**Parameters used for the morphometric analysis**

| Sl. No. | Parameters | Definition | Unit | Reference |
|---|---|---|---|---|
| **LinearAspects** | | | | |
| 1 | Perimeter (P) | Length of the watershed boundary | km | ------- |
| 2 | Basin length (Lb) | Maximum length of the watershed measured parallel to the main drainage line | km | ------- |
| 3 | Stream order (Nu) | Hierarchical ordering | Dimensionless | Strahler (1957) |
| 4 | Stream length (Lu) | Length of the major stream | km | Horton (1945) |
| 5 | Stream length ratio (RL) | RL= Lu / Lu-1 Where, Lu= Total stream length of order (u), Lu-1=The total stream length of its next lower order. | | Horton (1945) |
| 6 | Bifurcation ratio (Rb) | Rb = Nu/N(u-1), where Nu is number of streams of any given order and N(u-1) is number in the next higher order | Dimensionless | Horton (1945) |
| 7 | Stream length ratio (Rl) | Rl = Lu/L(u-1), where Lu is stream length order u and L(u-1) is stream segment length of the next lower order | Dimensionless | Horton (1945) |
| 8 | Rho coefficient (ρ) | ρ = RL/Rb | Dimensionless | Horton (1945) |
| **Aerial Aspects** | | | | |
| 1 | Area (A) | Area of watershed | $km^2$ | ------- |
| 2 | Drainage density (Dd) | $Dd = \frac{\sum Lt}{A}$ where Lt is the total length of all the ordered streams | $km^{-1}$ | Horton (1945) |

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| 3 | Stream frequency (Fs) | $Fs = \frac{\sum Nt}{A}$ where Nt is total number of stream segments of all orders | $km^{-2}$ | Horton (1945) |
| 4 | Drainage texture (T) | T = Dd × Fs | $km^{-3}$ | Smith (1950) |
| 5 | Texture ratio (T) | T=N1/P Where, N1=Total number of first order stream, P=Perimeter of basin. | | Hortan, 1945 |
| 6 | Length of overland flow (Lo) | Lo = 1/2Dd | km | Horton (1945) |
| 7 | Constant of channel maintenance (C) | C = 1/Dd | km | Schumm (1956) |
| 8 | Form factor (Ff) | $Ff= A/Lb^2$ | Dimensionless | Horton (1945) |
| 9 | Circularity ratio (Rc) | $Rc = 4\pi A/P^2$ | Dimensionless | Miller (1953) |
| 10 | Elongation ratio (Re) | $Re = \frac{1.128\sqrt{A}}{Lb}$ | Dimensionless | Schumm (1956) |
| 11 | Shape index (Sw) | Sw = 1/Ff | Dimensionless | Horton (1945) |
| **Relief Aspects** | | | | |
| 1 | Bain relief (R) | R = H-h, where H is maximum elevation and h is minimum elevation within the basin | km | Schumm (1956) |
| 2 | Relief ratio (Rr) | Rr = R/Lb | Dimensionless | Schumm (1956) |
| 3 | Ruggedness number (Rn) | Rn = R×Dd | Dimensionless | Strahler (1958) |
| 4 | Dissection index (DI) | DI = R/Ra, where Ra is absolute relief | Dimensionless | Singh and Dubey (1994) |
| 5 | Melton ruggedness ratio (MRn) | $MRn = H - h/A^{0.5}$ | Dimensionless | Melton (1965) |