R2 Reasonable Potential Tool Parameter Report

Compiled on 26 March, 2025

PR0024163 - 001 : Solids, settleable

Evaluated from 2020-03-31 to 2025-01-31

FACILITY INFORMATION:

PRASA HATILLO WTP

STATE ROAD 2, KM 88.9

HATILLO, PR

SUMMARY STATISTICS:

Number of Samples: 59

Min: 35 NA

Mean: 69.03 NA

Max: 275 NA

WQS - SB: NA NA

WQS - SD: NA NA

RWC: 375.02 NA

RECEIVING WATER CONCENTRATION CALCULATIONS

assuming a 95% confidence level and a 95% probability basis
calculations from 1991 Technical Support Document pgs 51-55

$$\text{Number of samples} = n$$
$$\text{Maximum effluent concentration} = max$$
$$\text{Dilution Ratio} = DR$$
$$\text{Coefficient of Variation (CV)} = S_n/\mu \text{ or } 0.6 \text{ when n} < 10$$
$$\text{Z-statistic} = Z_x$$
$$\text{Reasonable Potential Multiplier (RPM)} = \frac{exp(Z_{95}\ln(1+CV^2)^{0.5} - 0.5\ln(1+CV^2))}{exp(Z_x\ln(1+CV^2)^{0.5} - 0.5\ln(1+CV^2))}$$
$$\text{Receiving Water Concentration} = max * RPM/\text{Dilution Ratio}$$

$$n = 59$$
$$max = 275$$
$$DR = 1$$
$$CV = 0.6$$
$$Z_{95} = 1.645$$
$$Z_x = 1.084$$

$$RPM = \frac{exp(1.645\ln(1+0.6^2)^{0.5} - 0.5\ln(1+0.6^2))}{exp(1.084\ln(1+0.6^2)^{0.5} - 0.5\ln(1+0.6^2))}$$
$$= 1.36$$

$$RWC = 275 * 1.36/1$$
$$= 375.02$$