

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Indianapolis

OFFICE MEMORANDUM

DATE: April 27, 1988

TO: Joseph Krieger
Permits Section

THRU: Gurdeo Sondhe *g-s-06*
T.P. Chang *TPC*
Joseph Stallsmith *JCS*

FROM: James Connon *JC*
Modeling Section

SUBJECT: Dupont Revised Controlled Discharge Analysis

Jack Fisher of the Construction Grants Section has requested that a revised controlled discharge analysis be conducted for the town of Dupont. The proposed outfall is downstream from the present outfall, below the confluence with Bear Creek. The drainage area there is about 4.86 square miles, and the Q7,10 is zero.

The analysis was run using 70% of the proposed design flow of 31,000 gpd, or 21,700 gpd. Gage data, water years 1975-1984, was taken from the gaging station of Harberts Creek near Madison. The resulting calculated controlled discharge storage volume is 1.3 million gallons, with a detention time of 60 days. It should be noted that this value applies to the controlled discharge storage volume only; requirements for the treatment volume would still need to be met.

ABJ/JC/jc

Attachment

cc: Jack Fisher

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
WATER MANAGEMENT
MODELING and ENGINEERING SERVICES

ANALYST : JC

DATE : 4/88

WASTE STABILIZATION LAGOON CONTROLLED DISCHARGE ANALYSIS

TABLE

Name of Facility : DUPONT (PROPOSED OUTFALL)

Flow Correction Factor for CD Analysis : 70.00 %

Receiving Stream : BEAR CREEK

Gaging Station : HARBERTS CREEK NEAR MADISON

Facility Design Flow : 0.031 mgd 0.0480 cfs

Corrected FACILITY Flow used in the Analysis : 0.021 mgd 0.0336 cfs

Drainage area upstream of STP's Outfall Location : 4.86 Sq.mi 7Q10 Flow : 0.00 cfs

Drainage area upstream of Referenced Gaging Station : 9.31 Sq.mi Corrected Flow Ratio : 0.00

Month	Gaging Station cfs-day	Adjusted Flow cfs-day u/s STP [Qs]	Dilution Ratio [R]	Allowable Discharge cfs-day [Q0=Qs/R]	STP Flow cfs-day [Qi]	Qo-out	Qi-in	cfs-day	Deficiency	Accumulation Sum[Qi-Q0]
OCT	35.06	18.3019	10	1.8301	1.0426	1.8301	1.0426	-0.7875	0.0000	
NOV	47.40	24.7437	10	2.4743	1.0090	4.3045	2.0517	-1.4653	0.0000	
DEC	56.68	29.5880	10	2.9588	1.0426	7.2633	3.0944	-1.9161	0.0000	
JAN	59.49	31.0549	10	3.1054	1.0426	10.3688	4.1371	-2.0628	0.0000	
FEB	500.30	261.1662	10	26.1166	0.9417	36.4854	5.0788	-25.1748	0.0000	
MAR	216.80	113.1737	10	11.3173	1.0426	47.8028	6.1215	-10.2746	0.0000	
APR	438.90	229.1142	10	22.9114	1.0090	70.7143	7.1306	-21.9023	0.0000	
MAY	624.40	325.9488	10	32.5948	1.0426	103.3091	8.1733	-31.5522	0.0000	
JUN	115.04	60.0531	10	6.0053	1.0090	109.3145	9.1823	-4.9962	0.0000	
JUL	114.80	59.9278	10	5.9927	1.0426	115.3072	10.2250	-4.9500	0.0000	
AUG	24.33	12.7007	10	1.2700	1.0426	116.5773	11.2677	-0.2273	0.0000	
SEP	3.89	2.0306	10	0.2030	1.0090	116.7804	12.2767	0.8059	0.8059	

Month	Gaging Station cfs-day	Adjusted Flow cfs-day u/s STP [Qs]	Dilution Ratio [R]	Allowable Discharge cfs-day [Q0=Qs/R]	STP Flow cfs-day [Qi]	Qo-out	Qi-in	cfs-day	Deficiency	Accumulation Sum[Qi-Q0]
OCT	7.30	3.8107	10	0.3810	1.0426	0.3810	1.0426	0.6616	1.4675	
NOV	8.81	4.5989	10	0.4598	1.0090	0.8409	2.0517	0.5491	2.0167	
DEC	146.05	76.2409	10	7.6240	1.0426	8.4650	3.0944	-6.5814	0.0000	
JAN	1782.20	930.3428	10	93.0342	1.0426	101.4993	4.1371	-91.9916	0.0000	
FEB	593.80	309.9750	10	30.9975	0.9417	132.4968	5.0788	-30.0557	0.0000	
MAR	1162.10	606.6386	10	60.6638	1.0426	193.1607	6.1215	-59.6211	0.0000	
APR	475.00	247.9591	10	24.7959	1.0090	217.9566	7.1306	-23.7868	0.0000	
MAY	697.30	364.0040	10	36.4004	1.0426	254.3570	8.1733	-35.3577	0.0000	
JUN	817.10	426.5419	10	42.6541	1.0090	297.0112	9.1823	-41.6451	0.0000	
JUL	261.65	136.5863	10	13.6586	1.0426	310.6698	10.2250	-12.6159	0.0000	
AUG	62.09	32.4121	10	3.2412	1.0426	313.9111	11.2677	-2.1985	0.0000	
SEP	46.12	24.0755	10	2.4075	1.0090	316.3186	12.2767	-1.3985	0.0000	

Month	Gaging Station cfs-day	Adjusted Flow cfs-day u/s STP [Qs]	Dilution Ratio [R]	Allowable Discharge cfs-day [Q0=Qs/R]	STP Flow cfs-day [Qi]	Qo-out	Qi-in	cfs-day	Deficiency	Accumulation Sum[Qi-Q0]
OCT	55.71	29.0816	10	2.9081	1.0426	2.9081	1.0426	-1.8654	0.0000	
NOV	539.29	281.5198	10	28.1519	1.0090	31.0601	2.0517	-27.1429	0.0000	
DEC	1072.40	559.8135	10	55.9813	1.0426	87.0415	3.0944	-54.9386	0.0000	
JAN	368.00	192.1031	10	19.2103	1.0426	106.2518	4.1371	-18.1676	0.0000	
FEB	324.90	169.6040	10	16.9604	0.9417	123.2122	5.0788	-16.0186	0.0000	
MAR	186.60	97.4088	10	9.7408	1.0426	132.9531	6.1215	-8.6981	0.0000	
APR	1162.90	607.0562	10	60.7056	1.0090	193.6587	7.1306	-59.6965	0.0000	
MAY	1893.50	988.4436	10	98.8443	1.0426	292.5030	8.1733	-97.8016	0.0000	
JUN	387.09	202.0684	10	20.2068	1.0090	312.7099	9.1823	-19.1977	0.0000	
JUL	21.54	11.2442	10	1.1244	1.0426	313.8343	10.2250	-0.0817	0.0000	
AUG	5.37	2.8032	10	0.2803	1.0426	314.1146	11.2677	0.7623	0.7623	
SEP	0.09	0.0469	10	0.0046	1.0090	314.1193	12.2767	1.0043	1.7667	

*** OVERALL >>> Maximum ACCUMULATION : 2.01 cfs - day CONTROLLED WASTEWATER VOLUME : 1.3011 Mgal HOLDING PERIOD : 59.95 Days 111 ***
Remark (s) :