Figure 58. Sample Benefit-to-Cost Analysis Worksheet

Evaluation No.: _______________ Project No.: _______________ Date: __________________________
Evaluator: ___________________________________________________________________________________

1. Initial implementation cost, I: $100,000
2. Annual operating and maintenance costs before project implementation: $100
3. Annual operating and maintenance costs after project implementation: $1,000
4. Net annual operating and maintenance costs, K (#3 - #2): $900
5. Annual safety benefits in number of accidents prevented:

   Severity Actual - Expected = Annual Benefit
   a) Fatal accidents (fatalities)  0 - 0 = 0
   b) Injury accidents (injuries)  4 - 2 = 2
   c) PDO accidents (involvements)  5 - 3 = 2

6. Accident cost values (Source Department)

   Severity Cost
   a) Fatal accident (fatality) $500,000
   b) Injury accident (injury) $50,000
   c) PDO accident (involvement) $2,000

7. Annual safety benefits in dollars saved, B:

   (5a) x (6a) = 500,000 x 0 = 0
   (5b) x (6b) = 50,000 x 2 = 100,000
   (5c) x (6c) = 2,000 x 2 = 4,000
   Total = $104,000

8. Service life, n: 20 yrs
9. Salvage value, T: $5,000 (Annual compounding interest)
10. Interest rate: 10% = .10
11. EUAC Calculation:

    Capital recovery factor, CR = 0.1175
    Sinking fund factor, SF = 0.0175
    EUAC = I (CR) + K - T (SF)
    = 100,000 (0.1175) + 900 - 5,000 (0.0175) = 12,562
12. EUAB Calculation: EUAB = B = 104,000
13. B/C = EUAB/EUAC = 104,000 / 12,562 = 8.3
14. PWOC Calculation:

    Present worth factor, PW = 8.5136
    Single payment present worth factor, SPW = 0.1486
    PWOC = I + K (SPW ) - T (PW )
    = 100,000 + 900 (8.5136) - 5,000 (0.1486) = 106,919
15. PWOB Calculation:

    PWOB = B (SPW) = 104,000 (8.5136) = 885,414
16. B/C = PWOB/PWOC = 885,414 / 106,919 = 8.3