

Appendix B - Detailed Calculation of Construction Dust Emission Factors

- Construction Activities : (1) General Construction
(2) Wind Erosion

Calculation of Emission Factors for Various Construction Activities

- (1) General Construction (Based on USEPA AP-42, Vol.1 5th Edition, Section 13.2.3).
The TSP emission factor for construction activity operations is 2.69 Mg per hectare of construction per month of activity
= $2.69 \times 10^6 \text{ g} / 10,000 \text{ m}^2/\text{month}$
= $269 \text{ g/m}^2/\text{month}$
- (2) Wind Erosion (Based on USEPA AP-42, Vol.1 5th Edition, Table 11.9-4)
= $2.695 \times 10^{-6} \text{ gs}^{-1} \text{m}^{-2}$

Assumption: Based on 26 working day per month and 10 operation hours per day
 $269 \text{ g/m}^2/\text{month} = 269 / (26 \times 10 \times 60 \times 60) \text{ g/m}^2/\text{month}$
 $= 2.87 \times 10^{-4} \text{ g/s/m}^2$

and 30% of the entire site as close to the nearest receptor to be exposed active works area

Unmitigated TSP emission factor = $2.87 \times 10^{-4} + 2.695 \times 10^{-6} = 2.9 \times 10^{-4} \text{ g/s/m}^2$

For the estimated width of access road at Intake I-3 = 3.5m, the emission factor for the road works (line sources) = $(2.87 \times 10^{-4} + 2.695 \times 10^{-6}) \times 3.5 \text{ g/s/m} = 1.02 \times 10^{-3} \text{ g/s/m}$

Table B-1 Summary of Emission Factors for the Construction Activity Operations

Activities	Type of Source	Emission Factor
Construction of Intake I-1, I-2 and Outfall	Area	$2.9 \times 10^{-4} \text{ g/s/m}^2$
Proposed access road at Intake I-3	Line	$1.02 \times 10^{-3} \text{ g/s/m}$

Table B-2 Summary of Respective Site Areas and Emission Factors

Locations	Respective Emission Factors ¹	Respective Site Area ²
Intake 1	0.13 g/s	448m ²
Intake 2	0.07 g/s	240m ²
Intake 3	0.36 g/s	356.3m x 3.5m = 1247m ²
Outfall 1	0.45 g/s	1548m ²

Notes: 1 Respective emission factor equals to the respective site area times the total emission factor, i.e. $2.9 \times 10^{-4} \text{ g/s/m}^2$ for area source and $1.02 \times 10^{-3} \text{ g/s/m}$ for line source presented in **Table B-1**.

2 The modelled source area that is about 30% of the entire site.