 1,021.37 | 114,292 | 74,244     |
| 2033 | 0.6246 | 1,021.37 | 1,021.37 | 114,292 | 71,387     |
| 2034 | 0.6006 | 1,021.37 | 1,021.37 | 114,292 | 68,644     |
| 2035 | 0.5775 | 1,021.37 | 1,021.37 | 114,292 | 66,004     |
| 2036 | 0.5553 | 1,021.37 | 1,021.37 | 114,292 | 63,466     |
| 2037 | 0.5339 | 1,021.37 | 1,021.37 | 114,292 | 61,020     |
| 2038 | 0.5134 | 1,021.37 | 1,021.37 | 114,292 | 58,678     |
| 2039 | 0.4936 | 1,021.37 | 1,021.37 | 114,292 | 56,415     |
| 2040 | 0.4746 | 1,021.37 | 1,021.37 | 114,292 | 54,243     |
| 2041 | 0.4564 | 1,021.37 | 1,021.37 | 114,292 | 52,163     |
| 2042 | 0.4388 | 1,021.37 | 1,021.37 | 114,292 | 50,151     |
| 2043 | 0.4220 | 1,021.37 | 1,021.37 | 114,292 | 48,231     |
| 2044 | 0.4057 | 1,021.37 | 1,021.37 | 114,292 | 46,368     |
| 2045 | 0.3901 | 1,021.37 | 1,021.37 | 114,292 | 44,585     |
| 2046 | 0.3751 | 1,021.37 | 1,021.37 | 114,292 | 42,871     |
| 2047 | 0.3607 | 1,021.37 | 1,021.37 | 114,292 | 41,225     |
| 2048 | 0.3468 | 1,021.37 | 1,021.37 | 114,292 | 39,636     |
| 2049 | 0.3335 | 1,021.37 | 1,021.37 | 114,292 | 38,116     |
| 2050 | 0.3207 | 1,021.37 | 1,021.37 | 114,292 | 36,653     |
| 合計   |        |          |          |         | 16,897,699 |

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

- U: 下流のダムに堆積した1㎡の土砂を除去するコスト(円/㎡) 4,115  
出典:(一社)ダム水源地土砂対策技術研究会資料ほか
- V1: 事業実施前における1ha当りの年間流出土砂量(m3) 20.00  
出典:「治山全体調査の考え方進め方」森林の公益的機能に関する文献要約集「森林水文」  
[表: 荒廃地等]
- V2: 事業実施後における1ha当りの年間流出土砂量(m3) 1.30  
出典:「治山全体調査の考え方進め方」森林の公益的機能に関する文献要約集「森林水文」  
[表: 整備済森林]
- A: 事業対象区域面積(ha) 1,021.37 ~ 1,021.37
- 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 80
- t: 経過年数(治山事業の便益の算出に当たっては、各年度の事業費の累計を用いている。  
※社会的割引率を考慮するために用いる(1+i)<sup>t</sup>のt(年数)とは異なる。
- i: 社会的割引率(0.04)

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毎に累計した面積

| 年度   | 社会的割引率 | 事業対象区域面積 ha | 事業効果面積 ha | 効果額 千円 | 現在価値化 千円 |
|------|--------|-------------|-----------|--------|----------|
| 1970 | 7.3910 |             |           |        |          |
| 1971 | 7.1067 | 1,021.37    | 102.14    | 7,860  | 55,859   |
| 1972 | 6.8333 | 1,021.37    | 204.27    | 15,719 | 107,413  |
| 1973 | 6.5705 | 1,021.37    | 306.41    | 23,579 | 154,926  |
| 1974 | 6.3178 | 1,021.37    | 408.55    | 31,438 | 198,619  |
| 1975 | 6.0748 | 1,021.37    | 510.69    | 39,298 | 238,727  |
| 1976 | 5.8412 | 1,021.37    | 612.82    | 47,157 | 275,453  |
| 1977 | 5.6165 | 1,021.37    | 714.96    | 55,017 | 309,003  |
| 1978 | 5.4005 | 1,021.37    | 817.10    | 62,876 | 339,562  |
| 1979 | 5.1928 | 1,021.37    | 919.23    | 70,736 | 367,318  |
| 1980 | 4.9931 | 1,021.37    | 1,021.37  | 78,595 | 392,433  |
| 1981 | 4.8010 | 1,021.37    | 1,021.37  | 78,595 | 377,335  |
| 1982 | 4.6164 | 1,021.37    | 1,021.37  | 78,595 | 362,826  |
| 1983 | 4.4388 | 1,021.37    | 1,021.37  | 78,595 | 348,867  |
| 1984 | 4.2681 | 1,021.37    | 1,021.37  | 78,595 | 335,451  |
| 1985 | 4.1039 | 1,021.37    | 1,021.37  | 78,595 | 322,546  |
| 1986 | 3.9461 | 1,021.37    | 1,021.37  | 78,595 | 310,144  |
| 1987 | 3.7943 | 1,021.37    | 1,021.37  | 78,595 | 298,213  |
| 1988 | 3.6484 | 1,021.37    | 1,021.37  | 78,595 | 286,746  |
| 1989 | 3.5081 | 1,021.37    | 1,021.37  | 78,595 | 275,719  |
| 1990 | 3.3731 | 1,021.37    | 1,021.37  | 78,595 | 265,109  |
| 1991 | 3.2434 | 1,021.37    | 1,021.37  | 78,595 | 254,915  |
| 1992 | 3.1187 | 1,021.37    | 1,021.37  | 78,595 | 245,114  |
| 1993 | 2.9987 | 1,021.37    | 1,021.37  | 78,595 | 235,683  |
| 1994 | 2.8834 | 1,021.37    | 1,021.37  | 78,595 | 226,621  |
| 1995 | 2.7725 | 1,021.37    | 1,021.37  | 78,595 | 217,905  |
| 1996 | 2.6658 | 1,021.37    | 1,021.37  | 78,595 | 209,519  |
| 1997 | 2.5633 | 1,021.37    | 1,021.37  | 78,595 | 201,463  |
| 1998 | 2.4647 | 1,021.37    | 1,021.37  | 78,595 | 193,713  |
| 1999 | 2.3699 | 1,021.37    | 1,021.37  | 78,595 | 186,262  |
| 2000 | 2.2788 | 1,021.37    | 1,021.37  | 78,595 | 179,102  |
| 2001 | 2.1911 | 1,021.37    | 1,021.37  | 78,595 | 172,210  |
| 2002 | 2.1068 | 1,021.37    | 1,021.37  | 78,595 | 165,584  |
| 2003 | 2.0258 | 1,021.37    | 1,021.37  | 78,595 | 159,218  |
| 2004 | 1.9479 | 1,021.37    | 1,021.37  | 78,595 | 153,095  |
| 2005 | 1.8730 | 1,021.37    | 1,021.37  | 78,595 | 147,208  |
| 2006 | 1.8009 | 1,021.37    | 1,021.37  | 78,595 | 141,542  |
| 2007 | 1.7317 | 1,021.37    | 1,021.37  | 78,595 | 136,103  |
| 2008 | 1.6651 | 1,021.37    | 1,021.37  | 78,595 | 130,869  |
| 2009 | 1.6010 | 1,021.37    | 1,021.37  | 78,595 | 125,831  |
| 2010 | 1.5395 | 1,021.37    | 1,021.37  | 78,595 | 120,997  |
| 2011 | 1.4802 | 1,021.37    | 1,021.37  | 78,595 | 116,336  |
| 2012 | 1.4233 | 1,021.37    | 1,021.37  | 78,595 | 111,864  |
| 2013 | 1.3686 | 1,021.37    | 1,021.37  | 78,595 | 107,565  |
| 2014 | 1.3159 | 1,021.37    | 1,021.37  | 78,595 | 103,423  |
| 2015 | 1.2653 | 1,021.37    | 1,021.37  | 78,595 | 99,446   |
| 2016 | 1.2167 | 1,021.37    | 1,021.37  | 78,595 | 95,627   |
| 2017 | 1.1699 | 1,021.37    | 1,021.37  | 78,595 | 91,948   |
| 2018 | 1.1249 | 1,021.37    | 1,021.37  | 78,595 | 88,412   |
| 2019 | 1.0816 | 1,021.37    | 1,021.37  | 78,595 | 85,008   |
| 2020 | 1.0400 | 1,021.37    | 1,021.37  | 78,595 | 81,739   |
| 2021 | 1.0000 | 1,021.37    | 1,021.37  | 78,595 | 78,595   |
| 2022 | 0.9615 | 1,021.37    | 1,021.37  | 78,595 | 75,569   |
| 2023 | 0.9246 | 1,021.37    | 1,021.37  | 78,595 | 72,669   |
| 2024 | 0.8890 | 1,021.37    | 1,021.37  | 78,595 | 69,871   |
| 2025 | 0.8548 | 1,021.37    | 1,021.37  | 78,595 | 67,183   |
| 2026 | 0.8219 | 1,021.37    | 1,021.37  | 78,595 | 64,597   |
| 2027 | 0.7903 | 1,021.37    | 1,021.37  | 78,595 | 62,114   |
| 2028 | 0.7599 | 1,021.37    | 1,021.37  | 78,595 | 59,724   |
| 2029 | 0.7307 | 1,021.37    | 1,021.37  | 78,595 | 57,429   |



|      |        |          |          |        |            |
|------|--------|----------|----------|--------|------------|
| 2030 | 0.7026 | 1,021.37 | 1,021.37 | 78,595 | 55,221     |
| 2031 | 0.6756 | 1,021.37 | 1,021.37 | 78,595 | 53,099     |
| 2032 | 0.6496 | 1,021.37 | 1,021.37 | 78,595 | 51,055     |
| 2033 | 0.6246 | 1,021.37 | 1,021.37 | 78,595 | 49,090     |
| 2034 | 0.6006 | 1,021.37 | 1,021.37 | 78,595 | 47,204     |
| 2035 | 0.5775 | 1,021.37 | 1,021.37 | 78,595 | 45,389     |
| 2036 | 0.5553 | 1,021.37 | 1,021.37 | 78,595 | 43,644     |
| 2037 | 0.5339 | 1,021.37 | 1,021.37 | 78,595 | 41,962     |
| 2038 | 0.5134 | 1,021.37 | 1,021.37 | 78,595 | 40,351     |
| 2039 | 0.4936 | 1,021.37 | 1,021.37 | 78,595 | 38,794     |
| 2040 | 0.4746 | 1,021.37 | 1,021.37 | 78,595 | 37,301     |
| 2041 | 0.4564 | 1,021.37 | 1,021.37 | 78,595 | 35,871     |
| 2042 | 0.4388 | 1,021.37 | 1,021.37 | 78,595 | 34,487     |
| 2043 | 0.4220 | 1,021.37 | 1,021.37 | 78,595 | 33,167     |
| 2044 | 0.4057 | 1,021.37 | 1,021.37 | 78,595 | 31,886     |
| 2045 | 0.3901 | 1,021.37 | 1,021.37 | 78,595 | 30,660     |
| 2046 | 0.3751 | 1,021.37 | 1,021.37 | 78,595 | 29,481     |
| 2047 | 0.3607 | 1,021.37 | 1,021.37 | 78,595 | 28,349     |
| 2048 | 0.3468 | 1,021.37 | 1,021.37 | 78,595 | 27,257     |
| 2049 | 0.3335 | 1,021.37 | 1,021.37 | 78,595 | 26,211     |
| 2050 | 0.3207 | 1,021.37 | 1,021.37 | 78,595 | 25,205     |
| 合計   |        |          |          |        | 11,620,026 |

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

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

- U: 下流のダムに堆積した1㎡の土砂を除去するコスト(円/㎡) 4,115  
出典:(一社)ダム水源地土砂対策技術研究会資料ほか
- V: 崩壊見込み量(m<sup>3</sup>/年) 0.00 ~ 180.89
- A: 事業対象区域面積(ha) 1,021.37 ~ 1,021.37
- R: 流域内崩壊率 0.0015  
出典「治山全体調査」S42からS46:本流域内の菊池川流域ほか7流域を使用。事業箇所が所在する8流域の平均値にて算定。
- N: 雨量比=50年確率日雨量/既往最大日雨量 1.1807  
出典:気象統計情報(気象庁):本広域流域内の気象庁HP観測所データ(鹿北観測所ほか14観測所)を使用。50年確率日雨量は、各観測所の気象データ(2016~2020年)を基に確率雨量計算にて算定。既往最大日雨量は、観測開始~2020年までの最大値。事業箇所が所在する市町村に所在する15観測所の平均値にて算定。
- L: 事業対象区域の周囲(m)(治山事業のみ算定対象)  
周囲面積 L×H/10,000 (ha)
- H: 平均崩壊深(m) 1.0  
出典:熊本県への聞き取り。
- Y: 評価期間 80
- i: 社会的割引率(0.04)
- T: 土砂崩壊防止機能に差が生じるまでの期間(10年)
- 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 ha | 崩壊見込み量 m <sup>3</sup> /年 | 効果額 千円 | 現在価値化 千円 |
|------|--------|-------------|--------------------------|--------|----------|
| 1970 | 7.3910 |             |                          |        |          |
| 1971 | 7.1067 | 1,021.37    | 0.00                     | 0      | 0        |
| 1972 | 6.8333 | 1,021.37    | 0.00                     | 0      | 0        |
| 1973 | 6.5705 | 1,021.37    | 0.00                     | 0      | 0        |
| 1974 | 6.3178 | 1,021.37    | 0.00                     | 0      | 0        |
| 1975 | 6.0748 | 1,021.37    | 0.00                     | 0      | 0        |
| 1976 | 5.8412 | 1,021.37    | 0.00                     | 0      | 0        |
| 1977 | 5.6165 | 1,021.37    | 0.00                     | 0      | 0        |
| 1978 | 5.4005 | 1,021.37    | 0.00                     | 0      | 0        |
| 1979 | 5.1928 | 1,021.37    | 0.00                     | 0      | 0        |
| 1980 | 4.9931 | 1,021.37    | 0.00                     | 0      | 0        |
| 1981 | 4.8010 | 1,021.37    | 180.89                   | 744    | 3,572    |
| 1982 | 4.6164 | 1,021.37    | 180.89                   | 744    | 3,435    |
| 1983 | 4.4388 | 1,021.37    | 180.89                   | 744    | 3,302    |
| 1984 | 4.2681 | 1,021.37    | 180.89                   | 744    | 3,175    |
| 1985 | 4.1039 | 1,021.37    | 180.89                   | 744    | 3,053    |
| 1986 | 3.9461 | 1,021.37    | 180.89                   | 744    | 2,936    |
| 1987 | 3.7943 | 1,021.37    | 180.89                   | 744    | 2,823    |
| 1988 | 3.6484 | 1,021.37    | 180.89                   | 744    | 2,714    |
| 1989 | 3.5081 | 1,021.37    | 180.89                   | 744    | 2,610    |
| 1990 | 3.3731 | 1,021.37    | 180.89                   | 744    | 2,510    |
| 1991 | 3.2434 | 1,021.37    | 180.89                   | 744    | 2,413    |
| 1992 | 3.1187 | 1,021.37    | 180.89                   | 744    | 2,320    |
| 1993 | 2.9987 | 1,021.37    | 180.89                   | 744    | 2,231    |
| 1994 | 2.8834 | 1,021.37    | 180.89                   | 744    | 2,145    |
| 1995 | 2.7725 | 1,021.37    | 180.89                   | 744    | 2,063    |
| 1996 | 2.6658 | 1,021.37    | 180.89                   | 744    | 1,983    |
| 1997 | 2.5633 | 1,021.37    | 180.89                   | 744    | 1,907    |
| 1998 | 2.4647 | 1,021.37    | 180.89                   | 744    | 1,834    |
| 1999 | 2.3699 | 1,021.37    | 180.89                   | 744    | 1,763    |
| 2000 | 2.2788 | 1,021.37    | 180.89                   | 744    | 1,695    |
| 2001 | 2.1911 | 1,021.37    | 180.89                   | 744    | 1,630    |
| 2002 | 2.1068 | 1,021.37    | 180.89                   | 744    | 1,567    |
| 2003 | 2.0258 | 1,021.37    | 180.89                   | 744    | 1,507    |
| 2004 | 1.9479 | 1,021.37    | 180.89                   | 744    | 1,449    |
| 2005 | 1.8730 | 1,021.37    | 180.89                   | 744    | 1,394    |
| 2006 | 1.8009 | 1,021.37    | 180.89                   | 744    | 1,340    |
| 2007 | 1.7317 | 1,021.37    | 180.89                   | 744    | 1,288    |
| 2008 | 1.6651 | 1,021.37    | 180.89                   | 744    | 1,239    |
| 2009 | 1.6010 | 1,021.37    | 180.89                   | 744    | 1,191    |
| 2010 | 1.5395 | 1,021.37    | 180.89                   | 744    | 1,145    |
| 2011 | 1.4802 | 1,021.37    | 180.89                   | 744    | 1,101    |
| 2012 | 1.4233 | 1,021.37    | 180.89                   | 744    | 1,059    |
| 2013 | 1.3686 | 1,021.37    | 180.89                   | 744    | 1,018    |
| 2014 | 1.3159 | 1,021.37    | 180.89                   | 744    | 979      |
| 2015 | 1.2653 | 1,021.37    | 180.89                   | 744    | 941      |
| 2016 | 1.2167 | 1,021.37    | 180.89                   | 744    | 905      |
| 2017 | 1.1699 | 1,021.37    | 180.89                   | 744    | 870      |
| 2018 | 1.1249 | 1,021.37    | 180.89                   | 744    | 837      |
| 2019 | 1.0816 | 1,021.37    | 180.89                   | 744    | 805      |
| 2020 | 1.0400 | 1,021.37    | 180.89                   | 744    | 774      |
| 2021 | 1.0000 | 1,021.37    | 180.89                   | 744    | 744      |
| 2022 | 0.9615 | 1,021.37    | 180.89                   | 744    | 715      |

|      |        |          |        |     |        |
|------|--------|----------|--------|-----|--------|
| 2023 | 0.9246 | 1,021.37 | 180.89 | 744 | 688    |
| 2024 | 0.8890 | 1,021.37 | 180.89 | 744 | 661    |
| 2025 | 0.8548 | 1,021.37 | 180.89 | 744 | 636    |
| 2026 | 0.8219 | 1,021.37 | 180.89 | 744 | 611    |
| 2027 | 0.7903 | 1,021.37 | 180.89 | 744 | 588    |
| 2028 | 0.7599 | 1,021.37 | 180.89 | 744 | 565    |
| 2029 | 0.7307 | 1,021.37 | 180.89 | 744 | 544    |
| 2030 | 0.7026 | 1,021.37 | 180.89 | 744 | 523    |
| 2031 | 0.6756 | 1,021.37 | 180.89 | 744 | 503    |
| 2032 | 0.6496 | 1,021.37 | 180.89 | 744 | 483    |
| 2033 | 0.6246 | 1,021.37 | 180.89 | 744 | 465    |
| 2034 | 0.6006 | 1,021.37 | 180.89 | 744 | 447    |
| 2035 | 0.5775 | 1,021.37 | 180.89 | 744 | 430    |
| 2036 | 0.5553 | 1,021.37 | 180.89 | 744 | 413    |
| 2037 | 0.5339 | 1,021.37 | 180.89 | 744 | 397    |
| 2038 | 0.5134 | 1,021.37 | 180.89 | 744 | 382    |
| 2039 | 0.4936 | 1,021.37 | 180.89 | 744 | 367    |
| 2040 | 0.4746 | 1,021.37 | 180.89 | 744 | 353    |
| 2041 | 0.4564 | 1,021.37 | 180.89 | 744 | 340    |
| 2042 | 0.4388 | 1,021.37 | 180.89 | 744 | 326    |
| 2043 | 0.4220 | 1,021.37 | 180.89 | 744 | 314    |
| 2044 | 0.4057 | 1,021.37 | 180.89 | 744 | 302    |
| 2045 | 0.3901 | 1,021.37 | 180.89 | 744 | 290    |
| 2046 | 0.3751 | 1,021.37 | 180.89 | 744 | 279    |
| 2047 | 0.3607 | 1,021.37 | 180.89 | 744 | 268    |
| 2048 | 0.3468 | 1,021.37 | 180.89 | 744 | 258    |
| 2049 | 0.3335 | 1,021.37 | 180.89 | 744 | 248    |
| 2050 | 0.3207 | 1,021.37 | 180.89 | 744 | 239    |
| 合計   |        |          |        |     | 86,902 |



|      |        |          |       |          |       |      |    |        |       |  |  |  |  |
|------|--------|----------|-------|----------|-------|------|----|--------|-------|--|--|--|--|
| 2006 | 1.8009 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2007 | 1.7317 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2008 | 1.6651 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2009 | 1.6010 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2010 | 1.5395 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2011 | 1.4802 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2012 | 1.4233 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2013 | 1.3686 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2014 | 1.3159 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2015 | 1.2653 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2016 | 1.2167 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2017 | 1.1699 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2018 | 1.1249 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2019 | 1.0816 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2020 | 1.0400 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2021 | 1.0000 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2022 | 0.9615 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2023 | 0.9246 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2024 | 0.8890 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2025 | 0.8548 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2026 | 0.8219 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2027 | 0.7903 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2028 | 0.7599 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2029 | 0.7307 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2030 | 0.7026 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2031 | 0.6756 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2032 | 0.6496 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2033 | 0.6246 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2034 | 0.6006 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2035 | 0.5775 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2036 | 0.5553 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2037 | 0.5339 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2038 | 0.5134 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2039 | 0.4936 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2040 | 0.4746 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2041 | 0.4564 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2042 | 0.4388 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2043 | 0.4220 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2044 | 0.4057 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2045 | 0.3901 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2046 | 0.3751 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2047 | 0.3607 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2048 | 0.3468 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2049 | 0.3335 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 2050 | 0.3207 | 1,088.72 | 5,411 | 1,290.19 | 8,438 | 9.24 | 66 | 107.56 | 1,127 |  |  |  |  |
| 合計   |        |          |       |          |       |      |    |        |       |  |  |  |  |

| 年度   | 合計     |        |         |
|------|--------|--------|---------|
|      | 社会的割引率 | 効果額    | 現在価値化   |
| 1970 | 7.3910 |        |         |
| 1971 | 7.1067 | 15,042 | 106,899 |
| 1972 | 6.8333 | 15,042 | 102,786 |
| 1973 | 6.5705 | 15,042 | 98,833  |
| 1974 | 6.3178 | 15,042 | 95,032  |
| 1975 | 6.0748 | 15,042 | 91,377  |
| 1976 | 5.8412 | 15,042 | 87,863  |
| 1977 | 5.6165 | 15,042 | 84,483  |
| 1978 | 5.4005 | 15,042 | 81,234  |
| 1979 | 5.1928 | 15,042 | 78,110  |
| 1980 | 4.9931 | 15,042 | 75,106  |
| 1981 | 4.8010 | 15,042 | 72,217  |
| 1982 | 4.6164 | 15,042 | 69,440  |
| 1983 | 4.4388 | 15,042 | 66,768  |
| 1984 | 4.2681 | 15,042 | 64,201  |
| 1985 | 4.1039 | 15,042 | 61,731  |
| 1986 | 3.9461 | 15,042 | 59,357  |
| 1987 | 3.7943 | 15,042 | 57,074  |
| 1988 | 3.6484 | 15,042 | 54,879  |
| 1989 | 3.5081 | 15,042 | 52,769  |
| 1990 | 3.3731 | 15,042 | 50,738  |
| 1991 | 3.2434 | 15,042 | 48,787  |
| 1992 | 3.1187 | 15,042 | 46,911  |
| 1993 | 2.9987 | 15,042 | 45,106  |
| 1994 | 2.8834 | 15,042 | 43,372  |
| 1995 | 2.7725 | 15,042 | 41,704  |
| 1996 | 2.6658 | 15,042 | 40,099  |
| 1997 | 2.5633 | 15,042 | 38,557  |
| 1998 | 2.4647 | 15,042 | 37,074  |
| 1999 | 2.3699 | 15,042 | 35,648  |
| 2000 | 2.2788 | 15,042 | 34,278  |
| 2001 | 2.1911 | 15,042 | 32,959  |
| 2002 | 2.1068 | 15,042 | 31,690  |
| 2003 | 2.0258 | 15,042 | 30,472  |
| 2004 | 1.9479 | 15,042 | 29,300  |
| 2005 | 1.8730 | 15,042 | 28,174  |
| 2006 | 1.8009 | 15,042 | 27,089  |
| 2007 | 1.7317 | 15,042 | 26,048  |
| 2008 | 1.6651 | 15,042 | 25,046  |
| 2009 | 1.6010 | 15,042 | 24,082  |
| 2010 | 1.5395 | 15,042 | 23,157  |

|      |        |        |           |
|------|--------|--------|-----------|
| 2011 | 1.4802 | 15.042 | 22.265    |
| 2012 | 1.4233 | 15.042 | 21.409    |
| 2013 | 1.3686 | 15.042 | 20.586    |
| 2014 | 1.3159 | 15.042 | 19.794    |
| 2015 | 1.2653 | 15.042 | 19.033    |
| 2016 | 1.2167 | 15.042 | 18.302    |
| 2017 | 1.1699 | 15.042 | 17.598    |
| 2018 | 1.1249 | 15.042 | 16.921    |
| 2019 | 1.0816 | 15.042 | 16.269    |
| 2020 | 1.0400 | 15.042 | 15.644    |
| 2021 | 1.0000 | 15.042 | 15.042    |
| 2022 | 0.9615 | 15.042 | 14.463    |
| 2023 | 0.9246 | 15.042 | 13.908    |
| 2024 | 0.8890 | 15.042 | 13.372    |
| 2025 | 0.8548 | 15.042 | 12.858    |
| 2026 | 0.8219 | 15.042 | 12.363    |
| 2027 | 0.7903 | 15.042 | 11.888    |
| 2028 | 0.7599 | 15.042 | 11.430    |
| 2029 | 0.7307 | 15.042 | 10.991    |
| 2030 | 0.7026 | 15.042 | 10.569    |
| 2031 | 0.6756 | 15.042 | 10.162    |
| 2032 | 0.6496 | 15.042 | 9.771     |
| 2033 | 0.6246 | 15.042 | 9.395     |
| 2034 | 0.6006 | 15.042 | 9.034     |
| 2035 | 0.5775 | 15.042 | 8.687     |
| 2036 | 0.5553 | 15.042 | 8.353     |
| 2037 | 0.5339 | 15.042 | 8.031     |
| 2038 | 0.5134 | 15.042 | 7.723     |
| 2039 | 0.4936 | 15.042 | 7.425     |
| 2040 | 0.4746 | 15.042 | 7.139     |
| 2041 | 0.4564 | 15.042 | 6.865     |
| 2042 | 0.4388 | 15.042 | 6.600     |
| 2043 | 0.4220 | 15.042 | 6.348     |
| 2044 | 0.4057 | 15.042 | 6.103     |
| 2045 | 0.3901 | 15.042 | 5.868     |
| 2046 | 0.3751 | 15.042 | 5.642     |
| 2047 | 0.3607 | 15.042 | 5.426     |
| 2048 | 0.3468 | 15.042 | 5.217     |
| 2049 | 0.3335 | 15.042 | 5.017     |
| 2050 | 0.3207 | 15.042 | 4.824     |
| 合計   |        |        | 2,658.785 |

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

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

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

- U: 二酸化炭素に関する原単位(円/t-CO2) 5,500  
出典: 東京都総量削減義務による排出量取引制度における仲値(アーガス・メディア・リミテッド(Argus Media Limited)による平成28年5月23日査定価格)
- 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(To) 又は 80  
②評価期間内に侵食深が30cmに達しない場合は評価期間
- A: ①事業対象区域面積(ha) 又は ①事業対象区域 1,021.37 ~ 1,021.37  
②保全効果区域面積(ha)
- s: 単位面積当たりの土壌平均炭素蓄積量(t-C/ha) 85.45  
出典: 「日本国温室効果ガスインベントリ報告書」(2021年4月) 温室効果ガスインベントリオフィス(GIO)編  
炭素から二酸化炭素への換算係数
- e1:: 事業を実施しない場合の侵食深(cm/年) ①事業対象区域 0.200  
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」 表 1-1 荒廃地等
- e2:: 事業を実施した場合の侵食深(cm/年) ①事業対象区域 0.013  
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」 表 1-2 整備済森林
- t: 経過年数(治山事業の便益の算出に当たっては、各年度の事業費の累計を用いている。) ※社会的割引率を考慮するために用いる(1+i)<sup>t</sup>(年数)とは異なる。
- i: 社会的割引率(0.04)
- 30: 土壌炭素の測定深度(cm)
- 0.3: 流出土砂排出炭素係数

| 年度   | 社会的割引率 | 事業対象区域      |           |        |         | 現在価値化千円 | 現在価値化千円 |
|------|--------|-------------|-----------|--------|---------|---------|---------|
|      |        | 事業対象区域面積 ha | 効果対象面積 ha | 効果額 千円 | 現在価値化千円 |         |         |
| 1970 | 7.3910 |             |           |        |         |         |         |
| 1971 | 7.1067 | 1,021.37    | 102.14    | 328    | 2,331   |         |         |
| 1972 | 6.8333 | 1,021.37    | 204.27    | 655    | 4,476   |         |         |
| 1973 | 6.5705 | 1,021.37    | 306.41    | 983    | 6,459   |         |         |
| 1974 | 6.3178 | 1,021.37    | 408.55    | 1,310  | 8,276   |         |         |
| 1975 | 6.0748 | 1,021.37    | 510.69    | 1,638  | 9,951   |         |         |
| 1976 | 5.8412 | 1,021.37    | 612.82    | 1,965  | 11,478  |         |         |
| 1977 | 5.6165 | 1,021.37    | 714.96    | 2,293  | 12,879  |         |         |
| 1978 | 5.4005 | 1,021.37    | 817.10    | 2,620  | 14,149  |         |         |
| 1979 | 5.1928 | 1,021.37    | 919.23    | 2,948  | 15,308  |         |         |
| 1980 | 4.9931 | 1,021.37    | 1,021.37  | 3,276  | 16,357  |         |         |
| 1981 | 4.8010 | 1,021.37    | 1,021.37  | 3,276  | 15,728  |         |         |
| 1982 | 4.6164 | 1,021.37    | 1,021.37  | 3,276  | 15,123  |         |         |
| 1983 | 4.4388 | 1,021.37    | 1,021.37  | 3,276  | 14,542  |         |         |
| 1984 | 4.2681 | 1,021.37    | 1,021.37  | 3,276  | 13,982  |         |         |
| 1985 | 4.1039 | 1,021.37    | 1,021.37  | 3,276  | 13,444  |         |         |
| 1986 | 3.9461 | 1,021.37    | 1,021.37  | 3,276  | 12,927  |         |         |
| 1987 | 3.7943 | 1,021.37    | 1,021.37  | 3,276  | 12,430  |         |         |
| 1988 | 3.6484 | 1,021.37    | 1,021.37  | 3,276  | 11,952  |         |         |
| 1989 | 3.5081 | 1,021.37    | 1,021.37  | 3,276  | 11,493  |         |         |
| 1990 | 3.3731 | 1,021.37    | 1,021.37  | 3,276  | 11,050  |         |         |
| 1991 | 3.2434 | 1,021.37    | 1,021.37  | 3,276  | 10,625  |         |         |
| 1992 | 3.1187 | 1,021.37    | 1,021.37  | 3,276  | 10,217  |         |         |
| 1993 | 2.9987 | 1,021.37    | 1,021.37  | 3,276  | 9,824   |         |         |
| 1994 | 2.8834 | 1,021.37    | 1,021.37  | 3,276  | 9,446   |         |         |
| 1995 | 2.7725 | 1,021.37    | 1,021.37  | 3,276  | 9,083   |         |         |
| 1996 | 2.6658 | 1,021.37    | 1,021.37  | 3,276  | 8,733   |         |         |
| 1997 | 2.5633 | 1,021.37    | 1,021.37  | 3,276  | 8,397   |         |         |
| 1998 | 2.4647 | 1,021.37    | 1,021.37  | 3,276  | 8,074   |         |         |
| 1999 | 2.3699 | 1,021.37    | 1,021.37  | 3,276  | 7,764   |         |         |
| 2000 | 2.2788 | 1,021.37    | 1,021.37  | 3,276  | 7,465   |         |         |
| 2001 | 2.1911 | 1,021.37    | 1,021.37  | 3,276  | 7,178   |         |         |
| 2002 | 2.1068 | 1,021.37    | 1,021.37  | 3,276  | 6,902   |         |         |
| 2003 | 2.0258 | 1,021.37    | 1,021.37  | 3,276  | 6,637   |         |         |
| 2004 | 1.9479 | 1,021.37    | 1,021.37  | 3,276  | 6,381   |         |         |

|      |        |          |          |       |         |  |  |   |
|------|--------|----------|----------|-------|---------|--|--|---|
| 2005 | 1.8730 | 1,021.37 | 1,021.37 | 3,276 | 6,136   |  |  |   |
| 2006 | 1.8009 | 1,021.37 | 1,021.37 | 3,276 | 5,900   |  |  |   |
| 2007 | 1.7317 | 1,021.37 | 1,021.37 | 3,276 | 5,673   |  |  |   |
| 2008 | 1.6651 | 1,021.37 | 1,021.37 | 3,276 | 5,455   |  |  |   |
| 2009 | 1.6010 | 1,021.37 | 1,021.37 | 3,276 | 5,245   |  |  |   |
| 2010 | 1.5395 | 1,021.37 | 1,021.37 | 3,276 | 5,043   |  |  |   |
| 2011 | 1.4802 | 1,021.37 | 1,021.37 | 3,276 | 4,849   |  |  |   |
| 2012 | 1.4233 | 1,021.37 | 1,021.37 | 3,276 | 4,663   |  |  |   |
| 2013 | 1.3686 | 1,021.37 | 1,021.37 | 3,276 | 4,484   |  |  |   |
| 2014 | 1.3159 | 1,021.37 | 1,021.37 | 3,276 | 4,311   |  |  |   |
| 2015 | 1.2653 | 1,021.37 | 1,021.37 | 3,276 | 4,145   |  |  |   |
| 2016 | 1.2167 | 1,021.37 | 1,021.37 | 3,276 | 3,986   |  |  |   |
| 2017 | 1.1699 | 1,021.37 | 1,021.37 | 3,276 | 3,833   |  |  |   |
| 2018 | 1.1249 | 1,021.37 | 1,021.37 | 3,276 | 3,685   |  |  |   |
| 2019 | 1.0816 | 1,021.37 | 1,021.37 | 3,276 | 3,543   |  |  |   |
| 2020 | 1.0400 | 1,021.37 | 1,021.37 | 3,276 | 3,407   |  |  |   |
| 2021 | 1.0000 | 1,021.37 | 1,021.37 | 3,276 | 3,276   |  |  |   |
| 2022 | 0.9615 | 1,021.37 | 1,021.37 | 3,276 | 3,150   |  |  |   |
| 2023 | 0.9246 | 1,021.37 | 1,021.37 | 3,276 | 3,029   |  |  |   |
| 2024 | 0.8890 | 1,021.37 | 1,021.37 | 3,276 | 2,912   |  |  |   |
| 2025 | 0.8548 | 1,021.37 | 1,021.37 | 3,276 | 2,800   |  |  |   |
| 2026 | 0.8219 | 1,021.37 | 1,021.37 | 3,276 | 2,693   |  |  |   |
| 2027 | 0.7903 | 1,021.37 | 1,021.37 | 3,276 | 2,589   |  |  |   |
| 2028 | 0.7599 | 1,021.37 | 1,021.37 | 3,276 | 2,489   |  |  |   |
| 2029 | 0.7307 | 1,021.37 | 1,021.37 | 3,276 | 2,394   |  |  |   |
| 2030 | 0.7026 | 1,021.37 | 1,021.37 | 3,276 | 2,302   |  |  |   |
| 2031 | 0.6756 | 1,021.37 | 1,021.37 | 3,276 | 2,213   |  |  |   |
| 2032 | 0.6496 | 1,021.37 | 1,021.37 | 3,276 | 2,128   |  |  |   |
| 2033 | 0.6246 | 1,021.37 | 1,021.37 | 3,276 | 2,046   |  |  |   |
| 2034 | 0.6006 | 1,021.37 | 1,021.37 | 3,276 | 1,968   |  |  |   |
| 2035 | 0.5775 | 1,021.37 | 1,021.37 | 3,276 | 1,892   |  |  |   |
| 2036 | 0.5553 | 1,021.37 | 1,021.37 | 3,276 | 1,819   |  |  |   |
| 2037 | 0.5339 | 1,021.37 | 1,021.37 | 3,276 | 1,749   |  |  |   |
| 2038 | 0.5134 | 1,021.37 | 1,021.37 | 3,276 | 1,682   |  |  |   |
| 2039 | 0.4936 | 1,021.37 | 1,021.37 | 3,276 | 1,617   |  |  |   |
| 2040 | 0.4746 | 1,021.37 | 1,021.37 | 3,276 | 1,555   |  |  |   |
| 2041 | 0.4564 | 1,021.37 | 1,021.37 | 3,276 | 1,495   |  |  |   |
| 2042 | 0.4388 | 1,021.37 | 1,021.37 | 3,276 | 1,438   |  |  |   |
| 2043 | 0.4220 | 1,021.37 | 1,021.37 | 3,276 | 1,382   |  |  |   |
| 2044 | 0.4057 | 1,021.37 | 1,021.37 | 3,276 | 1,329   |  |  |   |
| 2045 | 0.3901 | 1,021.37 | 1,021.37 | 3,276 | 1,278   |  |  |   |
| 2046 | 0.3751 | 1,021.37 | 1,021.37 | 3,276 | 1,229   |  |  |   |
| 2047 | 0.3607 | 1,021.37 | 1,021.37 | 3,276 | 1,182   |  |  |   |
| 2048 | 0.3468 | 1,021.37 | 1,021.37 | 3,276 | 1,136   |  |  |   |
| 2049 | 0.3335 | 1,021.37 | 1,021.37 | 3,276 | 1,093   |  |  |   |
| 2050 | 0.3207 | 1,021.37 | 1,021.37 | 3,276 | 1,051   |  |  |   |
| 合計   |        |          |          |       | 484,335 |  |  | 0 |



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

- Y: 評価期間 80
- Vt主: 人工林 主伐量 t年後における伐採材積(m3) スギ 0.00 ~ 139,355.71  
 出典:人工林分密度管理図((一社)日本森林技術協会)、 ヒノキ 0.00 ~ 154,822.89  
 森林整備センター収穫予測表((国研)森林研究・整備機構)等 マツ 0.00 ~ 1,072.19
- @: 人工林 主伐材 木材市場価格(円/m3) スギ 3,065  
 出典:山林素地価格及び山元立木価格調((一財)日本不動産研究所)(2021年3月末現在):熊本県の価格にて算定。 ヒノキ 6,235  
 マツ 1,000
- i: 社会的割引率(0.04)

|      |        | スギ                    |         | ヒノキ                   |         | マツ                    |        |                       |        |                       |        |
|------|--------|-----------------------|---------|-----------------------|---------|-----------------------|--------|-----------------------|--------|-----------------------|--------|
| 年度   | 社会的割引率 | 事業効果材積 m <sup>3</sup> | 効果額 千円  | 事業効果材積 m <sup>3</sup> | 効果額 千円  | 事業効果材積 m <sup>3</sup> | 効果額 千円 | 事業効果材積 m <sup>3</sup> | 効果額 千円 | 事業効果材積 m <sup>3</sup> | 効果額 千円 |
| 2050 | 0.3207 | 139,355.71            | 427,125 | 154,822.89            | 965,321 | 1,072.19              | 1,072  |                       |        |                       |        |

|      |        |                       |        | 合計        |          |
|------|--------|-----------------------|--------|-----------|----------|
| 年度   | 社会的割引率 | 事業効果材積 m <sup>3</sup> | 効果額 千円 | 効果額 千円    | 現在価値化 千円 |
| 2050 | 0.3207 |                       |        | 1,393,518 | 446,901  |
| 合計   |        |                       |        |           | 446,901  |