PENGKLASIFIKASIAN STATUS KUALITI AIR SUNGAI BERDASAKAN INDEKS KUALITI AIR

PARAMETER	INDEKS		
	BERSIH	SEDERHANA TERCEMAR	TERCEMAR
Biochemical Oxygen Demand (BOD)	91 - 100	80 - 90	0 - 79
Ammoniacal Nitrogen (NH_3-N)	92 - 100	71 - 91	0 - 70
Total Suspended Solids (TSS)	76 - 100	70 - 75	0 - 69
Indeks Kualiti Air (IKA)	81 - 100	60 - 80	0 - 59

PENGKELASAN KUALITI AIR SUNGAI BERDASAKAN INDEKS KUALITI AIR

PARAMETER	UNIT	KELAS				
		I	II	III	IV	V
Ammoniacal Nitrogen	mg/L	< 0.1	0.1 – 0.3	0.3 – 0.9	0.9 – 2.7	> 2.7
Biochemical Oxygen Demand	mg/L	< 1	1 – 3	3 – 6	6 – 12	> 12
Chemical Oxygen Demand	mg/L	< 10	10 – 25	25 – 50	50 – 100	> 100
Dissolved Oxygen	mg/L	> 7	5 – 7	3 – 5	1 – 3	< 1
pH	-	6.5-8.5	6 –9	5 – 9	5 – 9	-
Total Suspended Solid	mg/L	< 25	25 – 50	50 – 150	150 – 300	> 300
Indeks Kualiti Air (IKA)		> 92.7	76.5 – 92.7	51.9 – 76.5	31.0 – 51.9	< 31.0

PENGIRAAN INDEKS KUALITI AIR (IKA)

Formula:

IKA = (0.22 * SIDO) + (0.19 * SIBOD) + (0.16 * SICOD) + (0.15 * SIAN) + (0.16 * SISS) + (0.12 * SIpH)

Di mana;

SIDO = Subindeks DO
SIBOD = Subindeks BOD
SICOD = Subindeks COD
SIAN = Subindeks NH_3-N
SISS = Subindeks SS
SIpH = Subindeks pH

$0 \leq IKA \leq 100$

***Best-Fit Equations* bagi penentuan nilai subindeks parameter:**

i) Subindeks bagi DO (in % saturation)

$SIDO = 0$	for $x \leq 8$
$SIDO = 100$	for $x \geq 92$
$SIDO = -0.395 + 0.030x^2 - 0.00020x^3$	for $8 < x < 92$

(x adalah kepekatan DO dakam unit *% saturated*)

ii) Subindeks bagi BOD

$SIBOD = 100.4 - 4.23x$	for $x \leq 5$
$SIBOD = 108 * \exp(-0.055x) - 0.1x$	for $x > 5$

(x adalah kepekatan BOD dalam unit mg/L)

iii) Subindeks bagi COD

$SICOD = -1.33x + 99.1$	for $x \leq 20$
$SICOD = 103 * \exp(-0.0157x) - 0.04x$	for $x > 20$

(x adalah kepekatan COD dalam unit mg/L)

iv) Subindeks bagi NH_3-N

$SIAN = 100.5 - 105x$	for $x \leq 0.3$
$SIAN = 94 * \exp(-0.573x) - 5 * \lvert x - 2 \rvert$	for $0.3 < x < 4$
$SIAN = 0$	for $x \geq 4$

(x adalah kepekatan NH_3-N dalam unit mg/L)

v) Subindeks bagi TSS

$SISS = 97.5 * \exp(-0.00676x) + 0.05x$	for $x \leq 100$
$SISS = 71 * \exp(-0.0016x) - 0.015x$	for $100 < x < 1000$
$SISS = 0$	for $x \geq 1000$

(x adalah kepekatan TSS dalam unit mg/L)

vi) Subindeks bagi pH

$SIpH = 17.2 - 17.2x + 5.02x^2$	for $x < 5.5$
$SIpH = -242 + 95.5x - 6.67x^2$	for $5.5 \leq x < 7$
$SIpH = -181 + 82.4x - 6.05x^2$	for $7 \leq x < 8.75$
$SIpH = 536 - 77.0x + 2.76x^2$	for $x \geq 8.75$

(x adalah nilai pH)

Nota: * bermaksud darab