Status and Prediction of Sewage Sludge Generation in Seoul

, (   )
, (   )
, (   )

- - - - -

.

.

.

.

ABSTRACT

This paper used monthly data for the period 1992　1996 to predict the sludge production quantity of 4 sewage treatment plants in Seoul. Explanatory variables included flow rates of primary treatment, flow rates of secondary treatment, and treatment efficiency of pollutants(SS, BOD). Using multiple linear regression model, we estimated the coefficients of independent variables.

The three estimates on flow rates of primary treatment, flow rates of secondary treatment, and suspended solid treatment efficiency were significant at Nanji and Gayang STP. In four regression results, the estimated coefficient on BOD treatment efficiency was insignificant. The each regression model had robust coefficients and had considerable explanatory power(R-squares were 0.94　0.98) when the insignificant variables were omitted. We obtained significant results from ex-ante forecast.

It was predicted that sewage would be produced 1,922　1,983 ton/day on average and 2,241　2,316 ton/day at the maximum if capacity of sewage treatment plants in Seoul was expanded 6.11 million 　/day in 2001.

•

4 `97 12 , 506 m³/ 567

m³/

1,544 / . , 2011 ( ) , 4

2004 690.5 m³/ , 2011 775.5 m³/

.

4

. , 2001

.

.

.

, ,

.

, ,

.

(SS, BOD) . 1

2

.

1 , 2 ,

.

. .

,

.

•

2-1

4   ,   < 1>

.

,   ,

.   ,   ,

.   1

, 2

.

4   ,   ,

1   2   1

.

,   (Filter Press),   ,   .

3   ,

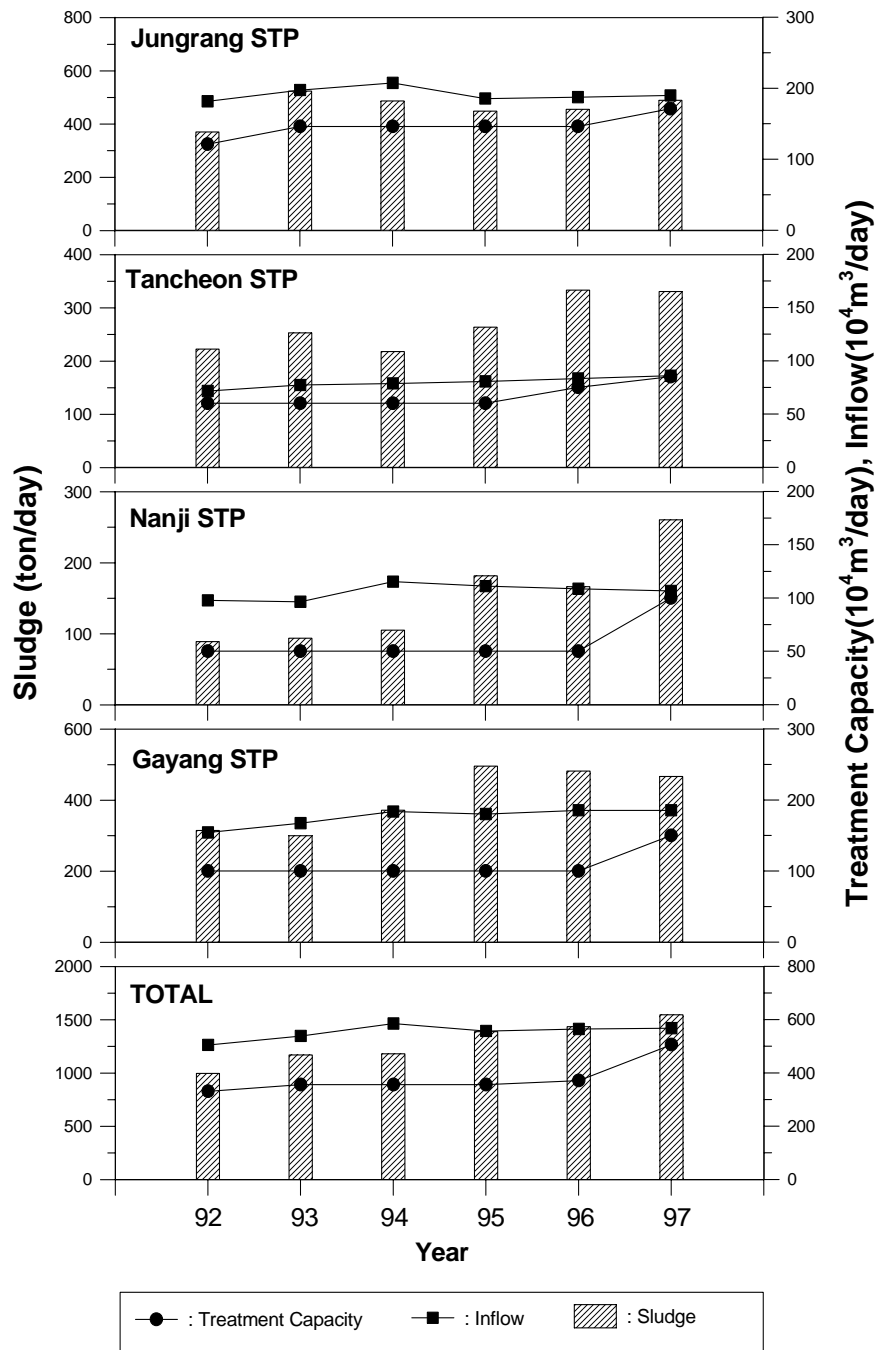.

< 1>

1 2	1	1 2	1 2
: 12 (17,162m³)	: 8 (2,400m³)	: 8 (7,540m³)	: 4 (3,770m³)
1 +2 : 24 (175,442m³)	1 : 8 (13,740m³) : 4 (5,430m³)	1 +2 : 16 (106,190m³)	1 +2 : 8 (53,090m³)
: 18 (420kgDS/m·hr) : 4 (420kg DS/m·hr) : 2 (900kg DS/m·hr)	: 12 (450kg DS/m·hr)	: 15 (150kg DS/m·hr)	: 9 (150kg DS/m·hr)

2-2

    4   , <   2> <
1>   .

<   2>

		(m³/)	(m³/)	(/)	1m³ (kg/m³)
	1992	121.0	181.4	369.9	0.20
	1993	146.0	197.3	523.1	0.27
	1994	146.0	207.3	485.9	0.23
	1995	146.0	185.2	447.8	0.24
	1996	146.0	187.2	453.9	0.24
	1997	171.0	189.6	488.0	0.25
	1992	60.0	71.5	222.5	0.31
	1993	60.0	77.2	253.0	0.33
	1994	60.0	78.6	217.6	0.28
	1995	60.0	80.5	263.2	0.33
	1996	75.0	83.3	332.7	0.40
	1997	85.0	85.9	330.0	0.38
	1992	50.0	97.7	88.8	0.09
	1993	50.0	96.3	93.6	0.10
	1994	50.0	115.2	104.8	0.09
	1995	50.0	111.1	181.4	0.16
	1996	50.0	108.5	165.9	0.15
	1997	100.0	106.5	260.0	0.24
	1992	100.0	154.1	314.2	0.20
	1993	100.0	167.3	299.5	0.18
	1994	100.0	183.5	371.4	0.20
	1995	100.0	180.0	495.0	0.27
	1996	100.0	185.4	481.3	0.26
	1997	150.0	185.3	466.0	0.25
	1992	331.0	504.7	995.4	0.20
	1993	356.0	538.1	1169.2	0.22
	1994	356.0	584.6	1179.7	0.20
	1995	356.0	556.8	1387.4	0.25
	1996	371.0	564.4	1433.8	0.25
	1997	506.0	567.3	1544.0	0.27

, 4   `92   504.7 m³/   '97   567.3

m³/   5   20%   `92   995.4 /   '97   1544.0

/   55%   .   `92   88.8 /   '97   260.0

   /   2.9   .

        ,   1   By-pass   2

. 1m³ 0.20 0.40kg .

, `97 , 189.6 m³/

488.0 / 32% 1m³ 0.25kg

. 1m³ 0.38kg 4

'97 330.0 / 21%

. , 106.5 m³/ 260.0 /

4 1m³ 0.24kg/m³

. `97 , 466.0 /

, 1m³ 0.26kg .

`92 '97 4

, < 3> < 2> 5, 6 9, 10

1, 2

. 64 77% . .

.

< 3> ,

		1	2	3	4	5	6	7	8	9	10	11	12		
`9 2		456	489	510	516	506	489	546	561	531	496	474	475	456	561
		797	826	1127	1200	1165	1096	1304	793	919	1084	1022	935	793	1304
	1m³	0.17	0.17	0.22	0.23	0.23	0.22	0.24	0.14	0.17	0.22	0.22	0.20	0.14	0.24
`9 3		482	496	526	553	555	536	557	564	550	537	549	541	482	564
		811	910	972	1093	1350	1363	1297	1169	1303	1315	1210	1219	811	1363
	1m³	0.17	0.18	0.18	0.20	0.24	0.25	0.23	0.21	0.24	0.25	0.22	0.23	0.17	0.25
`9 4		521	568	577	593	604	575	600	598	588	592	579	573	521	604
		1099	893	958	1230	1276	1267	1473	1196	1153	1192	1220	1167	893	1473
	1m³	0.21	0.16	0.17	0.21	0.21	0.22	0.25	0.20	0.20	0.20	0.21	0.20	0.16	0.25
`9 5		569	543	546	554	549	556	567	533	566	533	521	508	508	569
		1124	1066	1137	1176	1505	1748	1365	1211	1658	1644	1544	1411	1066	1748
	1m³	0.20	0.20	0.21	0.21	0.27	0.31	0.24	0.23	0.29	0.31	0.30	0.28	0.20	0.31
`9 6		539	555	572	561	557	570	565	594	567	560	558	560	539	594
		1074	1227	1469	1704	1898	1605	1374	1217	1366	1588	1208	1447	1074	1898
	1m³	0.20	0.22	0.26	0.30	0.34	0.28	0.24	0.20	0.24	0.28	0.22	0.26	0.20	0.34
`9 7		558	551	564	560	591	562	579	588	560	549	575	570	549	591
		1288	1165	1275	1647	1496	1484	1364	1550	1843	1783	1506	1470	1165	1843
	1m³	0.23	0.21	0.23	0.29	0.25	0.26	0.24	0.26	0.33	0.32	0.26	0.26	0.21	0.31

* ： m³/ ， / ， 1m³ kg/m³