STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

July (Month) 19 80

Marshall (Municipality), Michigan

Robert J. Swahell (Superintendent's Signature)

ID 1300299 (Plant No.) 07 (Mo.) 80 (Yr.) 500 (Sampling Point Code)

DAY	WEATHER		FLOW		RAW SEWAGE QUALITY											REMARKS OR
	TYPE	PRECIP.	TOTAL	MAX RATE	TEMP	pH	BOD-5		SS		TOTAL-P		VSS	NH_3-N		
1 2	9	14	19	24	29	34	39	44	49	54	59	64	69	74 78	80	9 14
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C	
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C	
SF															C	
01	4	.70	2.62		55	7.6	120	2622	88	1923	1.95	43	70		C	
02	1		2.64		55	7.6	90	1982	78	1717	1.90	42	68		C	
03	1		2.56		55	7.5									C	
04	4	.93	2.47		55	7.5									C	
05	4	.10	2.61		55	7.4									C	
06	1		2.51		55	7.4	80	1675	52	1089	1.90	40	44		C	
07	4	.36	2.64		55	7.4	162	3567	62	1365	2.00	44	52		C	
08	3		2.60		56	7.3	88	1908	76	1648	2.00	43	66		C	
09	4	.54	2.58		56	7.7	64	1377	102	2195	1.90	41	72		C	
10	1		2.62		56	7.5	142	3103	118	2578	2.20	48	102		C	
11	4	.07	2.54		56	7.5									C	
12	4	.15	2.54		56	7.5									C	
13	1		2.48		54	7.5	90	1861	90	1861	1.70	35	68		C	
14	4	.04	2.59		55	7.5	96	2074	160	3456	2.80	60	130		C	
15	4	.85	2.76		56	7.5	58	1335	70	1611	1.60	37	54		C	
16	4	.14	2.73		56	7.5	109	2481	56	1275	1.20	27	42		C	
17	1		2.75		57	7.6	68	1560	80	1835	2.55	58	64		C	
18	1		2.61		57	7.6									C	
19	4	.09	2.60		57	7.6									C	
20	3		2.56		57	7.5	74	1580	52	1110	1.60	34	44		C	
21	4	.04	2.58		57	7.5	112	2410	180	3837	2.10	45	152		C	
22	1		2.58		56	7.5	72	1549	64	1377	1.90	41	50		C	
23	1		2.58		57	7.4	72	1549	74	1592	2.00	43	62		C	
24	1		2.56		57	7.5	124	2647	66	1409			60		C	
25	1		2.64		56	7.4									C	
26	4	.10	2.50		56	7.4									C	
27	4	.80	2.53		58	7.4	110	2321	100	2110	2.00	42	90		C	
28	4	.26	2.68		57	7.4	64	1430	72	1609	1.70	38	46		C	
29	1		2.66		57	7.5	94	2085	98	2174	3.20	71	94		C	
30	4	.04	2.61		57	7.5	118	2569	176	3831	2.00	44	80		C	
31	1		2.67		57	7.5	93	2071	90	2004	1.80	40	70		C	
TL		5.21	80.60					45,756		43,606		916			C	
AE			2.60				95	2080	91	1982	2.0	44	75		C	

EPA Region 5 Records Ctr.
201251

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

July, 19 80
Month

Marshall, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

ID 130029 (Plant No.) 07 (Mo.) 80 (Yr.) .. (Sampling Point Code)

DAY	BOD-5		SS		TOTAL-P		VSS	NH_3-N	REMARKS OR OTHER PARAMETERS									
	9	14	19	24	29	34	39	44	49	54	59	64	69	74	78	80	9	14
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l								C		
PN	00310	85001	00530	85002	00665	85004	00535	00610								C		
SF																C		
01	70	1530	80	1748	1.70	37	62									C		
02	68	1497	56	1233	1.70	37	50									C		
03																C		
04																C		
05																C		
06	36	754	36	754	.95	20	30									C		
07	118	2598	52	1145	1.90	42	46									C		
08	74	1605	72	1561	1.20	26	54									C		
09	34	732	70	1506	1.90	41	46									C		
10	98	2141	92	2010	2.20	48	78									C		
11																C		
12																C		
13	36	745	30	620	1.05	22	26									C		
14	78	1685	20	432	.95	21	12									C		
15	44	1013	54	1243	1.25	29	42									C		
16	86	1958	46	1047	1.45	33	34									C		
17	50	1147	68	1560	1.60	37	52									C		
18																C		
19																C		
20	76	1623	44	939	.85	18	30									C		
21	78	1678	84	1807	2.00	43	68									C		
22	60	1291	74	1592	1.30	28	56									C		
23	50	1076	42	904	1.55	33	42									C		
24	86	1836	54	1153			46									C		
25																C		
26																C		
27	64	1350	52	1097	1.25	26	40									C		
28	38	849	54	1207	1.25	28	30									C		
29	62	1375	72	1597	1.45	32	46									C		
30	88	1916	64	1393	1.30	28	42									C		
31	90	2004	52	1158	.95	21	40									C		
		32,401		27706		650										C		
	67	1473	58	1259	1.4	31	44									C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

July (Month), 19 80 — Marshall (Municipality), Michigan — Superintendent's Signature

ID 130029 (Plant No.) 07 (Mo.) 80 (Yr.) ... (Sampling Point Code)

DAY	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification
	Aeration Volume	Reaeration Volume	Detention Time	Sludge Age	Organic Loading	MLSS	MLVSS	SETTL.	SDI	DO	Air Applied	SS	VSS	Percent Return		Waste Sludge	
1 2	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		3.3	5.8	.28	2781	1942	23.0	1.21	3.5	201	.80	67	57	C	15	
02			3.3	5.2	.32	2503	1704	21.0	1.20	5.0	203	.76	67	56	C	15	
03			3.4	4.9	.26	2244	1485	19.0	1.18	6.2	198	.63	63	59	C	15	
04			3.5								194			62	C	15	
05			3.3								200			59	C	15	
06			3.4								206			61	C	15	
07			3.3	4.8	.29	2293	1592	18.0	1.27	4.3	186	.68	67	57	C	15	
08			3.3	5.7	.32	2416	1683	19.0	1.27	2.9	187	.71	69	56	C	15	
09			3.3	6.5	.28	2497	1742	19.0	1.31	3.2	188	.76	68	57	C	15	
10			3.3	5.8	.32	2390	1684	19.0	1.26	2.3	188	.73	69	56	C	15	
11			3.4	6.7	.28	2596	1858	19.0	1.37	2.9	183	.79	68	57	C	15	
12			3.4								192			59	C	15	
13			3.5								187			60	C	15	
14			3.3	5.2	.45	2263	1044	19.0	1.19	4.5	184	.68	77	58	C	15	
15			3.1	5.5	.27	2456	1712	20.0	1.23	2.7	178	.69	71	56	C	15	
16			3.2	5.6	.31	2479	1741	20.0	1.24	3.5	194	.72	70	53	C	15	
17			3.1	4.9	.31	2169	1522	17.0	1.28	4.2	200	.67	69	55	C	15	
18			3.3								195			58	C	15	
19			3.3								196			58	C	15	
20			3.4								193			56	C	15	
21			3.3	5.6	.31	2359	1628	20.0	1.18	4.1	197	.74	67	58	C	15	
22			3.3	6.1	.28	2559	1698	22.0	1.16	4.6	199	.75	64	62	C	15	
23			3.3	6.1	.27	2557	1751	21.0	1.22	2.1	197	.73	66	62	C	15	
24			3.4	6.5	.27	2463	1774	23.0	1.16	3.3	193	.74	65	62	C	15	
25			3.3	7.2	.24	3046	2092	23.0	1.33	2.6	191	.78	67	58	C	15	
26			3.4								189			62	C	15	
27			3.4								191			58	C	15	
28			3.2	4.7	.32	2041	1426	19.0	1.07	2.2	191	.64	67	54	C	15	
29			3.2	5.2	.30	2245	1516	20.0	1.12	3.0	193	.63	66	59	C	15	
30			3.3	5.0	.31	2097	1450	19.0	1.10	3.0	192	.62	69	59	C	15	
31			3.2	5.0	.31	2143	1496	21.0	1.02	2.0	185	.68	67	52	C	15	
TL															C	465	
AVE			3.3	5.6	.30	2419	1645	20.0	1.21	3.4	193	.71	68	58	C	15	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

July, 19 80 — Month

Marshall, Michigan — Municipality

Robert J. Snobell — Superintendent's Signature

D 130,029 07 80 — Plant No. Mo. Yr. Sampling Point Code

DAY	GRIT	AUX. FUEL	POWER CONSUMPTION			CHEMICALS APPLIED					
	9	14	19 #1	24 #2	29 #3	34 Cl_2	39 $FeCl_3$	44	49	54	59
	CF		KWH	KWH	KWH	LBS.	LBS.				
PN											
SF											
01			2640			20	596				
02			2760			5	794				
03			2640			5	397				
04			2640			10	397				
05			2640			10	199				
06			2640			10	199				
07			2640			5	596				
08			2760			5	596				
09			2640			5	596				
10			2520			5	695				
11			2400			5	397				
12			2400				496				
13			2640			5	199				
14			2640			10	496				
15			2760			20	794				
16			2880			20	695				
17			2640			10	794				
18			2520			10	596				
19			2520			15	596				
20			2520			5	397				
21			2640			5	199				
22			2640			25	794				
23			2760			10	794				
24			2760			10	794				
25			2520				397				
26			2640			10	397				
27			2280			10	397				
28			2760			20	596				
29			2760			10	794				
30			2760				794				
31			2760				794				
[illegible]	270		[illegible]			280	17,275				
[illegible]			2636			10	557				

MANPOWER			
POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		884
Superintendent	1		176
Asst. Supt.	1		176
Shift Foreman			
Shift Operator	3		532
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL A[illegible]

WEEKDAYS 11 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To _____
Process Pattern _____

MTH July 1980

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swallwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	50	5.0	52		5.8																			
2	50	5.2	66		5.9																			
3	50	8.0	73		5.9																			
4	40	4.8	63		6.0																			
5	40	4.6	64		6.1																			
6	40	4.7	67		6.3																			
7	50	4.2	64		6.3																			
8	50	4.3	61		6.2																			
9	50	4.4	65		6.3																			
10	50	4.8	63		6.2																			
11	50	5.1	63		6.2																			
12	40	5.3	69		6.2																			
13	40	4.7	62		6.2																			
14	50	5.3	65		6.2																			
15	50	4.9	71		6.1																			
16	40	5.4	71		6.2																			
17	50	5.1	61		6.3																			
18	60	9.0	59		6.1																			
19	40	4.9	66		6.2																			
20	40	5.3	59		6.2																			
21	50	4.9	64		6.3																			
	50	5.4	69		6.3																			
	50	4.9	68		6.3																			
	50	5.6	50		6.4																			
26	40	4.9	59		6.4																			
27	40	4.9	62		6.3																			
	40	4.3	79		6.3																			
28	50	4.9	72		6.4																			
29	50	4.6	54		6.5																			
	50	5.2	65		6.5																			
	50	5.0	65		6.4																			
TAL	1450																							
AVG	47	5.1	64																					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ Month , 19 _____ _____ Municipality , Michigan _____ Superintendent's

1 2 ID | 3 Plant No. 8 | 9 10 Mo. | 11 12 Yr. | 13 Sampling Point Code 15

DAY 1 2	BOD-5 9 mg/l	BOD-5 14 LBS.	BOD-5 19 % Rem.	SS 24 mg/l	SS 29 LBS.	SS 34 % Rem.	TOTAL-P 39 mg/l	TOTAL-P 44 LBS.	TOTAL-P 49 % Rem.	VSS 54 mg/l	NH_3-N 59 mg/l	pH 64 SU	DO 69 mg/l	F. COLI* 74 #/100 ml
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615
SF														
01	4	87	97	4	87	95	.14	3	93	3		7.2	5.8	70
02	5	110	94	2	44	97	.10	2	95	1		7.4	6.5	94
03												7.4	7.5	36
04												7.3		
05												7.4		
06	12	251	85	2	42	96	.13	3	93	1		7.3		
07	10	220	94	7	154	89	.21	5	90	2		7.3	7.0	280
08	6	130	93	8	173	89	.47	10	95	7		7.2	4.9	238
09	3	65	95	11	237	89	.11	2	94	6		7.4	5.2	80
10	13	284	91	4	87	97	.10	2	95	2		7.4	6.3	60
11												7.3	5.7	74
12												7.3		
13	3	62	97	3	62	97	.15	3	91	2		7.3		
14	5	108	94	4	86	98	.15	3	95	3		7.4	7.0	214
15	4	92	93	9	207	87	.14	3	91	6		7.4	5.5	222
16	21	478	81	4	91	93	.11	3	91	3		7.4	5.3	70
17	5	115	93	9	206	89	.11	3	96	6		7.4	6.2	32
18												7.4		
19												7.4		
20	24	512	70	2	43	96	.12	3	93	1		7.3		
21	4	86	96	8	172	96	.27	6	87	6		7.3	6.3	236
22	3	65	96	2	43	97	.12	3	94	1		7.3	4.7	18
23	3	65	96	2	43	97	.12	3	94	1		7.4	6.1	36
24	9	192	93	2	43	97				1		7.4	5.4	74
25												7.4	6.0	108
26												7.4	5.9	
27	6	127	95	2	42	98	.14	3	93	1		7.3		
28	5	112	92	2	45	97	.13	3	92	1		7.2	5.9	8
29	4	89	96	4	89	96	.09	2	97	1		7.4	5.3	266
30	5	109	96	10	218	94	.07	2	97	6		7.4	4.5	158
31	12	267	87	6	134	93	.12	3	93	4		7.4	4.8	58
TL		3626			2348			70						
ME	8	165	92	5	107	94	.15	3	93	3		7.3	5.8	82
WA				6	139									119

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

August (Month), 1980 — Marshall (Municipality), Michigan — Robert J. Swalwell (Superintendent's Signature)

1,2 | 3–8 | 9,10 | 11,12 | 13–15
10 | 130079 | 08 | 80 | 500
Plant No. | Mo | Yr. | Sampling Point Code

DAY	WEATHER		FLOW		RAW SEWAGE QUALITY											REMARKS OR
	TYPE	PRECIP.	TOTAL	MAX	TEMP	pH	BOD-5		SS		TOTAL-P		VSS	NH_3-N		
1,2	9	14	19	24 RATE	29	34	39	44	49	54	59	64	69	74	78 80	9 14
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C	
PAR	00043	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C	
DE															C	
01	4	.21	2.63		57	7.5									C	
02	4	1.53	2.72		56	7.4									C	
03	1		2.69		57	7.4	62	1520	38	849	1.80	40	26		C	
04	1		2.78		57	7.2	106	2365	46	1067	2.30	53	36		C	
05	4	.06	2.72		58	7.4	142	3357	60	1361	3.30	52	48		C	
06	4	.02	2.69		58	7.2	150	3365	44	987	1.60	36	34		C	
07	1		2.67		58	7.1	150	3340	48	1069	1.45	32	22		C	
08	1		2.63		58	7.3									C	
09	4	.20	2.58		58	7.2									C	
10	4	.05	2.58		57	7.2	156	3357	44	947	1.95	42	26		C	
11	4	.27	2.69		57	7.2	154	3455	80	1794	1.95	44	64		C	
12	1		2.63		57	7.3	90	1974	66	1448	2.10	46	50		C	
13	4	.50	2.64		58	7.1	124	2730	80	1761	1.80	40	68		C	
14	3		2.66		58	7.3	112	2485	124	2751	2.50	55	94		C	
15	1		2.62		58	7.4									C	
16	4	.48	2.48		57	7.4									C	
17	4	.02	2.56		57	7.4	146	3117	202	4312	2.25	48	150		C	
18	1		2.60		58	7.1	114	2472	94	2038	2.10	46	80		C	
19	4	1.27	2.80		57	7.0	74	1728	102	2382	1.25	29	80		C	
20	4	.02	2.77		58	6.8	98	2264	104	2403			94		C	
21	4	.40	2.80		58	6.5	94	2195	66	1541	1.90	44	50		C	
22	1		2.78		58	6.7									C	
23	1		2.61		58	6.7									C	
24	1		2.64		56	6.9	66	1453	62	1365	1.80	40	48		C	
25	1		2.67		57	6.6	60	1336	66	1470	2.10	48	34		C	
26	1		2.80		58	6.8	110	2569	98	2288	2.30	54	84		C	
27	1		2.70		58	6.7	106	2387	110	2477	2.60	59	86		C	
28	1		2.66		58	6.5	130	2884	52	1154	2.10	47	40		C	
29	4	.02	2.62		58	7.0									C	
30	4	.08	2.57		57	6.9									C	
31	4	1.06	2.58		57	6.7									C	
TL		6.19	82.57					50,353		35,279		855			C	
VE			2.66				113	2518	79	1764	2.01	45	61		C	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

August, 19 80
Month

Marshall, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

ID 130629 08 80
Plant No. Mo. Yr. Sampling Point Code

DAY	BOD 5		SS		TOTAL-P		VSS	NH_3-N	REMARKS OR OTHER PARAMETERS									
	mg/l	LBS.	mg/l	LBS	mg/l	LBS	mg/l	mg/l										
	00310	85001	00530	85002	00665	85004	00535	00610										
01																C		
02																C		
03																C		
04																C		
05																C		
06	38	849	60	1341	1.05	23	46									C		
07	47	1113	46	1067	1.45	34	26									C		
08	72	1633	38	862	1.70	39	23									C		
09	103	2288	84	1885	2.10	47	58									C		
10	102	2271	98	2182	1.70	38	48									C		
11																C		
12																C		
13	98	2109	22	473	1.05	23	12									C		
14	146	3275	92	2064	2.20	49	66									C		
15	40	877	38	833	1.10	24	32									C		
16	116	2554	56	1233	1.20	26	46									C		
17	106	2352	56	1242	1.60	35	40									C		
18																C		
19																C		
20	80	1708	60	1281	1.15	25	46									C		
21	100	2168	64	1388	1.40	30	50									C		
22	70	1635	68	1588	1.55	36	40									C		
23	58	1340	92	2125			80									C		
24	50	1168	60	1401	1.70	40	46									C		
25																C		
26																C		
27	52	1145	52	1145	1.15	25	34									C		
28	40	891	48	1069	1.55	35	30									C		
29	54	1261	50	1168	1.30	30	44									C		
30	68	1531	70	1576	1.90	43	64									C		
31	64	1420	46	1020	1.40	31	34									C		
TL		33591		26943		633										C		
ME	75	1680	60	1347	1.49	33	44									C		

DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

August, 19 80 (Month)

Marshall, Michigan (Municipality)

Robert J Swahull (Superintendent's Signature)

ID 130029 (Plant No.) 08 (Mo.) 80 (Yr.) ... (Sampling Point Code)

DAY	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification
	Aeration Volume	Reaeration Volume	Detention Time	Sludge Age	Organic Loading	MLSS	MLVSS	SETTL.	SDI	DO	Air Applied	SS	VSS	Percent Return		Waste Sludge	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		3.3	5.4	.30	2296	1604	21.0	1.69	2.5	184	.67	67	52	C	15	
02			3.2								183			50	C	15	
03			3.2								186			52	C	15	
04			3.1								184			51	C	15	
05			3.2	5.2	.33	2172	1476	21.0	1.03	2.8	184	.85	52	51	C	15	
06			3.2	5.0	.40	2146	1310	23.0	.93	3.2	184	.67	68	50	C	15	
07			3.2	4.6	.42	2117	1400	23.0	.92	2.9	182	.73	83	54	C	15	
08			3.3								180			57	C	15	
09			3.3								181			54	C	15	
10			3.3								179			53	C	15	
11			3.2	4.1	.50	1950	1363	22.0	.89	3.4	178	.64	68	52	C	15	
12			3.3	4.5	.44	1998	1395	21.0	.95	2.8	184	.61	68	51	C	15	
13			3.3	4.3	.49	1924	1320	20.0	.96	1.8	181	.62	66	52	C	15	
14			3.2	4.6	.46	2201	1579	23.0	.96	2.8	178	.87	54	52	C	15	
15			3.3	4.6	.47	2168	1530	22.0	.98	3.1	186	.69	67	53	C	15	
16			3.5								188			55	C	15	
17			3.4								180			52	C	15	
18			3.3	6.3	.44	2496	1696	24.0	1.04	2.6	176	.85	68	47	C	15	
19			3.1	5.7	.39	2778	1952	28.0	.99	2.5	174	.98	66	41	C	30	
20			3.1	4.4	.46	2105	1535	20.0	1.05	2.7	169	.73	72	47	C	15	
21			3.1	4.4	.37	2286	1625	20.0	1.14	3.2	177	.87	69	45	C	15	
22			3.1	4.8	.45	2400	1332	23.0	1.04	3.3	184	.82	70	45	C	15	
23			3.3								186			48	C	15	
24			3.3								178			47	C	15	
25			3.2	5.5	.31	2553	1839	27.0	.95	4.7	177	.84	69	50	C	15	
26			3.1	5.8	.27	2834	1977	26.0	1.09	1.7	172	.53	69	48	C	30	
27			3.2	3.7	.36	1750	1307	16.0	1.09	2.0	176	.56	75	53	C	15	
28			3.2	4.2	.31	1859	1378	17.0	1.09	2.4	177	.62	72	52	C	15	
29			3.3	5.1	.26	2317	[illegible]	20.0	1.11	1.3	175	[illegible]	73	50	C	15	
30			3.4								177			53	C	15	
31			3.3								173			53	C	15	
TL															C	495	
ME			3.2	4.9	.39	2224	1540	21.9	1.02	2.7	1.80	.74	68	51	C	16	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

August (Month), 19 80 — Marshall (Municipality), Michigan — Robert J. Swalwell (Superintendent's Signature)

1 2 ID: 3–8 Plant No. 130029 | 9 10 Mo. 08 | 11 12 Yr. 80 | 13–15 Sampling Point Code

DAY	GRIT	AUX. FUEL	POWER CONSUMPTION			CHEMICALS APPLIED					
2	3	14	19 #1	24 #2	29 #3	34 Cl_2	39 $FeCl_3$	44	49	54	59
	CF		KWH	KWH	KWH	LBS.	LBS				
01	1		2640				596				
02	1		2400			30	397				
03	1		2400			10	397				
04	1		2520			20	397				
05	1		2520			20	397				
06	1		2400			10	397				
07	1		2520			20	397				
08	1		2400			20	199				
09	1		2520			10	397				
10	1		2520			20	397				
11	1		2520			20	397				
12	1		2760			20	397				
13	1		2760			20	794				
14	1		2640			20	794				
15	1		2760			20	397				
16	1		2520			10	397				
17	1		2400			20	596				
18	1		2400			20	794				
19	1		2640			10	596				
20	1		2760			10	596				
21	1		2760			20	596				
22	1		2640			10	397				
23	1		2520			20	397				
24	1		2400			20	199				
25	1		2520			20	199				
26	1		2400			10	397				
27	1		2640			20	397				
28	1		2520			20	199				
29	2		2520			20	199				
30	1		2400			20	397				
31	1		2400			10	397				
TL	32		78720			520	13503				
ME	1		2539			17	436				

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		840
Superintendent	1		168
Asst. Supt.	1		168
Shift Foreman			
Shift Operator	3		504
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL A

WEEKDAYS 11 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To _____
Process Pattern _____

MONTH August 1980

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	S-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	50	5.0	63		6.5																			
2	40	4.8	63		6.3																			
3	40	4.9	61		6.4																			
4	50	4.9	61		6.1																			
5	50	4.1	72		6.2																			
6	50	4.5	62		6.2																			
7	50	4.1	40		6.3																			
8	50				6.3																			
9	60	4.8	60		6.2																			
10	40	4.1	60		6.2																			
11	50	3.9	70		6.3																			
12	50	4.7	64		6.1																			
13	50	4.4	73		6.2																			
14	50	5.0	62		6.2																			
15	50	4.7	81		5.9																			
16	40	6.2	65		6.0																			
17	40	5.1	65		6.2																			
18	40	4.4	75		6.2																			
19	50	4.4	75		5.8																			
20	50	4.6	60		5.8																			
21	50	4.7	78		5.7																			
22	45	4.6	62		5.7																			
23	40	5.3	64		5.7																			
24	40	4.6	57		5.8																			
25	50	5.0	54		6.0																			
26	50	5.1	63		5.6																			
27	50	4.8	73		5.6																			
28	50	5.1	65		6.0																			
29	50	5.1	72		6.2																			
30	40	3.9	64		6.0																			
31	40	4.4	68		6.0																			
TOTAL	1455																							
AR. TH. MEAN	47	4.8	65																					

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

MDPH
D-4.7

Marshall, MICHIGAN

MONTH August, 1980 — VACUUM FILTER & INCINERATION DATA — OPERATOR R.J. Swalwell

DATE	SLUDGE TO FILTER				CHEMICALS TO FILTER				FILTER		FILTRATE						FILTER CAKE					INCINERATION			REMARKS
					C2o		FeCl3																		
	Gal. x 100	Tot. Sol. %	Lbs. Dry Sol.	pH	Lbs. Dry	R	Lbs. Dry	R	Tot. Hours	Yield	Gal. x 100	pH	Sus. Solids Mg/l	Vol. Susp. Solids %	5 Day BOD Mg/l	P Mg/l	Thou. Lbs. Wet	Tot. Sol. %	Lbs. Tot. Solids x 100	Vol. Sol. %	Lbs. Vol. Solids x 100	Hrs. Opr.	Yield	Fuel BTU	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	88	9.0	2957	6.4	1808		191		8.0		76	11.8	606	11	1560		26	18.5	48	47	23				
2																									
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12	88	4.3	3179	6.3	1808		191		8.0		76	12.3	1008	9	1440		31	14.3	50	45	23				
13	88	4.5	3326	6.6	1808		191		8.0		76	12.0	1164	33	1500		32	15.8	50	55	28				
14	88	4.5	3326	6.4	1808		191		8.0		76	12.1	1240	8	2040		32	16.1	52	49	25				
15	88	4.4	3252	6.4	1808		191		8.0		76	11.9	1118	10	2040		30	16.6	50	50	25				
16																									
17																									
18																									
19	88	4.1	3031	6.4	1808		191		8.0		76	11.5	960	13	1380		26	18.9	48	69	33				
20	88	4.7	3474	5.9	1808		191		8.0		76	11.8	782	15	1380		30	17.9	53	48	25				
21	88	5.5	4066	5.9	1808		191		8.0		76	11.8	838	12	1500		31	18.7	59	48	28				
22	88	4.8	3548	5.8	1808		191		8.0		76	11.7	948	11	1440		26	20.3	54	46	25				
23																									
24																									
25																									
26																									
27																									
28																									
29																									
30																									
31																									
Tot.	792		30159		16272		1719		72		684						264		464		235				
Avg.	88	4.5	3351		1808		191		8.0		76		963	14	1587		29	17.7	52	51	26				

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ Month , 19 _____ _____ Municipality , Michigan _____ Superintendent's

1 2 ID | 3 Plant No. 8 | 9 10 Mo. | 11 12 Yr. | 13 Sampling Point Code 15

DAY	20 BOD-5			20 SS			19 TOTAL-P			VSS 26	NH_3-N	pH	DO 20	F. COLI* 20	
	9	14	19	24	29	34	39	44	49	54	59	64	69	74	80
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	# /100 ml	C
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C
SF															C
01												7.4	5.0	254	C
02												7.4			C
03	6	134	91	5	112	87	.12	3	93	4		7.5			C
04	8	185	92	4	93	91	.18	4	92	2		7.3	6.1	74	C
05	8	181	95	2	45	97	.33	7	90	1		7.2	5.4	64	C
06	18	403	88	2	45	95	.06	1	96	1		7.1	6.2	146	C
07	18	401	88	2	44	96	.08	2	94	1		7.2	6.2	54	C
08												7.2			C
09												7.1			C
10	19	409	88	2	43	95	.19	4	90	1		7.2			C
11	20	449	87	14	314	83	.21	5	89	7		7.3	6.4	74	C
12	15	329	83	2	44	97	.14	3	93	2		7.3	6.6	10	C
13	18	396	85	2	44	98	.17	4	91	1		7.1	5.7	16	C
14	14	311	88	3	67	98	.22	5	91	2		7.0	4.3	20	C
15												7.1	Hz	64	C
16												7.1			C
17	20	427	86	9	192	96	.18	4	92	7		7.3			C
18	17	369	85	1	22	99	.26	6	88	1		7.0	4.2	30	C
19	12	208	84	14	327	86	.12	3	90	8		7.1	4.9	98	C
20	9	208	91	8	185	92				7		6.9	4.0	32	C
21	16	374	83	2	47	97	.12	3	94	1		6.8	4.1	22	C
22												6.7	5.9	6	C
23												6.4	5.1		C
24	21	462	68	3	66	95	.15	3	92	2		6.8	7.3		C
25	7	156	88	2	45	97	.16	4	92	1		6.6	6.8	2	C
26	2	47	98	7	163	93	.16	4	93	4		6.5	5.9	18	C
27	11	248	90	2	45	98	.19	4	93	1		6.7		10	C
28	14	310	89	5	111	90	.21	5	90	4		6.8		10	C
29												6.7	1.0	40	C
30												6.8			C
31												6.6			C
TL		6007			2054			74							C
ME	14	300	87	5	103	94	.19	4	92	3		7.0	5.3	30	C
WA	17	379		7	155									78	C

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

September, 19 80
Month

Marshall
Municipality, Michigan

Robert J. Swindell
Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
ID | 13.0.0.29 | 09 | 80 | 5.0.0
Plant No. Mo. Yr. Sampling Point Code

DAY 1 2	WEATHER TYPE 9	WEATHER PRECIP. 14	FLOW TOTAL 19	FLOW MAX 24 RATE	RAW SEWAGE QUALITY TEMP 29	pH 34	BOD-5 39 44		SS 49 54		TOTAL-P 59 64		VSS 69	NH_3-N 74 78	80	REMARKS OR 9	14
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C		
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C		
SF															C		
01	4	.15	2.65		57	6.9	92	2033	86	1901	1.80	40	64		C		
02	4	.06	2.74		60	6.8	96	2194	152	3473	2.10	48	132		C		
03	1		2.81		59	7.0	82	1922	106	2484	2.40	56	72		C		
04	1		2.71		59	7.0	98	2215	138	3119	3.20	72	112		C		
05	1		2.67		59	7.2									C		
06	1		2.58		58	7.2									C		
07	4	.07	2.57		60	7.1	130	2786	122	2615	2.20	47	92		C		
08	4	.46	2.68		60	7.1	120	2682	90	2012	3.00	67	66		C		
09	4	.04	2.85		60	7.2	66	1569	84	1997	2.10	50	54		C		
10	1		2.62		59	7.2	88	1922	94	2054	2.00	43	72		C		
11	1		2.68		58	7.3	64	1430	72	1609	2.00	45	58		C		
12	4	.27	2.55		58	7.3									C		
13	4	.30	2.56		58	7.2									C		
14	4	.06	2.53		56	7.2	80	1688	62	1308	1.95	41	48		C		
15	1		2.78		59	7.2	70	1623	102	2365	2.10	49	68		C		
16	4	1.21	2.76		59	7.1	58	1335	70	1611	2.20	51	52		C		
17	4	.06	2.73		57	7.2	86	1958	90	2049	1.95	44	74		C		
18	1		2.64		58	7.1	94	2070	182	4007	1.95	43	74		C		
19	4	.05	2.73		58	7.0									C		
20	4	.10	2.58		58	7.1									C		
21	1		2.58		58	7.2	68	1463	44	947	1.95	42	34		C		
22	4	1.15	2.65		59	6.9	72	1591	76	1680	1.90	42	58		C		
23	1		2.65		59	6.7	94	2077	94	2077	1.70	38	80		C		
24	1		2.72		58	6.8	120	2722	104	2359	2.10	48	76		C		
25	4	.07	2.72		59	6.8	108	2450	102	2314	1.95	44	90		C		
26	1		2.64		59	7.4									C		
27	1		2.51		58	7.3									C		
28	1		2.51		58	7.3	92	1926	98	2051	2.30	48	76		C		
29	1		2.60		58	7.4	98	2125	56	1214	1.80	39	36		C		
30	1		2.58		58	7.5	98	2109	70	1506	1.95	42	64		C		
31															C		
TL		4.05	79.58					43,890		46,761		1039			C		
ME			2.65				90	1995	95	2126	2.12	47	71		C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

September, 1980
Month

Marshall, Michigan
Municipality

Robert J Swalwell
Superintendent's Signature

ID 130029 09 80
Plant No. Mo. Yr. Sampling Point Code

DAY	BOD-5		SS		TOTAL-P		VSS	NH_3-N	REMARKS OR OTHER PARAMETERS										
	9 14		19 24		29 34		39	44	49	54	59	64	69	74	78 80	9	14		
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C				
PN	00310	85001	00530	85002	00665	85004	00535	00610							C				
SF															C				
01	48	1061	46	1017	2.30	51	28								C				
02	62	1417	52	1188	1.70	39	32								C				
03	92	2156	70	1640	2.70	63	46								C				
04	76	1718	84	1899	2.10	47	74								C				
05															C				
06															C				
07	76	1629	50	1072	1.20	26	40								C				
08	88	1967	122	2727	2.50	56	106								C				
09	50	1188	72	1711	1.45	34	52								C				
10	50	1093	68	1486	1.25	27	50								C				
11	54	1207	64	1430	1.65	37	40								C				
12															C				
13															C				
14	72	1519	32	675	1.25	26	16								C				
15	44	1020	78	1808	1.65	38	60								C				
16	64	1473	56	1289	2.25	51	42								C				
17	62	1412	68	1548	1.70	39	48								C				
18	62	1365	64	1409	1.70	37	60								C				
19															C				
20															C				
21	34	732	50	1076	1.25	27	34								C				
22	66	1459	114	2520	2.40	53	88								C				
23	70	1547	84	1856	1.80	40	64								C				
24	90	2042	86	1951	1.95	44	58								C				
25	118	2677	98	2223	2.60	59	76								C				
26															C				
27															C				
28	66	1256	90	1889	2.00	42	62								C				
29	92	1995	68	1475	2.20	48	52								C				
30	74	1592	72	1549	1.70	37	64								C				
31															C				
TL		33552		35433		921									C				
ME	68	1525	72	1611	1.88	42	54								C				

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

September, 19 80
Month

Marshall, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

ID 13,0,0,29 09 80
Plant No. Mo. Yr. Sampling Point Code

DAY	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification
	Aeration Volume	Reaeration Volume	Detention Time	Sludge Age	Organic Loading	MLSS	MLVSS	SETTL.	SDI	DO	Air Applied	SS	VSS	Percent Return		Waste Sludge	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		3.3								172			52	C	15	
02			3.1	6.6	.22	2623	1869	27.0	.97	2.5	180	.86	70	50	C	15	
03			3.1	6.7	.23	2878	2031	22.0	1.07	3.0	180	.91	63	51	C	30	
04			3.2	4.7	.32	2157	1557	20.0	1.08	3.0	174	.69	70	53	C	15	
05			3.2	5.5	.35	2470	1393	22.0	1.12	2.7	178	.74	84	50	C	15	
06			3.3								178			53	C	15	
07			3.4								173			52	C	15	
08			3.2	5.2	.29	2587	1847	26.0	1.00	2.6	189	.78	70	54	C	15	
09			3.0	4.6	.29	2610	1904	23.0	1.13	2.6	192	.77	68	50	C	30	
10			3.3	3.0	.44	1601	1178	15.0	1.07	5.5	213	.48	71	55	C	15	
11			3.2	3.5	.35	2001	1473	18.0	1.11	3.9	210	.62	71	55	C	15	
12			3.4	4.2	.29	2250	1712	21.0	1.07	2.2	208	.67	68	55	C	15	
13			3.4								208			55	C	15	
14			3.4								210			55	C	15	
15			3.1	5.4	.23	2865	2082	29.0	.99	3.3	211	.91	71	47	C	30	
16			3.1	3.8	.28	2048	1600	19.0	1.07	4.0	206	.67	68	46	C	15	
17			3.2	4.2	.30	1941	1413	20.0	.97	3.5	214	.70	71	51	C	15	
18			3.2	5.4	.24	2428	1798	25.0	.97	3.6	211	.80	73	51	C	15	
19			3.2	6.2	.20	2887	2132	29.0	.99	1.1	174	.85	73	53	C	15	
20			3.3								187			56	C	15	
21			3.3								186			56	C	15	
22			3.3	5.2	.23	2534	1898	24.0	1.05	1.8	188	.76	59	55	C	15	
23			3.3	4.9	.22	2618	1904	28.0	.94	1.8	197	.90	59	55	C	15	
24			3.2	4.3	.28	2440	1749	25.0	.98	3.5	193	.74	70	53	C	15	
25			3.2	4.1	.27	2650	1952	27.0	.98	3.0	159	.75	71	53	C	30	
26			3.3	3.1	.37	1967	1431	20.0	.98	2.9	163	.54	71	57	C	15	
27			3.4								160			63	C	15	
28			3.4								158			64	C	15	
29			3.3	4.4	.28	2675	1953	28.0	.96	3.5	155	.69	70	61	C	30	
30			3.3	3.2	.39	1985	1490	21.0	.95	3.1	152	.56	74	62	C	15	
31															C		
TL															C	525	
ME			3.3	4.7	.29	2392	1742	23.5	1.02	3.0	186	.73	70	54	C	18	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

September, 19 80 (Month) — Marshall (Municipality), Michigan — Robert J. Swalwell (Superintendent's Signature)

1 2	3 8	9 10	11 12	13 15
ID	130029	09	80	
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX. FUEL 14	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 $FeCl_3$ LBS	44	49	54	59
PN											
SF											
01			2640			10	397				
02			2640			20	397				
03			2640			20	794				
04			2880			20	794				
05			2640			10	397				
06			2520			20	397				
07			2400			20	397				
08			2520			10	596				
09			2760			30	596				
10			2640			20	794				
11			2760			10	596				
12			2760			10	596				
13			2640			5	397				
14			2520			25	199				
15			2640			10	397				
16			2760			20	596				
17			2520			20	794				
18			2640			10	397				
19			2520			10	397				
20			2400			10	298				
21			2520			10	397				
22			2520			20	397				
23			2640			20	397				
24			2760			20	596				
25			2520			20	596				
26			2400			20	596				
27			2400			20	397				
28			2280			15	397				
29			2400			5	199				
30			2640			20	596				
31											
TL			77520			480	14794				
ME			2584			16	493				

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		844
Superintendent	1		168
Asst. Supt.	1		168
Shift Foreman			
Shift Operator	3		508
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL AR

WEEKDAYS 11 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

R 4619
4833-5382

Marshall, MICHIGAN

Supernatant To _____
Process Pattern _____

MONTH September 1980

DIGESTER AND SLUDGE DATA

OPERATOR R. J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produc cu. f X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/ 1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	40	4.9	68		6.1																			
2	50	4.7	69		5.9																			
3	50	5.1	67		6.0																			
4	50	2.9	70		6.3																			
5	50	4.3	63		6.5																			
6	40	4.3	71		6.3																			
7	40	4.3	70		6.2																			
8	50	4.6	76		6.1																			
9	50	5.1	67		6.1																			
10	50	3.6	62		6.4																			
11	50	4.6	63		6.5																			
12	60	5.9	71		6.2																			
13	40	3.5	78		6.2																			
14	40	5.2	70		6.3																			
15	50	5.2	69		6.1																			
16	50	4.0	79		6.4																			
17	50	4.9	62		6.3																			
18	50	5.0	67		6.4																			
19	50	5.2	63		6.2																			
20	40	4.7	70		6.3																			
21	40	4.5	72		6.4																			
22	50	4.9	64		6.0																			
23	50	4.6	69		5.9																			
24	50	5.3	62		5.9																			
25	50	4.4	73		5.9																			
26	50	4.7	60		6.5																			
27	40	4.7	70		6.4																			
28	40	4.8	68		6.3																			
29	50	5.3	65		6.3																			
30	50	4.2	75		6.5																			
31																								
TOTAL	1420																							
ARITH. MEAN	47	4.6	68																					

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

MDPH
D-4.7

Marshall, MICHIGAN

MONTH September, 1980 — VACUUM FILTER & INCINERATION DATA — OPERATOR R.J. Swalwell

SLUDGE TO FILTER				CHEMICALS TO FILTER				FILTER		FILTRATE						FILTER CAKE					INCINERATION			REMARKS
				CaO		FeCl3																		
Gal. X 100	Tot. Sol. %	Lbs. Dry Sol.	pH	Lbs. Dry	R	Lbs. Dry	R	Tot. Hours	Yield	Gal. X 100	pH	Sus. Solids Mg/l	Vol. Susp. Solids %	5 Day BOD Mg/l	P Mg/l	Thou. Lbs. Wet	Tot. Sol. %	Lbs. Tot. Solids X 100	Vol. Sol. %	Lbs. Vol. Solids X 100	Hrs. Opr.	Yield	Fuel BTU	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
97	4.3	3504	6.2	1768		191		8.0		76	12.2	1326	6	1440		30	17.7	53	46	24				
97	3.0	2444	6.3	1768		191		8.0		76	11.9	992	9	1260		24	17.2	41	47	19				
97	4.6	3748	6.3	1768		191		8.0		76	11.9	1294	17	900		33	16.5	54	46	25				
73	2.2	1793	6.5	1326		143		6.0		57	12.7	1300	10	1260		20	15.3	31	49	15				
97	3.2	2607	6.5	1768		191		8.0		76	12.3	964	10	960		26	16.6	43	48	21				
85	4.6	3284	6.5	1547		167		7.0		67	12.5	1018	10	900		28	17.1	48	48	23				
97	3.7	3015	6.5	1768		191		8.0		76	12.7	828	15	1140		28	17.3	48	50	24				
97	4.4	3585	6.4	1768		191		8.0		76	12.5	904	10	1380		27	19.5	53	47	25				
97	4.1	3346	6.3	1768		191		8.0		76	12.4	772	17	600		31	16.3	51	51	26				
97	5.1	4155	6.3	1768		191		8.0		76	12.2	686	13	1140		28	21.0	59	53	31				
97	5.0	4074	6.3	1768		191		8.0		76	12.5	834	15	1080		33	17.5	58	51	29				
97	3.5	2852	6.2	1768		191		8.0		76	12.0	934	10	1260		27	16.9	47	44	20				
97	4.3	3504	6.2	1768		191		8.0		76	12.1	800	13	840		29	17.9	52	45	23				
97	5.1	4155	6.5	1768		191		8.0		76	13.2	942	9	1140		33	17.7	58	43	25				
97	4.3	3504	6.5	1768		191		8.0		76	12.4	858	11	780		29	18.1	52	47	25				
1419		49564		25857		2793		117		1112						426		748		355				
95	4.1	3304		1724		186		7.8		74		963	12	1072		28	17.5	50	48	24				

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ Month , 19 _____ _____ Municipality , Michigan _____ Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
ID [ ] [ ] [ ] [ ]
Plant No. Mo. Yr. Sampling Point Code

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*		T. COLI*	REMARKS
	22 9	14	19	22 24	29	34	39	44	49	54	59	64	69 2l	74 2l	80	9	14 19
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01	6	133	93	1	22	99	.15	3	92	1		6.7			C		
02	11	251	89	1	23	99	.21	5	90	1		6.8	4.5	14	C		
03	5	117	94	6	141	94	.14	3	94	1		6.9	4.1	34	C		
04	8	181	92	8	181	94	.15	3	95	7		7.0	5.7	12	C		
05												6.9	4.4	16	C		
06												6.8			C		
07	12	257	91	4	86	97	.12	3	95	3		7.0			C		
08	16	358	87	9	201	90	.19	4	94	2		7.0	4.0	16	C		
09	5	114	92	7	166	92	.13	3	89	3		7.2	5.0	14	C		
10	15	328	83	8	175	91	.15	3	93	6		7.5	7.4	4	C		
11	17	380	73	2	45	97	.12	3	94	1		7.3	~~3.9~~	6	C		
12												7.0	4.4	200	C		
13												6.9			C		
14	23	485	71	2	42	97	.15	3	92	1		7.0			C		
15	5	116	93	4	93	96	.10	2	95	2		7.2	4.3	8	C		
16	6	138	90	4	92	94	.12	3	95	3		7.0	5.8	2	C		
17	15	342	83	10	228	89	.15	3	92	8		7.0	6.6	2	C		
18	6	132	94	7	154	96	.18	4	91	6		6.9	6.7	4	C		
19												6.7	4.4	4	C		
20												6.8			C		
21	10	125	85	3	65	70	.14	3	93	2		6.8			C		
22	4	88	94	9	199	88	.16	4	92	2		7.0	4.7	2	C		
23	5	111	95	4	88	96	.16	4	91	3		6.6	5.3	2	C		
24	12	272	90	9	204	91	.14	3	93	4		6.7	4.7	2	C		
25	12	272	89	10	227	90	.15	3	92	8		6.9	4.6	2	C		
26												7.4	5.0	8	C		
27												7.4			C		
28	11	230	88	3	63	97	.19	4	92	1		7.3			C		
29	6	130	94	2	43	96	.16	3	91	1		7.3	3.9	2	C		
30	5	108	95	4	86	94	.20	4	90	3		7.3	4.5	2	C		
31															C		
TL		4700			2624			73							C		
ME	10	214	89	5	119	93	.15	3	93	3		7.0	5.0	6	C		
WA	13	288		7	157									16	C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

October, 19 80 — Month

Marshall, Michigan — Municipality

Robert J. Swalwell — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130029	10	80	500
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY 1 2	WEATHER TYPE 9	WEATHER PRECIP. 14	FLOW TOTAL 19	FLOW MAX RATE 24	RAW SEWAGE QUALITY TEMP 29	pH 34	BOD-5 39	BOD-5 44	SS 49	SS 54	TOTAL-P 59	TOTAL-P 64	VSS 69	NH_3-N 74 78	80	REMARKS OR 9	14
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C		
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C		
SF															C		
01	4	.10	2.64		58	7.5	110	2422	110	2422	1.95	43	88		C		
02	4	.20	2.61		58	7.4	66	1437	86	1872	2.20	48	82		C		
03	4	.06	2.87		58	7.5									C		
04	3		2.58		58	7.3									C		
05	3		2.49		56	7.5	100	2077	52	1080	1.80	37	38		C		
06	3		2.60		56	7.5	76	1648	68	1475	1.90	41	60		C		
07	1		2.61		56	7.4	106	2307	140	3047	2.25	49	96		C		
08	1		2.55		57	7.4	90	1914	112	2382	2.25	48	74		C		
09	1		2.57		58	7.5	86	1843	74	1586	2.25	48	64		C		
10	4	.05	2.54		57	7.4									C		
11	4	.07	2.48		57	7.4									C		
12	1		2.48		55	7.5	90	1861	86	1719	2.40	50	76		C		
13	4	.02	2.65		57	7.5	108	2387	96	2122	2.20	49	64		C		
14	4	.13	2.85		57	7.5	86	2044	84	1997	2.20	52	76		C		
15	4	.09	2.56		57	7.5	98	2092	98	2092	2.40	51	70		C		
16	4	.06	2.53		57	7.5	122	2574	116	2448	2.30	49	90		C		
17	4	.56	2.64		57	7.4									C		
18	4	.02	2.44		57	7.4									C		
19	4	.06	2.63		56	7.4	110	2412	84	1842	2.25	49	68		C		
20	3		2.52		56	7.5	90	1892	78	1639	1.95	41	52		C		
21	1		2.57		56	7.4	119	2551	68	1457	2.30	49	68		C		
22	1		2.58		56	7.5	100	2152	50	1076	2.25	48	40		C		
23	1		2.61		56	7.4	112	2438	68	1480	2.10	46	52		C		
24	4	.50	2.69		56	7.4									C		
25	4	.07	2.78		56	7.4									C		
26	4	.02	2.50		56	7.5	86	1793	92	1918	2.10	44	80		C		
27	4	.16	2.63		56	7.5	106	2325	68	1492	1.95	43	62		C		
28	1		2.65		56	7.5	100	2210	98	2166	2.00	44	84		C		
29	1		2.64		56	7.5	112	2466	66	1453	2.20	48	48		C		
30	1		2.59		56	7.5	103	2225	80	1728	2.00	43	68		C		
31	1		2.63		55	7.6									C		
TL		2.17	80.71					47076		40,493		1020			C		
ME			2.60				99	2140	85	1841	2.14	46	68		C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

_____ Month, 19__ _____ Municipality, Michigan

Robert J. Swalwell
Superintendent's Signature

ID: Plant No. | Mo. | Yr. | Sampling Point Code

DAY	BOD-5		SS		TOTAL-P		VSS	NH_3-N	REMARKS OR OTHER PARAMETERS										
	9 14		19 24		29 34		39	44	49	54	59	64	69	74 78	80	9	14	1
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C			
PN	00310	85001	00530	85002	00665	85004	00535	00610							C			
SF															C			
01	118	2598	94	2070	1.70	37	68								C			
02	38	827	64	1393	2.00	44	44								C			
03															C			
04															C			
05	60	1246	82	1703	1.60	33	74								C			
06	80	1735	56	1214	1.80	39	42								C			
07	98	2133	76	1654	1.95	42	60								C			
08	62	1319	86	1829	2.00	43	60								C			
09	78	1672	70	1500	3.20	69	56								C			
10															C			
11															C			
12	58	1200	26	538	2.50	52	20								C			
13	80	1768	58	1282	1.65	36	40								C			
14	52	1236	70	1664	2.00	48	58								C			
15	88	1879	124	2647	2.50	53	68								C			
16	94	1983	70	1477	2.00	42	48								C			
17															C			
18															C			
19	76	1667	68	1492	1.45	32	46								C			
20	72	1513	82	1723	2.55	54	42								C			
21	140	3001	66	1415	2.60	56	56								C			
22	110	2367	44	947	2.25	48	36								C			
23	116	2525	90	1959	2.30	50	66								C			
24															C			
25															C			
26	70	1460	64	1334	1.95	41	48								C			
27	104	2281	92	2018	2.20	48	76								C			
28	114	2520	74	1635	2.10	46	62								C			
29	84	1849	96	2114	2.30	51	68								C			
30	116	2506	76	1642	2.20	48	62								C			
31															C			
TL		41285		35517		1012									C			
ME	87	1877	74	1614	2.13	46	55								C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

October 1980 — Month
Marshall — Municipality
Michigan
Robert J Swahell — Superintendent's Signature

ID 130029 — Plant No. | 10 — Mo. | 80 — Yr. | .. — Sampling Point Code

DAY	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification
	Aeration Volume	Reaeration Volume	Detention Time	Sludge Age	Organic Loading	MLSS	MLVSS	SETTL.	SDI	DO	Air Applied	SS	VSS	Percent Return		Waste Sludge	
1 2	9	14	19	24	29	34	39	44	49	54	59	64	49	74	80	9	14
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		3.3	3.9	.37	2435	1779	25.0	.97	2.9	157	.80	71	59	C	15	
02			3.3	3.4	.44	2019	1373	25.0	.81	3.2	161	.66	70	56	C	15	
03			3.0	3.8	.36	2523	1871	26.0	.97	1.8	167	.78	73	47	C	20	
04			3.3								170			55	C	15	
05			3.5								169			60	C	15	
06			3.3	3.9	.35	2117	1549	20.0	1.05	3.4	185	.58	71	55	C	15	
07			3.3	3.5	.42	1864	1379	18.0	1.04	4.4	188	.54	72	50	C	15	
08			3.4	3.5	.39	1893	1398	18.0	1.05	4.0	147	.79	53	50	C	15	
09			3.4	3.8	.34	2042	1594	21.0	.97	4.2	149	.67	74	48	C	15	
10			3.4	4.1	.33	2195	1626	23.0	.95	3.0	146	.70	74	56	C	15	
11			3.5								148			54	C	15	
12			3.5								152			52	C	15	
13			3.3	6.0	.22	2864	2102	30.0	.95	2.0	168	.83	71	56	C	25	
14			3.0	4.6	.34	2306	1707	22.0	1.05	2.3	171	.71	73	47	C	15	
15			3.4	3.1	.43	1628	1225	15.0	1.09	3.5	168	.46	73	55	C	15	
16			3.4	4.1	.33	2056	1565	19.0	1.08	1.4	165	.63	76	55	C	15	
17			3.3	3.9	.33	2072	1606	19.0	1.09	1.3	164	.65	79	52	C	15	
18			3.5								169			56	C	15	
19			3.3								172			49	C	15	
20			3.4	3.2	.42	1606	1234	14.0	1.15	3.2	170	.44	75	57	C	15	
21			3.4	3.5	.42	1932	1467	17.0	1.14	2.5	172	.58	74	56	C	15	
22			3.3	3.5	.44	1871	1461	18.0	1.04	2.6	174	.56	71	52	C	15	
23			3.3	3.4	.49	1938	1478	18.0	1.08	1.2	171	.54	76	56	C	15	
24			3.2	3.4	.49	1962	1521	18.0	1.09	3.2	166	.57	76	54	C	15	
25			3.1								180			53	C	15	
26			3.4								175			57	C	15	
27			3.3	4.2	.43	2213	1666	21.0	1.05	3.8	173	.67	73	52	C	15	
28			3.3	4.0	.48	2146	1602	22.0	.98	2.9	174	.71	71	51	C	15	
29			3.3	3.5	.53	1918	1433	18.0	1.07	2.6	171	.58	72	51	C	15	
30			3.3	3.5	.50	1933	1474	19.0	1.02	2.7	167	.65	75	51	C	15	
31			3.3	3.5	.50	1971	1486	20.0	.99	2.8	165	.61	73	50	C	15	
TL															C	480	
ME			3.3	3.8	.41	2065	1561	20.0	1.03	2.8	167	.64	72	53	C	15	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____, 19____ Month _____ Municipality, Michigan _____ Superintendant's Signature

1 2 ID | 3 8 Plant No. | 9 10 Mo. | 11 12 Yr. | 13 15 Sampling Point Code

DAY	BOD-5 22			SS 22			TOTAL-P 22			VSS 2	NH_3-N	pH 31	DO 23 22	F. COLI* 23		T. COLI*	REMARKS
	9	14	19	24	29	34	39	44	49	54	59	64	69	74	80	9	14
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01	12	264	89	4	88	96	.20	4.4	90	3		7.3	3.3	2	C		
02	8	174	89	4	87	95	.19	4.1	91	1		7.2	3.2	10	C		
03												7.2	3.7	2	C		
04												7.1	[illegible]		C		
05	5	104	95	7	145	87	.19	3.9	89	4		7.2			C		
06	8	173	89	8	173	88	.16	3.5	92	6		7.3	5.8	2	C		
07	10	218	91	5	109	96	.20	4.3	92	3		7.3	5.8	16	C		
08	10	213	89	5	106	96	.23	4.8	90	3		7.4	4.8	4	C		
09	14	300	72	2	43	97	.27	5.7	88	1		7.2	5.0	6	C		
10												7.4	4.3	120	C		
11												7.3			C		
12	24	496	73	14	290	84	.22	4.5	91	11		7.2			C		
13	13	287	88	12	265	88	.37	8.1	83	3		7.3	3.0	50	C		
14	8	190	91	6	143	93	.20	4.7	91	4		7.4	4.0	24	C		
15	20	427	87	10	214	88	.24	5.1	90	7		7.4	4.9	4	C		
16	16	338	87	5	105	96	.26	5.4	89	3		7.4	4.0	16	C		
17												7.4	3.5	200	C		
18												7.3			C		
19	23	504	79	15	329	82	.30	6.5	87	8		7.4			C		
20	10	210	89	6	126	92	.28	5.8	86	4		7.4	4.9	14	C		
21	23	493	81	1	21	99	.32	6.8	86	1		7.2	4.3	12	C		
22	23	495	77	3	65	94	.24	5.1	89	1		7.3	4.6	32	C		
23	12	261	89	6	131	91	.32	6.9	85	3		7.3	4.7	4	C		
24												7.3	4.3	26	C		
25												7.3			C		
26	23	480	73	24	500	74	.63	13.1	70	17		7.4			C		
27	24	526	77	7	154	90	.42	9.2	78	5		7.4	4.4	22	C		
28	23	508	77	14	309	86	.32	7.0	84	10		7.4	3.7	62	C		
29	17	374	85	4	88	94	.23	5.0	90	3		7.3	5.1	2	C		
30	24	518	77	13	281	84	.27	5.8	87	8		7.2	5.6	2	C		
31												7.4	5.5	60	C		
TL		7253			3,772			129.7							C		
ME	16	330	84	8	171	90	.28	5.9	87	5		7.4	4.3	12	C		
WA	22	481		12	266									27	C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

October, 1980 — Month
Marshall, Michigan — Municipality
Robert J. Swalwell — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	13,0,0,2,9	10	80	
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX. FUEL 14	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 $FeCl_3$	44	49	54	59
PN											
SF											
01			2520			20	596				
02			2640			20	794				
03			2520			20	397				
04			2520			30	298				
05			2400			30	298				
06			2760			10	397				
07			2760			10	794				
08			2520			10	397				
09			2400			20	397				
10			2400			10	397				
11			2400			20	199				
12			2520			20	199				
13			2760			10	397				
14			2760			10	397				
15			2880			20	397				
16			2520			10	397				
17			2400			20	993				
18			2400			20	596				
19			2400			20	397				
20			2520			20	199				
21			2520			20	596				
22			2880			30	596				
23			2520			20	596				
24			2400			20	397				
25			2760			10	199				
26			2520			20	199				
27			2760			20	397				
28			2880			20	397				
29			2760			10	596				
30			3000			20	397				
31			2640			20	397				
TL			80,640			560	13,703				
ME			2601			18	442				

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		920
Superintendent	1		184
Asst. Supt.	1		184
Shift Foreman			
Shift Operator	3		552
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL AR

WEEKDAYS 11 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary
Secondary

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To
Process Pattern

MONTH October 1980

DIGESTER AND SLUDGE DATA

OPERATOR R. J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	50	2.2	60		6.4																			
2	50	4.9	64		6.5																			
3	50	4.8	64		6.4																			
4	40	4.5	69		6.3																			
5	40	4.6	69		6.5																			
6	50	4.6	71		6.4																			
7	50	5.1	59		6.5																			
8	50	4.7	59		6.5																			
9	50	3.4	89		6.5																			
10	35	4.5	76		6.3																			
11	40	5.0	79		6.3																			
12	40	5.0	67		6.3																			
13	50	5.0	66		6.3																			
14	50	5.5	59		6.5																			
15	50	2.8	75		6.6																			
16	50	4.9	66		6.5																			
17	50	5.0	95		6.5																			
18	40	3.7	83		6.3																			
19	40	5.9	68		6.3																			
20	50	5.2	69		6.4																			
21	50	5.3	56		6.4																			
22	60	5.3	62		6.5																			
23	50	5.2	70		6.3																			
24	40	3.8	57		6.3																			
25	40	7.1	61		6.2																			
26	50	5.3	69		6.2																			
27	50	5.4	68		6.2																			
28	50	5.0	61		6.2																			
29	50	5.0	66		6.4																			
30	50	3.4	59		6.4																			
31	50	4.8	65		6.3																			
TOTAL	1465																							
MONTH. MEAN	47	4.7	68																					

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

MDPH
D-4.7

Marshall, MICHIGAN

MONTH October, 19 80 — VACUUM FILTER & INCINERATION DATA — OPERATOR R.J. Swallwell

SLUDGE TO FILTER				CHEMICALS TO FILTER				FILTER		FILTRATE						FILTER CAKE					INCINERATION			REMARKS
				CaO		FeCl3																		
Gal. X 100	Tot. Sol. %	Lbs. Dry Sol.	pH	Lbs. Dry	R	Lbs. Dry	R	Tot. Hours	Yield	Gal. X 100	pH	Sus. Solids Mg/l	Vol. Susp. Solids %	5 Day BOD Mg/l	P Mg/l	Thou. Lbs. Wet	Tot. Sol. %	Lbs. Tot. Solids X 100	Vol. Sol. %	Lbs. Vol. Solids X 100	Hrs. Opr.	Yield	Fuel BTU	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
106	4.3	3829	6.5	1888		191		8.0		76	12.3	1392	35	780		32	17.9	57	42	24				
106	4.4	3918	6.4	1888		191		8.0		76	12.4	730	38	660		33	17.4	57	51	29				
106	3.7	3294	6.4	1888		191		8.0		76	11.7	882	11	780		33	15.6	51	40	21				
106	3.9	3473	6.5	1888		191		8.0		76	12.3	772	12	1200		29	18.6	54	49	26				
106	4.6	4096	6.5	1888		191		8.0		76	12.5	832	9	900		31	19.6	61	44	27				
106	4.8	4274	6.5	1888		191		8.0		76	12.3	834	13	420		35	17.6	62	46	28				
106	4.8	4274	6.5	1888		191		8.0		76	12.4	624	9	900		34	18.0	61	50	31				
92	4.2	3740	6.5	1652		167		7.0		67	12.3	1284	8	1080		29	18.4	53	45	24				
106	2.9	2582	6.4	1888		191		8.0		76	12.3	838	11	600		25	17.7	44	48	21				
106	3.7	3294	6.4	1888		191		8.0		76	11.4	728	43	1140		29	18.1	52	48	25				
106	4.4	3918	6.5	1888		191		8.0		76	11.7	716	10	960		31	18.5	57	62	36				
106	4.8	4274	6.3	1888		191		8.0		76	11.7	910	14	1200		32	19.2	61	46	28				
106	5.2	4630	6.3	1888		191		8.0		76	11.9	824	8	1140		32	20.2	65	64	41				
106	3.3	2938	6.3	1888		191		8.0		76	12.3	804	10	900		28	17.2	48	50	24				
1470		59534		26196		2650		111		1055						443		(783)		385				
105	4.2	3895		1871		189		7.9		75		869	17	904		32	18.1	56	49	28				

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ Month , 19 _____ _____ Municipality , Michigan _____ Superintendent's Signature

ID Plant No. | Mo. | Yr. | Sampling Point Code

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*		T. COLI*
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505
SF															C	
01	12	264	89	4	88	96	.20	4.4	90	3		7.3	3.3	2	C	
02	8	174	89	4	87	95	.19	4.1	91	1		7.2	3.2	10	C	
03												7.2	3.7	2	C	
04												7.1	[illegible]		C	
05	5	104	95	7	145	87	.19	3.9	89	4		7.2			C	
06	8	173	89	8	173	88	.16	3.5	92	6		7.3	5.8	2	C	
07	10	218	91	5	109	96	.20	4.3	92	3		7.3	5.8	16	C	
08	10	213	89	5	106	96	.23	4.8	90	3		7.4	4.8	4	C	
09	14	300	72	2	43	97	.27	5.7	88	1		7.2	5.0	6	C	
10												7.4	4.3	120	C	
11												7.3			C	
12	24	496	73	14	290	84	.22	4.5	91	11		7.2			C	
13	13	287	88	12	265	88	.37	8.1	83	3		7.3	3.0	50	C	
14	8	190	91	6	143	93	.20	4.7	91	4		7.4	4.0	24	C	
15	20	427	87	10	214	88	.24	5.1	90	7		7.4	4.9	4	C	
16	16	338	87	5	105	96	.26	5.4	89	3		7.4	4.0	16	C	
17												7.4	3.5	200	C	
18												7.3			C	
19	23	504	79	15	329	82	.30	6.5	87	8		7.4			C	
20	10	210	89	6	126	92	.28	5.8	86	4		7.4	4.9	14	C	
21	23	493	81	1	21	99	.32	6.8	86	1		7.2	4.3	12	C	
22	23	495	77	3	65	94	.24	5.1	89	1		7.3	4.6	32	C	
23	12	261	89	6	131	91	.32	6.9	85	3		7.3	4.7	4	C	
24												7.3	4.3	26	C	
25												7.3			C	
26	23	480	73	24	500	74	.63	13.1	70	17		7.4			C	
27	24	526	77	7	154	90	.42	9.2	78	5		7.4	4.4	22	C	
28	23	508	77	14	309	86	.32	7.0	84	10		7.4	3.7	62	C	
29	17	374	85	4	88	94	.23	5.0	90	3		7.3	5.1	2	C	
30	24	518	77	13	281	84	.27	5.8	87	8		7.2	5.6	2	C	
31												7.4	5.5	60	C	
TL		7253			3,772			129.7							C	
ME	16	330	84	8	171	90	.28	5.9	87	5		7.4	4.3	12	C	
WA	22	481		12	266									27	C	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

November, 1980
Month

Marshall, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

ID 130029 11 80 5.00
Plant No. Mo. Yr. Sampling Point Code

DAY	WEATHER		FLOW		RAW SEWAGE QUALITY											REMARKS OR	
	TYPE	PRECIP.	TOTAL	MAX RATE	TEMP	pH	BOD-5		SS		TOTAL-P		VSS	NH_3-N			
1 2	9	14	19	24	29	34	39	44	49	54	59	64	69	74 78	80	9	14
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C		
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C		
SF															C		
01	1		2.51		55	7.6									C		
02	1		2.54		55	7.5	110	2330	68	1440	2.60	55	62		C		
03	4	.21	2.60		56	7.3	116	2515	68	1475	1.80	39	50		C		
04	3		2.58		56	7.5	118	2539	76	1635	2.00	43	70		C		
05	1		2.55		55	7.5	64	1361	86	1829	2.20	48	72		C		
06	3		2.56		55	7.4	102	2178	60	1281	2.30	49	56		C		
07	4	.08	2.52		55	7.5									C		
08	4	.03	2.45		55	7.4									C		
09	4	.04	2.48		55	7.4	116	2399	76	1572	3.00	62	70		C		
10	1		2.50		55	7.4	120	2502	88	1835	2.90	60	74		C		
11	1		2.55		54	7.4	84	1786	140	2977	2.80	60	106		C		
12	1		2.52		54	7.4	102	2144	70	1471	2.60	55	62		C		
13	4	.20	2.58		54	7.3	116	2496	60	1291	2.50	54	52		C		
14	3		2.50		54	7.3									C		
15	3		2.42		54	7.3									C		
16	1		2.45		54	7.2	142	2901	138	2820	3.70	76	102		C		
17	3		2.51		54	7.1	70	1465	64	1340	2.80	59	50		C		
18	1		2.45		54	7.4	108	2207	122	2493	4.10	84	96		C		
19	1		2.57		54	7.2	96	2058	132	2829	4.00	86	102		C		
20	4	.04	2.61		54	7.2	116	2525	64	1393	2.40	52	56		C		
21	3		2.53		54	7.5									C		
22	1		2.45		54	7.4									C		
23	4	.12	2.48		54	7.5	74	1530	90	1861	3.30	68	82		C		
24	4	.03	2.42		54	7.6	121	2644	122	2666	3.10	68	98		C		
25	1		2.58		54	7.5	66	1420	62	1334	2.25	48	44		C		
26	1		2.52		54	7.5									C		
27	5	.28	2.40		54	7.4									C		
28	5	.08	2.45		53	7.4									C		
29	5	.02	2.43		54	7.5									C		
30	1		2.43		54	7.5	74	1500	90	1824	4.90	99	84		C		
31															C		
TL		1.13	7534					40,500		35,366.		1165			C		
ME			2.51				101	2132	88	1861	2.91	61	73		C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

November, 19 80
Month

Marshall, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

1 2 ID | 3 8 130029 Plant No. | 9 10 11 Mo. | 11 12 80 Yr. | 13 15 .. Sampling Point Code

DAY	BOD-5 9 14		SS 19 24		TOTAL-P 29 34		VSS 39	NH_3-N 44	REMARKS OR OTHER PARAMETERS 49	54	59	64	69	74 78	80	9	14
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C		
PN	00310	85001	00530	85002	00665	85004	00535	00610							C		
SF															C		
01															C		
02	102	2161	98	2076	2.70	57	78								C		
03	98	2125	62	1344	2.00	43	60								C		
04	102	2195	52	1119	1.60	34	46								C		
05	52	1106	82	1744	2.00	43	64								C		
06	72	1537	48	1025	1.70	36	34								C		
07															C		
08															C		
09	78	1613	68	1406	2.00	41	52								C		
10	98	2043	76	1585	3.70	77	70								C		
11	74	1574	74	1574	2.80	60	52								C		
12	94	1976	70	1471	2.50	53	56								C		
13	90	1937	82	1764	2.60	56	58								C		
14															C		
15															C		
16	84	1716	64	1308	2.10	43	42								C		
17	36	754	32	670	2.70	57	30								C		
18	94	1921	78	1594	2.40	49	66								C		
19	56	1200	62	1329	2.45	53	52								C		
20	102	2220	64	1393	2.10	46	54								C		
21															C		
22															C		
23	38	786	36	745	1.90	39	28								C		
24	124	2709	68	1486	3.00	66	48								C		
25	62	1334	80	1721	2.70	58	56								C		
26															C		
27															C		
28															C		
29															C		
30	64	1297	66	1338	4.65	94	58								C		
31															C		
TL		32204		26,692		1005									C		
ME	80	1695	66	1405	2.64	53	53								C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

November, 19 80 (Month) — Marshall (Municipality), Michigan — Robert J. Swalwell (Superintendent's Signature)

1 2 3 8 9 10 11 12 13 15
IP | 130029 (Plant No.) | 11 (Mo.) | 80 (Yr.) | ... (Sampling Point Code)

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	8C 9	Waste Sludge	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		3.4								169			52	C	15	
02			3.4								164			52	C	15	
03			3.3	4.5	.37	2592	1908	22.0	1.18	1.3	155	.75	73	51	C	15	
04			3.3	3.6	.49	2028	1506	20.0	1.01	2.3	163	.59	73	54	C	15	
05			3.4	3.4	.48	1856	1416	18.0	1.03	3.9	165	.62	73	54	C	15	
06			3.4	3.7	.45	1916	1399	15.6	1.28	2.6	158	.59	71	54	C	15	
07			3.4	4.0	.45	2032	1400	15.0	1.35	2.8	157	.59	71	55	C	15	
08			3.5								146			57	C	15	
09			3.5								159			56	C	15	
10			3.4	4.6	.38	2211	1571	20.0	1.11	2.9	168	.66	69	56	C	15	
11			3.4	4.7	.38	2209	1546	19.0	1.16	3.2	168	.64	68	55	C	15	
12			3.4	4.4	.38	2056	1505	17.0	1.21	3.0	162	.68	72	55	C	15	
13			3.3	4.0	.39	2034	1472	18.0	1.13	3.1	167	.63	70	54	C	15	
14			3.4	4.3	.37	2117	1497	18.0	1.18	3.1	186	.60	69	52	C	15	
15			3.6								189			54	C	15	
16			3.5								188			58	C	15	
17			3.4	4.6	.39	2158	1547	17.0	1.27	3.0	183	.63	68	57	C	15	
18			3.5	3.9	.46	1825	1293	15.0	1.22	5.0	181	.57	71	54	C	15	
19			3.4	3.9	.44	1854	1339	16.0	1.16	4.1	179	.58	71	53	C	15	
20			3.3	4.2	.45	1981	1400	17.0	1.17	3.5	175	.59	69	52	C	15	
21			3.4	3.7	.50	1689	1213	14.0	1.21	5.1	179	.49	68	51	C	15	
22			3.5								175			53	C	15	
23			3.5								170			52	C	15	
24			3.3	3.9	.51	1645	1196	15.0	1.10	4.7	182	.47	72	53	C	15	
25			3.3	4.1	.46	1788	1248	16.0	1.12	4.6	184	.47	69	57	C	15	
26			3.4	4.4	.44	1842	1291	15.0	1.23	5.7	178	.50	69	55	C	15	
27			3.6								169			58	C	15	
28			3.5								170			57	C	15	
29			3.5								173			57	C	15	
30			3.5								171			56	C	15	
31															C		
TL															C	450	
ME			3.4	4.1	.43	1991	1430	17.1	1.17	3.6	171	.59	70	54	C	15	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

November, 19 80 — Month
Marshall, Michigan — Municipality
Robert J. Swalwell — Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
ID | 13.0.0.29 | 11 | 80 | ,,
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX.FUEL 14 GAS CF	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 FeCl3 LBS	44	49	54	59
PN											
SF		2									
01			2640			20	496				
02			2520			20	397				
03			2520			20	496				
04			2400			20	893				
05			2760			10	893				
06			2880			10	695				
07			2640			10	397				
08			2520			10	397				
09			2520			20	397				
10		19	2640			10	397				
11		65	2880			10	794				
12		49	2760			10	794				
13		20	2760			10	794				
14		40	2760			10	993				
15		20	2520			10	397				
16		71	2640			20	199				
17		72	2760			10	596				
18		55	2880			10	496				
19		65	2880			10	794				
20		50	2760			10	695				
21		52	2760			10	397				
22		45	2520			10	298				
23		59	2760			10	496				
24		48	2880			10	794				
25		72	2880			10	794				
26		64	2640			10	596				
27		61	2520			10	199				
28		63	2640			10	199				
29		53	2640			10	596				
30		43	2520			10	298				
31											
TL		1091	80400			360	16677				
ME		52	2680			12	556				

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		728
Superintendent	1		144
Asst. Supt.	1		144
Shift Foreman			
Shift Operator	3		440
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL AR

WEEKDAYS 11 HRS.
SATURDAYS 4 HRS.
SUNDAYS 4 HRS.
HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To _____
Process Pattern _____

MONTH November 1980

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	40	5.2	66		6.4																			
2	40	5.3	65		6.4																			
3	50	5.5	69		6.2																			
4	50	5.3	68		6.2																			
5	50	4.8	69		6.6																			
6	50	5.1	70		6.5																			
7	50	5.6	42		6.5																			
8	40	3.1	56		6.4																			
9	40	5.0	65		6.3																			
10	50	6.8	78		6.3																			
11	50	4.8	68		6.4																			
12	50	3.9	86		6.4																			
13	50	4.0	87		6.4																			
14	50	5.5	67		6.4																			
15	40	5.6	68		6.4																			
16	40	7.0	30		6.2																			
17	50	5.2	70		6.4																			
18	50	4.9	70		6.5																			
19	50	4.8	71		6.3																			
20	50	4.7	60		6.1																			
21	50	5.7	65		6.4																			
22	40	4.3	62		6.4																			
23	40	4.8	59		6.3																			
24	50	5.2	70		6.4																			
25	50	4.9	64		6.4																			
26	50	6.4	67		6.3																			
27	40	4.2	61		6.3																			
28	40	4.7	62		6.3																			
29	40	4.1	78		6.3																			
30	40	5.0	63		6.3																			
31																								
TOTAL	1380																							
PATH. MEAN	46	5.0	66																					

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

MDPH
D-4.7

Marshall, MICHIGAN

MONTH November, 1980 — VACUUM FILTER & INCINERATION DATA — OPERATOR R. J. Swalwell

SLUDGE TO FILTER				CHEMICALS TO FILTER				FILTER		FILTRATE						FILTER CAKE					INCINERATION			REMARKS
Gal. X 100	Tot. Sol. %	Lbs. Dry Sol.	pH	CaO Lbs. Dry	R	$FeCl_3$ Lbs. Dry	R	Tot. Hours	Yield	Gal. X 100	pH	Sus. Solids Mg/l	Vol. Susp. Solids %	5 Day BOD Mg/l	P Mg/l	Thou. Lbs. Wet	Tot. Sol. %	Lbs. Tot. Solids X 100	Vol. Sol. %	Lbs. Vol. Solids X 100	Hrs. Opr.	Yield	Fuel BTU	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
98	5.0	4087	6.4	1817		191		8.0		76	11.0	746	12	1380		33	18.0	59	49	29				
98	5.4	4413	6.5	1817		191		8.0		76	10.8	912	10	960		36	17.2	62	49	30				
98	4.4	3596	6.3	1817		191		8.0		76	10.4	738	10	1380		31	18.0	56	49	27				
98	3.6	2942	6.4	1817		191		8.0		76	9.6	782	44	900		26	18.1	47	45	21				
98	4.3	3923	6.3	1817		191		8.0		76	10.4	772	15	1800		33	17.4	57	51	29				
98	4.4	3596	6.3	1817		191		8.0		76	9.7	804	8	1140		30	18.3	55	49	27				
98	4.2	3432	6.3	1817		191		8.0		76	9.6	1018	10	1500		31	17.2	53	50	27				
98	4.1	3351	6.5	1817		191		8.0		76	10.1	1172	12	1680		25	20.7	52	40	21				
98	3.7	3024	6.2	1817		191		8.0		76	10.1	1058	12	780		27	18.1	49	44	22				
98	4.7	3841	6.2	1817		191		8.0		76	10.7	878	8	1800		29	19.3	56	43	24				
98	4.8	3923	6.3	1817		191		8.0		76	12.2	958	8	2040		33	17.3	57	48	27				
98	4.9	4005	6.4	1817		191		8.0		76	12.1	1158	10	1040		31	18.5	57	44	25				
1176		44133		21804		2292		96		912						365		660		309				
98	4.5	3678		1817		191		8.0		76		919	13	1367		30	18.2	55	47	26				

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____, 19 _____ Month

_____, Michigan Municipality

_____ Superintendent's Signature

1 2 ID | 3 8 Plant No. | 9 10 Mo. | 11 12 Yr. | 13 15 Sampling Point Code

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*		T. COLI*
	9	14	19	24	29	34	39	44	49	54	59	64	69	74	80	9
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505
SF															C	
01												7.4			C	
02	25	530	77	7	148	90	.32	7	88	5		7.4			C	
03	23	499	80	4	87	94	.23	5	87	2		7.3	4.4	76	C	
04	23	495	81	5	108	93	.17	4	92	3		7.2	4.4	16	C	
05	6	128	91	15	319	83	.21	4	90	11		7.2	4.5	6	C	
06	21	448	79	2	43	97	.15	3	93	1		7.1	4.8	228	C	
07												7.3	3.3	200	C	
08												7.3			C	
09	24	496	79	6	124	92	.27	6	91	4		7.3			C	
10	20	417	83	2	42	93	.23	5	92	1		7.2	4.5	158	C	
11	9	191	89	5	106	96	.30	6	89	3		7.3	5.7	200	C	
12	25	525	75	6	126	91	.28	6	89	5		7.2	5.4	108	C	
13	24	516	79	5	108	92	.28	6	89	3		7.3	4.4	160	C	
14												7.2	4.7	160	C	
15												7.3	~~6.6~~		C	
16	9	184	94	5	102	96	.23	7	96	3		7.3			C	
17	5	106	93	8	167	88	.32	7	89	6		7.2	6.6	200	C	
18	5	102	95	11	225	91	.30	6	93	9		7.3	6.1	6	C	
19	5	107	95	7	150	95	.32	7	92	6		7.1	5.1	8	C	
20	25	544	78	8	174	88	.28	6	88	5		7.3	5.4	10	C	
21												7.3	6.0	8	C	
22												7.3			C	
23	7	145	91	2	41	98	.28	6	92	1		7.3			C	
24	7	153	94	8	175	93	.29	6	91	4		7.3	5.7	4	C	
25	5	108	92	9	194	85	.25	5	90	2		7.3	5.6	6	C	
26												7.3	6.5	2	C	
27												7.3			C	
28												7.3			C	
29												7.3			C	
30	8	162	89	7	141	92	.33	7	93	6		7.4			C	
31															C	
TL		5856			2580			109							C	
ME	15	308	86	6	136	92	.27	6	91	4		7.3	5.2	32	C	
WA	20	429		8	164									154	C	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

December, 19 80
Month

Marshall
Municipality, Michigan

Robert Swalwell
Superintendant's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
ID | 1300.29 | 12 | 80 | 500
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	WEATHER		FLOW		RAW SEWAGE QUALITY											REMARKS OR	
	TYPE 9	PRECIP. 14	TOTAL 19	MAX RATE 24	TEMP 29	pH 34	BOD-5 39 44		SS 49 54		TOTAL-P 59 64		VSS 69	NH_3-N 74 78	80	9	14
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C		
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C		
SF															C		
01	4	.72	2.55		53	7.5	136	2892	72	1531	4.15	88	64		C		
02	5	.03	2.52		53	7.5	164	3447	44	925	2.40	50	40		C		
03	1		2.49		52	7.6	152	3157	118	2450	2.80	58	104		C		
04	3		2.48		52	7.5	154	3185	68	1406	2.50	52	66		C		
05	3		2.45		53	7.4									C		
06	4	.64	2.44		53	7.5									C		
07	4	.23	2.53		53	7.4	92	1941	56	1182			50		C		
08	4	.50	2.67		53	7.3	142	3162	70	1559	2.50	56	54		C		
09	3		2.69		52	7.4	146	3275	86	1929	2.05	46	56		C		
10	1		2.73		52	7.5	136	3096	44	1002	2.65	60	24		C		
11	5	.02	2.74		52	7.4	80	1828	40	914	3.00	69	36		C		
12	1		2.73		52	7.4									C		
13	5	.01	2.43		52	7.5									C		
14	1		2.62		52	7.3									C		
15	1		2.64		52	7.6	158	3479	124	2730	3.50	77	112		C		
16	1		2.72		52	6.4	74	1679	100	2269	4.05	92	96		C		
17	3		2.68		51	7.4	90	2012	92	2056	2.65	59	80		C		
18	5	.02	2.65		52	7.4	124	2741	110	2431	2.55	56	100		C		
19	1		2.65		51	7.3									C		
20	5	.01	2.55		51	7.3									C		
21	1		2.55		50	7.2									C		
22	1		2.69		50	6.8	72	1615	86	1929	2.75	62	36		C		
23	5	.23	2.63		51	6.8									C		
24	3		2.55		51	7.5									C		
25	3		2.43		50	7.5	94	1905	72	1459	2.30	47	50		C		
26	5	.02	2.55		50	7.6									C		
27	3		2.58		50	7.5									C		
28	5	.73	2.56		50	7.5	64	1366	56	1196	2.75	59	50		C		
29	5	.13	2.69		50	7.5	64	1436	78	1750	2.50	56	58		C		
30	5	.22	2.70		50	7.4	114	2567	88	1982	2.55	57	76		C		
31	5	.16	2.61		50	7.4									C		
TL		3.67	80.70					44783		30,700		1044			C		
ME			2.60				114	2489	78	1706	2.80	61	64		C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

December, 19 80
Month

Marshall, Michigan
Municipality

Robert Swalwell
Superintendent's Signature

ID 13,00,29 12 80 . .
Plant No. Mo. Yr. Sampling Point Code

DAY	BOD-5		SS		TOTAL-P		VSS	NH_3-N	REMARKS OR OTHER PARAMETERS									
	9 14		19 24		29 34		39	44	49	54	59	64	69	74 78	80	9	14	1
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C			
PN	00310	85001	00530	85002	00665	85004	00535	00610							C			
SF															C			
01	110	2340	52	1106	1.80	38	46								C			
02	160	3363	52	1093	2.05	43	32								C			
03	162	3364	92	1911	2.10	44	58								C			
04	158	3270	76	1572	2.55	53	70								C			
05															C			
06															C			
07	50	1055	38	802			30								C			
08	124	2761	66	1470	2.05	46	26								C			
09	110	2468	48	1077	2.20	49	34								C			
10	132	3005	52	1184	1.50	34	30								C			
11	96	2194	68	1554	2.40	55	50								C			
12															C			
13															C			
14															C			
15	76	1673	70	1541	2.10	46	58								C			
16	66	1497	68	1543	2.30	52	60								C			
17	66	1475	56	1252	1.90	42	48								C			
18	134	2962	56	1238	2.10	46	46								C			
19															C			
20															C			
21															C			
22	40	897	60	1346	1.50	34	36								C			
23															C			
24															C			
25	70	1419	56	1135	1.95	40	38								C			
26															C			
27															C			
28	36	769	50	1068	1.75	37	38								C			
29	60	1346	48	1077	2.05	46	34								C			
30	58	1306	80	1801	2.30	52	68								C			
31															C			
TL		37,164		33,770		797									C			
ME	95	2065	60	1321	2.04	44	45								C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

December (Month), 19 80 — Marshall (Municipality), Michigan — Robert Swalwell (Superintendent's Signature)

ID 130029 (Plant No.) 12 (Mo.) 86 (Yr.) .. (Sampling Point Code)

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	80	Waste Sludge 9	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		3.4	3.1	.57	1386	977	13.0	1.07	4.5	164	.40	69	54	C	15	
02			3.4	4.4	.57	1835	1316	15.0	1.22	4.7	176	.49	86	55	C	15	
03			3.5	4.1	.61	1803	1148	16.0	1.13	4.5	183	.50	68	55	C	15	
04			3.5	3.7	.68	1759	1212	16.0	1.10	4.6	167	.53	67	56	C	15	
05			3.5	3.6	.61	1692	1143	16.0	1.06	4.5	155	.53	64	56	C	15	
06			3.5								145			55	C	15	
07			3.4								142			55	C	15	
08			3.2	3.1	.84	1499	1045	15.0	1.00	4.8	155	.52	68	49	C	15	
09			3.2	2.3	.89	1015	1049	15.0	.68	4.8	161	.46	69	48	C	15	
10			3.2	5.2	1.00	1387	972	15.0	.92	4.5	167	.47	68	48	C	15	
11			3.1	2.9	1.02	1363	895	15.0	.91	4.7	163	.44	67	53	C	15	
12			3.2	3.0	.93	1408	988	15.0	.94	2.5	154	.46	69	53	C	15	
13			3.3								163			51	C	15	
14			3.3								163			53	C	15	
15			3.3	3.2	.77	1480	1017	19.0	.78	5.5	155	.46	63	49	C	15	
16			3.2	3.3	.69	1476	1016	18.0	.82	4.5	160	.45	68	51	C	15	
17			3.2	3.5	.72	1487	1001	19.0	.78	4.0	150	.44	66	57	C	15	
18			3.3	3.6	.66	1583	1088	20.0	.79	3.5	155	.44	67	60	C	15	
19			3.3	4.3	.61	1876	1172	22.0	.85	4.0	166	.51	65	60	C	15	
20			3.4								161			62	C	15	
21			3.4								158			60	C	15	
22			3.2	3.8	.55	1702	1184	22.0	.77	4.8	159	.51	69	52	C	15	
23			3.3	3.3	.58	1427	1097	21.0	.68	4.2	154	.53	68	51	C	15	
24			3.4								167			51	C	15	
25			3.5								168			53	C	15	
26			3.4	3.6	.53	1542	1045	20.0	.77	4.5	162	.52	66	50	C	15	
27			3.3								163			50	C	15	
28			3.4								155			47	C	15	
29			3.2	3.6	.47	1557	1079	19.0	.82	4.5	152	.46	64	54	C	15	
30			3.2	3.6	.46	1556	1067	20.0	.78	4.4	157	.51	67	52	C	15	
31			3.3	4.0	.40	1718	1188	22.0	.78	4.0	155	.49	67	57	C	15	
TL															C	465	
ME			3.3	3.6	.67	1550	1081	17.8	.89	4.4	160	.50	68	53	C	15	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ , 19____
Month

_____ , Michigan
Municipality

Robert Swalwell
Superintendent's Signature

ID [ ][ ][ ][ ][ ][ ] [ ][ ] [ ][ ] [ ][ ][ ]
Plant No. Mo. Yr. Sampling Point Code

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*		T. COLI*	REMARKS
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01	13	276	90	3	64	96	.22	5	95	2		7.2	6.5	4	C		
02	14	294	91	4	84	91	.32	7	87	3		7.3	5.7	8	C		
03	19	395	88	11	228	91	.32	7	89	8		7.4	6.2	8	C		
04	10	207	94	6	124	91	.35	7	86	4		7.4	6.4	4	C		
05												7.4	6.0	10	C		
06												7.3			C		
07	6	127	93	3	63	95				2		7.4			C		
08	8	178	94	3	67	96	.27	6	89	2		7.3	6.4	40	C		
09	10	224	93	1	22	99	.35	8	83	1		7.3	6.2	8	C		
10	7	159	95	14	319	68	.36	8	86	10		7.3	6.8	6	C		
11	10	229	88	10	229	75	.36	8	88	8		7.3	7.5	4	C		
12												7.3	6.2	70	C		
13												7.3			C		
14												7.1			C		
15	12	264	92	19	418	85	.51	11	85	16		7.4	7.0	106	C		
16	9	204	88	15	340	85	.48	11	88	14		7.3	6.6	122	C		
17	10	224	89	10	224	98	.37	8	86	9		7.6	6.1	124	C		
18	16	354	87	6	133	95	.37	8	85	4		7.3	6.0	34	C		
19												7.1	5.8	12	C		
20												7.1			C		
21												7.2			C		
22	10	224	86	12	269	86	.48	11	83	9		6.8	6.5	10	C		
23												6.7	6.2	36	C		
24												7.2			C		
25	10	203	89	7	142	90	.42	9	82	5		7.2			C		
26												7.4	5.7	2	C		
27												7.5			C		
28	13	278	80	9	192	84	.38	8	86	4		7.4			C		
29	5	112	92	3	67	96	.32	7	87	2		7.4	5.5	2	C		
30	5	113	96	18	405	80	.34	8	87	15		7.4	5.5	2	C		
31												7.4	6.0	4	C		
TL		4063			3390			137							C		
ME	10	226	90	9	188	89	.37	8	87	7		7.3	6.2	12	C		
WA	14	293		13	279									58	C		

gester Volume, ft³
imary
condary

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To
Process Pattern

TH December 1986

DIGESTER AND SLUDGE DATA

OPERATOR R. J. Swalwell

E	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 180	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
	50	4.8	69		6.3																			
	50	4.8	67		6.3																			
	50	5.6	63		6.4																			
	50	4.2	68		6.4																			
	50	4.6	67		6.5																			
	40	5.0	67		6.4																			
	40	5.0	85		6.4																			
	50	4.5	68		6.4																			
	50	4.4	75		6.5																			
	50	4.4	64		6.5																			
	46	4.7	64		6.5																			
	50	5.0	64		6.5																			
	40	5.0	59		6.5																			
	40	5.3	63		6.4																			
	40	4.7	68		6.5																			
	50	4.5	57		6.5																			
	50	5.0	61		6.7																			
	50	4.8	67		6.5																			
	50	5.3	65		6.3																			
	50	4.7	68		6.2																			
	40	5.0	65		6.1																			
	40	4.9	69		6.0																			
	50	4.2	61		6.4																			
	50	5.3	70		6.4																			
	40	5.3	67		6.4																			
	40	5.1	67		6.3																			
	50	4.4	70		6.3																			
	40	4.3	73		6.4																			
	50	4.7	70		6.4																			
	50	4.4	83		6.4																			
	40	5.1	70		6.4																			
AL	1436																							
H. N	46	4.8	68																					

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

MDPH
D-4.7

Marshall, MICHIGAN

MONTH December, 1980 — VACUUM FILTER & INCINERATION DATA — OPERATOR R. J. Swalwell

SLUDGE TO FILTER				CHEMICALS TO FILTER				FILTER		FILTRATE						FILTER CAKE					INCINERATION			REMARKS
				CaO		FeCl3																		
Gal. X 100	Tot. Sol. %	Lbs. Dry Sol.	pH	Lbs. Dry	R	Lbs. Dry	R	Tot. Hours	Yield	Gal. X 100	pH	Sus. Solids Mg/l	Vol. Susp. Solids %	5 Day BOD Mg/l	P Mg/l	Thou. Lbs. Wet	Tot. Sol. %	Lbs. Tot. Solids X 100	Vol. Sol. %	Lbs. Vol. Solids X 100	Hrs. Opr.	Yield	Fuel BTU	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
84	5.5	3886	6.4	1818		191		8.0		76	12.2	778	7	1800		31	18.1	56	51	29				
84	5.1	3599	6.5	1818		191		8.0		76	12.3	962	12	1260		30	17.9	54	48	26				
84	4.8	3387	6.5	1818		191		8.0		76	12.2	546	13	1260		30	17.5	53	48	25				
84	4.9	3457	6.5	1818		191		8.0		76	12.2	1204	10	840		30	17.4	52	51	27				
84	4.8	3387	6.5	1818		191		8.0		76	12.3	944	12	1440		31	16.8	52	45	23				
84	4.2	2964	6.5	1818		191		8.0		76	12.3	1010	9	900		28	17.2	48	47	23				
84	4.4	3105	6.5	1818		191		8.0		76	12.3	852	12	1440		28	17.4	49	47	23				
84	4.8	3387	6.5	1818		191		8.0		76	12.3	1466	6	1680		32	16.4	52	48	25				
84	4.0	2822	6.4	1818		191		8.0		76	11.0	1116	8	1860		25	18.2	46	44	20				
84	3.8	2681	6.5	1818		191		8.0		76	10.6	989	9	1380		23	19.8	46	44	20				
84	4.4	3105	6.3	1818		191		8.0		76	11.0	880	12	3300		27	18.5	50	64	32				
84	4.1	2893	6.2	1818		191		8.0		76	11.0	1020	11	1440		25	19.1	48	46	22				
84	4.4	3105	5.2	1818		191		8.0		76	10.9	872	11	1620		26	18.9	49	47	23				
84	5.5	3881	6.3	1818		191		8.0		76	12.3	1200	14	1440		27	21.2	57	42	24				
84	4.1	2893	6.2	1818		191		8.0		76	12.3	788	9	1330		24	20.0	48	45	22				
84	4.1	2893	6.2	1818		191		8.0		76	12.4	572	22	1260		24	19.4	47	38	18				
84	4.2	2964	6.2	1818		191		8.0		76	12.4	990	10	1360		23	20.5	47	44	21				
1428		54405		30906		3247		136		1292						464		854		402				
84	4.5	2677		1818		191		8.0		76		952	11	1506		27	18.5	50	47	24				

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

December , 19 80 — Month

Marshall , Michigan — Municipality

Robert Swalwell — Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
10 | 130029 | 12 | 80 | ..
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX.FUEL 14 GAS CF	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 FeCl3 LBS	44	49	54	59
PN											
SF		2									
01		42	2880			5	496				
02		69	3000			10	596				
03		80	3240			10	794				
04		60	3000			5	695				
05		41	3000			5	596				
06		27	2640			5	298				
07		25	2640			5	397				
08		30	2760			10	397				
09		64	3120			15	596				
10		79	3240			10	596				
11		81	3240			10	794				
12		74	3120			10	893				
13		46	3000			20	397				
14		69	2640			10	298				
15		77	2880			10	596				
16		113	3240			20	794				
17		79	3240			5	596				
18		84	3240			10	993				
19		120	3340			10	596				
20		109	2880			10	397				
21		86	3120			20	397				
22		91	3120			10	397				
23		93	3000			5	993				
24		89	3000			15	397				
25		108	2880			10	596				
26		79	3000			10	397				
27		72	3000			5	397				
28		69	2880			15	397				
29		67	3120			10	794				
30		82	3120			10	794				
31		63	3000			10	794				
TL		2266	93606			315	18168				
ME		73	3019			10	586				

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		848
Superintendent	1		168
Asst. Supt.	1		168
Shift Foreman			
Shift Operator	3		512
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL A

WEEKDAYS 11 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

January (Month), 19 82

Marshall (Municipality), Michigan

Robert J. Swalwell (Superintendent's Signature)

1 2 3 8 9 10 11 12 13 15
ID | 1300291 | 01 | 82 | 500
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	WEATHER TYPE 9 See Code*	WEATHER PRECIP. 14 Inches	FLOW TOTAL 19 MGD	FLOW MAX RATE 24 MGD	RAW SEWAGE QUALITY TEMP 29 °F	pH 34 SU	BOD-5 39 44 mg/l	BOD-5 LBS.	SS 49 54 mg/l	SS LBS.	TOTAL-P 59 64 mg/l	TOTAL-P LBS.	VSS 69 mg/l	NH_3-N 74 78 mg/l	80 C	REMARKS 9 14
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C	
SF															C	
01	1		2.24		50	7.5									C	
02	4	.20	2.34		50	7.4									C	
03	4	.49	2.45		50	7.4	82	1675	104	2126	2.70	55	82		C	
04	5	.03	2.54		50	7.4	66	1389	74	1568	2.20	47	60		C	
05	1		2.58		50	7.5	68	1463	82	1764	2.00	43	80		C	
06	1		2.55		50	7.4	84	1786	66	1404	2.40	51	46		C	
07	5	.04	2.52		50	7.5	80	1681	78	1639	2.30	48	58		C	
08	1		2.46		50	7.3									C	
09	5	.04	2.42		49	7.1									C	
10	1		2.42		49	7.0	96	1938	42	848	2.30	46	32		C	
11	5	.16	2.51		49	7.1	76	1591	54	1130	2.30	48	44		C	
12	1		2.49		49	7.4	84	1744	54	1121	2.25	48	44		C	
13	5	.01	2.48		49	7.2	82	1696	76	1572	2.30	48	64		C	
14	5	.06	2.43		49	7.3	66	1338	56	1135	2.40	49	48		C	
15	5	.03	2.40		49	7.3									C	
16	1		2.34		49	7.3									C	
17	1		2.37		49	7.2	102	2016	48	949	1.90	38	38		C	
18	1		2.43		49	7.3	72	1459	60	1216	2.25	46	48		C	
19	5	.23	2.45		49	7.2	72	1471	56	1144	2.25	46	48		C	
20	1		2.44		49	7.4	68	1384	50	1017	2.30	47	36		C	
21	4	.30	2.39		49	7.3	72	1435	64	1276	2.00	40	54		C	
22	5	.04	2.35		49	7.3									C	
23	5	.02	2.29		49	7.4									C	
24	5	.01	2.28		49	7.5	66	1255	54	1026	2.10	40	46		C	
25	1		2.33		49	7.5	64	1244	48	933	1.90	37	30		C	
26	3		2.41		49	7.4	60	1206	64	1286	4.35	87	42		C	
27	3		2.42		49	7.4	78	1574	42	848	5.10	103	36		C	
28	1		2.42		49	7.5	88	1776	66	1332	2.10	42	44		C	
29	5	.47	2.31		49	7.4									C	
30	5	.05	2.28		49	7.4									C	
31	5	.95	2.21		49	7.4	76	1401	56	1032	2.00	37	48		C	
TL		3.13	74.55					32822		26366		1046			C	
ME			2.40				76	1563	62	1255	2.44	50	49		C	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

January, 19 82 — Month

Marshall, Michigan — Municipality

Robert J. Swabell — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130629	01	82	
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY	BOD-5		SS		TOTAL-P		VSS	NH_3-N	REMARKS OR OTHER PARAMETERS								
	9	14	19	24	29	34	39	44	49	54	59	64	69	74 78	80	9	14
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C		
PN	00310	85001	00530	85002	00665	85004	00535	00610							C		
SF															C		
01															C		
02															C		
03	56	1144	40	817	1.85	38	30								C		
04	46	974	36	763	1.90	40	24								C		
05	52	1119	48	1033	1.85	40	38								C		
06	56	1191	44	936	2.00	43	30								C		
07	60	1261	42	883	1.90	40	30								C		
08															C		
09															C		
10	64	1292	46	928	2.50	50	42								C		
11	44	921	50	1047	2.10	44	36								C		
12	60	1246	44	914	2.00	42	32								C		
13	56	1158	38	785	1.75	36	30								C		
14	46	932	44	892	1.85	37	36								C		
15															C		
16															C		
17	60	1185	50	988	2.00	40	38								C		
18	46	932	50	1013	2.10	43	34								C		
19	54	1103	48	980	1.75	36	42								C		
20	48	977	30	610	1.75	36	12								C		
21	52	1036	50	997	1.70	34	42								C		
22															C		
23															C		
24	42	799	38	723	1.85	35	30								C		
25	42	816	44	855	1.55	30	22								C		
26	48	965	52	1045	3.45	69	54								C		
27	20	404	42	848	4.35	88	36								C		
28	50	1009	50	1009	1.75	35	28								C		
29															C		
30															C		
31	50	922	62	1143	2.25	41	50								C		
TL		21386		19209		897									C		
ME	50	1018	45	915	2.10	43	34								C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

January (Month), 19 82 — Marshall (Municipality), Michigan — Robert J Swalwell (Superintendent's Signature)

1 2 ID | 3 8 1300299 (Plant No.) | 9 10 01 (Mo.) | 11 12 82 (Yr.) | 13 15 .. (Sampling Point Code)

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	80	Waste Sludge 9	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		3.8								171			49	C	15	
02			3.7								165			47	C	15	
03			3.5								162			44	C	15	
04			3.4	4.2	.45	1291	895	12.0	1.08	4.2	166	.38	69	49	C	15	
05			3.3	3.9	.58	1259	829	13.0	.97	4.0	167	.41	67	50	C	15	
06			3.4	4.9	.38	1448	1029	14.0	1.03	3.4	169	.43	70	51	C	15	
07			3.4	4.9	.38	1477	1056	14.0	1.06	3.5	176	.46	71	53	C	15	
08			3.5	5.2	.36	1524	1075	14.0	1.09	3.5	173	.44	71	55	C	15	
09			3.6								179			56	C	15	
10			3.6								178			55	C	15	
11			3.4	4.7	.38	1432	998	14.0	1.02	5.3	175	.46	69	49	C	15	
12			3.5	4.9	.37	1494	1038	14.0	1.07	3.2	174	.44	68	51	C	15	
13			3.5	5.0	.37	1554	1090	14.0	1.11	3.6	172	.48	69	52	C	15	
14			3.5	5.0	.35	1502	1055	15.0	1.00	4.5	172	.46	69	51	C	15	
15			3.6	4.8	.38	1424	969	14.0	1.02	5.2	172	.46	69	50	C	15	
16			3.7								182			54	C	15	
17			3.6								180			54	C	15	
18			3.5	4.5	.37	1412	967	13.0	1.09	4.2	174	.40	69	53	C	15	
19			3.5	4.5	.36	1402	976	13.0	1.08	4.7	172	.47	69	50	C	15	
20			3.5	4.7	.37	1384	974	13.0	1.06	4.5	170	.43	70	50	C	15	
21			3.6	4.9	.34	1433	1014	13.0	1.10	4.5	175	.40	70	56	C	15	
22			3.7	5.1	.37	1466	921	13.0	1.13	5.1	167	.41	70	56	C	15	
23			3.8								171			56	C	15	
24			3.8								174			57	C	15	
25			3.7	4.8	.32	1388	986	13.0	1.07	4.5	172	.42	70	54	C	15	
26			3.6	4.8	.31	1441	1012	13.0	1.11	4.2	175	.44	70	53	C	15	
27			3.6	5.0	.29	1461	1023	13.0	1.12	4.2	164	.44	69	52	C	15	
28			3.6	5.0	.28	1462	1038	14.0	1.04	4.0	155	.44	70	55	C	15	
29			3.7	5.3	.26	1510	1066	13.0	1.16	4.1	149	.44	65	53	C	15	
30			3.8								153			53	C	15	
31			3.9								155			52	C	15	
TL															C	465	
ME			3.6	4.8	.36	1438	1001	13.5	1.08	4.2	170	.44	70	52	C	15	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ Month , 19 _____ _____ Municipality , Michigan _____ Superintendent's Signature

ID _____ Plant No. _____ Mo. _____ Yr. _____ Sampling Point Code

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*		T. COLI*	REMARKS
	9 14 19			24 29 34			39 44 49			54	59	64	69	74	80	9	14 19
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01	[illegible]		[illegible]									7.4			C		
02							[illegible]					7.4			C		
03	22	450	73	14	286	87	.35	7	87	9		7.5			C		
04	22	466	67	4	85	95	.29	6	87	3		7.3	6.4	24	C		
05	22	473	68	3	65	96	.31	7	85	2		7.3	6.4	10	C		
06	22	468	74	4	85	94	.27	6	89	2		7.4	5.3	12	C		
07	22	462	73	6	126	92	.28	6	88	5		7.3	6.1	52	C		
08												7.1	5.8	20	C		
09												7.1			C		
10	23	464	79	6	121	86	.40	8	83	4		7.0			C		
11	23	481	70	10	209	81	.37	8	84	9		7.0	6.7	26	C		
12	21	436	74	12	249	87	.43	9	81	9		7.3	6.6	8	C		
13	23	476	72	12	248	84	.38	8	83	8		7.2	6.2	4	C		
14	21	426	68	17	345	70	.31	6	87	10		7.2	6.9	8	C		
15												7.1	7.3	22	C		
16												7.2			C		
17	24	474	76	12	237	75	.47	9	75	9		7.2			C		
18	22	446	69	12	243	80	.45	9	80	6		7.3	7.2	32	C		
19	22	450	69	14	286	75	.37	8	84	8		7.0	6.5	54	C		
20	22	448	68	6	122	88	.38	8	83	4		7.4	6.1	10	C		
21	23	458	68	14	297	78	.38	8	81	12		7.2	6.7	74	C		
22												7.3	6.6	26	C		
23												7.3			C		
24	23	437	65	6	114	89	.43	8	80	2		7.4			C		
25	21	408	67	15	291	69	.40	8	79	9		7.5	6.6	120	C		
26	23	462	[illegible]	19	382	70	.74	15	83	16		7.3	6.9	42	C		
27	20	404	74	9	182	79	.76	15	85	6		7.3	6.2	28	C		
28	23	464	74	9	181	86	.68	14	68	6		7.3	6.3	186	C		
29												7.3	6.2	14	C		
30												7.4			C		
31	22	405	71	11	203	80	.47	9	77	9		7.4			C		
TL		9458			4257			182							C		
ME	22	450	70	[illegible]10	203	83	.42	9	82	7		7.3	6.5	24	C		
WA	23	464		13	258									52	C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

January (Month), 19 82 — Marshall (Municipality), Michigan — Robert J. Swalwell (Superintendent's Signature)

1 2 ID | 3–8 Plant No. 130629 | 9 10 Mo. 01 | 11 12 Yr. 82 | 13–15 Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX. FUEL 14 625 CF	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 $FeCl_3$ LBS	44	49	54	59
PN											
SF		2									
01		46	2880			20	397				
02		41	2880			10	397				
03		32	2880			20	397				
04		57	3120			20	397				
05		51	3120			10	794				
06		56	3360			20	596				
07		78	3240			10	596				
08		106	3240			20	397				
09		102	3120			10	397				
10		106	3240			20	298				
11		110	3240			20	496				
12		83	3480			10	596				
13		89	3360			20	596				
14		72	3120			20	397				
15		99	3120			10	397				
16		137	3120			20	298				
17		139	3360			20	298				
18		83	3120			10	397				
19		68	3360			20	794				
20		71	3360			20	794				
21		76	3360			20	596				
22		73	3360			10	397				
23		79	3120			20	397				
24		77	3120			10	199				
25		87	3120			15	397				
26		79	3480			15	794				
27		67	3360			15	695				
28		11	3120			15	496				
29		9	3960			15	397				
30		43	2640			15	397				
31		37	2640			15	199				
TL		2264	99000			495	14693				
ME		73	3194			16	474				

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		804
Superintendent	1		160
Asst. Supt.	1		160
Shift Foreman			
Shift Operator	3		484
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL

WEEKDAYS 11 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary
Secondary

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833–5382

Supernatant To
Process Pattern

MONTH January 1982

DIGESTER AND SLUDGE DATA

OPERATOR R. J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 180	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	40	4.3	75		6.2																			
2	40	4.2	57		6.3																			
3	40	4.9	67		6.3																			
4	45	5.2	62		6.5																			
5	45	4.7	35		6.4																			
6	45	4.7	67		6.5																			
7	45	4.4	78		6.6																			
8	45	4.9	68		6.4																			
9	40	4.2	43		6.4																			
10	40	4.7	80		6.4																			
11	45	4.4	83		6.3																			
12	45	4.3	61		6.3																			
13	45	5.2	63		6.3																			
14	45	4.7	63		6.4																			
15	45	4.5	78		6.4																			
16	40	4.3	38		6.4																			
17	40	4.3	75		6.3																			
18	45	4.2	81		6.3																			
19	45	4.1	70		6.3																			
20	45	4.2	77		6.4																			
21	45	4.2	80		6.4																			
22	45	4.3	65		6.5																			
23	40	4.2	81		6.4																			
24	40	3.8	67		6.3																			
25	45	4.5	83		6.3																			
26	45	4.7	66		6.3																			
27	45	4.5	70		6.3																			
28	45	4.3	62		6.5																			
29	40	4.7	72		6.4																			
30	40	3.5	73		6.4																			
31	40	4.2	67		6.4																			
TOTAL	1335																							
ARITH. MEAN	43	4.4	68																					

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

MDPH
D-4.7

Marshall, MICHIGAN

MONTH January, 1982 — VACUUM FILTER & INCINERATION DATA — OPERATOR R. J. Swalwell

DATE	SLUDGE TO FILTER				CHEMICALS TO FILTER				FILTER		FILTRATE						FILTER CAKE					INCINERATION			REMARKS
	Gal. X 100	Tot. Sol. %	Lbs. Dry Sol.	pH	C2o Lbs. Dry	R	Fecl3 Lbs. Dry	R	Tot. Hours	Yield	Gal. X 100	pH	Sus. Solids Mg/l	Vol. Susp. Solids %	5 Day BOD Mg/l	P Mg/l	Thou. Lbs. Wet	Tot. Sol. %	Lbs. Tot. Solids X 100	Vol. Sol. %	Lbs. Vol. Solids X 100	Hrs. Opr.	Yield	Fuel BTU	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1																									
2																									
3																									
4																									
5	120	4.8	4838	6.3	1481		191		8.0		76	12.1	922	23	2400		33	19.4	64	53	34				
6	120	5.0	5040	6.3	1481		191		8.0		76	12.0	870	28	1760		34	19.4	66	54	36				
7	120	4.9	4939	6.3	1481		191		8.0		76	11.8	1050	10	1860		35	18.4	64	59	38				
8																									
9																									
10																									
11																									
12	120	4.3	4334	6.3	1481		191		8.0		76	11.9	1098	30	1860		31	18.5	57	50	29				
13	120	4.2	4234	6.3	1481		191		8.0		76	11.8	992	21	2220		30	19.3	58	52	30				
14																									
15																									
16																									
17																									
18																									
19	120	4.8	4838	6.2	1481		191		8.0		76	11.2	1078	9	2100		37	17.1	63	61	39				
20	120	4.2	4239	6.3	1481		191		8.0		76	11.7	922	14	1980		31	18.7	58	51	30				
21	120	4.2	4234	6.3	1481		191		8.0		76	12.2	864	43	1680		30	19.0	57	51	29				
22																									
23																									
24																									
25																									
26	120	5.1	5141	6.3	1481		191		8.0		76	12.1	916	18	2280		34	19.7	67	53	35				
27	120	3.8	3830	6.3	1481		191		8.0		76	12.2	504	47	1500		28	18.8	53	55	29				
28	120	6.6	6653	6.3	1481		191		8.0		76	12.0	1060	16	2460		43	18.7	80	52	42				
29																									
30																									
31																									
Total	1320		52320		16291		2101		88		836						366		687		371				
Month. Means	120	4.7	4756		1481		191		8.0		76		934	24	2009		33	18.8	62	54	34				

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

February, 19 82 — Month

Marshall, Michigan — Municipality

Robert J. Swalwell — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130029	02	82	500
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY 1 2	WEATHER TYPE 9	WEATHER PRECIP. 14	FLOW TOTAL 19	FLOW MAX RATE 24	RAW SEWAGE QUALITY TEMP 29	pH 34	BOD-5 39	BOD-5 44	SS 49	SS 54	TOTAL-P 59	TOTAL-P 64	VSS 69	NH_3-N 74 78	80	REMARKS O 9	14
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C		
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C		
SF															C		
01	1		2.24		49	7.4	70	1308	36	673	1.70	32	28		C		
02	1		2.38		49	7.4	84	1667	64	1270	2.00	40	52		C		
03	5	.11	2.34		49	7.4	76	1483	60	1171	1.85	36	40		C		
04	5		2.35		49	7.4	68	1333	36	706	2.50	49	8		C		
05	5	.14	2.25		49	7.5									C		
06	3		2.24		49	7.4									C		
07	3		2.22		49	7.4	74	1370	148	2740	2.50	46	114		C		
08	5	.14	2.30		49	7.6	96	1841	116	2225	4.10	79	76		C		
09	5	.02	2.33		49	7.3	70	1360	60	1165	2.30	45	38		C		
10	1		2.32		48	7.3	72	1393	56	1084	2.25	44	50		C		
11	1		2.34		48	7.4	88	1717	58	1131	2.25	44	54		C		
12	1		2.69		48	7.3									C		
13	1		2.23		49	7.3									C		
14	1		2.24		49	7.4									C		
15	1		2.39		49	7.3	82	1634	84	1674	2.50	50	66		C		
16	1		2.31		49	7.3	70	1349	60	1156	2.30	44	52		C		
17	1		2.34		49	7.4	68	1327	66	1288	2.50	49	54		C		
18	4+5	.38	2.32		49	7.5	74	1432	50	967	2.30	45	42		C		
19	3		2.31		49	7.3									C		
20	3		2.27		49	7.3									C		
21	3		2.29		48	7.4	74	1413	54	1031	2.10	40	46		C		
22	1		2.40		48	7.2	80	1601	60	1201	2.25	45	52		C		
23	5	.25	2.40		48	7.1	70	1401	58	1161	1.90	38	54		C		
24	5	.06	2.40		48	7.3	78	1561	44	881	1.75	35	32		C		
25	1		2.36		48	7.1	80	1575	62	1220	1.85	36	54		C		
26	1		2.32		48	7.2									C		
27	1		2.29		48	7.2									C		
28	1		2.30		48	7.2	94	1803	120	2302	2.30	44	110		C		
29															C		
30															C		
31															C		
TL		1.10	65.17					28568		25046		841			C		
ME			2.33				77	1504	68	1318	2.27	44	54		C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

February, 19 82
Month

Marshall, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

ID 130629 02 82
Plant No. Mo. Yr. Sampling Point Code

DAY	BOD-5		SS		TOTAL-P		VSS	NH_3-N	REMARKS OR OTHER PARAMETERS								
	9 14		19 24		29 34		39	44	49	54	59	64	69	74 78	80	9	14
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C		
PN	00310	85001	00530	85002	00665	85004	00535	00610							C		
SF															C		
01	50	934	30	560	1.55	29	16								C		
02	52	1032	44	873	1.70	34	36								C		
03	54	1054	52	1015	1.50	29	30								C		
04	52	1019	16	314	1.90	37	12								C		
05															C		
06															C		
07	66	1222	58	1074	2.40	44	34								C		
08	56	1074	52	997	2.50	48	20								C		
09	54	1049	60	1166	1.70	33	50								C		
10	50	967	24	464	1.60	31	22								C		
11	58	1131	44	859	1.60	31	32								C		
12															C		
13															C		
14															C		
15	46	917	40	797	1.85	37	26								C		
16	46	886	46	886	1.85	36	32								C		
17	56	1093	54	1054	1.90	37	38								C		
18	54	1045	36	697	1.85	36	32								C		
19															C		
20															C		
21	50	955	38	726	.40	8	30								C		
22	48	961	38	761	4.75	35	28								C		
23	48	961	44	881	1.55	31	32								C		
24	50	1001	38	761	1.55	31	34								C		
25	60	1181	54	1063	1.75	34	42								C		
26															C		
27															C		
28	44	844	36	691	1.70	33	28								C		
29															C		
30															C		
31															C		
TL		19.326		15639		634									C		
ME	52	1017	42	823	1.72	33	30								C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

February, 19 82 (Month)

Marshall (Municipality), Michigan

Robert J. Swalwell (Superintendent's Signature)

1 2 3 8 9 10 11 12 13 15
IP | 130029 | 02 | 82 | | |
Plant No. Mo. Yr. Sampling Point Code

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	8C 9	Waste Sludge	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		3.8	5.0	.37	1362	944	12.0	1.14	6.1	187	.41	69	51	C	15	
02			3.6	4.8	.42	1324	910	12.0	1.10	5.9	188	.42	68	47	C	15	
03			3.7	4.5	.40	1324	910	12.0	1.10	5.5	183	.42	68	48	C	15	
04			3.7	5.3	.38	1343	957	12.0	1.11	4.9	193	.43	70	55	C	15	
05			3.8	5.5	.36	1359	971	12.0	1.13	6.7	140	.36	70	61	C	15	
06			3.8								194			61	C	15	
07			3.9								188			61	C	15	
08			3.7	4.9	.39	1351	927	12.0	1.13	5.0	187	.37	68	58	C	15	
09			3.7	4.6	.36	1343	1003	12.0	1.12	4.9	191	.45	68	47	C	8	
10			3.7	5.3	.34	1525	1062	13.0	1.17	4.1	195	.49	69	46	C	8	
11			3.7	5.0	.33	1591	1117	13.0	1.22	3.9	164	.51	69	43	C	8	
12			3.2	4.8	.36	1601	1166	15.0	1.07	5.0	157	.53	69	39	C	8	
13			3.9								154			47	C	8	
14			3.8								150			46	C	8	
15			3.6								149			44	C	8	
16			3.7	5.7	.34	1686	1148	14.0	1.20	5.4	162	.42	68	47	C	8	
17			3.7	5.4	.31	1621	1097	14.0	1.16	5.1	167	.56	66	48	C	8	
18			3.7	6.1	.29	1703	1165	14.0	1.22	4.9	167	.53	67	48	C	8	
19			3.7	6.3	.28	1731	1202	14.0	1.24	5.0	165	.57	68	47	C	8	
20			3.8								161			58	C	8	
21			3.8								163			56	C	8	
22			3.6	7.7	.23	2171	1477	18.0	1.21	3.6	163	.66	67	52	C	8	
23			3.6	7.8	.22	2186	1488	20.0	1.09	3.3	163	.63	67	54	C	8	
24			3.6	7.6	.23	2134	1455	19.0	1.12	5.0	171	.65	68	54	C	8	
25			3.7	7.4	.25	2103	1406	19.0	1.11	3.5	194	.63	66	59	C	8	
26			3.7	6.7	.27	1935	1285	23.0	.84	5.0	184	.58	66	60	C	8	
27			3.8								186			68	C	8	
28			3.7								180			65	C	8	
29															C		
30															C		
31															C		
TL															C	280	
ME			3.7	5.8	.32	1652	1142	14.7	1.13	4.9	175	.51	68	52	C	10	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

Febuary (Month), 19 82

Marshall (Municipality), Michigan

Robert J. Swalwell (Superintendent's Signature)

1 2 | 3 8 | 9 10 | 11 12 | 13 15
ID | 130029 | 02 | 82 | ..
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX.FUEL 14 G25 CF	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 $FeCl_3$ LBS.	44	49	54	59
PN											
SF		3									
01		96	2880			10	397				
02		59	3120			10	695				
03		72	3120			10	893				
04		81	3000			20	596				
05		64	2880			20	397				
06		74	2880			20	397				
07		82	2880			10	397				
08		85	2880			20	794				
09		84	3120			20	396				
10		110	3120			20	794				
11		87	3000			30	596				
12		48	2760			10	397				
13		42	2640			20	397				
14		31	2520			10	397				
15		27	2520			10	397				
16		36	2760			10	397				
17		35	3000			20	794				
18		50	3000			20	794				
19		42	2880			10	596				
20		32	2640			20	397				
21		33	2520			10	298				
22		41	2760			20	496				
23		54	2880			20	596				
24		66	3120			20	794				
25		60	3000			10	397				
26		65	2880			20	397				
27		41	2880			10	298				
28		33	2760			20	596				
29											
30											
31											
TL		1630	80400			450	14790				
ME		58	2871			16	528				

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		764
Superintendent	1		152
Asst. Supt.	1		152
Shift Foreman			
Shift Operator	3		460
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL

WEEKDAYS 11 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____, 19 _____ Month

_____, Michigan Municipality

_____ Superintendent's Signature

1 2 ID | 3 8 Plant No. | 9 10 Mo. | 11 12 Yr. | 13 15 Sampling Point Code

DAY	BOD-5 19			SS 19			TOTAL-P 19			VSS 19	NH_3-N	pH 28	DO 19	F. COLI* 19		T. COLI*	REMARKS
	9	14	19	24	29	34	39	44	49	54	59	64	69	74	80	9	14 19
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01	24	448	66	5	93	86	.47	9	72	3		7.4	8.0	144	C	98	
02	20	347	76	8	159	88	.33	7	84	4		7.4	6.8	322	C		
03	21	410	72	12	234	80	.35	7	81	5		7.4	7.0	4	C		
04	21	412	69	6	118	83	.37	7	85	4		7.3	7.3	10	C		
05												7.4	8.0	10	C		
06												7.3			C		
07	25	463	66	10	185	93	.35	6	86	7		7.2			C		
08	24	460	75	14	269	88	.37	7	91	5		7.2	7.5	8	C		
09	23	447	67	21	408	65	.37	7	84	10		7.3	7.3	8	C		
10	23	445	65	7	135	88	.37	7	84	4		7.3	6.6	10	C		
11	23	458	74	13	259	77	.40	8	82	9		7.3	6.8	28	C		
12												7.2	6.7	30	C		
13												7.3			C		
14												7.4			C		
15	25	449	70	6	117	93	.25	9	90	3		7.1			C		
16	19	366	73	10	193	83	.31	6	87	3		6.9	6.3	36	C		
17	20	390	71	12	234	82	.31	6	88	7		7.3	6.3	14	C		
18	23	445	69	8	155	84	.37	7	84	5		7.3	6.3	28	C		
19												7.2	6.3	48	C		
20												7.2	[illegible]	[illegible]	C		
21	24	458	68	10	191	81	.32	6	86	6		7.2			C		
22	20	400	75	10	200	87	.27	5	86	7		7.1	6.2	40	C		
23	19	380	73	7	140	87	.27	5	85	5		7.2	5.5	24	C		
24	24	480	69	5	100	89	.27	5	85	3		6.9	6.0	14	C		
25	21	413	74	4	79	94	.18	4	91	3		7.0	6.9	28	C		
26												7.1	7.2	66	C		
27												7.1			C		
28	22	422	77	7	134	94	.23	4	90	5		7.0			C		
29															C		
30															C		
31															C		
TL		8143			3457			122							C		
ME	22	429	71	9	182	85	.32	6	85	5		7.2	6.8	24	C		
WA	24	455		13	251									30	C		

28

Digester Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To _____
Process Pattern _____

MONTH February 1982

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/ 1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	45	4.7	62		6.4																			
2	45	3.8	77		6.5																			
3	45	3.6	80		6.4																			
4	40	3.9	75		6.4																			
5	45	4.4	61		6.4																			
6	40	4.3	65		6.4																			
7	40	4.0	70		6.4																			
8	45	5.0	81		6.4																			
9	45	3.9	63		6.5																			
10	45	4.2	67		6.5																			
11	40	4.5	56		6.5																			
12	45	4.4	78		6.5																			
13	40	2.9	80		6.4																			
14	40	4.6	83		6.2																			
15	40	4.2	85		6.3																			
16	45	4.9	69		6.3																			
17	45	4.4	62		6.5																			
18	45	5.7	85		6.4																			
19	45	4.4	67		6.4																			
20	40	3.4	75		6.4																			
21	40	4.8	73		6.2																			
22	45	4.3	68		6.1																			
23	45	4.2	79		6.4																			
24	45	4.0	67		6.4																			
25	45	4.2	73		6.4																			
26	45	4.0	82		6.4																			
27	40	4.7	78		6.4																			
28	40	4.5	61		6.4																			
29																								
30																								
31																								
TOTAL	1205																							
ARITH. MEAN	43	4.3	72																					

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

MDPH
D-4.7

Marshall, MICHIGAN

MONTH Febuary, 1982 — VACUUM FILTER & INCINERATION DATA — OPERATOR R.J. Swalwell

SLUDGE TO FILTER				CHEMICALS TO FILTER				FILTER		FILTRATE						FILTER CAKE					INCINERATION			REMARKS
				C20		FeCl3																		
Gal. X 100	Tot. Sol. %	Lbs. Dry Sol.	pH	Lbs. Dry	R	Lbs. Dry	R	Tot. Hours	Yield	Gal. X 100	pH	Sus. Solids Mg/l	Vol. Susp. Solids %	5 Day BOD Mg/l	P Mg/l	Thou. Lbs. Wet	Tot. Sol. %	Lbs. Tot. Solids X 100	Vol. Sol. %	Lbs. Vol. Solids X 100	Hrs. Opr.	Yield	Fuel BTU	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
100	5.5	4620	6.3	1333		191		8		76	12.3	690	14	2040		30	19.7	59	47	28				
100	4.4	3696	6.3	1333		191		8		76	11.4	700	19	2040		26	19.3	50	52	26				
100	4.5	3780	6.3	1333		191		8		76	10.7	916	11	2160		19	27.5	52	54	28				
100	2.9	2436	6.3	1333		191		8		76	10.9	788	16	1380		19	20.0	38	48	18				
100	4.0	3360	6.5	1333		191		8		76	11.9	682	43	2280		25	19.0	48	56	27				
100	3.6	3024	6.5	1333		191		8		76	11.8	684	9	1860		22	19.6	43	53	23				
100	3.6	3024	6.2	1333		191		8		76	8.4	848	9	2280		20	21.3	43	52	22				
100	2.4	2016	6.4	1333		191		8		76	11.5	618	45	2340		16	20.6	33	45	15				
100	4.7	3948	6.4	1333		191		8		76	8.6	760	11	2400		26	20.5	53	58	31				
100	3.9	3276	6.2	1333		191		8		76	11.5	863	46	2520		23	20.4	47	49	23				
100	4.3	3612	6.3	1333		191		8		76	9.3	812	9	2100		23	21.1	49	53	26				
100	4.5	3780	6.2	1333		191		8		76	11.6	1034	24	1980		26	19.8	51	55	28				
1200		40572		15996		2292		96		912						275		566		295				
100	4.0	3381		1333		191		8		76		783	21	2115		23	26.7	47	52	25				

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

March, 19 82
Month

Marshall, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130029	03	82	500
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY 1 2	WEATHER TYPE 9	WEATHER PRECIP. 14	FLOW TOTAL 19	FLOW MAX RATE 24	RAW SEWAGE QUALITY TEMP 29	pH 34	BOD-5 39	BOD-5 44	SS 49	SS 54	TOTAL-P 59	TOTAL-P 64	VSS 69	NH_3-N 74 78	80	REMARKS O 9	14
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C		
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C		
SF															C		
01	5	.07	2.38		48	6.8	68	1350	66	1310	1.90	38	62		C		
02	5	.14	2.39		48	6.8	80	1595	44	877	1.90	38	32		C		
03	1		2.36		48	7.2	72	1417	108	2126	2.70	53	92		C		
04	5	1.04	2.33		48	6.9	72	1399	72	1399	2.20	43	52		C		
05	1		2.29		48	7.4									C		
06	1		2.23		48	7.6									C		
07	1		2.26		48	7.5	82	1546	62	1169	2.20	41	42		C		
08	5	.19	2.35		48	7.5	54	1058	60	1176	3.50	69	42		C		
09	5	.08	2.32		48	7.3	68	1316	66	1277	2.80	54	46		C		
10	4	.20	2.39		48	7.1	54	1076	48	957	2.50	50	36		C		
11	1		2.53		48	7.4	62	1308	66	1393	2.20	46	50		C		
12	4	.71	2.86		48	7.3									C		
13	1		3.23		48	7.3									C		
14	1		3.30		48	7.3	58	1596	50	1376	1.70	47	38		C		
15	4	.36	3.36		48	7.3	52	1457	44	1233	1.70	48	38		C		
16	4	.03	3.51		47	7.1	46	1347	54	1581	1.70	50	42		C		
17	3		3.56		47	7.1	52	1544	40	1188	1.85	55	30		C		
18	1		3.53		47	7.4	62	1825	46	1354	1.75	52	40		C		
19	4	.31	3.47		47	7.5									C		
20	4	.03	3.43		47	7.4									C		
21	3		3.44		48	7.5	66	1894	60	1721	1.60	46	52		C		
22	1		3.45		47	7.3	50	1439	90	2590	2.00	58	60		C		
23	1		3.49		47	7.4	36	1048	26	757	1.50	44	16		C		
24	4	.11	3.45		47	7.3	32	921	36	1036	1.50	43	34		C		
25	5	.02	3.43		47	7.3	56	1602	32	915			20		C		
26	1		3.33		47	7.3									C		
27	1		3.27		47	7.3									C		
28	1		3.28		47	7.3	48	1313	132	3611	1.55	42	96		C		
29	1		3.30		48	7.4	50	1376	58	1596			50		C		
30	4	.79	3.47		48	7.3	44	1273	40	1158	1.20	34	34		C		
31	4	.01	3.44		48	7.3	50	1434	42	1205	1.70	49	36		C		
TL		4.09	9343					32134		33005		1000			C		
ME			3.01				56	1397	58	1435	1.98	48	45		C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

March, 19 82
Month

Marshall, Michigan
Municipality

Robert L. Swalwell
Superintendent's Signature

ID 130029 03 82
Plant No. Mo. Yr. Sampling Point Code

DAY	BOD-5		SS		TOTAL-P		VSS	NH_3-N	REMARKS OR OTHER PARAMETERS								
	9 14		19 24		29 34		39	44	49	54	59	64	69	74 78	80	9	14
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C		
PN	00310	85001	00530	85002	00665	85004	00535	00610							C		
SF															C		
01	30	595	34	675	1.30	26	28								C		
02	52	1036	36	598	1.60	32	22								C		
03															C		
04	52	1010	54	1049	1.90	37	40								C		
05															C		
06															C		
07	44	829	58	1093	1.60	30	48								C		
08	46	902	64	1254	2.70	53	32								C		
09	38	735	38	735	1.60	31	26								C		
10	40	797	39	777	1.65	33	25								C		
11	50	1055	56	1182	1.90	40	46								C		
12															C		
13															C		
14	38	1046	50	1376	1.60	44	36								C		
15	40	1121	30	841	1.55	43	20								C		
16	52	1522	54	1581	1.55	45	48								C		
17	46	1366	34	1009	1.55	46	20								C		
18	46	1354	38	1119	1.60	47	28								C		
19															C		
20															C		
21	50	1434	48	1377	1.55	44	38								C		
22	30	863	40	1151	1.55	45	24								C		
23	32	931	24	699	1.30	38	12								C		
24	28	806	36	1036	1.50	43	30								C		
25	50	1430	30	858			22								C		
26															C		
27															C		
28	34	930	44	1204	1.60	44	32								C		
29	34	936	38	1046			20								C		
30	24	695	30	868	1.00	29	26								C		
31	36	1033	42	1205	1.40	40	40								C		
TL		25232		22733		790									C		
ME	39	1147	41	1033	1.60	36	30								C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

March , 19 82
Month

Marshall , Michigan
Municipality

Robert J Swalwell
Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
ID | 13.05.29 | 03 | 82 | ..
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	8C	Waste Sludge 9	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01			3.6	5.9	.29	1574	1086	14.0	1.12	6.3	175	.43	68	61	C	15	
02			3.6	4.1	.42	1077	734	10.0	1.07	6.2	181	.28	66	66	C	15	
03			3.7	5.7	.31	1463	1007	12.0	1.22	4.7	165	.38	69	66	C	15	
04			3.7	6.9	.23	1854	1307	15.0	1.24	2.4	160	.48	70	63	C	15	
05			3.8	8.7	.22	2148	1417	17.0	1.26	3.9	163	.58	68	59	C	15	
06			3.9								161			63	C	15	
07			3.8								161			62	C	15	
08			3.7	6.1	.24	1841	1259	15.0	1.23	3.5	155	.54	67	60	C	15	
09			3.7	7.6	.19	2210	1521	17.0	1.30	4.8	161	.60	68	58	C	15	
10			3.6	4.4	.32	1317	892	11.0	1.20	5.3	163	.35	68	56	C	15	
11			3.4	4.0	.26	1668	1164	12.0	1.39	4.0	177	.53	68	50	C	15	
12			3.0	5.0	.28	1934	1310	17.0	1.14	4.8	137	.57	67	45	C	15	
13			2.7								134			39	C	15	
14			2.6								138			40	C	15	
15			2.6	3.8	.34	1704	1151	14.0	1.22	5.4	156	.57	67	41	C	15	
16			2.5	4.2	.33	1923	1286	14.0	1.37	5.0	163	.64	65	39	C	15	
17			2.4	4.7	.32	1987	1312	16.0	1.24	3.8	168	.70	64	38	C	15	
18			2.4	5.1	.30	2176	1456	17.6	1.28	4.0	166	.77	66	42	C	15	
19			2.5	4.5	.34	1906	1275	15.6	1.27	6.1	163	.68	65	44	C	15	
20			2.5								160			44	C	15	
21			2.5								160			43	C	15	
22			2.5	3.1	.50	1251	829	11.0	1.14	5.8	160	.41	65	44	C	15	
23			2.5	4.4	.38	1607	1091	12.0	1.34	5.6	156	.51	66	46	C	15	
24			2.5	4.7	.33	1774	1186	15.0	1.18	2.5	157	.56	65	46	C	15	
25			2.5	5.6	.29	1922	1296	17.0	1.13	2.5	161	.63	67	45	C	15	
26			2.5	6.1	.27	2024	1378	18.0	1.12	2.8	166	.66	68	47	C	15	
27			2.6								169			49	C	15	
28			2.6								167			44	C	15	
29			2.6	5.9	.31	2017	1379	17.0	1.19	3.1	183	.64	68	50	C	15	
30			2.5	6.4	.22	2167	1473	18.0	1.20	3.8	182	.66	67	48	C	15	
31			2.5	5.3	.27	1778	1223	16.0	1.11	3.8	187	.54	68	48	C	15	
TL															C	465	
ME			3.0	5.3	3.0	1797	1219	14.8	1.22	4.4	163	.55	67	50	C	15	

Digester Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833–5382

Supernatant To _____
Process Pattern _____

MONTH March 1982

DIGESTER AND SLUDGE DATA

OPERATOR R. J. Swol well

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	45	4.3	64		6.3																			
2	45	2.8	68		6.4																			
3																								
4	50	4.0	75		6.4																			
5	40	4.4	68		6.5																			
6	40	4.0	75		6.5																			
7	40	4.5	74		6.5																			
8	45	4.9	93		6.6																			
9	45	3.7	85		6.6																			
10	45	3.6	74		6.6																			
11	45	4.8	68		6.7																			
12	45	4.9	67		6.6																			
13	40	5.0	73		6.6																			
14	40	4.7	75		6.6																			
15	45	5.7	67		6.4																			
16	45	4.6	62		6.4																			
17	45	4.8	70		6.3																			
18	45	4.7	60		6.4																			
19	50	6.6	67		6.5																			
20	40	4.1	61		6.5																			
21	40	3.0	55		6.4																			
22	45	4.4	65		6.4																			
23	45	4.6	65		6.5																			
24	45	4.8	66		6.6																			
25	45	4.6	57		6.4																			
26	45	4.3	62		6.6																			
27	40	4.2	65		6.4																			
28	40	3.8	67		6.4																			
29	45	4.0	79		6.5																			
30	45	4.2	65		6.4																			
31	45	4.0	62		6.3																			
TOTAL	1310																							
ARITH. MEAN	44	4.4	68																					

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

MDPH D-4.7

Marshall, MICHIGAN

MONTH March 1982 — VACUUM FILTER & INCINERATION DATA — OPERATOR R.J. Swalwell

DATE	SLUDGE TO FILTER				CHEMICALS TO FILTER				FILTER		FILTRATE						FILTER CAKE					INCINERATION			REMARKS
	Gal. X 100	Tot. Sol. %	Lbs. Dry Sol.	pH	CaO Lbs. Dry	CaO R	FeCl3 Lbs. Dry	FeCl3 R	Tot. Hours	Yield	Gal. X 100	pH	Sus. Solids Mg/l	Vol. Susp. Solids %	5 Day BOD Mg/l	P Mg/l	Thou. Lbs. Wet	Tot. Sol. %	Lbs. Tot. Solids X 100	Vol. Sol. %	Lbs. Vol. Solids X 100	Hrs. Opr.	Yield	Fuel BTU	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
2	109	4.2	3846	6.4	1333		191		8.0		76	10.5	734	46	2280		27	19.1	52	50	26				
9	109	5.0	4578	6.6	1333		191		8.0		76	12.3	708	15	1380		29	20.6	60	48	29				
0	109	4.0	3662	6.9	1333		191		8.0		76	12.0	572	35	1740		25	19.6	49	49	24				
1	109	3.5	3205	6.4	1333		191		8.0		76	12.3	584	16	1020		23	20.1	46	23	11				
5	109	8.5	7783	6.2	1333		191		8.0		76	12.0	906	9	1440		47	20.4	96	53	51				
7	109	4.6	4212	6.3	1333		191		8.0		76	12.0	876	8	1680		29	19.3	56	49	27				
8	109	4.3	3937	6.3	1333		191		8.0		76	10.1	686	16	1500		29	18.4	53	51	27				
4	109	4.3	3937	6.4	1333		191		8.0		76	9.9	852	10	1560		27	19.8	53	51	27				
5	109	4.5	4120	6.1	1333		191		8.0		76	11.7	742	8	1140		28	19.8	55	53	29				
6	109	4.9	4486	6.2	1333		191		8.0		76	9.2	842	9	1320		21	28.0	59	51	30				
0	109	4.2	3845	6.2	1333		191		8.0		76	12.1	798	13	1680		28	18.8	53	52	27				
1	109	4.1	3753	6.2	1333		191		8.0		76	11.9	816	12	1680		27	18.6	50	54	27				
al	1308		51,373		15996		2292		96		912						340		682		335				
ns	109	4.7	4281		1333		191		8		76		751	16	1535		28	20.2	57	49	28				

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

March (Month), 19 82 — Marshall (Municipality), Michigan — Robert J. Swalwell (Superintendent's Signature)

1 2 | 3 8 | 9 10 | 11 12 | 13 15
IP | 130029 | 03 | 82 | ..
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX. FUEL 14 GAS CF	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 $FeCl_3$ LBS	44	49	54	59
PN											
SF		2									
01		32	2760			10	397				
02		42	3120			20	794				
03		47	2880			10	397				
04		88	3000			20	397				
05		62	2640			20	397				
06		40	2640			10	397				
07		49	2760			10	596				
08		50	2880			20	298				
09		56	2880			20	596				
10		43	2880			10	695				
11		27	2760			20	794				
12		24	2880			10	199				
13		25	2640			10	397				
14		25	2640			10	397				
15		40	2880			20	596				
16		23	3120			20	596				
17		37	3240			10	794				
18		32	3000			20	794				
19		34	3000			20	397				
20		26	2760			20	298				
21		29	3000			10	397				
22		32	2880			20	496				
23		29	3120			20	993				
24		33	3120			20	596				
25		61	3000			20	496				
26		51	3000			20	496				
27		42	2880			20	397				
28		34	3000			20	397				
29		26	2880			10	397				
30		5	3000			20	794				
31		22	3000			20	794				
TL		1205	90240			510	16481				
ME		39	2911			16	532				

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		920
Superintendent	1		184
Asst. Supt.	1		184
Shift Foreman			
Shift Operator	3		552
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL A

WEEKDAYS 11 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

March (Month), 19 82 — Marshall (Municipality), Michigan — (Superintendent's Signature)

ID 13,00,29 (Plant No.) 03 (Mo.) 82 (Yr.) ... (Sampling Point Code)

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*		T. COLI*	REMAR
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01	20	397	71	8	159	82	.18	4	91	7		6.8	7.5	2	C		
02	23	458	71	6	120	86	.20	4	89	4		7.1	8.2	6	C		
03	15	295	79	12	236	89	.22	4	92	4		7.2	6.7	2	C		
04	23	447	68	19	369	74	.31	6	86	13		7.0	6.0	2	C		
05												7.4	6.5	10	C		
06												7.3			C		
07	20	377	76	14	264	77	.23	4	90	9		7.3			C		
08	13	255	76	3	59	95	.26	5	93	2		7.4	7.5	6	C		
09	12	232	82	8	155	88	.25	5	91	1		7.2	6.7	2	C		
10	11	219	80	4	80	92	.23	5	91	1		7.2	9.3	6	C		
11	9	190	85	8	169	88	.23	5	90	6		7.2	6.6	22	C		
12												7.2	6.5	12	C		
13												7.3			C		
14	11	303	81	7	193	86	.26	7	85	1		7.3			C		
15	8	284	85	2	56	95	.19	5	89	1		7.1	6.8	92	C		
16	12	351	74	13	381	76	.27	8	84	8		7.1	5.9	128	C		
17	15	445	71	14	416	68	.38	11	79	8		7.3	6.3	68	C		
18	17	500	73	14	412	70	.45	13	74	12		7.3	5.6	158	C		
19												7.5	7.1	56	C		
20												7.5			C		
21	12	344	82	15	430	75	.33	9	79	13		7.5			C		
22	6	173	88	6	173	93	.21	6	90	4		7.1	7.5	238	C		
23	11	320	69	7	204	73	.25	7	83	5		6.9	7.3	252	C		
24	9	259	72	11	317	69	.35	10	77	8		7.2	4.5	98	C		
25	14	400	75	12	343	63				9		7.2	4.7	250	C		
26												7.1	5.4	44	C		
27												7.2			C		
28	8	219	83	8	219	94	.26	7	83	5		7.1			C		
29	16	440	68	16	440	72				15		7.2	4.6	168	C		
30	13	376	70	10	289	75	.32	9	73	6		7.2	4.9	146	C		
31	21	602	58	11	316	74	.32	9	81	7		7.2	5.0	190	C		
TL		7826			5800			143							C		
ME	14	340	75	10	252	81	.27	7	85	6		7.2	6.4	31	C		
WA	20	409		12	362									152	C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

April (Month), 19 82

Marshall (Municipality), Michigan

Robert J. Swartout (Superintendent's Signature)

1 2 3 8 9 10 11 12 13 15
ID | 130029 (Plant No.) | 04 (Mo.) | 82 (Yr.) | 500 (Sampling Point Code)

DAY 1 2	WEATHER		FLOW		RAW SEWAGE QUALITY											REMARKS
	TYPE 9	PRECIP. 14	TOTAL 19	MAX 24 RATE	TEMP 29	pH 34	BOD-5 39 44		SS 49 54		TOTAL-P 59 64		VSS 69	NH_3-N 74 78	80	9 14
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C	
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C	
SF															C	
01	1		3.39		48	4.3	54	1527	42	1187	1.70	48	28		C	
02	4	.33	3.31		48	7.3									C	
03	5	.05	3.28		48	7.4									C	
04	3		3.21		48	7.4	60	1606	46	1231	1.40	37	32		C	
05	5	.37	3.31		47	7.2	62	1712	42	1159	1.50	41	30		C	
06	1		3.29		47	7.0	60	1646	20	549	1.50	41	16		C	
07	1		3.27		46	7.3	52	1418	34	927	1.65	45	14		C	
08	5	.01	3.27		46	7.4									C	
09	1		3.21		46	7.4									C	
10	5	.45	3.24		47	7.3									C	
11	1		3.24		47	7.3	52	1405	58	1567	1.70	46	34		C	
12	4	.03	3.27		47	7.0	52	1463	46	1293	1.65	46	26		C	
13	1		3.28		48	7.3	54	1522	50	1409	1.90	54	34		C	
14	1		3.26		48	7.2	66	1849	42	1177	1.60	45	30		C	
15	1		3.27		48	7.3	52	1444	50	1389	1.90	53	40		C	
16	4	.25	3.23		48	7.3									C	
17	4	.04	3.12		48	7.2									C	
18	1		3.19		48	7.2	48	1277	60	1596	1.70	45	46		C	
19	4	.14	3.23		48	7.2	46	1239	58	1562	1.65	44	34		C	
20	3		3.16		48	7.2	44	1160	34	896	1.65	43	24		C	
21	1		3.20		48	7.3	44	1174	36	961	1.60	43	30		C	
22	1		3.23		48	7.3	64	1724	36	970	2.20	59	26		C	
23	1		3.17		48	7.2									C	
24	1		2.97		48	7.2									C	
25	1		3.10		48	7.2	50	1293	42	1086	1.40	36	34		C	
26	1		3.19		48	6.4	52	1383	50	1330	2.05	55	34		C	
27	1		3.[illegible]6		48	6.4	50	1318	44	1160			40		C	
28	1		3.09		48	6.9	48	1232	26	670	1.65	43	22		C	
29	1		3.08		49	7.3	54	1387	42	1079	1.70	44	30		C	
30	3		3.03		49	7.0									C	
31															C	
TL		1.67	96.61					28783		23,198		868			C	
ME			3.22				53	1439	43	1160	16.9	46	30		C	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

April Month 19 82

Marshall Municipality, Michigan

Robert J. Swalwell Superintendent's Signature

ID 130029 Plant No. 04 Mo. 82 Yr. ... Sampling Point Code

DAY	BOD-5		SS		TOTAL-P		VSS	NH_3-N	REMARKS OR OTHER PARAMETERS									
	9 14		19 24		29 34		39	44	49	54	59	64	69	74 78	80	9	14
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C		
PN	00310	85001	00530	85002	00665	85004	00535	00610							C		
SF															C		
01	48	1357	44	1244	1.50	42	32								C		
02															C		
03															C		
04	38	1017	64	1713	1.60	43	38								C		
05	46	1270	26	718	1.15	32	22								C		
06	50	1372	22	604	1.35	37	12								C		
07	42	1145	32	873	1.35	37	6								C		
08															C		
09															C		
10															C		
11	28	757	48	1297	1.70	46	22								C		
12	34	955	38	1068	1.40	39	30								C		
13	40	1128	40	1138	1.60	45	30								C		
14	32	897	34	953	1.30	36	20								C		
15	38	1055	44	1222	1.70	47	18								C		
16															C		
17															C		
18	36	958	48	1277	1.50	40	36								C		
19	26	700	38	1033	1.15	31	34								C		
20	28	738	20	527	1.30	34	14								C		
21	34	907	32	854	1.35	36	22								C		
22	52	1401	40	1078	1.90	51	30								C		
23															C		
24															C		
25	44	1138	26	672	1.40	36	16								C		
26					1.90	51									C		
27	34	896	48	1265			36								C		
28	29	749	14	361	1.40	36	6								C		
29	30	771	30	771	1.60	41	16								C		
30															C		
31															C		
TL		19209		18658		760									C		
ME	35	960	34	933	1.48	40	22								C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

April Month 19 82

Marshall Municipality, Michigan

Robert J. Swihart Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
ID | 130029 Plant No. | 04 Mo. | 82 Yr. | ... Sampling Point Code

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	8C 9	Waste Sludge	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Cod
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		2.5	4.8	.31	1719	1180	16.0	1.07	3.1	187	.49	68	48	C	15	
02			2.6	5.1	.27	1820	1250	15.0	1.21	2.7	178	.56	68	50	C	15	
03			2.6								186			49	C	15	
04			2.7								196			50	C	15	
05			2.6	4.6	.29	1739	1171	17.0	1.05	5.2	167	.46	67	49	C	15	
06			2.6	5.2	.28	1836	1267	16.0	1.15	3.9	196	.56	68	48	C	15	
07			2.6	5.7	.29	1931	1307	19.0	1.02	2.6	198	.55	66	50	C	15	
08			2.6	6.3	.25	2131	1472	18.0	1.18	3.1	193	.54	68	53	C	15	
09			2.7								191			54	C	15	
10			2.7								189			53	C	15	
11			2.7								191			50	C	15	
12			2.6	4.6	.33	1681	1154	15.0	1.12	5.3	181	.59	68	46	C	15	
13			2.5	5.0	.30	1849	1264	12.0	1.54	3.8	188	.57	67	52	C	15	
14			2.6	6.3	.27	1993	1357	16.0	1.25	3.6	186	.59	67	60	C	15	
15			2.6	4.7	.33	1549	1064	13.0	1.19	4.4	180	.46	68	54	C	15	
16			2.7	5.6	.26	1877	1328	15.0	1.25	3.8	178	.58	70	55	C	15	
17			2.8								187			57	C	15	
18			2.7								184			53	C	15	
19			2.7	5.7	.20	2112	1457	18.0	1.17	2.5	179	.60	68	61	C	15	
20			2.7	4.3	.30	1391	952	12.0	1.16	5.8	186	.34	68	65	C	15	
21			2.7	5.2	.25	1713	1187	14.0	1.22	3.2	188	.50	68	53	C	15	
22			2.7	5.7	.24	1899	1320	16.0	1.19	3.2	186	.54	68	53	C	15	
23			2.7	6.4	.21	2095	1460	18.0	1.11	3.5	181	.59	69	59	C	15	
24			2.9								171			59	C	15	
25			2.8								178			59	C	15	
26			2.7	8.8	.19	2427	1700	22.0	1.10	3.2	180	.63	70	61	C	15	
27			2.7	7.8	.21	2275	1502	20.0	1.14	3.3	185	.55	69	63	C	15	
28			2.8	7.9	.23	1976	1355	17.0	1.16	4.9	184	.47	68	65	C	15	
29			2.8	8.2	.25	1829	1244	17.0	1.08	5.0	182	.44	68	66	C	15	
30			2.9	8.1	.26	1784	1195	15.0	1.19	4.1	180	.44	67	66	C	15	
31															C		
TL															C	450	
ME			2.7	6.0	.26	1887	1295	16.2	1.17	3.8	185	.53	68	54	C	15	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

April Month, 19 82 — Marshall Municipality, Michigan — Robert J. Sinclair Superintendent's Signature

1 2 ID | 3 8 1300.29 Plant No. | 9 10 04 Mo. | 11 12 82 Yr. | 13 15 Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX.FUEL 14 GAS CF	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 $FeCl_3$ LBS	44	49	54	59
PN											
SF		2									
01		23	2760			20	397				
02		11	2640			10	397				
03		47	2880			40	397				
04		22	3000			20	397				
05		23	3000			20	397				
06		39	3360			30	794				
07		35	3240			30	397				
08		23	3000			20	596				
09		32	2880			30	496				
10		32	2880			30	397				
11		15	2880			10	397				
12		32	3000			30	397				
13		32	3000			30	794				
14		22	3120			20	794				
15		21	2760			20	794				
16		30	2640			30	397				
17		34	2640			30	397				
18		31	2640			30	397				
19		22	2640			20	397				
20		42	2760			40	496				
21		32	3000			30	495				
22		21	2880			20	794				
23		12	2760			10	596				
24		32	2520			30	397				
25		31	2640			30	199				
26		22	2520			20	397				
27		22	2760			20	794				
28		22	2640			20	397				
29		22	2520			10	397				
30		11	2520			20	596				
31											
TL		800	84480			720	15187				
ME		27	2816			24	506				

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		844
Superintendent	1		168
Asst. Supt.	1		168
Shift Foreman			
Shift Operator	3		508
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL A

WEEKDAYS 11 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

April , 19 82
Month

Marshall , Michigan
Municipality

Superintendent's Signature

ID 1300279 04 82
Plant No. Mo. Yr. Sampling Point Code

DAY	BOD-5 20			SS 20			TOTAL-P 19			VSS 20	NH_3-N	pH 20	DO 21	F. COLI* 17		T. COLI*	REMARKS
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01	8	226	85	6	170	86	.23	7	86	3		7.2	5.2		C		
02												7.0	4.8		C		
03												7.1			C		
04	15	414	75	14	386	70	.45	12	64	3		7.1			C		
05	21	580	66	10	276	76	.37	10	75	3		7.1	7.7	202	C		
06	14	384	77	5	137	75	.42	12	72	1		7.1	5.3		C	237	
07	11	300	79	21	573	38	.37	10	78	8		7.2	4.8	112	C		
08												7.3	4.8	516	C		
09												7.3			C		
10												7.2			C		
11	21	567	60	8	216	86	.37	10	78	85		7.2			C		
12	9	253	83	13	365	72	.32	9	81	2		7.2	7.5	6	C		
13	13	366	76	10	282	80	.38	11	80	3		7.2	5.5		C		
14	16	448	76	16	448	62	.34	10	79	11		7.9	5.7	92	C		
15	9	250	83	11	305	78	.27	7	86	9		7.3	6.4	154	C		
16												7.1	5.8	80	C		
17												7.1			C		
18	8	213	83	12	319	80	.27	7	84	10		7.2			C		
19	10	269	78	20	539	66	.28	8	83	10		7.1	5.2	52	C		
20	8	290	82	5	132	85	.25	7	85	4		7.1	7.6	30	C		
21	11	294	75	7	187	81	.30	8	81	3		7.1	5.1	32	C		
22	14	377	78	3	81	92	.22	6	90	2		7.1	6.5	18	C		
23												7.3	5.8	218	C		
24												7.3			C		
25	7	181	86	4	103	90	.22	6	84	1		7.2			C		
26	8	213	85	8	213	84	.28	7	85	4		6.5	5.0	186	C		
27	10	264	80	13	343	70				9		6.5	5.7	164	C		
28	4	232	81	2	53	92	.32	8	81	1		6.8	6.9	182	C		
29	8	205	85	2	51	95	.27	7	84	1		7.4	7.0	100	C		
30												7.0	6.1	210	C		
31															C		
TL		6326			5178			162							C		
ME	12	316	79	10	259	78	.31	9	81	5		7.1	5.9	90	C		
WA	14	381		14	379									227	C		

Digester Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To _____
Process Pattern _____

MONTH April 1982

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	45	4.1	70		6.6																			
2	45	4.1	63		6.8																			
3	40	4.0	64		6.6																			
4	40	4.6	65		6.6																			
5	45	4.5	66		6.5																			
6	45	4.1	68		6.4																			
7	45	5.5	71		6.5																			
8	45	4.9	64		6.6																			
9	40	3.5	59		6.5																			
10	40	4.3	64		6.5																			
11	40	4.8	65		6.4																			
12	45	4.3	60		6.3																			
13	45	4.0	59		6.4																			
14	45	3.1	65		6.5																			
15	45	4.0	70		6.7																			
16	45	4.5	59		6.8																			
17	40	4.1	75		6.8																			
18	40	4.8	59		6.8																			
19	45	4.7	59		6.5																			
20	45	4.4	78		6.4																			
21	45	5.2	79		6.6																			
22	45	5.1	62		6.7																			
23	40	4.2	60		5.8																			
24	40	6.3	75		6.3																			
25	45	5.9	76		6.3																			
26	45	4.3	85		6.1																			
27	45	4.7	69		6.1																			
28	45	4.1	67		6.6																			
29	45	3.9	56		6.7																			
30	45	4.2	61		6.5																			
31																								
TOTAL	1305																							
ARITH. MEAN	44	4.5	66																					

MDPH
D-4.7

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

MONTH April 1982

VACUUM FILTER & INCINERATION DATA

OPERATOR R.J. Swalwell

TE	SLUDGE TO FILTER				CHEMICALS TO FILTER				FILTER		FILTRATE						FILTER CAKE					INCINERATION			REMARKS
	Gal. X 100	Tot. Sol. %	Lbs. Dry Sol.	pH	CaO Lbs. Dry	R	FeCl3 Lbs. Dry	R	Tot. Hours	Yield	Gal. X 100	pH	Sus. Solids Mg/l	Vol. Susp. Solids %	5 Day BOD Mg/l	P Mg/l	Thou. Lbs. Wet	Tot. Sol. %	Lbs. Tot. Solids X 100	Vol. Sol. %	Lbs. Vol. Solids X 100	Hrs. Opr.	Yield	Fuel BTU	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	109	5.6	5127	6.1	1433		191		8.0		76	12.1	560	43	1740		33	19.6	65	49	32				
2																									
3																									
4																									
5																									
6	109	4.9	4486	6.2	1433		191		8.0		76	11.8	962	9	1500		30	19.9	60	52	31				
7	109	5.1	4670	6.1	1433		191		8.0		76	11.4	1352	7	1560		24	26.0	62	54	34				
8	109	3.7	3388	6.2	1433		191		8.0		76	10.6					25	19.6	49	46	23				
9																									
10																									
11																									
12																									
13	109	4.7	4303	6.2	1433		191		8.6		76	11.7	708	8	1260		30	19.3	58	46	27				
14	109	4.6	4212	6.3	1433		191		8.0		76	9.1	688	24	1200		28	20.3	57	46	26				
15	109	3.6	3296	6.1	1433		191		8.0		76	8.1	978	19	600		18	25.9	47	53	25				
16																									
17																									
18																									
19																									
20																									
21	109	4.9	4486	6.4	1433		191		8.0		76	11.1	594	22	1080		30	19.8	59	52	31				
22	109	4.1	3754	6.2	1433		191		8.0		76	8.5	806	18	1680		28	18.4	52	53	27				
23	109	4.8	4395	6.0	1433		191		8.0		76	8.4	934	22	2220		30	19.7	59	53	31				
24																									
25																									
26																									
27	109	4.5	4120	6.1	1433		191		8.0		76	9.9	886	13	2100		28	20.0	56	45	25				
28																									
29																									
30	109	5.3	4853	6.1	1433		191		8.0		76	12.1	890	23	1358		30	20.7	62	43	27				
31																									
Total	1308		51,096		17196		2292		96.0		912						334		1686		339				
Means	109	4.7	4258		1433		191		8.0		76		780	17	1358		28	20.8	57	49	28				

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

May Month, 19 82

Marshall Municipality, Michigan

Robert J. Swalwell Superintendent's Signature

1 2 ID | 3 8 1,300,29 Plant No. | 9 10 05 Mo. | 11 12 82 Yr. | 13 15 500 Sampling Point Code

DAY 1 2	WEATHER		FLOW		RAW SEWAGE QUALITY											REMARKS OF
	TYPE 9	PRECIP. 14	TOTAL 19	MAX 24 RATE	TEMP 29	pH 34	BOD-5 39 44		SS 49 54		TOTAL-P 59 64		VSS 69	NH_3-N 74 78	80	9 14
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C	
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C	
SF															C	
01	1		3.04		49	7.3									C	
02	1		3.02		49	7.3	54	1360	76	1914	1.65	52	56		C	
03	1		3.11		50	7.2	50	1297	68	1764	1.95	51	50		C	
04	1		3.11		50	7.4	50	1297	50	1297	1.80	47	32		C	
05	1		3.03		50	7.2	44	1211	48	1321	1.80	50	40		C	
06	4	.02	3.06		50	7.4	50	1276	44	1123			30		C	
07	4	.32	3.01		50	7.4									C	
08	1		2.89		50	7.4									C	
09	1		2.94		50	7.4	56	1373	46	1128	1.70	43	26		C	
10	1		3.06		50	7.4	54	1351	58	1451	2.10	53	52		C	
11	1		3.04		51	7.4	52	1318	58	1471	1.90	48	50		C	
12	4	.06	3.96		51	7.4	50	1334	40	987	1.80	44	32		C	
13	1		2.94		51	7.4	42	1030	68	1667	1.70	42	46		C	
14	1		2.79		51	7.1									C	
15	4	.18	2.79		51	7.2									C	
16	4	.07	2.77		51	7.2	42	1432	80	1848	1.80	42	78		C	
17	1		2.85		52	7.1	40	951	28	665	1.70	40	20		C	
18	4	.05	2.88		52	7.2	46	1104	72	1729	1.65	39	70		C	
19	1		2.85		52	7.2	58	1379	72	1711	2.05	49	62		C	
20	4	.31	2.84		52	7.2									C	
21	4	.68	2.83		52	7.2									C	
22	4	.34	2.84		52	7.3									C	
23	1		2.85		52	7.2	52	1236	64	1520	1.80	43	40		C	
24	1		2.96		52	7.2	50	1234	54	1333	1.90	47	48		C	
25	4	.15	2.95		52	7.2	46	1132	68	1673	1.65	41	46		C	
26	4	.01	2.96		52	7.3	50	1234	54	1333	2.05	51	36		C	
27	4	.28	2.92		53	7.5	44	1072	50	1218	1.80	44	42		C	
28	1		2.97		53	7.5									C	
29	4	.15	2.80		53	7.4									C	
30	1		2.77		53	7.5									C	
31	4	2.20	3.07		54	7.4	64	1639	106	2714	1.80	46	82		C	
TL		4.82	90.84					25,160		29,868		871			C	
ME			2.93				51	1258	60	1493	1.82	46	47		C	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

May, 1982 — Month

Marshall, Michigan — Municipality

Robert J. Swalwell — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130029	05	82	
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY	BOD-5		SS		TOTAL-P		VSS	NH_3-N	REMARKS OR OTHER PARAMETERS								
	9	14	19	24	29	34	39	44	49	54	59	64	69	74 78	80	9	14
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C		
PN	00310	85001	00530	85002	00665	85004	00535	00610							C		
SF															C		
01															C		
02	38	957	24	604	1.30	33	12								C		
03	40	1037	56	1452	1.40	36	36								C		
04	36	934	28	726	1.50	39	8								C		
05	26	716	28	771	1.35	37	20								C		
06	42	1072	36	919			26								C		
07															C		
08															C		
09	34	834	20	490	1.65	40	14								C		
10	26	651	34	851	1.65	41	32								C		
11	36	913	26	659	1.35	34	18								C		
12	34	839	30	741	1.35	33	22								C		
13	60	1471	38	932	1.30	32	26								C		
14															C		
15															C		
16	44	1016	26	601	1.30	30	12								C		
17	30	713	18	428	1.30	31	10								C		
18	32	768	44	1057	1.30	31	32								C		
19	56	1331	28	665	1.50	36	18								C		
20															C		
21															C		
22															C		
23	34	808	28	666	1.35	32	10								C		
24	32	790	40	987	1.35	33	26								C		
25	40	984	40	984	1.35	33	24								C		
26	46	1136	34	839	1.90	47	18								C		
27	36	877	32	779	1.40	34	22								C		
28															C		
29															C		
30															C		
31	42	1075	54	1383	1.40	36	36								C		
TL		19022		16534		668									C		
ME	38	951	33	827	1.42	35	21								C		

DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

MAY Month, 19 82 — Marshall Municipality, Michigan — Robert J. Swalwell Superintendent's Signature

1 2 ID | 3 8 Plant No. 1300.29 | 9 10 Mo. 05 | 11 12 Yr. 82 | 13 15 Sampling Point Code ...

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	80	Waste Sludge 9	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		2.8								183			66	C	17	
02			2.9								179			65	C	17	
03			2.8	4.5	.36	1302	895	13.0	1.00	4.2	178	.32	66	65	C	17	
04			2.8	5.8	.30	1614	1127	14.0	1.15	2.7	176	.39	70	65	C	17	
05			2.9	7.0	.20	1968	1369	18.0	1.09	3.5	173	.46	69	66	C	17	
06			2.8	6.1	.26	1632	1120	15.0	1.09	3.4	199	.45	68	58	C	17	
07			2.9	7.5	.20	1959	1420	18.0	1.09	3.2	220	.50	67	60	C	17	
08			3.0								215			65	C	17	
09			2.9								219			57	C	17	
10			2.9	7.4	.25	1872	1286	20.0	.44	3.6	213	.48	68	56	C	17	
11			2.8	4.7	.31	1331	938	13.0	1.02	3.6	210	.32	70	52	C	17	
12			2.9	5.3	.30	1271	892	13.0	.98	4.5	211	.23	69	53	C	17	
13			2.9	5.1	.52	1255	580	13.0	.97	3.3	210	.31	70	52	C	17	
14			3.1	5.4	.30	1350	971	13.0	1.04	5.1	211	.35	72	55	C	17	
15			3.1								211			51	C	17	
16			3.1								214			61	C	17	
17			3.0	8.4	.26	1817	1172	18.0	1.00	5.7	210	.45	71	59	C	17	
18			3.0	6.3	.27	1586	1086	16.0	.99	3.5	209	.44	68	58	C	17	
19			3.0	7.2	.28	1721	1183	19.0	.91	4.1	210	.43	68	58	C	17	
20			3.0	6.8	.29	1623	1150	17.0	.95	4.5	212	.39	70	56	C	17	
21			3.0	6.5	.31	1530	1066	16.0	.96	4.5	216	.40	69	53	C	17	
22			3.0								215			53	C	17	
23			3.0								215			53	C	17	
24			3.0	6.1	.30	1600	1117	15.0	1.06	5.5	215	.42	69	53	C	17	
25			2.9	5.5	.31	1458	1014	14.0	1.04	4.8	210	.38	68	51	C	17	
26			2.9	5.2	.33	1414	981	13.6	1.68	4.1	208	.36	68	51	C	17	
27			3.0	5.1	.31	1459	1022	13.0	1.12	5.7	208	.36	70	48	C	17	
28			2.9	4.5	.36	1304	902	12.0	1.09	3.5	209	.38	68	46	C	17	
29			3.1								206			50	C	17	
30			3.1								208			50	C	17	
31			2.8								204			44	C	17	
TL															C	< 27	
ME			2.9	6.0	.30	1553	1064	15.2	1.03	4.2	206	.39	69	56	C	17	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

~~MAY~~ Month, 19 82 — Marshall Municipality, Michigan — Superintendent's Signature

ID 1300129 (Plant No.) 05 (Mo.) 82 (Yr.) ... (Sampling Point Code)

DAY	20 BOD-5			20 SS			19 TOTAL-P			VSS 20	NH_3-N	pH 31	DO 40	F. COLI* 17		T. COLI*	REMARKS
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01												7.2			C		
02	8	201	85	3	76	96	.27	7	84	1		7.2			C		
03	12	311	76	14	415	76	.27	7	86	14		7.2	6.8	428	C		
04	10	259	80	5	130	90	.23	6	87	3		7.4	5.2	228	C		
05	7	193	84	2	55	96	.22	6	89	1		7.2	5.6	64	C		
06	8	204	84	2	51	95				1		7.4	5.7	106	C		
07												7.4	5.2	140	C		
08												7.4			C		
09	8	196	86	2	49	96	.25	6	85	1		7.3			C		
10	8	200	85	6	150	90	.23	6	89	5		7.4	6.0	194	C		
11	5	127	90	2	51	96	.22	6	88	1		7.5	6.9	182	C		
12	6	148	88	2	49	95	.19	5	89	1		7.3	6.4	136	C		
13	6	147	85	2	49	97	.17	4	90	1		7.4	5.6	218	C		
14												7.1	6.6	420	C		
15												7.2			C		
16	12	277	81	2	46	98	.19	4	89	1		7.1			C		
17	6	143	85	3	71	89	.18	4	89	2		7.2	6.7		C		
18	6	144	87	7	168	90	.19	5	88	4		7.2	(6.1)	220	C		
19	8	190	86	10	238	86	.19	5	91	10		7.2	6.8	152	C		
20												7.2	7.1	164	C		
21												7.4	6.7	128	C		
22												7.4			C		
23	20	475	62	7	166	89	.25	6	86	2		7.3			C		
24	11	272	78	9	222	83	.27	7	86	4		7.2	6.8		C		
25	14	344	70	10	246	85	.27	7	84	5		7.2	6.3	216	C		
26	17	420	66	7	173	87	.30	7	85	2		7.4	5.5	118	C		
27	14	341	68	3	73	94	.22	5	88	2		7.6	6.5	324	C		
28												7.4	6.5		C		
29												7.4			C		
30												7.4			C		
31	17	435	73	9	230	92	.22	6	88	4		7.3			C		
TL		5009			2708			109							C		
ME	10	250	80	5	135	91	.23	6	87	3		7.3	6.3	181	C		
WA	15	370		7	176									213	C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

May , 19 82
Month

Marshall , Michigan
Municipality

Robert J. Swahill
Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
ID | 13,0,0,29 | 05 | 82 | ..
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX. FUEL 14	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 Fe Cl₃ LBS.	44	49	54	59
PN											
SF											
01			2760			20	397				
02			2520			10	298				
03			2520			20	496				
04			2640			20	596				
05			2520			20	596				
06			2880			20	596				
07			2760			30	397				
08			2640			10	496				
09			2640			40	298				
10			2760			20	397				
11			2640			30	794				
12			2880			20	596				
13			2760			20	397				
14			2640			10	298				
15			2520			30	298				
16			2640			10	199				
17			2640			20	397				
18			2880			20	794				
19			2640			30	397				
20			2760			30	496				
21			2640			30	596				
22			2760			40	397				
23			2520			20	397				
24			2760			20	397				
25			3000			20	794				
26			2760			10	596				
27			2640			30	397				
28			2760			20	397				
29			2640			20	596				
30			2520			30	397				
31			2520			30	397				
TL			83,160			700	14594				
ME			2772			22.6	470				

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		804
Superintendent	1		160
Asst. Supt.	1		160
Shift Foreman			
Shift Operator	3		484
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL A

WEEKDAYS 11 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

Digester, Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To _____
Process Pattern _____

MONTH May 1982

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produce cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	40	3.7	73		6.5																			
2	40	3.6	56		6.6																			
3	45	2.4	66		6.6																			
4	40	4.5	69		6.6																			
5	40	4.6	67		6.5																			
6	40	3.8	54		6.7																			
7	40	4.5	68		6.6																			
8	40	4.6	67		6.5																			
9	40	6.1	69		6.4																			
10	40	4.1	54		6.4																			
11	40	4.4	59		6.3																			
12	40	4.8	67		6.4																			
13	30	4.3	73		6.6																			
14	40	4.7	70		6.5																			
15	40	3.3	53		6.4																			
16	50	4.7	65		6.4																			
17	45	4.7	71		6.2																			
18	45	4.4	66		6.3																			
19	45	4.5	70		6.6																			
20	45	5.4	78		6.3																			
21	40	4.2	59		6.4																			
22	40	4.2	67		6.4																			
23	40	4.2	70		6.3																			
24	10	4.3	66		6.3																			
25	45	5.1	63		6.4																			
26	40	4.3	59		6.6																			
27	40	4.6	63		6.6																			
28	45	3.8	63		6.6																			
29	40	4.1	65		6.5																			
30	40	3.8	52		6.4																			
31	40	3.7	75		6.5																			
TOTAL	1245																							
ARITH. MEAN	40	4.3	66																					

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

MDPH
D-4.7

Marshall, MICHIGAN

MONTH May, 1982 — VACUUM FILTER & INCINERATION DATA — OPERATOR R.J. Swalwell

DATE	SLUDGE TO FILTER				CHEMICALS TO FILTER				FILTER		FILTRATE						FILTER CAKE					INCINERATION			REMARKS
	Gal. X 100	Tot. Sol. %	Lbs. Dry Sol.	pH	$C_{12}O$ Lbs. Dry	R	$FeCl_3$ Lbs. Dry	R	Tot. Hours	Yield	Gal. X 100	pH	Sus. Solids Mg/l	Vol. Susp. Solids %	5 Day BOD Mg/l	P Mg/l	Thou. Lbs. Wet	Tot. Sol. %	Lbs. Tot. Solids X 100	Vol. Sol. %	Lbs. Vol. Solids X 100	Hrs. Opr.	Yield	Fuel BTU	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1																									
2																									
3																									
4	100	4.9	4116	6.4	1778		191		8.0		76	11.2	970	12	2040		30	19.4	58	54	31				
5																									
6	100	4.4	3696	6.2	1778		191		8.0		76	11.9	1214	14	2280		29	19.1	55	48	27				
7	100	4.7	3948	6.3	1778		191		8.0		76	12.2	1062	12	2340		31	18.2	56	53	30				
8																									
9																									
10																									
11	100	5.7	4788	6.2	1778		191		8.0		76	11.8	1106	9	2100		34	19.1	65	46	30				
12	100	4.3	3612	6.1	1778		191		8.0		76	12.1	806	14	1320		27	19.7	53	52	28				
13																									
14																									
15																									
16																									
17																									
18	100	4.0	3360	6.1	1778		191		8.0		76	11.6	770	13	1200		26	19.7	51	46	24				
19																									
20																									
21																									
22																									
23																									
24																									
25	100	3.9	3276	6.1	1778		191		8.0		76	11.6	844	12	2640		30	16.9	51	49	25				
26	100	3.8	3192	6.2	1778		191		8.0		76	11.7	1030	14	2940		32	15.5	50	51	25				
27																									
28	100	3.1	2604	6.1	1778		191		8.0		76	11.9	1464	9	1920		28	15.9	45	44	20				
29																									
30																									
31																									
Total	900		32592		16002		1719		72		684						267		484		240				
Avg. Mons	100	4.3	3621		1778		191		8.0		76		1085	12	2087		30	18.2	54	49	27				

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

June (Month), 19 82 — Marshall (Municipality), Michigan — Robert J. Swalwell (Superintendent's Signature)

1 2 IP | 3 8 1300239 (Plant No.) | 9 10 06 (Mo.) | 11 12 82 (Yr.) | 13 15 500 (Sampling Point Code)

DAY 1 2	WEATHER TYPE 9	PRECIP. 14	FLOW TOTAL 19	MAX RATE 24	RAW SEWAGE QUALITY TEMP 29	pH 34	BOD-5 39 44		SS 49 54		TOTAL-P 59 64		VSS 69	NH_3-N 74 78	80	REMARKS OF 9	14
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C		
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C		
SF															C		
01	3		3.24		53	6.8	50	1351	72	1946	1.60	43	60		C		
02	4	.08	3.17		53	7.2	56	1481	40	1058	1.50	40	28		C		
03	4	.14	3.09		53	7.1	64	1649	48	1237	1.80	46	22		C		
04	3		3.05		53	7.1									C		
05	1		2.94		53	7.1									C		
06	1		2.94		53	7.2	62	1520	62	1520	1.20	29	50		C		
07	4	.02	3.04		53	7.2	44	1116	50	1268	1.80	46	40		C		
08	1		3.03		53	7.3	50	1264	42	1061	1.90	48	32		C		
09	4	.46	2.99		53	7.3	66	1646	66	1646	2.10	52	48		C		
10	1		2.99		53	7.3	64	1596	60	1496	2.05	51	38		C		
11	1		3.00		53	7.3									C		
12	1		2.84		53	7.4									C		
13	1		2.77		54	7.3	60	1386	120	2772	1.80	42	80		C		
14	4	.02	2.86		54	7.2	60	1431	64	1527	2.05	49	54		C		
15	4	.25	2.89		54	7.4	42	1012	58	1398	1.80	43	52		C		
16	3		2.83		54	7.4	42	991	50	1180	1.95	46	40		C		
17	1		2.87		54	7.4	46	1101	64	1532	1.90	45	50		C		
18	4	.69	2.86		54	7.4									C		
19	1		2.87		54	7.3									C		
20	4	.57	2.80		54	7.2	60	1401	64	1495	1.95	45	40		C		
21	4	.05	2.92		54	7.5	48	1169	54	1315	1.90	46	42		C		
22	1		2.88		54	7.2	56	1345	70	1681	2.05	49	56		C		
23	1		2.82		54	7.4	30	706	40	941	1.90	45	26		C		
24	1		2.84		54	7.3	76	1800	48	1137	2.05	49	30		C		
25	4	.05	2.90		54	7.4									C		
26	3		2.68		54	7.3									C		
27	1		2.68		55	7.3	68	1520	52	1162	1.70	38	36		C		
28	4	.08	2.86		55	7.4	82	1956	76	1812	1.90	45	48		C		
29	4	.02	2.85		54	7.4	78	1854	50	1188	1.90	45	40		C		
30	1		2.83		54	7.3	72	1699	38	897			36		C		
31															C		
TL		2.43	87.23					30994		31269		942			C		
ME			2.91				58	1409	59	1421	1.85	45	43		C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

June, 19 82
Month

Marshall, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130029	06	82	..
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY	BOD-5		SS		TOTAL-P		VSS	NH_3-N	REMARKS OR OTHER PARAMETERS								
	9	14	19	24	29	34	39	44	49	54	59	64	69	74 78	80	9	14
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C		
PN	00310	85001	00530	85002	00665	85004	00535	00610							C		
SF															C		
01	38	1027	50	1351	1.20	32	30								C		
02	54	1429	78	2062	1.20	32	62								C		
03	54	1392	40	1030	1.35	35	24								C		
04															C		
05															C		
06	42	1030	62	1520	1.15	28	50								C		
07	18	456	36	913	1.35	34	30								C		
08	42	1061	30	758	1.40	35	26								C		
09	56	1396	50	1247	1.65	41	38								C		
10	52	1297	58	1446	1.60	40	44								C		
11															C		
12															C		
13	42	970	40	924	1.40	32	26								C		
14	30	716	38	906	1.60	38	36								C		
15	32	771	36	868	1.40	34	34								C		
16	40	944	32	755	1.35	32	24								C		
17	30	718	44	1053	1.40	34	40								C		
18															C		
19															C		
20	46	1074	46	1074	1.35	32	20								C		
21	32	779	40	974	1.60	39	24								C		
22	34	817	50	1201	1.60	38	32								C		
23	18	423	42	988	1.40	33	24								C		
24	60	1421	38	900	1.80	42	16								C		
25															C		
26															C		
27	50	1118	50	1118	1.40	31	32								C		
28	64	1527	52	1240	1.50	36	26								C		
29	64	1521	42	998	1.60	38	36								C		
30	60	1416	52	1227			46								C		
31															C		
TL		23303		24553		736									C		
ME	44	1059	46	1116	1.44	35	33								C		

DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

June, 1982 (Month) — Marshall (Municipality), Michigan — Robert J. Swalwell (Superintendent's Signature)

1 2 3 8 9 10 11 12 13 15
ID | 130029 (Plant No.) | 06 (Mo.) | 82 (Yr.) | ... (Sampling Point Code)

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	80	Waste Sludge 9	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		2.7	4.3	.32	1356	1066	13.0	1.26	4.6	213	.42	68	46	C	15	
02			2.7	3.6	.35	1497	1039	12.0	1.25	4.3	211	.39	68	47	C	15	
03			2.8	3.7	.38	1481	1033	11.0	1.35	4.6	216	.41	69	49	C	15	
04			2.8	3.7	.38	1460	1021	10.0	1.46	4.5	213	.42	69	51	C	15	
05			2.9								178			50	C	14	
06			2.9								183			50	C		
07			2.8	3.7	.33	1557	1109	11.6	1.42	4.4	182	.43	70	48	C	22	
08			2.9	3.5	.44	1491	832	12.0	1.24	3.1	182	.43	79	47	C	34	
09			2.9	3.2	.40	1330	953	10.0	1.33	4.0	181	.37	71	48	C	27	
10			2.9	3.0	.41	1288	913	10.0	1.29	3.5	187	.40	70	47	C	20	
11			2.9	3.4	.37	1435	1023	11.0	1.30	3.3	185	.44	71	48	C	15	
12			3.0								187			53	C	8	
13			3.1								184			54	C	8	
14			3.0	4.5	.28	1616	1132	16.0	1.01	4.0	181	.43	69	50	C	22	
15			3.0	5.0	.32	1657	1176	12.0	1.38	3.5	185	.40	70	51	C	46	
16			3.0	4.7	.31	1527	1069	11.0	1.39	3.8	191	.37	69	52	C	64	
17			3.0	5.4	.24	1870	1296	13.0	1.44	2.6	186	.41	69	51	C	7	
18			3.0	5.2	.26	1790	1200	12.0	1.49	2.8	183	.41	70	52	C	17	
19			3.1								189			54	C	13	
20			3.1								186			50	C		
21			3.0	4.8	.27	1566	1098	11.0	1.42	4.4	187	.41	69	48	C		
22			3.0	5.7	.21	1904	1341	14.0	1.36	3.1	187	.56	70	48	C		
23			3.0	4.9	.23	1602	1126	11.0	1.46	4.3	189	.43	69	49	C	25	
24			3.0	3.8	.32	1300	920	9.0	1.44	4.3	184	.37	70	49	C	30	
25			3.1	4.0	.29	1394	990	10.0	1.40	3.5	183	.35	70	53	C	15	
26			3.2								186			56	C	12	
27			3.2								179			54	C	12	
28			3.0	4.2	.32	1527	1057	12.0	1.27	3.4	196	.41	69	55	C	17	
29			3.0	4.2	.34	1531	1060	12.0	1.28	3.3	202	.39	69	53	C	22	
30			3.0	3.9	.40	1454	967	11.0	1.32	2.8	207	.35	65	53	C	16	
31															C		
TL															C	576	
ME			3.0	4.2	.33	1537	1065	11.0	1.34	3.7	190	.41	70	51	C	22	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

June (Month), 1982 — Marshall (Municipality), Michigan — Superintendent's Signature

1 2 | 3 ... 8 | 9 10 | 11 12 | 13 15
ID | 13.06.29 | 06 | 82 | ..
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX.FUEL 14	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 $FeCl_3$ LBS	44	49	54	59
PN											
SF											
01			2640			30	596				
02			2880			30	596	F			
03			2880			40	993	F			
04			2880			10	596	F			
05			2400			20	397				
06			2520			20	199				
07			2640			10	596				
08			2760			20	596	F			
09			2760			30	397	F			
10			2760			30	794	F			
11			2640			20	993	F			
12			2400			30	397				
13			2520			20	397				
14			2520			20	298				
15			2760			20	695	F			
16			2760			40	596	F			
17			2640			20	596	F			
18			2520			20	397				
19			2400			20	199				
20			2640			30	298				
21			2520			30	397				
22			2640			20	496	F			
23			2640			20	396				
24			2640			20	397	F			
25			2400			10	199				
26			2520			30	397				
27			2400			20	298				
28			2640			20	496				
29			2760			40	794	F			
30			2760			30	794	F			
31											
TL			78840			920	15291				
ME			2628			24	510				

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		880
Superintendent	1		176
Asst. Supt.	1		176
Shift Foreman			
Shift Operator	3		528
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL

WEEKDAYS 11 HRS.
SATURDAYS 4 HRS.
SUNDAYS 4 HRS.
HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To _____
Process Pattern _____

MONTH June 1982

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	45	4.5	62		6.4																			
2	45	4.5	56		6.5																			
3	45	4.6	63		6.4																			
4	45	4.9	62		6.6																			
5	40	4.2	58		6.5																			
6	40	3.8	60		6.5																			
7	40	4.1	56		6.4																			
8	45	4.3	57		6.4																			
9	45	3.8	67		6.7																			
10	45	4.2	58		6.5																			
11	45	4.9	60		6.4																			
12	40	4.2	59		6.4																			
13	40	5.0	61		6.5																			
14	45	5.6	66		6.3																			
15	45	4.7	66		6.3																			
16	45	4.7	62		6.5																			
17	45	5.3	70		6.5																			
18	45	4.9	62		6.6																			
19	40	2.2	26		6.5																			
20	40	4.6	63		6.4																			
21	45	4.5	61		6.6																			
22	40	2.4	60		6.4																			
23	45	5.1	58		6.5																			
24	45	4.3	58		6.5																			
25	45	5.3	71		6.6																			
26	40	4.3	58		6.5																			
27	40	4.7	70		6.4																			
28	45	4.6	61		6.3																			
29	40	8.3	79		6.3																			
30	45	5.1	63		6.2																			
31																								
TOTAL	1295																							
MTH. MEAN	43	4.6	61																					

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

MDPH D-4.7

Marshall, MICHIGAN

MONTH June, 1982 — VACUUM FILTER & INCINERATION DATA — OPERATOR Robert J. Swalwell

DATE	SLUDGE TO FILTER				CHEMICALS TO FILTER				FILTER		FILTRATE						FILTER CAKE					INCINERATION			REMARKS
	Gal. X 100	Tot. Sol. %	Lbs. Dry Sol.	pH	Lbs. Dry	R	FeCl3 Lbs. Dry	R	Tot. Hours	Yield	Gal. X 100	pH	Sus. Solids Mg/l	Vol. Susp. Solids %	5 Day BOD Mg/l	P Mg/l	Thou. Lbs. Wet	Tot. Sol. %	Lbs. Tot. Solids X 100	Vol. Sol. %	Lbs. Vol. Solids X 100	Hrs. Opr.	Yield	Fuel BTU	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1																									
2	118	3.6	3568	6.1	2182		191		8.0		76	12.1	1096	26	2580		35	16.2	57	50	29				
3	118	4.0	3965	6.4	2182		191		8.0		76	12.1	1122	11	2220		37	16.6	61	49	30				
4	118	4.3	4262	6.4	2182		191		8.0		76	12.0	652	12	1800		40	16.3	65	47	31				
5																									
6																									
7																									
8	118	4.2	4163	6.3	2182		191		8.0		76	12.0	912	10	1500		37	17.0	63	51	32				
9	118	3.9	3866	6.5	2182		191		8.0		76	12.1	1124	38	2460		38	15.9	60	51	31				
10	118	4.2	4163	6.4	2182		191		8.0		76	10.7	1012	15	660		39	16.4	64	53	34				
11	118	4.2	4163	6.4	2182				8.0		76	9.6	892	20	600		35	17.9	63	49	31				
12																									
13																									
14																									
15	118	4.5	4460	6.3	2182		191		8.0		76	12.0	1144	10	1320		38	17.3	66	49	32				
16	118	4.2	4163	6.4	2182		191		8.0		76	12.1	1146	11	1140		38	16.7	63	49	31				
17	118	3.8	3767	6.5	2182		191		8.0		76	11.7	1374	28	1620		34	17.4	59	48	28				
18																									
19									—																
20																									
21																									
22	118	4.2	4163	6.6	2182		191		8.0		76	12.2	1242	7	1080		37	17.1	63	46	29				
23																									
24	118	4.0	3965	6.5	2182		191		8.0		76	12.1	1138	12	1920		36	17.2	62	50	31				
25																									
26																									
27																									
28																									
29	118	4.2	4163	6.5	2182		191		8.0		76	11.8	1278	10	2100		35	17.9	63	39	24				
30	118	3.9	3866	6.5	2182		191		8.0		76	11.9	1476	8	1980		36	17.0	61	48	29				
31																									
Total	1652		56697		30548		2674		11.2		1064						515		870		422				
Ch. Ins	118	4.1	4050		2182		191		8.0		76		1115	16	1641		37	16.9	62	49	30				

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ , 19____
Month

_____ , Michigan
Municipality

_____
Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
ID [ ] [ ] [ ] [ ]
Plant No. Mo. Yr. Sampling Point Code

DAY	22 BOD-5 9	14	19	22 SS 24	29	34	21 TOTAL-P 39	44	49	VSS 54 22	NH_3-N 59	pH 64	DO 69 22	F. COLI* 74 22	80	T. COLI* 9	REMARKS 14	19
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml		
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505		
SF															C			
01	9	243	80	6	162	92	.10	3	94	4		6.8	5.7	254	C			
02	14	370	75	3	79	93	.10	3	93	1		6.8	5.1	138	C			
03	13	335	80	4	103	92	.12	3	93	2		7.2	6.0	252	C	215		
04												7.2	5.8	246	C			
05												7.3	~~6.5~~		C			
06	8	196	87	15	368	76	.12	3	90	13		7.2			C			
07	8	203	82	2	51	96	.15	4	92	1		7.7	6.5	210	C			
08	9	227	82	3	76	93	.13	3	93	2		7.2	5.0	192	C	225		
09	22	549	67	6	150	91	.18	4	91	4		7.3	5.6	192	C			
10	9	224	86	4	100	93	.15	4	93	3		7.2	5.8	180	C			
11												7.2	6.0	414	C			
12												7.3			C			
13	9	208	85	2	46	98	.12	3	93	1		7.2			C			
14	4	95	93	6	143	91	.13	3	94	5		7.1	6.7	58	C			
15	6	145	86	5	121	91	.16	4	91	2		7.4	5.6	52	C			
16	21	496	50	2	47	96	.19	4	90	1		7.3	6.1	80	C			
17	9	215	80	2	48	97	.16	4	92	1		7.3	5.5	48	C			
18												7.3	4.5	68	C			
19												7.2			C			
20	13	304	78	3	70	95	.18	4	91	1		7.1			C			
21	9	219	81	3	73	94	.18	4	91	2		7.5	6.1	162	C			
22	11	264	80	5	120	93	.18	4	91	1		7.2	5.2	110	C			
23	7	164	77	3	71	93	.16	4	92	2		7.4	5.8	80	C			
24	11	261	86	2	47	96	.16	4	92	1		7.2	6.8	126	C			
25												7.3	6.5	146	C			
26												7.2			C			
27	15	335	78	2	45	96	.15	3	92	1		7.4			C			
28	19	453	77	6	143	92	.16	4	92	4		7.3	6.0	124	C			
29	13	309	83	5	119	90	.13	3	93	3		7.3	6.3	102	C			
30	9	212	88	1	24	97				1		7.4	6.8	96	C			
31															C			
TL		6027			2206			75							C			
ME	11	274	80	4	100	93	.15	4	92	3		7.3	5.9	130	C			
WA	13	314		6	153									225	C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

July, 1982
Month

Marshall, Michigan
Municipality

Robert L. Swalwell
Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
10 | 1300029 | 07 | 82 | 500
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	WEATHER TYPE 9	WEATHER PRECIP. 14	FLOW TOTAL 19	FLOW MAX 24 RATE	RAW SEWAGE QUALITY TEMP 29	pH 34	BOD-5 39 44		SS 49 54		TOTAL-P 59 64		VSS 69	NH_3-N 74 78	80	REMARKS 9 14
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C	
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C	
SF															C	
01	1		2.78		54	7.3	76	1762	17	394	2.30	53	16		C	
02	4	1.04	2.99		54	7.1									C	
03	4	.10	2.80		54	7.3									C	
04	1		2.74		54	7.2									C	
05	1		2.84		54	7.3	152	3600	50	1184	1.70	40	38		C	
06	4	.02	2.92		55	7.3			62	1510	1.70	41	46		C	
07	1		2.92		55	7.3	116	2825	52	1266	1.95	47	46		C	
08	1		2.77		55	7.1	82	1894	52	1201			42		C	
09	1		2.73		55	7.1									C	
10	4	.58	2.69		55	7.3									C	
11	3		2.67		55	7.1	60	1336	52	1158	1.80	40	42		C	
12	1		2.73		56	7.2	86	1958	50	1138	1.95	44	30		C	
13	4	.09	2.72		56	7.2	52	1180	48	1089	1.60	36	36		C	
14	3		2.70		55	7.4	62	1396	70	1576	2.55	57	62		C	
15	1		2.79		55	7.4	66	1536	74	1722	2.20	51	54		C	
16	4	1.20	2.82		55	7.3									C	
17	1		2.69		55	7.4									C	
18	1		2.69		55	7.3	56	1256	82	1840	1.90	43	74		C	
19	4	.57	2.86		55	7.3	54	1288	52	1240	2.20	52	40		C	
20	1		2.82		56	7.4	56	1317	54	1270	2.55	60	38		C	
21	1		2.76		56	7.4	46	1059	60	1381	1.95	45	54		C	
22	1		2.75		56	7.6	54	1238	62	1422	3.65	84	46		C	
23	1		2.75		56	7.5									C	
24	1		2.62		56	7.4									C	
25	1		2.60		56	7.5	56	1214	60	1301	2.65	57	48		C	
26	3		2.73		57	7.4	46	1047	60	1366	2.05	47	50		C	
27	4	.64	2.87		57	7.4	26	622	76	1819	2.05	49	68		C	
28	1		2.74		57	7.5	52	1188	52	1188	2.45	56	42		C	
29	1		2.77		57	7.4	54	1247	66	1525	2.90	67	62		C	
30	1		2.66		57	7.2									C	
31	1		2.60		57	7.4									C	
TL		4.24	85.57					28963		25320		969			C	
ME			2.76				66	1524	61	1333	2.34	54	49		C	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

July, 19 82 — Month

Marshall, Michigan — Municipality

Robert J. Swalwell — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
10	130029	07	82	
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY 1 2	BOD-5 9 mg/l	BOD-5 14 LBS.	SS 19 mg/l	SS 24 LBS.	TOTAL-P 29 mg/l	TOTAL-P 34 LBS.	VSS 39 mg/l	NH_3-N 44 mg/l	REMARKS OR OTHER PARAMETERS 49	54	59	64	69	74 78	80	9	14
															C		
PN	00310	85001	00530	85002	00665	85004	00535	00610							C		
SF															C		
01	58	1344	22	510	1.90	44	20								C		
02															C		
03															C		
04															C		
05	158	3742	58	1373	1.40	33	42								C		
06			60	1461	1.30	31	46								C		
07	94	2289	58	1412	1.60	39	44								C		
08	60	1386	42	970			34								C		
09															C		
10															C		
11	48	1069	50	1113	1.50	33	34								C		
12	54	1229	44	1002	1.60	36	30								C		
13	44	998	60	1361	1.30	29	54								C		
14	42	946	48	1080	1.95	44	40								C		
15	48	1117	52	1210	1.80	42	44								C		
16															C		
17															C		
18	42	943	64	1436	1.50	33	50								C		
19	48	1145	32	764	1.90	45	22								C		
20	52	1223	50	1176	1.90	45	38								C		
21	44	1013	60	1381	1.80	41	42								C		
22	52	1193	64	1468	2.85	65	52								C		
23															C		
24															C		
25	34	737	50	1084	1.60	35	34								C		
26	40	911	44	1002	1.80	41	34								C		
27	38	910	28	670	1.70	41	22								C		
28	44	1005	72	1645	1.95	46	54								C		
29	40	924	44	1016	2.45	57	36								C		
30															C		
31															C		
TL		24115		23134		780									C		
ME	55	1269	53	1218	1.88	43	41								C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

July, 1982 (Month) — Marshall, Michigan (Municipality) — Robert J. Swalwell (Superintendent's Signature)

1 2	3 8	9 10	11 12	13 15
ID	130.029	07	82	..
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX. FUEL 14	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 Fec/3 LBS	44	49	54	59
PN											
SF											
01			2760			20	596				
02			2640			20	298				
03			2640			30	298				
04			2520			30	298				
05			2640			10	397				
06			2760			10	794				
07			2880			20	397				
08			2640			20	397				
09			2520			20	596				
10			2520			20	199				
11			2520			50	596				
12			2640			20	397				
13			2760			10	596				
14			2640			20	397				
15			3000			30	397				
16			2520			20	695				
17			2520			30	397				
18			2520			30	298				
19			2640			30	397				
20			2880			40	596				
21			2880			10	596				
22			2760			40	794				
23			2640			30	397				
24			2520			30	199				
25			2520			20	199				
26			2640			30	596				
27			2760			50	794				
28			2880			30	695				
29			2760			50	695				
30			2520			20	397				
31			2520			40	199				
TL			82560			830	14597				
ME			2663			27	471				

POSITION TITLE	MANPOWER No. Full Time	No. Part Time	Total Hours
TOTAL	5		844
Superintendent	1		168
Asst. Supt.	1		168
Shift Foreman			
Shift Operator	3		508
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL A

WEEKDAYS 11 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

JULY Month, 1982

Marshall Municipality, Michigan

Robert J. Swalwell Superintendent's Signature

1 2 3 8 9 10 11 12 13 15

ID | 13,0,0,29 Plant No. | 07 Mo. | 82 Yr. | ... Sampling Point Code

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	80	Waste Sludge 9	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		3.1	4.3	.38	1591	1069	11.0	1.45	3.6	208	40	67	54	C	13	
02			3.9	4.3	.36	1728	1238	11.0	1.57	3.0	201	52	66	50	C	13	
03			3.1								203			50	C	20	
04			3.1								202			51	C	13	
05			3.0								199			49	C	13	
06			3.0	2.8	.59	1483	1014	10.0	1.48	3.6	194	41	68	49	C	23	
07			3.0	2.4	.67	1383	953	10.0	1.38	3.4	200	39	68	49	C	32	
08			3.1							3.3	202			52	C	13	
09			3.2	2.5	.60	1402	1010	10.0	1.40		199	47	65	52	C	20	
10			3.2								198			5.2	C	13	
11			3.2								202			52	C	12	
12			3.2	2.6	.56	1496	1044	11.0	1.36	4.5	200	43	69	52	C	15	
13			3.2	2.5	.62	1380	949	10.0	1.38	4.1	201	41	68	5.2	C	24	
14			3.2								202			55	C	35	
15			3.1					9.0		3.8	198			48	C	30	
16			3.0	2.8	.45	1246	984	9.0	1.38	4.0	198	35	69	50	C	32	
17			3.3								196			51	C	12	
18			3.2								198			48	C	135	
19			3.0	2.0	.65	753	572	6.0	1.26	4.3	200	25	71	51	C		
20			3.0	3.2	.45	1176	830	8.0	1.47	4.4	203	34	70	50	C		
21			3.1	4.7	.29	1650	1170	10.0	1.65	3.2	201	46	70	51	C		
22			3.1	4.6	.29	1643	1172	10.0	1.64	3.5	204	45	71	53	C	43	
23			3.1	3.8	.35	1382	988	9.0	1.54	3.7	202	38	70	51	C	20	
24			3.3								202			55	C	37	
25			3.3								197			54	C	17	
26			3.2	3.9	.35	1346	958	9.0	1.50	3.8	196	38	71	51	C	38	
27			3.0	3.5	.39	1244	896	9.0	1.38	4.0	198	32	71	53	C	28	
28			3.1	4.9	.31	1540	1097	10.0	1.54	3.4	202	43	70	53	C		
29			3.1	4.8	.33	1550	1015	10.0	1.55	3.7	202	44	71	48	C	20	
30			3.2	4.9	.33	1560	1012	10.0	1.56	5.0	202	44	70	53	C	14	
31			3.3								200			52	C	15	
TL															C	700	
ME			3.1	3.5	.44	1418	998	9.6	1.47	3.8	200	40	69	51	C	26	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

July , 19 82
Month

Marshall , Michigan
Municipality

Robert L. Swalwell
Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
ID | 1300129 | 07 | 82 | ..
Plant No. | Mo. | Yr. | Sampling Point Code

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*		T. COLI*	REMARK
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	# /100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01	13	301	33	5	116	77	.15	3	93	3		7.2	6.3	166	C		
02							.15		91			7.1	6.0	160	C		
03												7.3			C		
04												7.3			C		
05	24	518	84	3	71	94	.15	4	91	1		7.2			C		
06				2	49	97	.12	3	93	1		7.2	5.5	166	C		
07	22	536	81	7	170	87	.11	3	94	6		7.2	4.5	160	C		
08	17	393	79	2	46	96				1		7.2	6.0		C		
09												7.2	6.0	136	C		
10												7.3			C		
11	13	289	78	3	66	94	.15	3	92	2		7.2			C		
12	13	296	85	1	23	98	.13	3	93	1		7.0	6.2	142	C		
13	7	159	87	7	159	85	.16	4	90	5		7.2	5.9	286	C		
14	12	270	81	5	113	93	.16	4	94	3		7.3	5.5	360	C		
15	14	226	79	2	47	97	.18	4	92	1		7.3	5.5	256	C		
16												7.4	5.7	312	C		
17												7.3			C		
18	11	247	80	3	67	96	.15	3	92	2		7.3			C		
19	14	333	74	2	47	96	.18	4	92	1		7.4	6.8	182	C		
20	14	329	75	2	49	96	.16	4	94	1		7.4	6.0	312	C		
21	11	253	76	7	161	88	.15	3	93	6		7.3	4.4	208	C		
22	13	298	76	7	161	89	.34	8	91	5		7.5	5.4	164	C		
23												7.4	5.5	186	C		
24												7.3			C		
25	11	238	80	2	43	97	.17	4	94	1		7.3			C		
26	11	250	76	2	46	97	.22	5	89	1		7.3	5.3	162	C		
27	5	120	81	2	48	94	.23	6	89	1		7.4	5.8	160	C		
28	18	411	65	12	274	77	.20	5	92	11		7.3	5.1	162	C		
29	13	300	76	5	116	92	.32	7	89	4		7.3	[illegible]		C		
30												7.3	6.5	60	C		
31												7.3			C		
TL		5817			1870			80							C		
ME	13	306	79	4	98	97		4	97	3		7.3	5.7	183	C		
WA	14	335		5	114	[illegible]	.19							277	C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

July, 19 82 — Month

Marshall, Michigan — Municipality

Robert J. Swaland — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130029	07	82	
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY	BOD-5 19			SS 20			TOTAL-P 19			VSS 20	NH_3-N	pH	DO 20	F. COLI* 19		T. COLI*	REMARKS
1 2	9 mg/l	14 LBS.	19 % Rem.	24 mg/l	29 LBS.	34 % Rem.	39 mg/l	44 LBS.	49 % Rem.	54 mg/l	59 mg/l	64 SU	69 mg/l	74 #/100 ml	80 C	9 #/100 ml	14 19
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01	13	301	83	5	116	77	.15	3	93	3		7.2	6.3	166	C		
02							~~.15~~		~~91~~			7.1	6.0	160	C		
03												7.3			C		
04												7.3			C		
05	24	568	84	3	71	94	.15	4	91	1		7.2			C		
06				2	49	97	.12	3	93	1		7.2	5.5	166	C		
07	22	536	81	7	170	87	.12	3	94	6		7.2	4.5	160	C		
08	17	393	79	2	46	96				1		7.2	6.0		C		
09												7.2	6.0	136	C		
10												7.2			C		
11	13	289	78	3	66	94	.15	3	92	2		7.2			C		
12	13	296	85	1	23	98	.13	3	93	1		7.0	6.2	142	C		
13	7	159	87	7	159	85	.16	4	90	5		7.2	5.9	286	C		
14	12	270	81	5	113	93	.16	4	94	3		7.3	5.5	360	C		
15	14	226	79	2	47	97	.18	4	92	1		7.3	5.5	256	C		
16												7.4	5.7	312	C		
17												7.3			C		
18	11	247	80	3	67	96	.15	3	92	2		7.3			C		
19	14	333	74	2	47	96	.18	4	92	1		7.4	6.8	182	C		
20	14	329	75	2	47	96	.16	4	94	1		7.4	6.0	312	C		
21	11	253	76	7	161	88	.15	3	93	6		7.3	4.4	208	C		
22	13	298	76	7	161	89	.34	8	91	5		7.5	5.4	164	C		
23												7.4	5.5	186	C		
24												7.3			C		
25	11	238	80	2	43	97	.17	4	94	1		7.3			C		
26	11	250	76	2	46	97	.22	5	89	1		7.3	5.8	162	C		
27	5	120	81	2	48	97	.23	6	89	1		7.4	5.8	160	C		
28	18	411	65	12	274	77	.20	5	92	11		7.3	5.1	162	C		
29	13	300	76	5	116	92	.32	7	89	4		7.3	~~6.0~~		C		
30												7.3	6.5	60	C		
31												7.3			C		
TL		5817			1870			80							C		
ME	13	306	79	4	98	97		4	97	3		7.3	5.7	183	C		
WA	14	335		5	114	~~[illegible]~~	.19							277	C		

Digester Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To _____
Process Pattern _____

MONTH July 1982

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swallwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals.	Total Solids	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
	180 X	%																						
1	45	5.0	63		6.5																			
2	45	5.1	66		6.4																			
3	40	4.5	74		6.5																			
4	40	4.8	84		6.4																			
5	40	4.8	64		6.4																			
6	45	4.4	58		6.4																			
7	45	5.0	60		6.4																			
8	30	6.0	76		6.4																			
9	30	4.5	80		6.5																			
10	30	4.5	80		6.4																			
11	20	4.5	65		6.4																			
12	45	4.3	67		6.4																			
13	45	4.7	83		6.5																			
14	45	3.4	73		6.6																			
15	45	4.6	64		6.6																			
16																								
17	40	4.5	76		6.5																			
18	40	4.5	61		6.6																			
19	45	4.3	74		6.5																			
20	45	4.0	77		6.5																			
21	45	4.3	81		6.6																			
22	30																							
23	45	4.4	59		6.3																			
24	40	4.6	70		6.3																			
25	48	4.6	61		6.3																			
26	45	4.7	65		6.4																			
27	45	4.8	67		6.4																			
28	45	4.4	73		6.5																			
29	45	4.2	60		6.4																			
30	45	4.5	68		6.2																			
31	40	4.8	67		6.3																			
TOTAL	1233																							
ARITH. MEAN	41	4.6	70																					

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

MDPH D-4.7

Marshall, MICHIGAN

MONTH July, 1982 — VACUUM FILTER & INCINERATION DATA — OPERATOR R.J. Swalwell

DATE	SLUDGE TO FILTER				CHEMICALS TO FILTER				FILTER		FILTRATE						FILTER CAKE					INCINERATION			REMARKS
	Gal. X 100	Tot. Sol. %	Lbs. Dry Sol.	pH	CaO_2 Lbs. Dry	R	$FeCl_3$ Lbs. Dry	R	Tot. Hours	Yield	Gal. X 100	pH	Sus. Solids Mg/l	Vol. Susp. Solids %	5 Day BOD Mg/l	P Mg/l	Thou. Lbs. Wet	Tot. Sol. %	Lbs. Tot. Solids X 100	Vol. Sol. %	Lbs. Vol. Solids X 100	Hrs. Opr.	Yield	Fuel BTU	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	95	4.8	3830	6.5	1662		191		8.0		76	11.9	1134	6	1440		31	17.9	55	49	27				
2																									
3																									
4																									
5																									
6	95	4.1	3272	6.5	1662		191		8.0		76	12.7					27	18.5	50	46	23				
7	95	5.3	4229	6.6	1662		191		8.0		76	11.7	1572	20	1920		31	18.9	59	46	27				
8	95	3.8	3032	6.5	1662		191		8.0		76	11.1	1642	10	1440		26	18.0	47	50	23				
9																									
10																									
11																									
12																									
13	95	4.3	3431	6.6	1662		191		8.0		76	9.5	1320	9	1320		28	18.1	51	47	24				
14																									
15	95	4.0	3192	6.7	1662		191		8.0		76	11.6	1370	12	1620		29	17.0	49	48	24				
16	95	3.6	2873	6.7	1662		191		8.0		76	11.2	1302	4	1560		25	18.4	46	51	23				
17																									
18																									
19																									
20	95	4.2	3352	6.7	1662		191		8.0		76	8.5	1278	10	1200		28	17.7	50	38	19				
	95	4.0	3192	6.9	1662		191		8.0		76	10.0	1420	13	1200		28	17.2	48	44	21				
22	95	3.8	3032	6.9	1662		191		8.0		76	8.8	1256	8	1680		27	17.5	47	53	25				
23																									
24																									
25																									
26																									
27	95	4.3	3431	6.7	1662		191		8.0		76	11.6	784	10	1080		29	17.3	50	45	23				
28	95	4.1	3272	6.8	1662		191		8.0		76	11.2	1394	9	1500		28	17.8	50	43	21				
29	95	3.8	3032	6.7	1662		191		8.0		76	11.0	1108	22	1200		28	16.9	47	48	23				
30																									
31																									
Total	1235		43170		21606		2483		184		988						365		649		303				
Meth. Means	95	4.2	3321		1662		191		8.0		76		1298	11	1430		28	17.7	50	47	23				

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

August, 1982 (Month) — Marshall (Municipality), Michigan — Robert Swanlund (Superintendent's Signature)

1 2 | 3 8 | 9 10 | 11 12 | 13 15
ID | 1300229 (Plant No.) | 08 (Mo.) | 82 (Yr.) | 500 (Sampling Point Code)

DAY 1 2	WEATHER TYPE 9	WEATHER PRECIP. 14	FLOW TOTAL 19	FLOW MAX RATE 24	RAW SEWAGE QUALITY TEMP 29	pH 34	BOD-5 39 44		SS 49 54		TOTAL-P 59 64		VSS 69	NH_3-N 74 78	80	REMARKS 9	REMARKS 14
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C		
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C		
SF															C		
01	4	.21	2.58		57	7.4	48	1033	66	1420	1.95	42	60		C		
02	1		2.74		57	7.5	52	1188	84	1920	2.75	63	76		C		
03	4	.10	2.73		57	7.5	52	1184	60	1366	1.80	41	48		C		
04	1		2.76		57	7.6	50	1126	60	1351	1.90	43	42		C		
05	1		2.65		58	7.2	44	972	62	1370	1.40	42	44		C		
06	1		2.65		58	7.4									C		
07	4	.11	2.57		58	7.1									C		
08	1		2.57		58	7.1	48	1029	44	943	1.60	34	36		C		
09	3		2.71		58	7.0	72	1627	76	1717	2.05	46	62		C		
10	1		2.68		57	6.9	60	1341	74	1654	2.40	54	66		C		
11	1		2.59		57	7.5	88	1901	64	1384	1.90	41	60		C		
12	1		2.64		56	7.3	110	2422	78	1718	2.45	54	72		C		
13	1		2.57		56	7.3									C		
14	1		2.49		56	7.2									C		
15	1		2.48		57	7.2	96	1986	86	1779	2.10	43	72		C		
16	1		2.69		57	6.8			56	1247	2.40	53	48		C		
17	1		2.74		57	6.8	68	1554	68	1553	2.20	50	60		C		
18	1		2.76		57	7.3	60	1381	74	1703	2.30	53	60		C		
19	4	1.11	2.75		58	7.2	56	1284	86	1972			70		C		
20	1		2.67		57	7.1									C		
21	1		2.55		57	7.2									C		
22	4	.06	2.56		57	7.2	106	2263	92	1964	2.30	49	72		C		
23	3		2.65		58	7.1	60	1326	58	1281	2.05	45	44		C		
24	3		2.62		58	7.1	64	1398	60	1311	1.95	43	54		C		
25	1		2.69		58	7.1	52	1167	122	2737	2.90	65	94		C		
26	1		2.63		57	7.3	60	1316	82	1798	2.30	50	70		C		
27	4	.06	2.48		57	7.2									C		
28	1		2.40		57	7.3									C		
29	1		2.42		56	7.2	64	1292	100	2018	2.10	42	96		C		
30	1		2.55		57	7.2	64	1361	162	3445	1.80	38	86		C		
31	1		2.54		58	7.1	68	1440	64	1356	2.30	49	36		C		
TL		1.65	81.03					31591		39007		1040			C		
ME			2.61				66	1436	77	1696	2.15	47	62		C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

AUGUST, 19 82 — Month

Marshall, Michigan — Municipality

Robert J. Swalwell — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130029	08	82	..
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY	BOD-5 (21) 9	14	SS (22) 19	24	TOTAL-P (22) 29	34	VSS (22) 39	NH_3-N 44	REMARKS OR OTHER PARAMETERS 49	54	59	64	69	74 78	80	9	14
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C		
PN	00310	85001	00530	85002	00665	85004	00535	00610							C		
SF															C		
01	40	861	34	732	1.70	37	30								C		
02	38	868	43	983	1.65	37	28								C		
03	40	911	22	501	1.50	34	10								C		
04	42	946	22	495	1.35	30	14								C		
05	32	707	44	972	1.65	36	28								C		
06															C		
07															C		
08	46	986	40	857	1.80	39	32								C		
09	50	1130	40	904	1.65	37	30								C		
10	48	1073	56	1252	1.90	42	46								C		
11	70	1512	42	907	1.40	30	30								C		
12	82	1805	40	881	1.95	43	32								C		
13															C		
14															C		
15	54	1117	50	1034	1.50	31	38								C		
16			40	891	1.95	43	30								C		
17	44	1005	50	1143	1.50	34	42								C		
18	48	1105	48	1105	1.40	32	40								C		
19															C		
20															C		
21															C		
22	64	1366	74	1580	1.70	36	50								C		
23	40	884	44	972	1.40	31	34								C		
24	44	961	46	1005	1.40	31	32								C		
25	36	808	64	1436	1.65	37	44								C		
26	36	790	26	570	1.50	33	18								C		
27															C		
28															C		
29	48	969	68	1372	1.50	30	66								C		
30	60	1276	60	1276	1.40	30	40								C		
31	40	847	58	1229	1.95	41	34								C		
TL		21,927		22,097		774									C		
ME	48	1044	46	1004	1.61	35	34								C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

August (Month), 19 82 — Marshall (Municipality), Michigan — Robert J. Swahill (Superintendent's Signature)

1 2 ID | 3 8 Plant No. 13,0029 | 9 10 Mo. 08 | 11 12 Yr. 82 | 13 15 Sampling Point Code

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	80	Waste Sludge 9	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		3.3								200			52	C	15	
02			3.1	4.6	.31	1400	974	10.6	1.40	4.2	200	.67	67	45	C		
03			3.2	5.3	.27	1657	1134	13.0	1.20	5.0	197	.43	69	49	C	23	
04			3.2	4.8	.33	1381	909	11.6	1.26	5.5	199	.37	66	52	C	27	
05			3.3	4.3	.33	1283	859	9.0	1.43	5.6	203	.35	67	54	C	21	
06			3.3	4.0	.36	1202	805	9.0	1.34	4.8	200	.32	67	54	C	35	
07			3.4								198			56	C	15	
08			3.4								201			54	C	14	
09			3.2	5.1	.32	1354	957	10.6	1.35	2.0	203	.49	69	53	C	12	
10			3.2	5.0	.31	1409	1011	11.0	1.28	3.8	210	.40	71	56	C	14	
11			3.3	5.6	.32	1534	1059	10.0	1.53	3.9	202	.37	68	58	C	22	
12			3.3	5.9	.41	1765	1200	11.0	1.60	2.5	140	50	67	52	C	2	
13			3.4	6.4	.30	1884	1283	14.0	1.35	2.8	134	.44	67	55	C	10	
14			3.5								115			56	C	6	
15			3.5								112			58	C	10	
16			3.2	4.9	.40	1609	1029	15.0	1.07	3.0	125	.44	65	52	C	26	
17			3.1	4.4	.48	1353	888	11.0	1.23	2.9	122	.45	64	50	C	16	
18			3.1	3.8	.44	1379	934	11.0	1.25	2.9	126	.42	66	49	C	16	
19			3.1	5.0	.38	1790	1156	14.0	1.28	3.1	96	.25	64	50	C	14	
20			3.2	4.8	.39	1670	1090	14.0	1.19	2.4	136	.52	65	53	C	22	
21			3.4								119			57	C	9	
22			3.4								116			56	C	8	
23			3.3	4.2	.42	1538	1005	14.0	1.10		127	.43	65	56	C	19	
24			3.3	3.8	.41	1401	919	11.0	1.27		127	.32	68	55	C	24	
25			3.2	3.5	.37	1372	963	10.0	1.37		124	.34	69	54	C	17	
26			3.3	5.0	.28	1724	1193	12.0	1.44		124	.42	69	54	C	10	
27			3.5	4.0	.32	1398	967	11.0	1.27	2.4	122	.34	68	59	C	15	
28			3.6								118			61	C	10	
29			3.6								116			56	C	6	
30			3.4	3.5	.35	1373	962	11.0	1.25	2.9	133	.42	70	51	C	27	
31			3.4	3.2	.42	1170	716	10.0	1.17		141	.31	67	52	C	27	
TL															C	492	
ME			3.3	4.6	.36	1484	1003	11.5	1.30	3.5	151	.41	67	54	C	16.4	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

AUGUST, 19 82
Month

MARSHALL, Michigan
Municipality

Robert J. Swedlund
Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
ID 1300029 08 82
Plant No. Mo. Yr. Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX.FUEL 14	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 $FeCl_3$ LBS.	44	49	54	59
PN											
SF											
01			2640			40	199				
02			2520			35	397				
03			2880			5	596				
04			2880			30	794				
05			2760			40	397				
06			2520			30	397				
07			2520			40	298				
08			2640			40	298				
09			2760			40	397				
10			2760			40	596				
11			2880			40	993				
12			2400			40	794				
13			2160			30	596				
14			1920			40	596				
15			1920			20	397				
16			2160			40	596				
17			2400			40	993				
18			1200			40	596				
19			2160			40	993				
20			2040			40	397				
21			2040			30	596				
22			1920			40	794				
23			2160			20	397				
24			2160			40	397				
25			2400			40	794				
26			2280			40	596				
27			2160			40	199				
28			1920			40	397				
29			1920			30	199				
30			2160			20	397				
31			2400			30	596				
TL			71640			1080	16682				
ME			2311			35	538				

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		880
Superintendent	1		176
Asst. Supt.	1		176
Shift Foreman			
Shift Operator	3		528
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL A

WEEKDAYS 11 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To _____
Process Pattern _____

MONTH August 1982

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	40	4.6	60		6.2																			
2	45	4.3	59		6.2																			
3	45	2.7	55		6.5																			
4	28	4.2	75		6.9																			
5	45	4.3	80		6.5																			
6	45	4.1	59		6.4																			
7	40	4.1	75		6.4																			
8	40	4.4	57		6.4																			
9	45	4.5	60		6.1																			
10	45	4.2	61		6.2																			
11	45	3.9	60		6.2																			
12	45	3.8	62		6.4																			
13	45	5.1	65		6.5																			
14	40	4.4	77		6.5																			
15	40	4.4	63		6.4																			
16	40	4.1	71		6.3																			
17	40	4.7	59		6.3																			
18	240																							
19																								
20	40	3.9	58		6.3																			
21	40	3.9	58		6.3																			
22	45	4.0	60		6.5																			
23	40	4.1	75		6.8																			
24	40	5.9	67		6.5																			
25	107	5.3	62		6.7																			
26																								
27	45	4.9	67		6.5																			
28	40	5.9	50		6.6																			
29	40	5.5	54		6.6																			
30	45	4.7	62		6.5																			
31	40	4.6	69		6.6																			
TOTAL	1475																							
ARITH. MEAN	51	4.4	64																					

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

MDPH
D-4.7

Marshall, MICHIGAN

MONTH August, 1982 — VACUUM FILTER & INCINERATION DATA — OPERATOR R.J. Swalwell

DATE	SLUDGE TO FILTER				CHEMICALS TO FILTER				FILTER		FILTRATE						FILTER CAKE					INCINERATION			REMARKS
					CaO		FeCl3																		
	Gal. X 100	Tot. Sol. %	Lbs. Dry Sol.	pH	Lbs. Dry	R	Lbs. Dry	R	Tot. Hours	Yield	Gal. X 100	pH	Sus. Solids Mg/l	Vol. Susp. Solids %	5 Day BOD Mg/l	P Mg/l	Thou. Lbs. Wet	Tot. Sol. %	Lbs. Tot. Solids X 100	Vol. Sol. %	Lbs. Vol. Solids X 100	Hrs. Opr.	Yield	Fuel BTU	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1																									
2																									
3	120	4.2	4234	6.9	1833		191				76	12.2	1354	7	1200		37	16.4	61	44	27				
4	120	3.2	3226	6.9	1833		191				76	11.3	1554	7	1260		35	14.5	51	50	25				
5	120	4.1	4133	7.1	1833		191				76	11.7	1534	8	360		33	17.9	59	40	24				
6																									
7																									
8																									
9																									
10	120	3.8	3830	6.5	1833		191				76	11.2	794	13	1080		32	17.5	56	41	23				
11	120	3.7	3730	6.5	1833		191				76	11.9	1152	7	960		33	16.9	56	44	25				
12	120	3.9	3931	6.8	1833		191				76	12.2	1068	10	1740		33	17.7	58	44	26				
13																									
14																									
15																									
16																									
17	120	4.5	4536	6.6	1833		191				76	12.0	904	19	480		39	16.2	63	47	30				
18	120	4.0	4032	6.7	1833		191				76	12.0	770	18	960		37	15.7	58	45	26				
19	120	3.1	3125	6.8	1833		191				76	12.0	826	11	960		30	16.4	49	42	21				
20																									
21																									
22																									
23																									
24																									
25	120	4.0	4032	6.8	1833		191				76	11.8	1184	27	1200		37	15.9	59	43	25				
26	120	3.1	3125	7.0	1833		191				76	12.0	1042	7	1200		30	16.8	50	40	20				
27																									
28																									
29																									
30																									
31	120	5.7	5746	6.8	1833		191				76	11.9	1198	6	720		45	16.9	76	59	45				
Total	1440		44160		21,996		2292				912						412		696		317				
Avg. Mons	120	3.9	3993		1833		191				76		1115	12	1616		34	16.6	58	45	26				

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ Month , 19 _____ _____ Municipality , Michigan _____ Superintendent's Signature

ID Plant No. (3–8) Mo. (9–10) Yr. (11–12) Sampling Point Code (13–15)

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*		T. COLI*	REMARKS
	9 14 19			24 29 34			39 44 49			54	59	64	69	74	80	9	14 19
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01	14	301	71	5	108	92	.19	4	90	4		7.4			C		
02	13	297	75	9	206	89	.34	8	88	7		7.3	5.2	164	C		
03	22	501	58	2	46	97	.22	5	88	1		7.4	6.0	62	C		
04	17	383	66	2	45	97	.17	4	91	1		7.6	6.3	58	C		
05	20	442	55	4	88	94	.20	4	89	3		7.3	6.4	44	C		
06												7.1	7.1	36	C		
07												7.1			C		
08	15	322	69	6	129	86	.17	4	89	4		7.1			C		
09	16	362	77	2	45	97	.22	5	89	1		7.1	5.9	86	C		
10	19	425	68	4	89	95	.20	5	92	3		7.0	5.6	86	C		
11	17	367	81	2	43	97	.13	3	93	1		7.3	5.5	50	C		
12	19	418	83	2	44	97	.10	2	96	1		7.1	5.9	26	C		
13												7.2	4.5	22	C		
14												7.3			C		
15	13	269	86	2	41	98	.10	2	95	1		7.1			C		
16				5	111	91	.10	2	96	4		6.6	5.0	18	C		
17	12	274	82	3	69	96	.09	2	96	2		6.8	5.0	20	C		
18	22	506	63	2	46	97	.08	2	97	1		7.1	4.4	10	C		
19	13	298	77	7	161	92				5		7.0	4.6	2	C		
20												6.9	4.7	16	C		
21												7.1			C		
22	23	491	78	3	64	97	.12	3	95	2		7.1			C		
23	7	154	88	2	44	97	.09	2	96	1		6.9		20	C		
24	6	131	91	2	44	97	.12	3	94	1		7.1		14	C		
25	7	157	87	11	247	91	.37	8	87	2		7.1		32	C		
26	7	154	88	2	44	98	.13	3	94	1		7.1		46	C		
27												7.2	4.8		C		
28												7.3			C		
29	6	121	91	3	61	97	.13	3	94	1		7.2			C		
30	7	149	89	8	170	95	.16	3	91	6		7.3		42	C		
31	5	106	93	15	318	77	.19	4	92	9		7.1		8	C		
TL		6628			2263			81							C		
ME	14	301	78	4	98	94	.16	4	92	3		7.1	5.4	28	C		
WA	18	402		8	168									61	C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

September (Month), 19 82

Marshall (Municipality), Michigan

Robert J. Swabell
Superintendent's Signature

ID | 1300277 (Plant No.) | 09 (Mo.) | 82 (Yr.) | 500 (Sampling Point Code)

DAY	WEATHER		FLOW		RAW SEWAGE QUALITY											REMARKS
	TYPE	PRECIP.	TOTAL	MAX RATE	TEMP	pH	BOD-5		SS		TOTAL-P		VSS	NH_3-N		
1 2	9	14	19	24	29	34	39	44	49	54	59	64	69	74 78	80	9 14
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C	
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C	
SF															C	
01	1		2.51		58	7.3	94	1968	66	1382	4.70	98	52		C	
02	4	.10	2.52		58	7.3	78	1639	76	1597	2.45	51	66		C	
03	1		2.44		58	7.2									C	
04	1		2.33		58	7.3									C	
05	1		2.27		57	7.3									C	
06	4	.08	2.36		57	7.2	52	1023	60	1181	2.65	52	58		C	
07	3		2.48		58	7.5	70	1448	76	1572	2.30	48	68		C	
08	1		2.52		58	7.3	68	1429	66	1387	2.30	48	30		C	
09	1		2.50		58	7.3	66	1376	96	2002	2.40	50	88		C	
10	1		2.45		58	7.0									C	
11	1		2.38		58	7.2									C	
12	1		2.42		58	7.4	106	2139	72	1453	2.65	53	62		C	
13	4	.03	2.46		60	7.4	96	1970	72	1477	2.45	50	62		C	
14	4	.30	2.45		60	7.0	74	1512	78	1594	2.30	47	72		C	
15	4	.03	2.47		59	7.3	92	1895	112	2307	2.75	57	80		C	
16	4	.01	2.45		59	6.8	64	1321	62	1267	2.45	50	46		C	
17	4	.72	2.45		58	7.5									C	
18	1		2.33		57	7.5									C	
19	4	.06	2.37		56	7.5	70	1384	100	1977	2.40	47	80		C	
20	4	.04	2.48		58	7.5	62	1282	62	1282	2.30	48	45		C	
21	4	.58	2.54		57	7.2	46	974	52	1102	2.30	49	36		C	
22	4	.18	2.45		56	7.5	82	1676	66	1349	2.40	49	46		C	
23	4	.06	2.43		57	7.5	60	1216	80	1621	2.40	49	72		C	
24	4	.46	2.43		57	7.4									C	
25	4	.03	2.39		57	7.4									C	
26	4	.55	2.34		57	7.5	84	1639	64	1249	1.70	33	40		C	
27	4	.50	2.34		58	6.7	70	1483	52	1102	2.45	52	30		C	
28	1		2.51		57	7.3	80	1675	52	1089	1.80	38	30		C	
29	1		2.52		57	7.3	54	1135	74	1555	2.05	43	64		C	
30	1		2.50		57	7.2	76	1585	56	1168	2.40	50	46		C	
31															C	
TL		3.73	73.19					31860		30731		1062			C	
ME			2.44				74	1517	71	1463	2.46	51	56		C	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

September, 19 82
Month

Marshall, Michigan
Municipality

Robert L. Swalwell
Superintendent's Signature

ID 130029 09 82 . .
Plant No. Mo. Yr. Sampling Point Code

DAY	BOD-5		SS		TOTAL-P		VSS	NH_3-N	REMARKS OR OTHER PARAMETERS									
	9 14		19 24		29 34		39	44	49	54	59	64	69	74 78	80	9	14	
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C			
PN	00310	85001	00530	85002	00665	85004	00535	00610							C			
SF															C			
01	48	1005	28	586	1.90	40	22								C			
02	69	1345	68	1429	1.90	40	60								C			
03															C			
04															C			
05															C			
06	42	827	46	905	1.90	37	40								C			
07	56	1158	48	993	1.80	37	36								C			
08	64	1345	52	1093	1.70	34	8								C			
09	46	959	44	917	1.70	35	36								C			
10															C			
11															C			
12	86	1736	44	888	1.95	39	40								C			
13	50	1026	52	1067	2.05	42	42								C			
14	54	1103	72	1471	1.90	39	66								C			
15															C			
16	54	1103	60	1226	2.20	45	34								C			
17															C			
18															C			
19	54	1067	28	553	1.80	36	24								C			
20	52	1076	50	1034	2.05	42	30								C			
21	38	805	44	932	1.95	41	30								C			
22	72	1471	42	858	2.05	42	36								C			
23	48	972	58	1175	1.90	39	48								C			
24															C			
25															C			
26	70	1366	46	898	1.65	32	32								C			
27	62	1313	34	720	1.80	38	18								C			
28	72	1507	48	1005	1.90	40	24								C			
29	50	1051	64	1345	1.90	40	50								C			
30	62	1293	56	1168	2.05	43	36								C			
31															C			
TL		23528		20263		781									C			
ME	57	1176	49	1013	1.90	39	36								C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

September, 19 82
Month

Marshall, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
ID | 130029 | 09 | 82 | ...
Plant No. Mo. Yr. Sampling Point Code

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	80	Waste Sludge 9	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		3.4	3.5	.36	1135	840	10.0	1.14		123	.33	71	55	C	18	
02			3.4	3.1	.39	1215	839	10.0	1.21		122	.31	69	56	C	14	
03			3.5	3.9	.30	1461	1052	12.0	1.22		132	.30	72	57	C	13	
04			3.7								118			64	C		
05			3.8								114			59	C	36	
06			3.7								119			63	C		
07			3.5	3.3	.39	1200	892	10.0	1.20	2.6	123	.30	74	60	C		
08			3.4	3.8	.33	1571	1146	12.0	1.31	2.6	114	.39	72	61	C		
09			3.4	3.8	.32	1494	1109	11.0	1.36	2.9	125	.40	71	59	C	8	
10			3.5	4.2	.39	1532	1190	11.0	1.39	2.8	124	.34	70	64	C	14	
11			3.6								118			67	C	5	
12			3.6								118			66	C	5	
13			3.5	3.7	.35	1492	1131	10.0	1.49	2.5	153	.34	75	57	C	7	
14			3.5	3.4	.38	1339	1023	9.0	1.44	2.9	160	.39	76	58	C	11	
15			3.5	3.5	.34	1386	1039	10.0	1.39	3.2	164	.33	74	57	C	28	
16			3.5	2.8	.48	1081	834	8.0	1.35	4.0	167	.26	76	59	C	24	
17			3.5	2.7	.47	1111	858	9.0	1.23	3.4	137	.29	76	57	C	24	
18			3.7								125			59	C		
19			3.6								124			58	C		
20			3.5	3.6	.37	1427	1077	10.0	1.43	2.3	134	.45	70	54	C	11	
21			3.4	3.5	.37	1403	1045	9.0	1.56	2.5	163	.30	74	56	C	10	
22			3.5	3.7	.39	1215	939	9.0	1.35	2.4	136	.37	76	60	C	17	
23			3.5	3.4	.32	1487	1130	10.0		2.7	141	.37	75	61	C		
24			3.5					9.0		1.7	130			59	C	16	
25			3.8								132			64	C		
26			3.7								128			62	C	6	
27			3.4	3.0	.41	1186	991	10.0	1.19	1.8	176	.33	76	55	C	13	
28			3.4	3.1	.43	1231	956	10.0	1.23	1.8	168	.30	77	53	C	35	
29			3.4	3.3	.39	1363	1057	10.0	1.36	2.2	143	.39	75	54	C	44	
30			3.4	4.7	.31	1918	1409	12.0	1.60	1.4	142	.56	75	54	C		
31															C		
TL															C	442	
ME			3.5	3.5	3.7	1362	1028	10.0	1.28	2.5	136	.35	74	59	C	21	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

September, 19 82 — Month

Marshall, Michigan — Municipality

Robert J. Swalwell — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130029	09	82	..
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX. FUEL 14	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 $FeCl_3$ LBS.	44	49	54	59
PN											
SF											
01			2280			30	794				
02			2400			40	397				
03			1920			40	397				
04			1920			30	397				
05			1920			40	397				
06			2040			40	596				
07			2160			20	596				
08			2160			50	397				
09			2160			30	397				
10			2040			30	397				
11			2160			30	397				
12			2040			50	397				
13			2400			20	199				
14			2400			40	199				
15			2400			50	397				
16			2640			40	397				
17			2400			40	596				
18			2160			30	199				
19			2160			50	199				
20			2400			40	298				
21			2520			40	496				
22			2400			40	496				
23			2400			20	496				
24			2160			40	596				
25			2040			40	199				
26			1920			40	199				
27			2280			20	397				
28			2520			10	596				
29			2400			10	596				
30			2400			10	199				
31											
TL			67200			1010	12313				
ME			2240			34	410				

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		880
Superintendent	1		176
Asst. Supt.	1		176
Shift Foreman			
Shift Operator	3		528
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL

WEEKDAYS 11 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

September, 19 82 — Month

Marshall, Michigan — Municipality

Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	13.00.29	09	82	
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY	BOD-5 21			SS 21			TOTAL-P 21			VSS 21	NH_3-N	pH 30	DO 18	F. COLI* 18		T. COLI*	REMARKS	
	9	14	19	24	29	34	39	44	49	54	59	64	69	74	80	9	14	19
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml		
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505		
SF															C			
01	7	146	93	2	42	97	.19	4	96	1		7.3		92	C			
02	7	147	91	4	84	95	.17	4	93	3		7.2		22	C			
03												6.9		6	C			
04												7.0		48	C			
05												7.2		30	C			
06	5	98	90	3	59	95	.22	4	92	2		7.1			C			
07	19	393	73	4	83	95	.22	5	90	1		7.4	4.7		C			
08	18	378	74	8	168	88	.25	5	89	6		7.3	4.0		C			
09	8	167	88	6	125	94	.27	6	89	5		6.9	4.0	58	C			
10												7.1	3.6	24	C			
11												7.1			C			
12	14	283	87	10	202	86	.41	8	85	7		7.5			C			
13	8	164	92	12	246	83	.32	7	87	5		7.5	3.0	216	C			
14	9	184	88	11	225	86	.20	4	91	10		7.1	4.1	24	C			
15	5	103	95	9	185	92	.12	2	96	4		7.2	4.8	6	C			
16	6	123	91	2	41	97	.27	6	89	1		6.9	5.6	32	C			
17												7.5	5.4	74	C			
18												7.3			C			
19	7	138	90	2	40	98	.27	5	89	1		7.3			C			
20	14	290	77	4	83	93	.32	7	86	2		7.4	3.5	6	C			
21	5	106	89	2	42	96	.23	5	90	1		6.7	3.6	62	C			
22	10	204	88	2	41	97	.30	6	88	1		7.3	3.7	8	C			
23	7	142	76	8	162	90	.28	6	88	6		7.5	3.5	16	C			
24												7.3	2.8	24	C			
25												7.3			C			
26	20	390	76	2	39	97	.25	5	85	1		7.4	L		C			
27	9	191	87	4	85	92	.46	10	81	2		6.5	4.8	4	C			
28	7	147	91	7	147	87	.22	5	88	5		7.4	4.8		C			
29	6	126	89	12	252	84	.32	7	84	9		7.3	4.0		C			
30	14	292	82	15	313	73	.42	9	83	9		7.1	3.9		C			
31															C			
TL		4266			2664			120							C			
ME	10	203	86	6	127	91	.27	6	89	4		7.2	4.1	24	C			
WA	13	277		10	197									37	C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

September, 19 82 (Month) — Marshall (Municipality), Michigan — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	13.0029	09	82	
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY	BOD-5 (21) 9	14	19	SS (21) 24	29	34	TOTAL-P (21) 39	44	49	VSS (21) 54	NH_3-N 59	pH (30) 64	DO (18) 69	F. COLI* (18) 74	80	T. COLI* 9	REMARK 14
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01	7	146	93	2	42	97	.19	4	96	1		7.3		92	C		
02	7	147	91	4	84	95	.17	4	93	3		7.2		22	C		
03												6.9		6	C		
04												7.0		48	C		
05												7.2		30	C		
06	5	98	90	3	59	95	.22	4	92	2		7.1			C		
07	19	393	73	4	83	95	.22	5	90	1		7.4	4.7		C		
08	18	378	74	8	168	88	.25	5	89	6		7.3	4.0		C		
09	8	167	88	6	125	94	.27	6	89	5		6.9	4.0	58	C		
10												7.1	3.6	24	C		
11												7.1			C		
12	14	283	87	10	202	86	.41	8	85	7		7.5			C		
13	8	164	92	12	246	83	.32	7	87	5		7.5	3.0	216	C		
14	9	184	88	11	225	86	.20	4	91	10		7.1	4.1	24	C		
15	5	103	95	9	185	92	.12	2	96	4		7.2	4.8	6	C		
16	6	123	91	2	41	97	.27	6	89	1		6.9	5.6	32	C		
17												7.5	5.4	74	C		
18												7.3			C		
19	7	138	90	2	40	98	.27	5	89	1		7.3			C		
20	14	290	77	4	83	93	.32	7	86	2		7.4	3.5	6	C		
21	5	106	89	2	42	96	.23	5	90	1		6.7	3.6	62	C		
22	10	204	88	2	41	97	.30	6	88	1		7.3	3.7	8	C		
23	7	142	76	8	162	90	.28	6	88	6		7.5	3.5	16	C		
24												7.3	2.8	24	C		
25												7.3			C		
26	20	390	76	2	39	97	.25	5	83	1		7.4	[illegible]		C		
27	9	191	87	4	85	92	.46	10	81	2		6.5	4.8	4	C		
28	7	147	91	7	147	87	.22	5	88	5		7.4	4.8		C		
29	6	126	89	12	252	84	.32	7	84	9		7.3	4.0		C		
30	14	292	82	15	313	73	.42	9	83	9		7.1	3.9		C		
31															C		
TL		4266			2664			120							C		
ME	10	203	86	6	127	91	.27	6	89	4		7.2	4.1	24	C		
WA	13	277		10	197									37	C		

Digester Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To _____
Process Pattern _____

MONTH September 1982

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	45	4.2	55		6.7																			
2	45	4.3	92		6.5																			
3	45	4.3	65		6.3																			
4	40	4.9	66		6.3																			
5	40	5.7	63		6.5																			
6	40	4.1	56		6.4																			
7	45	4.6	63		6.3																			
8	45	5.5	64		6.3																			
9	45	4.9	69		6.3																			
10	45	5.6	68		6.1																			
11	40	5.3	64		5.9																			
12	40	5.1	61		6.3																			
13	45	4.9	84		6.4																			
14	45	3.9	85		6.4																			
15	30																							
16	45	4.9	77		6.0																			
17	45	4.4	73		6.3																			
18	40	4.6	63		6.5																			
19	40	3.6	85		6.5																			
20	45	4.2	78		6.0																			
21	45	5.4	67		6.0																			
22	45	2.2	50		6.4																			
23	45	4.4	71		6.5																			
24	45	4.3	61		6.3																			
25	40	4.7	68		6.4																			
26	40	3.1	75		6.4																			
27	45	5.0	70		6.1																			
28																								
29																								
30																								
31																								
TOTAL	1155																							
ARITH. MEAN	43	4.5	69																					

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

MDPH
D-4.7

Marshall, MICHIGAN

MONTH September, 19 82 — VACUUM FILTER & INCINERATION DATA — OPERATOR R.J. Swalwell

DATE	SLUDGE TO FILTER				CHEMICALS TO FILTER				FILTER		FILTRATE						FILTER CAKE					INCINERATION			REMARKS
	Gal. X 100	Tot. Sol. %	Lbs. Dry Sol.	pH	CaO Lbs. Dry	R	FeCl3 Lbs. Dry	R	Tot. Hours	Yield	Gal. X 100	pH	Sus. Solids Mg/l	Vol. Susp. Solids %	5 Day BOD Mg/l	P Mg/l	Thou. Lbs. Wet	Tot. Sol. %	Lbs. Tot. Solids	Vol. Sol. %	Lbs. Vol. Solids X	Hrs. Opr.	Yield	Fuel BTU	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	95	4.5	3591	6.5	1754		191		8.0		76	11.6	1508	7	780		34	15.5	5270	39	2055				
2	95	1.5	1197	6.6	1754		191		8.0		76	9.5	1208	8	1200		17	16.9	2873	43	1235				
3																									
4																									
5																									
6																									
7																									
8	95	3.8	3032	6.8	1754		191		8.0		76	8.4	1460	7	1620		29	16.4	4756	49	2336				
9																									
10	95	4.0	3192	6.8	1754		191		8.0		76	10.5	1390	9	1500		28	17.9	5012	43	2155				
11																									
12																									
13																									
14																									
15																									
16	95	4.2	3352	6.9	1754		191		8.0		76	11.0	1492	9	660		29	17.8	5162	46	2375				
17	95	2.2	1756	6.9	1754		191		8.0		76	11.6	1522	27	960		19	18.5	3515	47	1652				
18																									
19																									
20																									
21	95	4.2	3351	7.1	1754		191		8.0		76	11.6	908	7	600		27	18.6	5022	46	2316				
22	95	3.9	3112	6.9	1754		191		8.0		76	11.9	720	15	1860		26	18.6	4836	47	2273				
23	95	3.9	3112	6.6	1754		191		8.0		76	11.8	814	11	1500		25	19.2	4800	45	2160				
24	95	4.7	3750	6.6	1754		191		8.0		76	11.9	942	14	1980		30	18.5	5550	51	2830				
25																									
26																									
27																									
28	95	4.1	3372	6.4	1754		191		8.0		76	11.8	926	15	1260		24	21.1	5064	45	2278				
29	95	3.8	3032	7.5	1754		191		8.0		76	11.3	922	13	1380		25	19.0	4750	35	1663				
30	95	3.8	3032	6.7	1754		191		8.0		76	11.3	864	12	1020		24	19.9	4776	37	1767				
31																									
Total	1235		38781		22802		2483		104		988						337		61341		20718				
Avg. Mns	95	3.7	2983		1754		191		8.0		76		1129	11.8	1248		26	18.3	4719	44	1599				

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

Month 19 Municipality Michigan Department Signature

ID

DAY 1 2	WEATHER		FLOW		RAW SEWAGE QUALITY											REMARKS
	SPECIFIC 9	FREQ	TOTAL	MAX RATE	TEMP	PH	BOD		SS 49	SS 54	CL 59	CL	VSS 69	NH_3-N 74 78	80	9 14
	See Code	Tricheck	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l	C	
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C	
SF															C	
01	1		2.48		57	7.2									C	
02	1		2.37		57	7.2									C	
03	1		2.39		57	7.2	58	1156	66	1316	2.30	46	51		C	
04	3		2.52		57	7.0	70	1471	70	1471	2.10	44	62		C	
05	1		2.58		57	7.1	52	1118	60	1291	1.90	41	52		C	
06	4	.06	2.59		58	7.1	58	1224	60	1271	2.10	44	50		C	
07	3		2.50		58	7.1	68	1452	72	1537	1.95	42	52		C	
08	1		2.40		58	6.9									C	
09	4	.22	2.30		58	7.3									C	
10	1		2.32		56	7.3	78	1509	80	1548	2.85	55	58		C	
11	4	.02	2.47		56	7.2	82	1689	70	1442	2.20	45	64		C	
12	1		2.44		56	6.5	60	1220	120	2442	2.05	42	98		C	
13	4	.02	2.47		55	6.7	84	1730	98	2019	2.45	50	80		C	
14	4	.03	2.48		55	6.9	64	1324	64	1324	2.30	48	54		C	
15	4	.09	2.40		55	7.3									C	
16	4	.02	2.30		55	7.3									C	
17	1		2.32		55	7.2	72	1393	102	1974	2.45	47	40		C	
18	1		2.44		57	7.5	80	1628	76	1547	3.00	61	58		C	
19	4	.31	2.45		56	7.4	68	1389	60	1226	2.45	50	50		C	
20	4	.04	2.43		56	7.3	68	1378	66	1338	2.40	49	60		C	
21	3		2.41		57	7.3	86	1729	76	1528	2.30	46	66		C	
22	1		2.38		57	7.2									C	
23	1		2.24		57	7.3									C	
24	1		2.29		56	7.2	96	1833	110	2100	2.55	49	54		C	
25	1		2.36		56	7.3	74	1456	58	1142	2.05	40	46		C	
26	1		2.39		56	6.9	78	1555	140	2791	2.20	44	26		C	
27	1		2.42		56	7.3	66	1332	82	1655	3.20	65	56		C	
28	1		2.40		56	7.0	76	1521	76	1521	2.55	51	66		C	
29	4	.06	2.40		56	7.2									C	
30	3		2.36		56	7.2									C	
31	4	.38	2.28		56	7.3	78	1483	134	2548	2.55	48	60		C	
TL		1.25	74.59					30,595		35,031		1007			C	
ME			2.41				72	1457	83	1668	2.38	48	60		C	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

Plant Name: Battle Creek

Plant Number:

DAY	9	14	19	24	29	34	39	44	49	54	59	64	69	74	78	80	9	14
	2	mg/L	LBS.	mg/L	LBS.	mg/L	LBS.	mg/L								C		
PN	00310	80082	00530	85002	00665	85004	00535	00610								C		
SE																C		
01																C		
02																C		
03	1.6	1375	56	1116	1.95	39	48									C		
04	52	1093	52	1093	2.20	46	44									C		
05	1.4	1397	48	1463	1.40	30	58									C		
06	50	1068	48	1017	1.90	40	36									C		
07	72	1537	68	1451	2.10	45	50									C		
08																C		
09																C		
10	58	1136	48	929	1.90	37	34									C		
11	56	1154	44	906	1.90	39	36									C		
12	54	1099	50	1017	1.65	34	16									C		
13	78	1607	48	989	1.95	40	32									C		
14	58	1200	50	1034	1.90	39	44									C		
15																C		
16																C		
17	1.6	1377	114	3367	4.95	86	126									C		
18	56	1140	48	977	1.95	40	42									C		
19	72	1471	46	940	1.80	37	40									C		
20	58	1175	44	892	1.90	39	38									C		
21	60	1205	56	1126	1.65	33	42									C		
22																C		
23																C		
24	84	1604	58	1108	2.30	44	40									C		
25	78	1535	44	866	1.40	28	36									C		
26	62	1235	30	595	1.90	38	24									C		
27	1.6	1332	48	969	3.20	65	20									C		
28	70	1481	48	961	3.40	48	40									C		
29																C		
30																C		
31	76	1445	58	1103	1.95	37	46									C		
TL		27,469		23,919		884										C		
AE	65	1308	56	1139	2.08	42	42									C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

Kelly Smith
Superintendent of Operations

ID 1622
Plant No.

DAY	PRIMARY WASTE					MIXED LIQUOR							SECONDARY SLUDGE				
	Aeration Volume	Final Clarifier Volume	Detention Time	Sludge Age	Organic Loading	Mass	MLSS	SVI	SDI	DO	Temp		VSS	Percent Return	%	Waste Sludge	MCRT Control
1 2	9	12	18	24	29	34	39	44	49	54	59		69	74	80	9	14
	KCF	KCF	DAYS	DAYS	LBS	mg/l	mg/l	%	%	mg/l	Cu. Ft.		%	%	C	KGal	See Code
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81006	00631	70325	81014	C	80991	80889
SF															C		
01	48		3.5	4.4	.34	1549	1223	10.0	1.59	6.3	224	31	71	58	C	11	
02			3.6								250			62	C	7	
03			3.6								257			63	C	13	
04			3.4	3.9	.41	1392	1072	10.0	1.39	3.6	191	37	76	58	C	25	
05			3.3	3.3	.44	1272	991	9.0	1.41	3.5	181	31	72	56	C	54	
06			3.4	3.5	.34	1345	1120	10.0	1.38	3.0	177	38	65	58	C		
07			3.4	3.2	.42	1332	1010	9.0	1.48	2.8	183	39	89	58	C	8	
08			3.6	3.1	.44	1215	908	8.0	1.52	4.5	222	26	73	58	C	22	
09			3.7								182			62	C		
10			3.7								182			64	C	15	
11			3.5	3.2	.46	1217	905	9.0	1.35	4.2	184	34	72	56	C	24	
12			3.5	2.8	.52	1043	761	7.0	1.49	5.3	163	28	72	59	C	27	
13			3.5	3.5	.47	1214	905	9.0	1.40	3.9	162	32	71	60	C		
14			3.5	3.6	.45	1214	937	8.0	1.58	4.1	159	31	73	58	C	11	
15			3.6	3.5	.46	1186	877	7.0	1.69	4.0	161	32	73	59	C	19	
16			3.7								164			63	C		
17			3.7								165			64	C	7	
18			3.5	2.9	.43	1188	963	9.0	1.43	5.1	161	32	74	57	C	140	
19			3.5	1.5	.85	667	504	5.0	1.33	5.3	158	27	74	62	C		
20			3.5	2.3	.54	1050	782	7.0	1.47	4.8	168	32	75	54	C	1	
21			3.6	3.2	.44	1430	968	8.0	1.72	3.7	169	37	79	55	C		
22			3.6	2.7	.47	1201	897	9.0	1.33	4.6	170	38	74	55	C	21	
23			3.8								171			58	C	15	
24			3.8								170			52	C	16	
25			3.7	2.7	.52	1170	862	9.0	1.36	5.1	167	28	73	50	C	16	
26			3.6	3.4	.59	1070	758	8.0	1.34	5.0	166	33	70	48	C	27	
27			3.6	4.4	.45	1396	1028	10.0	1.39	3.4	162	27	73	50	C	1	
28			3.6	5.6	.36	1767	1296	12.0	1.47	2.6	159	21	72	50	C		
29			3.6	5.4	.37	1701	1262	11.0	1.55	3.2	161	28	73	55	C	11	
30			3.7								169			59	C	8	
31			3.8								157			59	C	6	
TL															C	505	
ME			3.6	3.4	.44	1280	954	8.76	1.46	4.2	178	1.35	74	57	C	21	

Digester Volume
Primary
Secondary

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

[illegible] MICHIGAN [illegible]

R 4619
4833-5382

MONTH [illegible]

DIGESTER AND SLUDGE DATA [illegible] OPERATOR [illegible]

DATE	RAW SLUDGE Gals. X 100	Total Solids	Vol. Solids	1000 Gal. Digester		DIGESTING SLUDGE Temp. °F	Vol.	Total Solids	Vol. Solids	Vol. Acid Mg/l	Alk. Limit Mg/l	SUPERNATANT Gals. X	pH	Total Solids	Vol. Solids	Sus. Solids	Lbs.	5 Day BOD Mg/l	DIGESTED SLUDGE Gals. X	Total Solids %	Vol. Solids %	pH	Gas Produced Cu. Ft.
1																							
2	20	6.2	65		5.8																		
3	20	4.6	83		5.8																		
4	45	6.1	72		5.4																		
5	45	5.6	67		5.8																		
6	45	5.6	69		6.2																		
7	45	7.0	78		6.2																		
8	45	5.7	67		5.9																		
9	40	5.3	65		6.0																		
10	40	5.7	54		6.0																		
11	45	4.4	63		6.0																		
12	45	5.3	70		6.0																		
13	45	3.8	50		6.0																		
14																							
15	10	3.7	64		6.1																		
16	40	5.2	66		6.0																		
17	40	5.2	67		6.1																		
18																							
19	45	4.8	43		6.1																		
20	25	5.4	75		6.3																		
21																							
22	45	5.5	80		6.0																		
23	40	5.5	68		6.1																		
24	45	4.5	78		6.2																		
25	45	5.5	31		6.0																		
26	45	5.4	68		5.8																		
27	45	9.3	92		5.8																		
28																							
29	45	4.8	80		6.1																		
30	40	4.6	80		5.9																		
31	40	5.1	75		5.9																		
TOTAL	1030																						
ARITH. MEAN	38	5.4	68																				

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall MICHIGAN

MONTH October 82 VACUUM FILTER & INCINERATION DATA OPERATOR R.T. Swalwell

TE	SLUDGE TO FILTER Gal. x 100 1	Sol. 2	Lbs. Dry Sol. 3	Lbs. Dry Sol. 4	CHEMICALS TO FILTER Lbs. Dry 5	6	Feet Lbs. Dry 7	8	FILTER Yield 9	10	FILTRATE Gal. x 100 11	Sol. 12	Sus. Solids Mg/l 13	Vol. Sus. Solids 14	BOD Mg/l 15	Mg/l 16	FILTER CAKE Thou. Lbs. Wet 17	Lbs. Sol. 18	Lbs. Sol. x 100 19	Sol. 20	Sol. x 100 21	INCINERATION Hrs. Opr. 22	Yield 23	Fuel BTU 24	REMARKS 25
1	80	3.7	2486	6.7	1754		191		8.0		76	11.1	1400	16	1740		23	18.5	43	40	17				
2																									
3																									
4																									
5	80	4.9	3293	6.0	1754		191		8.0		76	10.9	1198	17	780		29	17.9	50	43	22				
6	80	5.7	3830	5.8	1754		191		8.0		76	9.6	1098	9	1080		29	19.3	56	45	25				
7	80	4.5	3024	6.4	1754		191		8.0		76	11.7	1052	7	1380		26	18.6	48	41	20				
8																									
9																									
10																									
11																									
12	80	7.6	5107	5.6	1754		191		8.0		76	12.1	886	10	1260		36	19.2	69	46	32				
13	80	5.1	3427	5.8	1754		191		8.0		76	12.1	848	6	1380		29	17.7	51	44	23				
14	80	4.4	2957	6.3	1754		191		8.0		76	12.2	844	15	1080		27	17.3	47	50	23				
15	80	4.5	3024	6.3	1754		191		8.0		76	12.0	1166	42	1560		27	17.8	48	48	23				
16																									
17																									
18																									
19	80	4.6	3091	6.5	1754		191		8.0		76	11.9	1342	6	1320		26	18.4	48	43	22				
20	80	2.8	1882	6.5	1754		191		8.0		76	9.7	1094	10	720		19	18.9	36	51	18				
21	80	4.0	2688	6.7	1754		191		8.0		76	9.7	960	23	1620		22	20.1	44	32	14				
22																									
23																									
24																									
25																									
26																									
27	80	1.9	1277	6.0	1754		191		8.0		76	12.1	1064	7	960		16	18.4	29	49	14				
28	80	5.4	3629	6.0	1754		191		8.0		76	12.1	1140	15	1980		26	21.0	55	46	25				
29																									
30																									
31																									
Total	1040		39715		22,802		2483		104		988						335		624		278				
Avg.	80	4.5	3055		1754		191		8.0		76		1084	14	1297		26	18.7	48	45	21				

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

[illegible] 19 82 — Month

[illegible] — Municipality — Michigan

[illegible] — Superintendent's Signature

1 2 3 4 5 6 7 8 9 10

ID [illegible] — Plant Name — Plant Type — Sewer Type — Sewer Code

DAY 1 2	GRIT 9 CF	ALT. FUEL 14	POWER CONSUMPTION 19 KWH	24 #2 KWH	29 KWH	CHEMICALS APPLIED 34 LBS	39	44	49	54	59
PN											
SF											
01			2520			20	397				
02			2400			40	199				
03			2520			40	596				
04			2400			50	199				
05			2520			40	596				
06			2400			30	596				
07			2520			50	596				
08			2280			40	199				
09			2160			40	199				
10			2280			40	397				
11			2400			50	199				
12			2520			40	596				
13			2640			60	794				
14			2640			30	596				
15			2520			40	794				
16			2520			50	298				
17			2520			40	199				
18			2400			30	298				
19			2520			30	596				
20			2640			60	397				
21			2640			50	397				
22			2520			30	794				
23			2400			50	199				
24			2400			50	397				
25			2520			40	199				
26			2640			40	596				
27			2640			30	397				
28			2400			30	596				
29			2520			40	199				
30			2280			40	199				
31			2280			40	199				
TL			76560			1260	12913				
ME			2470			41	417				

MANPOWER POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL			
Superintendent	1		168
Asst. Supt.	1		168
Shift Foreman			
Shift Operator	3		512
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL

WEEKDAYS 11 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

Month 19 Michigan Superintendent's Signature

1 2 3 ID

Plant No. Code

DAY	BOD5			SS			TOTAL P			VSS	NH_3N	pH	DO	F. COLI		T. COLI	REMA
	9	14	19	24	29	34	39	44	49	54	59	64	69	74	80	9	14
1 2	mg/l	LBS	% Rem.	mg/l	LBS	% Rem.	mg/l	LBS	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01												7.1	3.7		C		
02												7.2			C		
03	5	100	91	2	40	97	.22	4	90	1		7.2			C		
04	5	105	93	3	63	96	.27	6	87	2		7.1	6.3	2	C		
05	6	129	88	7	151	88	.27	6	86	2		7.1	5.0	2	C		
06	12	254	79	5	106	92	.25	5	88	3		7.2	5.0	4	C		
07	21	448	69	16	342	78	.23	5	88	10		7.1	4.9	4	C		
08												7.1	5.6	4	C		
09												7.3			C		
10	5	97	94	5	97	94	.22	4	92	3		7.2			C		
11	8	165	90	11	227	84	.34	7	85	5		7.0	5.9	4	C		
12	7	142	88	9	183	93	.32	7	84	3		6.9	6.8	2	C		
13	21	433	75	5	103	95	.26	5	89	3		6.9	5.2	4	C		
14	7	145	89	7	145	89	.27	6	88	5		7.0	5.0	2	C		
15												7.3	5.5	4	C		
16												7.2			C		
17	19	368	74	8	155	92	.34	7	89	7		7.2			C		
18	13	265	84	6	122	92	.27	5	91	5		7.3	6.1	6	C		
19	23	470	66	3	61	95	.30	6	88	1		7.2	7.5	52	C		
20	7	142	90	5	101	92	.32	6	87	3		7.2	5.0	6	C		
21	10	201	88	11	221	86	.30	6	87	9		7.2	5.2	4	C		
22												7.2	5.3	4	C		
23												7.2			C		
24	10	191	90	4	76	96	.38	7	85	2		7.3			C		
25	23	453	69	6	118	90	.30	6	85	3		7.1	6.6	32	C		
26	6	120	92	5	100	96	.28	6	87	3		6.7	6.5	4	C		
27	20	404	70	3	61	96	.42	8	84	1		7.2	5.1	26	C		
28	21	420	72	5	100	93	.41	8	84	4		7.1	3.9	18	C		
29												7.1	3.8	64	C		
30												7.1			C		
31	5	95	94	6	114	96	.22	4	91	2		7.1			C		
TL		5147			2686			124							C		
ME	12	245	83	6	128	92	.29	6	87	4		7.1	5.4	6	C		
WA	16	318		9	191									21	C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

November (Month), 1982 — Marshall (Municipality), Michigan — Robert J. Swabell (Superintendent's Signature)

IP | 1300291 (Plant No.) | 11 (Mo.) | 82 (Yr.) | 500 (Sampling Point Code)

DAY	WEATHER TYPE	WEATHER PRECIP.	FLOW TOTAL	FLOW MAX RATE	RAW SEWAGE QUALITY TEMP	pH	BOD-5		SS		TOTAL-P		VSS	NH_3-N		REMARKS
1 2	9	14	19	24	29	34	39 44		49 54		59 64		69	74 78	80	9 14
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C	
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C	
SF															C	
01	4	1.20	2.54		57	7.4	64	1356	82	1737	2.65	56	58		C	
02	4	.39	2.56		56	7.2	60	1281	74	1580	1.80	38	60		C	
03	3		2.51		57	7.2	58	1214	74	1549	2.85	60	60		C	
04	5	.01	2.53		56	7.2	84	1772	62	1308	2.45	52	50		C	
05	5	.03	2.49		56	7.4									C	
06	3		2.38		56	7.4									C	
07	3		2.40		56	7.3	71	1421	104	2082	2.45	49	60		C	
08	4	.15	2.47		56	7.5	54	1112	84	1730	2.10	43	60		C	
09	4	.50	2.50		55	7.5	78	1626	82	1710	3.10	65	62		C	
10	4	.03	2.51		55	7.3	79	1654	62	1298	2.55	53	54		C	
11	4	1.10	2.63		55	7.4	86	1886	24	526	2.55	56	14		C	
12	4	.22	2.61		54	7.4									C	
13	9	.01	2.49		54	7.3									C	
14	5	.01	2.49		54	7.1	62	1288	54	1121	2.05	43	44		C	
15	1		2.55		54	7.1	60	1276	60	1276	2.30	49	44		C	
16	1		2.55		54	7.5	58	1233	44	936	1.95	41	30		C	
17	1		2.53		54	7.5	78	1646	60	1266	2.55	54	56		C	
18	3		2.53		54	7.5	54	1139	52	1097	2.45	52	44		C	
19	4	.93	2.53		54	7.4									C	
20	4	.19	2.56		54	7.3									C	
21	1		2.55		53	7.3	78	1659	56	1191	1.95	41	50		C	
22	4	.30	2.59		53	7.2	58	1253	46	994	2.10	45	38		C	
23	4&5	.17	2.65		53	7.5									C	
24	5	.02	2.64		53	7.4									C	
25	5	.03	2.45		53	7.5									C	
26	5	.04	2.49		53	7.5									C	
27	4	.18	2.47		53	7.4									C	
28	4	.35	2.57		54	7.5	80	1714	76	1629	2.65	57	58		C	
29	4	.06	2.59		53	7.4	64	1382	104	2246	2.40	52	64		C	
30	4	.02	2.60		53	7.5	40	867	68	1475	2.05	54	42		C	
31															C	
TL		5.94	7596					26779		26751		960			C	
ME			2.53				67	1409	67	1408	2.37	51	50		C	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

November, 19 82 — Month

Marshall, Michigan — Municipality

Robert J. Swalwell — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	1300.29	11	82	
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY	BOD-5		SS		TOTAL-P		VSS	NH_3-N	REMARKS OR OTHER PARAMETERS								
	9	14	19	24	29	34	39	44	49	54	59	64	69	74 78	80	9	14
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C		
PN	00310	85001	00530	85002	00665	85004	00535	00610							C		
SF															C		
01	70	1483	98	2076	2.75	58	72								C		
02	42	897	48	1025	1.60	34	32								C		
03	44	921	50	1047	1.80	38	42								C		
04	84	1772	40	844	2.05	43	34								C		
05															C		
06															C		
07	58	1161	40	801	1.70	34	36								C		
08	34	700	38	783	1.65	34	26								C		
09	44	917	34	709	2.65	55	24								C		
10	91	1905	30	628	2.20	46	28								C		
11	88	1930	30	658	2.05	45	20								C		
12															C		
13															C		
14	42	872	36	748	1.70	35	32								C		
15	44	936	28	595	1.65	35	20								C		
16	46	978	28	595	1.65	35	22								C		
17	42	886	28	591	1.80	38	26								C		
18	36	760	40	844	1.95	41	28								C		
19															C		
20															C		
21	38	808	32	681	1.40	30	26								C		
22	32	691	24	518	1.50	32	18								C		
23															C		
24															C		
25															C		
26															C		
27															C		
28	60	1286	50	1072	1.90	41	42								C		
29	64	1382	44	950	1.80	39	32								C		
30	30	651	40	867	1.70	37	28								C		
31															C		
TL		20,936		16032		750									C		
ME	52	1102	40	844	1.87	39	31								C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

November, 19 82 — Month

Marshall, Michigan — Municipality

Robert J. Swakwell — Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
ID | 130.029 | 11 | 82 | [ ]
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX.FUEL 14	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 Ferric LBS	44	49	54	59
PN											
SF		2									
01			2400			30	397				
02			2520			30	397				
03			2640			30	695				
04			2760			30	596				
05			2640			20	397				
06		105	2640			30	397				
07		44	2520			10	199				
08		25	2640			20	397				
09		4	2760			30	397				
10		27	2880			20	794				
11		24	2520			20	794				
12		2	2880			30	596				
13		37	2640			40	199				
14		68	2760			20	397				
15		70	2760			30	397				
16		61	3000			30	596				
17		54	2880			20	794				
18		49	2880			20	794				
19		31	2520			20	596				
20		25	2400			10	596				
21		25	2640			30	596				
22		27	2640			30	596				
23		41	2880			30	1191				
24		43	3000			40	596				
25		64	2760			20	397				
26		43	2760			20	397				
27		44	2880			10	199				
28		48	2760			30	397				
29		43	2640			10	397				
30		9	2880				397				
31											
TL		1013	81480			720	15588				
ME		41	2716			25	520				

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Tot: Hou:
TOTAL			
Superintendent	1		16
Asst. Supt.	1		16
Shift Foreman			
Shift Operator	3		48
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONN

WEEKDAYS 11 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

November , 19 82
Month

Marshall , Michigan
Municipality

Robert J. Swartwell
Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
ID | 1300.29 | 11 | 82 | ...
Plant No. Mo. Yr. Sampling Point Code

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Proc Modi catic
	9 Aeration Volume	14 Reaeration Volume	19 Detention Time	24 Sludge Age	29 Organic Loading	34 MLSS	39 MLVSS	44 SETTL.	49 SDI	54 DO	59 Air Applied	64 SS	69 VSS	74 Percent Return	80	9 Waste Sludge	14
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See C
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	8088
SF											4				C		
01	48		3.4	3.5	.38	1549	1158	11.0	1.40	3.0	154	.45	74	58	C	13	
02			3.4								159			54	C	16	
03			3.4	2.7	.51	1130	850	8.0	1.41	3.1	160	4.5	73	51	C	20	
04			3.4								154			60	C		
05			3.5	3.9	.38	1631	1192	10.0	1.63	2.9	172	.40	72	57	C		
06			3.6								175			65	C	9	
07			3.6								166			60	C	2	
08			3.5	3.8	.36	1554	1111	12.0	1.30	5.0	170	.35	65	59	C	32	
09			3.4	3.0	.43	1216	869	12.0	1.01	4.8	173	.32	70	57	C	27	
10			3.4	3.5	.49	1138	814	10.0	1.14	4.0	166	.28	71	55	C	36	
11			3.3	3.5	.51	1131	909	9.0	1.26	3.1	162	.26	73	53	C	35	
12			3.3	4.5	.45	1452	1012	10.0	1.45	3.0	181	.45	72	54	C		
13			3.5								188			58	C	17	
14			3.5								187			58	C	15	
15			3.4	5.1	.41	1421	994	11.0	1.29	4.8	187	.37	70	56	C	30	
16			3.4	5.8	.36	1563	1104	11.0	1.42	4.0	184	.39	70	58	C		
17			3.4	5.8	.39	1469	1036	11.0	1.34	4.4	183	.33	70	57	C	22	
18			3.4	5.4	.41	1368	968	11.0	1.24	5.0	179	.31	70	58	C	26	
19			3.4	5.5	.39	1409	1010	11.0	1.28	5.1	175	.33	69	58	C	29	
20			3.4								173			57	C	17	
21			3.4								180			56	C	14	
22			3.3	6.1	.29	1545	999	13.0	1.19	6.0	177	.39	64	54	C	30	
23			3.3	5.9	.34	1355	861	12.0	1.13	4.5	181	.37	63	51	C	23	
24			3.3	5.7	.32	1450	924	13.0	1.11	5.1	188	.39	64	51	C	10	
25			3.5								186			59	C	87	
26			3.5								186			59	C		
27			3.5								186			60	C		
28			3.4								178			58	C		
29			3.3	6.8	.28	1732	1170	14.0	1.24	4.5	180	.46	67	55	C		
30			3.3	7.5	.21	2236	1517	17.0	1.32	4.5	179	.55	67	53	C		
31															C		
TL															C	530	
ME			3.4	49	.38	1464	1028	11.4	1.29	4.3	176	.38	69	57	C	25	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____, 19 _____ Month

_____, Michigan Municipality

Robert J. Swalwell
Superintendent's Signature

1 2 ID | 3 8 Plant No. | 9 10 Mo. | 11 12 Yr. | 13 15 Sampling Point Code

DAY	BOD-5 19			SS 19			TOTAL-P 19			VSS 19	NH_3-N	pH 30	DO 17	F. COLI* 16		T. COLI*	REMARKS
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01	9	191	86	1	21	99	.28	6	89	1		7.2	4.3	96	C		
02	6	128	90	5	107	93	.27	6	85	4		7.2			C		
03	7	147	88	15	314	80	.46	10	84	11		7.3	4.5		C		
04	7	147	92	9	190	85	.28	6	89	6		7.2			C		
05												7.2	3.6		C		
06												7.3			C		
07	20	400	72	4	80	96	.22	4	91	3		7.3			C		
08	3	62	94	3	62	96	.25	5	88	2		7.5	6.4	70	C		
09	5	104	94	3	63	96	.32	7	90	1		7.3	6.9	70	C		
10	6	126	92	2	42	97	.27	6	89	2		7.4	6.0	42	C		
11	4	88	95	3	66	88	.22	5	91	1		7.4	5.0	64	C		
12												7.4		50	C		
13												7.3			C		
14	6	125	90	5	104	91	.32	7	84	4		7.0			C		
15	5	106	92	7	149	88	.32	7	86	3		7.4	6.7	72	C		
16	4	85	93	5	106	89	.27	6	86	3		7.5	6.3	48	C		
17	4	84	95	1	21	98	.28	6	89	1		7.4	5.8	54	C		
18	3	63	94	2	42	96	.22	5	91	1		7.4	6.0	106	C		
19												7.4	6.2	28	C		
20												7.3			C		
21	3	64	96	2	43	96	.12	3	99	1		7.3			C		
22	5	108	91	2	43	96	.16	3	92	1		7.3	7.2	78	C		
23												7.5	6.1	62	C		
24												7.4	6.7	102	C		
25												7.4			C		
26												7.5			C		
27												7.5			C		
28	10	214	88	7	150	91	.27	8	90	5		7.5			C		
29	7	151	89	7	151	93	.20	4	92	3		7.3	6.3	216	C		
30	4	87	90	17	369	75	.25	5	88	3		7.4	6.2	260	C		
31															C		
TL		2480			2123			109							C		
ME	6	131	91	5	112	92	.26	6	89	3		7.3	5.9	75	C		
WA	10.	203		10	223									179	C		

Digester Volume, ft³
Primary
Secondary

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

R 4619
4833-5382

Marshall, MICHIGAN

Supernatant To
Process Pattern

MONTH November 1982

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				G
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	Prod cu. X
1	45	5.1	68		5.9																			
2	45	5.0	80		6.0																			
3	45	4.1	80		6.0																			
4	45	4.6	68		6.0																			
5	45	5.2	64		6.1																			
6	40	4.5	78		6.1																			
7	40	4.6	69		6.1																			
8	30																							
9	45	5.7	80		5.9																			
10	45	4.1	76		6.2																			
11	45	4.2	68		6.3																			
12	40																							
13	40	6.3	76		6.3																			
14	40	4.5	61		6.3																			
15	46	4.5	72		6.2																			
16	45	5.2	69		6.3																			
17	45	4.9	67		6.2																			
18	45	5.2	69		6.2																			
19	45	4.5	77		6.1																			
20	40	5.8	73		6.2																			
21	40	4.2	61		6.1																			
22	45	4.0	61		6.3																			
23	45	2.9	72		6.4																			
24	45	4.2	71		6.7																			
25	40	4.4	80		6.5																			
26	40	4.5	68		6.5																			
27	40	4.4	62		6.4																			
28	40	4.0	60		6.4																			
29	45	4.5	74		6.7																			
30	30	4.9	70		6.6																			
31																								
TOTAL	1216																							
ARITH. MEAN	42	4.5	71																					

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

MDPH
D-4.7

Marshall, MICHIGAN

MONTH November, 19 82 — VACUUM FILTER & INCINERATION DATA — OPERATOR R.J. Swalwell

DATE	SLUDGE TO FILTER				CHEMICALS TO FILTER				FILTER		FILTRATE						FILTER CAKE					INCINERATION			REMARKS
	Gal. X 100	Tot. Sol. %	Lbs. Dry Sol.	pH	CaO Lbs. Dry	CaO R	FeCl3 Lbs. Dry	FeCl3 R	Tot. Hours	Yield	Gal. X 100	pH	Sus. Solids Mg/l	Vol. Susp. Solids %	5 Day BOD Mg/l	P Mg/l	Thou. Lbs. Wet	Tot. Sol. %	Lbs. Tot. Solids X 100	Vol. Sol. %	Lbs. Vol. Solids / 180	Hrs. Opr.	Yield	Fuel BTU	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1																									
2	106	4.1	3651		1750		191		8.0		76		934	14	960		30	17.8	53	52	28				
3	106	4.1	3651		1750		191		8.0		76		820	15	1200		30	18.2	55	53	29				
4	106	4.9	3463		1750		191		8.0		76		782	23	780		27	19.0	51	53	27				
5																									
6																									
7																									
8																									
9																									
10	106	4.5	4007		1750		191		8.0		76		904	8	1500		33	17.5	58	49	28				
11	106	4.1	3651		1750		191		8.0		76		688	17	960		29	18.7	54	42	23				
12	106	4.9	3463		1750		191		8.0		76		1142	10	1440		29	18.2	53	51	27				
13																									
14																									
15																									
16	106	4.5	4007		1750		191		8.0		76		830	10	600		33	17.2	57	52	30				
17	106	3.6	3205		1750		191		8.0		76		936	3	1560		26	19.0	49	50	25				
18	106	5.1	4541		1750		191		8.0		76		820	21	1200		32	19.7	63	46	29				
19																									
20																									
21																									
22																									
23	106	5.7	5075		1750		191		8.0		76		1552	8	780		37	18.3	68	42	28				
24	106	3.8	3384		1750		191		8.0		76		1552	8	960		28	18.4	52	53	27				
25																									
26																									
27																									
28																									
29																									
30	106	4.1	3651		1750		191		8.0		76		952	8	2100		29	18.6	54	52	28				
31																									
Total	1272		45774		21000		2292		96		912						363		667		329				
Arith. Means	106	4.5	3812		1750		191		8.0		76		993	12	1170		30	18.4	56	50	27				

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

December, 19 82
Month

Marshall, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

ID 13,0629 12 82 500
Plant No. Mo. Yr. Sampling Point Code

DAY	WEATHER		FLOW		RAW SEWAGE QUALITY											REMARKS OR OT
	TYPE	PRECIP.	TOTAL	MAX RATE	TEMP	pH	BOD-5		SS		TOTAL-P		VSS	NH_3-N		
1 2	9	14	19	24	29	34	39 44		49 54		59 64		69	74 78	80	9 14 19
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C	
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C	
SF															C	
01	3		2.58		53	7.4	64	1377	60	1291	2.10	45	46		C	
02	4	.55	2.61		53	7.4	52	1132	40	871	2.50	54	32		C	
03	4	.23	2.58		53	7.5									C	
04	4	.35	2.53		53	7.4									C	
05	4	.57	2.67		53	7.4	62	1381	40	891	2.00	45	32		C	
06	1		2.75		53	7.5	46	1055	56	1284	2.10	48	50		C	
07	1		2.75		53	7.4	52	1193	42	963	3.70	85	40		C	
08	5	.03	2.77		53	7.4	58	1340	60	1386	2.10	49	50		C	
09	1		2.72		53	7.4	54	1225	34	771	1.70	39	26		C	
10	3		2.67		52	7.5									C	
11	1		2.58		52	7.3									C	
12	1		2.57		52	7.3	66	1415	78	1672	2.10	45	50		C	
13	1		2.64		52	7.3	56	1233	60	1321	1.90	42	52		C	
14	4	.10	2.65		52	7.4	76	1680	58	1282	2.20	49	52		C	
15	4+5	.49	2.66		52	7.3	56	1242	50	1109	2.20	49	32		C	
16	4	.02	2.69		52	7.5	64	1436	48	1079	2.10	47	44		C	
17	3		2.64		52	7.4									C	
18	4	.06	2.56		52	7.4									C	
19	4	.03	2.54		52	7.5	50	1059	56	1186	1.95	41	52		C	
20	5	.02	2.65		51	7.4	44	972	60	1326	2.10	46	48		C	
21	1		2.66		51	7.5	56	1242	64	1420	2.90	64	52		C	
22	1		2.59		51	7.3									C	
23	4	.13	2.51		51	7.2									C	
24	4	.68	2.51		51	7.3									C	
25	1		2.41		51	7.4									C	
26	3		2.54		51	7.3	54	1144	76	1610	2.05	43	50		C	
27	4	.39	2.64		51	7.3	40	881	64	1409	2.10	46	54		C	
28	4	.04	2.69		51	7.5	56	1256	100	2243	2.45	55	94		C	
29	5	.02	2.64		51	7.4	62	1365	56	1233	2.30	51	40		C	
30	3		2.59		51	7.3									C	
31	1		2.59		51	7.5									C	
TL		3.71	81.18					23628		24345		943			C	
ME			2.62				56	1244	58	1281	2.24	50	47		C	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

December, 19 82
Month

Marshall, Michigan
Municipality

Robert J. Swahill
Superintendent's Signature

1 2 ID | 3 8 130929 Plant No. | 9 10 12 Mo. | 11 12 82 Yr. | 13 15 Sampling Point Code

DAY	BOD-5 9 14		SS 19 24		TOTAL-P 29 34		VSS 39	NH_3-N 44	REMARKS OR OTHER PARAMETERS 49	54	59	64	69	74 78	80	9	14	19
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C			
PN	00310	85001	00530	85002	00665	85004	00535	00610							C			
SF															C			
01	40	861	40	861	1.70	37	30								C			
02	42	941	30	653	2.00	44	20								C			
03															C			
04															C			
05	57	1202	26	579	1.70	38	20								C			
06	44	1009	28	642	1.90	44	26								C			
07	46	1055	42	963	3.40	78	32								C			
08	44	1016	62	1432	2.00	46	54								C			
09	38	862	36	817	1.70	39	28								C			
10															C			
11															C			
12	36	772	36	772	1.50	32	22								C			
13	32	705	20	440	1.40	31	8								C			
14	54	1193	54	1193	1.90	42	30								C			
15	44	976	30	666	1.80	40	14								C			
16	40	899	30	673	1.70	38	28								C			
17															C			
18															C			
19	34	720	26	551	1.60	34	20								C			
20	26	575	40	884	1.65	36	32								C			
21	40	857	48	1065	2.40	53	32								C			
22															C			
23															C			
24															C			
25															C			
26	34	763	54	1144	1.65	35	32								C			
27	20	440	34	749	1.65	36	30								C			
28	52	1167	34	763	2.05	46	26								C			
29	46	1013	38	837	1.95	43	20								C			
30															C			
31															C			
TL		17354		15684		792									C			
ME	40	898	37	825	186	42	27								C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

December, 19 82
Month

Marshall, Michigan
Municipality

Robert J. Swahill
Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
ID 130129 12 82 ..
Plant No. Mo. Yr. Sampling Point Code

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14	R 19
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	8C	Waste Sludge 9		
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*	
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889	
SF											4				C			
01	48		3.3	7.0	.23	1914	1308	16.0	1.26	4.0	166	.50	67	52	C	14		
02			3.3	6.8	.26	1836	1252	15.0	1.22	3.2	172	.46	67	56	C			
03			3.3	6.8	.25	1812	1250	15.0	1.21	3.2	181	.48	67	57	C			
04			3.4								184			56	C	9		
05			3.2								179			53	C	15		
06			3.1	4.4	.43	1244	861	12.0	1.04	5.0	188	.34	68	50	C	30		
07			3.1	3.8	.59	1042	699	9.0	1.16	4.8	167	.31	67	50	C	29		
08			3.1	3.8	.41	1106	801	8.0	1.38	3.6	202	.41	70	52	C	28		
09			3.2	4.0	.43	1163	774	9.0	1.29	3.8	205	.25	73	53	C	35		
10			3.2	4.3	.36	1198	898	10.0	1.20	6.5	197	.36	76	55	C	1		
11			3.3								205			57	C			
12			3.4								204			57	C	5		
13			3.3	5.4	.31	1431	996	15.0	.95	7.7	198	.42	68	53	C	28		
14			3.3	5.8	.27	1717	1228	15.0	1.14	5.8	193	.45	71	55	C			
15			3.2	6.3	.24	1864	1280	15.0	1.24	5.0	192	.32	71	54	C	14		
16			3.2	4.7	.31	1355	980	12.0	1.13	5.7	123	.32	72	53	C	40		
17			3.3	5.9	.24	1680	1241	14.0	1.20	5.5	149	.39	73	55	C			
18			3.4								143			58	C	5		
19			3.4								144			58	C	10		
20			3.3	4.9	.31	1236	905	12.0	1.03	6.1	148	.34	73	55	C	20		
21			3.2	4.1	.38	1070	761	11.0	.97	5.2	150	.26	71	53	C	36		
22			3.3	5.5	.27	1407	1052	13.0	1.08	2.8	144	.37	72	55	C			
23			3.4								138			56	C	4		
24			3.4								137			56	C	17		
25			3.6								140			60	C			
26			3.4								148			57	C	16		
27			3.3	4.0	.30	1180	836	12.0	.98	6.4	139	.33	70	54	C	31		
28			3.2	4.8	.25	1485	1041	13.0	1.14	5.1	146	.42	70	54	C			
29			3.3	5.8	.21	1763	1339	15.0	1.18	4.0	152	.44	65	52	C	9		
30			3.3	4.2	.28	1281	930	15.0	.85	5.2	152	.36	71	55	C	20		
31			3.3								148			55	C	13		
TL															C	434		
ME			3.2	5.1	.32	1439	1020	12.8	1.13	4.9	165	.38	70	55	C	19		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

December, 19 82
Month

Marshall
Municipality, Michigan

Robert F. Swalwell
Superintendent's Signature

ID 1300.29 12 82
Plant No. Mo. Yr. Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX.FUEL 14 G75 CF	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 $FeCl_3$	44	49	54	59
PN											
SF		2									
01		19	2760	x		20	794				
02		1	2520	x		10	596				
03		1	2520	x		20	596				
04			2520			20	199				
05		3	2520			30	199				
06		38	2760			30	397				
07		57	2880	x		40	596				
08		53	3120	x		20	199				
09		78	3120	x		30	596				
10		56	3000	x		20	596				
11		74	2880			30	298				
12		80	2880			20	397				
13		74	3000			20	298				
14		42	2880	x		30	496				
15		46	3000	x		20	695				
16		64	2520	x		40	496				
17		68	2690			20	298				
18		42	2520			20	199				
19		42	2520			30	397				
20		65	2640			20	397				
21		65	2760	x		30	397				
22		45	2760	x		20	596				
23		29	2400			20	397				
24		27	2400			20	397				
25		37	2280			20	397				
26		23	2520			30	199				
27		26	2640			20	397				
28		57	2880	x		30	794				
29		81	2880	x		20	596				
30		76	2640	x		20	397				
31		67	2640			30	397				
TL		1436	84000			750	13703				
ME		46	2710			24	442				

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours	N Va
TOTAL	5		816	
Superintendent	1		160	
Asst. Supt.	1		160	
Shift Foreman				
Shift Operator	3		496	
Maint. Supervisor				
Mechanic				
Chemist				
Lab Technician				
Clerk-Typist				
Other				

GIVE THE HOURS PER DAY PLANT PERSONNEL ARE

WEEKDAYS 11 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ Month , 19 _____ _____ Municipality , Michigan _____ Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
ID [ ] [ ] [ ] [ ]
Plant No. Mo. Yr. Sampling Point Code

DAY	19 BOD-5			19 SS			19 TOTAL-P			19 VSS	NH_3-N	31 pH	20 DO	F. COLI* 18		T. COLI*	REMARKS
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01	4	86	94	6	129	90	.22	5	89	4		7.3	4.9		C		
02	6	131	90	2	44	95	.27	6	89	1		7.4	4.5	80	C		
03												7.3	4.4	182	C		
04												7.2			C		
05	8	178	87	2	46	95	.28	6	86	1		7.3			C		
06	5	115	89	5	115	91	.41	9	80	3		7.5	6.7	96	C		
07	8	183	85	6	138	86	.90	21	82	5		7.4	6.4	108	C		
08	10	231	83	13	300	78	.80	18	62	10		7.5	6.3	98	C		
09	9	204	83	9	204	74	.62	14	64	8		7.3	6.0	206	C		
10												7.4	8.2		C		
11												7.3			C		
12	10	214	85	11	236	86	.46	10	78	3		7.3			C		
13	7	154	88	8	176	87	.41	9	78	6		7.4	7.4	134	C		
14	9	199	88	11	243	81	.41	9	81	8		7.3	6.6	158	C		
15	7	155	88	10	222	80	.41	9	81	7		7.2	5.1	392	C		
16	13	292	80	13	292	73	.46	10	78	8		7.4	6.5	26	C		
17												7.2	4.7	210	C		
18												7.3			C		
19	10	212	80	8	169	86	.40	8	79	4		7.4			C		
20	6	132	86	14	309	77	.41	9	80	8		7.4	6.3	34	C		
21	8	177	86	12	266	81	.42	9	86	8		7.4	6.1	130	C		
22												7.4	4.5	80	C		
23												7.2			C		
24												7.3			C		
25												7.3			C		
26	5	106	91	12	254	84	.40	8	80	2		7.3			C		
27	4	88	90	9	198	86	.37	8	82	8		7.3	7.0	4	C		
28	9	202	84	4	90	96	.41	9	83	3		7.5	5.9	4	C		
29	9	198	85	9	198	84	.46	10	80	4		7.4	4.8	10	C		
30												7.4	5.6	50	C		
31												7.3			C		
TL		3257			3629			187							C		
ME	8	171	86	9	191	85	.45	10	80	5		7.3	5.9	6.5	C		
WA	9	203		12	257									203	C		

Digester Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To _____
Process Pattern _____

MONTH December 1982

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	50	4.7	66		6.5																			
2	45	5.4	68		6.3																			
3	45	6.4	74		6.5																			
4	40	4.4	54		6.4																			
5	40	4.2	56		6.5																			
6	45	4.0	80		6.8																			
7	45	4.1	61		6.9																			
8	45	4.9	62		6.7																			
9	45	4.5	64		6.7																			
10	30	4.7	69		6.8																			
11	40	4.2	80		6.6																			
12	40	4.5	65		6.4																			
13	40	3.5	89		6.2																			
14	45	5.1	71		6.1																			
15	45	4.7	69		6.0																			
16	45	5.4	70		6.2																			
17	45	4.4	71		6.3																			
18	40	4.9	80		6.3																			
19	40	4.2	67		6.2																			
20	45	4.0	81		6.3																			
21	25	3.5	70		6.2																			
22	50	3.5	70		6.2																			
23	40	3.8	81		6.2																			
24	40	3.9	77		6.3																			
25	40	4.5	81		6.3																			
26	40	4.1	58		6.3																			
27	45	4.4	67		6.3																			
28	45	4.7	68		6.4																			
29	40	4.2	72		6.4																			
30	40	4.8	79		6.3																			
31	40	2.4	71		6.5																			
TOTAL	1300																							
ARITH. MEAN	42	4.4	71																					

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

MDPH
D-4.7

Marshall, MICHIGAN

MONTH December, 1982 — VACUUM FILTER & INCINERATION DATA — OPERATOR R.J. Swalwell

TE	SLUDGE TO FILTER				CHEMICALS TO FILTER				FILTER		FILTRATE						FILTER CAKE					INCINERATION			REMARKS
	Gal. X 100	Tot. Sol. %	Lbs. Dry Sol.	pH	Lbs. Dry	R	FeCl3 Lbs. Dry	R	Tot. Hours	Yield	Gal. X 100	pH	Sus. Solids Mg/l	Vol. Susp. Solids %	5 Day BOD Mg/l	P Mg/l	Thou. Lbs. Wet	Tot. Sol. %	Lbs. Tot. Solids X 100	Vol. Sol. %	Lbs. Vol. Solids X 100	Hrs. Opr.	Yield	Fuel BTU	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	90	4.1	3100	4.4	1320		191		8.0		76	12.1	854	9	1380		25	17.5	44	52	23				
2	90	3.9	2948	6.3	1320		191		8.0		76	12.0	1052	6	780		25	17.1	43	50	21				
3	90	5.0	3780	6.4	1320		191		8.0		76	11.8	828	7	1560		29	17.8	52	50	26				
4																									
5																									
6																									
7	90	4.2	3175	6.6	1320		191		8.0		76	11.9	724	9	1260		26	17.6	46	58	27				
8	90	5.7	4309	6.5	1320		191		8.0		76	12.1	878	19	2220		28	19.9	56	51	28				
9	90	5.9	4460	6.4	1320		191		8.0		76	12.2	654	27	2160		31	18.4	57	53	30				
10	90	6.1	4612	6.4	1320		191		8.0		76	12.1	892	14	2460		30	19.9	60	51	30				
11																									
12																									
13																									
14	90	5.0	3780	6.3	1320		191		8.0		76	12.0	926	8	1020		24	21.2	51	50	25				
15	90	5.3	4007	6.2	1320		191		8.0		76	11.9	744	25	2700		25	21.4	54	50	27				
16	90	5.0	3780	6.3	1320		191		8.0		76	11.8	554	15	1360		26	19.8	51	52	27				
17																									
18																									
19																									
20																									
21	90	3.8	2873	6.2	1320		191		8.0		76	10.5	832	41	1080		22	19.0	42	57	24				
22	90	5.6	4234	6.0	1320		191		8.0		76	11.5	862	40	1020		26	21.1	55	51	28				
23																									
24																									
25																									
26																									
27	90	3.4	2570	6.2	1320		191		8.0		76	12.1	772	13	1980		21	18.8	39	54	21				
28	90	3.9	2948	6.4	1320		191		8.0		76	12.2	548	18	1020		21	20.0	42	43	18				
29	90	5.1	3856	6.4	1320		191		8.0		76	12.2	1310	6	1380		23	22.6	52	52	27				
	1350		55432		19800		2865		120.		1140						382		544		382				
Avg	90	4.8	3695		1320		191		8.0		76		829	17	1572		25	19.5	50	52	25				

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

January (Month), 19 84 — Marshall (Municipality), Michigan — Robert J. Swalwell (Superintendent's Signature)

ID | 130029 (Plant No.) | 01 (Mo.) | 84 (Yr.) | 500 (Sampling Point Code)

DAY	WEATHER		FLOW		RAW SEWAGE QUALITY											REMARKS OR OT
	TYPE	PRECIP.	TOTAL	MAX RATE	TEMP	pH	BOD-5		SS		TOTAL-P		VSS	NH_3-N		
1 2	9	14	19	24	29	34	39	44	49	54	59	64	69	74	78 80	9 14 19
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C	
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C	
SF															C	
01	1		2.13		50	7.3									C	
02	1		2.25		51	7.4	92	1726	50	938	2.30	43	36		C	
03	1		2.21		51	7.3									C	
04	1		2.64		51	7.6	76	1673	82	1805	2.05	45	52		C	
05	1		2.72		51	7.3	72	1633	116	2631	2.20	50	76		C	
06	1		2.58		51	7.6									C	
07	1		2.41		51	7.3									C	
08	1		2.44		51	7.3	72	1465	74	1506	2.05	42	56		C	
09	5	.22	2.53		50	7.4	78	1646	80	1688	2.55	54	50		C	
10	1		2.51		50	7.4	74	1549	78	1633	2.65	55	60		C	
11	3		2.50		50	7.3	64	1334	66	1376	2.45	51	40		C	
12	3		2.55		50	7.6	56	1191	60	1276	2.20	47	48		C	
13	5	.08	2.41		50	7.3									C	
14	1		2.35		50	7.4									C	
15	1		2.39		50	7.4	72	1435	64	1276	2.40	48	38		C	
16	5	.01	2.44		50	7.4	62	1283	68	1388	2.30	48	46		C	
17	5	.02	2.42		50	7.5	64	1292	49	888	2.65	53	28		C	
18	5	.02	2.44		50	7.5	54	1099	66	1343	2.55	52	38		C	
19	1		2.44		50	7.5	74	1506	48	977	2.30	47	38		C	
20	5	.02	2.41		50	7.4									C	
21	1		2.38		50	7.5									C	
22	1		2.38		50	7.4	72	1429	56	1113	2.55	51	32		C	
23	4	.03	2.47		49	7.3	54	1113	104	2142	2.40	49	82		C	
24	3		2.46		50	7.5	54	1108	68	1395	2.40	49	38		C	
25	3		2.43		50	7.4	52	1054	60	1216	2.30	47	42		C	
26	5	.02	2.52		50	7.4	70	1471	78	1639	2.20	46	64		C	
27	1		2.42		50	7.5									C	
28	5	.12	2.41		50	7.5									C	
29	5	.10	2.40		50	7.4	56	1121	56	1121	2.45	49	46		C	
30	1		2.44		49	7.6	52	1058	60	1221	2.40	49	36		C	
31	1		2.46		49	7.3	72	1477	60	1231	2.15	126	36		C	
TL		.64	76.09					28,167		29,702		1,101			C	
ME			2.45				66	1365	68	1414	2.55	52	47		C	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

January, 19 84
Month

Marshall, Michigan
Municipality

Robert J Swalwell
Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
ID 130029 01 84 . .
Plant No. Mo. Yr. Sampling Point Code

DAY	BOD-5 9 14		SS 19 24		TOTAL-P 29 34		VSS 39	NH_3-N 44	REMARKS OR OTHER PARAMETERS 49 54 59 64 69 74 78 80	9	14	19
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l				
PN	00310	85001	00530	85002	00665	85004	00535	00610				
SF									C			
01									C			
02	72	1351	66	1238	2.70	45	56		C			
03									C			
04	74	1629	60	1321	2.45	54	44		C			
05	62	1406	66	1497	2.45	56	58		C			
06									C			
07									C			
08	86	1750	84	1709	3.30	47	66		C			
09	56	1182	76	1604	2.65	56	56		C			
10	72	1507	72	1507	2.45	55	50		C			
11	52	1084	68	1418	2.65	55	48		C			
12	90	1914	80	1701	2.90	62	62		C			
13									C			
14									C			
15	56	1116	82	1634	2.45	51	54		C			
16	58	1204	74	1537	2.55	53	52		C			
17	56	1130	54	1090	2.85	58	36		C			
18	56	1140	72	1465	2.40	49	56		C			
19	96	1954	68	1384	2.65	54	52		C			
20									C			
21									C			
22	50	992	70	1389	2.55	51	36		C			
23	46	948	82	1689	2.45	50	64		C			
24	44	903	100	2053	2.65	54	62		C			
25	42	851	64	1297	2.45	50	48		C			
26	66	1261	68	1429	2.40	50	46		C			
27									C			
28									C			
29	50	1000	65	1301	2.45	49	40		C			
30	62	1262	68	1384	2.85	58	38		C			
31	64	1313	68	1345	5.10	105	16		C			
TL		26817		31042		1162			C			
ME	62	1281	72	1478	2.68	55	50		C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

January, 19____ (Month)

Marshall (Municipality), Michigan

Robert J Swalwell (Superintendent's Signature)

1 2 3 8 9 10 11 12 13 15
ID | 1300229 | 01 | 84 | ...
Plant No. Mo. Yr. Sampling Point Code

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14 19
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	8C	Waste Sludge 9	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		4.0								174			47	C	8	
02			3.8								170			44	C	16	
03			3.2	4.3	.30	2476	1808	15.0	1.65	5.3	167	.70	72	37	C	17	
04			3.3	3.5	.39	1908	1388	14.0	1.36	3.3	167	.72	72	38	C	44	
05			3.2	3.8	.35	2098	1504	15.0	1.40	4.6	163	.75	71	37	C	5	
06			3.3	3.9	.33	2041	1500	13.0	1.57	5.4	171	.59	70	39	C	17	
07			3.5								170			41	C	10	
08			3.5								174			41	C	5	
09			3.4	3.7	.36	1861	1299	14.0	1.33	7.2	176	.69	68	40	C	34	
10			3.4	3.9	.41	1980	1321	14.0	1.41	6.3	177	.58	69	40	C	20	
11			3.4	3.3	.38	1627	1153	11.0	1.48	6.9	178	.61	70	40	C	40	
12			3.4	4.1	.33	2114	1327	14.0	1.51	4.6	176	.60	71	39	C		
13			3.6	4.1	.33	1995	1447	15.0	1.33	6.4	179	.64	72	41	C	19	
14			3.7								180			43	C	4	
15			3.6								173			42	C	17	
16			3.5	3.4	.35	1814	1330	13.0	1.40	8.2	175	.58	73	40	C	16	
17			3.6	3.9	.31	1875	1366	15.0	1.37	5.0	178	.56	72	41	C	15	
18			3.5	3.9	.31	1873	1362	15.0	1.25	7.1	178	.58	72	41	C	16	
19			3.5	3.6	.35	1759	1270	14.0	1.26	7.9	178	.69	72	41	C	15	
20			3.6	3.6	.36	1694	1233	13.0	1.30	7.1	182	.60	72	41	C	15	
21			3.6								182			42	C	16	
22			3.6								173			42	C	18	
23			3.5	4.0	.28	1995	1457	18.0	1.11	6.2	166	.66	73	40	C	5	
24			3.5	3.9	.27	1996	1460	17.0	1.17	5.9	165	.63	73	41	C	18	
25			3.5	4.1	.26	2015	1455	16.0	1.26	6.2	166	.53	72	45	C	15	
26			3.4	3.9	.27	1931	1432	15.0	1.29	6.5	165	.49	73	44	C	18	
27			3.6	2.8	.36	1401	1040	11.0	1.27	7.2	172	.44	72	41	C	17	
28			3.6								166			42	C	11	
29			3.6								168			43	C	14	
30			3.5	3.3	.28	1681	1246	15.0	1.12	8.1	173	.52	73	42	C	15	
31			3.5	3.6	.26	1860	1396	18.0	1.03	6.1	173	.59	73	42	C	2	
TL															C	487	
ME			3.5	3.7	.33	1904	1374	14.5	1.33	6.3	173	.61	72	41	C	16	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

January (Month), 19 84 — Marshall (Municipality), Michigan — Robert J Swalwell (Superintendent's Signature)

ID 13.0029 (Plant No.) 01 (Mo.) 84 (Yr.) ... (Sampling Point Code)

DAY 1 2	GRIT 9 CF	AUX.FUEL 14 GAS	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 $FeCl_3$ LBS.	44 Water CF	49	54	59
PN											
SF		2									
01		100	2400			40	199	320			
02		73	2400			30	199	380			
03		67	2400			30	199	430			
04		62	2640			30	199	320			
05		50	2520			30	397	310			
06		31	2520			30	199	390			
07		29	2400			30	199	320			
08		78	2520			30	199	[illegible]			
09		93	2760			40	199	380			
10		92	2640			30	199	320			
11		96	2760			30	199	420			
12		91	2760			30	199	350			
13		88	2520			40	199	340			
14		91	2640			40	199	320			
15		93	2640			20	199	430			
16		60	2760			20	199	330			
17		62	2640			30	199	450			
18		71	2760			40	199	320			
19		47	2760			20	199	330			
20		100	2640			30	199	410			
21		92	2760			20	298	340			
22		52	2640			20	298	450			
23		48	2520			20		340			
24		41	2520			20	199	360			
25		44	2640			20	199	470			
26		37	2520			30	99	430			
27		68	2640			20	99	420			
28		31	2400			20	199	310			
29		38	2520			30	99	420			
30		59	2640			20	199	310			
31		54	2520			20	199	380			
TL		2288	80400			860	6066	11420			
ME		67	2594			28	202	368			

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		848
Superintendent	1		168
Asst. Supt.	1		168
Shift Foreman			
Shift Operator	3		512
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL AR

WEEKDAYS 9 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary
Secondary

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

Supernatant To
Process Pattern

R 4619
4833-5382

MONTH January 1984

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE Gals. 100	RAW SLUDGE Total Solids %	RAW SLUDGE Vol. Solids %	RAW SLUDGE Vol. Solids Lbs./1000 c.f. Digester	RAW SLUDGE pH	DIGESTING SLUDGE Temp. °F	DIGESTING SLUDGE pH	DIGESTING SLUDGE Total Solids %	DIGESTING SLUDGE Vol. Solids %	DIGESTING SLUDGE Vol. Acids Mg/l	DIGESTING SLUDGE Alkalinity Mg/l	SUPERNATANT Gals. X	SUPERNATANT pH	SUPERNATANT Total Solids %	SUPERNATANT Vol. Solids %	SUPERNATANT Susp. Solids Mg/l	SUPERNATANT P Mg/l	SUPERNATANT P Lbs.	SUPERNATANT 5-Day BOD Mg/l	DIGESTED SLUDGE Gals. X	DIGESTED SLUDGE Total Solids %	DIGESTED SLUDGE Vol. Solids %	DIGESTED SLUDGE pH	Gas Produced cu. ft X
1	33	4.1	55		6.5																			
2	30	4.3	68		6.5																			
3	30	4.3	59		6.5																			
4	30	4.7	58		6.5																			
5	30	4.6	58		6.5																			
6	51	5.0	60		6.6																			
7	30	4.6	64		6.5																			
8	30	4.4	56		6.5																			
9	30	5.4	31		6.4																			
10	30	5.0	67		6.5																			
11	30	5.1	61		6.4								9.9	.53	79									
12	30	5.1	64		6.7																			
13	48	5.8	58		6.4																			
14	30	5.5	48		6.4																			
15	25	4.0	59		6.4																			
16	30	4.3	65		6.4																			
17	30	4.2	59		6.5																			
18	30	5.3	63		6.4																			
19	30	4.3	57		6.5																			
20	41	4.5	54		6.5																			
21	30	4.8	62		6.5																			
22	30	4.4	63		6.4																			
23	30	4.8	52		6.4																			
24	30	5.0	62		6.4																			
25	30	5.1	66		6.5																			
26	30	4.9	66		6.4																			
27	57	5.2	65		6.5																			
28	30	4.0	63		6.5																			
29	30	4.0	53		6.5																			
30	30	4.2	58		6.5																			
31	30	4.0	70		6.5								10.8	.40	77									
TOTAL	1225																							
ARITH-MEAN	52	4.7	60																					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

JAN _____ , 19 _____
Month

_____ , Michigan
Municipality

_____
Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
ID [ ] [ ] [ ] [ ]
Plant No. Mo. Yr. Sampling Point Code

DAY	21 BOD-5 9	14	19	21 SS 24	29	34	21 TOTAL-P 39	44	49	21 VSS 54	NH_3-N 59	pH 64 31	DO 69 21	F. COLI* 74 20	80	T. COLI* 9	REMARKS 14	19
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml		
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505		
SF															C			
01												7.3			C			
02	22	413	76	3	56	94	.42	8	82	2		7.9			C			
03												7.3	6.6	2	C			
04	21	462	72	10	220	88	.34	7	83	5		7.3	4.7	60	C			
05	19	431	74	8	181	93	.32	7	85	6		7.4	5.9	2	C			
06												7.3	6.1	4	C			
07												7.3			C			
08	6	122	92	13	265	82	.32	7	84	10		7.3			C			
09	4	84	95	9	190	89	.34	7	87	3		7.3	6.6	20	C			
10	21	440	72	10	209	87	.42	9	84	7		7.6	6.8	TNTC	C			
11	5	104	92	4	83	94	.40	8	84	1		7.4	6.2	4	C			
12	12	255	79	17	362	72	.56	12	75	15		7.5	5.9	10	C			
13												7.3	5.5	2	C			
14												7.2			C			
15	8	159	89	14	279	78	.34	7	89	5		7.2			C			
16	7	145	89	7	145	89	.28	6	88	5		7.4	7.5	6	C			
17	6	121	91	2	40	95	.42	8	84	1		7.4	6.7	4	C			
18	5	102	91	5	102	92	.44	9	83	2		7.5	6.5	2	C			
19	9	183	88	2	41	96	.46	9	80	2		7.3	7.5	18	C			
20												7.4	7.6	2	C			
21												7.4			C			
22	12	238	83	9	179	84	.46	9	82	2		7.3			C			
23	7	144	87	12	247	88	.44	9	82	7		7.4	7.1	6	C			
24	6	123	89	18	369	74	.50	10	79	4		7.4	6.2	18	C			
25	6	122	88	5	101	92	.47	10	80	3		7.4	6.0	14	C			
26	11	231	84	13	273	83	.66	14	70	7		7.4	6.3	300	C			
27												7.5	7.1	80	C			
28												7.4			C			
29	7	140	88	2	40	96	.47	9	81	1		7.4			C			
30	8	163	85	10	203	83	.55	11	77	5		7.3	7.1	50	C			
31	12	246	83	8	164	87	1.31	27	79	7		7.4	8.3	272	C			
TL		4428			3749			203							C			
ME	10	211	85	9	179	87	.47	10	82	5		7.4	6.6	11	C			
WA	17	357	79	11	234									86	C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

February (Month), 19 84 — Marshall (Municipality), Michigan — Robert J. Swalwell (Superintendent's Signature)

1 2 | 3 8 | 9 10 | 11 12 | 13 15
ID | 1300249 (Plant No.) | 02 (Mo.) | 84 (Yr.) | 500 (Sampling Point Code)

DAY 1 2	WEATHER		FLOW		RAW SEWAGE QUALITY											REMARKS OR	
	TYPE 9	PRECIP. 14	TOTAL 19	MAX 24 RATE	TEMP 29	pH 34	BOD-5 39 44		SS 49 54		TOTAL-P 59 64		VSS 69	NH_3-N 74 78	80	9	14
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C		
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C		
SF															C		
01	1		2.45		49	7.5	50	1022	60	1226	2.40	49	44		C		
02	4	.31	2.55		49	7.5	56	1191	54	1148	2.45	52	38		C		
03	1		2.46		49	7.4									C		
04	5	.02	2.45		49	7.4									C		
05	5	.01	2.42		49	7.4	52	1050	56	1130	2.05	41	40		C		
06	5	.03	2.44		49	7.5	62	1213	54	1099	2.55	52	42		C		
07	5	.01	2.41		49	7.5	70	1408	80	1608	2.20	44	52		C		
08	1		2.40		49	7.4	58	1160	72	1441	2.45	49	32		C		
09	1		2.41		49	7.4	66	1327	70	1407	2.20	44	36		C		
10	4	.20	2.42		49	7.4									C		
11	4	.03	2.41		49	7.4									C		
12	4	.06	2.44		49	7.4	70	1424	70	1424	2.30	47	60		C		
13	1		2.70		49	7.4	52	1171	52	1171	2.20	50	38		C		
14	1		2.1.1.		49	7.3	47	1020	50	1104	2.20	49	42		C		
15	1		2.69		49	7.4	60	1346	78	1750	2.40	54	58		C		
16	1		2.66		48	7.5	58	1287	42	932	3.40	75	32		C		
17	1		2.63		48	7.5									C		
18	4	.04	2.58		48	7.6									C		
19	4	.05	2.55		48	7.5									C		
20	3		2.66		48	7.5	68	1509	84	1863	2.30	51	64		C		
21	1		2.62		49	7.4	64	1398	54	1180	2.65	58	42		C		
22	1		2.63		49	7.4	63	1382	62	1360	2.10	46	46		C		
23	3		2.58		49	7.3	62	1334	74	1592	2.05	44	64		C		
24	3		2.56		49	7.4									C		
25	3		2.48		49	7.3									C		
26	1		2.52		48	7.3	54	1135	76	1597	2.40	50	48		C		
27	5	.10	2.57		48	7.5	40	857	68	1457	2.30	49	56		C		
28	5	.01	2.55		49	7.4	48	1021	48	1021	2.40	62	34		C		
29	1		2.54		49	7.3	64	1356	78	1652	2.10	44	66		C		
30															C		
31															C		
TL		.87	73.44					24,670		27,167		1010			C		
ME			2.53				58	1234	64	1358	2.38	51	48		C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

February, 19 84
Month

Marshall, Michigan
Municipality

Robert J Swartwell
Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
10 | 1300017 | 02 | 84 | ...
Plant No. | Mo. | Yr. | Sampling Point Code

DAY	BOD-5		SS		TOTAL-P		VSS	NH_3-N	REMARKS OR OTHER PARAMETERS							
	9 14		19 24		29 34		39									
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C	
PN	00310	85001	00530	85002	00665	85004	00535	00610							C	
SF															C	
01	60	1286	72	1471	2.90	59	58								C	
02	50	1063	76	1489	3.10	66	48								C	
03															C	
04															C	
05	34	686	90	1816	2.90	59	58								C	
06	58	1180	82	1669	2.90	59	70								C	
07	58	1166	72	1447	2.55	51	42								C	
08	44	881	76	1521	2.65	53	58								C	
09	50	1005	80	1608	2.85	57	48								C	
10															C	
11															C	
12	60	1221	74	1506	2.45	50	56								C	
13	38	856	66	1486	2.30	52	52								C	
14	48	1065	72	1597	2.45	54	58								C	
15	104	2333	96	2154	3.00	67	64								C	
16	62	1375	74	1642	3.75	83	58								C	
17															C	
18															C	
19															C	
20	66	1464	116	2573	2.55	57	80								C	
21	62	1355	82	1792	2.65	58	60								C	
22	58	1272	84	1842	2.45	54	64								C	
23	62	1334	90	1937	2.45	53	72								C	
24															C	
25															C	
26	46	967	106	2228	2.85	60	72								C	
27	34	729	88	1886	2.45	53	66								C	
28	56	1191	68	1446	3.10	66	52								C	
29	60	1271	98	2076	2.45	52	84								C	
30															C	
31															C	
TL		33,620		35,186		1163									C	
ME	56	1181	83	1759	2.74	58	61								C	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

February, 19 84
Month

MARSHALL, Michigan
Municipality

Robert J. Swartwell
Superintendent's Signature

ID 13.00.39 02 84
Plant No. Mo. Yr. Sampling Point Code

DAY	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification
	Aeration Volume	Reaeration Volume	Detention Time	Sludge Age	Organic Loading	MLSS	MLVSS	SETTL.	SDI	DO	Air Applied	SS	VSS	Percent Return	C	Waste Sludge	
1 2	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		3.5	3.8	.27	1860	1379	17.0	1.09	4.8	170	.60	73	36	C	16	
02			3.4	3.2	.33	1519	1185	15.0	1.01	4.8	165	.60	73	36	C	29	
03			3.5	4.1	.27	1902	1403	16.0	1.19	4.9	165	.52	73	40	C	9	
04			3.5								167			40	C	13	
05			3.6								172			40	C	17	
06			3.5	4.1	.24	2047	1503	18.0	1.14	6.7	173	.55	73	39	C	15	
07			3.6	3.6	.33	1838	1334	19.0	1.02	5.7	175	.51	72	43	C	11	
08			3.6	3.6	.26	1816	1344	16.0	1.14	7.3	170	.50	73	43	C	15	
09			3.6	3.2	.29	1659	1195	15.0	1.11	6.9	167	.69	51	49	C	28	
10			3.6	3.6	.26	1870	1356	19.0	.98	6.5	166	.50	72	48	C	15	
11			3.6								165			46	C	13	
12			3.5								157			44	C	14	
13			3.2	3.0	.29	1699	1185	16.0	1.06	5.8	163	.52	69	38	C	15	
14			3.2	3.9	.25	2130	1517	16.0	1.33	5.3	165	.61	71	39	C	14	
15			3.2	3.0	.33	1702	1305	15.0	1.13	4.5	164	.49	71	38	C	11	
16			3.2	3.0	.36	1698	1203	14.0	1.21	4.6	163	.54	70	49	C	11	
17			3.3	3.2	.33	1796	1294	16.0	1.12	5.5	163	.64	71	44	C	10	
18			3.3								162			44	C	13	
19			3.4								162			40	C	15	
20			3.2								165			38	C	12	
21			3.3	3.1	.34	1869	1352	15.0	1.25	6.7	148	.59	71	43	C	23	
22			3.3	2.7	.38	1686	1229	13.0	1.30	5.5	143	.61	72	40	C	26	
23			3.3	3.0	.30	2189	1555	17.0	1.29	4.0	142	.56	71	44	C	8	
24			3.4	3.3	.32	2042	1484	15.0	1.36	4.6	148	.56	72	45	C	15	
25			3.5								149			46	C	15	
26			3.4								152			42	C	15	
27			3.4	3.3	.27	2125	1532	16.0	1.33	6.2	152	.65	72	38	C	11	
28			3.4	2.9	.30	1883	1361	16.0	1.18	6.5	157	.59	72	38	C	20	
29			3.4	3.1	.29	1910	1376	13.0	1.47	6.0	158	.59	72	26	C	17	
30															C		
31															C		
TL															C	446	
ME			3.4	3.3	.30	1862	1344	15.8	1.19	5.6	161	.58	71	42	C	15	

Digester Volume, ft³
Primary
Secondary

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To
Process Pattern

MONTH February 19 84

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	30	4.2	74		6.4																			
2	30	4.1	58		6.5																			
3	70	4.6	57		6.4																			
4	30	3.8	54		6.5																			
5	30	4.2	59		6.5																			
6	30	5.4	61		6.6																			
7	30	4.7	67		6.5																			
8	30	4.6	64		6.5																			
9	30	4.4	67		6.5																			
10	51	4.2	68		6.5																			
11	30	3.8	58		6.5																			
12	30	4.6	64		6.5																			
13	30	3.8	62		6.6																			
14	30	3.5	75		6.6																			
15	30	4.7	63		6.6																			
16	30	4.0	58		6.6																			
17	53	3.9	67		6.5																			
18	30	5.3	69		6.5																			
19	30	4.2	81		6.5																			
20	30	4.0	54		6.5																			
21	30	4.9	65		6.6																			
22	53	4.6	68		6.6																			
23	30	4.4	64		6.6																			
24	46	4.3	54		6.6																			
25	30	4.1	61		6.6																			
26	30	4.3	54		6.6																			
27	30	4.4	64		6.7																			
28	30	4.1	65		6.6																			
29	30	3.6	75		6.6																			
30																								
31																								
TOTAL	993																							
ARITH. MEAN	34	4.3	64																					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

February, 19 84 (Month)

Marshall (Municipality), Michigan

Robert J. Swalwell (Superintendent's Signature)

ID 1300274 (Plant No.) 02 (Mo.) 84 (Yr.) (Sampling Point Code)

DAY 1 2	GRIT 9 CF	AUX. FUEL 14 Gas CF	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 Freig	44	49 Water CF	54	59
PN											
SF		2									
01		40	2640			20	199		360		
02		31	2640			20	298		380		
03		30	2400			20	199		360		
04		35	2640			20	199		330		
05		44	2520			20	199		480		
06		51	2760			30	199		280		
07		55	2640			30	298		350		
08		50	2640			20	199		470		
09		21	2640			10	397		350		
10		28	2520			10	397		480		
11		29	2520			20	397		490		
12		26	2520			10	397		530		
13		27	2640			10	397		560		
14		26	2640			20	397		510		
15		10	2520			20	397		510		
16		11	2520			30	199		520		
17		3	2520			10	397		510		
18		2	2400			20	397		530		
19		6	2520			10	199		570		
20		7	2520			10	397		540		
21		40	2520			20	397		520		
22		2	2520			20	298		610		
23		1	2400			30	298		580		
24		24	2520			20	397		550		
25		32	2640			30	199		720		
26		43	2640			10	199		580		
27		54	2640			20	199		580		
28		56	2880			10	397		520		
29		41	2640			30	397		360		
30											
31											
TL		825	74760			530	8939		14,030		
ME		28	2578			18	308		484		

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		804
Superintendent	1		160
Asst. Supt.	1		160
Shift Foreman			
Shift Operator	3		484
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL

WEEKDAYS 9 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ Month , 19 _____ _____ Municipality , Michigan _____ Superintendent's Signature

ID Plant No. Mo. Yr. Sampling Point Code

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*		T. COLI*	REMARK
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01	11	225	80	15	306	75	1.00	20	58	10		7.4	6.2	132	C		
02	19	404	66	6	128	89	.44	9	82	5		7.3	6.5	92	C		
03												7.3	6.2	8	C		
04												7.3			C		
05	6	121	88	8	161	86	.47	9	77	2		7.3			C		
06	7	142	89	10	203	81	.44	9	83	4		7.3	6.8	100	C		
07	8	161	89	9	181	89	.42	8	81	7		7.4	5.6	132	C		
08	6	120	90	6	120	92	.32	6	87	4		7.3	6.8	6	C		
09	5	100	92	12	241	83	.15	3	93	8		7.2	7.1	52	C		
10												7.3	6.5	26	C		
11												7.3			C		
12	4	81	94	5	102	93	.23	5	90	2		7.4			C		
13	9	203	83	3	68	94	.20	5	91	2		7.3	7.5	20	C		
14	5	111	89	1	22	98	.23	5	90	1		7.4	6.9	28	C		
15	18	404	70	19	426	76	.42	9	83	8		7.4	4.4	24	C		
16	9	200	84	3	67	93	.41	9	88	1		7.2	5.8	140	C		
17												7.4	6.3	66	C		
18												7.4			C		
19												7.4			C		
20	12	266	82	9	200	89	.32	7	86	5		7.3			C		
21	6	131	91	6	131	89	.32	7	88	3		7.4	6.8	2	C		
22	5	110	92	4	88	94	.25	5	88	2		7.3	5.6	2	C		
23	8	172	87	6	129	92	.23	5	89	4		7.3	5.7	2	C		
24												7.1	5.6	2	C		
25												7.1			C		
26	17	357	69	8	168	89	.34	7	86	2		7.2			C		
27	3	64	93	8	171	88	.38	8	83	4		7.2	6.3	10	C		
28	6	128	88	6	128	88	.30	6	90	3		7.4	7.0	14	C		
29	13	275	80	9	191	88	.27	6	87	7		7.3	6.6	18	C		
30															C		
31															C		
TL		3,775			3,231			148							C		
ME	9	184	85	8	162	88	.36	7	85	4		7.3	6.3	19	C		
WA	11	250		10	196									66	C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

March, 19 84 — Month

Marshall, Michigan — Municipality

Robert J. Swalwell — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130029	03	84	
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY 1 2	WEATHER TYPE 9	WEATHER PRECIP. 14	FLOW TOTAL 19	FLOW MAX RATE 24	RAW SEWAGE QUALITY TEMP 29	pH 34	BOD-5 39	BOD-5 44	SS 49	SS 54	TOTAL-P 59	TOTAL-P 64	VSS 69	NH_3-N 74 78	80	REMARKS OR O 9	14	19
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C			
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C			
SF															C			
01	5	.02	2.54		49	7.3	64	1356	52	1102	2.30	49	36		C			
02	1		2.41		49	7.4									C			
03	1		2.37		49	7.4									C			
04	4	.01	2.38		49	7.3	50	992	102	2025	2.30	46	74		C			
05	5	.01	2.46		49	7.5	50	1026	52	1067	2.20	45	50		C			
06	1		2.43		49	7.5	52	1054	84	1702	2.10	43	66		C			
07	5	.01	2.48		49	7.5	72	1489	58	1200	2.55	53	36		C			
08	1		2.40		49	7.5	40	801	52	1041	7.30	146	40		C			
09	5	.02	2.37		49	7.4									C			
10	5	.02	2.36		49	7.4									C			
11	1		2.36		49	7.4	52	1023	90	1771	2.20	43	56		C			
12	5	.25	2.39		49	7.4	68	1355	62	1236	2.30	46	44		C			
13	1		2.41		49	7.3	68	1367	54	1085	2.30	46	28		C			
14	4	.05	2.40		49	7.3	56	1121	58	1161	1.95	39	46		C			
15	4	1.47	2.59		49	7.4	72	1555	66	1426	2.30	50	58		C			
16	3		2.54		49	7.2									C			
17	5	.15	2.49		49	7.3									C			
18	3		2.54		49	7.2	78	1652	66	1398	2.40	51	48		C			
19	4	.53	2.63		48	7.4	84	1842	72	1579	2.20	48	48		C			
20	5	.38	2.68		48	7.4	68	1520	48	1072	1.95	43	34		C			
21	5	.19	2.71		48	7.4	62	1401	62	1401	2.20	50	48		C			
22	5	.01	2.72		48	7.5	82	1860	50	1134	1.95	49	32		C			
23	1		2.72		48	7.4									C			
24	1		2.68		48	7.4									C			
25	1		2.69		48	7.4	104	2333	90	2019	2.75	52	72		C			
26	1		2.77		48	7.4	96	2218	44	1016	2.40	55	58		C			
27	1		2.75		49	7.5	86	1972	46	1055	2.05	30	32		C			
28	1		2.71		49	7.5	76	1717	72	1627	2.20	50	56		C			
29	1		2.72		49	7.5	72	1633	64	1452	2.10	48	48		C			
30	1		2.68		49	7.4									C			
31	1		2.58		49	7.4									C			
TL		3.12	78.96					31,287		28,569		1092			C			
ME			2.55				69	1490	64	1360	2.48	52	48		C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

March, 19 84 — Month

Marshall, Michigan — Municipality

Robert J. Swalwell — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130029	03	84	..
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY	BOD-5		SS		TOTAL-P		VSS	NH_3-N	REMARKS OR OTHER PARAMETERS									
	9	14	19	24	29	34	39	44	49	54	59	64	69	74 78	80	9	14	19
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C			
PN	00310	85001	00530	85002	00665	85004	00535	00610							C			
SF															C			
01	60	1271	78	1652	2.40	51	50								C			
02															C			
03															C			
04	64	1270	106	2104	2.90	58	74								C			
05	56	1149	90	1846	2.65	54	78								C			
06	40	811	112	2270	2.45	50	88								C			
07	112	2317	80	1655	3.20	66	52								C			
08	48	961	62	1241	7.30	146	46								C			
09															C			
10															C			
11	68	1338	96	1890	2.65	52	62								C			
12	64	1276	80	1595	2.65	53	60								C			
13	112	2251	100	2010	2.85	57	66								C			
14	76	1521	106	2122	2.55	51	80								C			
15	72	1555	100	2160	2.85	62	84								C			
16															C			
17															C			
18	60	1271	140	2966	2.85	60	104								C			
19	68	1492	96	2106	2.55	56	64								C			
20	56	1252	88	1967	2.45	55	70								C			
21	56	1266	90	2034	2.75	62	68								C			
22	72	1633	86	1951	2.45	56	62								C			
23															C			
24															C			
25	108	2422	106	2378	3.40	76	80								C			
26	124	2865	102	2356	3.20	74	76								C			
27	112	2569	116	2660	3.00	69	84								C			
28	76	1717	112	2531	2.85	64	86								C			
29	72	1633	104	2359	2.85	64	86								C			
30															C			
31															C			
TL		33,840		43,853		1336									C			
ME	75	1611	98	2231	2.99	64	72								C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

March (Month), 19 84

Marshall (Municipality), Michigan

Robert J. Swalwell
Superintendent's Signature

ID | 13.0.029 (Plant No.) | 03 (Mo.) | 84 (Yr.) | ... (Sampling Point Code)

DAY	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification
	Aeration Volume	Reaeration Volume	Detention Time	Sludge Age	Organic Loading	MLSS	MLVSS	SETTL.	SDI	DO	Air Applied	SS	VSS	Percent Return	C	Waste Sludge	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70326	81014	C	80991	80889
SF											4				C		
01	48		3.4	3.2	.28	1951	1419	14.0	1.39	6.5	156	.61	72	33	C	14	
02			3.6	3.3	.27	1924	1375	12.0	1.60	4.3	158	.50	66	42	C	17	
03			3.6								158			47	C	21	
04			3.6								154			44	C	11	
05			3.5	3.1	.29	1830	1337	12.0	1.53	5.3	150	.53	72	38	C	28	
06			3.5	3.2	.27	1845	1355	13.0	1.42	5.1	158	.52	73	39	C	15	
07			3.5	3.3	.32	1893	1395	13.0	1.46	4.2	158	.56	73	38	C	15	
08			3.6	3.3	.30	1874	1396	16.0	1.17	3.3	159	.48	74	39	C	14	
09			3.6	3.3	.30	1878	1400	12.0	1.57	4.6	158	.48	74	50	C	17	
10			3.7								155			51	C	14	
11			3.7								160			41	C	13	
12			3.6	3.4	.31	1925	1391	14.0	1.38	5.3	158	.69	72	40	C	14	
13			3.6	3.1	.34	1904	1407	14.0	1.36	5.6	157	.67	72		C	15	
14			3.6	3.2	.33	1991	1497	14.0	1.24	2.5	155	.68	74		C	15	
15			3.3	2.5	.45	1682	1270	11.0	1.53	4.0	148	.82	74		C	22	
16			3.4	3.1	.37	2016	1501	15.0	1.34	5.3	155	.60	74		C	13	
17			3.5								155				C	15	
18			3.4								157				C	15	
19			3.3	2.8	.36	2090	1529	15.0	1.39	4.8	152	.61	72		C	15	
20			3.2	2.8	.35	2137	1574	14.0	1.53	5.2	147	.63	73		C	13	
21			3.2	2.8	.34	2174	1593	15.0	1.45	5.1	149	.63	73		C	15	
22			3.2	2.8	.32	2108	1549	15.0	1.41	5.2	155	.65	73		C	15	
23			3.2	2.5	.36	1915	1400	13.0	1.47	5.1	157	.62	73		C	15	
24			3.2								154				C	15	
25			3.2								153				C	15	
26			3.1	2.5	.41	1961	1451	13.6	1.51	4.2	154	.79	73		C	15	
27			3.1	2.5	.47	1877	1401	14.0	1.34	3.5	151	.86	74		C	15	
28			3.2	2.7	.43	2012	1501	14.0	1.44	3.8	149	.79	74		C	15	
29			3.2	2.5	.46	1963	1463	14.0	1.40	4.0	151	.81	73		C	15	
30			3.2	2.6	.46	1948	1462	12.0	1.62	4.0	153	.67	74		C	15	
31			3.3								154				C	15	
TL															C	483	
ME			3.4	2.9	.35	1950	1439	13.7	1.43	4.6	154	.65	73	42	C	16	

METER OUT

Digester Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To _____
Process Pattern _____

MONTH March 1984

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	30	4.6	67		6.6																			
2	30	4.1	56		6.7																			
3	30	4.1	54		6.6																			
4	30	5.1	63		6.7																			
5	50	4.3	64		6.6																			
6	30	4.0	61		6.6																			
7	30	4.1	59		6.6																			
8	30	4.3	56		6.6																			
9	44	4.4	57		6.6																			
10	30	4.7	64		6.6																			
11	30	4.6	61		6.6																			
12	30	4.7	76		6.6								9.0	.44	72									
13	30	4.5	70		6.6																			
14	30	2.3	68		6.6																			
15	30	4.3	55		6.7																			
16	40	4.3	63		6.5																			
17	30	4.5	56		6.6																			
18	30	5.6	63		6.6																			
19	30	4.3	62		6.6																			
20	30	4.5	57		6.6																			
21	30	4.8	56		6.6																			
22	30	7.5	60		6.6																			
23	18	4.4	56		6.6																			
24	43	4.3	57		6.6																			
25	30	4.9	61		6.6																			
26	30	4.3	59		6.6								8.6	.50	71									
27	65	5.0	59		6.6																			
28	30	4.0	50		6.6																			
29	30	4.1	76		6.5																			
30	44	4.2	58		6.6																			
31	30	4.1	64		6.6																			
TOTAL	1024																							
ARITH. MEAN	33	4.4	62																					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

March, 19 84 — Month

Marshall, Michigan — Municipality

Robert J. Swalwell — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130029	03	84	..
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX. FUEL 14 GAS CF	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 Fecls LBS.	44 Water CF	49	54	59
PN											
SF		2									
01		58	2760			10	298	310			
02		57	2520			10	298	440			
03		34	2640			10	199	360			
04		52	2640			40	298	460			
05		42	2640			10	298	320			
06		51	2520			10	199	430			
07		59	2640			20	199	390			
08		69	2640			20		410			
09		64	2640			20	298	390			
10		56	2520			10	397	460			
11		67	2520			20	298	400			
12		68	2640			10	397	350			
13		32	2640			10	199	320			
14		30	2520			20	298	190			
15		29	2520			20	298	290			
16		33	2640			30	397	310			
17		37	2640			20	199	240			
18		35	2520			20	199	370			
19		31	2640			20	199	460			
20		30	2640			20	496	360			
21		32	2520			20	298	430			
22		36	2640			20	397	390			
23		33	2640			20	199	350			
24		30	2520			20	397	350			
25		29	2520			30	199	440			
26		38	2640			20	397	310			
27		19	2520			30	397	480			
28		11	2520			10	199	360			
29		6	2520			30	397	370			
30		30	2520			20	199	450			
31		28	2520			30	397	350			
TL		1226	80160			600	8740	11540			
ME		40	2586			19	291	372			

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours	V
TOTAL	5		880	
Superintendent	1		176	
Asst. Supt.	1		176	
Shift Foreman				
Shift Operator	3		528	
Maint. Supervisor				
Mechanic				
Chemist				
Lab Technician				
Clerk-Typist				
Other				

GIVE THE HOURS PER DAY PLANT PERSONNEL ARE

WEEKDAYS 9 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

March , 19 84
Month

Marshall , Michigan
Municipality

Superintendent's Signature

ID 1300029 03 84
Plant No. Mo. Yr. Sampling Point Code

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*		T. COLI*	REMARKS
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF	21												22		C		
01	5	106	92	2	42	96	.22	5	90	1		7.3	7.2	82	C		
02												7.3	8.4	12	C		
03												7.3			C		
04	5	99	90	3	60	97	.28	6	88	2		7.3			C		
05	4	82	92	3	62	94	.22	5	90	1		7.2	6.2	100	C		
06	5	101	90	18	365	79	.25	5	88	13		7.4	6.2	102	C		
07	25	517	65	9	186	84	.50	10	80	10		7.4	5.8	34	C		
08	11	220	73	9	180	83	3.52	70	52	5		7.4	5.3	206	C		
09												7.4	5.7	124	C		
10												7.3			C		
11	6	118	88	13	256	86	.28	6	87	5		7.2			C		
12	6	120	91	4	80	94	.32	6	86	2		7.2	6.2	88	C		
13	23	462	66	13	261	76	.42	8	82	7		7.2	8.6	30	C		
14	10	200	82	9	180	84	.28	6	86	3		7.3	3.2	312	C		
15	8	173	89	3	65	95	.20	4	91	2		7.3	4.8	304	C		
16												7.1	5.6	346	C		
17												7.3			C		
18	5	106	93	4	85	94	.22	5	91	1		7.3			C		
19	12	263	86	9	197	88	.27	6	88	2		7.3	6.0	24	C		
20	11	246	84	8	179	83	.25	6	87	6		7.2	5.8		C		
21	7	158	89	4	90	94	.23	5	90	3		7.4	6.0	52	C		
22	7	159	91	4	91	92	.22	5	89	1		7.4	6.5	48	C		
23												7.3	6.3	38	C		
24												7.3			C		
25	14	314	87	12	269	87	.35	8	87	9		7.4			C		
26	20	462	84	13	300	86	.35	8	85	9		7.3	5.1	184	C		
27	13	298	85	8	183	83	.27	6	87	2		7.3	5.8	58	C		
28	7	158	91	11	249	85	.22	5	90	6		7.3	4.8	28	C		
29	6	136	92	6	136	91	.20	5	90	4		7.4	5.7	38	C		
30												7.4	4.8	158	C		
31												7.4			C		
TL		4498			3516			190							C		
ME	10	214	86	8	167	88	.43	9	86	4		7.3	5.9	76	C		
WA	14	287		11	227									154	C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

April (Month), 19 84

Marshall (Municipality), Michigan

Robert J. Swahill
Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
ID | 130.029 | 04 | 83 | 500
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	WEATHER		FLOW		RAW SEWAGE QUALITY											REMARKS OR OT		
	TYPE 9	PRECIP. 14	TOTAL 19	MAX RATE 24	TEMP 29	pH 34	BOD-5 39 44		SS 49 54		TOTAL-P 59 64		VSS 69	NH_3-N 74 78	80	9	14	19
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C			
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C			
SF															C			
01	1		2.59		49	7.4	60	1296	62	1339	1.95	42	38		C			
02	1		2.65		49	7.5	84	1856	56	1238	1.95	43	42		C			
03	4	.31	2.68		49	7.4	84	1878	58	1296	2.40	54	38		C			
04	4	.16	2.70		49	7.4	72	1621	50	1126	2.05	46	34		C			
05	4	.32	2.75		49	7.5	84	1927	62	1422	2.05	47	48		C			
06	3		2.68		49	7.4									C			
07	1		2.63		49	7.3									C			
08	1		2.66		49	7.5	144	3195	60	1331	2.05	45	46		C			
09	1		2.73		49	7.3	136	3352	130	2960	2.10	48	108		C			
10	1		2.68		49	7.4	156	3487	68	1520	1.60	36	52		C			
11	1		2.64		49	7.5	148	3259	78	1719	2.40	53	46		C			
12	4	.37	2.69		50	7.3	148	3320	60	1346	2.85	64	46		C			
13	4	.04	2.63		50	7.4									C			
14	4	.22	2.61		50	7.4									C			
15	4	.15	2.65		50	7.4	152	3359	60	1326	2.30	51	40		C			
16	4	.04	2.71		50	7.4	152	3435	104	2351	2.65	60	88		C			
17	4	.25	2.73		50	7.3	152	3461	56	1275	2.10	48	40		C			
18	4	.03	2.72		50	7.4	486	11047	66	1497	2.30	52	48		C			
19	1		2.68		50	7.3									C			
20	1		2.65		50	7.3									C			
21	1		2.63		50	7.3									C			
22	4	.49	2.70		50	7.4	144	3243	72	1621	2.05	46	50		C			
23	4	.09	2.77		50	7.4	192	4436	68	1571	2.20	51	46		C			
24	1		2.70		50	7.3	108	2432	64	1441	1.95	44	48		C			
25	1		2.69		50	7.3	72	1615	76	1705	2.10	47	30		C			
26	4	.01	2.68		50	7.5	120	2682	80	1788	2.50	56	72		C			
27	4	.04	2.60		50	7.5									C			
28	1		2.64		50	7.4									C			
29	4	.30	2.59		50	7.4	54	1166	70	1512	2.30	50	54		C			
30	3		2.64		50	7.4	54	1255	70	1541	2.10	46	50		C			
31															C			
TL		2.82	80.10					163522		32923		1029			C			
ME			2.67				135	3025	70	1568	2.19	49	51		C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

April, 1984 — Month

Marshall, Michigan — Municipality

Robert J. Swalwell — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130029	04	84	..
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY	BOD-5		SS		TOTAL-P		VSS	NH_3-N	REMARKS OR OTHER PARAMETERS									
	9	14	19	24	29	34	39	44	49	54	59	64	69	74 78	80	9	14	19
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C			
PN	00310	85001	00530	85002	00665	85004	00535	00610							C			
SF															C			
01	76	1642	134	2894	3.20	69	90								C			
02	80	1768	94	2077	2.30	51	72								C			
03	76	1699	112	2503	1.95	44	68								C			
04	64	1441	86	1937	2.10	47	68								C			
05	76	1743	76	1743	2.05	47	56								C			
06															C			
07															C			
08	140	3106	98	2174	2.20	49	74								C			
09	148	3370	104	2368	2.40	55	88								C			
10	156	3487	82	1833	2.65	59	60								C			
11	148	3259	106	2334	2.30	51	78								C			
12	148	3320	98	2199	2.65	59	74								C			
13															C			
14															C			
15	152	3359	108	2387	2.75	61	74								C			
16	152	3435	100	2260	2.85	64	82								C			
17	152	3461	110	2505	2.65	60	82								C			
18	468	10616	110	2495	2.75	62	82								C			
19															C			
20															C			
21															C			
22	144	3243	106	2386	2.75	62	72								C			
23	144	3327	116	2680	2.45	57	80								C			
24	108	2432	90	2027	2.45	55	68								C			
25	72	1615	100	2243	2.45	55	78								C			
26	84	1878	106	2369	2.70	60	98								C			
27															C			
28															C			
29	60	1296	112	2419	2.50	54	82								C			
30	57	1255	106	2334	2.55	56	84								C			
31															C			
TL		60747		48,167		1177									C			
ME	129	2893	103	2294	2.51	56	77								C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ Month , 19 _____ _____ Municipality , Michigan _____ Superintendent's

1 2 ID | 3 Plant No. 8 | 9 10 Mo. | 11 12 Yr. | 13 Sampling Point Code 15

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*	
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	
SF															
01	6	130	90	11	238	82	.25	5	87	2		7.4			
02	7	155	92	7	155	88	.23	5	88	4		7.4	5.5	58	
03	8	179	90	10	224	83	.22	5	91	4		7.4	5.5	16	
04	6	135	92	7	158	86	.23	5	89	3		7.4	6.3	30	
05	8	183	90	4	92	94	.25	6	88	3		7.4	5.6	8	
06												7.4	6.7	14	
07												7.3			
08	13	288	91	6	133	90	.18	4	91	2		7.3			
09	10	228	94	8	182	94	.15	3	93	6		7.4	6.6	16	
10	16	358	90	1	22	99	.12	3	93	1		7.4	6.6	10	
11	16	352	89	7	154	91	.19	4	92	2		7.4	6.3	6	
12	19	426	87	3	67	95	.22	5	92	2		7.3	4.7	46	
13												7.3	5.3	20	
14												7.3			
15	23	508	85	8	177	87	.22	5	90	1		7.4			
16	23	520	85	10	226	90	.27	6	90	7		7.3	5.4	12	
17	23	524	85	8	182	86	.23	5	89	2		7.3	5.0	12	
18	23	522	85	8	181	88	.22	5	90	1		7.3	5.3	2	
19												7.3	5.9	6	
20												7.4			
21												7.4			
22	10	225	93	9	203	88	.22	5	89	3		7.3			
23	11	254	94	11	254	84	.23	5	86	2		7.3	6.2	70	
24	24	540	78	12	270	81	.32	7	84	6		7.2	4.5		
25	5	112	93	5	112	93	.19	4	91	2		7.2		8	
26	6	134	95	8	179	90	.25	6	90	6		7.3	5.8	16	
27												7.4	5.5	12	
28												7.3			
29	6	130	89	2	43	97	.22	5	90	1		7.3			
30	6	132	89	5	110	93	.32	7	85	4		7.4	6.3	10	
31															
TL		6035			3362			105							
ME	13	287	90	7	160	89	.23	5	90	3		7.3	5.7	14	
WA	22	500		10	227									20	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

April, 19 84
Month

Mears Mill, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
ID | 1300024 | 04 | 84 | [ ]
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14	F 19
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	80	Waste Sludge 9		
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*	
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889	
SF											4				C			
01	48		3.3								154				C	15		
02			3.3	2.5	.45	2042	1520	13.0	1.57	3.2	152	.69	74		C	15		
03			3.2	2.3	.46	1902	1422	13.0	1.46	5.2	152	.64	74		C	15		
04			3.2	2.2	.45	1814	1316	12.0	1.51	5.2	148	.66	72		C	15		
05			3.1	2.2	.43	1749	1306	14.0	1.23	4.5	149	.61	73		C	15		
06			3.2	2.4	.41	1819	1343	13.0	1.40	6.5	152	.60	73		C	15		
07			3.3								151				C	15		
08			3.2								150				C	15		
09			3.2	2.2	.53	1716	1260	12.0	1.43	5.4	150	.51	73		C	15		
10			3.2	2.6	.56	1809	1330	11.0	1.69	3.2	150	.53	72		C	15		
11			3.3	2.7	.58	1844	1390	13.0	1.46	5.3	150	.64	72		C	15		
12			3.2	3.1	.56	2158	1584	13.0	1.66	4.4	147	.75	73		C	15		
13			3.3	3.5	.49	2403	1771	15.0	1.60	5.1	145	.81	73		C	15		
14			3.3								147				C	15		
15			3.3								145				C	15		
16			3.2	3.1	.63	2288	1682	15.0	1.53	4.0	147	.70	73		C	15		
17			3.2	2.3	.72	2197	1621	14.0	1.57	3.7	148	.70	73		C	15		
18			3.2	2.3	1.17	1751	1289	12.0	1.46	5.0	149	.56	73		C	15		
19			3.2	2.8	.95	2152	1576	14.0	1.54	4.5	148	.66	73		C	15		
20			3.3								148				C	15		
21			3.3								148				C	15		
22			3.2								144				C	15		
23			3.1	2.6	1.17	2102	1310	14.0	1.50	5.3	145	.64	81		C	15		
24			3.2	3.1	.79	2492	1832	14.0	1.78	4.4	146	.77	73		C	15		
25			3.2	3.9	.60	3081	2250	18.0	1.71	4.7	225	.99	72		C	15		
26			3.2	3.4	.65	2686	1959	16.0	1.68	3.8	224	.80	73		C	15		
27			3.3	3.6	.61	2744	2020	17.0	1.61	5.1	225	.80	72		C	15		
28			3.5								225				C			
29			3.3								227				C			
30			3.3	4.0	.47	3093	2224	20.0	1.55	4.1	238	.82	71		C			
31															C			
TL															C	405		
ME			3.2	2.8	.63	2195	1600	14.2	1.55	4.7	164	.69	73		C	15		

Mears Mill Pond Rd. Service Area

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

April (Month), 19 84

Marshall (Municipality), Michigan

Robert J. Swalwell
Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
ID | 13.0.0.29 | 04 | 84 | ..
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX.FUEL 14 Gas CF	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 Feed LBS	44 Water CF	49	54	59
PN											
SF		2									
01		28	2400			20	298	230			
02		4	2400			10	298	850			
03		1	2400			30	298	840			
04		3	2400			20	298	510			
05		2	2400			30	397	600			
06		16	2400			30	298	560			
07		4	2280			20	298	510			
08		3	2280			10	199	540			
09		4	2400			30	397	510			
10		4	2280			20	397	510			
11		2	2280			20	199	560			
12		4	2280			20	397	440			
13		4	2400			20	397	510			
14			2040			20	199	490			
15		4	2280			30	397	480			
16		4	2400			20	397	690			
17		6	2400			20	298	550			
18		1	2520			30	397	520			
19		3	2280			10	199	560			
20		4	2400			20	298	490			
21		4	2400			20	199	520			
22		5	2280			25	397	490			
23		3	2400			25	199	490			
24		3	2400			30	397	490			
25		2	2520			10	199	470			
26		3	2520			10	397	450			
27		2	2520			30	199	620			
28		3	2400			20	397	420			
29		2	2400			40	397	550			
30		4	2640			40	199	490			
31											
TL		132	71480			680	9336	15940			
ME		5	2380			25	311	531			

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		
Superintendent	1		160
Asst. Supt.	1		160
Shift Foremen			
Shift Operator	3		484
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL AR

WEEKDAYS 9 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To _____
Process Pattern _____

MONTH April 1984

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE Gals. X100	RAW SLUDGE Total Solids %	RAW SLUDGE Vol. Solids %	RAW SLUDGE Vol. Solids Lbs/1000 c.f. Digester	RAW SLUDGE pH	DIGESTING SLUDGE Temp. °F	DIGESTING SLUDGE pH	DIGESTING SLUDGE Total Solids %	DIGESTING SLUDGE Vol. Solids %	DIGESTING SLUDGE Vol. Acids Mg/l	DIGESTING SLUDGE Alkalinity Mg/l	SUPERNATANT Gals. X	SUPERNATANT pH	SUPERNATANT Total Solids %	SUPERNATANT Vol. Solids %	SUPERNATANT Susp. Solids Mg/l	SUPERNATANT P Mg/l	SUPERNATANT P Lbs.	SUPERNATANT 5-Day BOD Mg/l	DIGESTED SLUDGE Gals. X	DIGESTED SLUDGE Total Solids %	DIGESTED SLUDGE Vol. Solids %	DIGESTED SLUDGE pH	Gas Produced cu. ft X
1	30	3.9	65		6.6																			
2	125	4.3	74		6.7																			
3	125	4.2	71		6.7																			
4	125	4.3	56		6.7																			
5	38	4.5	63		6.6																			
6	50	4.7	61		6.7																			
7	25	5.7	60		6.6																			
8	41	4.7	60		6.6																			
9	30	4.4	65		6.6																			
10	30	4.3	61		6.6																			
11	30	4.2	54		6.6																			
12	47	4.0	58		6.6																			
13	37	4.3	61		6.5																			
14	34	4.6	64		6.6																			
15	34	4.0	73		6.5																			
16	38	5.2	64		6.6																			
17	22	4.3	63		6.7																			
18	37	4.4	65		6.6																			
19	47	4.6	59		6.6																			
20	33	4.2	55		6.6																			
21	28	4.0	60		6.6																			
22	33	4.1	75		6.6																			
23	37	4.2	55		6.6																			
24	28	4.1	80		6.5																			
25	28	4.1	68		6.5																			
26	32	4.8	65		6.6																			
27	52	4.0	75		6.6																			
28	37	4.9	69		6.6																			
29	37	5.9	63		6.6																			
30	31	4.3	58		6.6																			
31																								
TOTAL	1327																							
ARITH. MEAN	44	4.4	64																					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

MAY . 1984
Month

MARSHALL, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	13.00.29	05	84	500
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY 1 2	WEATHER		FLOW		RAW SEWAGE QUALITY											REMARKS OR C
	TYPE 9	PRECIP. 14	TOTAL 19	MAX 24 RATE	TEMP 29	pH 34	BOD-5 39 44		SS 49 54		TOTAL-P 59 64		VSS 69	NH_3-N 74 78	80	9 14 19
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C	
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C	
SF															C	
01	1		2.59		50	7.5	69	1382	60	1296	2.40	52	42		C	
02	1		2.60		50	7.3	68	1475	72	1561	2.05	44	54		C	
03	3		2.62		50	7.3	66	1442	82	1792	2.55	56	56		C	
04	4	.14	2.59		50	7.6									C	
05	4	.02	2.50		50	7.5									C	
06	1		2.50		50	7.6	62	1293	134	2794	2.05	43	110		C	
07	1		2.58		50	7.4	94	2023	112	2410	2.65	57	104		C	
08	4	.06	2.57		50	7.4	67	1436	76	1629	1.95	42	48		C	
09	4	.02	2.56		51	7.4	72	1537	78	1665	2.05	44	44		C	
10	4	.02	2.57		51	7.5	86	1843	74	1586	2.60	56	60		C	
11	1		2.53		51	7.3									C	
12	4	.03	2.45		51	7.4									C	
13	4	.38	2.49		51	7.4	81	1682	60	1246	2.30	48	54		C	
14	1		2.58		51	7.4	96	2066	62	1334	2.05	44	40		C	
15	1		2.56		52	7.2	72	1537	56	1196	1.95	42	48		C	
16	1		2.56		52	7.3	84	1793	54	1153	2.10	44	36		C	
17	4	.02	2.55		52	7.6	82	1744	58	1233	1.80	38	52		C	
18	4	.53	2.52		52	7.7									C	
19	4	.21	2.46		52	7.6									C	
20	4	.07	2.45		52	7.7	60	1226	40	817	1.80	37	32		C	
21	4	.50	2.63		52	7.4	98	2150	192	4211	2.40	53	164		C	
22	4	.72	2.76		52	7.4	66	1519	52	1197	1.95	45	34		C	
23	1		2.68		52	7.5	90	2012	60	1341	2.05	46	56		C	
24	1		2.67		52	7.4	104	2316	68	1314	4.10	91	60		C	
25	4	.87	2.68		52	7.3									C	
26	1		2.61		52	7.3									C	
27	1		2.53		52	7.4									C	
28	4	.25	2.70		52	7.3	80	1801	54	1216	1.70	38	48		C	
29	4	.04	2.81		52	7.4	82	1922	68	1594	2.30	54	60		C	
30	1		2.74		52	7.5	68	1553	66	1508	1.80	41	50		C	
31	1		2.72		53	7.6	62	1406	48	1089	1.70	39	46		C	
TL		3.88	80.36					37,158		35,382		1,054			C	
ME			2.49				77	1689	74	1608	2.20	50	59		C	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

May, 1984 — Month

Marshall, Michigan — Municipality

Robert J. Swalwell — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130029	05	84	
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY	BOD-5 9	BOD-5 14	SS 19	SS 24	TOTAL-P 29	TOTAL-P 34	VSS 39	NH_3-N 44	REMARKS OR OTHER PARAMETERS 49	54	59	64	69	74	78	80	9	14	19
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l								C			
PN	00310	85001	00530	85002	00665	85004	00535	00610								C			
SF																C			
01	90	1944	114	2462	2.85	62	104									C			
02	80	1735	112	2429	2.75	60	96									C			
03	64	1398	106	2316	2.55	56	72									C			
04																C			
05																C			
06	62	1293	132	2752	2.65	55	102									C			
07	78	1678	86	1850	2.55	55	68									C			
08	66	1415	112	2401	2.40	51	70									C			
09	68	1452	114	2434	2.45	52	74									C			
10	78	1672	86	1843	2.90	62	66									C			
11																C			
12																C			
13	90	1869	116	2409	2.80	58	110									C			
14	100	2152	114	2453	2.65	57	78									C			
15	56	1196	90	1922	3.00	64	72									C			
16	74	1580	80	1708	2.45	52	60									C			
17	94	1999	112	2382	2.30	49	82									C			
18																C			
19																C			
20	56	1144	120	2452	2.30	47	104									C			
21	64	1404	134	2939	2.90	64	108									C			
22	94	2164	124	2854	3.00	69	104									C			
23	100	2235	114	2548	2.85	64	90									C			
24	92	2098	78	1737	4.95	110	48									C			
25																C			
26																C			
27																C			
28	72	1621	124	2792	2.85	64	94									C			
29	76	1781	150	3515	2.65	62	98									C			
30	72	1645	66	1508	2.55	58	54									C			
31	68	1474	86	1951	2.45	56	70									C			
TL		36,849		51,657		1,327										C			
ME	77	1677	108	2348	2.76	60	83									C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

May, 1984
Month

Marshall, Michigan
Municipality

Robert J. Swallow
Superintendent's Signature

ID 13,40,29 05 84
Plant No. Mo. Yr. Sampling Point Code

DAY	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification	
	Aeration Volume	Reaeration Volume	Detention Time	Sludge Age	Organic Loading	MLSS	MLVSS	SETTL.	SDI	DO	Air Applied	SS	VSS	Percent Return		Waste Sludge		
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*	
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889	
SF											4				C			
01	218		3.3	3.5	.33	2678	1923	15.0	1.79	4.0	221	.72	71		C	18		
02			3.3	3.3	.31	2505	1812	16.0	1.57	3.5	215	.68	71		C	19		
03			3.3	2.4	.38	1902	1394	13.0	1.46	3.5	209	.62	73		C	33		
04			3.3	2.7	.34	2066	1514	14.0	1.48	4.1	226	.65	72		C	15		
05			3.4								223				C	15		
06			3.4								217				C	16		
07			3.3	2.9	.36	2276	1673	16.0	1.42	3.3	218	.66	73		C	15		
08			3.4	2.7	.33	2120	1552	15.0	1.41	4.2	226	.58	73		C	18		
09			3.4	2.7	.36	2124	1437	14.0	1.52	4.4	226	.56	76		C	20		
10			3.4	2.6	.36	1919	1392	12.0	1.60	4.2	219	.63	75		C	15		
11			3.4	2.7	.35	2008	1443	13.0	1.54	4.2	217	.66	71		C	15		
12			3.5								221				C	18		
13			3.5								226				C	16		
14			3.3	3.0	.33	2340	1700	14.0	1.67	3.0	225	.74	72		C	22		
15			3.4	4.0	.26	2898	2095	15.0	1.93	3.2	226	.79	71		C	15		
16			3.4	3.7	.28	2683	1913	12.0	1.58	4.2	223	.82	71		C	16		
17			3.4	2.4	.37	2130	1536	13.0	1.63	3.5	218	.56	71		C	38		
18			3.4	2.9	.39	2032	1458	12.0	1.69		210	.60	71		C	15		
19			3.5								215				C	15		
20			3.5								214				C	16		
21			3.3	3.0	.32	2389	1741	14.0	1.78	2.3	210	.78	72		C	15		
22			3.2	3.1	.30	2561	1936	14.0	1.83	2.1	211	.76	73		C	15		
23			3.2	2.8	.33	2337	1743	15.0	1.56	2.5	217	.75	73		C	15		
24			3.2	2.3	.40	1839	1346	12.0	1.53	2.0	211	.59	72		C	29		
25			3.2	2.5	.40	2032	1549	14.0	1.46	2.3	209	.66	75		C	15		
26			3.3								222				C	15		
27			3.4								215				C	15		
28			3.2								222				C	21		
29			3.1	2.3	.40	2136	1542	14.0	1.53	3.0	221	.78	72		C	15		
30			3.1	2.6	.38	2268	1599	15.0	1.51	2.4	218	.79	70		C	15		
31			3.2	2.4	.33	2361	1687	17.0	1.39	2.2	212	.77	71		C	15		
TL															C	555		
ME			3.3	2.9	.34	2255	1636	14.3	1.58	3.1	218	.69	72		C	18		

Not Ready

Digester Volume, ft³
Primary
Secondary

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To
Process Pattern

MONTH May 19 84

DIGESTER AND SLUDGE DATA

OPERATOR R. J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	25	4.1	65		6.6								12.4	.57	68									
2	29	4.2	57		6.7																			
3	29	3.9	58		6.7																			
4	33	3.6	57		6.8																			
5	29	4.0	59		6.8																			
6	45	4.3	58		6.7																			
7	33	3.8	73		6.7																			
8	41	4.2	59		6.7																			
9	25	4.1	55		6.7																			
10	37	4.1	82		6.8																			
11	29	4.2	62		6.6																			
12	21	4.0	65		6.7																			
13	49	3.9	73		6.6																			
14	37	4.2	57		6.7																			
15	33	3.9	73		6.6																			
16	29	4.2	62		6.5																			
17	21	4.7	61		6.9																			
18	24	3.7	73		7.1																			
19	45	4.9	57		7.0																			
20	29	3.8	57		7.1																			
21	29	4.0	57		7.0																			
22	33	4.0	63		7.0								12.5	.50	66									
23	33	4.3	55		6.8								12.2	.17	56									
24	33	4.0	56		6.8																			
25	45	3.8	55		6.8																			
26	33	3.9	75		6.9																			
27	33	3.8	71		6.9																			
28	41	3.9	58		6.8																			
29	29	4.1	62		6.8																			
30	33	4.2	61		6.8																			
31	33	4.2	63		6.8																			
TOTAL	1018																							
ARITH. MEAN	33	4.1	63																					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

May, 19 84 (Month) — Marshall, Michigan (Municipality) — Robert J. Swalwell (Superintendent's Signature)

1 2	3 8	9 10	11 12	13 15
ID	1300.29	05	84	..
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX. FUEL 14	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 Feels LBS.	44 Water CF	49	54	59
PN											
SF											
01			2640			20	397	580			
02			2640			20	199	540			
03			2520			20	199	390			
04			2640			20	397	410			
05			2520			20	199	470			
06			2400			10	199	290			
07			2520			20	199	500			
08			2640			30	397	320			
09			2640			20	397	300			
10			2400			20	199	370			
11			2520			20	397	340			
12			2400			10	199	450			
13			2520			40	397	360			
14			2520			10	199	330			
15			2520			20	397	370			
16			2520			20	199	380			
17			2520			30	298	410			
18			2520			10	298	470			
19			2400			30	199	360			
20			2520			20	199	390			
21			2400			20	199	470			
22			2520			20	397	480			
23			2520			20	397	380			
24			2520			20	397	380			
25			2400			30	199	470			
26			2400			20	397	380			
27			2520			20	199	360			
28			2520			40	199	350			
29			2640			30	397	350			
30			2520			10	397	410			
31			2520			20	199	310			
TL			78,000			660	8,941	12,376			
ME			2516			21	288	399			

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours	N Va
TOTAL	5		884	
Superintendent	1		176	
Asst. Supt.	1		176	
Shift Foreman				
Shift Operator	3		532	
Maint. Supervisor				
Mechanic				
Chemist				
Lab Technician				
Clerk-Typist				
Other				

GIVE THE HOURS PER DAY PLANT PERSONNEL ARE

WEEKDAYS 9 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ , 19 _____
Month

_____ , Michigan
Municipality

_____
Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
IP [ ] [ ] [ ] [ ]
Plant No. Mo. Yr. Sampling Point Code

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*		T. COLI*	REMARKS
	9	14	19	24	29	34	39	44	49	54	59	64	69	74	80	9	14 19
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01	8	173	88	10	216	83	.25	5	90	2		7.3	5.0	4	C		
02	6	130	91	9	195	88	.20	4	90	3		7.4	4.4	12	C		
03	3	66	95	3	66	96	.17	4	93	2		7.4	6.3	18	C		
04												7.4	6.6	12	C		
05												7.4			C		
06	5	104	92	7	146	95	.25	5	88	2		7.4			C		
07	7	151	93	4	86	96	.27	6	90	2		7.2	6.1	40	C		
08	7	150	90	9	193	88	.27	6	86	7		7.5	6.6	12	C		
09	5	107	93	7	149	91	.22	5	89	5		7.4	6.7	10	C		
10	8	171	91	6	129	92	.25	5	90	3		7.4	6.5	52	C		
11												7.3	6.9	60	C		
12												7.3			C		
13	13	270	84	4	83	93	.17	4	93	2		7.4			C		
14	17	366	82	1	22	98	.18	4	91	1		7.3	6.6	12	C		
15	22	470	69	5	107	91	.20	4	90	5		7.2	6.6	16	C		
16	13	278	85	4	85	93	.12	3	94	1		7.4	6.6		C		
17	13	276	84	8	170	86	.20	4	89	7		7.7	6.1	6	C		
18												7.7	8.1	10	C		
19												7.6			C		
20	22	450	63	8	163	80	.25	5	86	7		7.7			C		
21	16	351	84	17	373	91	.20	4	92	13		7.5	6.8	18	C		
22	20	460	70	4	92	92	.27	6	86	3		7.3	4.8	24	C		
23	9	201	90	4	89	93	.18	4	91	1		7.6	5.0	26	C		
24	7	156	93	5	111	93	.62	14	84	2		7.5	5.3	24	C		
25												7.3	6.3	16	C		
26												7.3			C		
27												7.5			C		
28	23	518	71	7	158	87	.25	6	85	5		7.4			C		
29	11	258	87	10	234	85	.19	4	92	7		7.5	5.3	44	C		
30	6	137	91	8	183	88	.27	6	85	5		7.2	7.2	84	C	38	
31	6	136	90	5	113	90	.22	5	87	5		7.6	4.5	36	C		
TL		5379			3163			113							C		
ME	11	245	85	7	144	90	.24	5	89	4		7.4	6.1	19	C		
WA	17	368		8	180									38	C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

June, 19 84 — Month

Marshall, Michigan — Municipality

Robert J. Swalem — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130024	06	84	500
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY 1 2	WEATHER TYPE 9	WEATHER PRECIP. 14	FLOW TOTAL 19	FLOW MAX RATE 24	RAW SEWAGE QUALITY TEMP 29	pH 34	BOD-5 39	BOD-5 44	SS 49	SS 54	TOTAL-P 59	TOTAL-P 64	VSS 69	NH_3-N 74 78	80	REMARKS OR C 9	14	19
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C			
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C			
SF															C			
01	1		2.69		52	7.6									C			
02	1		2.57		52	7.5									C			
03	4	.01	2.55		52	7.4	74	1574	52	1106	1.95	41	42		C			
04	1		2.71		53	7.6	70	1582	64	1446	1.80	41	54		C			
05	1		2.59		53	7.7	89	1922	60	1296	2.05	44	54		C			
06	1		2.56		53	7.5	85	1815	100	2135	1.95	42	56		C			
07	4	.01	2.60		53	7.5	91	1943	46	982	2.30	49	40		C			
08	1		2.55		54	7.6									C			
09	4	.13	2.46		54	7.5									C			
10	1		2.60		52	7.6	70	1518	54	1170	1.80	39	38		C			
11	1		2.61		54	7.7	88	1916	88	1916	2.45	53	74		C			
12	1		2.55		54	7.5	52	1106	70	1489	1.90	40	64		C			
13	4	.06	2.50		54	7.5	66	1376	56	1168	2.65	55	40		C			
14	1		2.46		54	7.6	82	1682	56	1149	2.30	47	34		C			
15	1		2.51		54	7.5									C			
16	4	.03	2.38		54	7.4									C			
17	3		2.46		54	7.5	54	1108	50	1026	2.05	42	30		C			
18	4	.04	2.60		54	7.5	60	1301	94	2038	2.40	52	28		C			
19	1		2.52		55	7.4	76	1597	76	1597	2.40	50	58		C			
20	1		2.49		55	7.3	46	955	59	1225	1.70	35	44		C			
21	1		2.47		55	7.3	80	1648	106	2184	2.55	53	90		C			
22	4	.26	2.42		55	7.3									C			
23	1		2.39		55	7.3									C			
24	1		2.35		55	7.1	66	1294	28	549	3.30	65	16		C			
25	4	.01	2.51		55	7.0	62	1298	66	1382	1.70	36	46		C			
26	1		2.45		54	7.3	88	1798	64	1308	2.30	47	32		C			
27	1		2.43		54	7.5	62	1257	64	1297	2.30	47	40		C			
28	1		2.44		54	7.6	56	1140	42	855	1.90	39	18		C			
29	1		2.32		54	7.5									C			
30	1		2.19		54	7.4									C			
31															C			
TL		.55	74.93					29,830		27,318		917			C			
ME			2.50				71	1492	65	1366	2.19	46	45		C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

June, 1984 — Month

Marshall, Michigan — Municipality

Robert J. Swalwell — Superintendent's Signature

ID 130029 06 84 — Plant No. Mo. Yr. Sampling Point Code

DAY	BOD-5		SS		TOTAL-P		VSS	NH_3-N	REMARKS OR OTHER PARAMETERS									
	9	14	19	24	29	34	39	44	49	54	59	64	69	74	78	80	9	14	19
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l								C			
PN	00310	35001	00530	85002	00665	85004	00535	00610								C			
SF																C			
01																C			
02																C			
03	68	1446	103	2297	2.55	54	78									C			
04	74	1673	94	2125	2.40	54	74									C			
05	90	1944	92	1987	2.40	52	76									C			
06	88	1879	100	2135	2.20	47	64									C			
07	92	1964	88	1879	2.75	59	60									C			
08																C			
09																C			
10	76	1675	104	2255	2.75	60	76									C			
11	70	1524	86	1872	2.65	58	64									C			
12	56	1191	106	2254	2.55	54	86									C			
13	62	1293	106	2210	2.85	59	84									C			
14	72	1477	110	2257	2.90	59	74									C			
15																C			
16																C			
17	36	379	98	2011	2.45	50	86									C			
18	42	911	154	3339	2.75	60	94									C			
19	82	1723	126	2648	2.85	60	90									C			
20	76	1587	150	3115	2.85	59	118									C			
21	70	1442	108	2225	2.45	50	94									C			
22																C			
23																C			
24	62	1215	114	2234	2.75	54	98									C			
25	52	1089	106	2219	2.30	48	90									C			
26	62	1267	96	1962	2.75	56	74									C			
27	44	892	96	1946	2.45	50	70									C			
28	48	977	86	1750	2.40	49	68									C			
29																C			
30																C			
31																C			
TL		27566		44,720		1092										C			
ME	66	1378	106	2236	2.60	55	81									C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

June, 19 84
Month

Marshall, Michigan
Municipality

Robert J. Swahlo
Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
ID | 130029 | 06 | 84 | ...
Plant No. Mo. Yr. Sampling Point Code

DAY 1 2	AERATION SYSTEM 11					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14	
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	8C	Waste Sludge 9		19
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*	
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889	
SF											4				C			
01	L/8		3.2	2.8	.34	2380	1718	15.0	1.59	2.5	203	.73	72		C	15		
02			3.4								205				C	15		
03			3.4								206				C	15		
04			3.3	3.0	.37	2294	1537	16.0	1.43	2.3	207	.75	69		C	15		
05			3.3	3.1	.33	2303	1644	16.0	1.44	2.1	199	.76	71		C	15		
06			3.3	3.4	.31	2410	1749	16.0	1.51	1.2	197	.80	69		C	15		
07			3.3	3.4	.36	2214	1608	17.0	1.30	2.0	197	.72	72		C	15		
08			3.4	2.7	.44	1751	1274	14.0	1.25	3.0	195	.59	72		C	15		
09			3.5								194				C	15		
10			3.4								200				C	15		
11			3.3	2.4	.48	1706	1218	14.0	1.22	4.4	202	.69	70		C	15		
12			3.3	2.8	.39	1945	1404	16.0	1.22	4.2	195	.60	72		C	15		
13			3.4	3.0	.36	2030	1465	16.0	1.27	2.4	196	.56	72		C	15		
14			3.4	2.9	.36	1993	1416	14.0	1.42	2.5	202	.57	70		C	15		
15			3.5	3.0	.32	2121	1631	15.0	1.41	2.4	203	.57	71		C	15		
16			3.6								182				C	15		
17			3.5								203				C	15		
18			3.3	2.5	.30	1944	1415	15.0	1.30	2.7	191	.58	71		C	15		
19			3.4	2.9	.26	2265	1629	19.0	1.19	2.0	193	.54	72		C	15		
20			3.5	2.9	.24	2463	1777	19.0	1.30	2.0	193	.58	72		C	15		
21			3.5	2.9	.25	2394	1730	21.0	1.14	2.0	195	.59	71		C	15		
22			3.6	3.0	.24	2449	1744	22.0	1.11	2.1	192	.59	71		C	15		
23			3.6								191				C	15		
24			3.7								196				C	15		
25			3.4	2.8	.24	2388	1740	29.0	.82	2.0	196	.73	72		C	15		
26			3.5	2.5	.29	2060	1481	21.0	.98	3.1	189	.72	72		C	15		
27			3.5	2.7	.29	2051	1487	21.0	.98	4.1	193	.67	71		C	15		
28			3.5	2.7	.28	1956	1412	19.0	1.03	4.3	193	.66	71		C	15		
29			3.7	2.9	.25	2050	1489	21.0	.98	4.7	195	.69	72		C	15		
30			3.9								195				C	15		
31															C			
TL															C	450		
ME			3.5	2.9	.32	2151	1551	17.9	1.23	2.8	197	.65	71		C	15		

Mixed Liquor

Digester Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To _____
Process Pattern _____

MONTH June 19 84

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	93	4.0	71		7.0																			
2	50	4.0	59		6.9																			
3	50	3.9	71		6.9																			
4	53	4.6	63		7.0																			
5	50	4.1	75		7.0								10.2	.41	69									
6	50	3.0	82		7.1								10.4	.46	73									
7	50	4.0	62		7.0								10.0	.43	70									
8	75	4.0	60		7.0																			
9	53	3.9	56		7.0																			
10	53	3.8	50		7.0																			
11	53	4.0	63		7.0																			
12	50	4.1	57		7.1																			
13	50	4.7	64		7.1																			
14	50	4.1	51		7.0																			
15	91	4.0	76		6.8																			
16	50	4.0	70		6.8																			
17	50	3.5	62		6.9																			
18	50	3.7	61		6.7																			
19	53	4.9	59		6.7																			
20	50	3.3	53		6.6								11.2	.28	75									
21	50	4.5	59		6.7																			
22	[illegible]	5.2	61		6.6																			
23	[illegible]	3.7	62		6.4																			
24	[illegible]	3.2	76		6.4																			
25	[illegible]	4.0	75		6.4																			
26	[illegible]	7.7	79		6.7																			
27	[illegible]	3.8	73		6.7																			
28	[illegible]	3.5	76		6.7																			
29	[illegible]	4.0	55		6.8																			
30	[illegible]	3.9	55		6.7																			
31																								
TOTAL	[illegible]																							
AVERAGE MEAN	56	4.1	65											.40	72									

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

June, 19 84 — Month

Marshall, Michigan — Municipality

Robert J Swalwell — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130029	06	84	
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX. FUEL 14	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 $FeCl_3$ LBS	44 Water CF	49	54	59
PN											
SF											
01			2400			20	199	810			
02			2400			10	199	220			
03			2400			20	397	460			
04			2520			10	199	380			
05			2400			20	199	400			
06			2400			20	397	1200			
07			2400			20	199	1310			
08			2400			20	397	470			
09			2400			30	199	430			
10			2280			20	397	520			
11			2520			30	199	350			
12			2400			20	397	2640			
13			2400			20	199	480			
14			2520			30	298	1540			
15			2400			20	298	1270			
16			2400			20	199	1160			
17			2400			10	298	830			
18			2520			30	298	1830			
19			2400			10	199	600			
20			2400			20	397	1130			
21			2400			20	199	1050			
22			2400			20	199	1240			
23			2520			30	397	270			
24			2400			20	199	470			
25			2400			20	298	1450			
26			2400			20	298	2170			
27			2280			30	397	1600			
28			2400			10	199	1210			
29			2400			30	199	2800			
30			2400			20	199	1120			
31											
TL			72,360			620	8,148	31,410			
ME			2412			21	272	1047			

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours	N Va
TOTAL	5		840	
Superintendent	1		168	
Asst. Supt.	1		168	
Shift Foreman				
Shift Operator	3		504	
Maint. Supervisor				
Mechanic				
Chemist				
Lab Technician				
Clerk-Typist				
Other				

GIVE THE HOURS PER DAY PLANT PERSONNEL ARE

WEEKDAYS 9 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ Month , 19 _____ _____ Municipality , Michigan _____ Superintendent's Signature

1 2 ID | 3 Plant No. 8 | 9 10 Mo. | 11 12 Yr. | 13 Sampling Point Code 15

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*		T. COLI*	REMARKS
	9 14 19			24 29 34			39 44 49			54	59	64	69	74	80	9	14 19
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01												7.5	5.5	80.	C		
02												7.5			C		
03	24	510	68	5	106	90	.23	5	88	3		7.5			C		
04	7	158	87	7	158	89	.23	5	87	3		7.5	6.2	288.	C		
05	10	216	89	3	65	95	.23	5	89	2		7.6	4.2	118.	C		
06	8	171	91	5	107	95	.19	4	90	3		7.4	3.0	62.	C		
07	19	406	79	4	85	91	.22	5	90	3		7.5	3.0	414.	C		
08												7.5	4.4	380.	C		
09												7.5			C		
10	6	130	91	2	43	96	.18	4	90	2		7.5			C		
11	6	131	93	4	87	95	.22	5	91	3		7.4	5.1	72	C		
12	4	85	92	5	106	93	.22	5	88	4		7.4	5.0	110	C		
13	22	459	67	8	167	86	.23	5	91	4		7.4	5.6	56	C		
14	23	472	72	4	82	93	.22	5	90	3		7.6	5.5	92	C		
15												7.3		98	C		
16												7.3			C		
17	5	103	91	7	144	86	.27	6	87	5		7.4			C		
18	4	87	93	8	173	94	.13	3	95	2		7.3	5.0	146	C		
19	1	21	98	6	126	92	.20	4	92	5		7.3	5.0	66	C		
20	21	436	54	9	187	83	.23	5	86	7		7.3	5.6	64	C		
21	7	144	91	4	82	96	.19	4	93	3		7.3	4.9	130	C		
22												7.1	5.7	102	C		
23												6.3			C		
24	5	98	92	4	78	86	.22	4	93	2		6.6			C		
25	5	105	92	5	105	92	.16	3	91	4		6.9	6.3	118	C		
26	5	102	94	2	41	97	.17	3	93	1		7.2	6.4	88	C		
27	9	182	82	6	122	91	.19	4	92	8		7.2	5.6	54	C		
28	5	102	91	3	61	93	.17	3	91	2		7.6	6.7	66	C		
29												7.1	6.6	160	C		
30												7.3			C		
31															C		
TL		4118			2125			87							C		
ME	10	306	85	5	106	92	.21	4	90	3		7.3	5.3	103	C		
WA	14	292		7	142									201	C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

July, 19 84 — Month

Marshall, Michigan — Municipality

Robert J. Swalwell — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130029	07	84	5.00
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY 1 2	WEATHER TYPE 9	WEATHER PRECIP. 14	FLOW TOTAL 19	FLOW MAX RATE 24	RAW SEWAGE QUALITY TEMP 29	pH 34	BOD-5 39	BOD-5 44	SS 49	SS 54	TOTAL-P 59	TOTAL-P 64	VSS 69	NH_3-N 74 78	80	REMARKS OR 9	14
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C		
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C		
SF															C		
01	1		2.19		54	7.5	58	1059	64	1169	1.70	31	42		C		
02	1		2.41		54	7.5	80	1608	40	804	3.30	66	28		C		
03	1		2.35		55	6.7									C		
04	1		2.15		55	7.5	55	986	46	824	1.90	34	42		C		
05	4	.03	2.31		55	7.4									C		
06	4	.16	2.29		55	7.5									C		
07	1		2.19		55	7.4									C		
08	1		2.24		55	7.4									C		
09	4	.84	2.48		55	7.5	80	1655	76	1572	2.40	50	48		C		
10	4	.60	2.48		56	7.3	100	2068	90	1861	2.30	48	74		C		
11	4	.05	2.45		56	7.4	112	2288	124	2534	3.40	69	92		C		
12	1		2.44		56	7.4	100	2035	112	2279	3.30	67	97		C		
13	1		2.40		56	7.4									C		
14	1		2.30		56	7.4									C		
15	1		2.29		56	7.4	74	1413	94	1795	2.20	42	70		C		
16	1		2.39		56	7.4	107	2133	182	3628	4.20	84	118		C		
17	1		2.33		56	7.4	76	1477	84	1632	2.65	51	76		C		
18	1		2.31		56	7.3	92	1772	94	1811	2.65	51	76		C		
19	1		2.30		56	7.4	86	1650	112	2148	2.45	47	72		C		
20	3		2.30		56	7.4									C		
21	1		2.21		56	7.4									C		
22	1		2.23		56	7.4	84	1562	74	1376	2.75	51	68		C		
23	4	.28	2.40		58	7.4	94	1881	120	2402	2.30	46	108		C		
24	1		2.35		58	7.3	88	1725	48	941	2.05	40	44		C		
25	4	.01	2.37		56	7.3	70	1384	86	1700	2.05	41	66		C		
26	4	.14	2.36		56	7.4	80	1575	98	1924	2.20	43	78		C		
27	4	.02	2.35		56	7.5									C		
28	1		2.22		56	7.4									C		
29	1		2.17		56	7.4	74	1339	114	2063	2.75	50	64		C		
30	1		2.36		56	7.3	78	1535	108	2126	2.40	47	100		C		
31	1		2.29		56	7.3	140	2674	28	535	5.40	103	22		C		
TL		2.13	71.91					33,819		35,129		1061			C		
ME			2.32				86	1691	90	1756	2.72	53	69		C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

July , 19 84
Month

Marshall , Michigan
Municipality

Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
10 | 130029 | 07 | 84 | ..
Plant No. | Mo. | Yr. | Sampling Point Code

DAY	BOD-5 9 14		SS 19 24		TOTAL-P 29 34		VSS 39	NH_3-N 44	REMARKS OR OTHER PARAMETERS 49	54	59	64	69	74 78	80	9	14	19
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C			
PN	00310	85001	00530	85002	00665	85004	00535	00610							C			
SF															C			
01	58	1059	126	1936	2.85	52	84								C			
02	88	1768	154	3095	2.05	41	102								C			
03															C			
04	62	1112	176	3156	3.20	57	138								C			
05															C			
06															C			
07															C			
08															C			
09	54	1117	120	2482	2.90	60	84								C			
10	56	1158	90	1861	2.05	42	66								C			
11	72	1471	112	2288	2.45	50	92								C			
12	72	1465	134	2727	2.75	56	100								C			
13															C			
14															C			
15	56	1070	132	2521	3.10	59	92								C			
16	85	1694	182	3638	4.10	82	122								C			
17	76	1477	182	3557	4.70	91	144								C			
18	82	1580	138	2659	3.65	70	92								C			
19	83	1592	192	3683	4.80	92	132								C			
20															C			
21															C			
22	92	1711	204	3794	5.50	102	154								C			
23	82	1491	164	3283	3.85	77	126								C			
24	104	2038	200	3920	5.25	103	154								C			
25	52	1038	90	1749	2.30	45	54								C			
26	64	1240	152	2932	3.65	72	110								C			
27															C			
28															C			
29	66	1194	150	2715	3.75	68	118								C			
30	52	1032	116	2283	2.55	50	100								C			
31	58	1108	126	2406	2.65	51	72								C			
TL		27575		56745		1520									C			
ME	71	1379	146	2837	3.41	66	107								C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

July (Month), 19 87 — Marshall (Municipality), Michigan — Robert J. Swalwell (Superintendent's Signature)

ID 13,3,0,2,7 (Plant No.) 07 (Mo.) 87 (Yr.) ... (Sampling Point Code)

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	8C 9	Waste Sludge	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		3.9								193				C	15	
02			3.6	2.8	.27	2033	1426	22.0	.92	1.8	192	.63	73		C	15	
03			3.7	3.1	.25	2210	1552	26.0	.85	1.8	186	.68	72		C	15	
04			4.0								191				C	15	
05			3.7	3.1	.23	2324	1630	33.0	1.01	1.5	189	.67	69		C	15	
06			3.8	2.8	.26	2065	1446	20.0	1.03	1.7	195	.67	69		C	15	
07			3.9								200				C	15	
08			3.8								199				C	15	
09			3.5	2.6	.29	2156	1426	22.0	.98	2.0	188	.62	70		C	15	
10			3.5	1.7	.40	1392	1002	14.0	.99	3.6	186	.48	70		C	15	
11			3.5	2.8	.26	2272	1420	26.0	.87	2.4	192	.72	70		C	15	
12			3.5	2.8	.27	2381	1688	26.0	.92	3.1	190	.64	70		C	15	
13			3.6	3.1	.23	2622	1877	30.0	.87	2.8	188	.64	71		C	15	
14			3.7								187				C	15	
15			3.8								190				C	15	
16			3.6	2.8	.24	2482	1764	40.0	.62	2.1	187	.68	70		C	15	
17			3.7	3.0	.23	2687	1885	30.0	.90	3.2	188	.68	70		C	15	
18			3.7	3.0	.25	2634	1857	33.0	.80	3.2	192	.69	67		C	15	
19			3.7	2.7	.26	2624	1841	30.0	.87	3.7	188	.66	70		C	15	
20			3.7	2.7	.26	2642	1869	29.0	.91	3.4	189	.69	70		C	15	
21			3.9								187				C	15	
22			3.9								184				C	15	
23			3.6	2.2	.31	2383	1690	24.0	.99	2.2	182	.69	70		C	15	
24			3.7	2.3	.32	2488	1772	25.0	1.00	1.6	184	.63	71		C	15	
25			3.6	2.2	.34	2249	1595	25.0	.90	3.8	189	.69	70		C	20	
26			3.7	2.0	.36	2076	1452	24.0	.87	2.5	190	.60	68		C	20	
27			3.7	2.1	.34	2135	1521	24.0	.89	1.8	140	.54	70		C	20	
28			3.9								141				C	20	
29			4.0								139				C	20	
30			3.7	1.9	.35	1944	1387	22.0	.88	1.5	138	.61	71		C	20	
31			3.8	2.4	.30	2040	1455	23.0	.89	1.8	135	.61	70		C	20	
TL															C	500	
ME			3.7	2.6	.29	2321	1607	25.6	.90	2.3	180	.64	70		C	16	

Waste 1400 Gal/Day
Waste 1200 Gal/Day
Waste 1000 Gal/Day

Digester Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

MARSHALL, MICHIGAN

R 4619
4833-5382

Supernatant To _____
Process Pattern _____

MONTH JULY 19 84

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/ 1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	50	4.5	67		6.7																			
2	50	3.9	55		6.7																			
3	50	3.9	69		6.7																			
4	50	3.9	61		6.7																			
5	50	3.8	59		6.8																			
6	75	4.6	59		6.7																			
7	50	4.6	64		6.7																			
8	50	4.0	59		6.7																			
9	50	4.4	60		6.8																			
10	50	4.1	55		6.8																			
11	50	3.8	44		6.8																			
12	75	5.3	60		6.8																			
13	50	4.1	55		6.7																			
14	50	3.6	59		6.7																			
15	50	3.9	77		6.7																			
16	125	4.9	55		6.8																			
17	125	5.0	81		6.7																			
18	125	4.4	61		6.7																			
19	100	4.3	60		6.7																			
20	125	4.3	60		6.7																			
21	50	4.6	57		6.7																			
22	50	5.6	83		6.7																			
23	45	4.9	59		6.7																			
24	63	4.5	68		6.7																			
25	63	4.6	62		6.7																			
26	63	4.3	67		6.7																			
27	85	4.7	63		6.7																			
28	63	4.3	62		6.7																			
29	63	4.7	66		6.7																			
30	63	3.0	87		6.7																			
31	94	4.1	57		6.7																			
TOTAL	2,152																							
ARITH. MEAN	69	4.3	62																					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

July (Month), 19 84 — Marshall (Municipality), Michigan — Robert J. Swalwell (Superintendent's Signature)

1 2 ID | 3 8 Plant No. 130239 | 9 10 Mo. 07 | 11 12 Yr. 84 | 13 15 Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX. FUEL 14	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 Feeds LBS	44 Water CF	49	54	59
PN											
SF											
01			2160			10	298	1190			
02			2520			20	397	1830			
03			2280			20	298	1690			
04			2280			30	397	1280			
05			2280			20	199	1090			
06			2400			20	298	400			
07			2400			30	298	1190			
08			2280			10	199	1220			
09			2400			10	298	490			
10			2400			10	496	400			
11			2400			20	397	870			
12			2400			20	199	1400			
13			2280			10	199	1340			
14			2400			10	199	380			
15			2400			30	199	440			
16			2400			20	199	880			
17			2280			10	298	2020			
18			2280			20	298	1130			
19			2400			10	99	1500			
20			2400			20	199	1480			
21			2400			30	199	1370			
22			2280			20	199	1290			
23			2280			20	397	1010			
24			2400			30	199	990			
25			2400			30	397	390			
26			2160			40	199	480			
27			2160			20	199	510			
28			2160			30	199	460			
29			2040			20	199	550			
30			2160			25	199	1420			
31			2160			25	199	1180			
TL			76640			640	5849	31820			
ME			2310			21	260	1026			

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		844
Superintendent	1		168
Asst. Supt.	1		168
Shift Foreman			
Shift Operator	3		508
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL A

WEEKDAYS 9 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

R 4610 4/74
4833-5468

July, 19 84
Month

_____, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
ID
Plant No. Mo. Yr. Sampling Point Code

*	Fecal	Total
MF	31616	31504
MPN	31615	31505

DAY	20 BOD-5			20 SS			20 TOTAL-P			20 VSS	NH_3-N	21 pH	21 DO	F. COLI*		T. COLI*	REMARKS OR OTHER PARAMETERS			
	9 14 19			24 29 34			39 44 49			54	59	64	69	74 78	80	9	14	19	24	29
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml				
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505				
SF															C					
01	4	73	93	4	73	94	.15	3	91	3		7.3			C					
02	14	281	83	4	80	90	.22	4	93	3		7.4	7.4		C					
03												6.6	4.4	106	C					
04	15	269	72	6	108	87	.19	3	90	4		7.4	~~6.8~~		C					
05												7.4	6.8		C					
06												7.3	6.0	92	C					
07												7.4			C					
08												7.3			C					
09	11	228	86	5	103	93	.25	5	90	3		7.4	5.8	50	C					
10	9	186	91	12	248	87	.30	6	87	10		7.3	5.7	200	C					
11	6	123	95	6	123	95	.19	4	94	4		7.5	4.0	184	C					
12	10	203	90	6	122	95	.17	3	95	5		7.4	5.2	550	C					
13												7.3	5.7		C					
14												7.4			C					
15	7	134	91	6	115	94	.16	3	93	1		7.2			C					
16	7	140	93	4	80	98	.30	6	88	1		7.2	4.6	2	C					
17	5	97	93	4	78	95	.16	3	94	3		7.4	4.6	310	C					
18	16	308	83	5	96	95	.18	3	93	3		7.3	3.4	364	C					
19	6	115	93	8	153	93	.17	3	93	6		7.3	5.4	56	C					
20												7.4	5.6	64	C					
21												7.3			C					
22	5	93	94	5	93	93	.20	4	93	3		7.3			C					
23	7	140	93	3	60	98	.19	4	92	2		7.4	5.0	42	C					
24	24	470	73	6	118	88	.22	4	89	5		7.3	5.1	96	C					
25	6	119	91	4	79	95	.18	4	91	1		7.3	5.3	38	C					
26	13	256	84	5	98	95	.19	4	91	4		7.4	4.6	62	C					
27												7.3	5.1	78	C					
28												7.3			C					
29	9	163	88	6	109	95	.17	3	94	2		7.3			C					
30	8	157	90	8	157	93	.17	3	93	6		7.2	5.4	30	C					
31	7	134	95	3	57	89	.15	3	97	2		7.2	5.4	52	C					
TL		3684			2150			75							C					
ME	9	184	89	6	108	93	.20	4	92	4		7.3	5.3	79	C					
WA	12	225		7	142									156	C					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

August, 1984 — Month

Marshall, Michigan — Municipality

Robert J. Swalwell — Superintendent's Signature

ID 130029 — Plant No. 08 — Mo. 84 — Yr. 500 — Sampling Point Code

DAY	WEATHER TYPE	WEATHER PRECIP.	FLOW TOTAL	FLOW MAX RATE	RAW SEWAGE QUALITY TEMP	pH	BOD-5		SS		TOTAL-P		VSS	NH_3-N		REMARKS OF
1 2	9	14	19	24	29	34	39	44	49	54	59	64	69	74 78	80	9 14
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C	
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C	
SF															C	
01	1		2.26		58	7.5	82	1546	144	2714	3.10	58	96		C	
02	4	.02	2.27		58	7.4	68	1287	106	2007	2.30	44	88		C	
03	1		2.20		58	7.4									C	
04	4	.03	2.13		58	7.4									C	
05	1		2.21		58	7.4									C	
06	1		2.35		58	7.4	76	1490	72	1411	2.10	41	70		C	
07	1		2.35		59	7.3	80	1568	90	1764	2.40	47	82		C	
08	1		2.34		59	7.3	68	1327	82	1600	2.10	41	56		C	
09	4	.02	2.28		59	7.4	71	1350	76	1445	2.05	39	46		C	
10	1		2.26		59	7.4									C	
11	1		2.10		59	7.4									C	
12	1		2.21		59	7.4	68	1253	60	1106	3.95	73	52		C	
13	1		2.33		59	7.3	74	1438	92	1788	2.30	45	78		C	
14	1		2.32		59	7.3	72	1393	100	1935	2.10	41	86		C	
15	1		2.29		59	7.5	70	1337	90	1719	2.45	47	78		C	
16	1		2.26		59	7.3	78	1470	96	1809	2.75	52	72		C	
17	1		2.26		59	7.3									C	
18	1		2.13		59	7.4									C	
19	1		2.13		59	7.4	78	1386	92	1634	2.30	41	76		C	
20	1		2.30		59	7.4	92	1765	92	1765	2.55	49	78		C	
21	1		2.25		59	7.4	88	1651	96	1801	2.75	52	84		C	
22	1		2.24		59	7.5	84	1569	70	1308	2.90	54	62		C	
23	1		2.18		59	7.3	82	1491	80	1454	2.45	44	62		C	
24	1		2.18		59	7.5									C	
25	1		2.08		59	7.4									C	
26	1		2.14		57	7.4	94	1678	134	2392	2.45	44	108		C	
27	4	.04	2.24		59	7.4	82	1532	82	1532	2.55	48	76		C	
28	1		2.29		59	7.1	86	1642	90	1718	2.40	46	82		C	
29	4	.53	2.22		59	7.3	76	1407	102	1889	2.65	49	84		C	
30	1		2.20		59	7.3	98	1798	166	3045	3.20	59	130		C	
31	4	.12	2.21		59	7.3									C	
TL		.76	69.21					31,378		37,836		1014			C	
ME			2.23				79	1494	96	1802	2.56	48	78		C	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

AUGUST (Month), 19 84

MARSHALL (Municipality), Michigan

Robert J. Swahill
Superintendent's Signature

ID 130229 (Plant No.) 08 (Mo.) 84 (Yr.) .. (Sampling Point Code)

DAY	BOD-5 (9–14)		SS (19–24)		TOTAL-P (29–34)		VSS (39)	NH_3-N (44)	REMARKS OR OTHER PARAMETERS (49 54 59 64 69 74 78 80)								
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l								C	
PN	00310	85001	00530	85002	00665	85004	00535	00610								C	
SF																C	
01	68	1282	182	3430	3.50	66	108									C	
02	64	1212	166	3143	3.20	61	116									C	
03																C	
04																C	
05																C	
06	60	1176	149	2822	3.50	69	116									C	
07	106	2077	258	5057	6.00	118	194									C	
08	104	2030	260	5074	6.35	124	182									C	
09	122	2320	320	6084	8.10	154	174									C	
10																C	
11																C	
12	94	1733	240	4424	5.70	105	182									C	
13	74	1438	150	2915	3.40	66	126									C	
14	68	1316	136	2631	2.75	53	114									C	
15	90	1719	232	4431	4.95	95	180									C	
16	84	1585	164	3091	4.10	77	136									C	
17																C	
18																C	
19	70	1243	130	2309	3.20	57	106									C	
20	88	1688	232	4450	5.10	98	174									C	
21	100	1877	250	4641	5.25	99	190									C	
22	92	1719	180	3363	4.45	83	154									C	
23	78	1418	146	2654	3.50	64	108									C	
24																C	
25																C	
26	60	1071	134	2392	3.10	55	104									C	
27	56	1046	110	2055	2.75	51	96									C	
28	56	1070	118	2254	2.75	53	114									C	
29	54	1000	110	2036	2.65	49	92									C	
30	56	1027	140	2569	2.55	47	102									C	
31																C	
TL		31045		71875		1644										C	
ME	78	1478	181	3423	4.13	78	152									C	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

AUGUST , 19 84
Month

Marshall , Michigan
Municipality

Robert J. Swihart
Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
ID | 130,024 | 08 | 84 |
Plant No. Mo. Yr. Sampling Point Code

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	80	Waste Sludge 9	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		3.8	2.3	.27	2139	1518	25.0	.86	1.8	134	.60	70		C	15	
02			3.8	2.3	.25	2196	1565	24.0	.92	1.7	133	.71	71		C	15	
03			3.9	2.1	.27	1954	1404	24.0	.81	1.7	133	.71	72		C	15	
04			4.0								132				C	15	
05			3.9								133				C	15	
06			3.7	2.3	.23	2364	1716	24.0	.99	1.5	137	.69	72		C	15	
07			3.7	2.4	.23	2656	1927	26.0	1.02	2.0	140	.66	72		C	15	
08			3.7	2.3	.24	2801	2017	30.0	.93	.4	139	.67	72		C	15	
09			3.8	2.0	.27	2732	1940	26.0	1.05	.8	142	.62	70		C	15	
10			3.8	2.0	.27	2717	1917	24.0	1.13	1.5	144	.65	71		C	15	
11			4.0								147				C	15	
12			3.9								147				C	15	
13			3.7	1.9	.29	2700	1969	21.0	1.29	1.8	146	.71	74		C	15	
14			3.7	1.7	.34	2403	1704	20.0	1.20	1.4	145	.69	70		C	15	
15			3.8	1.4	.39	2107	1555	18.0	1.17	1.3	142	.65	72		C	15	
16			3.8	1.9	.31	2529	1857	20.0	1.26	1.2	142	.73	73		C	15	
17			3.8	1.9	.30	2566	1883	19.0	1.35	1.4	141	.75	73		C	15	
18			4.0								144				C	15	
19			4.0								147				C	15	
20			3.7	1.9	.31	2252	1660	18.0	1.25	1.4	147	.62	73		C	15	
21			3.8	2.1	.29	2398	1787	16.0	1.50	1.6	176	.60	74		C	15	
22			3.8	2.0	.30	2374	1776	18.0	1.32	1.8	191	.62	74		C	15	
23			3.9	2.1	.28	2464	1833	18.0	1.37	2.4	183	.63	74		C	15	
24			3.9	2.1	.29	2464	1828	17.0	1.45	2.4	185	.66	73		C	15	
25			4.1								181				C	15	
26			4.0								178				C	15	
27			3.8	2.3	.28	2384	1763	19.0	1.25	2.2	169	.71	73		C	15	
28			3.8	2.1	.30	2190	1639	15.0	1.46	2.9	152	.64	73		C	15	
29			3.8	2.4	.27	2182	1645	16.0	1.36	2.2	140	.62	75		C	15	
30			3.9	2.6	.25	2129	1598	16.0	1.33	2.0	124	.62	74		C	15	
31			3.9	2.6	.25	2145	1620	17.0	1.26	2.8	175	.67	74		C	15	
TL															C	465	
ME			3.8	2.1	.28	2381	1744	20.4	1.20	1.8	152	.66	73		C	15	

Waste not recorded

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

August, 19 84 (Month) — Marshall (Municipality), Michigan — Robert J. Swalwell (Superintendent's Signature)

ID 13,00,29 (Plant No.) 08 (Mo.) 84 (Yr.) (Sampling Point Code)

DAY 1 2	GRIT 9 CF	AUX. FUEL 14	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 $FeCl_3$ LBS	44 Water CF	49	54	59
PN											
SF											
01			2160			20	199	1270			
02			2160			30	199	940			
03			2160			20	199	640			
04			1920			20	199	330			
05			2160			30	199	420			
06			2160			30	199	1840			
07			2160			30	199	1510			
08			2160			30	397	550			
09			2160			20	199	990			
10			2280			20	199	1360			
11			2040			30	199	1440			
12			2160			30	199	240			
13			2160			30	199	2650			
14			2280			30	199	1920			
15			2160			20	199	1270			
16			2160			30	199	1770			
17			2160			30	199	2030			
18			2160			20	199	1080			
19			2160			40	199	1220			
20			2160			30	397	1290			
21			2280			10	199	1370			
22			2400			40	199	1280			
23			2280			20	199	2350			
24			2400			20	199	700			
25			2280			20	199	360			
26			2280			40	199	1730			
27			2280			10	199	1200			
28			2280			20	397	1990			
29			2160			30	199	1410			
30			2280			30	199	600			
31			2400			30	199	580			
TL			68,400			810	6,763	38,380			
ME			2206			26	218	1238			

MANPOWER POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		924
Superintendent	1		184
Asst. Supt.	1		184
Shift Foreman			
Shift Operator	3		556
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL A

WEEKDAYS 9 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary
Secondary

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

ALPENA II, MICHIGAN

R 4619
4833-5382

Supernatant To
Process Pattern

MONTH AUGUST 1984

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swidwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. 10^X	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	6.2	7.9	84		6.1																			
2	6.3	3.7	41		6.7																			
3	9.4	3.5	60		6.7																			
4	6.2	3.8	76		6.7																			
5	6.3	3.6	74		6.7																			
6	6.2	4.4	64		6.7																			
7	7.5	4.7	76		6.7																			
8	6.2	4.1	65		6.7																			
9	9.4	2.4	71		6.8																			
10	6.2	3.9	56		6.7																			
11	6.2	4.1	70		6.7																			
12	6.2	4.0	48		6.7																			
13	6.3	4.8	63		6.7																			
14	6.3	4.0	80		6.7																			
15	6.2	4.0	70		6.7																			
16	6.3	3.9	64		6.7																			
17	6.3	3.8	80		6.7																			
18	6.3	3.4	59		6.7																			
19	6.3	3.9	57		6.7																			
20	6.3	4.4	70		6.7																			
21	6.3	4.1	64		6.8																			
22	6.3	3.8	79		6.7																			
23	6.3	3.6	76		6.7																			
24	6.3	4.1	56		6.8																			
25	6.3	3.7	75		6.7																			
26	6.3	3.7	59		6.8																			
27	6.3	2.9	44		6.7																			
28	6.3	4.1	48		6.5																			
29	6.3	4.3	65		6.7																			
30	6.3	4.2	76		6.7																			
31	6.3	4.0	75		6.8																			
TOTAL	201.9																							
ARITH. MEAN	6.5	4.1	66																					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

Aug., 1984 (Month) — Marshall (Municipality), Michigan — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130029	08	84	
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*		T. COLI*	REMARK
	9	14	19	24	29	34	39	44	49	54	59	64	69	74 23	80	9	14
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01	10	188	88	8	151	94	.17	3	95	5		7.2	3.9	42	C		
02	10	189	85	14	265	87	.17	3	93	9		7.2	4.3	78	C		
03												7.2	4.3	44	C		
04												7.3			C		
05												7.2			C		
06	10	196	87	4	78	94	.20	4	90	3		7.2	3.6	116	C		
07	9	176	89	11	216	88	.23	5	90	10		7.3	3.6	130	C		
08	17	332	75	6	117	93	.23	4	89	1		7.2	3.8	130	C		
09	12	228	83	10	190	87	.25	5	88	7		7.2	3.9	78	C		
10												7.4	3.7	146	C		
11												7.3			C		
12	20	369	71	6	111	90	.25	5	94	5		7.3			C		
13	13	253	82	9	175	90	.22	4	90	6		7.2	3.8	58	C		
14	20	387	72	15	290	85	.27	5	87	12		7.2	3.8	64	C		
15	17	325	76	10	191	89	.23	4	91	9		7.4	3.9	28	C		
16	22	415	72	13	245	86	.37	7	87	9		7.3	4.1	76	C		
17												7.2	3.5	88	C		
18												7.3			C		
19	23	409	71	12	213	87	.28	5	88	8		7.4			C		
20	22	422	76	9	173	90	.30	6	88	7		7.4	3.9	102	C		
21	23	432	74	9	169	91	.27	5	90	7		7.3	3.0	44	C		
22	23	430	76	8	149	89	.27	5	91	7		7.4	4.5	74	C		
23	23	418	72	7	127	91	.32	6	87	4		7.3	4.5	36	C		
24												7.3	5.0	28	C		
25												7.3			C		
26	23	410	76	12	214	91	.38	7	84	10		7.4			C		
27	23	430	72	9	168	89	.41	8	84	8		7.4	5.9	38	C		
28	23	439	73	11	210	88	.37	7	85	10		7.0	5.0	32	C		
29	22	407	71	14	259	86	.32	6	88	12		7.2	3.9	22	C		
30	23	422	77	13	239	92	.22	4	93	8		7.2	5.2	26	C		
31												7.2	6.0	2	C		
TL		7,277			3950			108							C		
ME	18	347	77	10	188	89	.27	5	89	7		7.3	4.2	50	C	50	
WA	23	425		12	222									117	C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

September, 19 84 — Month

Marshall, Michigan — Municipality

Robert J. Swalwell — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130029	09	84	500
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY 1 2	WEATHER TYPE 9	WEATHER PRECIP. 14	FLOW TOTAL 19	FLOW MAX RATE 24	RAW SEWAGE QUALITY TEMP 29	pH 34	BOD-5 39	BOD-5 44	SS 49	SS 54	TOTAL-P 59	TOTAL-P 64	VSS 69	NH_3-N 74 78	80	REMARKS OR 9	14
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C		
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C		
SF															C		
01	4	.13	2.16		59	7.4									C		
02	4	.08	2.11		58	7.4									C		
03	4	.03	2.15		57	7.4	64	1148	72	1291	3.20	57	58		C		
04	4	.16	2.28		59	7.7	66	1255	86	1635	2.55	48	62		C		
05	1		2.24		59	7.6	66	1233	108	2018	2.40	45	94		C		
06	4	.38	2.27		59	7.4	77	1458	104	1969	2.40	45	100		C		
07	1		2.27		59	7.5									C		
08	4	.10	2.17		59	7.4									C		
09	4	.11	2.26		59	7.4	76	1432	150	2827	2.65	50	136		C		
10	4	.63	2.41		59	7.4	54	1085	90	1809	1.90	38	66		C		
11	1		2.38		60	7.4	81	1608	86	1707	2.40	48	70		C		
12	4	.01	2.36		60	7.5	80	1575	96	1890	2.55	50	76		C		
13	4	.79	2.45		60	7.1	99	2023	126	2575	3.50	72	88		C		
14	4	.17	2.35		60	7.4									C		
15	1		2.18		60	7.4									C		
16	1		2.25		59	7.5	66	1238	74	1389	2.40	45	70		C		
17	1		2.35		60	7.4	76	1490	114	2234	2.75	54	100		C		
18	1		2.26		59	7.4	65	1225	58	1093	2.45	46	56		C		
19	1		2.33		59	7.3	52	1010	54	1049	2.30	45	52		C		
20	1		2.26		60	7.6	90	1696	60	1131	2.40	45	48		C		
21	1		2.23		59	7.4									C		
22	4	.22	2.14		59	7.4									C		
23	4	.23	2.18		59	7.4	60	1091	72	1309	1.90	35	58		C		
24	4	.21	2.33		59	7.8	89	1729	68	1321	2.45	48	54		C		
25	4	1.37	2.48		59	7.9	80	1655	104	2151	2.05	42	78		C		
26	1		2.37		59	7.6	50	988	48	949	1.90	38	36		C		
27	4	.05	2.39		59	7.5	92	1834	118	2352	3.85	77	78		C		
28	4	.02	2.36		59	7.5									C		
29	1		2.31		59	7.5									C		
30	1		2.30		59	7.4	72	1381	76	1458	2.30	44	60		C		
31															C		
TL		4.69	68.58					28,154		34,157		972			C		
ME			2.29				73	1408	88	1708	2.51	49	72		C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

September, 1984 — Month

Marshall, Michigan — Municipality

Robert J. Swalmer — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130029	09	84	..
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY	BOD-5 9	BOD-5 14	SS 19	SS 24	TOTAL-P 29	TOTAL-P 34	VSS 39	NH_3-N 44	REMARKS OR OTHER PARAMETERS 49	54	59	64	69	74 78	80	9	14	19
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C			
PN	00310	85001	00530	85002	00665	85004	00535	00610							C			
SF															C			
01															C			
02															C			
03	50	897	106	1901	2.55	46	84								C			
04	50	951	102	1940	2.40	46	76								C			
05	76	1420	206	3848	4.45	83	142								C			
06	85	1609	300	5680	4.55	86	216								C			
07															C			
08															C			
09	36	679	40	754	1.30	25	64								C			
10	40	804	42	844	1.30	26	38								C			
11	38	754	24	476	1.15	23	18								C			
12	40	787	28	551	1.35	27	20								C			
13	32	654	32	654	1.30	27	24								C			
14															C			
15															C			
16	28	525	32	600	1.30	24	28								C			
17	32	627	40	784	1.60	31	34								C			
18	30	565	16	302	1.50	28	16								C			
19	36	700	38	738	1.60	31	32								C			
20	22	415	22	415	1.60	30	14								C			
21															C			
22															C			
23	30	545	48	873	1.40	25	40								C			
24	40	777	44	855	1.50	29	34								C			
25	28	579	46	951	1.35	28	42								C			
26	26	514	26	514	1.20	24	18								C			
27	30	598	32	638	1.30	26	20								C			
28															C			
29															C			
30	25	480	30	575	1.30	25	22								C			
31															C			
TL		14,880		23,893		690									C			
ME	39	744	63	1195	1.80	35	49								C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

September, 19 84
Month

Marshall
Municipality, Michigan

Robert J. Swalwell
Superintendent's Signature

1 2 3. 8 9 10 11 12 13 15
ID | 1300291 | 09 | 84 | ...
Plant No. Mo. Yr. Sampling Point Code

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14	F 19
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	8C 9	Waste Sludge		
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*	
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889	
SF											4				C			
01	48		4.0								171				C	15		
02			4.0								163				C	15		
03			4.0								175				C	13		
04			3.8	2.6	.41	1915	1463	17.0	1.13	3.1	176	.61	75		C	15		
05			3.8	2.3	.40	1882	1435	15.0	1.25	3.7	177	.58	76		C	15		
06			3.8	3.0	.55	2907	2142	21.0	1.38	2.0	174	.87	73		C	15		
07			3.8	2.7	.50	2624	1951	23.0	1.14	1.5	167	.88	74		C	15		
08			4.0								164				C	57		
09			3.8								163				C			
10			3.6	2.4	.44	2161	1670	17.0	1.27	1.5	159	.69	77		C			
11			3.6	2.5	.41	1924	1498	17.0	1.13	2.6	164	.62	77		C			
12			3.7	2.8	.44	1948	1510	18.0	1.03	2.1	162	.61	77		C			
13			3.5	2.8	.40	1861	1447	17.0	1.09	2.4	158	.61	77		C			
14			3.6	2.9	.41	1831	1418	19.0	.96	2.7	167	.63	76		C			
15			3.9								173				C			
16			3.8								168				C			
17			3.7	8.4	.63	1875	1443	23.0	.82	1.0	164	.60	76		C			
18			3.8	10.0	.70	1945	1492	26.0	.75	1.8	160	.72	76		C			
19			3.7	10.1	.73	2082	1599	25.0	.83	1.5	151	.72	75		C			
20			3.8	11.6	.84	2191	1640	30.0	.73	1.3	152	.55	75		C			
21			3.9	11.1	.86	2166	1659	36.0	.60	.7	153	.57	76		C			
22			4.0								150				C			
23			3.9								144				C	50		
24			3.7	8.2	.72	1819	1448	21.0	.87	1.7	152	.46	78		C			
25			3.5	6.7	.62	1678	1330	19.0	.88	2.7	162	.52	79		C			
26			3.6	7.3	.62	1634	1232	22.0	.74	2.6	183	.50	75		C			
27			3.6	6.5	.62	1607	1248	20.0	.80	3.4	175	.69	86		C	41		
28			3.7	7.7	.73	1882	1440	26.0	.72	1.4	174	.47	75		C			
29			3.7								176				C			
30			3.7								172				C			
31															C			
TL															C	253		
ME			3.8	5.9	.58	1996	1530	21.7	.95	2.1	165	.63	76		C	25		

Digester Volume, ft³
Primary
Secondary

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To
Process Pattern

MONTH September 1984

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft
	Gals.	Total Solids	Vol. Solids		pH	Temp.	pH	Total Solids	Vol. Solids	Vol. Acids	Alkalinity	Gals.	pH	Total Solids	Vol. Solids	Susp. Solids	P	P	5-Day BOD	Gals.	Total Solids	Vol. Solids	pH	
	100 X	%	%	Lbs/ 1000 c.f. Digester		°F		%	%	Mg/l	Mg/l	X		%	%	Mg/l	Mg/l	Lbs.	Mg/l	X	%	%		X
1	75	2.7	65		6.7								11.7	.48	64									
2	75	3.7	65		6.7								12.3	.37	42									
3	75	4.3	67		6.7																			
4	75	4.4	58		7.0																			
5	138	3.8	62		7.0																			
6	760																							
7	37																							
8	15	8.7	42		7.0																			
9	15	5.5	59		6.6																			
10	75	4.5	60		6.6																			
11	75	4.2	80		6.5																			
12	75	4.2	80		6.5																			
13	75	4.3	74		6.4																			
14	75	6.3	59		6.4																			
15	66	4.3	78		6.5																			
16	75	4.9	65		6.5																			
17	75	5.3	74		6.2																			
18	38	7.0	67		6.0																			
19	30	5.2	72		6.1																			
20	75	4.7	70		6.1																			
21	75	3.5	81		6.4																			
22	62	4.0	75		6.4																			
23																								
24	180	4.8	74		6.3																			
25	549	4.1	67		6.1																			
26	549																							
27	112	5.3	70		6.0																			
28	150	6.4	44		5.9																			
29	75	4.7	78		6.0																			
30	75	4.1	65		6.0																			
31																								
TOTAL	3826																							
ARITH. MEAN	132	4.8	67																					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

September, 19 84 (Month) — Marshall (Municipality), Michigan — Robert J. Swalwell (Superintendent's Signature)

1 2	3 8	9 10	11 12	13 15
ID	130029	09	84	
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX. FUEL 14	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 Ferls LBS.	44 Water CF	49	54	59
PN											
SF											
01			2280			30	298	520			
02			2280			10	199	570			
03			2280			40	298	550			
04			2400			30	199	530			
05			2400			30	199	530			
06			2640			30	298	1040			
07			2400			10	298	470			
08			2280			20	199	300			
09			2280			40	199	380			
10			2400			20	199	540			
11			2280			30	199	440			
12			2400			20	199	530			
13			2040			25	397	550			
14			2400			20	397	400			
15			2280			20	199	350			
16			2280			20	199	330			
17			2400			25	199	320			
18			2280			25	199	400			
19			2280			25	199	400			
20			2280			25		500			
21			2160			25		450			
22			2160			25	199	380			
23			2040			20	199	370			
24			2160			20	397	1620			
25			2400			40	397	730			
26			2520			50	199	790			
27			2400			20	199	590			
28			2280			30	397	640			
29			2400			30	397	590			
30			2400			20	298	350			
31											
TL			64980			795	7255	16160			
ME			2166			27	259	539			

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		764
Superintendent	1		152
Asst. Supt.	1		152
Shift Foreman			
Shift Operator	3		460
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL ARE

WEEKDAYS 9 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ Month , 19 _____ _____ Municipality , Michigan _____ Superintendent's Signature

ID Plant No. | Mo. | Yr. | Sampling Point Code

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	19 DO	F. COLI*		T. COLI*	REMARKS
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01												7.2			C		
02												7.5			C		
03	24	430	63	11	197	85	.22	4	93	7		7.3			C		
04	18	342	73	12	228	86	.27	5	89	6		7.7	6.0	64	C		
05	24	448	64	9	168	92	.22	4	91	7		7.7	5.5	2	C		
06	4	76	95	12	227	90	.25	5	90	9		7.4	3.5	14	C		
07												7.5	3.8	16	C		
08												7.4			C		
09	19	358	75	12	226	92	.32	6	88	9		7.3			C		
10	6	121	89	11	221	88	.41	8	78	4		7.3	3.8	16	C		
11	14	278	83	6	119	93	.23	5	90	4		7.3	4.6	6	C		
12	6	118	93	3	59	97	.23	5	91	1		7.3	4.4	4	C		
13	15	306	85	6	123	95	.19	4	95	4		7.1	4.8	10	C		
14												7.3	5.0	6	C		
15												7.3			C		
16	6	113	91	4	75	95	.13	2	95	6		7.4			C		
17	14	274	82	5	98	96	.32	6	88	4		7.2	5.2	6	C		
18	8	151	88	1	19	98	.27	5	89	1		7.4	3.5	4	C		
19	12	233	77	3	58	94	.25	5	89	2		7.4	3.5		C		
20	8	151	91	3	57	95	1.00	19	58	2		7.5	4.8	2	C		
21												7.4	4.2	4	C		
22												7.4	[redacted]		C		
23	5	90	92	4	73	94	.19	3	90	2		7.4	[redacted]		C		
24	9	175	90	6	117	91	.34	7	86	4		7.7	4.8	6	C		
25	10	207	88	6	124	94	.23	5	89	5		7.6	4.8	2	C		
26	7	138	86	3	59	94	.16	3	92	2		7.2	5.4	12	C		
27	7	140	92	2	40	98	.27	5	93	1		7.4	5.4	56	C		
28												7.4	4.6	12	C		
29												7.4			C		
30	8	153	89	2	38	97	.12	2	95	1		7.4			C		
31															C		
TL		4302			2326			108							C		
ME	11	315	84	6	116	93	.28	5	88	4		7.4	4.6	8	C		
WA	18	331		11	214									14	C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

October (Month), 19 84 — Marshall (Municipality), Michigan — Robert J. Swallow (Superintendent's Signature)

ID | 13,00,29 (Plant No.) | 10 (Mo.) | 84 (Yr.) | 5.00 (Sampling Point Code)

DAY	WEATHER		FLOW		RAW SEWAGE QUALITY											REMARKS OR	
	TYPE	PRECIP.	TOTAL	MAX RATE	TEMP	pH	BOD-5		SS		TOTAL-P		VSS	NH_3-N			
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l			
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610			
SF																	
01	1		2.40		59	7.5	82	1641	90	1801	2.30	46	72				
02	1		2.35		59	7.5	80	1568	74	1450	2.55	50	58				
03	1		2.36		59	7.5	72	1417	63	1240	2.10	41	50				
04	1		2.36		59	7.6	66	1299	76	1496	2.05	40	60				
05	1		2.30		59	7.5											
06	4	.44	2.20		59	7.5											
07	4	.33	2.37		59	7.5	74	1401	62	1174	2.20	42	52				
08	4	.01	2.40		59	7.5	68	1361	128	2562	2.20	44	104				
09	1		2.36		59	7.4	62	1220	66	1299	2.45	48	48				
10	1		2.35		59	7.5	74	1450	80	1568	2.30	43	64				
11	1		2.38		59	7.4	94	1866	60	1191	2.45	49	32				
12	1		2.27		59	7.3											
13	4	.20	2.23		59	7.4											
14	4	.04	2.25		57	7.4	66	1238	68	1276	2.30	43	50				
15	4	.04	2.36		58	7.4	72	1417	90	1771	2.65	52	68				
16	4	.03	2.37		58	7.4	72	1423	64	1265	4.30	85	52				
17	1		2.35		58	7.4	108	2117	90	1764	3.10	61	78				
18	4	.38	2.33		58	7.3	95	1846	158	3070	3.30	64	138				
19	1		2.28		59	7.4											
20	4	1.29	2.28		58	7.4											
21	4	.02	2.32		58	7.3	80	1548	80	1547	2.20	43	72				
22	1		2.42		58	7.4	70	1413	136	2745	4.20	85	108				
23	1		2.38		58	7.3	73	1449	99	1866	3.40	67	78				
24	1		2.37		58	7.4	62	1443	96	1898	2.30	45	68				
25	4	.08	2.39		58	7.5	70	1395	72	1435	2.75	55	56				
26	4	.06	2.29		58	7.5											
27	3		2.27		58	7.5											
28	1		2.27		56	7.5											
29	1		2.39		57	7.5	86	1678	76	1483	2.55	50	66				
30	4	.01	2.29		57	7.5	69	1318	86	1642	2.40	46	66				
31	4	.10	2.27		57	7.5	56	1060	60	1136	1.95	37	54				
TL		3.03	72.06					32,568		36,589		1136					
ME			2.32				75	1480	85	1663	2.63	52	68				

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

October, 19 84
Month

Marshall, Michigan
Municipality

Robert J Swindell
Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
IP | 130029 | 10 | 84 | ...
Plant No. | Mo. | Yr. | Sampling Point Code

DAY	BOD-5 9 14		SS 19 24		TOTAL-P 29 34		VSS 39	NH_3-N 44	REMARKS OR OTHER PARAMETERS 49	54	59	64	69	74 78	80	9	14
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C		
PN	00310	85001	00530	85002	00665	85004	00535	00610							C		
SF															C		
01	26	530	36	721	1.15	23	20								C		
02	38	745	24	470	1.40	27	14								C		
03	30	590	22	433	1.20	24	18								C		
04	32	630	26	511	1.15	23	20								C		
05															C		
06															C		
07	38	719	42	795	1.15	22	32								C		
08	34	681	36	721	1.10	22	28								C		
09	32	630	22	433	1.30	26	10								C		
10	24	470	10	196	1.15	23	8								C		
11	48	926	22	437	1.65	33	16								C		
12															C		
13															C		
14	26	488	26	488	1.20	23	16								C		
15	36	709	38	748	1.60	31	34								C		
16	46	909	50	985	3.85	76	32								C		
17	68	1333	40	784	2.75	54	34								C		
18	44	855	44	855	2.20	43	38								C		
19															C		
20															C		
21	43	832	55	1064	2.40	46									C		
22	44	888	70	1413	1.10	22	62								C		
23	46	913	40	794	3.20	64	34								C		
24	40	791	30	593	2.75	54	20								C		
25	40	797	40	797	2.05	41	28								C		
26															C		
27															C		
28															C		
29	56	1093	42	820	2.20	43	38								C		
30	48	917	44	840	2.20	42	32								C		
31	40	757	38	719	1.80	34	32								C		
TL		17.193		15.620		796									C		
ME	41	782	36	710	1.84	34	26								C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

October, 19 84
Month

Marshall, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
10 | 1300127 | 10 | 84 | ...
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14 1
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	8C	Waste Sludge 9	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	43		3.6	7.0	.13	1735	1415	31.0	.57	3.3	166	.47	76		C	15	
02			3.7								160				C	15	
03			3.7	8.4	.15	1717	1287	33.0	.54	3.4	161	.43	75		C	15	
04			3.7	9.1	.16	1676	1272	29.0	.58	4.4	164	.39	75		C	15	
05			3.7	8.8	.16	1590	1200	27.0	.59	5.1	161	.38	75		C	15	
06			3.9								160				C	15	
07			3.8								160				C	15	
08			3.6	8.6	.16	1782	1315	30.0	.59	3.3	157	.44	75		C	15	
09			3.7	10.0	.14	2025	1520	36.0	.56	2.7	157	.44	74		C	15	
10			3.7	12.0	.15	1971	1467	33.0	.60	4.6	161	.44	74		C	15	
11			3.6	11.0	.16	1899	1408	33.0	.58	5.0	159	.42	74		C	15	
12			3.8	11.0	.15	1857	1388	33.0	.56	4.8	158	.42	74		C	15	
13			3.9								157				C	15	
14			3.8								156				C	15	
15			3.7	9.2	.18	1700	1268	27.0	.63	4.7	168	.38	74		C	15	
16			3.7	10.0	.16	1891	1429	27.0	.70	2.9	170	.37	71		C	15	
17			3.7	9.1	.20	1791	1300	31.0	.58	.8	176	.39	73		C	15	
18			3.7	9.0	.19	1924	1427	35.0	.55	2.3	171	.41	74		C	15	
19			3.8	9.3	.18	1955	1468	33.0	.59	3.5	174	.43	74		C	15	
20			3.8								176				C	15	
21			3.7								176				C	15	
22			3.6	6.1	.21	1894	1422	34.0	.56	1.4	180	.40	74		C	15	
23			3.6	6.0	.22	1927	1422	32.0	.52	2.0	179	.43	74		C	15	
24			3.6	6.1	.22	1885	1395	33.0	.57	2.1	128	.66	51		C	15	
25			3.6	5.0	.27	1524	1124	26.0	.59	3.9	124	.41	73		C	15	
26			3.8	5.7	.23	1585	1277	25.0	.63	2.3	121	.42	74		C	15	
27			3.8								121				C	15	
28			3.8								124				C	15	
29			3.7	4.7	.28	1400	1056	16.0	.88	2.4	124	.37	74		C	15	
30			3.8	4.9	.26	1433	1090	21.0	.68	2.4	124	.37	75		C	15	
31			3.8	5.0	.28	1351	1013	21.0	.64	3.0	122	.36	74		C	15	
TL															C	465	
ME			3.7	8.0	.19	1751	1317	27.6	.60	3.2	155	.41	73		C	15	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

October , 19 84
Month

Marshall , Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
ID | 1300299 | 10 | 84 | ..
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX.FUEL 14	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 Fecl3 LBS	44 Water CF	49	54	59
PN											
SF											
01			2400			10	298	310			
02			2250			30	199	310			
03			2250			30	199	450			
04			2400			30	298	480			
05			2280			10	298	390			
06			2280			10	199	420			
07			2160			20	298	530			
08			2280			20	298	500			
09			2280			30	199	490			
10			2400			20	199	430			
11			2280			40	397	440			
12			2400			10	397	540			
13			2280			40	199	530			
14			2040			30	199	480			
15			2400			30	397	510			
16			2280			20	199	510			
17			2400			30	199	550			
18			2400			20	199	420			
19			2400			30	199	530			
20			2400			30	199	470			
21			2400			40	199	480			
22			2520			30	397	450			
23			2520			30	99	440			
24			2280			20	199	530			
25			2280			20	199	660			
26			2280			20	298	570			
27			2040			20	99	530			
28			2160			20	199	590			
29			2280			40	199	500			
30			2160			30	199	570			
31			2280			30	199	600			
TL			71526			770	7455	15200			
ME			2307			25	240	490			

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		920
Superintendent	1		184
Asst. Supt.	1		184
Shift Foreman			
Shift Operator	3		552
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL ARE

WEEKDAYS 9 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To _____
Process Pattern _____

MONTH October 1984

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1																								
2																								
3	53	4.7	74		6.5																			
4	75	3.1	78		6.7																			
5	75	2.3	67		6.4																			
6	63	3.3	65		6.3																			
7	63	3.4	85		6.1																			
8	50	4.3	80		6.0																			
9	25	4.2	75		5.9																			
10																								
11	50	3.1	74		5.7																			
12	63	3.9	72		5.9																			
13	50	4.0	81		6.0																			
14	50	3.7	81		6.1																			
15	50	3.9	68		5.9																			
16	50	4.0	79		5.9																			
17	63	4.5	83		5.7																			
18	50	4.1	82		5.9																			
19	50	4.3	77		5.8																			
20	50	3.7	82		5.8																			
21	50	3.7	81		5.9																			
22	50	3.4	7[illegible]		6.0																			
23	38	3.9	65		5.7																			
24	38	4.1	83		6.1																			
25	38	3.8	73		6.0																			
26	60	4.6	84		5.9																			
27	38	4.3	73		6.0																			
28	38	4.2	83		6.0																			
29	38	4.0	72		5.9																			
30	38	4.6	69		5.9																			
31	38	5.2	68		5.8																			
TOTAL	1394																							
ARITH. MEAN	50	4.1	76																					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ Month , 19 _____ | _____ Municipality , Michigan | _____ Superintendent's Signature

1 2 ID | 3 ____ 8 Plant No. | 9 10 Mo. | 11 12 Yr. | 13 15 Sampling Point Code

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*		T. COLI*	REMARKS
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01	14	280	83	5	100	94	.23	5	90	4		7.4	5.5	72	C		
02	16	314	80	2	39	97	.15	3	94	1		7.5			C		
03	13	256	82	3	59	95	.13	3	94	2		7.5	4.3	10	C		
04	14	276	79	2	39	97	.13	3	94	1		7.3	5.8	14	C		
05												7.4	6.9	14	C		
06												7.4			C		
07	16	303	78	6	114	90	.12	3	95	3		7.5			C		
08	18	360	74	4	80	97	.15	3	93	3		7.2	5.0	50	C		
09	15	295	76	2	39	97	.15	3	94	1		7.4	5.2	4	C		
10	21	412	72	1	20	99	.12	2	95	1		7.5	5.3	12	C		
11	14	278	85	1	20	98	.20	4	92	1		7.3	6.2		C		
12												7.4	5.4	32	C		
13												7.3			C		
14	8	150	88	2	38	97	.25	5	89	1		7.3			C		
15	8	157	89	2	39	98	.25	5	91	2		7.3	6.3	86	C		
16	12	237	83	3	59	95	.61	12	86	2		7.3	5.1	62	C		
17	19	372	82	2	39	98	2.80	53	14	1		7.4	5.1	82	C		
18	7	136	93	3	58	98	.16	3	95	2		7.4	3.9	74	C		
19												7.4	4.5	54	C		
20												7.4			C		
21	8	155	89	3	58	96	.28	5	84	2		7.4			C		
22	11	222	85	5	101	96	1.17	24	72	2		7.4	4.5	150	C		
23	13	258	82	3	60	97	.15	3	96	2		7.4	4.2	78	C		
24	12	237	81	3	59	97	.19	4	92	2		7.4	4.5	86	C		
25	8	159	89	2	40	97	.27	5	90	1		7.5	5.0	32	C		
26												7.4	4.5	66	C		
27												7.4			C		
28												7.4			C		
29	22	439	74	3	59	96	.35	7	86	3		7.4	5.0	68	C		
30	9	172	87	5	95	94	.30	6	88	2		7.4	4.0	96	C		
31	10	189	82	3	57	95	.27	5	86	2		7.4	4.7	68	C		
TL		5647			1272			168							C		
ME	13	257	82	3	58	96	.38	7	87	2		7.4	5.0	43	C		
WA	17	330		6 4	70									83	C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

November, 1984 (Month) — Marshall (Municipality), Michigan — Robert J. Swindell (Superintendent's Signature)

1 2 3 8 9 10 11 12 13 15
ID | 130029 | 11 | 84 | 500
Plant No. Mo. Yr. Sampling Point Code

DAY 1 2	WEATHER TYPE 9	PRECIP. 14	FLOW TOTAL 19	MAX RATE 24	RAW SEWAGE QUALITY TEMP 29	pH 34	BOD-5 39	BOD-5 44	SS 49	SS 54	TOTAL-P 59	TOTAL-P 64	VSS 69	NH_3-N 74	78	80	REMARKS OR C 9	14	19
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l		C			
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610		C			
SF																C			
01	4	.67	2.44		57	7.3	79	1608	84	1709	2.10	43	60			C			
02	1		2.35		57	7.4										C			
03	1		2.23		57	7.4										C			
04	1		2.34		56	7.4	68	1327	52	1015	2.40	47	36			C			
05	4	.01	2.43		57	7.3	60	1216	60	1216	2.10	43	48			C			
06	1		2.37		57	7.5	68	1344	90	1779	2.30	45	74			C			
07	1		2.33		57	7.4	64	1244	64	1244	2.55	50	54			C			
08	4	.18	2.37		57	7.5	64	1265	52	1028	2.10	42	40			C			
09	4	.20	2.41		57	7.4										C			
10	4&5	1.05	2.39		57	7.4										C			
11	3		2.42		57	7.4	62	1251	70	1413	2.20	44	54			C			
12	1		2.51		55	7.4			70	1465	2.05	43	46			C			
13	1		2.49		56	7.5			72	1495	2.45	51	52			C			
14	4	.04	2.50		56	7.4			76	1585	2.65	55	58			C			
15	4	.10	2.49		56	7.4			82	1703	2.10	44	72			C			
16	3		2.35		56	7.3										C			
17	1		2.31		55	7.5										C			
18	1		2.40		53	7.4			74	1481	2.20	44	64			C			
19	1		2.43		55	7.5			82	1662	2.30	47	44			C			
20	3		2.36		55	7.4	86	1693	46	905	2.40	47	42			C			
21	1		2.40		55	7.4										C			
22	1		2.21		55	7.5										C			
23	3		2.26		55	7.6										C			
24	1		2.35		55	7.6										C			
25	1		2.35		54	8.2	68	1333	60	1176	2.10	41	50			C			
26	3		2.37		54	7.4	86	1700	80	1581	2.45	48	76			C			
27	4	.28	2.44		54	7.6	150	3052	58	1180	3.45	74	48			C			
28	3		2.37		55	7.4	128	2530	70	1384	2.40	47	50			C			
29	3		2.39		55	7.0	136	2711	58	1156	2.45	49	46			C			
30	3		2.33		55	7.0										C			
31																C			
TL		2.53	71.29					22274		26673		904				C			
ME			2.38				86	1713	68	1404	2.37	48	53			C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

November, 19 84
Month

Marshall, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

ID 130029 11 84 ..
Plant No. Mo. Yr. Sampling Point Code

DAY	BOD-5		SS		TOTAL-P		VSS	NH_3-N	REMARKS OR OTHER PARAMETERS										
	9 14		19 24		29 34		39	44	49	54	59	64	69	74	78 80	9	14		1
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C				
PN	00310	85001	00530	85002	00665	85004	00535	00610							C				
SF															C				
01	52	1058	48	977	1.95	40	28								C				
02															C				
03															C				
04	54	1054	28	546	2.10	41	14								C				
05	46	932	44	892	2.20	45	32								C				
06	44	870	42	830	2.40	47	22								C				
07	42	816	48	933	2.05	40	44								C				
08	50	988	50	988	2.20	43	40								C				
09															C				
10															C				
11	40	807	60	1211	2.10	42	50								C				
12			60	1256	1.95	41	46								C				
13			60	1246	2.30	48	44								C				
14			84	1751	2.40	50	36								C				
15			46	955	1.95	40	38								C				
16															C				
17															C				
18			56	1121	2.10	42	48								C				
19			64	1297	1.95	40	46								C				
20	48	945	30	590	2.05	40	22								C				
21															C				
22															C				
23															C				
24															C				
25	56	1098	58	1137	2.55	50	42								C				
26	58	1146	64	1265	2.40	47	53								C				
27	96	1454	94	692	2.30	47	18								C				
28	112	2214	74	1463	2.30	46	58								C				
29	120	2392	56	1116	2.30	46	36								C				
30															C				
31															C				
TL		16,274		20,066		835									C				
ME	63	1252	53	1067	2.19	44	38								C				

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

November, 19 84 (Month) — Marshall (Municipality), Michigan — Robert J. Swalwell (Superintendent's Signature)

1 2	3 8	9 10	11 12	13 15
ID	130039	11	84	..
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY 1 2	AERATION SYSTEM: Aeration Volume 9	Reaeration Volume 14	Detention Time 19	% Sludge Age 24	Organic Loading 29	MIXED LIQUOR: MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SECONDARY SLUDGE: SS 64	VSS 49	Percent Return 74	8C	Waste Sludge 9	Process Modification 14
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		3.5	4.8	.32	1310	973	22.0	.60	2.8	124	.35	73		C	15	
02			3.7	4.9	.32	1282	950	20.0	.64	2.8	129	.26	73		C	15	
03			3.9								121				C	15	
04			3.7								120				C	15	
05			3.5	6.0	.27	1658	1211	30.0	.55	2.7	124	.47	72		C	15	
06			3.6	6.0	.27	1626	1193	29.0	.56	2.2	123	.47	72		C	15	
07			3.7	5.8	.27	1595	1168	26.0	.61	2.0	116	.46	72		C	15	
08			3.6	5.1	.29	1442	1052	23.0	.63	1.3	115	.53	70		C	62	
09			3.6	5.9	.24	1715	1288	27.0	.64	2.0	111	.41	75		C	15	
10			3.6								113				C	15	
11			3.5								122				C	15	
12			3.4	4.5	.29	1483	1123	20.0	.74	2.0	121	.41	75		C	35	
13			3.5	4.3	.28	1538	1167	22.0	.70	1.8	121	.43	76		C	15	
14			3.4	4.3	.24	1728	1343	23.0	.75	1.4	159	.48	74		C	15	
15			3.5	4.9	.22	1949	1465	23.0	.85	1.7	168	.53	75		C	37	
16			3.7	5.1	.21	1917	1430	23.0	.83	2.6	172	.54	74		C	15	
17			3.7								171				C	15	
18			3.6								172				C	15	
19			3.5	4.9	.22	2010	1474	27.0	.74	4.8	176	.59	71		C	15	
20			3.7	5.0	.21	1887	1448	26.0	.73	5.3	176	.56	72		C	15	
21			3.6	5.0	.22	1925	1419	24.0	.80	5.0	179	.56	73		C	15	
22			3.9								171				C	15	
23			3.8								169				C	15	
24			3.8								168				C	15	
25			3.7								165				C	15	
26			3.6	4.4	.26	1614	1211	18.0	.90	3.2	161	.49	74		C	15	
27			3.5	5.5	.27	1857	1399	23.0	.81	2.3	160	.52	75		C	15	
28			3.6	5.3	.31	1893	1415	24.0	.79	2.0	167	.57	75		C	15	
29			3.6	5.3	.35	1923	1427	25.0	.77	2.0	163	.54	74		C	15	
30			3.7	5.4	.36	1912	1388	25.0	.76	1.3	164	.58	70		C	37	
31															C		
TL															C	561	
ME			3.6	5.1	.27	1713	1277	24.0	.72	2.6	147	.49	73		C	19	

Meater out of Service

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

November, 19 84 (Month) — Marshall, Michigan (Municipality) — Robert J. Swalwell (Superintendent's Signature)

ID 130029 (Plant No.) 11 (Mo.) 84 (Yr.) (Sampling Point Code)

DAY 1 2	GRIT 9 CF	AUX. FUEL 14 gas CF	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 Fecl3 LBS.	44 Water CF	49	54	59
PN											
SF		2									
01			2280			30	199	500			
02			2400			30	199	560			
03			2160			30	199	460			
04			2160			20	298	550			
05			2280			30	298	560			
06			2400			30	298	450			
07			2160			20	298	520			
08			2160			20	199	410			
09			2160			30	298	530			
10			2160			40	298	590			
11			2400			30	199	560			
12			2400			30	298	510			
13		32	2400			30	298	540			
14		26	2400			20	199	520			
15		29	2880			30	199	520			
16		34	2520			10	298	520			
17		34	2640			40	298	480			
18		32	2640			20	199	510			
19		42	2640			30	298	530			
20		52	2760			30	199	540			
21		52	2640			20	298	480			
22		34	2640			20	199	450			
23		38	2520			30	298	450			
24		29	2520			30	298	520			
25		36	2520			30	199	540			
26		16	2400			20	199	450			
27		25	2520			30	298	530			
28		28	2640			30	298	540			
29		27	2640			30	298	760			
30		28	2520			30	298	460			
31											
TL		594	73560			820	7752	15,540			
ME		33	2452			27	258	518			

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours	V
TOTAL	5		808	
Superintendent	1		160	
Asst. Supt.	1		160	
Shift Foreman				
Shift Operator	3		488	
Maint. Supervisor				
Mechanic				
Chemist				
Lab Technician				
Clerk-Typist				
Other				

GIVE THE HOURS PER DAY PLANT PERSONNEL AR

WEEKDAYS 9 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary
Secondary

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To
Process Pattern

MONTH November 1984

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	37	4.3	78		5.8																			
2	53	4.8	69		5.8																			
3	37	4.4	71		5.8																			
4	37	5.0	67		5.8																			
5																								
6	37	4.6	83		5.6																			
7	31	5.2	81		5.8																			
8	31	4.5	70		5.8																			
9	50	4.4	68		5.9																			
10	31	5.1	63		5.9																			
11	31	5.3	62		5.8																			
12	37	5.2	73		5.9																			
13	37	5.3	77		5.9																			
14	37	5.1	70		5.8																			
15	25	4.0	71		5.8																			
16	41	6.0	84		5.7																			
17																								
18	37	5.1	84		5.7																			
19	37	5.0	74		5.7																			
20	37	4.6	72		5.8																			
21																								
22	37	5.0	71		5.7																			
23	37	4.9	64		5.7																			
24	37	4.4	69		5.9																			
25	37	4.7	67		5.8																			
26	37	4.6	76		5.8																			
27	50	5.2	65		5.9																			
28	37	5.1	63		5.8																			
29	37	4.6	77		5.7																			
30	37	4.8	75		5.5																			
31																								
TOTAL	1009																							
ARITH. MEAN	37	4.9	72																					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____, 19 _____ Month

_____, Michigan Municipality

_____ Superintendent's Signature

ID (1 2) | Plant No. (3–8) | Mo. (9 10) | Yr. (11 12) | Sampling Point Code (13 15)

DAY	BOD-5 (13)			SS (19)			TOTAL-P			VSS	NH_3-N	pH	DO (10)	F. COLI* (19)		T. COLI*	REMARKS
1 2	9 mg/l	14 LBS.	19 % Rem.	24 mg/l	29 LBS.	34 % Rem.	39 mg/l	44 LBS.	49 % Rem.	54 mg/l	59 mg/l	64 SU	69 mg/l	74 #/100 ml	80 C	9 #/100 ml	14 19
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01	10	203	87	85	102	94	.27	5	87	3		7.3	4.4	46	C		
02												7.4	4.9	34	C		
03												7.3			C		
04	10	195	85	2	39	96	.40	8	83	1		7.3			C		
05	7	142	88	3	61	95	.34	7	84	1		7.3	3.7	128	C		
06	10	198	85	3	59	97	.27	5	88	1		7.4	3.7	62	C		
07	6	117	91	2	39	97	.25	5	90	1		7.4	3.5	50	C		
08	9	178	86	4	79	92	.30	6	86	2		7.4	4.5	62	C		
09												7.3	3.5	70	C		
10												7.4			C		
11	11	222	82	12	242	83	.32	6	85	11		7.3			C		
12				11	230	84	.32	7	84	2		7.5	3.9	172	C		
13				8	166	89	.42	9	83	3		7.4	3.9	72	C		
14				10	209	87	.37	8	86	8		7.3	2.8	208	C		
15				5	104	94	.30	6	86	3		7.3	3.6	68	C		
16												7.3	4.0	154	C		
17												7.3			C		
18				7	140	91	.35	7	84	6		7.4			C		
19				11	223	87	.37	7	84	8		7.4	6.5	68	C		
20	7	138	92	3	59	93	.37	7	85	2		7.4	6.8	52	C		
21												7.4	5.7	46	C		
22												7.4			C		
23												7.5			C		
24												7.5			C		
25	13	255	81	5	98	92	.37	7	82	2		7.5			C		
26	8	158	91	8	158	90	.34	7	86	7		7.3	6.8		C		
27	20	407	87	5	102	91	.62	13	83	3		7.3	4.6	332	C		
28	17	336	87	9	178	87	.38	8	84	4		7.4	3.0	612	C		
29	13	259	95	5	100	91	.25	5	90	3		7.2	4.0	50	C		
30												7.6	4.4	194	C		
31															C		
TL		2808			2388			133							C		
ME	11	216	87	6	126	91	.35	7	85	4		7.4	[illegible]	93	C		
WA	14	283		9	190								4.4	211	C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

December, 19 84 — Month

Marshall, Michigan — Municipality

Robert J. Swalwell — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130029	12	84	5.00
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY 1 2	WEATHER TYPE 9	WEATHER PRECIP. 14	FLOW TOTAL 19	FLOW MAX RATE 24	RAW SEWAGE QUALITY TEMP 29	pH 34	BOD-5 39	BOD-5 44	SS 49	SS 54	TOTAL-P 59	TOTAL-P 64	VSS 69	NH_3-N 74 78	80	REMARKS OR C 9	14	19
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C			
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C			
SF															C			
01	3		2.23		55	7.4									C			
02	4	.11	2.35		55	7.5	122	2391	64	1254			34		C			
03	3		2.41		55	7.5	108	2170	76	1528	2.30	46	64		C			
04	4	.01	2.40		55	7.4	152	3042	110	2202	3.30	66	90		C			
05	4	.03	2.38		55	7.5	96	1906	70	1389	2.45	49	62		C			
06	3		2.35		54	7.5	90	1764	66	1294	2.55	50	44		C			
07	1		2.29		54	7.4									C			
08	1		2.23		54	7.5									C			
09	4	.06	2.29		54	7.5	72	1375	62	1184	2.40	46	52		C			
10	3		2.39		54	7.5	84	1674	50	997	2.65	53	42		C			
11	4	.16	2.32		54	7.4	92	1780	70	1354	2.20	43	68		C			
12	4	.09	2.37		54	7.4	94	1858	74	1463	2.65	52	72		C			
13	4	.35	2.38		53	7.4	80	1588	88	1747	1.00	20	78		C			
14	4	.03	2.34		53	7.4									C			
15	3		2.30		53	7.4									C			
16	3		2.33		53	7.3	94	1827	102	1982	3.00	58	92		C			
17	1		2.43		53	7.4	87	1763	82	1662	2.45	50	74		C			
18	5	.26	2.37		53	7.5	90	1779	88	1739	2.85	56	68		C			
19	3		2.38		53	7.3	88	1747	76	1509	2.75	55	56		C			
20	1		2.37		53	7.4	86	1700	66	1305	2.85	56	52		C			
21	4	.61	2.36		53	7.4									C			
22	1		2.28		53	7.4									C			
23	1		2.29		53	7.3									C			
24	5	.02	2.34		53	7.4									C			
25	3		2.21		53	7.4									C			
26	5	.61	2.40		52	7.4	62	1241	96	1921	2.45	49	76		C			
27	4	.06	2.54		52	7.3	82	1737	78	1652	2.10	44	72		C			
28	4	.34	2.59		53	7.3									C			
29	4	.23	2.54		52	7.3									C			
30	1		2.56		51	7.0	64	1366	46	982	1.60	34	34		C			
31	4	2.04	2.86		52	7.4									C			
TL		5.01	73.88					32,708		27,164		827			C			
ME			2.38				91	1817	75	1509	2.44	49	63		C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

DECEMBER, 19 84
Month

MARSHALL, Michigan
Municipality

Robert J. Swartwell
Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	1300139	12	84	..
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY	BOD-5 9 14		SS 19 24		TOTAL-P 29 34		VSS 39	NH_3-N 44	REMARKS OR OTHER PARAMETERS 49	54	59	64	69	74 78	80	9	14	19
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C			
PN	00310	85001	00530	85002	00665	85004	00535	00610							C			
SF															C			
01															C			
02	104	2038	64	1254			56								C			
03	66	1327	52	1045	2.20	44	42								C			
04	108	2162	68	1361	2.45	49	58								C			
05	44	873	54	1072	2.20	44	32								C			
06	62	1215	76	1490	2.45	48	54								C			
07															C			
08															C			
09	60	1146	76	1451	2.65	51	70								C			
10	66	1196	66	1316	1.95	39	42								C			
11	68	1316	56	1084	2.85	55	52								C			
12	72	1423	54	1067	2.45	48	44								C			
13	68	1350	50	992	.90	18	50								C			
14															C			
15															C			
16	64	1244	74	1438	2.30	45	60								C			
17	68	1378	54	1094	2.45	50	50								C			
18	70	1384	62	1225	2.40	47	48								C			
19	68	1350	62	1231	2.65	53	54								C			
20	64	1265	58	1146	2.75	54	42								C			
21															C			
22															C			
23															C			
24															C			
25															C			
26	52	1041	58	1160	1.95	34	40								C			
27	52	1102	48	1017	1.90	40	34								C			
28															C			
29															C			
30	38	811	46	982	1.40	30	38								C			
31															C			
TL		25621		21425		754									C			
ME	66	1312	60	1190	2.23	44	48								C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

December, 19 84 (Month) — Marshall (Municipality), Michigan — Robert J. Swalwell (Superintendent's Signature)

ID 130029 (Plant No.) 12 (Mo.) 84 (Yr.) (Sampling Point Code)

DAY 1 2	AERATION SYSTEM: Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MIXED LIQUOR: MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SECONDARY SLUDGE: SS 64	VSS 49	Percent Return 74	8C	Waste Sludge 9	Process Modification 14
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		3.9								169				C	15	
02			3.7								164				C	15	
03			3.6	5.3	.39	2034	1498	26.0	.78	3.3	172	.55	73		C	15	
04			3.6	4.6	.44	1937	1426	25.0	.77	4.1	174	.53	73		C	15	
05			3.6	6.0	.36	2281	1696	27.0	.84	1.4	170	.58	73		C	15	
06			3.7	5.7	.33	2349	1757	27.0	.87	2.3	174	.58	74		C	15	
07			3.8	5.4	.35	2155	1593	27.0	.80	2.3	170	.58	74		C	15	
08			3.9								168				C	15	
09			3.8								165				C	15	
10			3.6	4.6	.32	2002	1506	27.0	.74	1.2	167	.54	75		C	15	
11			3.7	5.0	.27	2073	1596	26.0	.80	3.1	163	.54	75		C	15	
12			3.6	4.9	.29	2056	1564	25.0	.82	1.8	159	.52	75		C	15	
13			3.6	5.1	.26	2095	1575	24.0	.87	2.1	168	.57	73		C	15	
14			3.7	5.0	.27	2030	1542	25.0	.81	1.9	166	.56	74		C	15	
15			3.7								164				C	15	
16			3.7								160				C	15	
17			3.5	4.6	.31	1916	1456	24.0	.80	2.7	167	.50	76		C	15	
18			3.6	4.9	.31	1919	1440	24.0	.80	1.8	170	.48	74		C	15	
19			3.6	4.7	.32	1818	1424	24.0	.76	3.2	171	.48	79		C	15	
20			3.6	4.9	.31	1921	1437	25.0	.77	2.8	171	.52	75		C	15	
21			3.7	5.1	.30	1976	1473	29.0	.68	2.3	163	.51	75		C	15	
22			3.8								171				C	15	
23			3.8								167				C	15	
24			3.7								177				C	15	
25			3.9								176				C	15	
26			3.6	3.9	.38	1573	1173	22.0	.72	4.7	171	.43	74		C	15	
27			3.4	3.8	.38	1577	1167	22.0	.72	5.3	165	.43	74		C	15	
28			3.3	3.7	.39	1559	1173	22.0	.71	3.9	156	.44	75		C	15	
29			3.4								167				C	15	
30			3.4								172				C	15	
31			3.0	3.4	.48	1465	980	26.0	.56	4.3	170	.43	80		C	15	
TL															C	465	
ME			3.6	4.8	.34	1933	1446	25.1	.77	2.9	168	.51	75		C	15	

Meter not working

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

December, 19 84 (Month) — Marshall (Municipality), Michigan — Robert J. Swalwell (Superintendent's Signature)

1 2	3 8	9 10	11 12	13 15
ID	130029	12	84	
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX. FUEL 14 GAS CF	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 $FeCl_3$ LBS	44 Water CF	49	54	59
PN											
SF		2									
01		35	2640			30	199	700			
02		39	2640			30	298	650			
03		40	3000			30	298	640			
04		49	2760			40	199	740			
05		51	3000			20	298	520			
06		59	2760			30	298	470			
07		49	2880			30	298	560			
08		36	2760			30	199	610			
09		28	2640			30	199	510			
10		32	2880			30	298	640			
11		27	2640			30	199	600			
12		17	2640			15	298	540			
13		40	2760			20	298	560			
14		33	2760			20	199	480			
15		27	2640			20	199	440			
16		25	2400			20	298	520			
17		28	2760			20	298	490			
18		40	2760			20	199	420			
19		42	2760			20	298	510			
20		44	2880			20	298	420			
21		40	2640			20	199	450			
22		31	2760				298	380			
23		42	2760				199	450			
24		55	3000				199	500			
25		64	2880				199	390			
26		44	2760				298	390			
27		27	2760				199	480			
28		1	2640				298	450			
29		2	2400				298	390			
30		33	2760				298	490			
31		24	2760				298	320			
TL		1104	85080			525	7951	15710			
ME		36	2745			25	256	507			

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		804
Superintendent	1		160
Asst. Supt.	1		160
Shift Foreman			
Shift Operator	3		484
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL AF

WEEKDAYS 9 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary
Secondary

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To
Process Pattern

MONTH December 1984

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/ 1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	45	4.6	77		6.0																			
2	45	4.7	69		5.8																			
3	45	4.7	67		5.8																			
4	23	4.4	68		5.7																			
5	38	4.7	72		5.8																			
6	38	5.1	85		5.9																			
7	45	4.1	77		5.8																8.6	64		
8	38	4.1	77		5.8																			
9	38	4.4	71		5.9																			
10	150	4.9	71		5.9																			
11	40	7.2	44		6.0																7.1	61		
12	40	5.1	75		6.0																			
13	40	4.5	73		6.0																			
14	51	7.6	81		6.0																			
15	40	4.5	65		5.9																			
16	40	4.8	83		5.9																			
17	40	4.7	81		5.8																			
18	40	4.8	80		5.9																			
19	40	5.3	70		5.8																			
20	20	4.4	74		5.7																			
21	60	4.9	74		5.7																			
22	40	5.0	70		5.8																			
23	40	4.9	75		5.8																			
24	40	4.8	81		5.7																			
25	40	4.8	69		5.7																			
26	40	4.2	85		5.8																			
27	40	4.8	70		5.8																			
28	40	5.2	70		5.9																			
29	40	5.2	67		5.8																			
30	40	5.1	80		5.7																			
31	40	4.9	80		5.7																			
TOTAL	1356																							
MONTH. MEAN	44	4.9	74																					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ Month , 19 _____ _____ Municipality , Michigan _____ Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
ID [ ] [ ] [ ] [ ]
Plant No. Mo. Yr. Sampling Point Code

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*		T. COLI*	REMARK
	9 14 19			24 29 34			39 44 49			54	59	64	69	74	80	9	14 1
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01												7.6			C		
02	12	235	90	5	98	92				3		7.3			C		
03	6	121	94	4	80	95	.22	4	90	2		7.2	5.0	54	C		
0460	16	320	89	11	220	90	.66	13	80	6		7.2	5.2	28	C		
05	22	437	77	3	60	96	.25	5	90	2		7.4	3.4	36	C		
06	4	78	96	8	137	88	.17	3	93	2		7.2	4.2	42	C		
07												7.6	5.3	20	C		
08												7.5	[illegible]		C		
09	7	134	90	2	38	97	.23	4	90	1		7.4			C		
10	7	140	92	3	60	94	.15	3	94	2		7.3	5.5	50	C		
11	6	116	93	3	58	96	.20	4	91	2		7.4	5.2	18	C		
12	9	178	90	4	79	95	.27	5	90	3		7.3	3.3	32	C		
13	9	179	89	1	20	99	.05	1	95	1		7.3	4.1	80	C		
14												7.3	4.7		C		
15												7.3			C		
16	10	144	89	7	136	93	.28	5	91	3		7.3			C		
17	10	203	89	2	41	98	.27	5	89	1		7.5	5.2		C		
18	7	138	92	2	40	98	.25	5	91	2		7.5	5.2	80	C		
19	10	198	89	5	99	93	.30	6	89	3		7.4	4.7	40	C	56	
20	7	138	92	8	158	88	.37	7	87	6		7.2	4.9	30	C		
21												7.3	4.1	106	C		
22												7.3			C		
23												7.4			C		
24												7.3			C		
25												7.3			C		
26	12	240	81	6	120	94	.40	8	84	5		7.3	7.5		C		
27	8	169	90	7	148	91	.25	5	88	5		7.3	6.4		C		
28												7.2	5.4		C		
29												7.3			C		
30	5	107	92	2	43	96	.13	3	92	1		7.1			C		
31												7.1	5.9		C		
TL		3325			1435			86							C		
ME	9	185	90	5	92	94	.26	5	90	3		7.3	5.0	41	C		
WA	12	238		6	123									56	C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

January (Month), 19 86

Marshall (Municipality), Michigan

Robert J. Swalwell
Superintendent's Signature

1 2 IP | 3 8 13000.79 Plant No. | 9 10 01 Mo. | 11 12 86 Yr. | 13 15 500 Sampling Point Code

DAY 1 2	WEATHER TYPE 9	WEATHER PRECIP. 14	FLOW TOTAL 19	FLOW MAX RATE 24	RAW SEWAGE QUALITY TEMP 29	pH 34	BOD-5 39 44		SS 49 54		TOTAL-P 59 64		VSS 69	NH_3-N 74 78	80	REMARKS OR C 9	14	1
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C			
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C			
SF															C			
01	1		2.80		51	7.4	56	1308	60	1401	1.65	39	56		C			
02	5	.13	2.87		51	7.3	94	2250	88	2106	2.45	59	66		C			
03	3		2.77		51	7.4	92	2125	102	2356	2.85	66	41		C			
04	5	.20	2.76		51	7.6	96	2210	60	1381	1.90	44	42		C			
05	5	.02	2.70		51	7.5	96	2162	60	1351	1.80	41	48		C			
06	1		2.87		51	7.5	90	2154	48	1149	1.80	43	38		C			
07	1		2.89		51	7.5	76	1832	32	771	2.55	61	24		C			
08	1		2.91		51	7.7	80	1942	60	1456	1.90	46	48		C			
09	1		2.87		51	7.3	70	1676	52	1245	2.05	49	32		C			
10	1		2.82		51	7.3	68	1599	40	941	1.80	42	36		C			
11	1		2.78		51	7.3	144	3339	96	2256	1.90	44	80		C			
12	5	.02	2.88		51	7.3	78	1873	66	1585	2.05	49	58		C			
13	5	.05	2.90		51	7.4	80	1935	66	1596	2.45	59	54		C			
14	5	.01	2.83		51	7.5	98	2313	64	1511	2.05	48	56		C			
15	1		2.85		51	7.6	70	1664	52	1236	2.65	63	42		C			
16	1		2.84		51	7.6	102	2416	118	2795	2.90	69	76		C			
17	1		2.85		51	7.4	78	1854	105	2496	2.05	49	57		C			
18	3		2.96		51	7.2	68	1679	76	1876	1.50	37	62		C			
19	3		2.94		51	7.2	58	1422	48	1177	1.80	44	19		C			
20	3		3.07		51	7.3	76	1946	70	1792	1.80	46	64		C			
21	3		3.06		50	7.7	76	1940	60	1531	1.70	43	52		C			
22	3		3.03		50	7.5	112	2830	54	1365	2.20	56	48		C			
23	1		2.92		50	7.4	86	2044	66	1607	1.70	41	54		C			
24	4	.06	2.96		50	7.4	100	2469	54	1333	1.90	47	44		C			
25	5	.01	2.86		50	7.5	86	2051	62	1479	1.95	47	52		C			
26	5	.04	2.82		50	7.5	96	2258	64	1505	1.95	46	50		C			
27	5	.02	3.02		50	7.4	154	3879	102	2569	2.30	58	86		C			
28	5	.16	2.94		49	7.5	86	2109	104	2550	1.95	48	80		C			
29	5	.03	2.95		49	7.3	82	2017	56	1525	2.20	54	48		C			
30	1		2.91		49	7.4	84	2038	62	1505	1.95	47	52		C			
31	4	.02	2.93		49	7.3	56	1368	38	929	1.65	40	30		C			
TL		.27	89.56					64752		50325		1525			C			
ME			2.89				87	2089	67	1625	2.04	49	53		C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

January , 19 86
Month

Marshall , Michigan
Municipality

Robert J. Swahill
Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
ID | 130.0.29 | 01 | 86 | ...
Plant No. Mo. Yr. Sampling Point Code

DAY	BOD-5 9 14		SS 19 24		TOTAL-P 29 34		VSS 39	NH_3-N 44	REMARKS OR OTHER PARAMETERS 49	54	59	64	69	74	78 80	9	14	19
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C			
PN	00310	85001	00530	85002	00665	85004	00535	00610							C			
SF															C			
01	52	1214	42	981	1.40	33	30								C			
02	66	1580	60	1436	2.05	49	42								C			
03	78	1802	76	1756	2.55	59	62								C			
04	110	2532	70	1611	1.60	37	52								C			
05	84	1892	48	1081	1.65	37	34								C			
06	144	3447	66	1580	2.20	53	56								C			
07	98	2362	70	1687	2.40	58	56								C			
08	78	1893	54	1311	1.80	44	36								C			
09	82	1963	76	1819	1.90	46	44								C			
10	58	1364	46	1082	1.60	38	34								C			
11	52	1206	26	603	1.80	42	18								C			
12	70	1681	48	1153	1.95	47	42								C			
13	82	1983	66	1596	2.05	50	54								C			
14	66	1558	58	1369	1.90	45	46								C			
15	64	1521	56	1331	2.05	49	44								C			
16	90	2132	64	1516	1.95	46	44								C			
17	44	1046	66	1569	1.95	46	62								C			
18	50	1234	58	1432	1.95	48	48								C			
19	46	1128	56	1373	2.10	51	40								C			
20	46	1178	50	1280	1.80	46	48								C			
21	56	1429	50	1276	1.95	50	42								C			
22	80	2022	68	1718	1.65	42	58								C			
23	80	1948	68	1656	1.60	39	50								C			
24	98	2419	76	1876	1.80	44	64								C			
25	76	1813	82	1956	1.65	39	62								C			
26	76	1787	44	1035	1.50	35	34								C			
27	104	2619	66	1662	1.65	42	56								C			
28	72	1765	64	1569	1.70	42	56								C			
29	82	2017	66	1623	2.05	50	50								C			
30	68	1650	60	1456	2.05	50	54								C			
31	38	929	42	1026	1.60	39	34								C			
TL		55,051		44419		1396									C			
ME	75	1776	59	1433	1.87	45	47								C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

January , 19 86
Month

Marshall , Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
ID | 13,002.9 | 01 | 86 | ...
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14 1
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	8C	Waste Sludge 9	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		3.1								183			31	C		
02			3.0	3.7	.40	1538	1147	11.0	1.40	4.8	178	.52	74	32	C		
03			3.1	3.7	.38	1599	1215	12.0	1.31	2.8	182	.55	77	33	C		
04			3.1								180			33	C		
05			3.2								184			34	C		
06			3.0	2.8	.64	1360	1033	11.0	1.24	4.6	179	.48	75	30	C		
07			3.0	2.7	.69	1363	1050	12.0	1.14	3.4	174	.50	76	30	C		
08			3.0	2.4	.76	1299	999	13.0	1.00	5.2	182	.44	77	29	C		
09			3.0	2.6	.72	1427	1064	13.0	1.10	4.6	163	.51	74	28	C		
10			3.0	3.1	.75	1570	994	14.0	1.12	3.4	162	.58	75	33	C		
11			3.1								159			34	C		
12			3.0								164			33	C		
13			3.0	3.6	.50	1643	1195	15.0	1.10	5.2	166	.53	73	35	C		
14			3.0	4.0	.42	1774	1318	16.0	1.11	4.5	164	.53	74	34	C		
15			3.0	4.4	.39	1873	1375	16.0	1.17	4.6	164	.52	73	36	C		
16			3.0	4.4	.41	1793	1324	16.0	1.12	5.2	155	.57	74	31	C		
17			3.0	3.6	.65	1558	816	14.0	1.11	4.9	153	.56	86	29	C		
18			2.9								156			27	C		
19			2.9								159			27	C		
20			2.8	3.0	.46	1471	1071	11.0	1.34	4.0	159	.64	72	25	C		
21			2.8	3.0	.45	1454	1081	12.0	1.21	3.9	153	.55	74	30	C		
22			2.9	3.1	.43	1551	1156	12.0	1.29	5.0	160	.51	74	29	C		
23			3.0	3.3	.43	1582	1160	12.0	1.32	4.6	160	.56	72	30	C		
24			2.9	3.2	.45	1605	1187	12.0	1.34	4.9	157	.58	73	27	C		
25			3.0								159			28	C		
26			3.0								165			25	C		
27			2.4	2.5	.67	1384	1016	11.0	1.26	6.8	166	.59	73	23	C		
28			2.9	2.9	.59	1571	1164	12.0	1.31	3.7	163	.67	74	23	C		
29			2.9	3.3	.51	1796	1352	13.0	1.38	3.5	161	.78	73	26	C		
30			3.0	4.2	.40	2231	1682	15.0	1.49	2.0	163	.85	75	29	C		
31			2.9	4.3	.30	2130	2014	15.0	1.42	3.8	160	.81	76	27	C		
TL															C		
ME			3.0	3.4	.52	1616	1200	13.0	1.24	4.3	166	.58	75	30	C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

January, 19 86 (Month) — Marshall (Municipality), Michigan — Robert J. Swalwell (Superintendent's Signature)

1 2	3 8	9 10	11 12	13 15
ID	130029	01	86	
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX. FUEL 14 GAS CF	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 $FeCl_3$ LBS	44 Water CF	49	54	59
PN											
SF		2									
01		110	2640					850			
02		132	2640					810			
03		70	2760				263	790			
04		79	2640				263	760			
05		85	2760				350	860			
06		15	2760				350	770			
07		102	2760				350	830			
08		63	2640				263	780			
09		57	2640				350	950			
10		44	2640				263	740			
11		32	2520				350	790			
12		56	2520				350	810			
13		70	2760				350	750			
14		65	2640				350	980			
15		62	2640				350	690			
16		52	2520				350	770			
17		34	2520				350	900			
18		31	2400				350	670			
19		38	2520				350	770			
20		52	2640				350	740			
21		46	2520				350	870			
22		48	2640				350	720			
23		55	2640				350	670			
24		47	2640				350	670			
25		41	2520				263	680			
26		70	2640				350	730			
27		109	2760				263	720			
28		69	2760				350	890			
29		66	2640					840			
30		70	2760				263	990			
31		56	2520					720			
TL		1926	81,600				8841	24,510			
ME		62	2632				327	791			

MANPOWER			
POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		884
Superintendent	1		176
Asst. Supt.	1		176
Shift Foreman			
Shift Operator	3		532
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL AF

WEEKDAYS 9 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary
Secondary

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To
Process Pattern

MONTH January 1986

DIGESTER AND SLUDGE DATA

OPERATOR R. J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	50	3.7	86		5.9																			
2	50	4.3	72		6.1																			
3	50	3.8	63		6.1																			
4	50	3.8	81		6.0																			
5	50	4.0	72		6.0																			
6																								
7	50	4.1	68		6.3																			
8	50	3.9	85		6.2																			
9	50	3.9	65		6.2																			
10	50	3.7	85		6.1																			
11	50	4.0	62		6.1																			
12	40	3.8	77		5.9																			
13	60	4.6	77		6.1																			
14	50	3.9	79		6.1																			
15	50	4.2	75		6.1																			
16	50	4.2	75		6.1																			
17	64	4.6	67		6.2																			
18	50	6.3	77		6.1																			
19	50	4.1	57		5.8																			
20	50	4.2	43		6.0																			
21	50	4.2	80		6.3																			
22	50	4.5	70		6.2																			
23	50	4.2	65		6.2																			
24	50	4.2	65		6.1																			
25	50	4.1	63		6.2																			
26	50	4.0	76		6.1																			
27	50	4.2	85		6.4																			
28	50	3.7	87		6.3																			
29	50	4.5	72		6.2																			
30	50	4.1	90		6.2																			
31	50	4.4	69		6.3																			
TOTAL	1514																							
ARITH. MEAN	50	4.2	73																					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ Month , 19 _____ _____ Municipality , Michigan _____ Superintendent's Signature

1 2 ID | 3 Plant No. 8 | 9 10 Mo. | 11 12 Yr. | 13 Sampling Point Code 15

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*		T. COLI*	REMARKS
	9 14 19			24 29 34			39 44 49			54	59	64	69	74	80	9	14 19
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01	17	397	70	9	210	85	.41	10	75	7		7.5	4.8		C		
02	23	550	76	13	311	85	.71	17	71	6		7.4	5.2		C		
03	22	508	76	26	601	75	.80	18	72	17		7.4	3.5		C		
04	24	552	75	22	506	63	.53	12	72	19		7.5	3.7		C		
05	25	563	74	11	248	82	.39	9	78	6		7.5	4.5		C		
06	46	1101	49	12	287	75	.51	12	72	11		7.4	6.3		C		
07	37	892	51	15	362	53	.51	12	80	12		7.4	4.0		C		
08	23	558	71	12	291	80	.40	10	79	8		7.3	5.2		C		
09	21	503	70	29	694	44	.42	10	80	13		7.1	5.7		C		
10	23	541	66	8	188	80	.34	8	81	5		7.1	4.1		C		
11	20	464	86	4	93	96	.41	10	78	3		7.1	4.3		C		
12	26	624	66	11	264	83	.44	11	79	9		7.0	4.1		C		
13	38	897	53	17	401	74	.40	9	84	8		7.3	5.4		C		
14	25	590	74	12	283	81	.42	10	80	9		7.4	4.9		C		
15	26	618	63	12	285	77	.41	10	85	9		7.3	5.2		C		
16	34	805	67	13	310	89	.27	6	91	10		7.5	5.5		C		
17	13	309	83	12	285	89	.27	6	87	10		7.1	6.5		C		
18	25	617	63	12	296	85	.30	7	80	9		7.1	5.7		C		
19	17	417	71	10	245	79	.27	7	85	1		7.0	4.1		C		
20	14	358	82	9	230	87	.25	6	86	8		7.3	6.0		C		
21	16	408	79	9	230	85	.22	6	87	7		7.6	4.7		C		
22	31	783	72	17	430	69	.27	7	88	14		7.4	5.5		C		
23	21	511	76	21	511	68	.32	8	81	16		7.3	5.5		C		
24	35	864	65	19	469	65	.35	9	82	13		7.4	6.3		C		
25	35	835	59	18	429	71	.32	8	84	15		7.5	5.6		C		
26	29	682	70	7	165	84	.27	6	86	2		7.4	5.5		C		
27	38	957	75	16	403	84	.38	10	83	12		7.3	7.1		C		
28	27	662	69	22	539	78	.38	9	81	18		7.4	4.4		C		
29	23	566	72	19	468	66	.50	12	77	15		7.3	4.4		C		
30	16	388	81	12	291	81	.41	10	79	9		7.5	3.4		C		
31	12	293	79	12	293	68	.56	14	66	10		7.5	4.0		C		
TL		18813			10618			299							C		
ME	25	607	70	14	343	77	.40	10	80	10		7.3	5.0		C		
WA	31	756		15	426										C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

February (Month), 19 86

Marshall (Municipality), Michigan

Robert J. Swalwell (Superintendent's Signature)

1 2 | 3 8 | 9 10 | 11 12 | 13 15
ID | 130029 (Plant No.) | 02 (Mo.) | 86 (Yr.) | 500 (Sampling Point Code)

DAY 1 2	WEATHER TYPE 9	WEATHER PRECIP. 14	FLOW TOTAL 19	FLOW MAX RATE 24	RAW SEWAGE QUALITY TEMP 29	pH 34	BOD-5 39 44		SS 49 54		TOTAL-P 59 64		VSS 69	NH_3-N 74 78	80	REMARKS OR C 9	14	19
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C			
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C			
SF															C			
01	4	.32	2.91		49	6.8	60	1456	40	971	1.90	46	36		C			
02	3		2.85		49	7.1	62	1474	50	1188	1.65	39	44		C			
03	4	.10	3.04		49	7.5	70	1775	64	1623	1.80	46	50		C			
04	4	.84	3.26		49	7.4	62	1686	78	2121	1.65	45	60		C			
05	4	.08	3.08		49	7.0	68	1747	52	1336	1.35	35	49		C			
06	5	.18	3.12		49	7.0	78	2030	60	1561	4.10	107	52		C			
07	5	.18	3.06		49	7.4	90	2297	62	1582	2.75	70	34		C			
08	3		2.94		49	7.1	74	1814	60	1471	1.70	42	18		C			
09	3		2.98		49	7.0	80	1988	44	1094	1.65	41	34		C			
10	1		3.07		49	7.4	72	1843	54	1383	1.80	46	44		C			
11	1		3.04		49	7.4	74	1876	54	1369	2.45	62	46		C			
12	3		3.03		44	7.4	78	1971	76	1921	1.95	49	68		C			
13	5	.01	2.99		49	7.4	56	1396	78	1945	1.65	41	66		C			
14	5	.05	2.97		49	7.4	68	1684	92	2279	2.75	68	60		C			
15	5	.07	2.80		49	7.5	104	2429	76	1775	2.45	57	46		C			
16	5	.44	2.86		49	7.3	64	1526	52	1240	1.90	45	46		C			
17	5	.03	2.95		49	7.5	84	2067	90	2214	2.30	57	80		C			
18	4	.30	3.10		49	7.4	128	3309	84	2172	1.95	50	78		C			
19	1		3.13		49	7.5	144	3754	86	2245	1.95	51	80		C			
20	4+5	.54	3.12		49	7.5	98	2550	94	2446	1.95	51	90		C			
21	3		3.06		49	7.5	78	1991	84	2144	1.90	48	70		C			
22	3		3.02		49	7.4	76	1914	66	1662	1.35	34	54		C			
23	3		3.02		49	7.1	64	1612	65	1637	1.30	33	51		C			
24	1		3.19		49	7.1	106	2820	94	2501	2.05	55	74		C			
25	5	.01	3.14		44	7.6	78	2043	52	1362	1.80	47	48		C			
26	5	.20	3.12		44	7.4	70	1821	52	1353	1.40	36	42		C			
27	3		3.01		49	7.3	70	1757	54	1356	1.65	41	46		C			
28	1		2.98		49	7.4	52	1292	72	1789	1.30	32	42		C			
29															C			
30															C			
31															C			
TL		3.35	84.84					55,927		47740		1374			C			
ME			3.03				79	1997	67	1705	1.94	49	54		C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

February, 1986 — Month

Marshall, Michigan — Municipality

Robert J. Swalwell — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130029	02	86	
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY	BOD-5		SS		TOTAL-P		VSS	NH_3-N	REMARKS OR OTHER PARAMETERS									
	9	14	19	24	29	34	39	44	49	54	59	64	69	74 78	80	9	14	1
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C			
PN	00310	85001	00530	85002	00665	85004	00535	00610							C			
SF															C			
01	26	631	48	1165	1.50	36	42								C			
02	44	1046	40	951	1.65	39	36								C			
03	48	1217	54	1369	1.70	43	44								C			
04	46	1251	52	1414	1.50	41	34								C			
05	58	1490	48	1233	1.35	35	36								C			
06	80	2082	60	1561	3.30	86	52								C			
07	72	1837	46	1174	2.45	63	36								C			
08	56	1373	72	1756	1.95	48	64								C			
09	70	1740	38	944	1.60	40	26								C			
10	44	1127	42	1075	1.35	35	30								C			
11	78	1978	48	1217	2.30	58	40								C			
12	56	1415	56	1415	1.90	48	46								C			
13	50	1247	72	1795	1.70	43	56								C			
14	64	1585	56	1387	1.95	48	32								C			
15	96	2442	72	1681	1.80	42	44								C			
16	60	1431	50	1193	1.90	45	40								C			
17	68	1673	64	1575	2.30	57	50								C			
18	80	2068	64	1655	1.90	49	60								C			
19	84	2193	50	1305	1.80	47	44								C			
20	84	2186	52	1353	2.10	55	46								C			
21	76	1940	64	1633	1.50	38	76								C			
22	62	1561	58	1461	1.40	35	44								C			
23	46	1159	46	1159	1.10	28	36								C			
24	62	1649	64	1703	1.90	51	34								C			
25	58	1519	40	1048	1.50	39	32								C			
26	58	1509	44	1145	1.30	34	32								C			
27	48	1205	40	1004	1.60	40	14								C			
28	36	895	36	895	.80	20	32								C			
29															C			
30															C			
31															C			
TL		43,449		37266		1243									C			
ME	61	1552	53	1331	1.72	44	41								C			

ACTIVATED SLUDGE SHEET

...RAL RESOURCES

February , 19 86
Month

Marshall , Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
ID 13.0029 02 86 ...
Plant No. Mo. Yr. Sampling Point Code

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	8C	Waste Sludge 9	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		3.0								155			29	C		
02			3.0								159			30	C		
03			2.8	4.4	.31	1958	1454	14.6	1.40	4.7	155	.72	73	29	C		
04			2.6								153			31	C		
05			2.8	3.5	.37	1482	1084	11.0	1.35	3.8	157	.58	73	32	C		
06			2.8	3.5	.40	1475	1065	11.0	1.34	4.7	161	.82	72	34	C		
07			2.8	5.2	.27	2230	1678	16.0	1.39	2.8	166	.70	73	36	C		
08			3.0								163			37	C		
09			2.9								166			31	C		
10			2.8	4.7	.35	2058	1486	15.0	1.37	4.5	166	.70	72	32	C		
11			2.8	4.7	.38	2028	1470	16.0	1.27	5.8	159	.69	72	33	C		
12			2.9	4.6	.38	2031	1466	15.0	1.35	3.8	178	.73	72	33	C		
13			2.9	4.6	.34	2032	1491	15.0	1.35	3.0	163	.70	73	32	C		
14			2.4	4.4	.34	2008	1467	16.0	1.26	4.1	162	.73	72	32	C		
15			3.1								164			33	C		
16			3.0								160			32	C		
17			2.9								155			32	C		
18			2.8	3.7	.39	1976	1492	14.0	1.41	1.5	155	.75	75	25	C		
19			2.8	3.2	.47	1727	1324	12.0	1.44	3.3	156	.67	77	24	C		
20			2.8	3.2	.53	1639	1260	11.0	1.49	4.2	159	.73	76	23	C		
21			2.8	2.9	.59	1457	1125	10.0	1.46	3.7	167	.68	77	22	C		
22			2.9								164			30	C		
23			2.9								165			30	C		
24			2.7	2.7	.85	1387	741	10.0	1.39	6.0	164	.53	75	28	C		
25			2.7	3.0	.56	1410	1048	10.0	1.41	4.8	161	.50	74	24	C		
26			2.8	3.4	.48	1546	1152	10.0	1.55	4.2	158	.73	74	26	C		
27			2.9	4.1	.37	1760	1326	13.0	1.35	4.8	168	.70	74	25	C		
28			2.9	4.7	.31	1848	1399	12.0	1.54	4.0	167	.78	75	24	C		
29															C		
30															C		
31															C		
TL															C		
ME			2.9	3.9	.43	1781	1807	13.0	1.40	4.1	162	.69	74	30	C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

February, 19 86
Month

Marshall, Michigan
Municipality

Robert J Swalwell
Superintendent's Signature

ID 1300179 02 86
Plant No. Mo. Yr. Sampling Point Code

DAY	GRIT	AUX. FUEL	POWER CONSUMPTION			CHEMICALS APPLIED					
1 2	9	14 GAS	19 #1	24 #2	29 #3	34 Cl_2	39 $FeCl_3$	44 WATER	49	54	59
	CF	CF	KWH	KWH	KWH	LBS.	LBS.	CF			
PN											
SF		2									
01		51	2520					790			
02		37	2520					680			
03		45	2760				350	730			
04		43	2640				350	1000			
05		45	2520				350	1020			
06		63	2760				350	1080			
07		70	2640				350	1100			
08		55	2640				350	890			
09		54	2640				350	1090			
10		70	2880				350	1020			
11		69	2640				350	1090			
12		74	2760				263	920			
13		71	2760				263	1210			
14		58	2640				350	1050			
15		56	2760				175	990			
16		62	2640					1070			
17		66	2640					1040			
18		26	2520				88	940			
19		50	2520				350	1000			
20		49	2640					910			
21		68	2760				612	1190			
22		49	2640					1000			
23		47	2520					1090			
24		60	2760					1020			
25		62	2640					950			
26		57	2640				Tank out of service repaint	870			
27		65	2760					1040			
28		71	2640					1410			
29											
30											
31											
TL		1593	74460				5251	28.190			
ME		57	2657				328	1007			

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		800
Superintendent	1		160
Asst. Supt.	1		160
Shift Foreman			
Shift Operator	3		480
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL AR

WEEKDAYS 9 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To _____
Process Pattern _____

MONTH February 1986

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	50	4.2	75		5.9																			
2	50	4.0	67		5.7																			
3	50	4.1	67		6.0																			
4	50	4.5	75		6.2																			
5	50	4.2	76		6.1																			
6	50	4.2	76		6.1																			
7	50	4.4	68		6.2																			
8	50	3.8	76		5.5																			
9	50	3.9	75		5.9																			
10	50	4.0	76		6.2																			
11	50	4.2	67		6.1																			
12	50	4.5	76		6.2																			
13	50	4.2	70		6.1																			
14	61	4.0	79		6.0																			
15	50	4.1	70		6.1																			
16	50	3.7	65		6.0																			
17	50	3.9	75		6.0																			
18	50	4.4	75		6.2																			
19	50	4.7	69		6.2																			
20	50	4.8	68		6.1																			
21	50	6.1	82		6.3																			
22	50	4.1	79		5.9																			
23	50	4.9	67		5.8																			
24	50	4.6	69		5.9																			
25	50	5.1	76		6.2																			
26	50	4.7	67		6.0																			
27	50	4.6	71		5.8																			
28	64	5.1	71		5.8																			
29																								
30																								
31																								
TOTAL	1425																							
ARITH. MEAN	51	4.4	72																					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ Month , 19 _____ _____ Municipality , Michigan _____ Superintendent's Signature

1 2 ID | 3 Plant No. 8 | 9 10 Mo. | 11 12 Yr. | 13 Sampling Point Code 15

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*		T. COLI*	REMARK
	9 14 19			24 29 34			39 44 49			54	59	64	69	74	80	9	14
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01	26	631	57	9	218	78	.32	8	83	5		7.4	4.7		C		
02	17	404	73	9	214	82	.28	7	83	7		7.0	4.7		C		
03	17	431	76	13	330	80	.40	10	78	11		7.3	4.9		C		
04	19	517	69	19	517	76	.41	11	75	8		7.3	3.8		C		
05	23	591	66	16	411	69	.32	8	76	8		7.3	5.7		C		
06	36	432	54	13	338	78	.64	17	84	10		7.3	6.5		C		
07	29	740	67	16	408	74	.50	13	82	11		7.3	4.0		C		
08	25	613	66	27	662	55	.48	12	72	22		6.9	4.9		C		
09	25	621	69	10	249	77	.47	12	72	7		7.0	5.5		C		
10	19	487	74	12	307	77	.38	10	79	10		7.4	6.2		C		
11	17	431	77	6	153	88	.35	9	86	3		7.2	6.7		C		
12	23	581	71	8	202	89	.41	10	79	6		7.3	4.8		C		
13	10	249	82	19	474	76	.34	8	79	10		7.3	5.1		C		
14	16	397	76	31	768	66	.38	9	86	25		7.0	5.7		C		
15	19	444	82	25	584	67	.42	10	83	17		7.4	5.5		C		
16	20	477	69	12	286	77	.76	18	60	8		7.3	5.1		C		
17	17	418	80	21	517	77	1.05	26	54	12		7.5	4.7		C		
18	23	545	82	18	465	79	.51	13	74	15		7.3	5.1		C		
19	30	783	79	9	235	90	.50	13	74	4		7.4	3.8		C		
20	26	677	73	10	260	89	.74	19	62	8		7.3	4.7		C		
21	23	587	71	13	332	84	.58	15	69	3		7.4	4.2		C		
22	29	730	62	21	529	68	.51	13	62	12		7.2	6.2		C		
23	17	428	73	11	277	83	.34	9	74	7		7.1	4.3		C		
24	14	372	87	12	319	87	.51	14	75	10		7.1	6.2		C		
25	15	393	81	11	288	79	.70	18	61	10		7.4	5.1		C		
26	14	364	80	14	364	73	.51	13	64	11		7.3	4.9		C		
27	16	402	77	9	226	83	.68	17	59	7		7.4	5.1		C		
28	10	249	81	18	447	75	.56	14	57	13		7.3	4.4		C		
29															C		
30															C		
31															C		
TL		14,549			10,379			356							C		
ME	21	520	73	15	370	78	.50	13	73	10		7.3	5.1		C		
WA	25	644		19	476										C		

NW

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

March, 1986
Month

Marshall, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
IP | 1.3a0.29 | 03 | 86 | 500
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	WEATHER		FLOW		RAW SEWAGE QUALITY											REMARKS OR C
	TYPE 9	PRECIP. 14	TOTAL 19	MAX 24 RATE	TEMP 29	pH 34	BOD-5 39 44		SS 49 54		TOTAL-P 59 64		VSS 69	NH_3-N 74 78	80	9 14 19
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C	
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C	
SF															C	
01	1		2.94		49	6.9	48	1177	54	1324	1.15	28	30		C	
02	5	.17	3.00		49	7.2	62	1551	80	2001	1.40	35	68	8.75	C	
03	5	.02	3.15		49	7.2	68	1786	90	2364	1.80	47	62	7.93	C	
04	1		3.11		49	7.6	74	1919	76	1971	1.60	41	49	7.80	C	
05	5	.31	3.13		49	7.5	58	1514	64	1671	1.15	30	54	8.46	C	
06	5	.03	3.00		49	7.4	74	1851	46	1151	1.15	29	38	9.55	C	
07	1		2.93		49	7.2	70	1711	57	1393	1.56	38	44		C	
08	1		2.90		49	7.1	78	1887	40	967	1.95	47	22		C	
09	1		3.04		49	7.0	90	2282	78	1978	2.05	52	66	8.42	C	
10	4	.20	3.34		49	7.4	68	1894	58	1616	1.80	50	48	5.14	C	
11	1		3.39		49	7.1	72	2036	58	1640	1.70	48	52	7.60	C	
12	4	.48	3.46		49	7.5	76	2193	56	1616	1.80	52	44	8.91	C	
13	4	.02	3.40		49	7.3	62	1758	74	2098	2.05	58	50	10.00	C	
14	1		3.41		49	7.4	76	2161	34	967	1.30	37	34		C	
15	1		3.33		49	6.7	42	1166	28	778	1.50	42	22		C	
16	1		3.43		49	7.2	74	2117	56	1602	1.50	43	48	6.28	C	
17	1		3.45		49	7.2	66	1899	80	2302	1.80	52	66	6.73	C	
18	4	.48	3.60		49	7.9	82	2462	46	1381	2.20	66	36	8.33	C	
19	1		3.50		49	7.4	70	2043	44	1284	1.20	35	34	6.10	C	
20	1		3.45		49	7.4	80	2302	46	1324	1.20	35	38	7.91	C	
21	1		3.34		49	7.3	70	1950	50	1393	2.10	58	40		C	
22	1		3.37		49	7.2	46	1293	48	1349	1.40	39	38		C	
23	1		3.35		49	7.3	52	1453	40	1118	1.30	36	28		C	
24	1		3.49		49	7.6	76	2212	60	1746	1.80	52	54	5.43	C	
25	1		3.48		49	7.5	66	1916	42	1219	1.35	39	30	7.80	C	
26	4	.19	3.43		49	7.2	80	2288	74	2117	1.50	43	60	7.26	C	
27	1		3.34		49	7.7	76	2117	52	1448	1.60	45	42	5.04	C	
28	1		3.27		49	7.4	74	2018	40	1091	1.35	37	36		C	
29	1		3.25		49	7.2	66	1789	52	1409	1.20	33	36		C	
30	1		3.21		49	7.5	78	2088	64	1713	1.40	37	46	6.01	C	
31	1		3.42		49	7.3	84	2396	76	2168	1.50	43	64	6.45	C	
TL		1.90	101.91					59,229		48,149		1,327			C	
ME			3.29				70	1911	57	1555	1.56	43	44	7.42	C	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

March , 19 86
Month

Marshall , Michigan
Municipality

Robert J. Swahnell
Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
ID | 130029 | 03 | 86 | . .
Plant No. Mo. Yr. Sampling Point Code

DAY	BOD-5 9 14		SS 19 24		TOTAL-P 29 34		VSS 39	NH_3-N 44	REMARKS OR OTHER PARAMETERS 49	54	59	64	69	74	78 80	9	14
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C		
PN	00310	85001	00530	85002	00665	85004	00535	00610							C		
SF															C		
01	36	883	44	1079	.95	23	28								C		
02	32	801	32	801	1.00	25	20	7.12							C		
03	84	2207	66	1734	1.95	51	50	7.93							C		
04	56	1452	61	1582	1.40	36	41	8.05							C		
05	48	1253	52	1357	1.30	34	38	8.10							C		
06	50	1251	32	801	1.50	38	24	9.20							C		
07	56	1368	45	1100	1.62	40	34								C		
08	54	1306	40	967	1.80	44	14								C		
09	46	1166	46	1166	1.90	48	36	6.73							C		
10	60	1671	54	1504	1.90	53	36	5.30							C		
11	62	1753	48	1357	1.70	48	40	7.26							C		
12	68	1962	30	866	1.80	52	22	7.59							C		
13	54	1531	46	1304	1.90	54	34	6.47							C		
14	52	1479	34	967	1.35	38	32								C		
15	24	667	38	1055	1.40	39	34								C		
16	64	1831	36	1030	1.35	39	30	5.62							C		
17	46	1324	52	1496	1.95	56	44	6.31							C		
18	60	1801	42	1261	1.80	54	32	5.28							C		
19	94	2744	52	1518	1.80	53	44	8.40							C		
20	64	1841	54	1554	1.50	43	48	7.45							C		
21	38	1059	52	1448	1.65	46	42								C		
22	38	1068	62	1743	1.70	48	54								C		
23	40	1118	40	1118	1.60	45	30								C		
24	64	1863	50	1455	1.95	57	48	5.02							C		
25	56	1625	26	755	1.65	48	18	6.48							C		
26	60	1716	48	1373	1.70	49	36	6.19							C		
27	78	2173	34	947	1.65	46	24	5.32							C		
28	76	2073	40	1091	1.65	45	30								C		
29	66	1789	50	1355	1.60	43	42								C		
30	68	1820	38	1017	1.60	43	20	5.79							C		
31	106	3023	50	1426	1.65	47	38	8.57							C		
TL		49,618		38,267		1385									C		
ME	58	1601	45	1234	1.62	45	34	6.87							C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

March, 1986
Month

Marshall, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
ID | 1300229 | 03 | 86 | ..
Plant No. Mo. Yr. Sampling Point Code

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14 19
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	80	Waste Sludge 9	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		2.9								169			25	C		
02			2.9								174			25	C		
03			2.7	5.3	.28	2020	1548	14.0	1.44	3.7	162	.84	77	24	C		
04			2.8	5.5	.29	2210	1810	15.0	1.47	1.0	161	.78	77	30	C		
05			2.8	6.0	.24	2464	1787	16.0	1.54	1.6	137	.80	75	33	C		
06			2.9	6.2	.23	2371	1805	17.0	1.39	2.1	163	.69	77	32	C		
07			2.9	5.0	.28	1925	1492	14.0	1.38	4.7	169	.63	77	32	C		
08			3.0								162			33	C		
09			2.8								154			31	C		
10			2.6	3.8	.40	1612	1233	12.0	1.35	3.7	155	.62	76	29	C		
11			2.5	4.1	.39	1749	1314	13.0	1.35	4.7	160	.64	75	25	C		
12			2.5	4.5	.40	1831	1366	13.0	1.41	3.4	157	.67	75	27	C		
13			2.5	4.8	.36	2011	1518	15.0	1.34	2.7	155	.79	75	27	C		
14			2.5	5.2	.34	2117	1598	15.0	1.41	1.5	156	.85	76	27	C		
15			2.6								156			30	C		
16			2.5								161			33	C		
17			2.5	5.7	.30	2252	1718	17.0	1.32	3.0	158	.72	76	32	C		
18			2.4	6.1	.30	2324	1761	19.0	1.22	2.4	149	.73	76	32	C		
19			2.5	5.3	.33	2208	1675	18.0	1.23	1.8	154	.68	75	32	C		
20			2.5	4.9	.34	2108	1631	17.0	1.24	2.0	163	.69	77	33	C		
21			2.6	5.0	.31	2168	1683	16.0	1.36	3.4	159	.69	77	35	C		
22			2.6								155			35	C		
23			2.6								156			35	C		
24			2.5	4.2	.36	2070	1558	16.0	1.29	4.8	155	.67	74	28	C		
25			2.5	4.3	.35	2022	1537	14.0	1.44	4.3	148	.71	76	28	C		
26			2.5	4.5	.32	2000	1543	13.0	1.54	3.7	155	.69	76	28	C		
27			2.6	4.5	.34	1874	1451	14.0	1.34	2.7	155	.64	73	29	C		
28			2.6								149			30	C		
29			2.7								145			30	C		
30			2.7								150			31	C		
31			2.5	4.7	.42	1835	1441	14.0	1.31	3.3	149	.67	78	29	C		
TL															C		
ME			2.6	5.0	.33	2059	1573	15.0	1.37	3.0	157	.71	76	30	C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

March (Month), 19 86 — Marshall (Municipality), Michigan — Robert J. Swahnell (Superintendent's Signature)

1 2 | 3 8 | 9 10 | 11 12 | 13 15
IP | 1300279 (Plant No.) | 03 (Mo.) | 86 (Yr.) | .. (Sampling Point Code)

DAY 1 2	GRIT 9 CF	AUX.FUEL 14 Gas CF	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 FeCl3 LBS	44 Water CF	49	54	59
PN											
SF		2									
01		53	2640					1020			
02		37	2760					1230			
03		37	2640					2700			
04		42	2640					1010			
05		54	2520					950			
06		21	2760					1140			
07		89	2640				194	1100			
08		38	2640				194	900			
09		32	2520				194	770			
10		29	2520				129	810			
11		48	2640				129	910			
12		50	2640				65	770			
13		33	2520				65	1220			
14		28	2520				129	940			
15		32	2520				65	900			
16		32	2640				129	980			
17		38	2640				129	730			
18		16	2520				129	950			
19		66	2640				65	850			
20		66	2880				129	860			
21		56	2640				129	820			
22		22	2640				129	780			
23		21	2880				129	790			
24		53	2880				65	1070			
25		14	2880				65	820			
26		4	2520				129	980			
27		4	2400				129	820			
28		1	2280				129	780			
29		1	2280				129	850			
30		11	2280				65	830			
31		1	2280				129	740			
TL		1079	80,400				2972	30,120			
ME		35	2594				119	972			

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		804
Superintendent	1		160
Asst. Supt.	1		160
Shift Foreman			
Shift Operator	3		484
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL AR

WEEKDAYS 9 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To _____
Process Pattern _____

MONTH March 1986

DIGESTER AND SLUDGE DATA

OPERATOR R. J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	40	4.6	71		5.6																			
2	40	4.0	63		5.8																			
3	40	4.0	74		6.2																			
4	40	4.4	63		6.1																			
5	40	4.6	77		6.2																			
6	40	4.7	71		5.7																			
7	40	4.1	73		6.1																			
8	40	4.7	79		5.8																			
9	40	4.6	71		5.8																			
10	40	4.5	64		5.8																			
11	40	4.4	67		5.9																			
12	40	5.2	73		5.9																			
13	40	5.1	71		5.8																			
14	40	4.1	73		5.7																			
15	46	4.9	70		5.3																			
16	40	4.7	71		5.5																			
17	40	5.0	67		5.8																			
18	40	4.9	65		5.9																			
19	40	4.8	80		5.9																			
20	40	4.6	86		5.7																			
21	40	4.7	78		5.7																			
22	40	4.0	65		5.5																			
23	40	4.5	74		5.7																			
24	40	4.5	83		5.7																			
25	40	4.5	78		5.9																			
26	40	4.1	62		5.7																			
27	40	7.6	97		5.7																			
28	40	3.7	83		5.6																			
29	40	5.9	76		5.4																			
30	40	6.5	77		5.6																			
31	40	4.7	58		5.7																			
TOTAL	1246																							
ARITH. MEAN	40	4.7	73																					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ Month , 19 _____ _____ Municipality , Michigan _____ Superintendent's Signature

ID Plant No. | Mo. | Yr. | Sampling Point Code

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*		T. COLI*	REMARK
	9 14 19			24 29 34			39 44 49			54	59	64	69	74	80	9	14 1
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01	19	466	60	27	662	50	.47	12	59	13		7.1	5.1		C		
02	34	851	45	15	375	81	.56	14	60	12	6.85	7.2	4.9		C		
03	32	841	53	27	709	70	1.16	30	36	15	10.30	7.3	4.5		C		
04	14	363	81	19	493	75	.58	15	64	11	7.20	7.5	2.6		C		
05	14	365	76	15	342	77	.58	15	50	12	6.82	7.2	3.3		C		
06	14	350	81	12	300	74	.46	12	60	9	7.45	7.2	3.6		C		
07	20	489	71	13	318	77	.59	14	62	10		7.2	5.7		C		
08	25	605	68	10	242	75	.52	13	73	4		7.0	6.2		C		
09	27	685	70	9	228	88	.53	13	74	7	5.65	7.1	5.5		C		
10	25	696	63	11	306	81	.63	18	65	7	4.26	7.2	[illegible]	4.7	C		
11	24	679	67	12	339	79	.56	16	67	11	6.26	6.9	6.3		C		
12	23	664	70	7	202	88	.71	20	61	6	7.36	7.7	4.7		C		
13	22	624	65	20	567	73	.85	24	58	14	6.05	7.4	4.1		C		
14	19	540	75	10	284	71	.97	28	25	7		7.1	3.2		C		
15	15	417	64	13	361	54	.41	11	73	10		6.8	3.4		C		
16	14	400	81	14	400	75	.46	13	69	13	5.02	7.3	4.2		C		
17	16	460	76	16	460	80	.38	11	79	13	5.42	7.1	4.2		C		
18	16	480	80	14	420	70	.62	19	72	11	4.81	7.16	4.1		C		
19	21	613	70	14	409	68	.80	23	33	11	7.43	7.4	3.8		C		
20	22	633	73	15	432	67	.56	16	53	14	7.91	7.5	3.4		C		
21	11	306	84	17	474	66	.32	9	85	13		7.3	4.6		C		
22	12	337	74	10	281	79	.40	11	71	8		7.1	4.1		C		
23	13	363	75	8	224	80	.40	11	69	6		7.2	4.7		C		
24	16	466	79	15	437	75	.58	17	68	13	4.72	7.5	5.3		C		
25	14	406	79	6	174	86	.69	20	49	4	7.32	7.5	5.0		C		
26	26	744	68	5	143	93	.46	13	69	4	6.56	7.2	3.9		C		
27	26	724	66	9	251	83	.62	17	61	7	4.52	7.4	6.0		C		
28	28	764	62	4	109	90	.47	13	65	3		7.3	5.7		C		
29	24	651	64	14	379	73	.49	13	61	12		7.2	5.8		C		
30	22	589	72	9	241	86	.44	12	69	6	5.35	7.5	5.6		C		
31	35	998	58	17	485	78	.91	26	39	14	8.44	7.3	5.2		C		
TL		17,569			11097			499							C		
ME	21	567	70	13	358	76	.59	16	61	10	6.46	7.3	4.6		C		
WA	25	697		18	464										C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

April , 19 86
Month

Marshall , Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
IP | 1300234 | 04 | 85 | 500
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	WEATHER		FLOW		RAW SEWAGE QUALITY											REMARKS OR
	TYPE 9	PRECIP. 14	TOTAL 19	MAX RATE 24	TEMP 29	pH 34	BOD-5 39 44		SS 49 54		TOTAL-P 59 64		VSS 69	NH_3-N 74 78	80	9 14 1
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C	
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C	
SF															C	
01	4	.22	3.39		49	7.1	70	1974	70	1979	1.70	48	52	6.5	C	
02	1		3.24		49	7.5	68	1837	70	1892	1.50	41	46	6.9	C	
03	4	.23	3.28		49	7.6	108	2954	114	3118	2.20	60	74	7.1	C	
04	4	.09	3.21		50	7.4	56	1499	26	696	1.70	46	10		C	
05	4	.14	3.24		49	7.1	52	1405	30	811	2.30	62	12		C	
06	1		3.36		50	7.0	68	1906	68	1906	1.90	53	30	7.3	C	
07	1		3.47		50	7.8	80	2315	86	2489	2.20	64	76	6.0	C	
08	4	.04	3.27		51	7.2	80	2182	60	1636	2.75	75	52	6.6	C	
09	1		3.22		51	7.4	94	1987	116	3115	2.75	74	88	7.2	C	
10	1		3.10		51	7.4	74	1913	46	1189	2.30	59	42	4.1	C	
11	1		3.05		51	7.5	58	1475	62	1577	1.20	31	26		C	
12	4	.11	3.02		51	7.3	70	1763	52	1310	4.95	125	36		C	
13	1		3.07		51	7.5	92	2356	64	1639	1.50	38	48	8.4	C	
14	4	.51	3.21		51	7.4	102	2731	68	1820	2.75	74	56	11.0	C	
15	5	.15	3.30		51	7.4	96	2642	76	2092	1.90	52	66	8.5	C	
16	4	.15	3.14		51	7.7	86	2288	64	1703	1.95	52	48	9.0	C	
17	1		3.18		51	7.3	74	1963	66	1750	1.80	48	56	9.5	C	
18	1		3.04		51	7.4	76	1927	82	2079	2.05	52	66		C	
19	1		3.00		51	7.3	62	1551	36	901	1.35	34	32		C	
20	4	.41	3.09		51	7.6	64	1649	58	1495	1.50	39	54	6.5	C	
21	1		3.16		51	7.6	60	1581	56	1476	1.60	42	52	8.4	C	
22	1		3.12		51	7.5	64	1665	70	1821	1.30	34	60	8.7	C	
23	1		3.17		51	7.4	60	1586	62	1639	1.80	48	38	6.6	C	
24	1		3.07		51	7.4	70	1792	50	1280	1.70	44	46	8.4	C	
25	1		3.03		51	8.2	60	1516	52	1314	1.80	45	30		C	
26	1		2.93		51	7.3	72	1759	52	1271	1.40	34	30		C	
27	1		3.04		51	7.1	72	1825	66	1623	1.65	42	48	7.0	C	
28	4	.05	3.28		51	7.6	86	2353	94	2521	2.45	67	76	7.6	C	
29	4	.26	3.12		51	7.5	86	2338	70	1821	2.40	62	54	6.3	C	
30	4	.22	2.89		51	7.6	72	1735	70	1687	1.80	43	52	6.6	C	
31															C	
TL		2.58	94.79					58,372		51,749		1588			C	
ME			3.16				74	1946	65	1725	2.01	53	46	7.7	C	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

April, 19 86
Month

Marshall, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

ID 130029 04 86 ...
Plant No. Mo. Yr. Sampling Point Code

DAY	BOD-5		SS		TOTAL-P		VSS	NH_3-N	REMARKS OR OTHER PARAMETERS										
	9 14		19 24		29 34		39	44	49	54	59	64	69	74	78 80	9	14		
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C				
PN	00310	85001	00530	85002	00665	85004	00535	00610							C				
SF															C				
01	70	1979	40	1131	1.90	54	32	8.6							C				
02	64	1729	60	1621	1.50	41	40	6.3							C				
03	120	3283	106	2900	2.40	66	84	10.0							C				
04	58	1553	46	1231	1.90	51	16								C				
05	52	1405	36	973	2.75	74	26								C				
06	62	1737	30	841	1.50	42	14	6.0							C				
07	62	1794	56	1620	2.30	67	52	5.6							C				
08	84	2291	62	1691	3.40	93	54	6.6							C				
09	72	1934	72	1934	2.45	66	62	6.0							C				
10	72	1861	60	1551	2.75	71	50	7.8							C				
11	64	1628	72	1831	1.50	38	42								C				
12	38	957	38	957	2.30	58	28								C				
13	68	1741	42	1075	1.40	36	30	6.4							C				
14	80	2142	48	1285	1.95	52	40	7.1							C				
15	86	2367	60	1631	2.05	56	50	7.2							C				
16	74	1969	44	1171	2.10	56	36	8.1							C				
17	62	1644	46	1220	1.65	44	38	6.9							C				
18	66	1673	50	1268	2.10	53	30								C				
19	54	1351	34	851	1.60	40	22								C				
20	46	1185	44	1134	1.60	41	36	5.8							C				
21	46	1212	36	949	1.65	43	28	7.8							C				
22	50	1301	46	1197	1.35	35	38	7.3							C				
23	50	1321	54	1428	1.65	44	34	6.5							C				
24	69	1639	38	973	1.95	50	26	7.3							C				
25	56	1415	34	859	2.20	56	32								C				
26	64	1564	44	1075	1.65	40	30								C				
27	62	1572	56	1420	1.80	46	38	6.3							C				
28	72	1470	56	1532	2.05	56	48	6.4							C				
29	68	1769	54	1405	2.30	60	36	6.3							C				
30	70	1805	54	1302	1.90	46	38	6.7							C				
31															C				
TL		51,792		40,056		1,575									C				
ME	65	1726	51	1335	1.99	53	38	7.0							C				

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

April (Month), 19 86

Marshall (Municipality), Michigan

Robert J. Swalwell (Superintendent's Signature)

1 2 | 3 8 | 9 10 | 11 12 | 13 15
ID | 130929 | 04 | 86 | [ ]
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14 1
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 21 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	8C	Waste Sludge 9	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		2.5	5.5	.40	2243	1757	15.0	1.49	1.5	152	.71	79	28	C		
02			2.7	6.2	.35	2513	1956	16.0	1.57	.7	153	.74	77	32	C		
03			2.6	4.7	.40	2380	1849	17.0	1.40	1.9	151	.76	77	32	C		
04			2.7	4.7	.38	2349	1855	16.0	1.47	2.2	151	.77	78	32	C		
05			2.7								148			31	C		
06			2.6								149			30	C		
07			2.5	4.7	.36	2405	1890	16.0	1.50	2.2	147	.88	79	30	C		
08			2.6	4.6	.35	2406	1892	15.0	1.60	2.1	151	.88	78	32	C		
09			2.7	5.0	.30	2607	2008	16.0	1.63	2.0	154	.82	77	29	C		
10			2.8	1.0	1.63	432	359	2.0	2.16	4.0	152	.15	82	20	C		
11			2.8	1.7	1.00	720	587	5.0	1.44	5.2	150	.49	81	20	C		
12			2.9								151			18	C		
13			2.8								152			22	C		
14			2.7	2.3	.63	1178	941	8.0	1.47	3.1	150	.68	80	20	C		
15			2.6	2.8	.54	1459	1155	10.0	1.46	0.7	155	.81	78	23	C		
16			2.7	4.0	.41	1870	1494	10.0	1.87	1.9	153	.91	79	21	C		
17			2.7	4.2	.41	1848	1478	11.0	1.68	1.8	191	.96	79	24	C		
18			2.8	5.1	.36	2037	1615	12.0	1.70	1.8	243	.94	78	25	C		
19			2.9								255			25	C		
20			2.8								259			30	C		
21			2.7	6.2	.36	2455	1527	15.0	1.63	5.0	241	.90	75	33	C		
22			2.8	7.3	.24	2756	2084	19.0	1.45	5.0	240	.79	74	42	C		
23			2.7	7.3	.22	2834	2043	19.0	1.49	4.7	234	.72	74	40	C		
24			2.8	7.2	.24	2643	1944	14.0	1.39	5.4	226	.70	74	42	C		
25			2.9	7.6	.26	2618	1696	18.0	1.45	4.0	220	.73	80	42	C		
26			2.9								212			42	C		
27			2.8								220			42	C		
28			2.6	5.1	.34	2174	1614	15.0	1.45	5.2	224	.74	74	37	C		
29			2.8	6.1	.29	2550	1873	18.0	1.42	1.6	238	.60	73	40	C		
30			3.0	6.6	.28	2575	1871	17.0	1.51	1.9	239	.72	73	46	C		
31															C		
TL															C		
ME			2.7	5.0	.44	2139	1615	14.0	1.56	2.9	189	.75	77	31	C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

April, 19 86 — Month

Marshall, Michigan — Municipality

Robert J. Sewalwell — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130029	04	86	..
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX. FUEL 14 GAS CF	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 FeCl3 LBS.	44 Water CF	49	54	59
PN											
SF		2									
01			2400				129	800			
02			2400				129	860			
03			2280				65	820			
04			2520				129	930			
05			2280				65	760			
06			2280				194	840			
07			2280				65	810			
08			2400				129	880			
09		58	2520				129	500			
10		34	2400				129	680			
11		30	2400				129	540			
12		24	2280				129	520			
13		24	2280				129	570			
14		25	2400				65	620			
15		28	2520				129	560			
16		28	2520				65	510			
17		25	2520				194	530			
18			2640				129	650			
19			2520				194	590			
20			2760				194	500			
21			2640				194	430			
22			2760				194	490			
23			2640				194	500			
24			2640				194	410			
25			2520				194	470			
26			2400				194	270			
27			2520				194	460			
28			2520				194	410			
29			2640				258	510			
30			2640				258	390			
31											
TL		276	74520				4588	17,810			
ME		31	2484				153	594			

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		880
Superintendent	1		176
Asst. Supt.	1		176
Shift Foreman			
Shift Operator	3		528
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL AR

WEEKDAYS 9 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To _____
Process Pattern _____

MONTH April 19 86

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	40	4.0	73		5.4																			
2	40	4.6	78		5.8																			
3	40	3.5	68		5.7																			
4	40	3.7	80		6.2																			
5	40	5.8	74		5.7																			
6	40	4.4	83		6.0																			
7	40	4.9	84		5.7																			
8	40	5.7	73		5.9																			
9	40	4.2	86		5.8																			
10	40	4.8	71		5.9																			
11	52	5.2	74		5.8																			
12	40	4.8	71		5.6																			
13	40	4.7	77		5.6																			
14	40	5.1	71		5.5																			
15	40	4.3	69		5.6																			
16	40	4.4	69		5.6																			
17	40	5.3	83		5.4																			
18	40	4.0	85		5.7																			
19	40	4.1	79		5.4																			
20	40	4.7	67		5.8																			
21	40	3.1	56		5.8																			
22	40	4.6	74		5.6																			
23	40	3.7	86		5.8																			
24	40	4.5	69		5.9																			
25	40	6.2	83		6.1																			
26	40	4.3	76		5.8																			
27	40	4.2	77		5.9																			
28	40	4.5	79		5.9																			
29	40	3.6	68		5.8																			
30	40	4.0	73		5.8																			
31																								
TOTAL	1212																							
ARITH. MEAN	40	4.5	75																					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ Month , 19 _____ | _____ Municipality , Michigan | _____ Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
ID [ ] [ ] [ ] [ ]
Plant No. Mo. Yr. Sampling Point Code

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*		T. COLI*	REMARK
	9 14 19			24 29 34			39 44 49			54	59	64	69	74	80	9	14 1
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01	25	707	64	15	424	79	.58	16	66	11	8.4	7.4	3.2		C		
02	23	621	66	17	459	76	.58	16	61	11	5.9	7.2	2.8		C		
03	46	1094	63	31	848	73	.97	27	56	26	8.8	7.5	2.8		C		
04	22	589	61	13	348	50	.44	12	74	4		7.4	3.2		C		
05	22	594	58	5	135	83	.44	12	81	3		7.4	3.7		C		
06	22	616	68	11	308	84	.50	14	74	5	5.1	7.0	3.2		C		
07	22	637	73	14	405	84	.68	20	72	12	6.2	7.8	3.6		C		
08	22	600	73	11	300	82	.90	25	67	9	6.0	7.4	2.5		C		
09	17	457	77	18	483	84	.55	15	80	14	5.4	7.3	3.1		C		
10	33	853	57	21	543	54	.90	23	57	20	6.5	7.3	4.8		C		
11	28	712	52	14	356	77	.76	19	37	11		7.4	5.9		C		
12	36	907	49	17	428	67	.99	25	80	21		7.3	3.8		C		
13	33	843	64	15	384	76	.71	18	53	12	6.3	7.4	5.3		C		
14	28	750	73	17	455	75	.82	22	70	15	7.1	7.4	4.8		C		
15	31	853	68	22	605	71	.82	23	57	19	7.8	7.3	3.9		C		
16	22	585	74	14	372	78	.97	26	50	11	8.0	7.7	3.5		C		
17	24	637	68	22	583	67	.74	20	59	20	6.2	7.2	3.8		C		
18	16	406	79	12	304	85	.44	11	79	4		7.3	3.9		C		
19	16	400	74	12	300	67	.40	10	70	10		7.3	4.4		C		
20	11	283	83	11	283	81	.40	10	73	9	4.2	7.8	5.7		C		
21	16	422	73	9	237	84	.38	10	76	7	6.6	7.8	5.4		C		
22	17	442	73	16	416	77	.35	9	73	12	7.3	7.6	4.6		C		
23	28	740	53	14	370	77	.27	7	85	7	6.7	7.3	5.4		C		
24	26	666	63	7	179	86	.38	10	78	5	7.3	7.3	6.1		C		
25	25	632	58	13	329	75	.51	13	72	3		7.4	5.7		C		
26	23	562	68	11	269	79	.37	9	74	6		7.5	5.1		C		
27	22	558	69	10	254	85	.32	8	81	6	6.0	7.3	5.5		C		
28	22	602	74	11	301	88	.44	12	85	8	6.0	7.5	6.0		C		
29	20	520	83	12	312	83	.48	12	80	8	5.2	7.3	[illegible]	4.1	C		
30	21	506	71	10	241	86	.53	13	70	8	6.0	7.4	3.6		C		
31															C		
TL		19,007			11,231			467							C		
ME	24	634	68	14	374	77	.59	16	70	11	6.3	7.4	4.4		C		
WA	30	786		17	455										C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

May, 19 86
Month

Marshall, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
IP | 1300297 | 05 | 86 | 5.00
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	WEATHER TYPE 9	WEATHER PRECIP. 14	FLOW TOTAL 19	FLOW MAX RATE 24	RAW SEWAGE QUALITY TEMP 29	pH 34	BOD-5 39 44		SS 49 54		TOTAL-P 59 64		VSS 69	NH_3-N 74 78	80	REMARKS OR OT 9	14	19
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C			
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C			
SF															C			
01	1		3.04		51	7.5	78	1978	74	1876	1.65	42	62	6.5	C			
02	1		3.02		51	7.6	62	1562	70	1763	1.40	35	50	6.6	C			
03	1		3.03		51	7.2									C			
04	1		3.11		51	7.4	68	1764	66	1712	1.50	39	56	4.2	C			
05	1		3.20		51	8.5	78	2082	66	1761	4.10	109	40	11.0	C			
06	4	1.22	3.32		51	7.5	74	2049	86	2381	3.00	83	42	6.4	C			
07	1		3.19		51	7.8	60	1596	66	1756	1.70	45	40	7.3	C			
08	1		3.25		51	7.6	120	3253	123	3334	2.65	72	95	6.5	C			
09	1		3.11		53	7.7	64	1660	62	1608	1.60	41	36	7.6	C			
10	1		3.07		52	7.6	72	1843	42	1075	1.40	36	28	6.0	C			
11	1		3.11		52	7.4	74	1919	56	1452	1.60	41	48	6.1	C			
12	4	.03	3.11		53	7.7	76	1971	88	2282	2.40	62	66	7.5	C			
13	4	.02	3.15		53	7.6	86	2259	88	2311	2.05	54	62	6.9	C			
14	1		3.18		53	7.5	112	2970	82	2175	1.70	45	68	8.6	C			
15	4	.18	3.11		53	7.6	62	1608	62	1608	1.65	42	54	7.2	C			
16	4	.13	2.97		53	7.2	86	2130	72	1783	1.65	41	60	5.5	C			
17	4	.66	3.14		53	7.4	66	1728	54	1414	1.20	31	44	5.7	C			
18	4	.65	3.18		53	7.5	84	2228	72	1910	1.70	45	58	6.8	C			
19	4	.35	3.30		53	7.6	112	3082	96	2642	2.45	67	84	8.3	C			
20	4	.10	3.32		53	7.6	84	2326	80	2215	1.70	47	46	7.4	C			
21	4	.10	3.32		53	7.4	76	2104	74	2044	1.45	54	48	7.1	C			
22	4	.05	3.29		53	7.6	84	2305	68	1866	1.90	52	58	6.1	C			
23	1		3.25		54	7.5	134	3632	90	2439	2.05	56	68	6.9	C			
24	3		3.14		53	7.4	54	1414	40	1048	2.55	67	22	5.2	C			
25	3		3.09		53	7.5	80	2061	56	1443	1.20	31	38	4.5	C			
26	4	.27	3.17		53	8.1	100	2644	92	2432	1.30	34	50	12.0	C			
27	4	.40	3.25		54	7.6	70	1897	76	2060	1.65	45	50	7.4	C			
28	1		3.18		53	7.5	74	1963	66	1750	1.40	37	44	6.2	C			
29	1		3.16		53	7.4	88	2319	106	2794	3.40	90	57	8.4	C			
30	1		3.11		54	7.6	76	1971	90	2334	2.05	53	78	7.5	C			
31	1		3.07		54	7.4	64	1639	50	1280	1.60	41	46	5.1	C			
TL		4.16	97.94					63957		58553		1537			C			
ME			3.16				81	2132	74	1952	1.94	51	53	6.95	C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

May, 1986 — Month

Marshall, Michigan — Municipality

Robert J. Swalwell — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130029	05	86	
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY	BOD-5		SS		TOTAL-P		VSS	NH_3-N	REMARKS OR OTHER PARAMETERS									
	9	14	19	24	29	34	39	44	49	54	59	64	69	74 78	80	9	14	19
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C			
PN	00310	85001	00530	85002	00665	85004	00535	00610							C			
SF															C			
01	54	1369	48	1217	1.80	46	40	6.5							C			
02	46	1159	66	1662	1.65	42	46	5.3							C			
03															C			
04	56	1452	52	1349	1.65	43	36	4.2							C			
05	62	1655	54	1441	3.75	100	28	8.6							C			
06	62	1717	66	1827	3.30	91	40	6.1							C			
07	64	1703	70	1862	1.90	51	42	6.3							C			
08	74	2006	38	1030	1.65	45	32	6.3							C			
09	56	1452	44	1141	1.65	43	24	6.8							C			
10	50	1280	28	717	1.60	40	23	5.8							C			
11	70	1816	42	1089	1.50	39	28	5.4							C			
12	60	1556	48	1245	2.20	57	32	6.6							C			
13	60	1576	50	1314	1.95	51	40	7.3							C			
14	90	2387	54	1432	1.80	48	46	9.0							C			
15	44	1141	58	1504	1.65	43	48	7.2							C			
16	58	1437	28	694	1.15	28	16	6.6							C			
17	46	1205	34	890	1.90	50	24	6.4							C			
18	62	1644	56	1485	2.40	64	44	6.7							C			
19	76	2092	66	1816	1.80	50	54	6.8							C			
20	66	1827	46	1274	2.40	66	36	7.6							C			
21	54	1495	54	1495	2.05	57	38	7.0							C			
22	70	1921	46	1262	2.05	56	36	7.0							C			
23	88	2385	58	1572	1.95	53	42	6.2							C			
24	54	1414	44	1152	1.90	50	30	5.7							C			
25	54	1392	48	1237	1.60	41	36	4.9							C			
26	68	1798	34	899	1.50	40	26	6.8							C			
27	58	1572	54	1464	1.90	51	44	7.0							C			
28	104	2758	54	1432	1.90	50	36	11.0							C			
29	44	1160	40	1054	2.40	63	26	7.1							C			
30	54	1401	40	1037	1.60	41	36	6.7							C			
31	22	563	20	512	1.00	26	8	6.7							C			
TL		48,333		38,105		1525									C			
ME	61	1611	48	1270	1.92	51	35	6.7							C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

May, 19 86 — Marshall, Michigan — Robert J. Swalwell
Month — Municipality — Superintendent's Signature

ID 130029 05 86 ...
Plant No. Mo. Yr. Sampling Point Code

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14	
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	8C	Waste Sludge 9		19
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*	
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889	
SF											4				C			
01	48		2.8	6.5	.28	2718	1972	20.0	1.36	2.4	246	.71	73	42	C	15		
02			2.9	5.7	.28	2577	1891	20.0	1.24	3.5	251	.71	73	42	C	15		
03			2.9								251			47	C	15		
04			2.8								238			46	C	15		
05			2.7	5.3	.29	2587	1869	20.0	1.29	2.8	232	.68	73	45	C	15		
06			2.6	4.7	.31	2460	1803	19.0	1.29	2.5	235	.71	73	41	C	15		
07			2.7	4.8	.29	2513	1794	19.0	1.32	3.3	236	.70	71	44	C	15		
08			2.7	5.0	.30	2521	1804	18.0	1.40	3.9	240	.65	71	46	C	15		
09			2.8	5.3	.29	2571	1845	19.0	1.35	3.1	240	.60	72	50	C	15		
10			2.8								238			47	C	15		
11			2.8								235			47	C	15		
12			2.8	6.2	.29	2564	1839	19.0	1.35	3.4	239	.59	72	51	C	15		
13			2.7	6.1	.31	2476	1749	20.0	1.24	2.8	234	.64	69	49	C	15		
14			2.7	6.7	.31	2556	1825	19.0	1.35	3.1	236	.61	74	50	C	15		
15			2.8	6.7	.27	2665	1926	20.0	1.33	2.3	233	.63	72	52	C	15		
16			2.9	7.3	.26	2653	1936	20.0	1.33	4.0	236	.64	73	54	C	30		
17			2.7								231			50	C	30		
18			2.7								234			51	C	15		
19			2.6	5.5	.32	2483	1809	20.0	1.24	2.9	246	.64	73	49	C	15		
20			2.6	5.5	.32	2519	1828	20.0	1.26	1.7	245	.60	72	51	C	15		
21			2.6	5.7	.29	2573	1845	20.0	1.29	3.3	243	.62	72	49	C	15		
22			2.6	6.2	.44	2692	1921	20.0	1.35	3.5	242	.64	72	50	C	15		
23			2.7	5.8	.30	2706	1973	21.0	1.29	2.4	239	.65	73	52	C	15		
24			2.7								239			54	C	30		
25			2.8								235			51	C	15		
26			2.7								232			52	C	15		
27			2.7	6.1	.30	2665	1932	22.0	1.21	3.2	234	.64	73	59	C	30		
28			2.7	7.2	.29	3077	2180	26.0	1.18	2.7	232	.62	72	61	C	30		
29			2.7	7.1	.28	2957	2126	30.0	.99	2.5	230	.58	72	56	C	150		
30			2.8	4.8	.46	1883	1390	16.0	1.18	4.0	229	.46	74	55	C	15		
31			2.8								227			56	C	15		
TL															C	675		
ME			2.7	5.9	.31	2594	1869	20.3	1.28	3.0	238	.63	72	50	C	22		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

MAY, 19 86
Month

MARSHALL, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

ID 13.00.29 05 86
Plant No. Mo. Yr. Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX.FUEL 14	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 FeCl_3 LBS.	44 Water CF	49	54	59
PN											
SF											
01			2640			40	194	500			
02			2760			40	194	470			
03			2640			20	194	380			
04			2640			20	194	460			
05			2640			20	194	470			
06			2640			20	194	390			
07			2520			20	258	440			
08			2760			30	194	430			
09			2520			30	194	1080			
10			2640			30	194	380			
11			2520			10	194	460			
12			2640			30	194	450			
13			2640			30	194	500			
14			2640			35	194	420			
15			2640			25	194	650			
16			2640			20	258	520			
17			2640			20	194	390			
18			2520				129	450			
19			2640			40	194	420			
20			2760			30	258	460			
21			2760			30	194	430			
22			2640			20	194	490			
23			2760			20	258	860			
24			2640			20	194	340			
25			2640			20	194	320			
26			2520			20	194	410			
27			2760			30	194	440			
28			2640			10	258	670			
29			2760			30	258	600			
30			2640			30	397	430			
31			2520			20	349	340			
TL			81,960			760	6739	15,050			
ME			2644			25	217	485			

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours	N Va
TOTAL	5		844	
Superintendent	1		168	
Asst. Supt.	1		168	
Shift Foreman				
Shift Operator	3		508	
Maint. Supervisor				
Mechanic				
Chemist				
Lab Technician				
Clerk-Typist				
Other				

GIVE THE HOURS PER DAY PLANT PERSONNEL ARE

WEEKDAYS 9 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To _____
Process Pattern _____

MONTH May 1986

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	40	4.7	70		5.5																			
2	40	4.6	63		5.5																			
3	40	4.7	73		5.7																			
4	40	4.3	74		5.7																			
5	40	4.8	72		5.5																			
6	40	4.1	77		5.8																			
7	40	4.7	64		6.1																			
8	40	4.9	70		5.7																			
9	40	3.6	80		5.8																			
10	40	4.4	68		5.7																			
11	40	4.1	67		5.8																			
12	40	4.0	83		5.9																			
13	40	2.6	43		5.6																			
14	40	4.4	68		5.6																			
15	40	3.8	78		5.7																			
16	40	3.7	84		5.4																			
17	50	4.3	74		5.9																			
18	40	3.7	79		5.8																			
19	40	4.4	72		5.8																			
20	40	3.8	82		5.7																			
21	40	3.9	63		5.7																			
22	40	4.0	86		5.8																			
23	54	4.2	81		5.7																			
24	40	3.8	78		5.6																			
25	40	4.4	73		5.5																			
26	40	4.1	80		5.5																			
27	40	4.0	59		5.5																			
28	40	4.1	71		5.6																			
29	40	3.9	32		5.7																			
30	45	2.7	72		6.4																			
31	40	4.5	61		6.3																			
TOTAL	1269																							
ARITH. MEAN	41	4.1	71																					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ , 19 _____
Month

_____ , Michigan
Municipality

_____
Superintendent's Signature

1 2 ID | 3 ____ 8 Plant No. | 9 10 Mo. | 11 12 Yr. | 13 15 Sampling Point Code

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*		T. COLI*	REMARK
	9 14 19			24 29 34			39 44 49			54	59	64	69	74	80	9	14
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	N. LBS
SF															C		
01	19	482	76	11	279	85	.28	7	83	9	5.7	7.4	6.3	18	C		144
02	22	554	65	19	479	73	.25	6	82	10	5.4	7.5	7.9	2	C		136
03												7.2	6.4	2	C		[illegible]
04	22	571	68	11	285	83	.34	9	77	8	4.2	7.2	6.2	4	C		106
05	22	587	72	14	374	79	.85	23	79	10	9.5	8.1	7.7	16	C		246
06	19	526	74	11	305	87	.87	24	71	7	6.2	7.4	6.7	12	C		165
07	19	505	68	21	559	68	.56	15	67	12	6.3	7.4	8.3	60	C		167
08	33	894	72	8	216	94	.46	12	83	6	6.1	7.6	8.0	2	C		165
09	22	571	66	11	285	82	.42	11	74	9	7.6	7.6	7.6	22	C		147
10	22	563	69	1	26	98	.38	10	73	1	6.0	7.5	7.8	2	C		154
11	18	467	76	9	233	84	.37	10	77	2	5.4	7.6	8.0	10	C		140
12	23	597	70	6	155	93	.55	14	77	3	5.8	7.7	5.8	10	C		150
13	26	683	70	16	420	82	.70	18	66	9	7.1	7.0	7.2	40	C		186
14	22	583	80	9	239	89	.91	24	52	6	8.7	7.4	7.6	26	C		231
15	23	547	63	9	233	85	.47	12	72	7	6.5	7.5	7.3	36	C		169
16	26	644	70	12	297	83	.42	10	75	7	6.2	7.2	8.0	10	C		154
17	23	602	65	12	314	78	.42	11	65	10	6.2	7.3	6.4	8	C		162
18	21	557	75	13	345	82	.47	12	72	10	6.1	7.3	6.6	422	C		162
19	25	688	78	15	412	84	.78	21	68	11	6.9	7.8	7.5	[illegible]	C	42	190
20	24	664	71	16	443	80	.53	15	69	10	6.6	7.5	6.7	76	C		183
21	19	526	75	14	388	81	.51	14	74	8	6.3	7.5	8.1	58	C		174
22	23	631	73	16	439	76	.55	15	71	9	6.1	7.5	7.8	62	C		167
23	25	678	81	10	271	89	.37	10	82	5	6.0	7.5	7.7	72	C		163
24	19	498	65	8	210	80	.48	13	81	3	4.9	7.4	6.8	24	C		128
25	18	467	78	4	103	93	.28	7	77	2	4.4	7.4	6.5	28	C		113
26	22	582	78	8	211	91	.28	7	78	3	7.5	7.3	6.8	62	C		198
27	22	596	69	8	217	89	.48	13	71	3	7.3	7.4	7.3	602	C		198
28	41	1087	45	30	796	55	.97	26	31	16	11.0	7.5	7.5	98	C		293
29	30	791	66	19	501	82	.56	15	84	7	6.0	7.5	6.2	[illegible]	C	385	158
30	25	648	67	4	104	96	.19	5	91	2	5.9	7.5	9.0	20	C		153
31	16	416	75	5	128	90	.19	3	88	3	4.1	7.4	8.7	14	C		105
TL		18,249			9267			344							C		5057
ME	23	608	71	12	309	84	.50	13	74	7	6.4	7.5	7.3	24	C		169
WA		671		14	377									95	C		180

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

June, 1986
Month

Marshall, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
IP | 1300239 | 06 | 86 | 5.06
Plant No. Mo. Yr. Sampling Point Code

DAY 1 2	WEATHER TYPE 9	WEATHER PRECIP. 14	FLOW TOTAL 19	FLOW MAX 24 RATE	RAW SEWAGE QUALITY TEMP 29	pH 34	BOD-5 39 44		SS 49 54		TOTAL-P 59 64		VSS 69	NH_3-N 74 78	80	REMARKS OR O 9	14	19
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C			
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C			
SF															C			
01	1		3.04		54	7.4	66	1673	50	1268	1.65	42	46	5.6	C			
02	1		3.14		54	7.6	88	2305	86	2252	2.05	54	56	7.2	C			
03	1		3.10		54	7.6	102	2637	80	2068	2.40	75	60	7.3	C			
04	4	2.23	3.27		54	7.5	138	3764	132	3600	3.65	100	104	8.7	C			
05	4	.92	3.60		54	7.3	66	1982	72	2162	1.80	54	54	5.4	C			
06	4	.10	3.53		55	7.4	69	1884	38	1119	1.00	29	26	5.8	C			
07	4	.06	3.47		55	7.4	66	1910	28	810	1.15	34	22	6.0	C			
08	1		3.45		55	7.4	82	2359	60	1756	1.70	49	48	6.1	C			
09	1		3.54		55	7.7	112	3307	78	2303	1.90	56	68	5.0	C			
10	4	.22	3.44		55	7.5	106	3041	60	1721	1.90	55	44	6.3	C			
11	4	.17	3.49		55	8.2	88	2561	64	1863	1.65	48	70	5.0	C			
12	4	.03	3.39		55	7.5	98	2771	90	2545	2.55	72	74	7.6	C			
13	1		3.30		55	7.9	64	1761	38	1046	2.45	67	24	6.5	C			
14	4	.26	3.22		55	7.3	68	1826	34	913	1.15	31	24	6.1	C			
15	4	.41	3.31		55	7.4	72	1988	40	1104	1.35	37	30	5.7	C			
16	1		3.41		56	7.4	72	2048	100	2844	1.65	47	76	5.1	C			
17	1		3.28		56	7.5	106	2900	69	1888	1.60	44	40	4.1	C			
18	1		3.29		55	7.4	82	2250	60	1646	2.30	63	52	6.2	C			
19	4	.88	3.40		55	7.5	80	2282	42	1198	2.30	66	22	6.6	C			
20	1		3.30		55	7.5	74	2037	68	1871	1.30	36	42	6.0	C			
21	1		3.32		55	7.4	74	2044	86	2381	3.95	109	78	6.3	C			
22	1		3.24		55	7.2	68	1837	36	973	1.80	49	28	4.6	C			
23	4	.05	3.32		55	7.2	90	2492	80	2215	1.90	53	58	5.9	C			
24	1		3.34		55	7.6	74	2061	64	1783	1.35	38	58	4.6	C			
25	1		3.32		55	7.4	72	1994	66	1827	3.00	83	46	5.3	C			
26	1		3.35		56	7.5	120	3353	70	1956	2.20	61	50	6.8	C			
27	4	.40	3.30		56	7.4	118	3248	80	2202	1.70	47	70	6.4	C			
28	1		3.08		56	7.2	72	1849	44	1130	1.70	44	28	4.4	C			
29	1		3.03		56	7.3	38	960	22	556	1.30	33	20	4.1	C			
30	4	.15	3.26		56	7.5	72	1958	56	1523	1.65	45	38	7.1	C			
31															C			
TL		5.88	9956					69,087		52523		1621			C			
ME			3.32				83	2303	63	1751	1.95	54	49	6.1	C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

June, 1986 (Month)

Marshall (Municipality), Michigan

Robert J. Swalwell (Superintendent's Signature)

1 2 | 3 8 | 9 10 | 11 12 | 13 15
ID | 130029 | 06 | 86 | ..
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	BOD-5 9 14 mg/l	BOD-5 9 14 LBS.	SS 19 24 mg/l	SS 19 24 LBS.	TOTAL-P 29 34 mg/l	TOTAL-P 29 34 LBS.	VSS 39 mg/l	NH_3-N 44 mg/l	REMARKS OR OTHER PARAMETERS 49	54	59	64	69	74 78	80	9	14	19
PN	00310	85001	00530	85002	00665	85004	00535	00610							C			
SF															C			
01	66	1673	42	1065	1.70	43	34	6.0							C			
02	70	1833	60	1571	1.90	50	46	7.4							C			
03	76	1065	36	1448	1.80	47	46	6.7							C			
04	94	2564	52	1418	2.20	60	28	6.7							C			
05	60	1801	44	1321	1.30	39	34	5.9							C			
06	56	1649	20	589	1.15	34	8	6.4							C			
07	68	2002	28	824	1.30	38	16	6.7							C			
08	80	2302	50	1439	1.65	47	42	6.0							C			
09	142	4192	60	1771	2.05	60	54	9.3							C			
10	96	2754	50	1434	1.65	47	42	6.5							C			
11	76	2212	50	1455	1.50	44	40	9.3							C			
12	76	2149	62	1753	1.90	54	30	6.9							C			
13	74	2032	36	991	2.30	63	18	7.3							C			
14	64	1719	48	1289	1.15	31	28	6.3							C			
15	70	1932	44	1215	1.20	33	26	5.2							C			
16	106	2844	82	2332	1.90	54	60	12.0							C			
17	96	2626	62	1696	1.50	41	40	8.6							C			
18	72	1976	42	1152	2.05	56	32	6.6							C			
19	74	2111	42	1198	2.10	60	18	6.6							C			
20	70	1927	66	1816	1.50	41	42	6.6							C			
21	74	2049	82	2270	2.85	79	78	6.2							C			
22	72	1946	44	1189	1.95	53	30	5.4							C			
23	106	2935	68	1883	1.70	47	52	6.4							C			
24	80	2228	70	1950	1.50	42	58	6.0							C			
25	82	2271	70	1938	2.85	79	56	7.6							C			
26	100	2794	78	2179	2.05	57	56	6.7							C			
27	110	3027	62	1706	1.60	44	52	9.7							C			
28	72	1849	74	1901	1.50	39	54	5.5							C			
29	54	1365	48	1213	1.70	43	40	7.0							C			
30	78	2121	72	1958	1.90	52	58	10.0							C			
31															C			
TL		65,952		45,964		1477									C			
ME	80	2198	55	1532	1.78	49	41	7.1							C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

June, 19 86
Month

Marshall, Michigan
Municipality

Robert J. Swahill
Superintendent's Signature

ID 130029 06 86 ...
Plant No. Mo. Yr. Sampling Point Code

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	8C 9	Waste Sludge	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		2.8								232			56	C	53	
02			2.7	5.7	.36	2185	1439	19.0	1.15	2.5	241	.57	76	50	C	50	
03			2.8	6.2	.30	2436	1769	20.0	1.22	2.3	236	.59	72	53	C	30	
04			2.6	5.9	.32	2397	1728	20.0	1.20	2.2	231	.59	73	49	C	48	
05			2.4	4.6	.43	2089	1481	16.0	1.30	2.5	233	.60	69	47	C	30	
06			2.4	5.1	.40	2139	1538	16.0	1.34	4.3	232	.55	71	56	C	53	
07			2.5								227			52	C	78	
08			2.5								230			53	C	55	
09			2.4	4.9	.53	2111	1515	19.0	1.11	0.4	232	.51	71	50	C	30	
10			2.5	5.5	.50	2265	1615	20.0	1.13	1.0	227	.54	72	52	C	35	
11			2.5	5.5	.48	2296	1668	19.0	1.21	1.6	223	.56	73	52	C	46	
12			2.5	4.7	.53	2035	1516	17.0	1.20	4.0	233	.49	74	53	C	30	
13			2.6	5.0	.49	2221	1625	18.0	1.23	2.2	232	.53	73	55	C	30	
14			2.7								234			52	C	30	
15			2.6								229			51	C	30	
16			2.5	3.4	.59	1855	1378	17.0	1.09	1.2	229	.48	74	48	C	30	
17			2.6	3.9	.51	1954	1424	17.0	1.15	3.3	235	.48	73	53	C	30	
18			2.6	4.1	.47	2016	1534	19.0	1.06	4.3	230	.49	74	52	C	30	
19			2.5	4.0	.53	1911	1413	16.0	1.19	4.4	224	.47	73	51	C	30	
20			2.6	3.7	.49	1898	1473	15.0	1.26	4.2	225	.45	73	45	C	30	
21			2.6								223			47	C	30	
22			2.7								217			46	C	30	
23			2.6	4.1	.48	2209	1573	19.0	1.16	3.3	223	.57	69	50	C	30	
24			2.6	3.6	.54	2016	1338	16.0	1.26	3.1	231	.51	71	48	C	30	
25			2.6	3.0	.59	1725	1257	15.0	1.15	2.5	185	.44	72	49	C	30	
26			2.6	3.1	.55	1950	1397	17.0	1.15	2.3	181	.48	71	50	C	30	
27			2.6	3.5	.51	2186	1617	18.0	1.21	1.8	180	.55	74	51	C	30	
28			2.8								181			55	C	30	
29			2.9								181			52	C	30	
30			2.6	3.1	.52	1916	1432	15.0	1.28	2.1	187	.54	74	50	C	30	
31															C		
TL															C	1078	
ME			2.6	4.4	.48	2086	1510	17.5	1.19	2.6	220	.52	72	51	C	36	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

June (Month), 19 86

Marshall (Municipality), Michigan

Robert J. Swalwell (Superintendent's Signature)

ID | 13.00229 (Plant No.) | 06 (Mo.) | 86 (Yr.) | .. (Sampling Point Code)

DAY	GRIT	AUX.FUEL	POWER CONSUMPTION			CHEMICALS APPLIED					
1 2	9	14	19 #1	24 #2	29 #3	34 Cl_2	39 $FeCl_3$	44 Water	49	54	59
	CF		KWH	KWH	KWH	LBS.	LBS	C.F			
PN											
SF											
01			2640			30	298	350			
02			2760			40	397	390			
03			2640			20	397	400			
04			2640			30	298	500			
05			2640			20	397	400			
06			2640			30	397	510			
07			2640			10	496	480			
08			2640			40	496	380			
09			2760			20	397	400			
10			2640			30	298	500			
11			2760			20	397	660			
12			2640			40	397	500			
13			2640			20	397	470			
14			2760			10	298	490			
15			2640			20	397	340			
16			2760			30	397	450			
17			2640			40	298	450			
18			2640			20	298	500			
19			2640			20	397	410			
20			2640			30	298	500			
21			2640			20	298	400			
22			2640			20	496	530			
23			2640			35	397	410			
24			2640			35	397	460			
25			2520			30	495	810			
26			2520			10	397	400			
27			2520			20	298	420			
28			2400			30	397	340			
29			2520			30	397	370			
30			2400			30	298	440			
31											
TL			78,840			780	11,515	13,660			
ME			2628			26	384	455			

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours	No Vac
TOTAL	5		840	
Superintendent	1		168	
Asst. Supt.	1		168	
Shift Foreman				
Shift Operator	3		504	
Maint. Supervisor				
Mechanic				
Chemist				
Lab Technician				
Clerk-Typist				
Other				

GIVE THE HOURS PER DAY PLANT PERSONNEL ARE N

WEEKDAYS 9 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To _____
Process Pattern _____

MONTH June 1986

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	40	4.0	74		6.1																			
2	40	3.2	70		5.9																			
3	40	3.9	80		6.0																			
4	45	3.7	83		6.0																			
5	57	4.7	64		6.2																			
6	40	3.7	55		6.0																			
7	40	4.0	65		6.1																			
8	40	3.7	71		6.1																			
9	30	3.7	78		6.3																			
10	71	3.8	76		6.1																			
11	40	3.5	76		6.3																			
12	40	3.9	77		6.3																			
13	40	3.5	81		6.5																			
14	40	3.3	85		6.1																			
15	40	3.1	65		6.3																			
16	52	3.2	80		6.3																			
17	50	4.4	68		6.3																			
18	50	3.1	72		6.4																			
19	50	4.4	70		6.5																			
20	50	3.8	74		6.5																			
21	50	3.1	69		6.3																			
22	50	3.8	79		6.2																			
23	50	3.4	67		6.3																			
24	50	3.2	75		6.3																			
25	50	3.6	67		6.3																			
26	50	3.7	80		6.5																			
27	50	6.0	79		6.3																			
28	50	3.3	69		6.2																			
29	45	3.0	79		6.1																			
30	50	2.9	73		6.4																			
31																								
TOTAL	1390																							
MATH. MEAN	46	3.7	73																					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ Month , 19 _____ | _____ Municipality , Michigan | _____ Superintendent

1 2 ID | 3–8 Plant No. | 9 10 Mo. | 11 12 Yr. | 13–15 Sampling Point Code

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*
	9	14	19	24	29	34	39	44	49	54	59	64	69	74
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	# /100 ml
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615
SF														
01	17	431	74	3	76	94	.18	5	89	2	4.5	7.3	8.3	16
02	19	498	78	4	183	92	.25	7	88	5	5.9	7.5	7.1	64
03	22	569	78	9	233	89	.34	9	88	5	5.0	7.5	9.4	50
04	26	709	81	11	300	93	.38	10	90	6	4.2	7.5	7.1	28
05	21	631	68	11	330	85	.19	6	89	7	4.1	7.3	7.8	224
06	20	558	64	3	88	92	.17	5	83	2	4.8	7.4	8.2	60
07	20	589	70	4	118	86	.15	4	87	3	4.8	7.3	8.3	16
08	17	489	79	8	230	87	.22	6	87	5	3.5	7.3	8.4	16
09	43	1270	62	14	413	82	.40	12	79	11	7.9	7.8	6.7	44
10	27	775	75	6	172	90	.28	8	85	4	4.9	7.4	6.4	30
11	22	640	75	12	349	86	.32	9	81	9	7.9	7.6	6.3	100
12	20	565	80	10	283	89	.18	5	93	5	5.0	7.5	7.5	78
13	22	605	66	3	83	92	.35	10	86	2	5.2	7.6	7.6	48
14	20	537	68	8	215	76	.17	5	85	6	4.7	7.3	8.4	18
15	19	525	72	5	138	88	.22	6	84	3	4.4	7.2	8.3	10
16	26	739	64	16	455	84	.22	6	87	12	8.3	7.4	6.9	20
17	30	821	72	11	301	86	.19	5	88	8	6.3	7.6	7.5	34
18	26	713	68	10	274	83	.22	6	90	8	4.7	7.3	8.1	32
19	28	799	65	5	143	88	.22	6	90	4	4.9	7.6	8.1	14
20	35	963	53	44	1211	35	.70	19	46	25	4.6	7.5	8.4	30
21	25	692	66	14	388	84	.22	6	94	11	5.2	7.3	8.1	122
22	36	973	47	4	108	89	.46	12	80	1	4.4	7.1	7.7	66
23	32	886	53	11	305	86	.20	6	89	6	5.8	7.2	6.3	34
24	43	1198	42	13	362	80	.87	24	36	2	4.4	7.5	8.2	60
25	31	858	57	13	360	80	.32	9	79	1	7.2	7.6	8.0	146
26	31	866	74	14	391	80	.42	12	81	4	6.9	7.6	7.9	98
27	35	963	70	16	440	80	.20	6	88	12	8.9	7.3	7.0	90
28	23	591	68	15	385	66	.32	8	81	5	5.0	7.2	7.1	126
29	20	505	47	10	253	54	.27	7	79	7	7.1	7.3	6.6	60
30	23	625	68	14	381	75	.27	7	84	4	5.0	7.5	6.5	146
31														
TL		21,583			8968			246						
ME	26	719	67	11	299	82	.30	8	83	6	5.5	7.4	7.5	46
WA	33	920		16	446									98

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

July (Month), 19 86 — Marshall (Municipality), Michigan — Robert J. Swalwell (Superintendent's Signature)

1 2 | 3 8 | 9 10 | 11 12 | 13 15
ID | 1300029 | 07 | 86 | 500
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	WEATHER TYPE 9	WEATHER PRECIP. 14	FLOW TOTAL 19	FLOW MAX RATE 24	RAW SEWAGE QUALITY TEMP 29	pH 34	BOD-5 39 44		SS 49 54		TOTAL-P 59 64		VSS 69	NH_3-N 74 78	80	REMARKS OR C 9	14	19
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C			
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C			
SF															C			
01	4	.75	3.39		56	7.5	76	2144	60	1696	1.90	54	54	4.5	C			
02	1		3.28		56	8.0	42	2517	56	1532	1.50	41	48	4.1	C			
03	1		3.23		56	7.2	88	2371	66	1778	1.65	44	58	4.5	C			
04	4	.04	3.04		56	7.5	82	2079	36	913	1.65	42	28	4.3	C			
05	1		3.17		56	7.3	83	2194	72	1904	1.84	49	56	5.7	C			
06	1		3.22		56	7.4	116	3115	74	1987	1.40	38	62	4.5	C			
07	4	.14	3.30		57	7.5	156	4293	96	2642	2.30	63	74	5.4	C			
08	4	.76	3.36		57	7.4	98	2746	112	3139	1.30	36	86	5.1	C			
09	1		3.22		57	7.5	62	1665	48	1289	1.50	40	26	5.5	C			
10	4	.50	3.27		57	7.6	92	2509	72	1964	1.95	53	48	6.2	C			
11	4	.94	3.30		57	7.5	76	2092	102	2807	1.90	52	88	8.8	C			
12	4	.11	3.19		57	7.3	66	1756	76	2022	2.65	71	60	7.9	C			
13	1		3.18		57	7.2	58	1538	50	1326	1.30	34	24	5.5	C			
14	1		3.41		57	7.2	74	2105	68	1934	1.60	46	52	5.9	C			
15	4	1.28	3.43		57	7.4	66	1888	82	2346	1.95	56	56	5.7	C			
16	1		3.47		57	7.4	88	2547	56	1621	2.65	77	38	6.5	C			
17	1		3.42		57	7.0	90	2567	58	1654	1.70	48	42	4.8	C			
18	1		3.47		57	7.2	56	1621	30	868	1.15	33	22	5.1	C			
19	1		3.25		57	7.1	54	1464	20	542	1.30	35	12	5.1	C			
20	1		3.25		57	7.2	82	2223	94	2548	1.30	35	62	5.6	C			
21	1		3.50		57	7.6	108	3153	80	2335	4.20	123	62	5.6	C			
22	1		3.41		57	7.8	86	2446	64	1820	1.95	55	40	5.9	C			
23	1		3.33		57	7.4	100	2777	62	1722	1.90	53	64	5.5	C			
24	4	.06	3.27		58	7.6	64	1745	72	1964	1.70	46	46	3.9	C			
25	4	.05	3.25		58	7.4	74	2006	164	4445	2.10	57	150	6.0	C			
26	1		3.09		57	7.3	64	1649	46	1185	1.15	30	38	5.9	C			
27	4	.20	3.02		57	7.1	50	1259	60	1511	1.40	35	46	7.3	C			
28	1		3.36		58	7.5	76	2130	62	1737	2.20	62	48	6.4	C			
29	1		3.23		58	7.5	106	2855	78	2101	2.45	66	64	7.0	C			
30	1		3.24		58	7.4	102	2756	120	3243	1.90	51	108	5.8	C			
31	1		3.23		58	7.5	90	2424	80	2156	1.70	46	68	6.0	C			
TL		4.83	101.78					70,639		60731		1571			C			
ME			3.28				83	2279	72	1959	1.84	51	56	5.7	C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

JULY (Month), 19 86

MARSHALL (Municipality), Michigan

Robert J. Swadwell
Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
ID | 130029 | 07 | 86 | [ ]
Plant No. | Mo. | Yr. | Sampling Point Code

DAY	BOD-5 9 14		SS 19 24		TOTAL-P 29 34		VSS 39	NH_3-N 44	REMARKS OR OTHER PARAMETERS 49	54	59	64	69	74 78	80	9	14	19
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C			
PN	00310	85001	00530	85002	00665	85004	00535	00610							C			
SF															C			
01	80	2262	84	2375	2.30	65	74	4.6							C			
02	76	2079	90	2462	1.65	45	76	5.0							C			
03	92	2478	70	1859	1.70	46	64	3.7							C			
04	80	3028	62	1572	1.70	43	56	4.9							C			
05	81	2141	80	2115	2.01	53	62	6.1							C			
06	94	2524	70	1880	1.50	40	64	4.6							C			
07	96	2642	100	2752	1.70	47	80	5.3							C			
08	98	2746	102	2858	1.60	45	68	5.7							C			
09	82	2202	104	2793	1.90	51	68	6.4							C			
10	84	2291	94	2564	2.10	57	58	7.2							C			
11	80	2202	100	2752	1.70	47	86	7.4							C			
12	68	1809	88	2341	2.45	65	78	7.8							C			
13	68	1803	64	1697	1.65	44	46	6.4							C			
14	66	1877	86	2446	1.80	51	66	7.1							C			
15	62	1774	96	2746	1.90	54	60	7.0							C			
16	96	2778	88	2547	2.55	74	60	7.2							C			
17	94	2681	64	1826	1.90	54	50	6.5							C			
18	88	2547	56	1621	1.80	52	46	6.7							C			
19	68	1843	52	1409	1.40	38	48	6.0							C			
20	78	2114	50	1355	1.40	38	44	5.6							C			
21	134	3911	114	3328	5.50	161	92	8.0							C			
22	114	3242	118	3356	3.00	85	86	6.3							C			
23	74	2055	62	1722	1.95	54	36	6.3							C			
24	68	1854	66	1800	1.70	46	44	5.2							C			
25	74	2006	74	2006	2.40	65	64	6.7							C			
26	38	979	40	1031	1.00	26	26	4.8							C			
27	52	1310	58	1461	1.65	42	42	4.3							C			
28	66	1849	80	2242	2.45	69	68	6.7							C			
29	92	2478	78	2101	2.10	57	62	6.9							C			
30	78	2108	106	2864	1.95	53	88	5.5							C			
31	70	1886	76	2047	1.80	48	70	6.2							C			
TL		68,499		67,928		1715									C			
ME	80	2210	80	2191	2.01	55	62	6.1							C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

JULY (Month), 19 86

MARSHALL (Municipality), Michigan

Robert J. Swedlund (Superintendent's Signature)

ID 130029 (Plant No.) 07 (Mo.) 86 (Yr.) ... (Sampling Point Code)

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14	F 19
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	8C	Waste Sludge 9		
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*	
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889	
SF											4				C			
01	48		2.5	3.3	.46	2194	1651	16.0	1.37	1.3	182	.52	76	49	C	50		
02			2.6	3.3	.44	2225	1693	15.0	1.48	.7	220	.55	74	52	C	52		
03			2.7	3.5	.43	2250	1690	16.0	1.41	-1.8	221	.54	74	55	C	60		
04			2.8								214			59	C	30		
05			2.7								213			56	C	30		
06			2.7	=							216			54	C	106		
07			2.6	3.3	.46	2225	1693	15.0	1.48	2.1	216	.55	77	51	C	30		
08			2.6	2.7	.44	2409	1866	15.0	1.60	2.0	220	.60	78	51	C	30		
09			2.7	2.8	.46	2099	1618	14.0	1.50	1.7	221	.56	76	51	C	30		
10			2.6	2.7	.44	2127	1649	13.0	1.63	1.3	222	.51	78	60	C	30		
11			2.6	2.6	.49	2205	1661	14.6	1.57	1.0	222	.52	76	52	C	30		
12			2.7								218			52	C	63		
13			2.7								220			52	C	65		
14			2.5	2.7	.41	2363	1801	16.0	1.48	2.5	223	.59	76	47	C	44		
15			2.5	2.6	.41	2260	1695	15.0	1.51	2.9	219	.57	75	48	C	100		
16			2.5	2.6	.43	2185	1695	14.0	1.56	1.9	217	.55	77	49	C	52		
17			2.5	2.9	.42	2343	1735	14.0	1.67	2.0	216	.61	75	50	C	30		
18			2.5	3.3	.38	2482	1937	17.0	1.46	1.3	214	.64	74	48	C	52		
19			2.7								215			52	C	63		
20			2.7								218			51	C	56		
21			2.5	3.5	.45	2495	1861	17.0	1.46	2.3	220	.60	72	48	C	38		
22			2.5	3.0	.56	2215	1631	18.0	1.23	2.2	221	.57	74	51	C	64		
23			2.6	3.0	.58	2050	1485	14.0	1.46	4.2	226	.51	73	52	C	30		
24			2.6	2.7	.60	1824	1358	13.0	1.40	3.8	216	.46	74	53	C	138		
25			2.7	2.8	.53	1984	1481	16.0	1.24	3.1	218	.47	74	54	C	63		
26			2.8								225			57	C	30		
27			2.9								213			57	C	74		
28			2.6	3.0	.43	2021	1489	18.0	1.12	4.5	219	.50	74	46	C	30		
29			2.7	3.5	.40	2070	1500	19.0	1.09	2.7	220	.48	73	53	C	30		
30			2.7	3.4	.37	2217	1655	20.0	1.11	.6	219	.52	74	53	C	30		
31			2.7	3.0	.41	1957	1478	19.0	1.15	1.3	218	.49	76	52	C	38		
TL															C	1568		
ME			2.6	3.0	.46	2190	1651	15.1	1.41	2.1	217	.54	75	52	C	51		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

July (Month), 19 86 — Marshall (Municipality), Michigan — Robert J. Swalwell (Superintendent's Signature)

1 2 ID | 3 8 Plant No. 130029 | 9 10 Mo. 07 | 11 12 Yr. 86 | 13 15 Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX.FUEL 14	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 $FeCl_3$ LBS.	44 Water C.F	49	54	59
PN											
SF											
01			2520			20	263	390			
02			2640			20	263	480			
03			2760			30	350	770			
04			2520			10	175	470			
05			2640			30	263	380			
06			2520			20	175	450			
07			2640			20	263	460			
08			2520			40	263	660			
09			2640			10	263	620			
10			2640			30	263	1140			
11			2640			40	263	480			
12			2520			20	263	380			
13			2640			20	175	470			
14			2640			20	263	380			
15			2640			20	175	360			
16			2640			20	263	460			
17			2640			20	175	550			
18			2520			30	263	510			
19			2640			30	263	320			
20			2520			30	263	420			
21			2760			40	263	350			
22			2640			20	350	980			
23			2640			30	350	1520			
24			2640			10	263	1710			
25			2640			20	263	410			
26			2640			20	263	1120			
27			2520			30	263	770			
28			2640			20	263	390			
29			2640			30	263	1750			
30			2520			30	263	1160			
31			2760			10	263	1450			
TL			81120			750	7974	21,760			
ME			2617			24	257	702			

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours	Va
TOTAL	5		884	
Superintendent	1		176	
Asst. Supt.	1		176	
Shift Foreman				
Shift Operator	3		532	
Maint. Supervisor				
Mechanic				
Chemist				
Lab Technician				
Clerk-Typist				
Other				

GIVE THE HOURS PER DAY PLANT PERSONNEL ARE

WEEKDAYS 9 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To _____
Process Pattern _____

MONTH July 19 86

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	50	4.0	60		6.5																			
2	102	4.1	80		6.2																			
3	164	3.9	59		6.1																			
4	120	4.1	68		6.5																			
5	82	3.8	84		6.3																			
6																								
7	187	4.9	68		6.4																			
8	50	3.4	76		6.3																			
9	50	4.4	72		6.2																			
10	60	4.0	74		6.3																			
11	50	4.2	61		6.3																			
12	50	4.1	79		6.2																			
13	50	4.1	74		6.2																			
14	50	4.2	61		6.3																			
15	50	3.8	84		6.1																			
16	50	4.0	80		6.3																			
17	50	4.2	64		6.1																			
18	55	4.0	62		6.1																			
19	50	4.0	80		6.1																			
20	50	3.8	81		6.1																			
21	50	4.5	68		6.6																			
22	70	4.3	78		6.2																			
23	70	3.9	78		6.3																			
24	70	3.9	64		6.4																			
25	70	3.9	78		6.3																			
26	50	4.1	61		6.3																			
27	50	3.6	68		6.2																			
28	70	3.8	63		6.3																			
29	70	3.9	76		6.4																			
30	70	3.8	75		6.3																			
31	70	4.3	68		6.3																			
TOTAL	2080																							
ARITH. MEAN	69	4.0	71																					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ Month , 19 _____ _____ Municipality , Michigan _____ Superintendent's Signature

1 2 ID | 3 8 Plant No. | 9 10 Mo. | 11 12 Yr. | 13 15 Sampling Point Code

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*		T. COLI*	REMARKS
	9 14 19			24 29 34			39 44 49			54	59	64	69	74	80	9	14 NH_3-N
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	LBS
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	
SF															C		
01	23	650	70	19	537	68	.38	11	80	14	4.2	7.6	6.3	60	C		119
02	17	465	82	9	246	84	.18	5	88	7	3.5	7.5	6.2	96	C		96
03	22	593	75	6	161	91	.16	4	90	4	4.1	7.2	6.6	50	C		110
04	34	862	58	2	50	94	.20	5	88	1	3.8	7.3	6.5	212	C		96
05	17	449	80	7	185	90	.22	6	88	5	5.4	7.1	6.3	24	C		143
06	14	376	88	4	107	95	.17	5	88	1	4.2	7.2	6.7	12	C		113
07	20	550	87	15	413	84	.25	7	89	12	4.3	7.3	6.5	72	C		118
08	21	588	79	13	364	88	.19	5	85	8	4.8	7.5	6.5	34	C		135
09	12	322	81	15	402	69	.13	3	91	9	4.9	7.4	6.7	18	C		132
10	14	382	85	8	218	89	.15	4	92	5	5.9	7.8	6.2	40	C		161
11	8	220	89	13	358	88	.17	5	91	9	5.9	7.5	6.7	36	C		162
12	11	293	83	10	266	86	.17	5	94	8	7.1	7.4	6.2	8	C		189
13	9	239	84	3	80	94	.13	3	90	1	5.4	7.2	7.1	18	C		143
14	11	313	85	10	284	85	.13	4	92	6	7.0	7.4	7.5	16	C		199
15	11	315	83	8	224	90	.17	5	91	5	6.2	7.4	7.2	16	C		177
16	31	897	65	6	174	89	.25	7	89	4	7.3	7.4	7.5	20	C		211
17	26	742	71	4	114	93	.20	6	88	3	5.7	6.9	7.0	18	C		163
18	20	579	64	6	174	80	.12	3	89	4	5.8	7.3	6.7	14	C		168
19	19	515	65	2	54	90	.10	3	92	1	4.6	7.1	6.6	20	C		125
20	16	434	80	2	54	98	.16	4	88	1	5.7	7.3	7.4	24	C		154
21	19	555	82	5	146	94	.55	16	87	2	6.5	7.4	7.4	18	C		190
22	13	370	85	2	57	97	.22	6	89	1	6.1	7.4	7.1	54	C		173
23	10	278	90	2	56	97	.17	5	91	1	5.0	7.6	6.4	12	C		139
24	10	273	84	2	55	97	.17	5	90	1	4.7	7.4	6.3	32	C		128
25	23	623	69	12	325	93	.40	11	81	10	5.8	7.5	6.1	182	C		157
26	10	258	84	8	206	83	.17	4	85	5	5.2	7.0	6.3	12	C		134
27	11	277	78	7	176	88	.16	4	89	3	5.2	7.0	6.5	10	C		131
28	16	448	79	5	140	92	.28	8	87	3	6.2	7.5	5.5	20	C		174
29	21	566	80	4	108	95	.41	11	83	2	6.8	7.6	6.6	20	C		183
30	23	621	77	5	135	96	.41	11	78	3	5.7	7.3	6.1	72	C		154
31	16	431	82	6	162	93	.25	7	85	6	4.4	7.5	6.2	40	C		119
TL		14484			6036			188							C		4546
ME	17	467	79	7	195	89	.22	6	88	5	5.4	7.4	6.6	28	C		148
WA	21	564		11	304									54	C		178

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

AUGUST, 19 86
Month

Marshall, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

ID 1300.19 08 86 500
Plant No. Mo. Yr. Sampling Point Code

DAY	WEATHER		FLOW		RAW SEWAGE QUALITY											REMARKS OR C
	TYPE	PRECIP.	TOTAL	MAX RATE	TEMP	pH	BOD-5		SS		TOTAL-P		VSS	NH_3-N		
1 2	9	14	19	24	29	34	39	44	49	54	59	64	69	74	78 80	9 14 19
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C	
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C	
SF															C	
01	1		3.15		58	7.5	62	1629	80	2102	2.20	58	14	7.0	C	
02	1		2.98		58	7.4	50	1293	22	457	1.80	93	14	6.5	C	
03	4	.09	2.92		58	7.4	56	1364	78	1900	1.50	37	64	6.0	C	
04	1		3.19		59	7.3	82	2182	96	2554	1.65	44	80	5.9	C	
05	4	.03	3.10		59	7.4	90	2327	78	2017	2.75	71	66	9.8	C	
06	4	.52	3.23		59	7.3	88	2371	70	1885	2.30	62	54	7.3	C	
07	1		3.21		59	7.4	142	3802	82	2195	3.20	86	72	14.0	C	
08	4	.28	3.17		59	8.9	76	2009	56	1481	2.65	70	54	12.0	C	
09	1		2.92		59	7.3	34	828	14	341	1.15	28	10	6.0	C	
10	4	.12	2.93		59	7.1	44	1075	92	2248	2.65	65	72	14.0	C	
11	1		3.20		59	7.6	64	1708	68	1815	1.15	31	60	5.3	C	
12	1		3.14		59	7.9	90	2357	76	1990	2.65	69	64	11.0	C	
13	1		3.01		59	7.6	64	1607	54	1356	2.05	51	44	6.5	C	
14	1		3.00		59	7.5	68	1701	62	1551	2.45	61	50	8.0	C	
15	3		3.00		59	7.6	66	1651	40	1001	2.30	58	32	7.5	C	
16	1		2.97		59	7.3	56	1387	64	1585	2.90	72	48	6.8	C	
17	1		2.94		59	7.4	72	1765	60	1471	1.65	40	36	8.3	C	
18	1		2.98		59	7.8	74	1839	80	1988	1.80	45	54	6.6	C	
19	1		3.00		59	7.5	72	1801	68	1701	5.85	146	50	11.0	C	
20	1		3.01		59	7.3	70	1757	74	1858	5.25	132	60	9.3	C	
21	1		3.02		59	7.5	50	1259	64	1612	1.90	48	36	5.2	C	
22	1		2.90		59	7.5	68	1695	42	1016	3.95	96	34	9.0	C	
23	4	.28	2.87		59	7.4	42	1005	62	1484	1.80	43	54	5.4	C	
24	1		2.82		59	7.5	72	1693	68	1599	2.05	48	62	7.2	C	
25	4	.26	3.11		59	7.6	82	2127	69	1660	2.65	69	52	7.6	C	
26	4	1.26	3.20		59	7.4	92	2455	102	2722	3.50	93	74	6.6	C	
27	1		3.04		59	7.4	78	1978	68	1724	2.85	72	60	9.8	C	
28	1		3.06		59	7.5	74	1889	69	1633	1.70	43	42	7.7	C	
29	1		3.03		59	7.3	50	1264	40	1011	1.40	35	36	7.3	C	
30	1		2.85		59	7.2	82	1949	54	1283	1.50	36	44	7.7	C	
31	1		2.76		59	7.5	114	2624	30	691	1.50	35	22	6.8	C	
TL		2.89	93.71					56291		49931		1889			C	
ME			3.02				71	1816	64	1611	2.41	61	49	7.97	C	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

AUGUST, 19 86 — Month

Marshall, Michigan — Municipality

Robert J. Swalwell — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130029	08	86	
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY	BOD-5		SS		TOTAL-P		VSS	NH_3-N	REMARKS OR OTHER PARAMETERS									
	9	14	19	24	29	34	39	44	49	54	59	64	69	74 78	80	9	14	19
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C			
PN	00310	85001	00530	85002	00665	85004	00535	00610							C			
SF															C			
01	70	1839	78	2049	2.30	60	6	7.0							C			
02	48	1193	72	1789	1.65	41	60	6.5							C			
03	58	1412	68	1656	1.60	39	52	6.1							C			
04	66	1756	88	2341	1.50	40	56	6.5							C			
05	66	1706	88	2275	2.10	54	54	6.7							C			
06	72	1940	76	2047	2.30	62	56	7.3							C			
07	116	3105	90	2409	3.20	86	60	9.6							C			
08	88	2326	80	2115	3.20	84	72	10.0							C			
09	44	1072	32	779	1.35	33	24	6.0							C			
10	46	1124	54	1320	1.60	39	48	6.1							C			
11	50	1334	54	1441	1.00	27	44	5.8							C			
12	90	2357	70	1833	2.55	67	52	7.7							C			
13	58	1456	56	1406	2.20	55	38	7.4							C			
14	56	1401	64	1601	2.45	61	56	6.7							C			
15	66	1651	58	1451	2.10	53	54	6.6							C			
16	64	1585	60	1486	3.40	84	48	8.2							C			
17	52	1275	46	1128	1.70	42	32	6.1							C			
18	52	1292	60	1491	1.70	42	44	6.1							C			
19	38	951	44	1101	3.85	96	26	7.3							C			
20	50	1255	44	1105	4.80	120	38	6.2							C			
21	36	907	30	756	2.10	53	14	5.6							C			
22	34	822	44	1064	1.65	40	34	6.0							C			
23	28	670	44	1053	1.65	39	38	5.5							C			
24	36	847	30	706	1.90	45	24	5.7							C			
25	34	882	76	1971	3.00	78	64	6.3							C			
26	48	1281	58	1548	1.62	43	36	5.7							C			
27	38	963	48	1217	2.20	56	42	6.2							C			
28	38	970	56	1429	1.60	41	42	6.6							C			
29	40	1011	34	859	1.70	43	24	6.6							C			
30	46	1093	36	856	1.35	32	32	4.4							C			
31	72	1657	14	322	1.40	32	8	5.4							C			
TL		43,133		44,904		1687									C			
ME	55	1391	57	1449	2.15	54	41	6.57							C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

August (Month), 1986 — Marshall (Municipality), Michigan — Robert J. Swaby (Superintendent's Signature)

ID 130629 (Plant No.) 08 (Mo.) 86 (Yr.) .. (Sampling Point Code)

DAY	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification	F
1 2	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	8C	Waste Sludge 9	14	19
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*	
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889	
SF											4				C			
01	48		2.7	3.3	.41	2136	1633	18.0	1.19	1.3	220	.51	75	58	C			
02			2.9								224			57	C			
03			3.0								226			56	C			
04			2.7	2.9	.42	2092	1432	19.0	1.10	3.6	224	.50	80	53	C			
05			2.8	2.9	.36	2087	1585	22.0	.95	3.1	232	.44	76	65	C			
06			2.7	3.1	.35	2185	1629	23.0	.95	1.5	236	.47	75	60	C			
07			2.7	3.2	.37	2326	1742	25.0	.93	1.2	235	.46	75	50	C			
08			2.7	2.9	.37	2034	1589	15.0	1.36	1.0	235	.50	77	50	C			
09			3.0								235			54	C			
10			2.9								240			54	C			
11			2.7	3.2	.41	1963	1502	19.0	1.03	1.8	239	.48	77	50	C			
12			2.7	3.3	.44	1893	1445	20.0	.95	4.1	198	.48	76	51	C			
13			2.9	3.6	.42	1858	1399	21.0	.88	1.2	227	.47	76	55	C			
14			2.9	3.9	.36	1900	1427	22.0	.86	2.8	238	.49	75	55	C			
15			2.9	4.0	.22	1972	1475	22.0	.90	3.6	240	.49	75	46	C			
16			2.9								241			63	C			
17			2.9								243			52	C			
18			2.9	3.9	.37	1898	1413	21.0	.90	4.8	240	.47	72	65	C			
19			2.9	4.3	.31	1976	1482	23.0	.86	3.6	245	.43	75	67	C			
20			2.9	4.6	.29	2094	1527	25.0	.84	2.5	244	.45	73	58	C			
21			2.9	5.1	.28	2092	1519	23.0	.91	3.0	232	.44	73	57	C			
22			3.0	4.7	.30	1776	1269	21.6	.85	5.2	229	.44	76	59	C			
23			3.0								237			57	C			
24			3.0								240			57	C			
25			2.8	4.5	.26	1709	1233	21.0	.81	1.5	230	.42	72	52	C			
26			2.7	4.6	.24	1938	1437	22.0	.88	2.3	232	.42	74	54	C			
27			2.8	4.8	.21	1920	1413	25.0	.77	2.3	241	.42	73	57	C			
28			2.8	4.5	.23	1947	1391	25.0	.78	3.9	239	.43	72	64	C			
29			2.9	4.6	.23	1910	1354	26.0	.73	3.0	237	.41	72	68	C			
30			3.0								237			71	C			
31			3.1								214			72	C			
TL															C			
ME			2.9	3.9	.33	1986	2123	21.8	.93	2.7	233	.46	75	58	C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

AUGUST, 19 86 — Month

Marshall, Michigan — Municipality

Robert J. Swalwell — Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	130029	08	86	
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX. FUEL 14	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 Feels LBS.	44 Water C.F.	49	54	59
PN											
SF											
01			2520			40	199	1450			
02			2400			20	397	320			
03			2760			40	298	410			
04			2460			20	298	1160			
05			2460			20	199	1380			
06			2760			20	298	450			
07			2640			20	298	510			
08			2760			20	298	610			
09			2640			20	298	450			
10			2640			30	298	550			
11			2880			40	298	870			
12			2520			20	298	1160			
13			2640			30	298	1830			
14			2760			20	298	490			
15			2760			20	298	1800			
16			2760			20	199	520			
17			2640			30	298	1210			
18			2760			30	298	1360			
19			2880			30	199	2440			
20			2760			20	298	1160			
21			2640			20	298	1560			
22			2640			20	298	680			
23			2640			40	298	720			
24			2520			30	199	650			
25			2640			30	298	660			
26			2760			30	199	580			
27			2640			40	298	650			
28			2760			30	397	540			
29			2760			20	199	530			
30			2760			10	298	510			
31			2400			10	298	500			
TL			82,740			790	8743	27,710			
ME			2669			25	282	894			

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours	N Va
TOTAL	5		840	
Superintendent	1		168	
Asst. Supt.	1		168	
Shift Foreman				
Shift Operator	3		504	
Maint. Supervisor				
Mechanic				
Chemist				
Lab Technician				
Clerk-Typist				
Other				

GIVE THE HOURS PER DAY PLANT PERSONNEL ARE

WEEKDAYS 9 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To _____
Process Pattern _____

MONTH August 1986

DIGESTER AND SLUDGE DATA

OPERATOR R. J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	70	4.1	76		6.4																			
2	50	3.8	64		6.3																			
3	50	3.8	67		6.4																			
4	70	3.9	74		6.5																			
5	70	4.3	65		6.4																			
6	90	3.5	60		6.4																			
7	69	3.3	81		6.4																			
8	90	3.9	80		6.6																			
9	70	3.6	63		6.3																			
10	70	2.7	80		6.2																			
11	188	3.6	76		6.4																			
12	84	3.8	75		6.4																			
13	70	3.9	73		6.2																			
14	187	3.7	74		6.1																			
15	70	3.8	48		6.4																			
16	40	4.4	68		6.1																			
17	50	4.8	73		6.4																			
18	200	5.1	71		6.3																			
19	25	6.3	66		6.2																			
20	25	6.3	66		6.5																			
21	6	6.5	67		6.5																			
22	76	5.5	73		5.7																			
23	140	3.6	80		6.0																			
24	8	12.7	45		5.9																			
25	204	3.6	65		7.0																			
26	22	13.7	53		5.7																			
27	130	9.8	65		5.6																			
28	8	10.0	64		5.7																			
29																								
30																								
31																								
TOTAL	2232																							
ARITH. MEAN	80	5.3	68																					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

R 4610 4/74
4833-5468

_____ , 19____
Month

_____ , Michigan
Municipality

_____
Superintendent's Signature

ID [ ] [ ] [ ] [ ] [ ]
Plant No. Mo. Yr. Sampling Point Code

*	Fecal	Total
MF	31616	31504
MPN	31615	31505

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*		T. COLI*	REMARKS OR OTHER PARAMETERS			
	9 14 19			24 29 34			39 44 49			54	59	64	69	74	80	9	14	19	24	29
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml	NH_3-N			
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505	~~NH3-N~~			
SF															C					
01	28	736	55	17	447	79	.37	10	83	6	5.6	7.6	6.2	40	C		147			
02	14	348	72	3	75	86	.22	5	88	2	4.8	7.4	6.2	28	C		119			
03	14	341	75	10	244	87	.17	4	89	8	4.2	7.3	6.4	18	C		102			
04	14	372	83	15	399	84	.16	4	90	13	5.5	7.5	7.0	20	C	29	146			
05	16	414	82	8	207	89	.20	5	93	5	5.6	7.3	7.0	22	C		145			
06	20	539	77	5	135	93	.22	6	90	4	5.0	7.3	6.8	42	C		135			
07	23	618	84	14	375	83	.62	17	81	10	7.9	7.4	6.4	48	C		211			
08	16	423	79	19	502	66	1.00	26	62	18	11.0	7.4	6.0	T	C		291			
09	7	170	79	4	97	71	.18	4	84	3	4.5	7.4	6.1	34	C		110			
10	7	171	84	11	269	88	.23	6	91	10	4.1	7.1	6.0	24	C		100			
11	5	133	92	3	80	96	.09	2	92	2	5.7	7.5	7.3	36	C		152			
12	17	445	81	5	131	93	.35	9	87	3	6.9	7.7	7.2	118	C		181			
13	5	126	92	2	50	96	.22	6	89	1	6.8	7.5	6.1	26	C		171			
14	5	125	93	6	150	90	.25	6	90	5	5.8	7.6	6.9	28	C		145			
15	5	125	92	4	100	90	.20	5	91	3	6.8	7.5	7.0	26	C		170			
16	9	223	84	6	149	91	.85	21	71	5	7.5	7.2	6.4	10	C		159			
17	5	123	93	2	49	97	.13	3	92	1	5.9	7.4	6.6	16	C		145			
18	5	124	93	4	99	95	.32	8	82	1	5.1	7.5	7.2	10	C		127			
19	8	200	89	10	250	85	.48	12	92	4	6.8	7.5	7.1	8	C		170			
20	7	176	90	6	151	92	.56	14	89	4	7.4	7.6	6.8	17	C		171			
21	2	50	96	7	176	89	.29	7	85	4	5.1	7.5	7.1	14	C		128			
22	4	97	94	3	73	93	.25	6	94	2	6.0	7.3	7.1	10	C		145			
23	5	120	88	3	72	95	.17	4	91	2	5.6	7.2	7.3	4	C		134			
24	5	118	93	7	165	90	.15	4	93	6	5.1	7.5	7.0	8	C		120			
25	9	233	89	3	78	95	.47	12	82	2	5.9	7.5	5.7	T	C		153			
26	20	534	78	9	240	91	.32	9	91	6	4.9	7.3	6.8	4	C		131			
27	18	456	77	3	76	96	.20	5	93	2	4.6	7.4	7.0	4	C		117			
28	7	179	91	5	128	92	.16	4	91	3	4.9	7.4	7.3	8	C		125			
29	19	480	62	8	202	80	.22	6	84	2	5.9	7.4	7.0	56	C		149			
30	16	380	80	10	238	81	.22	5	85	8	4.4	7.3	6.8	10	C		162			
31	19	437	83	8	184	73	.27	6	82	7	5.1	7.3	7.3	20	C		117			
TL		9016			5591			141							C		4578			
ME	11	291	84	7	180	88	.30	8	87	5	5.8	7.4	6.7	18	C		148			
WA	18	481		11	283									35	C		174			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

September, 19 86
Month

Marshall, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
ID | 13.00.29 | 09 | 86 | 5.00
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	WEATHER		FLOW		RAW SEWAGE QUALITY											REMARKS OR
	TYPE 9	PRECIP. 14	TOTAL 19	MAX 24 RATE	TEMP 29	pH 34	BOD-5 39 44		SS 49 54		TOTAL-P 59 64		VSS 69	NH_3-N 74 78	80	9 14 1
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C	
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C	
SF															C	
01	1		2.89		59	7.6	58	1398	60	1446	1.60	39	32	6.8	C	
02	1		3.04		59	7.5	80	2028	88	2231	1.65	42	74	6.5	C	
03	4	.66	3.11		59	7.6	110	2853	94	2438	3.30	86	52	6.9	C	
04	1		3.13		60	7.6	68	1775	60	1566	4.10	107	40	8.4	C	
05	1		2.99		60	7.5	72	1795	88	2194	1.40	35	86	7.1	C	
06	3		2.92		60	7.2	116	2825	102	2484	1.80	44	90	6.5	C	
07	1		2.79		58	7.4	76	1768	84	1955	1.80	42	60	8.4	C	
08	1		3.10		59	7.6	66	1706	114	2947	1.60	41	82	8.0	C	
09	4	.01	3.10		59	7.4	84	2172	118	3051	2.55	66	56	8.9	C	
10	1		3.05		59	7.4	92	2340	74	1882	2.30	59	52	6.5	C	
11	4	.67	3.05		59	7.6	104	2645	82	2086	2.65	67	54	6.5	C	
12	4	.03	3.05		59	7.5	84	2137	88	2238	1.80	46	82	8.5	C	
13	3		2.88		59	7.5	96	2306	108	2594	1.65	40	98	7.0	C	
14	3		3.03		59	7.6	92	2325	98	2476	1.50	38	76	5.1	C	
15	1		3.03		59	7.6	96	2426	72	1819	3.40	86	60	12.0	C	
16	1		2.93		59	7.5	88	2150	80	1955	2.05	50	64	12.0	C	
17	4	.13	2.95		59	7.4	94	2313	70	1722	1.95	48	52	11.0	C	
18	1		3.01		59	7.5	78	1958	84	2109	2.75	69	72	8.0	C	
19	4	.02	2.91		59	7.4	54	1310	34	825	2.30	56	28	8.6	C	
20	1		2.66		59	7.4	46	1020	40	887	1.40	31	24	6.9	C	
21	4	.05	2.91		59	7.1	114	2767	92	2233	1.95	47	72	8.8	C	
22	4	.57	3.10		59	7.4	82	2120	90	2327	1.90	49	76	7.9	C	
23	3		3.05		59	7.4	86	2188	96	2442	2.30	59	70	8.3	C	
24	4	2.25	3.25		59	7.3	160	4337	93	2521	2.65	72	77	8.8	C	
25	4	.04	3.22		59	7.5	87	2336	83	2229	2.21	59	65	8.1	C	
26	4	.61	3.23		59	7.3	110	2963	88	2370	1.95	53	72	6.5	C	
27	4	.02	3.05		59	7.0	68	1730	68	1730	2.30	59	60	4.7	C	
28	4	.71	3.13		59	7.3	64	1621	70	1827	1.35	35	58	6.8	C	
29	4	.79	3.34		59	7.7	100	2786	57	1588	2.46	67	52	6.6	C	
30	4	.42	3.44		60	7.4	72	20616	122	3500	3.85	110	102	11.0	C	
31															C	
TL		6.98	91.34					66196		63672		1702			C	
ME			3.04				86	2207	83	2122	2.21	57	65	8.1	C	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

September, 19 86
Month

Marshall, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

ID 130029 09 86
Plant No. Mo. Yr. Sampling Point Code

DAY	BOD-5		SS		TOTAL-P		VSS	NH_3-N	REMARKS OR OTHER PARAMETERS										
	9 14		19 24		29 34		39	44	49	54	59	64	69	74 78	80	9	14	19
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C			
PN	00310	85001	00530	85002	00665	85004	00535	00610							C			
SF															C			
01	44	1061	50	1205	1.50	36	20	5.4							C			
02	56	1420	54	1369	1.60	41	48	5.6							C			
03	74	1919	26	674	3.10	80	18	6.0							C			
04	54	1410	46	1201	1.95	51	30	5.0							C			
05	44	1097	38	948	1.20	30	30	5.9							C			
06	78	1900	60	1461	1.50	37	46	6.0							C			
07	60	1396	68	1582	1.60	37	52	6.5							C			
08	84	2172	66	1706	1.60	41	40	5.9							C			
09	80	2068	62	1603	2.55	66	42	6.5							C			
10	76	1933	48	1221	2.30	59	38	5.8							C			
11	66	1679	62	1577	2.40	61	40	5.7							C			
12	58	1475	70	1781	2.05	52	56	6.5							C			
13	68	1633	84	2018	1.70	41	66	6.1							C			
14	80	2022	64	1617	1.70	43	44	6.2							C			
15	74	1870	62	1567	2.10	53	52	6.5							C			
16	72	1759	54	1320	1.95	48	64	8.3							C			
17	64	1575	44	1083	1.80	44	38	7.0							C			
18	56	1406	58	1456	2.55	64	50	6.9							C			
19	44	1068	30	728	2.20	53	24	6.4							C			
20	44	976	30	666	1.65	37	26	6.0							C			
21	72	1747	60	1456	2.05	50	50	6.5							C			
22	66	1706	50	1293	1.95	50	38	5.0							C			
23	58	1476	44	1119	2.10	53	24	4.7							C			
24	98	2656	70	1897	2.45	66	60	6.9							C			
25	65	1746	53	1423	2.00	54	41	6.3							C			
26	60	1616	58	1562	2.85	77	44	5.2							C			
27	72	1831	60	1526	2.20	56	50	9.8							C			
28	48	1253	36	940	1.60	42	32	4.8							C			
29	42	1170	50	1393	1.30	42	36	9.2							C			
30	48	1377	42	1205	3.30	95	32	5.3							C			
31															C			
TL		48,417		40,579		1559									C			
ME	64	1614	53	1353	2.03	52	41	6.3							C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

September, 19 86
Month

Marshall, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
ID | 1300879 | 09 | 86 | |
Plant No. Mo. Yr. Sampling Point Code

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14	19
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	80	Waste Sludge 9		
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*	
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889	
SF											4				C			
01	48		3.0	6.1	.25	2058	1487	32.0	.64	5.0	206	.43	72	67	C	62		
02			2.8	4.8	.33	1720	1227	21.0	.82	2.3	189	.36	72	64	C	71		
03			2.8	5.2	.46	1776	1281	23.0	.77	1.8	177	.36	72	59	C	38		
04			2.7	5.6	.36	1806	1334	29.0	.75	1.5	175	.41	74	66	C	30		
05			2.9	5.8	.33	1861	1400	23.0	.81	1.3	178	.36	75	68	C	30		
06			3.0								181			67	C	30		
07			3.1								183			70	C	30		
08			2.8	5.3	.31	2349	1761	20.0	1.17	1.6	182	.53	76	63	C	30		
09			2.8	5.5	.31	2496	1883	22.0	1.13	1.3	218	.54	76	63	C	30		
10			2.8	5.5	.29	2576	1959	22.0	1.17	1.3	229	.60	76	63	C	30		
11			2.8	5.3	.29	2625	2046	21.6	1.25	1.0	225	.59	77	65	C	30		
12			2.8	4.6	.33	2409	1804	20.0	1.20	1.2	245	.54	76	69	C	35		
13			3.0								245			68	C	36		
14			2.9								243			65	C	30		
15			2.9	2.9	.49	1590	1219	14.0	1.14	2.8	239	.35	77	65	C	30		
16			2.9	3.3	.43	1704	1311	20.0	.85	2.8	242	.38	76	68	C	30		
17			2.9	3.8	.42	1968	1361	26.0	.76	3.5	242	.42	74	66	C	30		
18			2.9	4.0	.36	2074	1545	22.0	.94	3.0	239	.46	75	63	C	30		
19			3.0	4.6	.33	2145	1607	34.0	.63	1.3	205	.47	76	67	C	48		
20			3.2								190			74	C	30		
21			3.0								191			68	C	52		
22			2.8	4.9	.34	2015	1532	36.0	.56	.5	184	.45	76	64	C	30		
23			2.8	5.0	.34	1906	1449	29.0	.66	.7	187	.43	77	64	C	30		
24			2.7	4.2	.39	1908	1464	29.0	.67	1.2	185	.42	74	60	C	30		
25			2.7	4.4	.39	1894	1444	31.0	.61	.8	179	.43	76	60	C	36		
26			2.7	3.9	.41	1840	1454	32.0	.58	.6	189	.39	78	77	C	30		
27			2.8								193			83	C	30		
28			2.8								188			81	C	30		
29			2.6	3.7	.46	1846	1405	25.0	.74	.4	193	.44	76	71	C	30		
30			2.5	3.6	.56	1853	1371	27.0	.69	.8	192	.37	74	75	C	30		
31															C			
TL															C	1038		
ME			2.8	4.6	.37	2019	1516	25.0	.84	1.7	204	.44	75	67	C	35		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

September, 19 86
Month

Nashville, Michigan
Municipality

Robert J. Swihart
Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
10 | 1300.29 | 09 | 86 | ..
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX. FUEL 14	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 $FeCl_3$	44 Water CF	49	54	59
PN											
SF											
01			2520			30	298	500			
02			2520			20	298	510			
03			2400			20	298	520			
04			2520			30	298	800			
05			2640			20	298	1570			
06			2520			40	298	1680			
07			2520			40	298	1790			
08			2640			20	298	1450			
09			2640			20	199	680			
10			2760			20	199	740			
11			2760			20	298	710			
12			2760			40	298	540			
13			2760			20	298	550			
14			2760			20	298	560			
15			2760			30	298	630			
16			2760			30	99	580			
17			2880			20	99	580			
18			2980			30		1650			
19			2280			20		540			
20			2520			30	99	510			
21			2520			40		520			
22			2640			10	397	550			
23			2520			20	496	550			
24			2640			30	397	530			
25			2400			20	397	580			
26			2640			20	347	560			
27			2640			20	397	490			
28			2640			40	397	390			
29			2760			30	298	480			
30			2640			20	248	700			
31											
TL			78840			770	8043	22940			
ME			2628			26	298	765			

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours	V
TOTAL				
Superintendent	1	168		
Asst. Supt.	1	168		
Shift Foreman				
Shift Operator	3	508		
Maint. Supervisor				
Mechanic				
Chemist				
Lab Technician				
Clerk-Typist				
Other				

GIVE THE HOURS PER DAY PLANT PERSONNEL ARE

WEEKDAYS 9 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary
Secondary

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To
Process Pattern

MONTH September 1986

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1																								
2																								
3	30	2.7	86		6.0																			
4	165	3.4	67		6.4																			
5	10	13.3	54		5.5																			
6	11																							
7																								
8	160	2.9	75		5.6																			
9																								
10	7	10.9	66		5.3																			
11	200	11.3	52		6.0																			
12	6	11.4	46		5.9																			
13	20	8.0	62		6.0																			
14	15	3.2	8		5.5																			
15	145	7.1	73		5.6																			
16	75	4.3	76		5.4																			
17	90	6.9	78		5.4																			
18	50	6.6	81		5.6																			
19	8	6.4	74		5.4																			
20	9																							
21	11	6.1	79		5.6																			
22	26	5.0	87		5.4																			
23	60	5.2	80		5.6																			
24	30	5.3	74		5.6																			
25	80	4.9	74		5.7																			
26	8	4.6	64		5.5																			
27	40	4.6	75		5.5																			
28	40	4.5	88		5.8																			
29	60	5.3	70		5.8																			
30	60	5.5	70		5.9																			
31																								
TOTAL	1416																							
ARITH. MEAN	54	5.7	69																					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

October , 19 86
Month

Marshall , Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
IP | 1300.79 | 10 | 86 | 500
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	WEATHER		FLOW		RAW SEWAGE QUALITY											REMARKS OR C
	TYPE 9	PRECIP. 14	TOTAL 19	MAX RATE 24	TEMP 29	pH 34	BOD-5 39 44		SS 49 54		TOTAL-P 59 64		VSS 69	NH_3-N 74 78	80	9 14 19
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C	
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C	
SF															C	
01	4	.54	3.50		59	7.4	104	3036	68	1985	2.20	64	54		C	
02	4	.33	3.46		59	7.4	68	1962	60	1731	1.50	43	50		C	
03	4	.92	3.78		59	7.3	82	2585	76	2396	2.40	76	64		C	
04	4	.17	3.25		59	7.3	80	2502	92	2877	2.55	80	80		C	
05	4	.13	3.70		59	7.3	52	1605	74	2283	1.35	42	60		C	
06	1		3.25		59	7.6	68	2127	90	2815	1.65	52	74		C	
07	1		3.67		59	7.4	102	3122	68	2081	2.85	87	62		C	
08	4	.08	3.60		59	7.4	104	3122	68	2042	1.95	58	58		C	
09	3		3.51		59	7.3	82	2400	68	1991	1.50	44	58		C	
10	1		3.51		59	7.2	114	3337	92	2693	2.85	83	76		C	
11	3		3.45		59	7.3	96	2763	118	3395	2.05	59	112		C	
12	4	.10	3.50		59	7.2	104	3036	90	2627	1.95	57	78		C	
13	4	.37	3.62		59	7.7	90	2717	70	2113	2.05	62	60		C	
14	4	.05	3.41		59	8.6	64	1820	86	2446	1.70	48	62		C	
15	4	.03	3.40		58	7.5	80	2268	114	3233	2.40	68	98		C	
16	3		3.44		58	7.5	84	2410	98	2812	1.95	56	88		C	
17	3		3.29		58	7.6	68	1866	106	2908	2.05	56	84		C	
18	1		3.11		58	7.2	74	1919	80	2075	2.10	54	76		C	
19	1		3.16		58	7.1	54	1423	66	1739	1.40	37	56		C	
20	1		3.44		58	7.5	100	2869	76	2180	1.95	56	64		C	
21	1		3.50		58	7.9	106	3094	66	1926	1.70	50	26		C	
22	3		3.29		58	7.5	60	1646	66	1811	2.55	70	52		C	
23	1		3.39		58	7.6	86	2360	64	1756	2.45	67	50		C	
24	3		3.20		58	7.8	102	2722	70	1868	1.80	48	56		C	
25	4	.12	3.01		58	8.0	64	1607	64	1607	1.70	43	50		C	
26	4	.04	3.21		58	7.3	80	2142	80	2142	2.05	55	58		C	
27	4	.11	3.38		58	8.1	128	3608	130	3665	3.50	99	102		C	
28	1		3.28		58	7.4	80	2188	66	1805	1.90	52	52		C	
29	1		3.17		58	7.7	112	2961	96	2538	2.05	54	76		C	
30	1		3.04		57	8.0	56	1420	76	1922	2.40	61	58		C	
31	1		2.97		57	7.4	40	991	34	842	1.40	35	26		C	
TL		3.04	10539					73628		70309		1816			C	
ME			3.40				83	2375	80	2268	2.06	59	65		C	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

OCTOBER , 19 86
Month

MARSHALL , Michigan
Municipality

Robert J. Swahill
Superintendent's Signature

ID 130029 10 86 [ ]
Plant No. Mo. Yr. Sampling Point Code

DAY	BOD-5		SS		TOTAL-P		VSS	NH_3-N	REMARKS OR OTHER PARAMETERS										
	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l											
PN	00310	85001	00530	85002	00665	85004	00535	00610								C			
SF																C			
01	66	1927	54	1576	1.95	57	32									C			
02	50	1443	48	1385	1.35	39	38									C			
03	56	1765	50	1576	2.10	66	40									C			
04	34	1063	56	1751	1.90	59	48									C			
05	32	987	56	1728	1.30	40	46									C			
06	44	1376	50	1564	1.40	44	16									C			
07	92	2816	64	1959	2.85	87	34									C			
08	76	2282	60	1801	2.30	69	44									C			
09	74	2166	70	2049	1.40	41	62									C			
10	76	2225	68	1991	2.75	81	62									C			
11	82	2359	74	2129	1.80	52	62									C			
12	66	1927	60	1751	1.95	57	50									C			
13	76	2295	62	1872	1.80	54	52									C			
14	66	1877	68	1934	1.80	51	48									C			
15	62	1758	102	2892	2.40	68	96									C			
16	74	2123	74	2123	1.80	52	64									C			
17	64	1756	66	1811	2.30	63	54									C			
18	54	1401	66	1712	1.90	49	44									C			
19	54	1423	62	1634	1.50	40	48									C			
20	112	3213	98	2812	2.10	60	74									C			
21	96	2802	86	2510	2.10	61	68									C			
22																C			
23																C			
24																C			
25																C			
26																C			
27																C			
28																C			
29	74	1956	100	2644	2.75	73	90									C			
30	74	1876	64	1623	1.90	48	54									C			
31																C			
TL		44816		44845		1311										C			
ME	68	1949	67	1950	1.97	57	53									C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

October , 1986
Month

Marshall , Michigan
Municipality

Robert J. Swelwell
Superintendent's Signature

1 2 3 . 8 9 10 11 12 13 15
IP | 1300029 | 10 | 86 | ...
Plant No. Mo. Yr. Sampling Point Code

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14	15
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	80	Waste Sludge 9		
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*	
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889	
SF											4				C			
01	48		2.5	3.8	.41	1843	1357	26.0	.70	1.6	200	.38	74	74	C	30		
02			2.5	3.9	.39	1867	1361	25.0	.75	3.8	198	.39	73	74	C			
03			2.3	3.7	.44	1885	1310	23.0	.82	1.3	193	.43	77	68	C			
04			2.3								199			68	C	36		
05			2.3								202			69	C	30		
06			2.3	3.4	.38	1804	1291	19.0	.95	1.6	204	.47	72	65	C	30		
07			2.3	3.8	.37	2086	1486	20.0	1.04	3.4	199	.47	72	70	C	30		
08			2.4	4.1	.34	2257	1628	19.0	1.19	1.3	198	.47	73	67	C	30		
09			2.5	3.9	.35	2206	1609	20.0	1.10	1.3	208	.47	72	73	C	30		
10			2.5	3.6	.37	2162	1594	25.0	.86	1.4	204	.45	72	73	C	30		
11			2.5								196			74	C	30		
12			2.5								200			73	C	30		
13			2.4	3.3	.43	2151	1634	23.0	.93	1.4	203	.46	76	70	C	30		
14			2.5	3.9	.44	2116	1595	19.0	1.24	2.0	205	.44	75	74	C	30		
15			2.5	3.0	.44	2050	1542	17.0	1.20	2.2	205	.42	75	74	C	30		
16			2.5	3.9	.46	2028	1510	16.0	1.27	2.9	204	.43	75	73	C	30		
17			2.6	3.1	.42	2023	1530	15.0	1.35	4.1	208	.42	77	76	C	30		
18			2.7								209			81	C	30		
19			2.7								208			80	C			
20			2.5	2.6	.52	1904	1381	15.0	1.26	4.4	200	.38	73	78	C	30		
21			2.5	2.7	.45	2105	1595	15.0	1.40	.5	198	.43	75	81	C	30		
22			2.5	3.0	.40	2226	1721	16.0	1.34	.7	197	.46	77	81	C	30		
23			2.5	3.1	.40	2218	1698	16.0	1.38	1.2	200	.46	76	81	C	30		
24			2.7	3.1	.40	2202	1639	16.0	1.38	1.2	203	.46	75	83	C	30		
25			2.9								199			89	C	30		
26			2.7								206			87	C	30		
27			2.5	3.1	.38	2287	1775	17.0	1.35	1.3	214	.47	73	75	C	30		
28			2.6	3.3	.35	2351	1758	18.0	1.31	1.3	217	.48	75	75	C	30		
29			2.7	3.3	.34	2298	1781	19.0	1.21	1.0	220	.47	77	79	C	30		
30			2.8	3.4	.34	2270	1738	19.0	1.19	1.8	223	.45	76	82	C	30		
31			2.9	3.4	.34	2243	1697	19.0	1.18	2.7	216	.45	76	83	C	30		
TL															C	840		
ME			2.5	3.3	.40	1995	1575	18.9	1.15	1.9	204	.44	75	76	C	30		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

October, 1986
Month

Marshall, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
ID | 13.0029 | 10 | 86 | ..
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	GRIT	AUX.FUEL	POWER CONSUMPTION			CHEMICALS APPLIED					
	9	14	19 #1	24 #2	29 #3	34 Cl_2	39 $FeCl_3$	44 Water	49	54	59
	CF		KWH	KWH	KWH	LBS.	LBS.	CF			
PN											
SF											
01			2760			30	397	490			
02			2640			40	397	650			
03			2640			30	397	500			
04			2640			30	397	670			
05			2640			30	298	570			
06			2880			30	298	900			
07			2760			20	496	560			
08			2640			20	397	440			
09			2880			40	397	580			
10			2760			30	397	450			
11			2760			10	298	450			
12			2640			30	397	560			
13			2760			30	397	480			
14			2760			30	397	480			
15			2760			20	298	340			
16			2880			30	397	460			
17			2880			30	397	540			
18			2880			30	298	380			
19			2640			20	298	570			
20			2760			30	397	400			
21			2760			20	397	450			
22			2760			20	199	380			
23			2760			20	397	510			
24			2760			25	397	510			
25			2640			25	298	370			
26			2760			25	298	440			
27			2880			25	397	440			
28			2760			25	298	390			
29			2760			20	397	470			
30			2880			20	298	380			
31			2640			20	298	470			
TL			85320			795	11,119	15,280			
ME			2752			26	359	493			

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		920
Superintendent	1		184
Asst. Supt.	1		184
Shift Foreman			
Shift Operator	3		552
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL ARE

WEEKDAYS 9 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary
Secondary

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

Supernatant To
Process Pattern

R 4619
4833-5382

MONTH October 1986

DIGESTER AND SLUDGE DATA

OPERATOR R.J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	60	4.7	80		5.7																			
2	60	5.0	80		6.0																			
3	65	4.4	76		5.4																			
4	40	5.3	66		5.5																			
5	60	5.3	80		5.6																			
6	60	4.5	77		6.0																			
7	60	2.8	70		6.0																			
8	60	4.6	65		6.6																			
9	60	4.0	74		6.3																			
10	60	4.5	65		6.1																			
11	40	4.3	64		6.2																			
12	40	4.6	74		5.8																			
13	60	6.5	72		6.0																			
14	60	5.1	71		6.6																			
15	60	5.3	70		6.1																			
16	60	4.9	72		6.3																			
17	75	5.1	72		6.2																			
18	40	6.5	67		6.3																			
19	40	4.3	80		6.2																			
20	60	4.2	74		6.2																			
21	60	4.9	71		6.1																			
22	60	4.8	69		6.1																			
23	60	4.7	55		6.0																			
24	60	4.9	74		6.1																			
25	40	4.0	86		6.1																			
26	40	4.2	78		6.2																			
27	60	4.5	75		6.1																			
28	60	5.1	71		6.1																			
29	60	4.4	87		6.2																			
30	60	4.9	71		6.1																			
31	60	4.7	68		6.0																			
TOTAL	1740																							
ARITH. MEAN	56	4.7	73																					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ Month , 19 _____ _____ Municipality , Michigan _____ Superintendent

1 2 ID | 3 Plant No. 8 | 9 10 Mo. | 11 12 Yr. | 13 Sampling Point Code 15

DAY	BOD-5 9	14	19	SS 24	29	34	TOTAL-P 39	44	49	VSS 54	NH_3-N 59	pH 64	DO 69	F. COLI* 74
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	# /100 ml
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615
SF														(19)
01	11	321	89	14	409	79	.44	13	80	9		7.3	6.5	120
02	7	202	90	17	491	72	.36	10	77	15		7.4	7.3	80
03	12	378	85	26	820	66	.80	25	67	25		7.3	6.3	T
04	13	407	84	29	907	68	.82	26	68	23		7.3	6.7	210
05	2	62	96	14	432	81	.38	12	72	13		7.4	6.4	96
06	9	281	87	17	532	81	.42	13	75	16		7.5	6.5	362
07	14	429	86	16	490	76	1.02	31	64	9		7.5	7.1	186
08	14	420	87	13	390	82	.80	24	59	10		7.4	6.4	240
09	16	468	80	22	644	68	.62	18	59	18		7.2	6.8	T40
10	14	410	88	15	439	84	1.02	30	64	12		7.0	6.6	380
11	10	288	89	14	403	88	.80	23	61	12		7.1	6.1	14
12	16	467	85	19	554	79	.78	23	60	17		6.9	5.3	18
13	23	694	74	22	664	69	.70	21	66	19		7.3	4.5	114
14	13	370	80	17	483	80	.37	11	78	12		8.2	6.1	138
15	12	340	85	11	312	90	.44	12	82	9		7.5	6.9	108
16	12	344	86	15	430	85	.44	13	77	10		7.5	7.2	146
17	14	384	79	9	247	92	.41	11	80	7		7.4	5.6	166
18	17	441	77	18	467	78	.44	11	79	14		7.6	6.1	34
19	14	369	74	13	343	80	.30	8	79	12		7.3	6.1	8
20	11	316	89	9	258	73	.35	10	82	4		7.4	6.9	30
21	28	817	74	16	467	76	.58	17	66	11		7.3	6.4	34
22	13	357	78	16	439	76	.40	11	84	10		7.4	6.7	120
23	12	329	86	11	302	83	.51	14	79	8		7.4	7.0	180
24	14	374	86	13	349	81	.35	9	82	10		7.4	6.7	
25	15	377	77	14	351	78	.32	8	81	11		7.1	5.2	12
26	7	187	91	11	294	86	.30	8	85	9		7.4	4.2	16
27	15	423	88	21	592	84	.53	15	85	16		7.5	7.1	18
28	7	191	91	8	219	88	.32	9	78	6		7.3	6.9	32
29	10	264	91	10	264	90	.34	9	83	8		7.5	6.3	16
30	14	353	75	16	406	79	.32	8	87	11		7.5	4.1	36
31	8	198	80	11	272	68	.32	8	77	9		7.4	7.7	42
TL		12260			13668			461						
ME	13	395	84	15	441	79	.52	15	75	12		7.4	6.3	65
WA	16	454		19	602									218

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

November (Month), 19 86

Marshall (Municipality), Michigan

Robert J. Sinclair
Superintendent's Signature

1 2 | 3 8 | 9 10 | 11 12 | 13 15
IP | 13.0029 | 11 | 86 | 500
Plant No. | Mo. | Yr. | Sampling Point Code

DAY 1 2	WEATHER TYPE 9	WEATHER PRECIP. 14	FLOW TOTAL 19	FLOW MAX RATE 24	RAW SEWAGE QUALITY TEMP 29	pH 34	BOD-5 39	BOD-5 44	SS 49	SS 54	TOTAL-P 59	TOTAL-P 64	VSS 69	NH_3-N 74	78	80	REMARKS OR C 9	14	19
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l		C			
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610		C			
SF																C			
01	4	.14	2.96		57	7.3	56	1382	56	1382	1.60	39	46			C	Sampler on		
02	1		2.99		56	7.2	72	1795	112	2793	1.70	42	106			C	NOT Proporti		
03	4	.04	3.22		57	7.5	70	1880	74	1987	1.95	52	58			C			
04	1		3.21		57	7.5	84	2249	66	1767	2.45	66	58			C			
05	1		3.15		57	7.5	68	1786	72	1892	1.90	50	46			C	Sampler Re		
06	1		3.03		57	7.5	60	1516	48	1213	1.80	45	44			C			
07	3		2.96		57	7.5	60	1481	58	1432	2.55	63	42			C			
08	4	.05	2.90		57	7.3	60	1451	56	1354	3.00	73	36			C			
09	1		2.99		57	7.4	64	1596	50	1247	2.05	51	36			C			
10	3		3.18		57	7.4	84	2228	60	1591	1.70	45	54			C			
11	3		3.10		57	7.5	76	1965	100	2585	1.90	49	86			C			
12	5	.02	3.16		57	7.4	87	2293	132	3479	2.40	63	124			C			
13	5	.01	3.19		57	7.4	94	2501	66	1756	4.20	112	56			C			
14	1		3.12		56	7.4	78	2030	78	2030	2.45	64	68			C			
15	3		2.97		56	7.3	56	1387	54	1338	1.90	47	48			C			
16	1		3.01		55	7.5	44	1105	40	1004	1.65	41	26			C			
17	5	.03	3.06		56	7.5	64	1633	60	1531	1.65	42	50			C			
18	5	.18	3.16		57	7.5	76	2003	76	2003	2.20	58	68			C			
19	5	.01	3.07		57	7.5	68	1741	56	1434	3.30	84	52			C			
20	5	.33	3.04		57	7.8	76	1927	54	1369	2.40	61	44			C			
21	1		2.96		55	7.9	70	1728	44	1086	2.85	70	38			C			
22	4	.05	2.92		57	7.2	36	877	30	731	1.65	40	22			C			
23	4	.10	2.97		57	7.4	54	1338	48	1189	1.90	47	36			C			
24	1		3.07		55	7.6	122	3124	80	2048	3.95	101	66			C			
25	4	.43	3.17		55	8.5	102	2697	72	1904	2.20	58	58			C			
26	4	.40	3.21		55	7.9	108	2891	80	2142	1.90	51	66			C			
27	1		2.96		55	7.5	64	1580	46	1136	1.70	42	28			C			
28	1		3.00		55	7.3	72	1751	56	1401	2.30	58	46			C			
29	1		3.09		55	7.2	72	1855	66	1701	1.70	93	52			C			
30	1		3.15		55	7.2	80	2102	33	867	2.05	54	24			C			
31																C			
TL		1.79	91.97					55,892		49392		1711				C			
ME			3.07				73	1863	64	1646	2.23	57	53			C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

November, 19 86
Month

MARSHALL
Municipality, Michigan

Robert J. Swalwell
Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
ID | 13,602.9 | 11 | 86 | . .
Plant No. Mo. Yr. Sampling Point Code

DAY	BOD-5 9 14		SS 19 24		TOTAL-P 29 34		VSS 39	NH_3-N 44	REMARKS OR OTHER PARAMETERS 49 54 59 64 69 74 78 80 9 14 19
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C
PN	00310	85001	00530	85002	00665	85004	00535	00610	C
SF									C
01									AUTOMATIC SAMPLER OUT SERVICE C
02									for REPAIR. C
03	64	1719	74	1987	1.80	48	56		C
04	68	1820	52	1392	2.45	66	48		GRAB SAMPLE USED C
05	50	1314	70	1839	2.45	64	52		C
06	54	1365	38	960	1.80	45	34		C
07									C
08									C
09									C
10	44	1167	46	1220	1.65	44	34		C
11	36	931	44	1138	1.65	43	32		C
12	50	1318	44	1160	1.65	43	36		C
13									C
14									C
15									C
16									C
17	50	1276	54	1378	1.50	38	26		C
18	32	843	48	1265	1.65	43	36		C
19	48	1229	52	1331	3.10	79	46		C
20	52	1318	40	1014	4.20	106	34		C
21									C
22									C
23									C
24	46	1178	40	1024	1.90	49	32		C
25	74	1956	56	1481	2.40	64	50		C
26									C
27									C
28									C
29									C
30									C
31									C
TL		17,434		17,189		732			C
ME	51	1341	50	1322	2.17	56	40		C

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

November, 19 86
Month

Marshall, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

ID 130029 11 86
Plant No. Mo. Yr. Sampling Point Code

DAY	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification
	Aeration Volume	Reaeration Volume	Detention Time	Sludge Age	Organic Loading	MLSS	MLVSS	SETTL.	SDI	DO	Air Applied	SS	VSS	Percent Return		Waste Sludge	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		2.9								221			84	C	30	
02			2.9								226			83	C	30	
03			2.7	5.0	.30	2042	1513	16.0	1.28	3.1	221	.44	75	73	C	30	
04			2.7	5.3	.29	2174	1578	17.0	1.28	1.4	226	.48	73	72	C	30	
05			2.7	5.2	.28	2105	1580	15.0	1.40	1.1	222	.41	75	73	C	30	
06			2.8	5.4	.28	2087	1568	17.0	1.23	2.9	219	.43	78	76	C	30	
07			2.9	5.5	.28	2080	1516	17.0	1.22	2.8	215	.44	72	57	C	30	
08			3.0								213			77	C	30	
09			2.9								227			76	C	30	
10			2.7	5.6	.33	2011	1399	19.0	1.05	2.3	225	.45	70	71	C	30	
11			2.8	4.8	.33	1879	1323	20.0	.94	3.0	228	.39	70	72	C	15	
12			2.7	4.5	.34	1805	1315	19.0	.95	2.5	230	.39	72	71	C	15	
13			2.7	4.5	.39	1813	1174	19.0	.95	1.3	232	.38	68	70	C	15	
14			2.8	4.6	.34	1840	1299	19.0	.96	1.7	223	.40	70	72	C	15	
15			2.9								219			75	C	15	
16			2.9								216			74	C	15	
17			2.8	4.6	.34	1803	1271	21.0	.86	3.7	216	.40	70	73	C	15	
18			2.7	4.7	.33	1912	1352	21.0	.91	2.3	202	.40	70	71	C	15	
19			2.8	4.8	.33	1878	1318	21.0	.89	2.9	201	.37	68	73	C	15	
20			2.8	5.1	.31	1946	1376	22.0	.88	1.5	201	.42	70	73	C	15	
21			2.9	5.5	.29	2065	1456	20.0	1.00	4.0	202	.37	70	89	C	15	
22			3.0								201			89	C	15	
23			2.9								201			88	C	15	
24			2.8	5.0	.32	1956	1365	24.0	.82	2.7	202	.42	70	91	C	30	
25			2.7	4.9	.26	1959	1330	23.0	.85	1.0	195	.35	69	92	C	30	
26			2.7	4.6	.35	1864	1321	21.0	.89	1.2	197	.36	71	89	C	30	
27			2.9								200			101	C	30	
28			2.9								197			98	C	30	
29			2.8								198			96	C	30	
30			2.7								203			94	C	30	
31															C		
TL															C	705	
ME			2.8	4.9	.32	1957	1414	19.5	1.02	2.3	213	.41	71	80	C	24	

Digester, Volume, ft³
Primary _____
Secondary _____

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To _____
Process Pattern _____

MONTH November 1986

DIGESTER AND SLUDGE DATA

OPERATOR R. J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	40	3.9	68		6.2																			
2	30	4.4	79		6.2																			
3	60	5.1	70		6.2																			
4	60	4.8	77		6.1																			
5	80	4.7	74		6.1																			
6	60	4.0	74		6.1																			
7	60	4.5	77		6.2																			
8	40	4.1	64		6.1																			
9	40	3.9	76		6.2																			
10	60	4.5	73		6.0																			
11	60	4.5	64		6.2																			
12	60	4.8	76		6.1																			
13	60	4.4	75		6.2																			
14	60	5.6	76		6.0																			
15	40	4.7	71		6.6																			
16																								
17	50	6.4	81		6.0																			
18	50	5.0	69		6.1																			
19	50	4.8	82		6.1																			
20	50	4.8	67		6.0																			
21	50	4.4	70		6.1																			
22	30	4.1	86		6.1																			
23																								
24	35	5.2	81		5.7																			
25	80	5.0	66		5.9																			
26	80	4.1	77		6.4																			
27	60	4.1	67		6.3																			
28	60	4.0	73		6.2																			
29	50	3.5	76		6.2																			
30	40	3.9	79		6.3																			
31																								
TOTAL	1495																							
ARITH. MEAN	53	4.5	74																					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

November, 19 86
Month

Marshall, Michigan
Municipality

Robert J. Sundell
Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
IP | 13a629 | 11 | 86 | ..
Plant No. Mo. Yr. Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX.FUEL 14 Gas CF	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 $FeCl_3$ LBS.	44 Water CF	49	54	59
PN											
SF											
01			2760				397	380			
02			2880				397	520			
03			2760				397	340			
04			3120				248	550			
05		4	3000				397	450			
06		38	2880				347	440			
07		27	2760				248	450			
08		24	2760				298	370			
09		32	2880				298	460			
10		47	3000				347	470			
11		38	3120				248	400			
12		53	3120				397	370			
13		68	3120				248	470			
14		62	3120				248	490			
15		23	3000				298	350			
16		39	3000				248	400			
17		22	2880				397	410			
18		54	3120				248	510			
19		46	3000				397	540			
20		39	3120				298	460			
21		36	2880				144	550			
22		32	2880				695	410			
23		31	2880				248	440			
24		40	3240				397	490			
25		33	3120				248	580			
26		35	2880				397	390			
27		30	3000				248	420			
28		28	3000				248	520			
29		27	2880				248	410			
30		35	3120				397	500			
31											
TL		943	89,280				10,526	13,840			
ME		36	2976				351	461			

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		872
Superintendent	1		144
Asst. Supt.	1		144
Shift Foreman			
Shift Operator	3		584
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL AR

WEEKDAYS 9 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ Month , 19 _____ | _____ Municipality , Michigan | _____ Superintendent's Signature

1 2 ID | 3 Plant No. 8 | 9 10 Mo. | 11 12 Yr. | 13 15 Sampling Point Code

DAY	BOD-5 9	14	19	SS 24	29	34	TOTAL-P 39	44	49	VSS 54	NH_3-N 59	pH 64	DO 69	F. COLI* 74	80	T. COLI* 9
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml	C	#/100 ml
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615	C	31504 31505
SF															C	
01	5	123	91	7	172	88	.30	7	81	5		7.2	5.2		C	
02	8	199	89	14	349	86	.32	8	81	12		7.2	5.4		C	
03	10	269	86	15	403	80	.35	9	82	10		7.5	6.0		C	
04	17	455	80	12	321	82	.47	13	81	9		7.7	5.3		C	
05	6	158	91	17	447	76	.38	10	80	7		7.5	4.6		C	
06	8	202	87	2	51	96	.30	8	83	1		7.5	4.7		C	
07	6	148	90	5	123	91	.34	8	87	4		7.4	5.2		C	
08	13	314	78	6	145	89	.74	18	75	4		7.0	4.6		C	
09	6	150	91	8	199	84	.53	13	74	6		7.1	4.7		C	
10	12	318	86	16	424	73	.53	14	74	9		7.4	5.6		C	
11	10	259	87	31	801	[illegible]49	.48	12	75	25		7.4	5.0		C	
12	13	343	85	13	343	90	.44	12	70	10		7.3	4.8		C	
13	26	692	72	14	372	79	.76	20	82	11		7.5	4.9		C	
14	15	390	81	12	312	85	.76	20	69	6		7.5	4.7		C	
15	8	198	86	18	446	67	.28	7	85	11		7.4	4.2		C	
16	5	126	87	10	251	75	.32	8	81	5		7.4	6.9		C	
17	10	255	84	15	383	75	.50	13	70	12		7.5	6.7		C	
18	12	316	84	16	422	74	.53	14	76	14		7.4	5.3		C	
19	9	230	87	12	307	79	.55	14	83	8		7.5	5.2		C	
20	12	304	84	11	279	80	.80	20	67	8		7.7	4.5		C	
21	9	222	87	13	320	71	.53	13	81	11		7.7	5.4		C	
22	5	122	86	8	195	73	.47	11	72	7		7.3	5.1		C	
23	7	173	87	1	25	98	.50	12	74	1		7.4	3.4		C	
24	13	333	84	12	307	85	.62	16	84	10		7.5	4.5		C	
25	13	344	87	9	238	88	.61	16	72	8		7.5	4.1		C	
26	15	402	86	12	321	85	.56	15	71	4		7.5	3.5		C	
27	13	321	80	13	296	74	.32	8	81	10		7.4	3.9		C	
28	14	350	81	9	225	84	.40	10	83	7		7.1	5.1		C	
29	13	335	82	17	438	74	.38	10	78	13		7.1	4.4		C	
30	4	105	95	9	236	79	.42	11	80	7		7.4	4.5		C	
31															C	
TL		8156			9151			370							C	
ME	11	272	86	12	305	81	.48	12	78	9		7.4	4.9		C	
WA	14	352		16	421										C	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

PLANT INFLUENT SHEET

December, 19 86
Month

Marshall
Municipality, Michigan

Robert J. Swalwell
Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
ID | 130029 | 12 | 86 | 500
Plant No. Mo. Yr. Sampling Point Code

DAY 1 2	WEATHER		FLOW		RAW SEWAGE QUALITY											REMARKS OR C
	TYPE 9	PRECIP. 14	TOTAL 19	MAX 24 RATE	TEMP 29	pH 34	BOD-5 39 44		SS 49 54		TOTAL-P 59 64		VSS 69	NH_3-N 74 78	80	9 14 15
	See Code*	Inches	MGD	MGD	°F	SU	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l	C	
PN	00033	00045	50050	50051	00011	00400	00310	85001	00530	85002	00665	85004	00535	00610	C	
SF															C	
01	4+5	.54	3.19		55	7.5	78	2075	126	3352	2.05	55	50		C	
02	4	.09	3.22		55	7.3	72	1934	52	1396	1.70	46	44		C	
03	5	.04	3.18		55	7.5	68	1803	50	1326	2.30	61	28		C	
04	5	.03	3.15		53	7.4	72	1892	66	1734	2.30	60	43		C	
05	1		3.15		55	7.3	80	2102	72	1892	1.90	50	62		C	
06	5	.10	3.00		55	7.4	72	1801	56	1401	1.50	38	44		C	
07	4	.10	3.07		55	7.4	78	1997	54	1383	1.60	41	38		C	
08	4	.20	3.18		53	8.8	72	1909	66	1750	1.50	40	42		C	
09	4+5	.12	3.30		53	7.5	128	3523	76	2092	3.20	88	60		C	
10	5	.02	3.19		53	7.5	76	2022	68	1809	2.55	68	50		C	
11	1		3.21		53	7.7	72	1928	76	2035	2.30	62	66		C	
12	1		3.18		53	7.6	66	1750	30	796	1.80	48	24		C	
13	1		3.16		53	7.5	132	3479	88	2319	2.45	65	76		C	
14	1		3.07		53	7.1	84	2151	56	1434	2.90	74	48		C	
15	4	.02	3.23		53	7.7	78	2101	74	1993	2.55	69	44		C	
16	4	.02	3.17		53	7.6	98	2591	64	1692	1.90	50	32		C	
17	4	.05	3.19		53	8.4	84	2235	54	1432	2.05	55	44		C	
18	3		3.16		53	8.5	84	2214	66	1739	1.80	47	56		C	
19	1		3.08		53	7.5	68	1747	66	1695	1.80	46	54		C	
20	3		2.99		52	7.4	70	1746	52	1297	1.65	41	34		C	
21	1		3.00		52	7.2	52	1301	42	1051	1.50	38	32		C	
22	1		3.29		53	7.7	94	2579	86	2360	3.30	91	74		C	
23	1		3.28		53	8.5	72	1970	70	1915	2.55	70	52		C	
24	4	.03	3.10		53	7.3	72	1861	62	1603	2.30	59	48		C	
25	3		2.99		53	7.5	50	1247	44	1097	1.40	35	32		C	
26	3		3.04		51	8.7	60	1521	56	1420	1.65	42	48		C	
27	3		3.05		51	7.8	50	1272	50	1272	1.60	41	38		C	
28	1		3.04		51	8.1	86	2180	106	2687	2.40	61	92		C	
29	5	.05	3.23		51	7.5	106	2855	98	2640	4.30	116	76		C	
30	1		3.08		51	7.6	104	2671	64	1644	3.50	90	56		C	
31	1		2.91		51	7.8	72	1747	42	1019	2.20	53	28		C	
TL		1.41	97.08					64,204		53,280		1800			C	
ME			3.13				79	2071	66	1719	2.17	58	49		C	

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

Primary Effluent Sheet

(For Secondary or Tertiary Plants Only)

December, 19 86
Month

Marshall, Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

1 2	3 8	9 10	11 12	13 15
ID	1300,29	12	86	..
	Plant No.	Mo.	Yr.	Sampling Point Code

DAY	BOD-5 9 14		SS 19 24		TOTAL-P 29 34		VSS 39	NH_3-N 44	REMARKS OR OTHER PARAMETERS 49	54	59	64	69	74 78	80	9	14	19
1 2	mg/l	LBS.	mg/l	LBS.	mg/l	LBS.	mg/l	mg/l							C			
PN	00310	85001	00530	85002	00665	85004	00535	00610							C			
SF															C			
01	66	1756	120	3193	3.10	82	46								C			
02	50	1343	42	1128	1.80	48	28								C			
03	40	1061	48	1273	2.20	58	22								C			
04	64	1681	64	1681	2.10	55	48								C			
05	48	1261	62	1629	1.90	50	50								C			
06	44	1101	60	1501	1.60	40	42								C			
07	76	1946	60	1536	1.60	41	46								C			
08	50	1326	58	1538	1.40	37	34								C			
09	116	3193	80	2202	3.90	107	54								C			
10	56	1490	66	1756	2.20	59	48								C			
11	62	1660	70	1874	2.10	56	60								C			
12	64	1697	40	1061	1.50	40	24								C			
13	102	2688	62	1634	2.55	67	58								C			
14	64	1639	46	1178	2.90	74	38								C			
15	120	3233	76	2047	3.65	98	60								C			
16	78	2062	54	1428	1.80	48	42								C			
17	72	1916	58	1543	1.95	52	46								C			
18	62	1634	60	1581	1.95	51	44								C			
19	48	1233	30	771	1.65	42	22								C			
20	50	1297	52	1297	1.40	35	40								C			
21	44	1101	46	1151	1.50	38	38								C			
22	108	2963	74	2030	3.30	91	58								C			
23	52	1422	38	1039	2.45	67	28								C			
24	48	1241	36	931	1.50	39	30								C			
25	42	1047	36	898	1.50	37	28								C			
26	48	1217	52	1318	1.60	41	40								C			
27	50	1272	50	1272	1.40	36	40								C			
28	58	1471	42	1064	1.60	41	30								C			
29	74	1993	50	1347	3.00	81	36								C			
30	64	1644	44	1130	3.50	90	36								C			
31	48	1165	40	971	1.90	46	32								C			
TL		51,703		45,002		1747									C			
ME	63	1668	55	1452	2.15	56	40								C			

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ACTIVATED SLUDGE SHEET

December, 19 86
Month

Marshall, Michigan
Municipality

Robert J Swalwell
Superintendent's Signature

1 2 3 8 9 10 11 12 13 15
ID | 130029 | 12 | 86 | ...
Plant No. Mo. Yr. Sampling Point Code

DAY 1 2	AERATION SYSTEM					MIXED LIQUOR						SECONDARY SLUDGE					Process Modification 14 19
	Aeration Volume 9	Reaeration Volume 14	Detention Time 19	Sludge Age 24	Organic Loading 29	MLSS 34	MLVSS 39	SETTL. 44	SDI 49	DO 54	Air Applied 59	SS 64	VSS 49	Percent Return 74	80	Waste Sludge 9	
	KCF	KCF	HRS.	DAYS	F/M	mg/l	mg/l	%	%	mg/l	Cu. Ft.	%	%	%	C	KGal	See Code*
PN	80993	80994	81001	80990	80992	70323	70324	81004	81007	00300	81000	81006	70325	81014	C	80991	80889
SF											4				C		
01	48		2.7	3.4	.35	1631	1348	24.0	.76	2.8	200	.34	73	93	C	30	
02			2.7	3.7	.34	1943	1420	24.0	.81	2.6	195	.36	73	92	C	30	
03			2.7	3.5	.34	1842	1335	23.0	.80	2.7	198	.36	72	94	C	30	
04			2.7	3.8	.33	2010	1424	24.0	.84	3.4	203	.37	70	95	C	30	
05			2.7	3.6	.33	1966	1408	24.0	.82	4.4	204	.36	71	93	C	30	
06			2.8								199			101	C	30	
07			2.8								199			99	C	30	
08			2.7	3.5	.38	1727	1246	19.0	.91	4.3	207	.34	72	95	C	30	
09			2.6	3.3	.43	1901	1381	19.0	1.00	4.2	199	.36	73	95	C	30	
10			2.7	3.2	.41	1814	1359	20.0	.91	1.4	207	.36	75	90	C	↑	
11			2.7	2.3	.57	1361	1029	14.0	.97	5.3	201	.28	75	94	C		
12			2.7	3.1	.48	1684	1264	14.0	.89	4.2	208	.35	75	95	C		
13			2.7								206			94	C		
14			2.8								199			96	C		
15			2.7	4.7	.52	1906	1440	18.0	1.06	1.2	199	.38	76	90	C		
16			2.7	3.5	.49	1801	1402	19.0	1.06	1.2	197	.34	77	93	C		
17			2.7	3.3	.54	1716	1317	16.0	1.07	2.1	197	.34	76	94	C		
18			2.7	3.4	.55	1686	1287	17.0	.99	1.1	200	.32	77	94	C		
19			2.8	3.1	.54	1481	1132	15.0	.99	4.8	203	.28	77	95	C	?	
20			2.9								212			93	C	?	
21			2.9								210			99	C		
22			2.6	3.1	.53	1486	1132	15.0	.99	0.8	205	.31	75	89	C		
23			2.6	3.1	.50	1463	1126	14.0	1.05	1.8	204	.28	77	92	C		
24			2.8								199			96	C		
25			2.9								203			101	C		
26			2.8	3.6	.43	1444	1089	13.0	1.11	5.5	203	.29	75	96	C		
27			2.8								205			96	C		
28			2.8								204			94	C		
29			2.7	3.2	.53	1253	946	12.0	1.04	3.6	202	.29	75	89	C		
30			2.8	3.8	.44	1451	1099	12.0	1.21	3.4	206	.30	76	94	C		
31			3.0	4.2	.39	1531	1168	13.0	1.18	2.3	206	.31	76	99	C	↓	
TL															C		
ME			2.7	3.4	4.5	1691	1255	18.0	.97	3.0	203	.33	75	94	C		

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MISCELLANEOUS SHEET

December , 19 86
Month

Marshall , Michigan
Municipality

Robert J. Swalwell
Superintendent's Signature

1 2 ID | 3 8 Plant No. 130629 | 9 10 Mo. 12 | 11 12 Yr. 86 | 13 15 Sampling Point Code

DAY 1 2	GRIT 9 CF	AUX. FUEL 14 GAS CF	POWER CONSUMPTION 19 #1 KWH	24 #2 KWH	29 #3 KWH	CHEMICALS APPLIED 34 Cl_2 LBS.	39 Water CF	44 FeCl3 LBS	49	54	59
PN											
SF											
01		41	3240				430	298			
02		46	2880				410	298			
03		52	3000				520	397			
04		62	3120				460	298			
05		58	3000				560	298			
06		50	3000				410	397			
07		49	3000				500	298			
08		47	3000				410	298			
09		51	3120				430	397			
10		54	3120				570	397			
11		51	3120				420	298			
12		119	3120				530	298			
13		46	3120				240	397			
14		42	3000				370	298			
15		32	3120				440	397			
16		32	2880				300	298			
17		54	3120				490	298			
18		38	3000				390	397			
19		43	3000				380	397			
20		39	3120				370	298			
21		48	3120				570	298			
22		43	3000				460	397			
23		37	3000				320	199			
24		32	3120				380	397			
25		51	3000				480	298			
26		53	3000				410	298			
27		55	3000				460	397			
28		43	3000				360	397			
29		43	3120				430	298			
30		36	3120				460	397			
31		36	3000				410	298			
TL		1477	94560				13310	10426			
ME		48	3050				429	336			

MANPOWER

POSITION TITLE	No. Full Time	No. Part Time	Total Hours
TOTAL	5		856
Superintendent	1		168
Asst. Supt.	1		168
Shift Foreman			
Shift Operator	3		520
Maint. Supervisor			
Mechanic			
Chemist			
Lab Technician			
Clerk-Typist			
Other			

GIVE THE HOURS PER DAY PLANT PERSONNEL AF

WEEKDAYS 9 HRS.

SATURDAYS 4 HRS.

SUNDAYS 4 HRS.

HOLIDAYS 4 HRS.

Digester Volume, ft³
Primary
Secondary

OPERATION REPORT OF WASTEWATER TREATMENT PLANT

Marshall, MICHIGAN

R 4619
4833-5382

Supernatant To
Process Pattern

MONTH December 19 86

DIGESTER AND SLUDGE DATA

OPERATOR R. J. Swalwell

DATE	RAW SLUDGE					DIGESTING SLUDGE						SUPERNATANT								DIGESTED SLUDGE				Gas Produced cu. ft X
	Gals. X 100	Total Solids %	Vol. Solids %	Vol. Solids Lbs/1000 c.f. Digester	pH	Temp. °F	pH	Total Solids %	Vol. Solids %	Vol. Acids Mg/l	Alkalinity Mg/l	Gals. X	pH	Total Solids %	Vol. Solids %	Susp. Solids Mg/l	P Mg/l	P Lbs.	5-Day BOD Mg/l	Gals. X	Total Solids %	Vol. Solids %	pH	
1	70	4.5	81		6.0																			
2	40	4.0	79		6.0																			
3	60	5.3	74		5.8																			
4	50	4.5	79		6.0																			
5	40	3.6	75		5.9																			
6	60	4.6	71		6.2																			
7	50	3.5	60		6.4																			
8	70	4.9	78		6.6																			
9	70	4.2	72		6.2																			
10	70	4.2	74		6.1																			
11	70	3.6	74		6.8																			
12	65	4.0	80		6.5																			
13	40	4.1	80		6.3																			
14	50	4.6	80		6.4																			
15	70	4.5	74		6.1																			
16	100	4.2	85		6.6																			
17	80	3.7	67		6.4																			
18	80	4.5	72		6.5																			
19	36	4.2	83		6.5																			
20	50	4.2	83		6.5																			
21	40	4.4	82		6.1																			
22	50	3.2	72		6.0																			
23	60	4.9	66		6.4																			
24	50	4.6	68		6.0																			
25	40	4.8	75		5.8																			
26	70	4.1	79		6.2																			
27	50	4.2	86		5.8																			
28	50	4.3	75		6.1																			
29	80	4.1	70		6.0																			
30	80	4.7	72		6.1																			
31	60	4.2	68		6.1																			
TOTAL	1851																							
ARITH. MEAN	60	4.2	75																					

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FINAL EFFLUENT SHEET

_____ Month , 19 _____

_____ Municipality , Michigan

_____ Superintendent

1 2 ID 3 Plant No. 8 | 9 10 Mo. | 11 12 Yr. | 13 15 Sampling Point Code

DAY	BOD-5			SS			TOTAL-P			VSS	NH_3-N	pH	DO	F. COLI*
1 2	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	LBS.	% Rem.	mg/l	mg/l	SU	mg/l	#/100 ml
PN	00310	85001	81010	00530	85002	81011	00665	85004	81012	00535	00610	00400	00300	31616 31615
SF														
01	9	239	88	42	1117	67	.38	10	81	22		7.3	5.1	
02	17	457	76	6	161	88	.37	10	78	4		7.2	4.9	
03	7	184	90	9	239	82	.42	11	82	7		7.7	5.2	
04	11	289	85	15	394	77	.48	13	79	11		7.4	5.1	
05	12	315	85	25	657	65	.75	20	61	19		7.3	7.2	
06	13	325	82	15	375	73	.38	10	75	11		7.3	6.8	
07	9	230	88	8	205	85	.30	8	81	6		7.5	7.1	
08	8	212	89	17	451	74	.27	7	82	9		8.6	6.5	
09	16	440	88	21	578	72	.56	15	83	18		7.4	6.7	
10	20	532	74	25	665	63	.66	18	74	17		7.5	4.0	
11	7	184	90	13	348	83	.30	8	87	11		7.8	7.2	
12	12	318	82	9	239	70	.41	11	77	2		7.4	6.8	
13	11	290	92	22	580	75	.68	18	72	12		7.4	6.5	
14	19	486	77	14	358	75	.76	19	74	12		7.2	4.3	
15	15	404	81	8	215	89	.91	25	64	2		7.4	3.5	
16	17	449	83	12	317	81	.46	12	76	9		7.6	3.9	
17	8	213	90	6	160	89	.28	7	86	5		8.4	4.3	
18	7	184	92	11	290	83	.41	11	77	7		8.5	4.2	
19	7	180	90	5	128	92	.32	8	82	3		7.6	6.5	
20	13	324	81	5	125	90	.32	8	82	4		7.3	5.3	
21	4	100	92	3	73	93	.27	7	82	2		7.1	4.9	
22	32	878	66	17	466	80	.70	19	79	16		7.5	6.2	
23	14	383	81	8	219	89	.66	18	74	5		7.8	3.8	
24	7	181	90	6	155	90	.30	8	87	4		7.2	6.3	
25	5	125	90	6	150	86	.25	6	82	5		7.4	6.1	
26	7	177	88	6	153	89	.25	6	88	5		8.6	8.1	
27	6	153	88	8	203	84	.23	6	86	6		7.4	7.6	
28	12	304	86	4	101	96	.32	8	87	1		7.9	6.8	
29	10	269	91	6	162	94	.32	9	93	4		7.4	7.1	
30	10	257	90	3	77	95	.44	14	73	2		7.4	6.3	
31	5	121	93	5	121	88	.32	8	85	3		7.4	5.3	
TL		9209			9483			368						
ME	11	297	86	12	306	82	.45	12	80	8		7.6	5.8	
WA	14	381		17	460									

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
JANUARY, 1988 - PLANT INFLUENT SHEET - SAMPLING CODE 500

	----Weather----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1	1		2.90	51	7.5	58	1,403	46	1,113	1.70	41	38		
2	1		2.97	52	7.4	36	892	36	892	1.70	42	32		
3	1		3.05	52	7.2	46	1,170	64	1,628	1.50	38	56		
4	5	0.04	3.05	52	7.4	56	1,424	52	1,323	1.65	42	38		
5	1		3.00	51	7.3	52	1,301	62	1,551	1.70	43	52		
6	1		3.04	52	7.4	68	1,724	72	1,825	2.10	53	36		
7	1		3.06	52	7.4	66	1,684	48	1,225	2.30	59	28		
8	5	0.02	2.91	52	7.4	56	1,359	62	1,505	1.65	40	44		
9	5	0.01	2.85	51	7.5	68	1,616	62	1,474	1.80	43	52		
10	1		2.90	50	7.4	84	2,032	72	1,741	1.90	46	46		
11	1		3.03	51	7.1	80	2,022	46	1,162	6.00	152	38		
12	5	0.03	3.01	52	7.2	58	1,456	56	1,406	1.90	48	44		
13	1		3.01	51	7.6	64	1,607	52	1,305	2.05	51	36		
14	5	0.01	3.06	51	7.4	70	1,786	58	1,480	2.40	61	48		
15	1		3.03	51	7.4	90	2,274	36	910	3.40	86	28		
16	4	0.02	2.96	51	7.3	88	2,172	48	1,185	3.10	77	42		
17	4	0.31	3.12	51	7.2	104	2,706	64	1,665	2.90	75	56		
18	1		3.13	51	7.4	56	1,462	70	1,827	1.90	50	56		
19	4	0.08	3.07	51	7.3	66	1,690	52	1,331	1.90	49	38		
20	5	0.01	3.08	51	7.4	72	1,849	54	1,387	1.65	42	46		
21	3		3.10	51	7.4	74	1,913	60	1,551	2.10	54	54		
22	5	0.02	3.08	51	7.4	92	2,363	86	2,209	3.65	94	68		
23	5	0.05	2.96	50	7.6	64	1,580	64	1,580	2.40	59	40		
24	5	0.01	2.97	50	7.5	70	1,734	56	1,387	1.80	45	44		
25	5	0.21	3.07	50	7.4	52	1,331	94	2,407	2.30	59	70		
26	5	0.03	2.95	50	7.5	88	2,165	74	1,821	4.70	116	54		
27	5	0.02	3.00	51	7.6	70	1,751	62	1,551	2.45	61	52		
28	3		3.00	51	7.6	78	1,952	64	1,601	2.40	60	52		
29	3		2.96	50	7.5	72	1,777	94	2,321	1.90	47	86		
30	3		2.93	50	7.7	92	2,248	66	1,613	4.80	117	60		
31	4	0.33	2.96	51	7.3	66	1,629	62	1,531	1.90	47	58		
Total	99	1.20	93.21	1,581	229.7	2,156	54,075	1,894	47,507	75.60	1,896	1,492		
Max.	5	0.33	3.13	52	7.7	104	2,706	94	2,407	6.00	152	86		
Min.	1	0.01	2.85	50	7.1	36	892	36	892	1.50	38	28		
Avg.	3	0.08	3.01	51	7.4	70	1,744	61	1,532	2.44	61	48		

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT - PLANT No. 130029
JANUARY, 1988 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	32	774	38	919	1.60	39	22		2.90	45	34	5
2	26	644	24	594	1.80	45	20		2.97	28	33	0
3	18	458	44	1,119	1.20	31	38		3.05	61	4	20
4	24	610	34	865	1.35	34	22		3.05	57	39	0
5	20	500	34	851	1.15	29	28		3.00	62	35	32
6	42	1,065	48	1,217	1.65	42	28		3.04	38	29	21
7	36	919	24	612	2.65	68	18		3.06	45	64	0
8	30	728	34	825	1.30	32	24		2.91	46	39	21
9	36	856	34	808	1.60	38	26		2.85	47	50	11
10	48	1,161	28	677	1.40	34	24		2.90	43	67	26
11	50	1,264	36	910	1.70	43	26		3.03	38	55	72
12	36	904	36	904	1.50	38	28		3.01	38	38	21
13	54	1,356	30	753	1.80	45	18		3.01	16	53	12
14	36	919	32	817	2.05	52	20		3.06	49	54	15
15	68	1,718	24	606	2.90	73	16		3.03	24	73	15
16	68	1,679	24	592	3.30	81	18		2.96	23	73	0
17	74	1,926	40	1,041	2.55	66	34		3.12	29	62	12
18	52	1,357	40	1,044	1.65	43	34		3.13	7	29	13
19	48	1,229	32	819	1.70	44	24		3.07	27	52	11
20	36	925	30	771	1.30	33	26		3.08	50	58	21
21	36	931	36	931	1.65	43	26		3.10	51	51	21
22	56	1,438	56	1,438	3.00	77	50		3.08	39	39	18
23	48	1,185	32	790	2.20	54	22		2.96	25	50	8
24	38	941	34	842	1.40	35	22		2.97	46	51	22
25	28	717	36	922	1.65	42	22		3.07	46	30	28
26	56	1,378	36	886	3.50	86	30		2.95	36	59	26
27	52	1,301	46	1,151	2.20	55	38		3.00	26	34	10
28	48	1,201	46	1,151	2.10	53	28		3.00	38	41	13
29	50	1,234	50	1,234	1.70	42	42		2.96	31	31	11
30	76	1,857	50	1,222	4.45	109	42		2.93	17	46	7
31	50	1,234	48	1,185	1.60	39	40		2.96	24	27	16
Total	1,372	34,408	1,136	28,497	61.60	1,544	856		93.21	1,152	1,400	508
Max.	76	1,926	56	1,438	4.45	109	50		3.13	62	73	72
Min.	18	458	24	592	1.15	29	16		2.85	7	4	0
Avg.	44	1,110	37	919	1.99	50	28		3.01	37	45	16

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT - PLANT No. 130029
JANUARY, 1988 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading f/m	Mix Liq SS mg/L	Mix Liq VSS mg/L	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mg/L	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mg/l	PE SS mg/L
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	3.0								205			53		2.90	41	41
2		2.9								199			52		2.97	39	38
3		2.8								195			51		3.05	37	38
4		2.8	5.1	0.27	1,563	1,051	21.0	0.74	7.2	204	0.44	0.29	50		3.05	33	36
5		2.9	5.4	0.21	1,661	1,146	21.0	0.79	7.6	206	0.43	0.29	52		3.00	29	37
6		2.8	5.1	0.22	1,683	1,155	21.0	0.80	7.2	141	0.43	0.31	52		3.04	30	39
7		2.8	5.7	0.21	1,703	1,159	25.0	0.68	3.6	152	0.44	0.40	50		3.06	28	35
8		3.0	6.1	0.19	1,731	1,196	25.0	0.69	4.2	168	0.45	0.31	52		2.91	28	35
9		3.0								174			53		2.85	29	36
10		3.0								171			52		2.90	34	34
11		2.8	6.0	0.26	1,714	1,195	25.0	0.69	6.1	163	0.47	0.32	53		3.03	37	34
12		2.9	6.5	0.26	1,846	1,277	28.0	0.66	6.1	162	0.47	0.33	53		3.01	40	34
13		2.9	6.8	0.26	1,819	1,299	27.0	0.67	7.2	174	0.49	0.33	49		3.01	41	32
14		2.8	6.4	0.28	1,805	1,234	29.0	0.62	7.0	173	0.49	0.34	47		3.06	41	33
15		2.8	7.0	0.31	1,825	1,272	29.0	0.63	5.7	168	0.49	0.34	48		3.03	47	31
16		2.9								163			49		2.96	51	30
17		2.8								164			46		3.12	55	32
18		2.8	6.6	0.38	1,844	1,265	27.0	0.68	6.5	165	0.51	0.35	45		3.13	55	32
19		2.8	6.3	0.38	1,733	1,284	25.0	0.69	6.5	146	0.51	0.35	45		3.07	57	32
20		2.8	6.0	0.42	1,642	1,130	23.0	0.71	6.6	142	0.47	0.32	44		3.08	55	32
21		2.8	4.7	0.46	1,503	1,033	22.0	0.68	7.0	145	0.45	0.31	44		3.10	55	37
22		2.8	4.1	0.47	1,325	974	20.0	0.66	6.4	143	0.41	0.28	43		3.08	53	38
23		2.9	5.1		1,562					143			47		2.96	50	37
24		2.9	5.5		1,680					148			46		2.97	45	37
25		2.8	5.3	0.30	1,672	1,163	24.0	0.70	6.4	151	0.47	0.32	44		3.07	41	37
26		2.9	5.0	0.32	1,605	1,104	23.0	0.70	7.1	149	0.46	0.31	45		2.95	43	39
27		2.9	5.2	0.33	1,684	1,156	23.0	0.73	5.6	151	0.46	0.31	45		3.00	45	39
28		2.9	5.0	0.33	1,711	1,199	23.0	0.74	5.4	149	0.47	0.33	45		3.00	47	41
29		2.9	5.2	0.32	1,727	1,247	23.0	0.75	5.4	139	0.48	0.34	46		2.96	48	40
30		2.9	5.0		1,740					136			47		2.93	50	43
31		2.9	4.6		1,716					139			46		2.96	51	45
Total	48	88.9	133.6	6.17	40,494	23,539	484.0	14.04	124.8	5,028	9.29	6.48	1,494		93.21	1,335	1,124
Max.	48	3.0	7.0	0.47	1,846	1,299	29.0	0.80	7.6	206	0.51	0.40	53		3.13	57	45
Min.	48	2.8	4.1	0.19	1,325	974	20.0	0.62	3.6	136	0.41	0.28	43		2.85	28	30
Avg.	48	2.9	5.6	0.31	1,687	1,177	24.2	0.70	6.2	162	0.46	0.32	48		3.01	43	36

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 W. PEARL ST. MARSHALL MI 49068 - PERMIT No. MI0023540
JANUARY, 1988 - DISCHARGE MONITORING REPORT - DISCHARGE No. 001A

	D.O. mg/L	pH SU	SS mg/L	SS Lbs.	Total-P mg/L	Flow MGD	Chlorine mg/L	BOD mg/L	BOD Lbs.	NH3 as N mg/L	NH3-N Lbs.	F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	7.6	7.6	15	363	0.42	2.90		4	97				67	93	75
2	6.9	7.4	10	248	0.41	2.97		2	50				72	94	76
3	7.6	7.3	19	483	0.42	3.05		3	76				70	93	72
4	7.5	7.5	12	305	0.41	3.05		3	76				77	95	75
5	8.4	7.3	17	425	0.40	3.00		5	125				73	90	76
6	7.4	7.4	20	507	0.22	3.04		3	76				72	96	90
7	5.6	7.2	14	357	0.53	3.06		8	204				71	88	77
8	6.5	7.2	17	413	0.32	2.91		4	97				73	93	81
9	7.0	7.2	10	238	0.91	2.85		5	119				84	93	49
10	7.8	7.3	12	290	0.42	2.90		9	218				83	89	78
11	7.2	7.3	15	379	0.40	3.03		5	126				67	93	93
12	7.6	7.3	17	427	0.41	3.01		3	75				70	95	78
13	8.0	7.6	15	377	0.44	3.01		5	126				71	92	79
14	7.6	7.4	13	332	0.53	3.06		5	128				78	93	78
15	7.6	7.2	8	202	0.51	3.03		8	202				77	91	85
16	7.4	7.1	8	197	0.97	2.96		10	247				83	89	69
17	6.5	7.2	18	468	0.78	3.12		11	286				72	89	73
18	7.6	7.3	18	470	0.61	3.13		7	183				74	88	68
19	8.0	7.4	6	154	0.42	3.07		4	102				88	94	78
20	7.9	7.4	13	334	0.41	3.08		4	103				76	94	75
21	7.5	7.4	13	336	0.55	3.10		8	207				78	89	75
22	7.9	7.3	12	308	0.47	3.08		4	103				86	96	87
23	7.7	8.0	10	247	0.58	2.96		5	123				84	92	76
24	7.5	7.6	12	297	0.46	2.97		4	99				79	94	74
25	7.3	7.2	6	154	0.32	3.07		3	77				94	94	86
26	7.1	7.3	4	98	0.62	2.95		4	98				95	95	87
27	7.3	7.3	10	250	0.74	3.00		7	175				84	90	70
28	7.6	7.2	10	250	0.47	3.00		4	100				84	95	80
29	7.7	7.2	5	123	0.34	2.96		3	74				95	96	82
30	8.0	7.2	4	98	1.02	2.93		9	220				94	90	79
31	6.0	7.2	6	148	0.62	2.96		5	123				90	92	67
Total	229.3	227.5	369	9,279	16.13	93.21		164	4,116				2,461	2,865	2,388
Max.	8.4	8.0	20	507	1.02	3.13		11	286				95	96	93
Min.	5.6	7.1	4	98	0.22	2.85		2	50				67	88	49
Avg.	7.4	7.3	12	299	0.52	3.01		5	133				79	92	77

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MISCELLANEOUS & SLUDGE SHEET - JANUARY 1988

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	Other	Raw Sludge Gals.	Raw Sludge Total Solids Percent	Raw Sludge Vol. Solids Percent	Raw Sludge pH
1	11,000	2,880	560		397		6,000	3.7	76	6.2
2	9,900	3,000	400		397		6,000	3.6	75	6.1
3	8,100	2,880	530		298		6,000	3.6	75	6.1
4	11,800	3,000	560		496		7,000	4.0	73	6.3
5	13,500	3,120	520		298		7,000	3.5	75	6.4
6	12,800	2,640	560		397		6,500	3.5	76	6.4
7	12,200	2,880	500		397		6,000	3.4	73	6.4
8	10,600	2,760	530		397		6,000	3.4	76	6.4
9	10,500	2,760	550		397		6,000	3.1	73	6.4
10	10,200	2,880	560		298		6,000	3.0	76	6.4
11	8,400	2,640	580		298		6,000	3.4	75	6.4
12	5,900	2,760	420		397		6,000	3.6	75	6.4
13	10,400	2,880	550		397		6,000	3.7	75	6.4
14	9,500	2,760	430		298		5,000	3.6	76	6.3
15	6,900	2,760	540		397		6,000	3.5	73	6.3
16	3,900	2,640	440		298		6,000	3.5	73	6.3
17	4,300	2,520	510		397		6,000	3.5	77	6.3
18	5,000	2,640	500		397		6,000	3.7	79	6.3
19	5,300	2,520	570		397		6,000	3.8	72	6.4
20	5,900	2,520	470		397		6,000	4.0	72	6.5
21	7,400	2,640	580		397		6,000	4.0	73	6.4
22	7,500	2,640	530		397		6,000	4.2	73	6.4
23	5,200	2,640	520		397		4,000	3.8	74	6.4
24	5,300	2,520	610		298		4,000	4.1	71	6.4
25	5,700	2,880	470		298		6,000	4.2	73	6.2
26	7,200	2,640	630		397		5,000	4.4	73	6.4
27	8,400	2,760	400		397		4,000	4.9	72	6.2
28	8,600	2,760	480		199					
29	4,800	2,520	580		397		6,000	4.8	71	6.1
30	4,200	2,400	380		199		4,000	4.7	73	6.1
31	3,500	2,520	590		298		4,000	5.0	73	5.9
Total	243,900	84,360	16,050		11,119		170,500	115.2	2,221	189.2
Max.	13,500	3,120	630		496		7,000	5.0	79	6.5
Min.	3,500	2,400	380		199		4,000	3.0	71	5.9
Avg.	7,868	2,721	518		359		5,683	3.8	74	6.3

Manpower & Hours

	Total Hr
Superintendent 1	^160
Asst. Supt. 1	^160
Operators 3	^484
Total	^804

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
FEBRUARY, 1988 - PLANT INFLUENT SHEET - SAMPLING CODE 500

	----Weather-----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1	5	0.36	3.01	50	7.2	76	1,908	60	1,506	1.95	49	50		
2	3		2.79	49	7.2	76	1,768	84	1,955	3.20	74	68		
3	5	0.45	2.93	50	7.3	70	1,711	56	1,368	2.05	50	42		
4	5	0.03	3.11	50	7.3	58	1,504	48	1,245	1.70	44	36		
5	5	0.03	3.09	49	7.4	48	1,237	48	1,237	2.45	63	40		
6	1		2.84	49	7.6	52	1,232	54	1,279	1.80	43	52		
7	5	0.01	3.02	50	7.2	54	1,360	60	1,511	1.40	35	48		
8	5	0.05	3.12	50	7.3	56	1,457	52	1,353	1.80	47	40		
9	5	0.01	3.13	49	7.2	52	1,357	60	1,566	2.45	64	30		
10	5	0.10	3.10	49	7.5	54	1,396	54	1,396	2.85	74	40		
11	5	0.12	3.08	49	7.5	54	1,387	60	1,541	1.90	49	46		
12	5	0.08	3.07	49	7.3	68	1,741	66	1,690	2.10	54	48		
13	1		3.01	49	7.3	60	1,506	65	1,632	1.80	45	45		
14	4	0.24	3.10	49	7.5	64	1,655	66	1,706	1.95	50	42		
15	1		3.25	50	7.6	68	1,843	76	2,060	2.55	69	48		
16	3		3.17	49	7.5	60	1,586	48	1,269	1.95	52	38		
17	1		3.08	50	7.5	60	1,541	136	3,493	2.30	59	102		
18	1		3.17	49	7.6	76	2,009	100	2,644	2.55	67	80		
19	5	0.23	3.09	49	7.4	76	1,959	100	2,577	2.85	73	64		
20	5	0.02	3.01	50	7.6	56	1,406	64	1,607	2.40	60	48		
21	1		3.03	49	7.3	56	1,415	70	1,769	1.80	45	60		
22	1		3.16	50	7.4	64	1,687	48	1,265	2.85	75	40		
23	5		3.13	50	7.5	62	1,618	84	2,193	2.55	67	64		
24	5		3.09	50	7.6	72	1,855	68	1,752	1.90	49	58		
25	1		3.11	50	7.4	64	1,660	70	1,816	2.20	57	48		
26	1		3.09	50	7.6	72	1,855	58	1,495	2.90	75	48		
27	1		3.06	50	7.6	76	1,940	56	1,429	2.55	65	50		
28	1		3.08	49	7.4	72	1,849	56	1,438	1.90	49	46		
29	1		3.12	49	7.2	70	1,821	70	1,821	2.65	69	52		
30														
31														
Total	92	1.73	89.04	1,435	215.0	1,846	47,266	1,937	49,614	65.30	1,673	1,473		
Max.	5	0.45	3.25	50	7.6	76	2,009	136	3,493	3.20	75	102		
Min.	1	0.01	2.79	49	7.2	48	1,232	48	1,237	1.40	35	30		
Avg.	3	0.13	3.07	49	7.4	64	1,630	67	1,711	2.25	58	51		

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT - PLANT No. 130029
FEBRUARY, 1988 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	665.00	^85004	^00535	^00610	^50050			
Day												
1	48	1,205	42	1,054	1.80	45	32		3.01	37	30	8
2	64	1,489	46	1,070	3.00	70	32		2.79	16	45	6
3	46	1,124	32	782	1.95	48	28		2.93	34	43	5
4	40	1,037	40	1,037	1.60	41	28		3.11	31	17	6
5	38	979	36	928	3.50	90	28		3.09	21	25	0
6	36	853	40	947	1.70	40	32		2.84	31	26	6
7	36	907	32	806	1.20	30	20		3.02	33	47	14
8	36	937	46	1,197	1.60	42	38		3.12	36	12	11
9	38	992	34	888	2.20	57	24		3.13	27	43	10
10	32	827	22	569	2.45	63	16		3.10	41	59	14
11	46	1,182	48	1,233	1.95	50	30		3.08	15	20	3
12	42	1,075	32	819	1.90	49	18		3.07	38	52	10
13	50	1,255	52	1,305	1.30	33	40		3.01	17	20	28
14	42	1,086	44	1,138	1.80	47	22		3.10	34	33	8
15	50	1,355	36	976	3.40	92	24		3.25	26	53	0
16	36	952	34	899	1.70	45	26		3.17	40	29	13
17	32	822	40	1,027	1.95	50	30		3.08	47	71	15
18	34	899	30	793	2.05	54	28		3.17	55	70	20
19	38	979	34	876	2.20	57	24		3.09	50	66	23
20	20	502	40	1,004	1.95	49	18		3.01	64	38	19
21	36	910	30	758	1.35	34	22		3.03	36	57	25
22	44	1,160	36	949	2.40	63	34		3.16	31	25	16
23	40	1,044	50	1,305	2.20	57	38		3.13	35	40	14
24	30	773	32	825	1.40	36	20		3.09	58	53	26
25	32	830	32	830	1.65	43	22		3.11	50	54	25
26	48	1,237	40	1,031	2.55	66	34		3.09	33	31	12
27	40	1,021	34	868	1.90	48	24		3.06	47	39	25
28	40	1,027	22	565	1.50	39	20		3.08	44	61	21
29	52	1,353	42	1,093	2.10	55	32		3.12	26	40	21
30												
31												
Total	1,166	29,813	1,078	27,573	58.25	1,493	784		89.04	1,053	1,199	404
Max.	64	1,489	52	1,305	3.50	92	40		3.25	64	71	28
Min.	20	502	22	565	1.20	30	16		2.79	15	12	0
Avg.	40	1,028	37	951	2.01	51	27		3.07	36	41	14

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT - PLANT No. 130029
FEBRUARY, 1988 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading f/m	Mix Liq SS mg/L	Mix Liq VSS mg/L	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mg/L	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mg/l	PE SS mg/L
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	2.9	4.9	0.33	1,714	1,227	23.0	0.75	4.7	146	0.49	0.33	45	32	3.01	48	42
2		3.1	4.8	0.39	1,713	1,270	22.0	0.78	5.7	151	0.51	0.37	49	32	2.79	64	46
3		2.9	6.6	0.31	1,718	1,228	21.0	0.82	4.6	150	0.47	0.34	46	32	2.93	46	32
4		2.8	4.8	0.28	1,680	1,235	21.0	0.80	6.8	150	0.51	0.37	43	32	3.11	40	40
5		2.8	5.2	0.27	1,625	1,196	20.0	0.81	6.8	154	0.48	0.35	42	32	3.09	38	36
6		3.0	5.3		1,666					154			48	26	2.84	36	40
7		2.9	6.1		1,645					148			45	32	3.02	36	32
8		2.8	4.0	0.26	1,605	1,187	18.0	0.89	5.4	149	0.46	0.34	44	32	3.12	36	46
9		2.8	5.5	0.27	1,630	1,228	18.0	0.91	6.4	148	0.48	0.35	43	32	3.13	38	34
10		2.8	8.6	0.24	1,637	1,141	17.0	0.96	5.4	151	0.46	0.34	43	32	3.10	32	22
11		2.8	3.7	0.35	1,532	1,129	17.0	0.90	6.4	150	0.48	0.35	44	32	3.08	46	48
12		2.8	5.7	0.32	1,560	1,118	17.0	0.92	6.3	149	0.45	0.33	44	26	3.07	42	32
13		2.9	3.7		1,624					148			45	26	3.01	50	52
14		2.8	4.5		1,693					138			44	26	3.10	42	44
15		2.7	5.1		1,672					144			42	27	3.25	50	36
16		2.7	5.6	0.26	1,679	1,200	19.0	0.88	5.1	145	0.47	0.33	44	27	3.17	36	34
17		2.8	4.9	0.23	1,669	1,175	19.0	0.88	4.6	142	0.51	0.36	43	27	3.08	32	40
18		2.7	6.5	0.25	1,720	1,217	19.0	0.91	5.1	144	0.51	0.36	43	27	3.17	34	30
19		2.8	5.9	0.27	1,738	1,215	20.0	0.87	5.0	139	0.50	0.35	44	27	3.09	38	34
20		2.9	5.2		1,749					147			45	29	3.01	20	40
21		2.8	6.8		1,732					143			44	27	3.03	36	30
22		2.7	5.4	0.33	1,710	1,180	20.0	0.86	6.2	139	0.51	0.36	43	32	3.16	44	36
23		2.8	3.8	0.30	1,650	1,157	20.0	0.83	6.5	146	0.47	0.33	43	36	3.13	40	50
24		2.8	6.2	0.22	1,710	1,197	21.0	0.81	6.3	148	0.44	0.31	44	29	3.09	30	32
25		2.8	5.9	0.24	1,632	1,153	19.0	0.86	5.5	147	0.46	0.33	45	29	3.11	32	32
26		2.8	4.4	0.39	1,524	1,058	19.0	0.80	5.8	140	0.46	0.32	43	26	3.09	48	40
27		2.8	5.7		1,650					144			44	26	3.06	40	34
28		2.8	8.7		1,650					141			44	29	3.08	40	22
29		2.8	4.4	0.40	1,603	1,130	21.0	0.76	5.9	143	0.47	0.33	43	29	3.12	52	42
30																	
31																	
Total	48	81.5	158.0	5.92	48,130	23,641	391.0	16.99	114.5	4,238	9.59	6.85	1,279	851	89.04	1,166	1,078
Max.	48	3.1	8.7	0.40	1,749	1,270	23.0	0.96	6.8	154	0.51	0.37	49	36	3.25	64	52
Min.	48	2.7	3.7	0.22	1,524	1,058	17.0	0.75	4.6	138	0.44	0.31	42	26	2.79	20	22
Avg.	48	2.8	5.4	0.30	1,660	1,182	19.6	0.85	5.7	146	0.48	0.34	44	29	3.07	40	37

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 W. PEARL ST. MARSHALL MI 49068 - PERMIT No. MIoo23540
FEBRUARY, 1988 - DISCHARGE MONITORING REPORT - DISCHARGE No. 001A

	D.O. mg/L	pH SU	SS mg/L	SS Lbs.	Total-P mg/L	Flow MGD	Chlorine mg/L	BOD mg/L	BOD Lbs.	NH3 as N mg/L	NH3-N Lbs.	F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	7.1	7.1	4	100	0.37	3.01		4	100				93	95	81
2	7.1	7.1	10	233	0.68	2.79		8	186				88	89	79
3	6.8	7.1	6	147	0.64	2.93		7	171				89	90	69
4	7.4	7.1	7	182	0.42	3.11		3	78				85	95	75
5	7.2	7.2	3	77	0.42	3.09		4	103				94	92	83
6	7.2	7.3	10	237	0.58	2.84		4	95				81	92	68
7	7.7	7.2	3	76	0.32	3.02		3	76				95	94	77
8	7.0	7.2	6	156	0.30	3.12		3	78				88	95	83
9	7.1	7.2	2	52	0.32	3.13		3	78				97	94	87
10	7.0	7.2	4	103	0.68	3.10		3	78				93	94	76
11	7.4	7.2	10	257	0.43	3.08		3	77				83	94	77
12	7.3	7.1	3	77	0.37	3.07		4	102				95	94	82
13	7.1	7.2	7	176	0.20	3.01		3	75				89	95	89
14	7.2	7.3	3	78	0.37	3.10		4	103				95	94	81
15	7.2	7.5	7	190	0.38	3.25		4	108				91	94	85
16	7.1	7.3	5	132	0.38	3.17		3	79				90	95	81
17	6.9	7.3	9	231	0.28	3.08		2	51				93	97	88
18	6.8	7.3	7	185	0.32	3.17		2	53				93	97	87
19	6.4	7.2	9	232	0.32	3.09		2	52				91	97	89
20	5.5	7.3	8	201	0.32	3.01		3	75				88	95	87
21	5.9	7.4	8	202	0.66	3.03		2	51				89	96	63
22	5.6	7.4	6	158	0.37	3.16		2	53				88	97	87
23	5.5	7.3	8	209	0.44	3.13		2	52				90	95	83
24	6.9	7.3	8	206	0.32	3.09		3	77				88	97	83
25	7.9	7.3	5	130	0.35	3.11		2	52				93	95	84
26	6.9	7.4	6	155	0.40	3.09		3	77				90	96	86
27	6.8	7.4	6	153	0.41	3.06		5	128				89	93	84
28	7.1	7.4	4	103	0.34	3.08		3	77				93	96	82
29	6.9	7.4	8	208	0.30	3.12		3	78				89	96	89
30															
31															
Total	200.0	210.7	182	4,644	11.69	89.04		97	2,464				2,620	2,743	2,365
Max.	7.9	7.5	10	257	0.68	3.25		8	186				97	97	89
Min.	5.5	7.1	2	52	0.20	2.79		2	51				81	89	63
Avg.	6.9	7.3	6	160	0.40	3.07		3	85				90	95	82

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MISCELLANEOUS & SLUDGE SHEET - FEBRUARY, 1988

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	Other	Raw Sludge Gals.	Raw Sludge Total Solids Percent	Raw Sludge Vol. Solids Percent	Raw Sludge pH
1	5,900	2,640	350		397		6,000	4.6	73	5.9
2	8,600	2,760	550		199		5,000	4.8	71	5.9
3	8,700	2,640	510		298		6,000	5.0	71	6.1
4	9,300	2,760	590		298		6,000	4.8	73	6.1
5	12,700	2,760	560		397		6,000	5.0	75	6.1
6	13,400	2,760	420		397		4,000	4.5	73	6.0
7	10,800	2,760	440		298		4,000	4.5	74	5.9
8	8,600	2,760	460		199		6,000	4.9	70	6.1
9	9,300	2,760	410		298		6,000	4.6	75	6.2
10	10,300	2,760	500		298		6,000	4.6	75	6.1
11	10,700	2,760	500		298		6,000	4.3	77	6.2
12	10,200	2,760	560		298		6,000	4.5	77	6.2
13	9,300	2,760	420		298		1,800	4.0	75	6.3
14	5,900	2,520	400		397		3,000	5.2	74	6.2
15	8,400	2,640	550		298		4,000	4.4	75	6.4
16	7,900	2,640	460		397		6,000	4.5	75	6.1
17	7,100	2,760	580		298		5,000	4.5	73	6.2
18	6,900	2,640	590		397		6,000	4.7	75	6.4
19	6,200	2,520	470		397		6,000	4.8	74	6.4
20	9,600	2,640	390		397		4,000	5.5	69	6.4
21	8,400	2,640	440		397		4,000	4.9	71	6.2
22	5,800	2,640	550		397		6,000	4.5	74	6.2
23	9,000	2,760	420		298		6,000	4.7	70	6.3
24	9,700	2,760	460		397		6,000	4.7	73	6.5
25	9,700	2,640	560		199		6,000	4.2	72	6.4
26	6,400	2,640	540		397		6,000	5.0	71	6.3
27	7,000	2,760	510		397		4,000	4.4	72	6.5
28	5,600	2,520	550		298		4,000	3.6	72	6.6
29	6,500	2,640	490		397		4,000	4.9	72	6.2
30										
31										
Total	247,900	78,000	14,230		9,731		148,800	134.6	2,121	180.4
Max.	13,400	2,760	590		397		6,000	5.5	77	6.6
Min.	5,600	2,520	350		199		1,800	3.6	69	5.9
Avg.	8,548	2,690	491		336		5,131	4.6	73	6.2

Manpower & Hours

	Total Hr
Superintendent 1	^160
Asst. Supt. 1	^160
Operators 3	^484
Total	^804

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MARCH, 1988 - PLANT INFLUENT SHEET - SAMPLING CODE 500

	Weather		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	Remarks or Other Parameters
	Type	Precip.	MGD	F	SU	mg/L	Lbs.	mg/L	Lbs.	mg/L	Lbs.	mg/L	mg/L	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1	3		2.83	49	7.7	94	2,219	74	1,747	1.95	46	56		
2	3		2.88	49	7.4	70	1,681	50	1,201	2.75	66	42		
3	1		2.85	49	7.5	72	1,711	68	1,616	2.10	50	58		
4	1		2.80	49	7.5	74	1,728	52	1,214	2.40	56	28		
5	1		2.75	49	7.6	94	2,156	66	1,514	2.90	67	54		
6	1		2.84	49	7.6	58	1,374	56	1,326	1.70	40	46		
7	1		2.82	49	7.4	56	1,317	60	1,411	1.65	39	44		
8	4	0.06	2.87	49	7.5	56	1,340	54	1,293	1.90	45	44		
9	3		2.85	49	7.7	58	1,379	64	1,521	2.40	57	50		
10	1		2.83	49	7.7	88	2,077	50	1,180	2.90	68	46		
11	4	0.09	2.86	49	7.6	74	1,765	44	1,050	2.75	66	32		
12	4	0.15	2.83	49	7.5	62	1,463	52	1,227	1.70	40	48		
13	5	0.05	2.79	49	7.4	58	1,350	52	1,210	1.70	40	48		
14	5	0.03	2.89	49	7.7	84	2,025	50	1,205	1.95	47	42		
15	5	0.01	2.89	49	7.6	114	2,748	74	1,784	4.10	99	64		
16	1		2.88	49	7.5	86	2,066	54	1,297	3.85	92	42		
17	5	0.04	2.85	49	7.6	74	1,759	74	1,759	2.40	57	58		
18	3		2.77	49	7.5	66	1,525	60	1,386	1.90	44	54		
19	5	0.09	2.72	48	7.8	64	1,452	64	1,452	3.20	73	52		
20	5	0.02	2.77	49	7.5	64	1,479	54	1,247	3.20	74	46		
21	1		2.82	49	7.6	100	2,352	58	1,364	2.90	68	52		
22	1		2.83	49	7.6	92	2,171	82	1,935	2.40	57	78		
23	4	0.04	2.80	50	7.5	94	2,195	68	1,588	3.65	85	52		
24	4	0.37	2.81	50	7.6	74	1,734	6	141	2.40	56	52		
25	4	0.03	2.75	50	7.6	76	1,743	22	505	1.65	38	12		
26	4	0.03	2.71	50	7.7	84	1,899	42	949	1.65	37	34		
27	1		2.70	50	7.5	98	2,207	74	1,666	2.75	62	52		
28	4	0.35	2.84	49	7.5	92	2,179	62	1,469	2.45	58	50		
29	4	0.50	2.81	49	7.5	100	2,344	58	1,359	2.20	52	54		
30	1		2.86	49	7.5	64	1,527	54	1,288	2.05	49	46		
31	3		2.88	49	7.6	72	1,729	60	1,441	1.65	40	44		
Total	92	1.86	87.38	1,523	234.5	2,412	56,691	1,758	41,345	75.15	1,767	1,480		
Max.	5	0.50	2.89	50	7.8	114	2,748	82	1,935	4.10	99	78		
Min.	1	0.01	2.70	48	7.4	56	1,317	6	141	1.65	37	12		
Avg.	3	0.12	2.82	49	7.6	78	1,829	57	1,334	2.42	57	48		

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT - PLANT No. 130029
MARCH, 1988 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mg/L	P Eff. BOD Lbs.	P Eff. SS mg/L	P. Eff. SS Lbs.	P Eff. Phos. mg/L	P Eff. Phos. Lbs.	P Eff. VSS mg/L	P Eff. NH3-N mg/L	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	64	1,511	40	944	1.65	39	30		2.83	33	46	15
2	56	1,345	36	865	2.45	59	28		2.88	20	28	11
3	54	1,284	48	1,141	2.05	49	38		2.85	25	29	2
4	50	1,168	42	981	2.20	51	26		2.80	32	19	8
5	50	1,147	36	826	2.30	53	28		2.75	47	45	21
6	52	1,232	56	1,326	1.70	40	46		2.84	10	0	0
7	42	988	44	1,035	1.40	33	36		2.82	25	27	15
8	38	910	34	814	1.70	41	28		2.87	32	37	10
9	44	1,046	44	1,046	2.05	49	38		2.85	24	31	15
10	68	1,605	32	755	2.30	54	28		2.83	23	36	21
11	56	1,336	34	811	2.55	61	26		2.86	24	23	7
12	50	1,180	26	614	1.65	39	20		2.83	19	50	3
13	44	1,024	42	977	1.50	35	32		2.79	24	19	12
14	64	1,543	48	1,157	1.70	41	40		2.89	24	4	13
15	74	1,784	52	1,253	3.50	84	40		2.89	35	30	15
16	58	1,393	48	1,153	3.65	88	38		2.88	33	11	5
17	50	1,188	46	1,093	2.45	58	36		2.85	32	38	-2
18	46	1,063	50	1,155	1.65	38	44		2.77	30	17	13
19	42	953	56	1,270	2.90	66	44		2.72	34	13	9
20	46	1,063	42	970	3.30	76	38		2.77	28	22	-3
21	72	1,693	56	1,317	3.00	71	48		2.82	28	3	0
22	74	1,747	66	1,558	2.90	68	56		2.83	20	20	0
23	94	2,195	58	1,354	3.30	77	48		2.80	0	15	0
24	70	1,640	48	1,125	2.55	60	40		2.81	5	20	1
25	60	1,376	30	688	1.65	38	20		2.75	21	0	0
26	76	1,718	64	1,446	2.20	50	58		2.71	10	0	0
27	82	1,846	80	1,801	2.85	64	62		2.70	16	0	0
28	68	1,611	60	1,421	2.65	63	48		2.84	26	3	0
29	54	1,266	48	1,125	1.95	46	42		2.81	46	17	0
30	56	1,336	60	1,431	2.20	52	48		2.86	13	0	11
31	60	1,441	52	1,249	1.80	43	42		2.88	17	13	0
												0
Total	1,814	42,628	1,478	34,703	71.70	1,685	1,196		87.38	756	616	202
Max.	94	2,195	80	1,801	3.65	88	62		2.89	47	50	21
Min.	38	910	26	614	1.40	33	20		2.70	0	0	-3
Avg.	59	1,375	48	1,119	2.31	54	39		2.82	24	20	6

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT - PLANT No. 130029
MARCH, 1988 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	3.0	5.3	0.44	1,660	1,145	20.0	0.83	6.0	140	0.47	0.33	48	26	2.83	64	40
2		3.0	6.3	0.34	1,806	1,320	23.0	0.79	7.2	186	0.51	0.37	47	36	2.88	56	36
3		3.0	4.7	0.33	1,785	1,288	23.0	0.78	7.4	200	0.52	0.37	48	36	2.85	54	48
4		3.1	5.3	0.30	1,750	1,291	24.0	0.73	7.5	199	0.44	0.33	50	43	2.80	50	42
5		3.1	6.2		1,700					197			50	43	2.75	50	36
6		3.0	3.7		1,631					194			47	43	2.84	52	56
7		3.1	4.8	0.27	1,662	1,232	23.0	0.72	7.1	192	0.48	0.35	47	33	2.82	42	44
8		3.0	6.2	0.25	1,681	1,216	23.0	0.73	6.0	186	0.46	0.34	46	32	2.87	38	34
9		3.0	4.7	0.29	1,652	1,211	22.0	0.75	4.7	181	0.47	0.34	48	32	2.85	44	44
10		3.0	6.4	0.45	1,624	1,193	22.0	0.74	6.2	180	0.44	0.32	47	32	2.83	68	32
11		3.0	6.0	0.39	1,631	1,149	22.0	0.74	6.2	179	0.47	0.33	48	32	2.86	56	34
12		3.0	8.3		1,694					178			48	32	2.83	50	26
13		3.1	5.1		1,657					184			49	32	2.79	44	42
14		3.0	4.1	0.46	1,573	1,121	20.0	0.79	6.2	185	0.46	0.32	47	32	2.89	64	48
15		3.0	3.8	0.51	1,610	1,177	22.0	0.73	6.2	184	0.46	0.33	47	32	2.89	74	52
16		3.0	4.5	0.37	1,747	1,252	24.0	0.73	6.2	185	0.45	0.33	47	39	2.88	58	48
17		3.0	4.8	0.32	1,735	1,247	24.0	0.72	4.7	184	0.49	0.35	48	35	2.85	50	46
18		3.1	4.7	0.28	1,797	1,269	24.0	0.75	6.8	180	0.46	0.33	50	40	2.77	46	50
19		3.2	4.1		1,739				6.9	181			50	40	2.72	42	56
20		3.1	5.2		1,690				7.2	186			49	40	2.77	46	42
21		3.1	3.7	0.49	1,630	1,159	21.0	0.78	7.6	185	0.47	0.37	49	40	2.82	72	56
22		3.0	3.3	0.47	1,723	1,240	21.0	0.82	7.6	178	0.47	0.34	48	43	2.83	74	66
23		3.1	3.8	0.57	1,740	1,285	21.0	0.83	5.0	172	0.50	0.39	48	46	2.80	94	58
24		3.1	4.8	0.44	1,786	1,244	20.0	0.89	4.6	170	0.47	0.35	48	46	2.81	70	48
25		3.1	7.2	0.38	1,649	1,195	20.0	0.82	4.6	171	0.48	0.35	49	42	2.75	60	30
26		3.2	3.6		1,736				5.3	178			48	46	2.71	76	64
27		3.2	2.8		1,702				3.3	182			50	46	2.70	82	80
28		3.0	3.6	0.41	1,700	1,313	22.0	0.77	4.9	174	0.45	0.33	47	46	2.84	68	60
29		3.1	5.0	0.30	1,891	1,418	20.0	0.95	5.1	173	0.47	0.36	49	52	2.81	54	48
30		3.0	3.3	0.36	1,595	1,232	19.0	0.84	6.5	180	0.47	0.35	48	53	2.86	56	60
31		3.0	4.0	0.37	1,661	1,294	21.0	0.79	6.3	179	0.48	0.39	48	29	2.88	60	52
Total	48	94.8	149.2	8.79	52,637	28,491	501.0	18.01	163.3	5,623	10.84	7.97	1,493	1,199	87.38	1,814	1,478
Max.	48	3.2	8.3	0.57	1,891	1,418	24.0	0.95	7.6	200	0.52	0.39	50	53	2.89	94	80
Min.	48	3.0	2.8	0.25	1,573	1,121	19.0	0.72	3.3	140	0.44	0.32	46	26	2.70	38	26
Avg.	48	3.1	4.8	0.38	1,698	1,239	21.8	0.78	6.0	181	0.47	0.35	48	39	2.82	59	48

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 W. PEARL ST. MARSHALL MI 49068 - PERMIT No. MI0023540
MARCH, 1988 - DISCHARGE MONITORING REPORT - DISCHARGE No. 001A

	D.O. mg/L	pH SU	SS mg/L	SS Lbs.	Total-P mg/L	Flow MGD	Chlorine mg/L	BOD mg/L	BOD Lbs.	NH3 as N mg/L	NH3-N Lbs.	F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	5.6	7.3	9	212	0.55	2.83		10	236				88	89	72
2	5.3	7.4	8	192	0.46	2.88		8	192				84	89	83
3	6.4	7.3	7	166	0.40	2.85		6	143				90	92	81
4	6.9	7.3	7	163	0.32	2.80		5	117				87	93	87
5	7.2	7.5	5	115	0.37	2.75		5	115				92	95	87
6	7.5	7.4	6	142	0.27	2.84		4	95				89	93	84
7	7.8	7.3	6	141	0.22	2.82		4	94				90	93	87
8	7.8	7.3	1	24	0.18	2.87		3	72				98	95	91
9	7.7	7.5	9	214	0.25	2.85		4	95				86	93	89
10	7.7	7.5	3	71	0.32	2.83		5	118				94	94	89
11	7.7	7.4	5	119	0.42	2.86		4	95				89	95	85
12	6.7	7.4	3	71	0.38	2.83		4	94				94	94	78
13	6.1	7.4	8	186	0.28	2.79		4	93				85	93	83
14	7.8	7.5	6	145	0.27	2.89		5	121				88	94	86
15	7.0	7.3	8	193	0.35	2.89		4	96				89	96	91
16	6.9	7.4	6	144	0.82	2.88		7	168				89	92	78
17	6.8	7.5	7	166	0.64	2.85		4	95				91	95	73
18	7.0	7.4	5	116	0.27	2.77		4	92				92	94	86
19	6.9	7.5	6	136	0.40	2.72		3	68				91	95	88
20	7.2	7.5	8	185	0.90	2.77		4	92				85	94	72
21	7.2	7.4	6	141	0.64	2.82		4	94				90	96	77
22	7.2	7.4	6	142	0.44	2.83		6	142				93	93	82
23	7.1	7.4	7	163	0.66	2.80		12	280				90	87	82
24	7.0	7.4	4	94	0.56	2.81		8	187				93	89	76
25	6.8	7.4	3	69	0.37	2.75		5	115				86	93	78
26	5.5	7.5	2	45	0.28	2.71		5	113				95	94	83
27	5.1	7.5	5	113	0.28	2.70		6	135				93	94	90
28	7.3	7.3	7	166	0.38	2.84		7	166				88	92	84
29	6.6	7.3	2	47	0.27	2.81		4	94				97	96	87
30	7.4	7.3	6	143	0.20	2.86		3	72				98	95	90
31	7.6	7.4	5	120	0.37	2.88		4	96				92	94	78
Total	214.8	229.4	176	4,144	12.52	87.38		161	3,785				2,806	2,891	2,577
Max.	7.8	7.5	9	214	0.90	2.89		12	280				98	96	91
Min.	5.1	7.3	1	24	0.18	2.70		3	68				84	87	72
Avg.	6.9	7.4	6	134	0.40	2.82		5	122				91	93	83

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MISCELLANEOUS & SLUDGE SHEET - MARCH, 1988

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	Other	Raw Sludge Gals.	Raw Sludge Total Solids Percent	Raw Sludge Vol. Solids Percent	Raw Sludge pH
1	5,800	2,640	580		199		6,000	4.1	71	6.4
2	5,300	2,760	500		298		6,000	4.5	71	6.6
3	9,600	3,000	520		298		6,000	4.9	73	6.4
4	8,100	3,000	670		397		6,000	3.3	73	6.6
5	6,200	2,760	400		298		4,000	5.4	72	6.5
6	5,100	2,760	430		298		4,000	4.6	71	6.5
7	4,300	2,760	510		298		6,000	4.7	72	6.5
8	2,300	2,640	530		298		6,000	4.4	74	6.6
9	5,200	2,880	630		397		6,000	4.3	72	6.6
10	6,100	2,640	520		199		5,000	4.4	75	6.8
11	800	2,520	670		298		5,000	4.3	72	6.8
12	4,100	2,760	450		298		4,000	3.9	73	6.8
13	8,100	2,640	490		397		3,000	4.3	74	6.7
14	9,500	2,880	530		199		4,000	4.4	74	6.7
15	8,400	2,760	460		298		4,000	4.9	77	6.5
16	7,400	2,880	440		298		4,000	4.8	73	6.5
17	6,600	2,880	450		397		4,000	4.3	75	6.4
18	7,400	2,640	630		199		4,500	4.9	73	6.4
19	7,500	2,760	460		397		4,000	4.6	73	6.5
20	8,300	2,760	520		298		4,000	4.7	72	6.4
21	7,600	2,880	450		298		4,000	4.8	75	6.3
22	5,000	2,760	400		397		4,000	4.9	73	6.3
23	300	2,520	680		298		4,000	5.0	74	6.2
24	100	2,400	480		298		4,000	4.9	73	6.3
25	100	2,520	510		298		5,000	5.2	72	6.2
26	4,000	2,760	400		298		4,000	5.2	73	6.2
27	5,800	2,760	470		298		4,000	5.3	75	6.2
28	4,300	2,640	640		298		10,000	5.5	75	6.4
29	2,400	2,640	530		298		6,000	2.7	73	6.5
30	5,200	2,640	580		298		6,000	5.1	75	6.3
31	3,800	2,640	510		298		6,000	4.7	73	6.2
Total	164,700	84,480	16,040		9,436		152,500	143.0	2,271	200.3
Max.	9,600	3,000	680		397		10,000	5.5	77	6.8
Min.	100	2,400	400		199		3,000	2.7	71	6.2
Avg.	5,313	2,725	517		304		4,919	4.6	73	6.5

Manpower & Hours

	Total Hr
Superintendent 1	^184
Asst. Supt. 1	^184
Operators 3	^552
Total	^920

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
APRIL, 1988 - PLANT INFLUENT SHEET - SAMPLING CODE 500

	----Weather-----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1	4	0.08	2.79	49	7.5	94	2,187	74	1,722	1.65	38	56		
2	4	0.16	2.70	50	7.5	64	1,441	70	1,576	1.65	37	66		
3	4	0.35	2.80	50	7.5	48	1,121	42	981	1.30	30	40		
4	1		2.90	50	7.3	52	1,258	46	1,113	1.65	40	36		
5	4	0.01	3.04	50	8.3	56	1,420	52	1,318	1.80	46	42		Fischer-Porter serviceman
6	4	1.97	3.54	50	7.8	74	2,185	104	3,070	2.45	72	86		in April 5, for the second
7	1		3.62	49	7.4	80	2,415	70	2,113	2.65	80	64		time in 35 days,To try to
8	1		3.58	49	7.3	62	1,851	50	1,493	1.90	57	46		recalibrate the flow meter.
9	1		3.44	49	7.6	52	1,492	42	1,205	1.30	37	32		
10	1		3.48	49	7.6	54	1,567	44	1,277	1.30	38	36		
11	1		3.60	50	7.4	70	2,102	78	2,342	2.30	69	64		
12	1		3.54	50	7.4	56	1,653	52	1,535	1.80	53	48		
13	4	0.13	3.38	51	7.2	60	1,691	56	1,579	1.90	54	50		
14	5	0.01	3.34	51	7.3	58	1,616	54	1,504	1.65	46	48		
15	3		3.34	51	7.4	72	2,006	52	1,448	1.65	46	46		
16	1		3.25	51	7.4	62	1,681	62	1,681	1.50	41	54		
17	4	0.24	3.28	51	7.3	50	1,368	60	1,641	1.65	45	54		
18	1		3.36	51	7.5	96	2,690	64	1,793	1.80	50	52		
19	1		3.34	51	7.5	64	1,783	66	1,838	1.80	50	58		
20	4	0.08	3.32	51	7.4	82	2,270	64	1,772	2.65	73	54		
21	1		3.30	51	7.5	72	1,982	68	1,871	1.80	50	60		
22	4	0.46	3.22	51	7.4	92	2,471	64	1,719	1.80	48	52		
23	3		3.16	51	7.4	76	2,003	56	1,476	1.70	45	34		
24	1		3.16	50	7.6	58	1,529	56	1,476	1.70	45	38		
25	1		3.34	51	7.5	72	2,006	80	2,228	3.20	89	32		
26	4	0.06	3.22	51	7.5	80	2,148	100	2,685	2.65	71	40		
27	4	0.15	3.24	51	7.5	66	1,783	64	1,729	2.65	72	52		
28	1		3.18	51	7.5	66	1,750	66	1,750	2.05	54	52		
29	1		3.10	51	7.5	58	1,500	48	1,241	1.70	44	36		
30	1		3.04	51	7.6	64	1,623	70	1,775	2.40	61	56		
31														
Total	71	3.70	97.60	1,512	224.6	2,010	54,590	1,874	50,954	58.00	1,582	1,484		
Max.	5	1.97	3.62	51	8.3	96	2,690	104	3,070	3.20	89	86		
Min.	1	0.01	2.70	49	7.2	48	1,121	42	981	1.30	30	32		
Avg.	2	0.31	3.25	50	7.5	67	1,820	62	1,698	1.93	53	49		

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT - PLANT No. 130029
APRIL, 1988 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mg/L	P Eff. BOD Lbs.	P Eff. SS mg/L	P. Eff. SS Lbs.	P Eff. Phos. mg/L	P Eff. Phos. Lbs.	P Eff. VSS mg/L	P Eff. NH3-N mg/L	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	46	1,070	46	1,070	1.80	42	38		2.79	51	38	0
2	48	1,081	42	946	1.30	29	38		2.70	25	40	21
3	34	794	38	887	1.35	32	32		2.80	29	10	0
4	44	1,064	50	1,209	1.65	40	44		2.90	15	0	0
5	38	963	44	1,116	1.50	38	36		3.04	32	15	17
6	52	1,535	52	1,535	1.50	44	40		3.54	30	50	39
7	42	1,268	30	906	1.60	48	26		3.62	48	57	40
8	48	1,433	32	955	1.80	54	20		3.58	23	36	5
9	34	975	20	574	1.20	34	8		3.44	35	52	8
10	40	1,161	32	929	1.20	35	24		3.48	26	27	8
11	46	1,381	48	1,441	2.05	62	40		3.60	34	38	11
12	42	1,240	44	1,299	1.90	56	38		3.54	25	15	0
13	40	1,128	38	1,071	1.70	48	32		3.38	33	32	11
14	34	947	32	891	1.65	46	22		3.34	41	41	0
15	58	1,616	36	1,003	1.70	47	30		3.34	19	30	0
16	46	1,247	42	1,138	1.40	38	30		3.25	26	32	7
17	36	985	42	1,149	1.35	37	34		3.28	28	30	18
18	74	2,074	52	1,457	1.65	46	44		3.36	23	19	8
19	44	1,226	50	1,393	1.60	45	46		3.34	31	24	11
20	68	1,883	56	1,551	2.20	61	42		3.32	17	13	17
21	52	1,431	58	1,596	1.90	52	54		3.30	28	15	0
22	64	1,719	52	1,396	2.20	59	40		3.22	30	19	0
23	58	1,529	48	1,265	1.95	51	32		3.16	24	14	0
24	44	1,160	50	1,318	1.60	42	36		3.16	24	11	6
25	32	891	42	1,170	1.60	45	24		3.34	56	48	50
26	54	1,450	48	1,289	1.40	38	38		3.22	33	52	43
27	52	1,405	54	1,459	2.30	62	44		3.24	21	16	13
28	58	1,538	62	1,644	1.90	50	46		3.18	12	6	7
29	42	1,086	40	1,034	1.40	36	34		3.10	28	17	18
30	56	1,420	38	963	2.10	53	32		3.04	13	46	13
31												
Total	1,426	38,699	1,318	35,656	50.45	1,371	1,044		97.60	860	843	371
Max.	74	2,074	62	1,644	2.30	62	54		3.62	56	57	50
Min.	32	794	20	574	1.20	29	8		2.70	12	0	0
Avg.	48	1,290	44	1,189	1.68	46	35		3.25	29	28	12

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT - PLANT No. 130029
APRIL, 1988 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading f/m	Mix Liq SS mg/L	Mix Liq VSS mg/L	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mg/L	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mg/l	PE SS mg/L
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	3.1	4.8		1,730					176			49	29	2.79	46	46
2		3.2	5.5		1,753					163			49	35	2.70	48	42
3		3.1	5.8		1,710					169			48	37	2.80	34	38
4		3.0	4.0	0.28	1,635	1,255	21.0	0.78	5.9	191	0.46	0.35	47	37	2.90	44	50
5		2.8	4.4	0.27	1,622	1,208	20.0	0.81	5.9	181	0.46	0.34	44	37	3.04	38	44
6		2.4	3.1	0.42	1,606	1,211	20.0	0.80	6.3	191	0.46	0.35	41	32	3.54	52	52
7		2.4	5.1	0.37	1,548	1,137	19.0	0.81	7.0	193	0.51	0.37	38	32	3.62	42	30
8		2.4	4.7	0.43	1,512	1,103	18.0	0.84	5.9	195	0.49	0.36	38	27	3.58	48	32
9		2.5	8.3		1,582					194			39	22	3.44	34	20
10		2.5	5.2		1,610					190			39	20	3.48	40	32
11		2.4	3.3	0.39	1,598	1,185	18.0	0.89	6.0	192	0.53	0.39	38	22	3.60	46	48
12		2.4	3.7	0.35	1,621	1,185	19.0	0.85	6.0	191	0.54	0.40	38	22	3.54	42	44
13		2.5	4.8	0.30	1,717	1,269	19.0	0.90	5.1	187	0.55	0.41	40	26	3.38	40	38
14		2.6	5.9	0.24	1,748	1,301	20.0	0.87	5.3	197	0.54	0.40	41	26	3.34	34	32
15		2.6	5.0	0.44	1,691	1,218	20.0	0.85	5.3	200	0.50	0.36	41	29	3.34	58	36
16		2.7	4.6		1,752					193			42	29	3.25	46	42
17		2.6	4.5		1,740					183			41	29	3.28	36	42
18		2.6	3.4	0.58	1,639	1,196	22.0	0.75	5.5	191	0.53	0.38	40	36	3.36	74	52
19		2.6	3.8	0.31	1,746	1,305	23.0	0.76	2.8	190	0.52	0.38	43	36	3.34	44	50
20		2.6	3.2	0.51	1,664	1,244	23.0	0.72	5.4	188	0.46	0.34	46	36	3.32	68	56
21		2.6	3.1	0.38	1,663	1,253	26.0	0.64	5.4	187	0.43	0.33	44	36	3.30	52	58
22		2.7	3.5	0.46	1,653	1,253	26.0	0.64	7.3	186	0.44	0.33	45	36	3.22	64	52
23		2.7	4.0		1,702					185			46	36	3.16	58	48
24		2.7	3.7		1,645					189			46	36	3.16	44	50
25		2.6	4.2	0.24	1,657	1,248	24.0	0.69	7.3	184	0.44	0.33	43	36	3.34	32	42
26		2.7	3.7	0.40	1,594	1,196	24.0	0.66	7.4	184	0.44	0.33	45	36	3.22	54	48
27		2.7	3.3	0.39	1,591	1,204	23.0	0.69	7.2	188	0.45	0.34	45	32	3.24	52	54
28		2.7	3.3	0.38	1,785	1,338	23.0	0.78	6.7	188	0.46	0.34	45	32	3.18	58	62
29		2.8	4.7	0.30	1,622	1,225	23.0	0.71	6.6	186	0.42	0.32	47	36	3.10	42	40
30		2.8	5.0		1,620					184			48	36	3.04	56	38
31																	
Total	48	79.9	131.9	7.45	49,756	24,534	431.0	15.44	120.3	5,616	9.63	7.15	1,296	951	97.60	1,426	1,318
Max.	48	3.2	8.3	0.58	1,785	1,338	26.0	0.90	7.4	200	0.55	0.41	49	37	3.62	74	62
Min.	48	2.4	3.1	0.24	1,512	1,103	18.0	0.64	2.8	163	0.42	0.32	38	20	2.70	32	20
Avg.	48	2.7	4.4	0.37	1,659	1,227	21.6	0.77	6.0	187	0.48	0.36	43	32	3.25	48	44

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 W. PEARL ST. MARSHALL MI 49068 - PERMIT No. MI0023540
APRIL, 1988 - DISCHARGE MONITORING REPORT - DISCHARGE No. 001A

	D.O. mgIL	pH SU	SS mgIL	SS Lbs.	Total-P mgIL	Flow MGD	Chlorine mgIL	BOD mgIL	BOD Lbs.	NH3 as N mgIL	NH3-N Lbs.	F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	7.1	7.4	6	140	0.37	2.79		5	116				92	95	78
2	7.2	7.4	6	135	0.22	2.70		4	90				91	94	87
3	7.2	7.5	7	163	0.18	2.80		2	47				83	96	86
4	7.4	7.3	4	97	0.28	2.90		4	97				91	92	89
5	7.1	7.3	5	127	0.22	3.04		3	76				90	95	88
6	6.6	7.3	9	266	0.30	3.54		5	148				91	93	88
7	7.4	7.2	10	302	0.30	3.62		4	121				86	95	89
8	6.9	7.2	9	269	0.62	3.58		5	149				82	92	67
9	6.6	7.3	7	201	0.48	3.44		4	115				83	92	63
10	7.3	7.4	6	174	0.28	3.48		4	116				86	93	78
11	7.6	7.3	8	240	0.46	3.60		5	150				90	93	80
12	7.5	7.4	5	148	0.51	3.54		5	148				90	91	72
13	6.3	7.2	8	226	0.35	3.38		4	113				86	93	82
14	6.5	7.1	5	139	0.34	3.34		3	84				91	95	79
15	6.5	7.3	5	139	0.34	3.34		17	474				90	76	79
16	6.9	7.4	8	217	0.27	3.25		10	271				87	87	82
17	6.6	7.4	7	191	0.23	3.28		3	82				88	94	86
18	8.5	7.3	9	252	0.34	3.36		15	420				83	84	81
19	7.3	7.3	14	390	0.37	3.34		12	334				79	81	79
20	6.0	7.4	13	360	0.40	3.32		11	305				80	87	85
21	5.6	7.2	8	220	0.40	3.30		7	193				88	90	78
22	5.6	7.3	6	161	0.37	3.22		6	161				90	93	79
23	7.6	7.4	5	132	0.30	3.16		5	132				91	93	82
24	7.6	7.5	8	211	0.30	3.16		4	105				86	93	82
25	7.8	7.4	5	139	0.27	3.34		3	84				94	96	91
26	8.0	7.5	8	215	0.22	3.22		5	134				92	94	92
27	7.7	7.5	5	135	0.30	3.24		5	135				92	92	89
28	6.7	7.5	10	265	0.37	3.18		5	133				85	92	82
29	7.2	7.5	6	155	0.22	3.10		2	52				88	97	87
30	6.7	7.4	3	76	0.27	3.04		4	101				96	94	89
31															
Total	211.0	220.6	215	5,885	9.88	97.60		171	4,684				2,641	2,752	2,469
Max.	8.5	7.5	14	390	0.62	3.62		17	474				96	97	92
Min.	5.6	7.1	3	76	0.18	2.70		2	47				79	76	63
Avg.	7.0	7.4	7	196	0.33	3.25		6	156				88	92	82

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	Other	Raw Sludge Gals.	Raw Sludge Total Solids Percent	Raw Sludge Vol. Solids Percent	Raw Sludge pH
1	1,700	2,640	430		298		4,000	4.7	74	6.3
2	3,300	2,400	480		199		4,000	5.0	75	6.1
3	2,800	2,640	560		298		4,000	4.5	76	6.1
4	1,700	2,640	440		298		4,000	5.0	75	6.2
5	100	2,400	840		199		4,000	5.1	71	6.1
6	2,400	2,760	570		298		5,000	4.8	73	6.2
7	3,000	2,640	610		199		4,000	5.2	72	6.1
8	2,300	2,640	550		298		4,000	5.7	69	5.9
9	2,700	2,760	430		298		6,000	4.6	72	6.1
10	2,200	2,640	490		199		4,000	4.9	71	6.0
11	2,500	2,640	470		298		6,000	5.1	73	6.2
12	1,700	2,640	590		298		6,000	4.7	72	6.1
13	200	2,520	560		199		6,000	4.8	74	6.3
14	2,800	2,760	520		397		6,000	4.4	73	6.3
15	5,800	2,760	570		397		6,000	4.1	74	6.3
16	3,200	2,640	460		397		1,000	4.5	73	6.5
17	3,300	2,640	440		199		1,500	4.7	74	6.2
18	4,500	2,640	480		397		2,000	5.5	72	6.1
19	5,000	2,520	500		298		3,000	4.4	75	6.3
20	4,700	2,760	470		199		4,000	4.3	76	6.3
21	4,000	2,760	460		298		5,000	4.5	73	6.2
22	3,500	2,640	500		199		5,000	4.6	75	6.2
23	2,200	2,640	440		199		4,000	4.5	77	6.3
24	2,700	2,640	520		298		4,000	5.1	73	6.1
25	1,000	2,640	540		199		4,000	5.4	74	6.1
26	1,300	2,520	510		298		6,000	4.7	72	6.1
27	5,400	2,760	510		397		6,000	4.8	72	6.2
28	3,500	2,760	500		199		6,000	4.5	72	6.1
29	1,800	2,520	510		199		6,000	4.8	71	6.2
30	2,000	2,520	400		298		4,000	4.3	73	6.1
31										
Total	83,300	79,080	15,350		8,247		134,500	143.2	2,196	185.3
Max.	5,800	2,760	840		397		6,000	5.7	77	6.5
Min.	100	2,400	400		199		1,000	4.1	69	5.9
Avg.	2,777	2,636	512		275		4,483	4.8	73	6.2

Manpower & Hours

	Total Hr
Superintendent 1	^160
Asst. Supt. 1	^160
Operators 3	^348
Total	^856

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MAY, 1988 - PLANT INFLUENT SHEET - SAMPLING CODE 500

	----Weather-----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1	1		3.06	51	7.4	62	1,582	64	1,633	1.80	46	52	11.4	
2	1		3.16	51	7.6	70	1,845	62	1,634	2.30	61	50	8.2	
3	1		3.12	51	7.5	62	1,613	76	1,978	2.55	66	62	9.1	
4	1		3.14	52	7.5	66	1,728	64	1,676	3.30	86	48	10.7	
5	1		3.16	52	7.5	76	2,003	70	1,845	2.40	63	54	12.3	
6	1		3.10	52	7.6	50	1,293	46	1,189	1.65	43	42	6.4	
7	1		3.02	52	7.5	50	1,259	42	1,058	1.50	38	32	6.9	
8	4	0.08	3.04	52	7.4	48	1,217	68	1,724	1.90	48	56	7.7	
9	4	0.17	3.20	53	7.3	80	2,135	128	3,416	3.20	85	88	8.1	
10	1		3.10	53	7.6	56	1,448	52	1,344	1.80	47	48	9.8	
11	4	0.02	3.11	53	7.5	54	1,401	66	1,712	1.65	43	58	8.8	
12	4	0.10	3.08	53	7.4	58	1,490	56	1,438	1.60	41	38	8.8	
13	1		3.06	53	7.5	58	1,480	72	1,837	1.90	48	60	7.0	
14	1		3.00	53	7.6	70	1,751	102	2,552	1.70	43	80	6.5	
15	4	0.20	3.04	52	7.5	70	1,775	68	1,724	2.10	53	50	8.4	
16	1		3.12	53	7.6	92	2,394	80	2,082	2.30	60	54	10.5	
17	1		3.12	53	7.4	88	2,290	62	1,613	2.05	53	44	7.2	
18	1		3.14	53	7.3	68	1,781	96	2,514	2.05	54	74	7.2	
19	1		3.04	53	7.5	58	1,471	66	1,673	2.05	52	50	8.2	
20	1		2.92	53	7.5	48	1,169	58	1,412	1.95	47	50	7.3	
21	1		2.84	53	7.6	58	1,374	48	1,137	3.50	83	44	10.1	
22	4	0.09	2.88	53	7.6	64	1,537	52	1,249	2.10	50	50	7.9	
23	4	0.13	3.02	54	7.4	102	2,569	66	1,662	2.30	58	56	10.8	
24	1		3.00	54	7.5	82	2,052	80	2,002	2.10	53	68	7.8	
25	1		3.00	55	7.5	74	1,851	68	1,701	2.55	64	54	8.7	
26	1		3.00	55	7.5	98	2,452	68	1,701	2.05	51	54	8.6	
27	1		2.94	55	7.4	100	2,452	80	1,962	1.95	48	62	7.1	
28	1		2.76	53	7.6	66	1,519	52	1,197	1.60	37	42	6.6	
29	1		2.80	52	7.6	64	1,495	60	1,401	2.05	48	48	5.9	
30	1		2.86	54	7.5	88	2,099	70	1,670	3.10	74	64	10.3	
31	1		3.02	55	7.5	78	1,965	84	2,116	2.05	52	70	8.9	
Total	52	0.79	93.85	1,641	232.4	2,158	54,489	2,126	53,854	67.10	1,695	1,702	263.2	
Max.	4	0.20	3.20	55	7.6	102	2,569	128	3,416	3.50	86	88	12.3	
Min.	1	0.02	2.76	51	7.3	48	1,169	42	1,058	1.50	37	32	5.9	
Avg.	2	0.11	3.03	53	7.5	70	1,758	69	1,737	2.16	55	55	8.5	

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MISCELLANEOUS & SLUDGE SHEET - MAY, 1988

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	Other	Raw Sludge Gals.	Raw Sludge Total Solids Percent	Raw Sludge Vol. Solids Percent	Raw Sludge pH
1		2,520	500	25	199		4,000	4.2	70	6.2
2		2,520	520	25	298		6,000	4.2	74	6.2
3		2,520	520	25	298		6,000	4.4	75	6.1
4		2,520	600	25	199		6,000	5.9	74	6.1
5		2,520	770	25	298		6,000	4.4	72	6.0
6		2,520	480	25	298		6,000	4.6	75	6.0
7		2,280	490	25	298		4,000	4.2	74	6.0
8		2,520	510	25	199		4,000	4.3	75	5.8
9		2,400	620	25	298		6,000	4.3	75	5.9
10		2,520	530	25	199		6,000	4.5	74	5.9
11		2,520	570	25	199		6,000	4.5	76	5.9
12		2,400	570	25	298		7,000	4.5	75	5.8
13		2,520	570	20	298		7,000	4.4	76	6.0
14		2,400	500	20	199		4,000	4.1	72	5.9
15		2,400	500	20	298		4,000	4.4	76	5.9
16		2,520	630	20	199		7,000	4.1	74	5.9
17		2,520	690	20	298		7,000	4.0	77	6.0
18		2,640	480	20	298		7,000	4.0	76	6.0
19		2,640	1,490	20	199		7,000	4.3	77	6.0
20		2,640	540	20	298		6,000	3.8	74	6.0
21		2,520	530	20	199		4,000	3.9	74	6.0
22		2,520	480	20	199		4,000	3.9	74	6.1
23		2,760	450	20	298		6,000	4.3	77	6.1
24		2,640	690	20	199		6,000	4.5	75	6.1
25		2,640	620	20	298		6,000	4.3	75	6.1
26		2,640	500	15	199		5,000	4.1	74	6.1
27		2,760	1,210	15	199		5,000	4.5	74	6.1
28		2,640	1,370	15	298		4,000	4.0	77	6.1
29		2,520	1,450	15	298		4,000	4.2	75	6.1
30		2,520	390	15	199		4,000	4.2	77	6.1
31		2,760	2,750	15	199		4,000	4.4	72	6.1
Total		78,960	22,520	650	7,753		168,000	133.4	2,315	186.6
Max.		2,760	2,750	25	298		7,000	5.9	77	6.2
Min.		2,280	390	15	199		4,000	3.8	70	5.8
Avg.		2,547	726	21	250		5,419	4.3	75	6.0

Manpower & Hours

	Total Hr
Superintendent 1	^168
Asst. Supt. 1	^168
Operators 3	^504
Total	^820

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 W. PEARL ST. MARSHALL MI 49068 - PERMIT No. MI0023540
MAY, 1988 - DISCHARGE MONITORING REPORT - DISCHARGE No. 001A

	D.O. mg/L	pH SU	SS mg/L	SS Lbs.	Total-P mg/L	Flow MGD	Chlorine mg/L	BOD mg/L	BOD Lbs.	NH3 as N mg/L	NH3-N Lbs.	F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	4.9	7.3	5	128	0.25	3.06	0.50	4	102	8.2	209	40	92	94	86
2	6.8	7.5	4	105	0.25	3.16	0.50	6	158	6.6	174	40	94	96	88
3	6.5	7.4	9	234	0.34	3.12		3	78	3.7	96	16	88	95	87
4	6.7	7.4	7	183	0.41	3.14		4	105	8.2	215	24	89	94	88
5	6.5	7.2	4	105	0.50	3.16	0.33	4	105	9.9	261	40	94	95	79
6	4.2	7.6	6	155	0.41	3.10	0.41	3	78	6.5	168	16	87	94	75
7	4.9	7.2	6	151	0.50	3.02		2	50	6.0	151	12	86	96	67
8	4.8	7.2	11	279	0.27	3.04		1	25	6.1	155	10	84	98	86
9	4.5	7.3	11	294	0.37	3.20	0.47	4	107	7.9	211	52	91	95	88
10	4.4	7.3	6	155	0.40	3.10		4	103	7.9	204	58	88	93	78
11	5.8	7.3	5	130	0.23	3.11		2	52	7.1	184	30	92	96	86
12	6.3	7.4	3	77	0.25	3.08	0.46	3	77	7.0	180	32	95	95	84
13	7.3	7.5	6	153	0.27	3.06	0.39	3	77	6.3	161	44	92	95	86
14	7.2	7.4	4	100	0.20	3.00		4	100	5.7	143	30	96	94	88
15	6.7	7.3	4	101	0.32	3.04		5	127	7.3	185	16	94	93	85
16	6.5	7.5	9	234	0.40	3.12	0.23	7	182	7.5	195	88	89	92	83
17	6.4	7.5	8	208	0.38	3.12	0.23	6	156	7.7	200	118	87	93	81
18	6.5	7.4	10	262	0.27	3.14	0.29	4	105	5.0	131	94	90	94	87
19	7.5	7.5	4	101	0.27	3.04		3	76	5.6	142	80	94	95	87
20	7.4	7.4	2	49	0.27	2.92		1	24	5.7	139	24	97	98	86
21	4.8	7.4	2	47	0.95	2.84		2	47	7.0	166	28	96	97	73
22	5.3	7.4	4	96	0.78	2.88		4	98	5.7	137	46	92	94	63
23	7.6	7.5	4	101	0.38	3.02	0.40	5	126	7.0	176	50	94	95	83
24	6.8	7.5	3	75	0.32	3.00		4	100	6.9	173	50	96	95	85
25	7.6	7.5	7	175	0.30	3.00	0.40	4	100	5.9	148	56	90	95	88
26	8.1	7.5	3	75	0.28	3.00	0.20	4	100	6.5	163	162	96	96	86
27	7.4	7.5	4	98	0.27	2.94	0.19	12	294	4.2	103	128	95	88	86
28	7.3	7.8	2	46	0.23	2.76		4	92	5.2	120	82	96		86
29	7.4	7.5	2	47	0.28	2.80		3	70	6.8	159	76	91		86
30	7.4	7.5	4	95	0.19	2.86		3	72	6.8	162	38	94		94
31	7.6	7.4	7	176	0.27	3.02	0.18	5	126	5.2	131	316	92		87
Total	199.1	230.1	166	4,237	10.81	93.85	5.18	123	3,111	203.1	5,140	1,896	2,851	2,555	2,592
Max.	8.1	7.8	11	294	0.95	3.20	0.50	12	294	9.9	261	316	97	98	94
Min.	4.2	7.2	2	46	0.19	2.76	0.18	1	24	3.7	96	10	84	88	63
Avg.	6.4	7.4	5	137	0.35	3.03	0.35	4	100	6.6	166	45	92	95	84
7day			8	200					130		195	98			

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT - PLANT No. 130029
MAY, 1988 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading f/m	Mix Liq SS mg/L	Mix Liq VSS mg/L	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mg/L	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mg/l	PE SS mg/L
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	2.8	3.6		1,638					184			48	36	3.06	48	54
2		2.7	3.2	0.46	1,571	1,157	23.0	0.68		183	0.43	0.31	45	36	3.16	60	56
3		2.8	3.4	0.44	1,603	1,186	26.0	0.62		183	0.43	0.31	47	36	3.12	60	54
4		2.7	3.0	0.42	1,600	1,203	25.0	0.64		180	0.44	0.31	46	36	3.14	58	62
5		2.7	3.7	0.43	1,621	1,201	26.0	0.62	4.2	179	0.43	0.32	45	36	3.16	58	50
6		2.8	4.1	0.31	1,622	1,209	26.0	0.62	4.2	177	0.45	0.33	47	36	3.10	44	46
7		2.9	6.2		1,678				4.3	177			47	36	3.02	36	32
8		2.8	3.3		1,626				4.2	173			47	36	3.04	30	58
9		2.7	3.0	0.45	1,584	1,195	23.0	0.69	4.1	173	0.45	0.34	46	36	3.20	60	60
10		2.8	4.6	0.30	1,659	1,253	26.0	0.64	4.3	181	0.46	0.35	47	36	3.10	44	42
11		2.8	3.6	0.28	1,620	1,228	26.0	0.62	4.2	187	0.43	0.33	50	36	3.11	40	52
12		2.8	4.6	0.30	1,661	1,261	26.0	0.64	5.2	182	0.42	0.32	52	36	3.08	44	42
13		2.8	3.3	0.29	1,620	1,233	25.0	0.65	4.7	189	0.39	0.29	52	36	3.06	42	58
14		2.9	3.5		1,615				4.0	186			54	36	3.00	56	56
15		2.8	3.6		1,624				4.0	179			53	36	3.04	62	54
16		2.8	2.9	0.57	1,590	1,182	28.0	0.57	4.6	183	0.39	0.29	51	36	3.12	78	64
17		2.8	3.3	0.52	1,640	1,248	30.0	0.55	4.4	186	0.38	0.29	51	43	3.12	74	58
18		2.7	2.8	0.34	1,612	1,220	30.0	0.54	4.1	224	0.39	0.29	51	50	3.14	48	66
19		2.8	3.6	0.38	1,637	1,249	29.0	0.56	4.1	223	0.39	0.30	52	50	3.04	56	54
20		3.0	4.2	0.25	1,628	1,244	27.0	0.60	4.1	223	0.40	0.30	55	50	2.92	38	48
21		3.0	4.5		1,647				4.0	222			56	50	2.84	52	46
22		3.0	4.5		1,656				2.4	217			55	50	2.88	66	46
23		2.9	2.9	0.39	1,569	1,581	20.0	0.78	1.7	221	0.40	0.30	54	50	3.02	74	64
24		2.9	3.2	0.44	1,610	1,228	23.0	0.70	5.9	228	0.37	0.28	54	50	3.00	64	60
25		2.9	3.0	0.39	1,620	1,253	23.0	0.70	5.7	229	0.39	0.30	53	50	3.00	58	64
26		2.9	3.2	0.43	1,636	1,279	23.0	0.71	5.7	223	0.40	0.31	53	50	3.00	66	62
27		2.9	3.1	0.40	1,665	1,309			4.8	223	0.39	0.31	54	50	2.94	64	66
28		3.1	6.6		1,729		23.0	0.75	4.1	223			58	50	2.76		34
29		3.1	4.5		1,684				3.5	220			57	50	2.80		48
30		3.0	4.5		1,591				4.1	220			56	43	2.86		44
31		2.9	3.2		1,591	1,222	19.0	0.84	4.6	217	0.39	0.30	52	43	3.02		60
Total	48	88.3	116.3	7.79	50,447	26,141	527.0	13.73	115.2	6,195	8.62	6.48	1,588	1,305	93.85	1,480	1,660
Max.	48	3.1	6.6	0.57	1,729	1,581	30.0	0.84	5.9	229	0.46	0.35	58	50	3.20	78	66
Min.	48	2.7	2.8	0.25	1,569	1,157	19.0	0.54	1.7	173	0.37	0.28	45	36	2.76	30	32
Avg.	48	2.8	3.8	0.39	1,627	1,245	25.1	0.65	4.3	200	0.41	0.31	51	42	3.03	55	54

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT - PLANT No. 130029
MAY, 1988 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mg/L	P Eff. BOD Lbs.	P Eff. SS mg/L	P. Eff. SS Lbs.	P Eff. Phos. mg/L	P Eff. Phos. Lbs.	P Eff. VSS mg/L	P Eff. NH3-N mg/L	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	48	1,225	54	1,378	1.60	41	48	8.5	3.06	22	16	11
2	60	1,581	56	1,476	1.90	50	46	8.1	3.16	14	10	17
3	60	1,561	54	1,405	2.20	57	50	4.2	3.12	3	28	14
4	58	1,519	62	1,624	3.00	79	54	9.8	3.14	12	3	9
5	58	1,529	50	1,318	2.20	58	38	10.3	3.16	24	28	8
6	44	1,138	46	1,189	1.65	43	42	7.5	3.10	12	0	0
7	36	907	32	806	1.60	40	30	6.7	3.02	28	23	0
8	30	761	58	1,471	1.60	41	40	6.8	3.04	38	15	16
9	60	1,601	60	1,601	2.65	71	44	8.6	3.20	25	53	17
10	44	1,138	42	1,086	1.70	44	38	9.1	3.10	21	19	5
11	40	1,037	52	1,349	1.50	39	44	8.2	3.11	26	21	9
12	44	1,130	42	1,079	1.60	41	36	8.0	3.08	24	25	0
13	42	1,072	58	1,480	1.70	43	46	7.3	3.06	28	19	11
14	56	1,401	56	1,401	1.50	38	38	6.6	3.00	20	45	12
15	62	1,572	54	1,369	1.90	48	36	8.0	3.04	11	21	14
16	78	2,030	64	1,665	2.10	55	44	9.1	3.12	15	20	9
17	74	1,926	58	1,509	1.95	51	42	7.8	3.12	16	6	5
18	48	1,257	66	1,728	2.10	55	46	7.3	3.14	29	31	0
19	56	1,420	54	1,369	2.05	52	38	7.4	3.04	3	18	0
20	38	925	48	1,169	1.65	40	42	7.8	2.92	21	17	15
21	52	1,232	46	1,090	3.50	83	40	9.2	2.84	10	4	0
22	66	1,585	46	1,105	2.45	59	40	7.0	2.88	0	12	0
23	74	1,864	64	1,612	2.40	60	58	9.2	3.02	27	3	0
24	64	1,601	60	1,501	2.05	51	50	8.0	3.00	22	25	2
25	58	1,451	64	1,601	1.65	41	54	9.7	3.00	22	6	35
26	66	1,651	62	1,551	2.30	58	50	9.1	3.00	33	9	0
27	64	1,569	66	1,618	2.05	50	60	8.0	2.94	36	18	0
28	50	1,151	34	783	2.20	51	28	6.4	2.76	24	35	0
29	50	1,168	48	1,121	1.95	46	36	6.1	2.80	22	20	5
30	76	1,813	44	1,050	1.65	39	36	8.6	2.86	14	37	47
31	62	1,562	60	1,511	1.80	45	52	8.0	3.02	21	29	12
Total	1,718	43,375	1,660	42,015	62.15	1,568	1,346	246.4	93.85	623	616	273
Max.	78	2,030	66	1,728	3.50	83	60	10.3	3.20	38	53	47
Min.	30	761	32	783	1.50	38	28	4.2	2.76	0	0	0
Avg.	55	1,399	54	1,355	2.00	51	43	7.9	3.03	20	20	9

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
JUNE, 1988 - PLANT INFLUENT SHEET - SAMPLING CODE 500

	----Weather----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1	4	0.06	2.97	55	7.4	90	2,229	64	1,585	2.55	63	52	8.9	
2	4	0.14	2.98	55	7.4	74	1,839	58	1,441	1.80	45	50	9.3	
3	1		2.91	55	7.5	74	1,796	66	1,602	2.20	53	52	8.7	
4	1		2.83	54	7.3	64	1,511	76	1,794	2.90	68	58	8.2	
5	1		2.91	54	7.5	64	1,553	54	1,311	1.95	47	44	6.5	
6	1		2.91	55	7.4	80	1,942	86	2,087	2.05	50	78	7.4	
7	1		2.90	55	7.4	112	2,709	66	1,596	2.10	51	48	7.5	
8	4	0.01	2.84	55	7.3	82	1,942	60	1,421	2.10	50	56	7.9	
9	1		2.85	55	7.2									
10	1		2.79	55	7.5	76	1,768	48	1,117	2.05	48	34	8.6	
11	1		2.68	55	7.4	70	1,565	52	1,162	3.00	67	42	10.6	
12	1		2.75	55	7.4	62	1,422	58	1,330	2.30	53	46	7.1	
13	1		2.87	56	7.4	64	1,532	66	1,580	2.20	53	62	7.8	
14	1		2.90	56	7.3	62	1,500	64	1,548	2.45	59	42	7.6	
15	1		2.81	56	7.6	58	1,359	62	1,453	2.10	49	56	8.6	
16	1		2.88	57	7.4	54	1,297	46	1,105	2.10	50	40	7.4	
17	1		2.75	56	7.3	78	1,789	90	2,064	2.10	48	68	8.0	
18	1		2.70	55	7.6	58	1,306	86	1,937	1.65	37	70	7.0	
19	1		2.70	54	7.2	68	1,531	74	1,666	2.20	50	58	7.8	
20	4	0.03	2.97	57	7.2	80	1,982	110	2,725	4.10	102	38	11.6	
21	1		2.86	57	7.4	72	1,717	76	1,813	2.55	61	66	7.8	
22	4	0.69	2.88	58	7.2	60	1,441	68	1,633	2.05	49	54	6.2	
23	1		2.75	57	7.3	76	1,743	74	1,697	2.10	48	64	7.3	
24	1		2.79	58	7.3	66	1,536	66	1,536	3.10	72	64	6.5	
25	1		2.60	57	7.3	60	1,301	52	1,128	1.70	37	48	7.3	
26	1		2.63	56	7.3	58	1,272	62	1,360	2.10	46	56	6.5	
27	1		2.73	58	7.3	68	1,548	68	1,548	2.45	56	58	6.9	
28	4	0.16	2.75	57	7.3	66	1,514	72	1,651	2.10	48	68	7.8	
29	1		2.85	58	7.3	78	1,854	74	1,759	2.65	63	60	9.3	
30	1		2.74	57	7.3	104	2,377	84	1,920	2.75	63	60	7.1	
31														
Total	48	1.09	84.48	1,678	220.7	2,078	48,874	1,982	46,569	67.45	1,586	1,592	229.2	
Max.	4	0.69	2.98	58	7.6	112	2,709	110	2,725	4.10	102	78	11.6	
Min.	1	0.01	2.60	54	7.2	54	1,272	46	1,105	1.65	37	34	6.2	
Avg.	2	0.18	2.82	56	7.4	72	1,685	68	1,606	2.33	55	55	7.9	

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT - PLANT No. 130029
JUNE, 1988 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mg/L	P Eff. BOD Lbs.	P Eff. SS mg/L	P. Eff. SS Lbs.	P Eff. Phos. mg/L	P Eff. Phos. Lbs.	P Eff. VSS mg/L	P Eff. NH3-N mg/L	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	66	1,635	60	1,486	2.30	57	50	8.9	2.97	27	6	10
2	54	1,342	48	1,193	1.80	45	42	9.2	2.98	27	17	0
3	54	1,311	42	1,019	2.10	51	30	8.9	2.91	27	36	4
4	46	1,086	52	1,227	2.55	60	38	8.6	2.83	28	32	12
5	50	1,213	46	1,116	1.80	44	36	6.7	2.91	22	15	8
6	54	1,311	64	1,553	1.90	46	54	7.3	2.91	33	26	7
7	44	1,064	42	1,016	1.90	46	34	7.0	2.90	61	36	10
8	40	947	38	900	1.90	45	30	7.5	2.84	51	37	10
9									2.85			
10	46	1,070	40	931	2.20	51	30	9.2	2.79	39	17	0
11	42	939	38	849	2.20	49	28	8.5	2.68	40	27	27
12	42	963	42	963	2.10	48	24	7.1	2.75	32	28	9
13	46	1,101	48	1,149	1.95	47	40	7.5	2.87	28	27	11
14	44	1,064	66	1,596	2.30	56	62	7.2	2.90	29	0	6
15	42	984	44	1,031	2.05	48	40	8.2	2.81	28	29	2
16	40	961	44	1,057	1.90	46	40	7.1	2.88	26	4	10
17	56	1,284	66	1,514	1.95	45	44	7.4	2.75	28	27	7
18	40	901	60	1,351	1.40	32	50	6.9	2.70	31	30	15
19	46	1,036	54	1,216	1.65	37	46	6.9	2.70	32	27	25
20	52	1,288	62	1,536	2.85	71	54	7.9	2.97	35	44	30
21	46	1,097	58	1,383	2.55	61	50	7.5	2.86	36	24	0
22	34	817	50	1,201	2.45	59	44	6.5	2.88	43	26	0
23	48	1,101	52	1,193	2.45	56	46	7.0	2.75	37	30	0
24	40	931	32	745	2.05	48	28	6.5	2.79	39	52	34
25	38	824	44	954	1.95	42	40	6.9	2.60	37	15	0
26	40	877	52	1,141	1.65	36	44	6.5	2.63	31	16	21
27	46	1,047	44	1,002	2.05	47	36	6.4	2.73	32	35	16
28	48	1,101	54	1,238	1.80	41	46	7.3	2.75	27	25	14
29	64	1,521	58	1,379	3.00	71	48	8.1	2.85	18	22	0
30	88	2,011	54	1,234	2.45	56	42	7.1	2.74	15	36	11
31												
Total	1,396	32,828	1,454	34,173	61.20	1,439	1,196	217.8	84.48	939	746	299
Max.	88	2,011	66	1,596	3.00	71	62	9.2	2.98	61	52	34
Min.	34	817	32	745	1.40	32	24	6.4	2.60	15	0	0
Avg.	48	1,132	50	1,178	2.11	50	41	7.5	2.82	32	26	10

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT - PLANT No. 130029
JUNE, 1988 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	2.9	3.2	0.45	1,605	1,226	20.0	0.80	5.1	214	0.40	0.30	53	43	2.97	66	60
2		2.9	3.9	0.38	1,572	1,175	20.0	0.79	4.9	226	0.40	0.30	53	43	2.98	54	48
3		3.0	4.4	0.38	1,514	1,147	19.0	0.80	6.1	224	0.40	0.30	54	43	2.91	54	42
4		3.0	3.7		1,516					223			55	43	2.83	46	52
5		3.0	4.3		1,604					218			54	36	2.91	50	46
6		3.0	2.9	0.40	1,511	1,108	17.0	0.89	6.2	214	0.38	0.28	54	36	2.91	54	64
7		3.0	4.6	0.31	1,560	1,164	19.0	0.82	4.1	213	0.39	0.28	55	36	2.90	44	42
8		3.0	4.3		1,297		19.0	0.68	4.5	224	0.39		56	36	2.84	40	38
9		3.0			1,442		18.0	0.80	5.4	227	0.36		56	36	2.85		
10		3.1	5.0		1,541		18.0	0.86	4.2	227	0.38		56	32	2.79	46	40
11		3.2	5.9		1,669				2.7	225			59	32	2.68	42	38
12		3.1	4.4		1,415				3.9	221			57	32	2.75	42	42
13		3.0	4.4		1,706		19.0	0.90	5.1	218	0.41		55	36	2.87	46	48
14		3.0	3.1		1,648		20.0	0.82	4.1	216	0.40		54	36	2.90	44	66
15		3.1	4.9	0.26	1,701	1,272	20.0	0.85	4.3	216	0.41	0.31	56	36	2.81	42	44
16		3.0	4.8	0.26	1,685	1,255	20.0	0.84	4.8	220	0.39	0.28	55	40	2.88	40	44
17		3.1	3.3	0.36	1,646	1,208	20.0	0.82	6.3	220	0.39	0.28	58	40	2.75	56	66
18		3.2	3.9		1,775					220			59	40	2.70	40	60
19		3.2	3.9		1,593					218			59	40	2.70	46	54
20		2.9	3.2	0.36	1,627	1,191	20.0	0.81	5.1	214	0.40	0.29	54	40	2.97	52	62
21		3.0	3.7	0.29	1,710	1,249	21.0	0.81	4.9	210	0.40	0.29	56	43	2.86	46	58
22		3.0	4.4	0.21	1,749	1,288	22.0	0.80	4.1	213	0.42	0.31	55	43	2.88	34	50
23		3.1	4.3	0.29	1,720	1,264	23.0	0.75	6.1	220	0.38	0.28	57	43	2.75	48	52
24		3.1	6.8	0.25	1,680	1,234	22.0	0.76	5.7	217	0.38	0.28	55	43	2.79	40	32
25		3.3	5.1		1,620					214			60	43	2.60	38	44
26		3.3	4.1		1,555					224			60	43	2.63	40	52
27		3.2	4.5	0.31	1,520	1,130	19.0	0.80	6.5	221	0.36	0.26	57	37	2.73	46	44
28		3.1	3.9	0.31	1,596	1,191	20.0	0.80	4.3	223	0.40	0.29	58	37	2.75	48	54
29		3.0	3.6	0.40	1,669	1,263	21.0	0.79	4.2	222	0.37	0.28	56	37	2.85	64	58
30		3.1	4.1	0.53	1,708	1,259	21.0	0.81	4.8	224	0.40	0.30	56	43	2.74	88	54
31																	
Total	48	91.9	122.7	5.74	48,154	20,624	438.0	17.81	117.4	6,586	8.61	4.91	1,682	1,168	84.48	1,396	1,454
Max.	48	3.3	6.8	0.53	1,775	1,288	23.0	0.90	6.5	227	0.42	0.31	60	43	2.98	88	66
Min.	48	2.9	2.9	0.21	1,297	1,108	17.0	0.68	2.7	210	0.36	0.26	53	32	2.60	34	32
Avg.	48	3.1	4.2	0.34	1,605	1,213	19.9	0.81	4.9	220	0.39	0.29	56	39	2.82	48	50

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 W. PEARL ST. MARSHALL MI 49068 - PERMIT No. MI0023540
JUNE, 1988 - DISCHARGE MONITORING REPORT - DISCHARGE No. 001A

	D.O. mg/L	pH SU	SS mg/L	SS Lbs.	Total-P mg/L	Flow MGD	Chlorine mg/L	BOD mg/L	BOD Lbs.	NH3 as N mg/L	NH3-N Lbs.	F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	7.5	7.3	6	149	0.27	2.97	0.22	4	99	7.9	196	310	91	96	89
2	7.9	7.3	5	124	0.32	2.98		4	99	7.8	194	344	91	95	82
3	7.9	7.5	4	97	0.37	2.91	0.23	6	146	8.2	199	526	94	92	83
4	7.7	7.3	8	189	0.74	2.83		3	71	7.9	186	80	89	95	74
5	7.8	7.3	2	49	0.40	2.91		2	49	7.2	175	208	96	97	79
6	7.2	7.5	8	194	0.32	2.91	0.20	3	73	6.9	167	334	91	96	84
7	7.3	7.3	4	97	0.27	2.90	0.11	2	48	6.6	160	898	94	98	87
8	7.3	7.5	2	47	0.27	2.84	0.03	2	47	6.5	154	56[illegible]	97	96	87
9	7.8	7.5				2.85	0.28					144			
10	6.8	7.4	4	93	0.61	2.79	0.27	3	70	8.1	188	140	92	96	70
11	6.6	7.2	2	45	0.32	2.68		3	67	7.2	161	20	96	96	89
12	6.2	7.3	2	46	0.47	2.75		3	69	7.5	172	14	97	95	80
13	7.1	7.5	2	48	0.53	2.87	0.37	3	72	7.3	175	38	97	95	76
14	6.5	7.3	4	97	0.46	2.90	0.27	6	145	6.0	145	78	94	90	81
15	6.8	7.5	3	70	0.34	2.81	0.28	3	70	7.0	164	74	95	95	84
16	7.4	7.2	3	72	0.27	2.88	0.31	3	72	7.2	173	84	93	94	87
17	7.2	7.2	9	206	0.28	2.75	0.38	4	92	7.0	161	54	90	95	87
18	7.5	7.7	9	203	0.23	2.70	0.38	3	68	6.3	142	34	90	95	86
19	7.3	7.5	7	158	0.25	2.70	0.33	2	45	3.7	83	28	91	97	87
20	7.9	7.1	7	173	0.56	2.97	0.29	4	99	3.7	92	60	94	95	86
21	6.9	7.3	5	119	0.50	2.86	0.15	5	119	6.4	153	134	93	93	80
22	6.7	7.3	3	72	0.38	2.88	0.36	2	48	5.9	142	112	96	97	81
23	6.9	7.2	5	115	0.25	2.75	0.31	3	69	6.3	144	64	93	96	88
24	7.1	7.2	4	93	0.27	2.79	0.31	3	70	6.1	142	66	94	95	91
25	7.4	7.2	3	65	0.22	2.60	0.43	3	65	6.3	137	38	94	95	87
26	7.6	7.2	9	197	0.32	2.63	0.49	3	66	6.1	134	28	85	95	85
27	7.1	7.3	5	114	0.30	2.73	0.11	5	114	5.2	118	384	93	93	88
28	7.3	7.2	4	92	0.35	2.75	0.26	5	115	6.5	149	92	94	92	83
29	7.1	7.2	8	190	0.32	2.85	0.19	2	48	6.3	150	72	89	97	88
30	7.1	7.4	7	160	0.53	2.74	0.29	6	137	6.4	146	38	92	94	81
31															
Total	216.9	219.9	144	3,374	10.72	84.48	6.85	100	2,350	191.5	4,501	5,064	2,695	2,755	2,430
Max.	7.9	7.7	9	206	0.74	2.98	0.49	6	146	8.2	199	898	97	98	91
Min.	6.2	7.1	2	45	0.22	2.60	0.03	2	45	3.7	83	14	85	90	70
Avg.	7.2	7.3	5	116	0.37	2.82	0.27	3	81	6.6	155	89	93	95	84
			6	149				4	88		182	311			

Robert J. Swalwell

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MISCELLANEOUS & SLUDGE SHEET - JUNE, 1988

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	Other	Raw Sludge Gals.	Raw Sludge Total Solids Percent	Raw Sludge Vol. Solids Percent	Raw Sludge pH
1		2,520	1,800	15	397		3,000	4.2	76	6.1
2		2,760	1,750	10	199		5,000	4.6	76	6.1
3		2,520	1,970	11	298		18,000	4.1	75	6.0
4		2,520	1,220	14	298		4,000	3.9	75	6.1
5		2,640	1,410	15	99		4,000	4.1	77	6.1
6		2,520	470	15	298		6,000	4.1	76	6.0
7		2,640	720	16	298		6,000	3.8	76	6.0
8		2,640	1,630	16	199		6,000	3.8	75	6.0
9		2,640	1,620	17	298		6,000	4.0	73	6.0
10		2,640	2,070	17	199		6,000	4.4	76	6.2
11		2,520	830	14	298		4,000	3.9	76	6.2
12		2,640	1,850	5	199		4,000	3.8	75	6.3
13		2,640	1,200	14	298		6,000	4.4	76	6.2
14		2,640	3,830	15	298		6,000	4.0	75	5.9
15		2,640	2,460	14	99		6,000	4.2	71	5.9
16		2,640	2,100	16	298		6,000	4.0	77	5.9
17		2,640	2,470	16	298		5,000	2.8	74	5.8
18		2,640	1,800	15	99		4,000	4.1	75	5.9
19		2,520	1,540	17	199		4,000	3.8	75	5.8
20		2,760	2,910	15	199		5,000	3.9	75	5.6
21		2,640	2,360	15	199		5,000	3.9	75	5.8
22		2,640	2,300	16	199		5,000	4.2	74	5.7
23		2,520	1,910	16	298		5,000	3.9	74	5.8
24		2,640	1,060	16	298		5,000	4.4	74	5.8
25		2,520	1,680	15	199		4,000	4.4	73	5.9
26		2,640	1,660	17	298		4,000	4.3	74	5.8
27		2,640	1,920	13	199		5,000	4.4	73	5.9
28		2,520	1,840	18	298		5,000	4.5	76	5.9
29		2,520	580	17	298		5,000	4.8	70	5.8
30		2,640	1,860	16	298		5,000	4.5	73	5.7
31										
Total		78,240	52,820	446	7,452		162,000	123.2	2,240	178.2
Max.		2,760	3,830	18	397		18,000	4.8	77	6.3
Min.		2,520	470	5	99		3,000	2.8	70	5.6
Avg.		2,608	1,761	15	248		5,400	4.1	75	5.9

Manpower & Hours

	Total Hr
Superintendent 1	^176
Asst. Supt. 1	^176
Operators 3	^528
Total	^828

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
JULY, 1988 - PLANT INFLUENT SHEET - SAMPLING CODE 500

	Weather		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1	1		2.75	57	7.4	92	2,110	54	1,238	1.90	44	48	9.4	
2	1		2.60	57	7.1	72	1,561	54	1,171	4.30	93	52	8.1	
3	1		2.61	58	7.5	94	2,046	50	1,088	2.10	46	40	12.2	
4	1		2.57	58	7.3	66	1,415	80	1,715	1.90	41	66	6.6	
5	1		2.76	57	7.5	64	1,473	66	1,519	1.95	45	32	8.2	
6	1		2.72	58	7.4	84	1,906	54	1,225	2.10	48	46	8.0	
7	1		2.76	58	7.5	78	1,795	68	1,565	1.95	45	62	5.8	
8	1		2.66	58	7.4	62	1,375	64	1,420	1.00	22	56	5.9	
9	1		2.48	58	7.5	64	1,324	80	1,655	2.40	50	68	6.0	
10	4	0.34	2.49	56	7.5	56	1,163	89	1,848	1.00	21	87	6.2	
11	1		2.71	59	7.3	86	1,944	80	1,808	4.45	101	62	10.2	
12	1		2.64	59	7.1	68	1,497	66	1,453	2.55	56	44	7.4	
13	1		2.74	59	7.3	90	2,057	80	1,828	2.05	47	74	8.0	
14	1		2.71	59	7.5	80	1,808	82	1,853	2.20	50	72	9.1	
15	4	0.11	2.75	59	7.5	72	1,651	96	2,202	2.05	47	90	8.7	
16	4	1.06	2.69	59	7.5	68	1,526	84	1,885	2.20	49	80	6.3	
17	1		2.61	57	7.3	46	1,001	66	1,437	2.05	45	64	5.4	
18	4	0.65	2.81	59	7.4	60	1,406	82	1,922	1.90	45	56	6.9	
19	1		2.92	59	7.3	114	2,776	90	2,192	2.85	69	76	12.2	
20	4	0.05	2.79	59	7.4	92	2,141	78	1,815	1.95	45	68	10.7	
21	4	0.10	2.94	59	7.4	66	1,618	58	1,422	1.70	42	56	7.0	
22	1		2.78	59	7.4	52	1,206	34	788	1.50	35	28	7.2	
23	4	0.12	2.66	59	7.3	48	1,065	54	1,198	1.70	38	34	5.8	
24	4	0.29	2.68	58	7.3	88	1,967	100	2,235	2.65	59	74	8.7	
25	4	0.59	2.92	58	7.5	50	1,218	90	2,192	1.90	46	66	5.7	
26	1		2.86	59	7.4	58	1,383	70	1,670	1.60	38	54	6.0	
27	1		2.74	59	7.4	50	1,143	68	1,554	1.80	41	66	8.8	
28	1		2.74	59	7.6	54	1,234	64	1,463	1.70	39	52	6.9	
29	1		2.66	59	7.4	56	1,242	118	2,618	1.95	43	96	5.8	
30	1		2.64	59	7.4	58	1,277	70	1,541	2.10	46	58	6.2	
31	1		2.61	59	7.4	86	1,872	64	1,393	1.70	37	46	8.1	
Total	58	3.31	84.00	1,810	229.2	2,174	49,200	2,253	50,912	65.15	1,471	1,873	237.5	
Max.	4	1.06	2.94	59	7.6	114	2,776	118	2,618	4.45	101	96	12.2	
Min.	1	0.05	2.48	56	7.1	46	1,001	34	788	1.00	21	28	5.4	
Avg.	2	0.37	2.71	58	7.4	70	1,587	73	1,642	2.10	47	60	7.7	

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT No. 130029
JULY, 1988 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	78	1,789	40	917	1.70	39	36	9.0	2.75	15	26	10
2	60	1,301	36	781	1.35	29	32	7.3	2.60	17	33	87
3	44	958	36	784	1.80	39	28	5.5	2.61	53	28	14
4	44	943	42	900	1.20	26	34	5.4	2.57	33	48	37
5	52	1,197	60	1,381	1.60	37	18	6.3	2.76	19	9	18
6	48	1,089	40	907	1.80	41	28	7.1	2.72	43	26	14
7	48	1,105	52	1,197	1.65	38	48	5.9	2.76	38	24	15
8	46	1,020	46	1,020	1.00	22	26	5.9	2.66	26	28	0
9	56	1,158	66	1,365	1.40	29	48	5.9	2.48	13	18	42
10	42	872	40	831	0.60	12	34	6.0	2.49	25	55	40
11	68	1,537	44	994	3.85	87	34	9.7	2.71	21	45	13
12	44	969	44	969	2.45	54	26	8.2	2.64	35	33	4
13	78	1,782	46	1,051	1.65	38	44	7.4	2.74	13	43	20
14	60	1,356	44	994	2.05	46	30	8.5	2.71	25	46	7
15	56	1,284	64	1,468	1.95	45	58	8.5	2.75	22	33	5
16	46	1,032	60	1,346	1.80	40	54	5.6	2.69	32	29	18
17	34	740	50	1,088	1.95	42	42	5.5	2.61	35	24	5
18	46	1,078	60	1,406	1.70	40	40	6.7	2.81	23	27	11
19	78	1,900	50	1,218	2.05	50	38	10.2	2.92	32	44	28
20	72	1,675	46	1,070	1.90	44	30	9.4	2.79	22	41	3
21	48	1,177	34	834	1.50	37	28	6.7	2.94	27	41	12
22	42	974	30	696	1.50	35	24	6.2	2.78	19	12	0
23	36	799	48	1,065	1.65	37	30	5.3	2.66	25	11	3
24	52	1,162	46	1,028	2.05	46	46	7.3	2.68	41	32	23
25	52	1,266	74	1,802	1.65	40	64	6.2	2.92	0	18	13
26	42	1,002	50	1,193	1.40	33	38	5.4	2.86	27	29	13
27	36	823	54	1,234	1.50	34	50	7.5	2.74	28	21	17
28	40	914	56	1,280	1.65	38	50	6.7	2.74		13	3
29	42	932	70	1,553	1.95	43	66	6.3	2.66		41	0
30	40	881	30	661	2.20	48	24	5.2	2.64		57	0
31	82	1,785	38	827	1.70	37	26	6.7	2.61		40	0
Total	1,612	36,500	1,496	33,860	54.20	1,227	1,174	213.5	84.00	709	975	475
Max.	82	1,900	74	1,802	3.85	87	66	10.2	2.94	53	57	87
Min.	34	740	30	661	0.60	12	18	5.2	2.48	0	9	0
Avg.	52	1,177	48	1,092	1.75	40	38	6.9	2.71	26	31	15

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT - zplant no. 130029
JULY, 1988 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	3.1	5.7	0.45	1,756	1,334	23.0	0.76	1.5	223	0.39	0.29	59	46	2.75	78	40
2		3.3	6.8		1,765					223			62	52	2.60	60	36
3		3.3	6.4		1,682					223			64	52	2.61	44	36
4		3.4	5.2		1,554					222			63	52	2.57	44	42
5		3.1	3.1	0.37	1,430	1,090	17.0	0.84	1.5	217	0.33	0.23	59	46	2.76	52	60
6		3.2	4.7	0.34	1,426	1,067	17.0	0.84	5.2	209	0.35	0.26	61	36	2.72	48	40
7		3.1	3.9	0.31	1,552	1,186	18.0	0.86	5.8	215	0.37	0.28	60	29	2.76	48	52
8		3.2	5.3	0.26	1,821	1,298	20.0	0.91	5.4	216	0.41	0.31	61	29	2.66	46	46
9		3.5	3.5		1,591					217			63	37	2.48	56	66
10		3.5	5.9		1,633					223			63	37	2.49	42	40
11		3.2	4.6	0.45	1,541	1,149	17.0	0.91	5.3	220	0.36	0.27	58	37	2.71	68	44
12		3.3	5.1	0.26	1,661	1,242	20.0	0.83	3.3	221	0.39	0.29	59	37	2.64	44	44
13		3.1	4.7	0.49	1,638	1,218	20.0	0.82	4.5	215	0.36	0.27	57	37	2.74	78	46
14		3.2	5.0	0.36	1,676	1,257	20.0	0.84	4.8	217	0.39	0.29	58	37	2.71	60	44
15		3.1	3.6	0.32	1,753	1,338	24.0	0.73	4.8	214	0.59	0.30	57	40	2.75	56	64
16		3.2	4.0		1,796					215			59	43	2.69	46	60
17		3.3	4.8		1,732					217			60	43	2.61	34	50
18		3.1	3.5	0.29	1,661	1,254	20.0	0.83	5.6	218	0.42	0.32	56	43	2.81	46	60
19		3.0	4.1	0.50	1,677	1,281	21.0	0.80	5.1	219	0.40	0.30	54	43	2.92	78	50
20		3.1	5.0	0.41	1,783	1,365	25.0	0.71	2.1	244	0.38	0.29	57	49	2.79	72	46
21		2.9	6.5	0.28	1,802	1,399	28.0	0.64	3.0	241	0.38	0.30	56	55	2.94	48	34
22		3.1	7.5	0.24	1,739	1,383	29.0	0.60	2.4	244	0.37	0.30	59	58	2.78	42	30
23		3.2	4.7		1,678					245			62	40	2.66	36	48
24		3.2	3.3		1,673					241			61	40	2.68	52	68
25		3.0	2.7	0.32	1,654	1,305	24.0	0.69	5.4	240	0.36	0.29	55	43	2.92	52	74
26		3.0	4.1	0.27	1,646	1,254	23.0	0.72	5.1	242	0.40	0.31	56	43	2.86	42	50
27		3.1	3.8	0.23	1,573	1,187	20.0	0.79	5.1	240	0.38	0.29	58	43	2.74	36	54
28		3.1	3.7	0.26	1,568	1,190	21.0	0.75	5.5	238	0.37	0.28	59	43	2.74	40	56
29		3.2	3.2	0.25	1,635	1,250	22.0	0.74	5.2	235	0.38	0.28	59	36	2.66	42	70
30		3.3	7.7		1,692					239			58	36	2.64	40	30
31		3.3	5.9		1,621					241			58	36	2.61	82	38
Total	48	98.7	148.0	6.64	51,409	25,047	429.0	15.61	86.6	7,034	7.78	5.75	1,831	1,298	84.00	1,612	1,518
Max.	48	3.5	7.7	0.50	1,821	1,399	29.0	0.91	5.8	245	0.59	0.32	64	58	2.94	82	74
Min.	48	2.9	2.7	0.23	1,426	1,067	17.0	0.60	1.5	209	0.33	0.23	54	29	2.48	34	30
Avg.	48	3.2	4.8	0.33	1,658	1,252	21.5	0.78	4.3	227	0.39	0.29	59	42	2.71	52	49

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 W. PEARL ST. MARSHALL MI 49068 -PERMIT No. MI0023540
JULY, 1988 DISCHARGE MONITORING REPORT - DISCHARG No. 001A

	D.O. mgIL	pH SU	SS mgIL	SS Lbs.	Total-P mgIL	Flow MGD	Chlorine mgIL	BOD mgIL	BOD Lbs.	NH3 as N mgIL	NH3-N Lbs.	F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	5.4	7.2	4	92	0.53	2.75	0.29	5	115	8.6	197	200	93	95	72
2	4.1	7.1	4	87	0.22	2.60	0.38	4	87	5.2	113	20	93	94	95
3	4.5	7.4	4	87	0.25	2.61	0.68	2	44	4.8	104	24	92	98	88
4	6.0	7.3	6	129	0.23	2.57	0.42	2	43	4.8	103	20	93	97	88
5	6.1	7.3	8	184	0.32	2.76	0.35	4	92	5.5	127	80	88	94	84
6	5.5	7.4	2	45	0.25	2.72	0.27	3	68	6.6	150	74	96	96	88
7	6.6	7.4	5	115	0.27	2.76	0.23	3	69	5.3	122	207	93	96	86
8	6.4	7.4	4	89	0.16	2.66	0.23	5	111	4.3	95	220	94	92	84
9	6.3	7.6	6	124	0.27	2.48	0.41	3	62	4.2	87	32	93	95	89
10	6.1	7.7	2	42	0.17	2.49	0.48	3	62	4.1	85	30	98	95	83
11	6.4	7.4	3	68	0.87	2.71	0.20	4	90	6.9	156	130	96	95	80
12	5.8	7.3	4	88	0.75	2.64	0.20	4	88	6.4	141	48	94	94	71
13	6.3	7.4	4	91	0.41	2.74	0.23	5	114	4.8	110	330	95	94	80
14	6.0	7.5	4	90	0.34	2.71	0.24	5	113	6.5	147	156	95	94	85
15	6.0	7.5	15	344	0.23	2.75	0.23	5	115	5.9	135	54	84	93	89
16	6.0	7.4	7	157	0.28	2.69	0.18	5	112	4.0	90	144	92	93	87
17	6.1	7.4	9	196	0.37	2.61	0.33	3	65	3.6	78	84	86	93	82
18	5.9	7.3	8	187	0.35	2.81	0.29	4	94	5.0	117	268	90	93	82
19	5.8	7.3	4	97	0.46	2.92	0.26	4	97	5.0	122	126	96	96	84
20	5.9	7.7	9	209	0.41	2.79	0.14	6	140	8.5	198	624	88	93	79
21	5.2	7.4	2	49	0.34	2.94	0.19	6	147	4.9	120	200	97	91	80
22	5.3	7.3	3	70	0.23	2.78	0.21	4	93	4.7	109	150	91	92	85
23	4.7	7.2	9	200	0.27	2.66	0.40	3	67	2.5	55	40	83	94	84
24	5.2	7.4	3	67	0.32	2.68	0.47	3	67	5.8	130	18	97	97	88
25	6.2	7.5	6	146	0.34	2.92	0.21	2	49	5.2	127	204	93	96	82
26	6.6	7.4	4	95	0.27	2.86	0.28	3	72	4.7	112	46	94	95	83
27	6.4	7.5	4	91	0.22	2.74	0.24	1	23	6.1	139	54	94	98	88
28	5.2	7.6	7	160	0.30	2.74	0.27	2	46	6.8	155	62	89	96	82
29	6.3	7.4	7	155	0.30	2.66	0.29	2	44	5.4	120	62	94	96	85
30	6.1	7.3	2	44	0.34	2.64	0.37	2	44	4.6	101	16	97	97	84
31	6.0	7.2	2	44	0.28	2.61	0.46	3	65	5.0	109	6	97	97	84
Total	180.4	229.2	161	3,643	10.35	84.00	9.43	110	2,497	165.7	3,754	3,729	2,875	2,939	2,601
Max.	6.6	7.7	15	344	0.87	2.94	0.68	6	147	8.6	198	624	98	98	95
Min.	4.1	7.1	2	42	0.16	2.48	0.14	1	23	2.5	55	6	83	91	71
Avg.	5.8	7.4	5	118	0.33	2.71	0.30	4	81	5.3	121	120	93	95	84

Robert J. Swalwell
Superintendent

MARSHALL,MICHIGAN WASTEWATER TREATMENT PLANT
MISCELLANEOUS & SLUDGE SHEET - JULY, 1988

	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	Other	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	pH
Day										
1		2,640	1,770	17	199		5,000	4.4	71	5.8
2		2,520	530	17	199		4,000	4.4	74	5.7
3		2,520	1,280	17	298		4,000	4.0	77	5.8
4		2,640	600	17	199		4,000			5.8
5		2,640	1,310	17	199		12,000	2.4	71	7.3
6		2,640	1,960	17	298		6,000	4.3	75	5.9
7		2,640	2,170	17	199		6,000	5.1	77	5.9
8		2,640	2,180	17	298		6,000	5.9	73	5.9
9		2,640	1,630	17	199		4,000	4.1	73	5.9
10		2,520	670	17	199		4,000	3.7	76	6.0
11		2,640	580	17	298		6,000	4.0	73	6.0
12		2,640	2,050	17	199		6,000	3.8	76	5.9
13		2,640	650	17	298		6,000	4.0	77	5.9
14		2,640	2,440	17	199		6,000	4.3	73	6.1
15		2,640	2,120	17	298		4,000	4.0	71	6.1
16		2,640	540	17	199		4,000	4.3	71	5.9
17		2,520	660	17	199		4,000	4.1	74	6.0
18		2,640	550	17	298		6,000	4.3	70	5.8
19		2,640	870	17	199		3,000	4.0	73	5.9
20		2,760	740	17	199		3,000	4.1	70	6.0
21		2,760	460	17	298		2,500	4.3	77	5.7
22		2,640	700	17	199		3,000	4.5	74	5.6
23		2,640	540	17	298		3,000	4.2	76	5.5
24		2,640	580	17	199		3,000	4.0	76	5.6
25		2,760	610	17	199		4,000	4.0	77	5.9
26		2,640	710	17	298		4,000	4.4	77	5.8
27		2,760	630	17	298		5,000	4.3	73	5.9
28		2,640	660	17	199		4,000	4.6	75	6.0
29		2,760	850	17	199		20,000	4.3	74	5.8
30		2,640	790	17	298					
31		2,640	650	17	199		5,000	4.1	74	5.9
Total		81,960	32,480	527	7,357		156,500	121.9	2,148	177.3
Max.		2,760	2,440	17	298		20,000	5.9	77	7.3
Min.		2,520	460	17	199		2,500	2.4	70	5.5
Avg.		2,644	1,048	17	237		5,217	4.2	74	5.9

Manpower & Hours

	Total Hr
Superintendent 1	^160
Asst. Supt. 1	^160
Operators 3	^484
Total	^804

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
AUGUST,1988 - PLANT INFLUENT SHEET - SAMPLING CODE 500

	----Weather----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1	1		2.75	60	7.5	68	1,560	58	1,330	2.05	47	52	6.3	
2	1		2.72	59	7.4	64	1,452	54	1,225	1.95	44	44	6.9	
3	1		2.76	59	7.3	84	1,934	90	2,072	1.90	44	58	8.9	
4	1		2.76	60	7.4	72	1,657	52	1,197	1.70	39	36	6.5	
5	4	1.66	2.79	59	7.3	70	1,629	86	2,001	2.30	54	56	6.9	
6	1		2.67	59	7.5	74	1,648	66	1,470	2.20	49	54	6.9	
7	1		2.75	59	7.4	52	1,193	56	1,284	1.90	44	50	6.6	
8	4	0.14	2.72	60	7.4	60	1,361	86	1,951	3.50	79	68	6.4	
9	4	0.01	2.72	60	7.4	78	1,769	86	1,951	1.90	43	62	8.1	
10	4	0.04	2.75	60	7.3	74	1,697	62	1,422	2.30	53	50	8.7	
11	1		2.80	61	7.2	88	2,055	94	2,195	1.90	44	78	7.9	
12	1		2.76	61	7.4	78	1,795	84	1,934	1.90	44	60	5.4	
13	1		2.65	60	7.4	62	1,370	106	2,343	2.10	46	62	5.7	
14	4	0.64	2.69	60	7.5	78	1,750	116	2,602	2.20	49	96	7.1	
15	4	0.03	2.84	61	7.4	60	1,421	94	2,226	2.65	63	80	8.1	
16	1		2.71	61	7.5	130	2,938	106	2,396	2.85	64	100	8.8	
17	4	0.67	2.84	61	7.1	76	1,800	66	1,563	2.20	52	60	6.3	
18	4	0.32	2.80	61	7.3	54	1,261	80	1,868	1.40	33	52	6.9	
19	4	0.02	2.74	61	7.5	74	1,691	78	1,782	2.10	48	58	10.2	
20	1		2.65	60	7.2	98	2,166	108	2,387	2.20	49	74	9.4	
21	1		2.52	60	7.2	66	1,387	62	1,303	1.95	41	42	7.6	
22	4	0.44	2.70	61	7.4	58	1,306	110	2,477	2.05	46	94	7.3	
23	4	0.10	2.80	61	7.4	60	1,401	62	1,448	2.20	51	42	8.7	
24	1		2.76	60	7.3	78	1,795	66	1,519	2.85	66	44	8.0	
25	1		2.79	61	7.4	108	2,513	66	1,536	2.40	56	48	8.7	
26	1		2.75	60	7.5	60	1,376	54	1,238	2.20	50	42	6.9	
27	4	0.46	2.64	60	7.5	64	1,409	70	1,541	1.70	37	46	6.9	
28	1		2.74	59	7.5	88	2,011	74	1,691	1.95	45	52	6.2	
29	1		2.73	61	7.6	68	1,548	70	1,594	2.55	58	54	9.2	
30	1		2.66	61	7.3	64	1,420	68	1,509	2.10	47	56	8.2	
31	1		2.75	62	7.2	122	2,798	74	1,697	1.70	39	62	9.3	
Total	67	4.53	84.71	1,868	228.7	2,330	53,112	2,404	54,752	66.85	1,524	1,832	235.0	
Max.	4	1.66	2.84	62	7.6	130	2,938	116	2,602	3.50	79	100	10.2	
Min.	1	0.01	2.52	59	7.1	52	1,193	52	1,197	1.40	33	36	5.4	
Avg.	2	0.38	2.73	60	7.4	75	1,713	78	1,766	2.16	49	59	7.6	

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT - PLANT No. 130029
AUGUST, 1988 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mg/L	P Eff. BOD Lbs.	P Eff. SS mg/L	P. Eff. SS Lbs.	P Eff. Phos. mg/L	P Eff. Phos. Lbs.	P Eff. VSS mg/L	P Eff. NH3-N mg/L	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	52	1,193	34	780	1.65	38	40	5.7	2.75	24	41	20
2	38	862	24	544	1.40	32	16	5.5	2.72	41	55	28
3	56	1,289	54	1,243	1.60	37	36	7.7	2.76	33	40	16
4	38	875	22	506	1.60	37	16	5.7	2.76	49	58	5
5	36	838	40	931	2.10	49	34	5.5	2.79	49	53	9
6	44	980	30	668	1.80	40	26	5.6	2.67	41	55	18
7	42	963	22	505	1.60	37	8	4.7	2.75	19	52	16
8	42	953	48	1,089	1.70	39	28	4.6	2.72	30	44	51
9	42	953	40	907	1.50	34	28	5.0	2.72	46	53	21
10	36	826	28	642	1.80	41	24	5.9	2.75	51	55	22
11	50	1,168	26	607	1.35	32	24	5.9	2.80	43	72	29
12	44	1,013	40	921	1.40	32	30	4.8	2.76	44	52	26
13	34	751	20	442	1.40	31	14	4.1	2.65	45	81	33
14	42	942	48	1,077	1.40	31	34	4.6	2.69	46	59	36
15	46	1,090	54	1,279	2.55	60	32	6.3	2.84	23	43	4
16	72	1,627	40	904	2.20	50	36	7.3	2.71	45	62	23
17	40	947	28	663	2.30	54	24	6.5	2.84	47	58	0
18	46	1,074	40	934	1.50	35	18	6.3	2.80	15	50	0
19	38	868	22	503	1.90	43	18	6.6	2.74	49	72	10
20	52	1,149	44	972	1.90	42	18	6.4	2.65	47	59	14
21	20	420	24	504	1.30	27	12	5.6	2.52	70	61	33
22	52	1,171	68	1,531	2.30	52	52	6.4	2.70	10	38	0
23	40	934	40	934	1.95	46	28	6.2	2.80	33	35	11
24									2.76			
25	50	1,163	28	652	2.20	51	18	6.9	2.79	54	58	8
26	54	1,238	42	963	2.05	47	32	6.3	2.75	10	22	7
27	44	969	34	749	1.60	35	22	5.9	2.64	31	51	6
28	62	1,417	42	960	1.65	38	32	5.4	2.74	30	43	15
29	58	1,321	42	956	2.45	56	30	7.7	2.73	15	40	4
30	48	1,065	52	1,154	2.20	49	40	7.8	2.66	25	24	0
31	62	1,422	40	917	1.70	39	30	7.4	2.75	49	46	0
Total	1,380	31,481	1,116	25,438	54.05	1,233	800	180.3	84.71	1,114	1,532	465
Max.	72	1,627	68	1,531	2.55	60	52	7.8	2.84	70	81	51
Min.	20	420	20	442	1.30	27	8	4.1	2.52	10	22	0
Avg.	46	1,049	37	848	1.80	41	27	6.0	2.73	37	51	16

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT - PLANT No. 130029
AUGUST, 1988 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading #/m	Mix Liq SS mg/L	Mix Liq VSS mg/L	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mg/L	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mg/l	PE SS mg/L
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	3.1	6.1	0.33	1,579	1,220	23.0	0.69	3.5	232	0.36	0.27	58	36	2.75	52	34
2		3.2	9.0	0.23	1,644	1,242	23.0	0.71	3.5	230	0.38	0.28	59	36	2.72	38	24
3		3.1	3.9	0.27	1,615	1,588	22.0	0.73	5.3	233	0.37	0.27	58	36	2.76	56	54
4		3.1	9.7	0.23	1,642	1,256	23.0	0.71	4.2	231	0.38	0.29	58	36	2.76	38	22
5		3.1	5.1	0.23	1,591	1,197	22.0	0.72	3.9	232	0.40	0.26	57	40	2.79	36	40
6		3.2	6.9		1,543					237			60	40	2.67	44	30
7		3.1	9.5		1,599					234			58	29	2.75	42	22
8		3.2	4.5	0.27	1,630	1,194	22.0	0.74	6.2	232	0.37	0.28	58	29	2.72	42	48
9		3.2	5.7	0.25	1,734	1,276	23.0	0.75	4.3	232	0.38	0.28	58	32	2.72	42	40
10		3.1	8.0	0.21	1,719	1,305	25.0	0.69	4.4	237	0.40	0.30	57	32	2.75	36	28
11		3.1	8.2	0.31	1,664	1,242	24.0	0.69	5.4	234	0.37	0.27	57	43	2.80	50	26
12		3.1	5.1	0.28	1,564	1,199	22.0	0.71	5.2	229	0.37	0.27	55	52	2.76	44	40
13		3.3	10.2		1,505					234			58	43	2.65	34	20
14		3.2	4.4		1,591					234			57	33	2.69	42	48
15		3.0	3.5	0.32	1,513	1,143	19.0	0.80	3.7	237	0.40	0.29	56	33	2.84	46	54
16		3.2	5.2	0.45	1,585	1,203	21.0	0.75	4.8	229	0.36	0.28	59	32	2.71	72	40
17		3.0	8.1	0.23	1,795	1,354	27.0	0.66	2.5	244	0.39	0.30	57	32	2.84	40	28
18		3.1	5.6	0.27	1,733	1,314	26.0	0.67	3.7	257	0.37	0.29	57	55	2.80	46	40
19		3.1	9.9	0.22	1,670	1,295	26.0	0.64	6.1	226	0.37	0.28	58	55	2.74	38	22
20		3.3	5.1		1,669					228			61	46	2.65	52	44
21		3.4	9.5		1,595					231			64	37	2.52	20	24
22		3.2	3.1	0.33	1,576	1,188	23.0	0.69	3.1	229	0.32	0.24	58	37	2.70	52	68
23		3.1	5.2	0.25	1,632	1,262	24.0	0.68	2.9	220	0.37	0.29	59	37	2.80	40	40
24		3.1			1,598	1,199	25.0	0.64	2.5	223	0.36	0.27	57	37	2.76		
25		3.1	7.6	0.30	1,663	1,275	28.0	0.59	3.2	223	0.37	0.28	56	49	2.79	50	28
26		3.1	5.0	0.34	1,614	1,208	27.0	0.60	3.2	224	0.35	0.26	56	50	2.75	54	42
27		3.3	6.7		1,667					228			60	50	2.64	44	34
28		3.1	4.6		1,489					230			58	49	2.74	62	42
29		3.2	4.6	0.39	1,480	1,117	21.0	0.70	5.6	231	0.36	0.27	59	43	2.73	58	42
30		3.2	4.0	0.24	1,542	1,482	22.0	0.70	5.5	224	0.35	0.27	60	43	2.66	48	52
31		3.1	5.0	0.41	1,528	1,148	21.0	0.73	6.0	228	0.35	0.26	58	42	2.75	62	40
Total	48	97.8	189.3	6.39	49,969	28,907	539.0	16.01	98.7	7,173	8.50	6.35	1,801	1,244	84.71	1,380	1,116
Max.	48	3.4	10.2	0.45	1,795	1,588	28.0	0.80	6.2	257	0.40	0.30	64	55	2.84	72	68
Min.	48	3.0	3.1	0.21	1,480	1,117	19.0	0.59	2.5	220	0.32	0.24	55	29	2.52	20	20
Avg.	48	3.2	6.3	0.29	1,612	1,257	23.4	0.70	4.3	231	0.37	0.28	58	40	2.73	46	37

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 W. PEARL ST. MARSHALL MI 49068 - PERMIT NO. MI0023540
AUGUST, 1988 - DISCHARGE MONITORING REPORT - DISCHARGE No. 001A

	D.O. mg/L	pH SU	SS mg/L	SS Lbs.	Total-P mg/L	Flow MGD	Chlorine mg/L	BOD mg/L	BOD Lbs.	NH3 as N mg/L	NH3-N Lbs.	F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	6.1	7.5	6	138	0.40	2.75	0.13	3	69	5.1	117	222	90	96	80
2	6.5	7.3	5	113	0.32	2.72	0.26	3	68	3.9	88	80	91	95	84
3	6.5	7.3	17	391	0.34	2.76	0.14	5	115	6.2	143	200	81	94	82
4	6.6	7.4	4	92	0.37	2.76	0.10	2	46	4.7	108	200	92	97	78
5	5.8	7.3	3	70	0.40	2.79	0.17	3	70	4.5	105	200	97	96	83
6	6.5	7.3	5	111	0.40	2.67	0.17	3	67	5.1	114	58	92	96	82
7	6.7	7.2	4	92	0.35	2.75	0.38	2	46	4.2	96	36	93	96	82
8	6.4	7.3	7	159	0.46	2.72	0.23	3	68	3.8	86	338	92	95	87
9	6.5	7.4	2	45	0.37	2.72	0.16	3	68	3.8	86	98	98	96	81
10	6.9	7.3	7	161	0.37	2.75	0.12	3	69	4.2	96	174	89	96	84
11	7.1	7.5	2	47	0.38	2.80	0.11	3	70	4.8	112	200	98	97	80
12	6.4	7.5	5	115	0.42	2.76	0.20	5	115	3.8	87	200	94	94	78
13	5.0	7.7	5	111	0.37	2.65	0.42	3	66	2.8	62	104	95	95	82
14	5.0	7.6	15	337	0.35	2.69	0.31	3	67	3.4	76	120	87	96	84
15	6.0	7.2	9	213	0.34	2.84	0.01	4	95	4.8	114	200	90	93	87
16	5.1	7.5	6	136	0.66	2.71	0.08	5	113	6.4	145	200	94	96	77
17	5.8	7.2	3	71	0.56	2.84	0.05	5	118	5.1	121	200	95	93	75
18	6.2	7.3	3	70	0.32	2.80	0.09	4	93	4.1	96	102	96	93	77
19	6.8	7.3	8	183	0.48	2.74	0.24	4	91	5.3	121	80	90	95	77
20	6.0	7.5	12	265	0.50	2.65	0.33	3	66	5.6	124	26	89	97	77
21	6.0	7.2	4	84	0.38	2.52	0.33	3	63	5.5	116	14	94	95	81
22	7.0	7.5	7	158	0.38	2.70	0.22	3	68	4.7	106	68	94	95	84
23	6.6	7.3	4	93	0.38	2.80	0.28	2	47	5.1	119	82	94	97	83
24	6.6	7.2	4	92	0.68	2.76	0.24	3	69	5.0	115	56	94	96	76
25	6.8	7.3	4	93	0.48	2.79	0.32	6	140	5.0	116	50	94	94	80
26	6.4	7.3	4	92	0.40	2.75	0.25	2	46	4.7	108	38	93	97	82
27	6.8	7.2	2	44	0.30	2.64	0.32	3	66	4.1	90	8	97	95	82
28	7.0	7.6	5	114	0.27	2.74	0.35	2	46	3.8	87	4	93	98	86
29	7.0	7.5	7	159	0.41	2.73	0.22	3	68	5.3	121	24	90	96	84
30	6.6	7.4	6	133	0.42	2.66	0.24	2	44	5.9	131	34	91	97	80
31	7.1	7.3	5	115	0.32	2.75	0.23	3	69	5.5	126	50	93	98	81
Total	197.8	228.4	180	4,096	12.58	84.71	6.70	101	2,307	146.2	3,332	3,466	2,870	2,964	2,516
Max.	7.1	7.7	17	391	0.68	2.84	0.42	6	140	6.4	145	338	98	98	87
Min.	5.0	7.2	2	44	0.27	2.52	0.01	2	44	2.8	62	4	81	93	75
Avg.	6.4	7.4	6	132	0.41	2.73	0.22	3	74	4.7	107	75	93	96	81
			8	182				4	86	5.2		169			

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MISCELLANEOUS & SLUDGE SHEET - AUGUAT, 1988

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	Other	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	pH
1		2,640	670	17	298		6,000	4.2	76	5.7
2		2,760	2,020	17	199		12,000	4.3	70	6.7
3		2,640	1,960	17	199		3,500	4.7	76	5.7
4		2,640	1,930	17	199		4,000	4.5	72	5.9
5		2,760	1,910	17	298		1,200	4.4	66	6.7
6		2,520	650	17	298		1,000	4.4	76	6.1
7		2,760	670	17	99		1,000	4.7	76	5.8
8		2,640	720	17	199		3,000	4.5	75	5.3
9		2,640	700	17	298		12,600	4.0	72	7.4
10		2,760	760	17	199		1,000	4.7	75	5.7
11		2,640	780	17	199		700	5.5	79	7.1
12		2,760	660	17	199		12,000	3.7	73	5.5
13		2,640	640	17	298		700	5.0	81	5.4
14		2,640	800	17	298		1,100	5.6	77	5.6
15		2,640	800	17	199		1,200	5.4	80	6.8
16		2,400	560	17	298		12,600	4.4	73	5.7
17		2,520	750	17	199		1,200	5.5	76	5.7
18		2,640	830	17	298		1,100	7.3	74	6.7
19		2,640	810	20	199		12,100	4.3	86	6.7
20		2,400	750	20	298		1,000	5.6	75	5.6
21		2,520	520	20	298		1,000	6.5	77	5.5
22		2,520	840	20	199		2,000	5.2	79	5.5
23		2,520	740	20	298		13,400	4.9	76	6.4
24		2,520	1,090	20	199		3,000	5.5	81	5.4
25		2,520	380	20	298		2,000	5.0	78	5.3
26		2,400	470	20	199		12,700	3.8	73	7.0
27		2,520	320	20	199		2,000	3.2	81	5.5
28		2,520	360	20	199		2,000	5.0	79	5.4
29		2,520	390	20	199		2,000	6.0	77	5.5
30		2,520	380	20	298		15,600	3.2	70	6.9
31		2,520	570	20	199		1,500	4.7	78	5.4
Total		80,280	25,430	566	7,356		146,200	149.7	2,357	185.6
Max.		2,760	2,020	20	298		15,600	7.3	86	7.4
Min.		2,400	320	17	99		700	3.2	66	5.3
Avg.		2,590	820	18	237		4,716	4.8	76	6.0

Manpower & Hours

	Total Hr
Superintendent 1	^184
Asst. Supt. 1	^184
Operators 3	^552
Total	^920

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
SEPTEMBER, 1988 - PLANT INFLUENT SHEET - SAMPLING CODE 500

	----Weather-----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1	1		2.74	62	7.3	130	2,971	112	2,559	3.20	73	86	19.0	
2	4	0.22	2.64	61	7.1	40	881	30	661	3.00	66	12	10.0	
3	4	0.30	2.48	61	7.6	64	1,324	44	910	1.70	35	38	6.3	
4	4	0.17	2.48	61	7.2	58	1,200	38	786	2.05	42	32	6.3	
5	4	0.03	2.56	60	7.1	82	1,751	92	1,964	1.90	41	76	6.5	
6	1		2.74	61	7.3	108	2,468	88	2,011	2.65	61	72	7.9	
7	1		2.74	61	7.3	92	2,102	66	1,508	2.05	47	58	7.6	
8	1		2.70	61	7.4	96	2,162	102	2,297	1.95	44	88	9.8	
9	1		2.71	61	7.6	108	2,441	72	1,627	1.95	44	56	8.7	
10	1		2.57	60	7.7	102	2,186	50	1,072	3.85	83	36	10.7	
11	1		2.61	61	7.7	76	1,654	60	1,306	2.40	52	48	8.6	
12	4	0.21	2.68	61	7.5	96	2,146	90	2,012	2.65	59	58	9.6	
13	1		2.60	61	7.2	84	1,821	80	1,735	2.10	46	74	8.8	
14	1		2.61	61	7.9	70	1,524	70	1,524	2.40	52	60	7.9	
15	1		2.59	61	7.4	96	2,074	60	1,296	2.75	59	48	9.0	
16	1		2.60	61	7.4	102	2,212	74	1,605	3.30	72	64	9.1	
17	4	0.02	2.54	60	7.4	80	1,695	78	1,652	2.75	58	62	8.8	
18	4	0.87	2.67	59	7.3	80	1,781	108	2,405	2.55	57	86	7.0	
19	4	1.28	2.74	60	7.2	98	2,239	88	2,011	2.55	58	72	8.2	
20	4	0.03	2.71	61	7.3	62	1,401	70	1,582	3.30	75	60	7.7	
21	4	0.03	2.72	61	7.4	68	1,543	70	1,588	2.20	50	60	8.0	
22	4	3.20	3.02	61	7.3	86	2,166	90	2,267	2.05	52	78	7.7	
23	1		2.91	61	7.3									
24	1		2.78	61	7.1	84	1,948	48	1,113	2.45	57	40	6.6	
25	1		2.79	59	7.1	72	1,675	68	1,582	2.55	59	58	6.2	
26	1		2.88	60	7.5	74	1,777	68	1,633	2.90	70	58	7.0	
27	1		2.83	60	7.4	94	2,219	82	1,935	4.20	99	80	7.4	
28	1		2.81	61	7.1	76	1,781	96	2,250	6.15	144	86	7.9	
29	1		2.79	61	7.3	76	1,768	76	1,768	5.10	119	66	9.6	
30	4	0.02	2.78	61	7.3	82	1,901	58	1,345	1.70	39	48	6.2	
31														
Total	66	6.38	81.02	1,821	220.7	2,436	54,810	2,128	48,004	80.35	1,812	1,760	244.1	
Max.	4	3.20	3.02	62	7.9	130	2,971	112	2,559	6.15	144	88	19.0	
Min.	1	0.02	2.48	59	7.1	40	881	30	661	1.70	35	12	6.2	
Avg.	2	0.53	2.70	61	7.4	84	1,890	73	1,655	2.77	62	61	8.4	

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT - PLANT No. 130029
SEPTEMBER, 1988 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mg/L	P Eff. BOD Lbs.	P Eff. SS mg/L	P. Eff. SS Lbs.	P Eff. Phos. mg/L	P Eff. Phos. Lbs.	P Eff. VSS mg/L	P Eff. NH3-N mg/L	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	126	2,879	60	1,371	2.55	58	46	16.2	2.74	3	46	20
2	50	1,101	44	969	3.20	70	20	8.4	2.64	0	0	6
3	52	1,076	26	538	2.30	48	22	6.3	2.48	19	41	0
4	52	1,076	10	207	1.95	40	6	5.7	2.48	10	73	5
5	68	1,452	66	1,409	1.65	35	48	6.3	2.56	17	28	13
6	68	1,554	50	1,143	2.05	47	40	6.7	2.74	37	43	22
7	58	1,325	20	457	2.10	48	8	6.2	2.74	37	70	0
8	76	1,711	46	1,036	2.10	47	32	7.5	2.70	21	55	0
9	70	1,582	50	1,130	1.95	44	40	7.8	2.71	35	31	0
10	94	2,015	58	1,243	1.80	39	50	8.7	2.57	8	0	53
11	50	1,088	26	566	1.80	39	18	7.0	2.61	34	57	25
12	60	1,341	62	1,386	2.45	55	46	7.6	2.68	38	31	0
13	60	1,301	48	1,041	2.10	46	40	7.0	2.60	29	40	0
14	46	1,001	44	958	2.10	46	36	6.9	2.61	34	37	13
15	62	1,339	44	950	2.20	48	40	8.6	2.59	35	27	20
16	78	1,691	48	1,041	3.20	69	42	8.1	2.60	24	35	3
17	52	1,102	44	932	2.90	61	32	7.6	2.54	35	44	0
18	48	1,069	48	1,069	2.75	61	38	6.5	2.67	40	56	0
19	58	1,325	64	1,463	2.40	55	48	6.8	2.74	41	27	5
20	44	994	42	949	2.20	50	36	7.5	2.71	35	40	33
21	50	1,134	48	1,089	2.45	56	42	7.4	2.72	26	31	0
22	44	1,108	38	957	1.95	49	30	6.8	3.02	49	58	5
23									2.91			
24	66	1,530	50	1,159	2.75	64	38	6.3	2.78	21	0	0
25	46	1,070	44	1,024	2.45	57	34	6.3	2.79	36	35	4
26	46	1,105	38	913	2.65	64	30	6.1	2.88	38	44	9
27	66	1,558	40	944	3.20	76	38	6.5	2.83	30	51	24
28	50	1,172	50	1,172	5.10	120	46	7.2	2.81	34	48	17
29	44	1,024	28	652	5.10	119	20	7.6	2.79	42	63	0
30	62	1,437	40	927	1.95	45	32	5.6	2.78	24	31	0
31												
Total	1,746	39,162	1,276	28,693	73.35	1,654	998	213.2	81.02	832	1,142	277
Max.	126	2,879	66	1,463	5.10	120	50	16.2	3.02	49	73	53
Min.	44	994	10	207	1.65	35	6	5.6	2.48	0	0	0
Avg.	60	1,350	44	989	2.53	57	34	7.4	2.70	29	39	10

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT - PLANT No. 130029
SEPTEMBER, 1988 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	3.1	3.3	0.83	1,530	1,156	22.0	0.70	5.3	227	0.37	0.28	59	42	2.74	126	60
2		3.3	5.7	0.26	1,835	1,409	27.0	0.68	5.3	220	0.39	0.30	61	42	2.64	50	44
3		3.5	10.1		1,822					212			63	42	2.48	52	26
4		3.5	25.8		1,781					196			66	50	2.48	52	10
5		3.4	3.5		1,670		26.0	0.64	6.5	205			63	50	2.56	68	66
6		3.1	4.1	0.44	1,562	1,186	25.0	0.62	5.2	200	0.35	0.27	58	50	2.74	68	50
7		3.1	10.2	0.38	1,563	1,179	28.0	0.56	1.9	200	0.34	0.26	58	46	2.74	58	20
8		3.2	4.6	0.47	1,595	1,223	31.0	0.51	4.1	195	0.38	0.27	59	49	2.70	76	46
9		3.2	4.3	0.42	1,634	1,261	37.0	0.44	4.3	237	0.37	0.28	59	46	2.71	70	50
10		3.4	4.0		1,653					260			62	46	2.57	94	58
11		3.3	9.0		1,697					257			61	46	2.61	50	26
12		3.2	3.6	0.34	1,671	1,318	30.0	0.56	5.2	255	0.36	0.28	59	58	2.68	60	62
13		3.3	4.6	0.35	1,610	1,251	27.0	0.60	6.2	258	0.36	0.28	61	58	2.60	60	48
14		3.3	4.9	0.28	1,564	1,212	26.0	0.60	5.8	261	0.34	0.27	61	50	2.61	46	44
15		3.3	4.8	0.38	1,537	1,169	25.0	0.61	4.2	218	0.34	0.25	61	50	2.59	62	44
16		3.3	4.4	0.47	1,545	1,194	27.0	0.57	5.5	209	0.34	0.26	61	50	2.60	78	48
17		3.4	5.2		1,621					226			63	50	2.54	52	44
18		3.2	4.4		1,571					222			60	55	2.67	48	48
19		3.1	3.4	0.36	1,637	1,224	26.0	0.63	6.2	222	0.35	0.27	58	50	2.74	58	64
20		3.2	5.1	0.27	1,627	1,220	26.0	0.63	6.0	228	0.36	0.27	59	49	2.71	44	42
21		3.2	4.5	0.31	1,624	1,212	25.0	0.65	5.3	229	0.37	0.26	59	48	2.72	50	48
22		2.9	5.0	0.31	1,603	1,190	24.0	0.67	6.0	220	0.36	0.27	52	48	3.02	44	38
23		3.0			1,569	1,132	21.0	0.75	5.2	228	0.40	0.28	54	48	2.91		
24		3.1	4.0		1,546				4.7	231			56	48	2.78	66	50
25		3.1	4.3		1,470				7.1	231			55	48	2.79	46	44
26		3.0	4.5	0.38	1,372	977	17.0	0.81	5.2	226	0.37	0.27	55	48	2.88	46	38
27		3.0	4.6	0.48	1,463	1,075	18.0	0.81	5.5	224	0.41	0.30	55	36	2.83	66	40
28		3.1	3.9	0.36	1,514	1,100	20.0	0.76	5.8	233	0.38	0.27	56	40	2.81	50	50
29		3.1	7.3	0.31	1,582	1,109	19.0	0.83	5.5	226	0.40	0.28	56	40	2.79	44	28
30		3.1	5.1	0.42	1,583	1,148	19.0	0.83	5.5	223	0.40	0.29	56	40	2.78	62	40
31																	
Total	48	95.9	168.4	7.81	48,051	24,945	546.0	14.46	127.5	6,779	7.74	5.76	1,766	1,423	81.02	1,746	1,276
Max.	48	3.5	25.8	0.83	1,835	1,409	37.0	0.83	7.1	261	0.41	0.30	66	58	3.02	126	66
Min.	48	2.9	3.3	0.26	1,372	977	17.0	0.44	1.9	195	0.34	0.25	52	36	2.48	44	10
Avg.	48	3.2	5.8	0.39	1,602	1,188	24.8	0.66	5.3	226	0.37	0.27	59	47	2.70	60	44

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 W. PEARL ST. MARSHALL MI 49068 - PERMIT No. MI0023540
SEPTEMBER, 1988 - DISCHARGE MONITORING REPORT - DISCHARGE No. 001A

	D.O. mg/L	pH SU	SS mg/L	SS Lbs.	Total-P mg/L	Flow MGD	Chlorine mg/L	BOD mg/L	BOD Lbs.	NH3 as N mg/L	NH3-N Lbs.	F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	7.1	7.4	6	137	0.68	2.74	0.27	10	229	9.5	217	50	95	92	79
2	5.9	7.2	3	66	1.08	2.64	0.07	4	88	7.9	174	100	90	90	64
3	4.8	7.1	3	62	0.37	2.48	0.21	5	103	4.0	83	36	93	92	65
4	4.1	7.2	5	103	0.30	2.48	0.25	5	103	4.1	85	56	87	91	85
5	4.0	7.2	6	128	0.27	2.56	0.25	5	107	4.0	85	6	93	94	86
6	6.8	7.4	5	114	0.36	2.74	0.40	6	137	4.3	98	88	94	94	86
7	7.8	7.3	9	206	0.62	2.74	0.30	4	91	5.4	123	110	86	96	70
8	7.7	7.3	7	158	0.51	2.70	0.20	7	158	6.1	137	50	93	93	74
9	7.5	7.5	6	136	0.32	2.71	0.30	5	113	5.7	129	62	92	95	84
10	7.3	7.8	6	129	0.19	2.57	0.30	3	64	6.3	135	38	88	97	95
11	7.1	7.8	4	87	0.19	2.61	0.30	3	65	5.2	113	14	93	96	92
12	7.0	7.4	14	313	0.40	2.68	0.27	4	89	6.3	141	82	84	96	85
13	6.5	7.4	6	130	0.27	2.60	0.25	4	87	5.4	117	24	93	95	87
14	6.6	7.3	4	87	0.32	2.61	0.40	1	22	6.2	135	18	94	99	87
15	7.1	7.3	7	151	0.56	2.59	0.30	3	65	7.4	160	14	88	97	80
16	7.1	7.3	6	130	0.97	2.60	0.30	5	108	7.6	165	26	92	95	71
17	7.4	7.2	6	127	0.37	2.54	0.15	5	106	5.8	123	120	92	94	87
18	6.9	7.2	6	134	0.37	2.67	0.26	3	67	4.9	109	44	94	96	85
19	7.0	7.4	5	114	0.42	2.74	0.27	3	69	6.0	137	26	94	97	84
20	7.0	7.2	5	113	0.32	2.71	0.25	3	68	6.5	147	30	93	95	90
21	7.0	7.4	3	68	0.52	2.72	0.40	3	68	6.8	154	16	96	96	76
22	7.2	7.4	4	101	0.53	3.02	0.32	3	76	6.3	159	22	96	97	74
23	7.2	7.2				2.91	0.15					52			
24	6.3	7.3	10	232	0.66	2.78	0.53	5	116	5.4	125	8	79	94	73
25	6.5	7.2	10	233	0.61	2.79	0.48	2	47	5.4	126	8	85	97	76
26	7.0	7.5	5	120	0.74	2.88	0.13	3	72	5.3	127	90	93	96	74
27	7.0	7.3	6	142	0.82	2.83	0.16	3	71	5.7	135	82	93	97	80
28	6.5	7.3	9	211	0.87	2.81	0.25	3	70	5.9	138	36	91	96	86
29	7.1	7.4	4	93	0.99	2.79	0.19	3	70	7.1	165	60	95	96	81
30	6.8	7.3	3	70	1.14	2.78	0.24	5	116	4.9	114	72	95	94	33
31															
Total	201.3	220.2	173	3,894	15.77	81.02	8.15	118	2,644	171.4	3,856	1,440	2,651	2,757	2,289
Max.	7.8	7.8	14	313	1.14	3.02	0.53	10	229	9.5	217	120	96	99	95
Min.	4.0	7.1	3	62	0.19	2.48	0.07	1	22	4.0	83	6	79	90	33
Avg.	6.7	7.3	6	134	0.54	2.70	0.27	4	91	5.9	133	36	91	95	79
			7	167				5	116		142				

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	Other	Raw Sludge Gals.	Raw Sludge Total Solids Percent	Raw Sludge Vol. Solids Percent	Raw Sludge pH
1		2,520	390	20	199		1,000	5.7	76	5.2
2		2,520	530	20	298		11,800	4.2	71	6.7
3		2,400	400	20	298		1,200	5.2	77	5.3
4		2,520	300	20	199		1,200	4.6	83	5.1
5		2,160	370	20	199		1,000	5.6	78	5.3
6		2,400	630	20	298		15,000	4.8	77	6.8
7		2,400	400	20	199		1,500	4.4	77	5.6
8		2,520	380	20	199		1,500	4.7	81	5.3
9		2,520	590	20	298		13,000	3.5	75	6.7
10		2,520	370	20	199		3,000	3.9	82	5.6
11		2,520	460	20	199		3,000	5.8	79	5.3
12		2,640	490	20	199		3,000	4.8	78	5.4
13		2,640	710	20	199		14,000	3.5	77	6.9
14		2,640	690	20	199		2,000	4.6	92	5.6
15		2,640	680	20	199		3,000	5.0	66	5.7
16		2,520	620	20	298					
17		2,520	500	20	199		3,000	4.5	78	6.1
18		2,400	650	20	298		3,000	4.4	77	5.9
19		2,520	640	20	397		6,000	4.3	73	5.5
20		2,520	550	20	199		3,000	5.4	76	6.6
21		2,520	730	20	199		11,000	4.3	75	5.6
22		2,520	650	20	298		6,000	4.1	73	5.5
23		2,520	600	20	298		6,000	4.5	71	5.6
24		2,520	540	20	199		4,000	4.4	71	5.7
25		2,520	600	20	298		4,000	4.2	71	5.7
26		2,520	750	20	298		6,000	4.9	71	5.8
27		2,520	650	20	298		6,000	4.3	72	5.7
28		2,520	610	20	298		6,000	4.3	72	5.7
29		2,520	720	20	199		6,000	4.2	72	5.8
30		2,520	670	20	298		5,400	4.2	73	5.7
31										
Total		75,240	16,870	600	7,455		150,600	132.3	2,194	167.4
Max.		2,640	750	20	397		15,000	5.8	92	6.9
Min.		2,160	300	20	199		1,000	3.5	66	5.1
Avg.		2,508	562	20	249		5,193	4.6	76	5.8

Manpower & Hours

	Total Hr
Superintendent 1	^168
Asst. Supt. 1	^168
Operators 3	^508
Total	^844

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
OCTOBER, 1988 - PLANT INFLUENT SHEET - SAMPLING CODE 500

	----Weather----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1	4	0.82	2.67	60	7.5	62	1,381	72	1,603	2.45	55	66		
2	4	0.18	2.72	60	7.4	84	1,906	82	1,860	2.30	52	56		
3	4	0.06	2.95	59	7.4	92	2,263	77	1,894	2.45	60	64		
4	4	0.08	2.79	59	7.3	96	2,234	68	1,582	2.10	49	50		
5	3		2.78	59	7.3	84	1,948	72	1,669	2.85	66	50		
6	3		2.82	59	7.5	68	1,599	46	1,082	2.85	67	42		
7	3		2.69	59	7.5	74	1,660	90	2,019	2.65	59	70		
8	3		2.64	58	7.7	74	1,629	102	2,246	2.30	51	86		
9	4	0.02	2.65	58	7.5	72	1,591	84	1,856	1.90	42	66		
10	1		2.77	59	7.4	62	1,432	82	1,894	2.75	64	70		
11	4	0.09	2.88	59	7.4	88	2,114	64	1,537	3.75	90	58		
12	3		2.86	59	7.4	78	1,860	68	1,622	2.90	69	52		
13	1		2.56	58	7.9	112	2,391	76	1,623	2.20	47	58		
14	1		2.63	59	7.3	76	1,667	68	1,492	2.10	46	62		
15	4	0.04	2.57	58	7.5	72	1,543	122	2,615	1.90	41	116		
16	4	0.26	2.69	58	7.5	82	1,840	68	1,526	1.95	44	60		
17	4	1.29	2.90	58	7.2	74	1,790	106	2,564	2.40	58	78		
18	4	0.17	2.89	59	7.2	62	1,494	78	1,880	2.75	66	74		
19	4	0.05	2.65	59	7.1	74	1,635	52	1,149	2.10	46	48		
20	4	0.05	2.82	59	7.2	72	1,693	84	1,976	2.55	60	80		
21	4	0.26	2.79	58	7.4	80	1,861	76	1,768	2.75	64	66		
22	3		2.68	57	6.9	72	1,609	64	1,430	2.45	55	46		
23	4	0.46	2.76	57	7.3	86	1,980	82	1,888	2.40	55	64		
24	4	0.27	2.88	59	7.7	90	2,162	68	1,633	2.30	55	48		
25	4	0.02	2.84	59	7.3	76	1,800	84	1,990	2.10	50	78		
26	3		2.86	58	7.4	76	1,813	68	1,622	2.45	58	50		
27	4	0.04	2.85	58	7.3	84	1,997	74	1,759	3.40	81	58		
28	1		2.83	58	7.3	94	2,219	66	1,558	2.30	54	62		
29	1		2.72	58	7.5	80	1,815	64	1,452	1.65	37	54		
30	1		2.89	56	7.4	74	1,784	62	1,494	1.80	43	58		
31	4	0.03	2.94	57	7.7	104	2,550	72	1,765	2.05	50	54		
Total	99	4.19	85.97	1,811	229.4	2,474	57,260	2,341	54,049	74.85	1,736	1,944		
Max.	4	1.29	2.95	60	7.9	112	2,550	122	2,615	3.75	90	116		
Min.	1	0.02	2.56	56	6.9	62	1,381	46	1,082	1.65	37	42		
Avg.	3	0.23	2.77	58	7.4	80	1,847	76	1,744	2.41	56	63		

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT - PLANT No. 130029
OCTOBER, 1988 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mg/L	P Eff. BOD Lbs.	P Eff. SS mg/L	P. Eff. SS Lbs.	P Eff. Phos. mg/L	P Eff. Phos. Lbs.	P Eff. VSS mg/L	P Eff. NH3-N mg/L	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	38	846	34	757	2.40	53	30		2.67	39	53	2
2	66	1,497	46	1,044	2.30	52	34		2.72	21	44	0
3	78	1,919	34	837	2.30	57	26		2.95	15	56	6
4	66	1,536	44	1,024	2.05	48	32		2.79	31	35	2
5									2.78			
6	54	1,270	36	847	2.75	65	32		2.82	21	22	3
7	52	1,167	54	1,211	2.65	59	34		2.69	30	40	0
8	44	969	56	1,233	1.65	36	44		2.64	41	45	28
9	44	972	40	884	1.70	38	24		2.65	39	52	11
10	52	1,201	50	1,155	1.60	37	42		2.77	16	39	42
11	50	1,201	44	1,057	3.20	77	34		2.88	43	31	15
12	54	1,288	48	1,145	2.55	61	34		2.86	31	29	12
13	90	1,922	46	982	2.10	45	32		2.56	20	39	5
14	52	1,141	42	921	1.95	43	32		2.63	32	38	7
15	52	1,115	68	1,457	1.80	39	60		2.57	31	44	5
16	70	1,570	46	1,032	1.70	38	38		2.69	12	32	13
17	42	1,016	64	1,548	2.05	50	48		2.90	43	40	0
18	38	916	44	1,061	2.10	51	34		2.89	39	44	24
19	36	796	44	972	1.95	43	36		2.65	51	15	7
20	46	1,082	42	988	1.90	45	36		2.82	36	50	25
21	56	1,303	72	1,675	2.85	66	62		2.79	30	5	0
22	56	1,252	42	939	2.20	49	30		2.68	22	34	10
23	48	1,105	50	1,151	2.20	51	42		2.76	44	39	8
24	72	1,729	54	1,297	2.10	50	44		2.88	20	21	9
25	40	947	48	1,137	1.70	40	38		2.84	47	43	19
26	52	1,240	38	906	2.10	50	32		2.86	32	44	14
27	50	1,188	44	1,046	2.20	52	36		2.85	40	41	35
28	84	1,983	50	1,180	2.05	48	46		2.83	11	24	11
29	58	1,316	42	953	1.70	39	32		2.72	28	34	0
30	60	1,446	34	819	1.65	40	28		2.89	19	45	8
31	66	1,618	40	981	1.70	42	32		2.94	37	44	17
Total	1,666	38,550	1,396	32,239	63.15	1,463	1,104		85.97	921	1,122	338
Max.	90	1,983	72	1,675	3.20	77	62		2.95	51	56	42
Min.	36	796	34	757	1.60	36	24		2.56	11	5	0
Avg.	56	1,285	47	1,075	2.11	49	37		2.77	31	37	11

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTERWATER TREATMENT PLANT - PLANT No. 130029
OCTOBER, 1988 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading #/m	Mix Liq SS mg/L	Mix Liq VSS mg/L	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mg/L	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mg/l	PE SS mg/L
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	3.2	6.3		1,582					223			58	40	2.67	38	34
2		3.2	4.4		1,542					232			56	40	2.72	66	46
3		2.9	5.4	0.55	1,500	1,176	21.0	0.71	5.7	234	0.36	0.26	57	40	2.95	78	34
4		3.1	4.4	0.47	1,502	1,090	22.0	0.68	4.6	237	0.37	0.27	55	40	2.79	66	44
5		3.1			1,534	1,141	22.0	0.70	4.4	239	0.37	0.27	57	40	2.78		
6		3.1	5.2	0.39	1,475	1,096	22.0	0.67	6.6	209	0.37	0.27	56	40	2.82	54	36
7		3.2	3.7	0.35	1,477	1,106	23.0	0.64	5.6	203	0.33	0.29	58	36	2.69	52	54
8		3.3	3.8		1,553					200			59	36	2.64	44	56
9		3.3	5.4		1,609					199			58	45	2.65	44	40
10		3.1	4.0	0.35	1,528	1,134	25.0	0.61	4.2	195	0.37	0.28	55	45	2.77	52	50
11		3.0	4.4	0.35	1,559	1,154	26.0	0.60	4.0	203	0.36	0.27	53	45	2.88	50	44
12		3.0	4.0	0.37	1,548	1,149	26.0	0.60	6.0	207	0.37	0.28	54	45	2.86	54	48
13		3.4	4.9	0.52	1,623	1,228	25.0	0.65	3.5	205	0.35	0.27	60	43	2.56	90	46
14		3.3	5.5	0.30	1,689	1,264	27.0	0.63	3.6	195	0.39	0.30	59	43	2.63	52	42
15		3.4	3.5		1,696					192			60	52	2.57	50	68
16		3.2	4.8		1,658					196			58	52	2.69	72	46
17		3.0	3.1	0.28	1,580	1,224	24.0	0.66	5.7	191	0.38	0.30	55	52	2.90	42	64
18		3.0	4.6	0.25	1,624	1,244	25.0	0.65	4.5	200	0.38	0.29	55	50	2.89	38	44
19		3.3	5.0	0.21	1,619	1,249	26.0	0.62	5.6	204	0.38	0.29	60	50	2.65	36	44
20		3.1	4.9	0.29	1,606	1,243	26.0	0.62	4.5	202	0.37	0.30	57	50	2.82	46	42
21		3.1	2.9	0.36	1,595	1,203	24.0	0.66	5.6	200	0.38	0.29	57	50	2.79	56	72
22		3.2	5.1		1,604					197			59	50	2.68	56	42
23		3.1	4.0		1,541					199			57	56	2.76	48	50
24		3.0	3.4	0.52	1,471	1,108	20.0	0.74	6.2	204	0.38	0.28	55	55	2.88	72	54
25		3.0	4.0	0.28	1,535	1,147	22.0	0.70	4.6	206	0.38	0.28	55	46	2.84	40	48
26		3.0	5.0	0.36	1,503	1,139	20.0	0.75	6.5	199	0.39	0.30	54	46	2.86	52	38
27		3.0	4.2	0.37	1,450	1,082	19.0	0.76	6.5	199	0.35	0.27	55	48	2.85	50	44
28		3.0	3.5	0.60	1,386	1,100	19.0	0.73	5.8	213	0.38	0.28	55	46	2.83	84	50
29		3.2	4.6		1,460					217			57	46	2.72	58	42
30		3.0	5.2		1,434					211			53	46	2.89	60	34
31		2.9	4.3	0.51	1,409	1,056	18.0	0.78	6.5	207	0.38	0.28	56	46	2.94	66	40
Total	48	96.5	133.4	7.68	47,892	24,333	482.0	14.16	110.2	6,418	7.79	5.92	1,753	1,419	85.97	1,666	1,396
Max.	48	3.4	6.3	0.60	1,696	1,264	27.0	0.78	6.6	239	0.39	0.30	60	56	2.95	90	72
Min.	48	2.9	2.9	0.21	1,386	1,056	18.0	0.60	3.5	191	0.33	0.26	53	36	2.56	36	34
Avg.	48	3.1	4.4	0.38	1,545	1,159	23.0	0.67	5.2	207	0.37	0.28	57	46	2.77	56	47

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 W. PEARL ST. MARSHALL MI 49068 - PERMIT No. MI0023540
OCTOBER, 1988 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

	D.O. mg/L	pH SU	SS mg/L	SS Lbs.	Total-P mg/L	Flow MGD	Chlorine mg/L	BOD mg/L	BOD Lbs.	NH3 as N mg/L	NH3-N Lbs.	F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	7.0	7.4	3	67	0.71	2.67	0.36	3	67			28	96	95	71
2	7.2	7.2	10	227	0.76	2.72	0.45	4	91			28	88	95	67
3	6.0	7.4	5	123	0.74	2.95	0.23	5	123			76	94	95	70
4	7.4	7.2	9	209	0.61	2.79	0.23	4	93			60	87	96	71
5	7.3	7.3	10	232	0.71	2.78	0.35	5	116			82	86	94	75
6	7.0	7.4	10	235	0.97	2.82	0.28	5	118			198	78	93	66
7	7.3	7.3	10	224	0.56	2.69	0.24	6	135			58	89	92	79
8	7.0	7.9	12	264	0.82	2.64	0.37	6	132			60	88	92	64
9	6.2	7.5	10	221	0.46	2.65	0.33	4	88			26	88	94	76
10	7.4	7.3	8	185	0.53	2.77	0.29	4	92			126	90	94	81
11	6.2	7.5	9	216	1.02	2.88	0.12	5	120			204	86	94	73
12	6.5	7.4	15	358	0.95	2.86	0.09	7	167			418	78	91	67
13	6.7	7.5	8	171	0.78	2.56	0.14	20	427			72	89	82	65
14	6.2	7.4	10	219	0.76	2.63	0.15	10	219			196	85	87	64
15	6.5	7.2	13	279	0.41	2.57	0.35	5	107			74	89	93	78
16	6.4	7.5	8	179	0.32	2.69	0.39	3	67			66	88	96	84
17	6.0	7.3	10	242	0.46	2.90	0.31	3	73			178	91	96	81
18	5.8	7.3	13	313	0.66	2.89	0.03	6	145			200	83	90	76
19	5.7	7.2	8	177	0.41	2.65	0.26	4	88			60	85	95	80
20	6.0	7.2	10	235	0.28	2.82	0.26	3	71			16	88	96	89
21	5.1	7.4	8	186	0.70	2.79	0.40	4	93			56	89	95	75
22	6.1	7.2	6	134	0.42	2.68	0.39	4	89			56	91	94	83
23	5.7	7.2	6	138	0.37	2.76	0.63	3	69			24	93	97	85
24	6.1	7.2	9	216	0.42	2.88	0.26	5	120			68	87	94	82
25	5.7	7.2	10	237	0.40	2.84	0.32	6	142			62	88	92	81
26	5.9	7.4	8	191	0.41	2.86	0.29	3	72			64	88	96	83
27	5.5	7.3	3	71	0.42	2.85	0.29	4	95			54	96	95	88
28	6.0	7.2	10	236	0.41	2.83	0.31	5	118			74	85	95	82
29	6.1	7.4	7	159	0.32	2.72	0.36	4	91			48	89	95	81
30	5.9	7.2	6	145	0.39	2.89	0.53	6	145			14	90	92	78
31	6.0	7.5	18	441	0.32	2.94	0.29	11	270			58	75	89	69
Total	195.9	227.6	282	6,531	17.50	85.97	9.30	167	3,842			2,804	2,717	2,894	2,364
Max.	7.4	7.9	18	441	1.02	2.95	0.63	20	427			418	96	97	89
Min.	5.1	7.2	3	67	0.28	2.56	0.03	3	67			14	75	82	64
Avg.	6.3	7.3	9	211	0.56	2.77	0.30	5	124			67	88	93	76
			11	252				9	197						

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	Other	Raw Sludge Gals.	Raw Sludge Total Solids Percent	Raw Sludge Vol. Solids Percent	Raw Sludge pH
1		2,400	620	18	199		4,000	4.1	70	5.8
2		2,520	740	18	199		4,000	4.2	71	5.8
3		2,640	610	18	397		6,000	4.4	70	5.9
4		2,640	770	18	199		6,000	4.1	73	5.7
5		2,520	770	18	298		6,000	4.0	72	5.9
6		2,640	350	18	199		6,000	4.0	71	5.9
7		2,520	350	18	199		6,000	3.9	74	5.9
8		2,400	510	18	298		4,000	3.9	74	6.0
9		2,400	200	18	199		4,000	4.0	73	6.0
10		2,520	290	18	298		6,000	4.1	73	6.0
11		2,640	240	18	199		4,000	4.1	73	6.0
12		2,640	260	18	298		10,000	4.5	69	5.9
13		2,760	370	18	298		22,000	4.3	73	6.1
14		2,520	1,370	18	199		4,000	4.3	71	6.7
15		2,400	220	18	298		4,000	4.1	74	5.8
16		2,280	360	18	298		4,000	4.3	75	5.9
17		2,520	380	18	298		5,000	5.0	67	6.0
18		2,520	350	18	298		7,500	5.9	64	6.2
19		2,640	350	18	298		15,000	5.1	70	6.6
20		2,640	540	18	298		4,000	5.0	67	6.5
21		2,640	330	18	298		4,000	5.0	71	6.0
22		2,640	380	18	199		3,500	4.6	74	5.8
23		2,640	450	18	298		4,000	4.6	73	5.9
24		2,640	470	18	298		5,000	5.0	74	7.1
25		2,760	420	18	298		5,000	4.7	86	5.7
26		2,760	440	18	298		6,000	4.7	70	5.8
27		2,760	370	18	298		5,000	4.5	79	5.7
28		2,640	430	18	298		6,000	5.4	68	5.7
29		2,880	270	18	199		4,000	4.9	71	5.7
30		2,760	380	18	298		4,000	4.9	70	5.7
31		2,640	510	18	397		6,000	5.1	73	5.5
Total		80,520	14,100	558	8,446		184,000	140.7	2,233	185.2
Max.		2,880	1,370	18	397		22,000	5.9	86	7.1
Min.		2,280	200	18	199		3,500	3.9	64	5.5
Avg.		2,597	455	18	272		5,935	4.5	72	6.0

Manpower & Hours

	Total Hr
Superintendent 1	^168
Asst. Supt. 1	^168
Operators 3	^504
Total	^840

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
NOVEMBER, 1988 - PLANT INFLUENT SHEET - SAMPLING CODE 500

	----Weather-----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1	4	0.03	3.00	57	7.3	80	2,002	76	1,902	2.10	53	62		
2	1		2.96	57	7.8	108	2,666	94	2,321	2.40	59	84		
3	4	0.02	3.02	57	7.3	118	2,972	146	3,677	3.20	81	128		
4	4	0.38	2.94	57	7.5	62	1,520	38	932	2.05	50	28		
5	5	0.52	2.76	57	7.3	62	1,427	38	875	2.05	47	30		
6	4	0.25	2.82	56	7.4	72	1,693	86	2,023	1.80	42	70		
7	4	0.05	2.92	57	7.3	84	2,046	68	1,656	2.05	50	58		
8	1		2.92	56	7.3	98	2,387	60	1,461	2.85	69	52		
9	4	1.41	3.02	57	7.7	132	3,325	76	1,914	2.75	69	68		
10	4	0.12	3.14	57	7.6	84	2,200	48	1,257	2.10	55	44		
11	3		3.08	56	7.5	58	1,490	46	1,182	2.05	53	38		
12	4	0.32	3.02	55	6.7	58	1,461	60	1,511	1.80	45	48		
13	1		3.08	55	7.5	82	2,106	60	1,541	1.90	49	52		
14	1		3.16	56	7.2	56	1,476	66	1,739	1.70	45	52		
15	4	0.51	3.10	56	7.3	60	1,551	50	1,293	1.65	43	40		
16	4	0.04	3.14	56	7.4	70	1,833	58	1,519	1.80	47	48		
17	1		3.14	55	7.5	70	1,833	116	3,038	1.15	30	106		
18	4	0.06	3.12	55	7.2	62	1,613	26	677	1.50	39	18		
19	4	0.20	2.96	55	7.4	66	1,629	62	1,531	1.80	44	54		
20	4&5	0.62	3.10	55	7.4	58	1,500	68	1,758	1.70	44	56		
21	1		3.26	55	7.7	72	1,958	64	1,740	2.20	60	44		
22	1		3.20	55	7.4	52	1,388	68	1,815	2.20	59	58		
23	1		3.22	55	7.3	64	1,719	36	967	2.45	66	28		
24	1		2.94	55	7.3	30	736	24	588	2.05	50	16		
25	1		3.00	55	7.2	40	1,001	32	801	1.65	41	30		
26	4	0.36	3.00	55	7.4	32	801	34	851	2.10	53	30		
27	4&5	0.04	3.08	55	7.5	56	1,438	54	1,387	1.65	42	48		
28	5	0.04	3.18	55	7.3	76	2,016	70	1,856	2.20	58	54		
29	3		3.24	55	7.1	82	2,216	56	1,513	2.40	65	48		
30	5	0.09	3.12	55	7.3	72	1,873	62	1,613	1.90	49	46		
31														
Total	83	5.06	91.64	1,672	221.1	2,116	53,874	1,842	46,936	61.20	1,558	1,538		
Max.	5	1.41	3.26	57	7.8	132	3,325	146	3,677	3.20	81	128		
Min.	1	0.02	2.76	55	6.7	30	736	24	588	1.15	30	16		
Avg.	3	0.28	3.05	56	7.4	71	1,796	61	1,565	2.04	52	51		

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
NOVEMBER, 1988 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mg/L	P Eff. BOD Lbs.	P Eff. SS mg/L	P. Eff. SS Lbs.	P Eff. Phos. mg/L	P Eff. Phos. Lbs.	P Eff. VSS mg/L	P Eff. NH3-N mg/L	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	50	1,251	44	1,101	1.80	45	34		3.00	38	45	14
2	48	1,185	30	741	1.90	47	20		2.96	63	69	21
3	72	1,813	38	957	1.65	42	32		3.02	39	74	48
4	44	1,079	42	1,030	1.70	42	22		2.94	29	0	17
5	44	1,013	42	967	1.90	44	34		2.76	29	0	7
6	44	1,035	48	1,129	1.65	39	40		2.82	39	44	8
7	50	1,218	42	1,023	1.80	44	34		2.92	40	51	12
8	78	1,900	44	1,072	2.45	60	42		2.92	20	35	14
9	96	2,418	50	1,259	2.65	67	44		3.02	27	17	4
10	54	1,414	50	1,309	1.95	51	48		3.14	36	0	7
11	44	1,130	56	1,438	1.90	49	34		3.08	24	0	7
12	42	1,058	46	1,159	1.70	43	38		3.02	28	23	6
13	54	1,387	42	1,079	1.40	36	32		3.08	34	30	26
14	40	1,054	52	1,370	1.60	42	40		3.16	29	21	6
15	44	1,138	40	1,034	1.35	35	32		3.10	27	20	18
16	58	1,519	42	1,100	1.60	42	34		3.14	17	28	11
17	36	943	30	786	0.95	25	20		3.14	49	74	17
18	48	1,249	28	729	1.50	39	26		3.12	23	0	0
19	40	987	50	1,234	1.60	39	42		2.96	39	19	11
20	32	827	42	1,086	1.50	39	36		3.10	49	24	12
21	52	1,414	40	1,088	1.90	52	30		3.26	28	38	14
22	30	801	42	1,121	1.65	44	38		3.20	42	38	25
23	36	967	32	859	1.70	46	26		3.22	44	11	31
24	6	147	14	343	1.95	48	10		2.94	80	42	5
25	28	701	40	1,001	1.50	38	32		3.00	30	0	9
26	22	550	16	400	2.05	51	12		3.00	31	41	2
27	34	873	36	925	1.20	31	30		3.08	39	33	27
28	58	1,538	48	1,273	1.90	50	38		3.18	24	31	14
29	54	1,459	42	1,135	2.20	59	38		3.24	34	25	8
30	48	1,249	44	1,145	1.35	35	30		3.12	33	29	29
31												
Total	1,386	35,317	1,212	30,892	51.95	1,322	968		91.64	1,064	862	430
Max.	96	2,418	56	1,438	2.65	67	48		3.26	80	74	48
Min.	6	147	14	343	0.95	25	10		2.76	17	0	0
Avg.	46	1,177	40	1,030	1.73	44	32		3.05	35	29	14

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
NOVEMBER, 1988 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading #lm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	2.9	4.0	0.38	1,485	1,104	21.0	0.71	4.4	203	0.40	0.30	44	43	3.00	50	44
2		2.9	5.8	0.38	1,443	1,048	22.0	0.66	5.6	207	0.36	0.30	46	43	2.96	48	30
3		2.9	4.6	0.65	1,472	926	21.0	0.70	5.7	192	0.42	0.34	52	43	3.02	72	38
4		2.9	4.6	0.30	1,596	1,189	21.0	0.76	5.4	188	0.39	0.29	53	40	2.94	44	42
5		3.1	5.1		1,631					192			58	42	2.76	44	42
6		3.1	4.3		1,628					193			56	43	2.82	44	48
7		3.0	4.4	0.37	1,489	1,089	22.0	0.68	5.1	208	0.37	0.27	54	43	2.92	50	42
8		3.0	4.2	0.58	1,494	1,096	21.0	0.71	6.0	212	0.35	0.26	55	46	2.92	78	44
9		2.9	3.6	0.73	1,500	1,107	23.0	0.65	5.6	205	0.37	0.27	52	46	3.02	96	50
10		2.7	3.4	0.42	1,500	1,134	24.0	0.63	4.8	210	0.38	0.27	50	43	3.14	54	50
11		2.8	3.2	0.33	1,519	1,152	25.0	0.61	6.7	215	0.38	0.29	51	50	3.08	44	56
12		2.9	3.9		1,512					206			52	50	3.02	42	46
13		2.8	4.1		1,469					208			51	50	3.08	54	42
14		2.7	3.1	0.33	1,412	1,077	22.0	0.64	7.0	207	0.36	0.27	50	43	3.16	40	52
15		2.8	4.2	0.34	1,456	1,102	21.0	0.69	6.0	196	0.38	0.29	51	43	3.10	44	40
16		2.7	4.1	0.44	1,494	1,141	21.0	0.71	5.2	204	0.38	0.28	50	43	3.14	58	42
17		2.7	5.5	0.29	1,442	1,075	20.0	0.72	6.6	208	0.37	0.28	50	40	3.14	36	30
18		2.8	5.9	0.39	1,442	1,078	18.0	0.80	5.2	207	0.37	0.27	51	40	3.12	48	28
19		2.9	3.5		1,460					206			54	40	2.96	40	50
20		2.8	4.2		1,507					206			51	40	3.10	32	42
21		2.6	4.0	0.45	1,455	1,038	17.0	0.86	6.0	210	0.39	0.29	48	40	3.26	52	40
22		2.7	4.1	0.23	1,528	1,163	20.0	0.76	5.8	213	0.40	0.30	49	40	3.20	30	42
23		2.7	5.5	0.27	1,585	1,184	17.0	0.93	6.7	212	0.39	0.30	49	39	3.22	36	32
24		2.9	14.5		1,662					207			54	39	2.94	6	14
25		2.9	4.7		1,564					201			53	43	3.00	28	40
26		2.9	11.9		1,590					195			53	43	3.00	22	16
27		2.8	4.9		1,511					205			51	40	3.08	34	36
28		2.7	3.4	0.48	1,437	1,071	17.0	0.85	6.7	208	0.37	0.28	50	40	3.18	58	48
29		2.7	3.9	0.45	1,475	1,079	17.0	0.87	6.1	206	0.38	0.28	49	40	3.24	54	42
30		2.8	4.0	0.37	1,514	1,136	17.0	0.89	5.7	209	0.38	0.29	51	43	3.12	48	44
31																	
Total	48	84.7	146.4	8.19	45,272	21,989	407.0	14.82	116.3	6,139	7.59	5.72	1,538	1,278	91.64	1,386	1,212
Max.	48	3.1	14.5	0.73	1,662	1,189	25.0	0.93	7.0	215	0.42	0.34	58	50	3.26	96	56
Min.	48	2.6	3.1	0.23	1,412	926	17.0	0.61	4.4	188	0.35	0.26	44	39	2.76	6	14
Avg.	48	2.8	4.9	0.41	1,509	1,099	20.4	0.74	5.8	205	0.38	0.29	51	43	3.05	46	40

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 W. PEARL ST. MARSHALL MI 49068 - PERMIT No. MI0023540
November, 1988 - DISCHARGE MONITORING REPORT - DISCHARGE No. 001A

	D.O. mg/L	pH SU	SS mg/L	SS Lbs.	Total-P mg/L	Flow MGD	Chlorine mg/L	BOD mg/L	BOD Lbs.	NH3 as N mg/L	NH3-N Lbs.	F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	4.5	7.2	13	325	0.97	3.00		13	325				83	84	54
2	5.9	7.4	8	197	0.38	2.96		5	123				92	95	84
3	6.1	7.3	7	176	0.30	3.02		4	101				95	97	91
4	5.2	7.3	3	74	0.28	2.94		2	49				92	97	86
5	6.2	7.3	5	115	0.61	2.76		3	69				87	95	70
6	3.8	7.2	10	235	0.40	2.82		4	94				88	94	78
7	6.0	7.4	8	195	0.27	2.92		2	49				88	98	87
8	6.3	7.4	7	170	0.38	2.92		5	122				88	95	87
9	4.7	7.2	7	176	0.53	3.02		7	176				91	95	81
10	5.0	7.3	8	210	0.37	3.14		5	131				83	94	82
11	6.4	7.3	12	308	0.47	3.08		5	128				74	91	77
12	5.1	7.6	6	151	0.40	3.02		4	101				90	93	78
13	4.8	7.7	7	180	0.90	3.08		4	103				88	95	53
14	6.6	7.2	8	211	0.22	3.16		3	79				88	95	87
15	6.1	7.2	4	103	0.22	3.10		3	78				92	95	87
16	5.9	7.4	6	157	0.85	3.14		3	79				90	96	53
17	5.8	7.4	5	131	0.22	3.14		3	79				96	96	81
18	6.6	7.3	3	78	0.25	3.12		3	78				88	95	83
19	6.2	7.3	7	173	0.27	2.96		3	74				89	95	85
20	6.4	7.3	5	129	0.27	3.10		3	78				93	95	84
21	6.2	7.4	4	109	0.35	3.26		5	136				94	93	84
22	5.0	7.4	7	187	0.28	3.20		3	80				90	94	87
23	5.3	7.2	6	161	0.35	3.22		4	107				83	94	86
24	5.6	7.2	9	221	0.34	2.94		2	49				63	93	83
25	5.5	7.3	7	175	0.35	3.00		2	50				78	95	79
26	5.7	7.2	3	75	0.32	3.00		2	50				91	94	85
27	5.7	7.3	10	257	0.27	3.08		5	128				81	91	84
28	5.9	7.3	11	292	0.32	3.18		5	133				84	93	85
29	5.8	7.3	8	216	0.40	3.24		4	108				86	95	83
30	5.9	7.4	10	260	0.32	3.12		4	104				84	94	83
31															
Total	170.2	219.7	214	5,448	11.86	91.64		120	3,060				2,609	2,826	2,407
Max.	6.6	7.7	13	325	0.97	3.26		13	325				96	98	91
Min.	3.8	7.2	3	74	0.22	2.76		2	49				63	84	53
Avg.	5.7	7.3	7	182	0.40	3.05		4	102				87	94	80
			8	214				5	116						

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
NOVEMBER, 1988 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	Other	Raw Sludge Gals.	Raw Sludge Total Solids Percent	Raw Sludge Vol. Solids Percent	Raw Sludge pH
1	5,100	2,760	390		199		6,000	4.7	75	5.6
2	6,000	2,760	240		298		5,600	4.4	74	5.6
3	3,000	2,520	400		199		6,000	4.4	76	5.8
4	2,500	2,520	320		199		6,000	4.3	71	6.4
5	4,100	2,760	250		298		4,000	4.2	72	5.8
6	6,300	2,640	310		298		4,000	4.3	75	5.9
7	4,900	2,760	320		298		7,000	4.3	73	6.0
8	5,200	2,880	360		298		7,000	4.1	76	6.0
9	3,700	2,760	410		298		7,000	4.3	75	6.0
10	4,700	2,760	370		397		7,000	5.8	72	6.2
11	6,100	3,000	470		397		7,000	4.4	72	6.0
12	4,700	2,760	330		199		5,000	3.8	75	6.0
13	4,100	2,760	450		397		5,000	3.8	74	6.1
14	3,300	2,760	400		199		7,000	4.1	74	6.1
15	2,500	2,640	360		298		6,000	4.2	73	5.8
16	4,700	2,760	360		298		6,000	4.2	75	6.8
17	6,700	2,760	390		298		6,000	4.1	73	6.0
18	3,300	2,880	320		298		6,000	4.5	75	6.1
19	6,400	2,760	270		298		4,000	3.9	72	6.1
20	5,700	2,760	340		199		4,000	3.9	75	6.0
21	5,900	2,760	270		298		6,000	4.2	72	6.1
22	7,200	2,760	360		397		6,000	5.1	76	6.1
23	3,700	3,000	430		298		6,000	4.2	71	6.0
24	5,300	2,880	320		199		4,000	4.1	74	5.9
25	2,700	2,440	320		298		4,000	4.5	73	6.0
26	2,800	2,640	410		298		4,000	4.1	75	6.1
27	5,400	2,760	340		199		4,000	4.3	73	5.9
28	7,000	2,880	360		298		6,000	4.4	73	5.9
29	5,700	2,760	380		298		6,000	4.3	76	5.9
30	6,500	2,880	810		298		6,000	4.2	74	5.9
31										
Total	145,200	82,720	11,060		8,544		167,600	129.1	2,214	180.1
Max.	7,200	3,000	810		397		7,000	5.8	76	6.8
Min.	2,500	2,440	240		199		4,000	3.8	71	5.6
Avg.	4,840	2,757	369		285		5,587	4.3	74	6.0

Manpower & Hours

	Total Hr
Superintendent 1	^160
Asst. Supt. 1	^160
Operators 3	^488
Total	^808

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
DECEMBER, 1988 - PLANT INFLUENT SHEET - SAMPLING CODE 500

	----Weather-----		Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	--Remarks or Other Parameters--
	Type	Precip.	Flow MGD	Temp F	pH SU	BOD mg/L	BOD Lbs.	SS mg/L	SS Lbs.	Phos. mg/L	Phos. Lbs.	VSS mg/L	NH3-N mg/L	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1	5	0.02	3.12	54	7.3	60	1,561	66	1,717	2.05	53	48		
2	3		3.01	54	7.4	62	1,556	60	1,506	2.05	51	44		
3	1		2.96	54	7.4	90	2,222	106	2,617	2.05	51	82		
4	1		3.02	55	7.4	62	1,562	54	1,360	2.10	53	48		
5	1		3.10	54	7.2	62	1,603	66	1,706	2.30	59	58		
6	1		3.05	55	7.2	84	2,137	64	1,628	2.55	65	54		
7	3		3.11	55	7.8	84	2,179	78	2,023	2.85	74	66		
8	3		3.08	54	7.3	84	2,158	72	1,849	2.45	63	66		
9	5	0.06	3.04	54	7.4	78	1,978	66	1,673	2.30	58	48		
10	5	0.02	2.94	54	7.5	82	2,011	76	1,863	1.80	44	56		
11	1		2.94	53	7.7	82	2,011	66	1,618	1.95	48	60		
12	5	0.04	3.04	53	7.3	70	1,775	68	1,724	2.05	52	54		
13	5	0.02	3.00	53	7.3	70	1,751	72	1,801	2.10	53	58		
14	1		2.96	53	7.5	70	1,728	58	1,432	2.30	57	44		
15	5	0.02	3.01	54	7.3	58	1,456	68	1,707	2.05	51	56		
16	5	0.03	2.93	53	7.3	68	1,662	46	1,124	1.95	48	40		
17	5	0.01	2.76	53	7.3	60	1,381	46	1,059	1.95	45	36		
18	1		2.90	53	7.4	84	2,032	74	1,790	3.30	80	52		
19	1		2.93	52	7.3	80	1,955	80	1,955	1.90	46	60		
20	4	0.04	2.93	53	7.7	60	1,466	54	1,320	2.05	50	50		
21	1		2.95	53	7.3	74	1,821	70	1,722	2.20	54	56		
22	4	0.51	2.94	53	7.2	56	1,373	42	1,030	1.60	39	26		
23	1		2.76	52	7.4	60	1,381	62	1,427	1.80	41	46		
24	3		2.80	52	7.5	62	1,448	68	1,588	1.90	44	48		
25	3		2.77	52	7.2	36	832	52	1,201	1.80	42	32		
26	4&5	0.90	2.86	52	7.4	72	1,717	64	1,527	1.90	45	54		
27	4&5	0.30	3.10	51	7.2	74	1,913	66	1,706	1.95	50	52		
28	3		3.05	51	7.2	80	2,035	58	1,475	2.40	61	48		
29	3		3.10	51	7.5	94	2,430	96	2,482	2.40	62	78		
30	3		2.97	51	7.4	62	1,536	62	1,536	1.80	45	42		
31	1		2.94	51	7.6	62	1,520	60	1,471	2.05	50	46		
Total	83	1.97	92.07	1,642	228.9	2,182	54,188	2,040	50,639	65.90	1,636	1,608		
Max.	5	0.90	3.12	55	7.8	94	2,430	106	2,617	3.30	80	82		
Min.	1	0.01	2.76	51	7.2	36	832	42	1,030	1.60	39	26		
Avg.	3	0.16	2.97	53	7.4	70	1,748	66	1,634	2.13	53	52		

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
DECEMBER, 1988 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mg/L	P Eff. BOD Lbs.	P Eff. SS mg/L	P. Eff. SS Lbs.	P Eff. Phos. mg/L	P Eff. Phos. Lbs.	P Eff. VSS mg/L	P Eff. NH3-N mg/L	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	48	1,249	48	1,249	1.65	43	36		3.12	27	27	20
2	44	1,105	40	1,004	1.90	48	26		3.01	27	33	7
3	52	1,284	44	1,086	2.05	51	28		2.96	51	58	0
4	46	1,159	48	1,209	1.80	45	36		3.02	15	11	14
5	44	1,138	54	1,396	1.90	49	44		3.10	33	18	17
6	42	1,068	36	916	1.80	46	30		3.05	34	44	29
7	62	1,608	48	1,245	2.30	60	40		3.11	21	38	19
8	50	1,284	44	1,130	1.95	50	32		3.08	31	39	20
9	52	1,318	52	1,318	2.05	52	38		3.04	21	21	11
10	56	1,373	48	1,177	1.70	42	32		2.94	26	37	6
11	52	1,275	50	1,226	1.90	47	30		2.94	21	24	3
12	46	1,166	52	1,318	1.80	46	44		3.04	32	24	12
13	50	1,251	36	901	1.90	48	24		3.00	31	50	14
14	30	741	40	987	1.80	44	28		2.96	31	31	22
15	48	1,205	44	1,105	1.70	43	36		3.01	29	35	17
16	44	1,075	38	929	1.50	37	32		2.93	4	17	23
17	40	921	20	460	1.40	32	6		2.76	13	56	28
18	56	1,354	40	967	1.65	40	26		2.90	24	46	50
19	44	1,075	64	1,564	1.90	46	60		2.93	45	20	0
20	42	1,026	40	977	2.10	51	34		2.93	22	26	0
21	54	1,329	50	1,230	2.30	57	40		2.95	23	29	0
22	44	1,079	28	687	1.70	42	18		2.94	5	33	0
23	40	921	44	1,013	1.95	45	34		2.76	35	29	0
24	46	1,074	54	1,261	1.70	40	42		2.80	32	21	11
25	22	508	22	508	1.60	37	14		2.77	58	58	11
26	52	1,240	36	859	1.65	39	30		2.86	19	44	13
27	44	1,138	34	879	1.65	43	28		3.10	33	48	15
28	52	1,323	40	1,017	2.20	56	34		3.05	10	31	8
29	49	1,267	40	1,034	2.05	53	32		3.10		58	15
30	42	1,040	46	1,139	1.70	42	32		2.97		26	5
31	38	932	50	1,226	1.80	44	38		2.94		17	12
Total	1,431	35,526	1,330	33,019	57.05	1,415	1,004		92.07	753	1,049	402
Max.	62	1,608	64	1,564	2.30	60	60		3.12	58	58	50
Min.	22	508	20	460	1.40	32	6		2.76	4	11	0
Avg.	46	1,146	43	1,065	1.84	46	32		2.97	27	34	13

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
DECEMBER, 1988 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading fIm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	2.8	3.6	0.37	1,491	1,121	17.0	0.88	5.2	212	0.38	0.28	51	43	3.12	48	48
2		2.9	4.4	0.33	1,486	1,129	18.0	0.83	5.8	206	0.37	0.28	52	40	3.01	44	40
3		2.9	4.2		1,537					208			53	40	2.96	52	44
4		2.9	3.9		1,591					210			52	40	3.02	46	48
5		2.8	3.3	0.32	1,529	1,172	22.0	0.70	4.8	205	0.38	0.29	51	40	3.10	44	54
6		2.8	4.8	0.34	1,483	1,039	20.0	0.74	5.4	200	0.35	0.27	52	50	3.05	42	36
7		2.8	3.5	0.49	1,444	1,099	20.0	0.72	4.7	206	0.36	0.28	51	50	3.11	62	48
8		2.8	3.8	0.38	1,439	1,130	23.0	0.63	4.5	212	0.35	0.28	52	50	3.08	50	44
9		2.8	3.3	0.39	1,468	1,115	24.0	0.61	4.3	213	0.35	0.27	52	46	3.04	52	52
10		2.9	3.8		1,486					218			55	46	2.94	56	48
11		2.9	3.6		1,464					221			54	46	2.94	52	50
12		2.8	3.0	0.38	1,335	1,032	21.0	0.64	6.1	213	0.33	0.25	50	46	3.04	46	52
13		2.9	4.8	0.38	1,438	1,102	21.0	0.68	5.7	205	0.34	0.26	55	40	3.00	50	36
14		2.9	4.3	0.21	1,423	1,190	21.0	0.68	5.9	203	0.34	0.26	56	40	2.96	30	40
15		2.9	4.0	0.35	1,492	1,139	21.0	0.71	5.3	217	0.33	0.25	54	40	3.01	48	44
16		2.9	4.8	0.31	1,479	1,151	21.0	0.70	5.1	216	0.36	0.28	55	40	2.93	44	38
17		3.1	10.0		1,540					215			58	40	2.76	40	20
18		3.0	4.7		1,516					211			56	40	2.90	56	40
19		2.9	3.0	0.30	1,551	1,189	21.0	0.74	5.9	196	0.37	0.28	57	40	2.93	44	64
20		2.9	5.0	0.26	1,631	1,294	22.0	0.74	5.0	199	0.40	0.31	57	43	2.93	42	40
21		2.9	3.9	0.35	1,619	1,269	23.0	0.70	6.3	212	0.37	0.29	58	43	2.95	54	50
22		2.9	6.2	0.30	1,422	1,192	20.0	0.71	5.7	204	0.36	0.29	56	43	2.94	44	28
23		3.1	4.5		1,521					202			56	43	2.76	40	44
24		3.1	3.6		1,520					206			59	43	2.80	46	54
25		3.1	8.8		1,500					218			59	43	2.77	22	22
26		3.0	4.8		1,374					198			56	43	2.86	52	36
27		2.8	4.6	0.37	1,343	1,019	17.0	0.79	5.4	207	0.32	0.24	47	40	3.10	44	34
28		2.8	4.0	0.42	1,370	1,054	16.0	0.86	5.6	218	0.37	0.28	49	36	3.05	52	40
29		2.8	4.2	0.38	1,441	1,106	17.0	0.85	5.4	221	0.32	0.24	46	36	3.10	49	40
30		2.9	3.7	0.32	1,425	1,093	17.0	0.84	5.4	211	0.37	0.28	49	36	2.97	42	46
31		2.9	3.4		1,379					211			51	37	2.94	38	50
Total	48	90.0	137.7	6.97	45,737	22,635	402.0	14.74	107.5	6,494	7.12	5.46	1,659	1,303	92.07	1,431	1,330
Max.	48	3.1	10.0	0.49	1,631	1,294	24.0	0.88	6.3	221	0.40	0.31	59	50	3.12	62	64
Min.	48	2.8	3.0	0.21	1,335	1,019	16.0	0.61	4.3	196	0.32	0.24	46	36	2.76	22	20
Avg.	48	2.9	4.4	0.35	1,475	1,132	20.1	0.74	5.4	209	0.36	0.27	54	42	2.97	46	43

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 W. PEARL ST. MARSHALL MI 49068 - PERMIT No. MI0023540
DECEMBER, 1988 - DISCHARGE MONITORING REPORT - DISCHARGE No. 001A

	D.O. mg/L	pH SU	SS mg/L	SS Lbs.	Total-P mg/L	Flow MGD	Chlorine mg/L	BOD mg/L	BOD Lbs.	NH3 as N mg/L	NH3-N Lbs.	F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	5.3	7.4	6	156	0.34	3.12		4	104				91	93	83
2	5.1	7.2	12	301	0.47	3.01		6	151				80	90	77
3	5.0	7.5	16	395	0.58	2.96		7	173				85	92	71
4	5.7	7.5	10	252	0.42	3.02		6	151				81	90	76
5	5.2	7.3	12.77	310 14.51	0.44	3.10		5	129				82	91	81
6	5.0	7.2	9	229	0.42	3.05		5	127				86	94	84
7	4.9	7.3	10	259	0.48	3.11		6	156				87	93	83
8	5.5	7.3	8	205	0.53	3.08		7	180 1135				88	92	78
9	5.6	7.3	10	254	0.41	3.04		6.45	152				85	92	82
10	5.5	7.2	14	343	0.40	2.94		6	147				82	93	78
11	5.6	7.5	8	196	0.56	2.94		8	196				88	90	71
12	5.8	7.2	9	228	0.46	3.04		7	177				87	90	76
13	5.7	7.2	13	325	0.41	3.00		5	125				82	93	80
14	5.9	7.4	3	74	0.32	2.96		4	99				95	94	86
15	5.7	7.1	13	326	0.50	3.01		7	176				81	87	76
16	5.9	7.1	10	244	0.50	2.93		6	147				78	91	74
17	5.7	7.1	7	161	0.40	2.76		5	115				85	92	79
18	5.6	7.3	14	339	0.53	2.90		7	169				81	92	84
19	5.4	7.3	12	293	0.40	2.93		5	122				85	94	79
20	4.5	7.2	6	147	0.38	2.93		5	122				89	92	81
21	5.5	7.1	14	344	0.64	2.95		6	148				80	92	75
22	6.7	7.3	8	196	0.46	2.94		5	123				81	91	71
23	5.4	7.4	9	207	0.44	2.76		4	92				85	93	76
24	5.1	7.4	12	280	0.42	2.80		5	117				82	92	78
25	4.8	7.1	7	162	0.42	2.77		4	92				87	89	77
26	5.6	7.6	13	310	0.41	2.86		5	119				80	93	78
27	5.9	7.1	8	207	0.30	3.10		4	103				88	95	79
28	5.8	7.2	9	229	0.41	3.05		6	153				84	93	83
29	6.0	7.2	11	284	0.08	3.10		6	155				89	94	97
30	6.9	7.4	10	248	0.34	2.97		4	99				84	94	81
31	6.2	7.5	9	221	0.35	2.94		4	98				85	94	83
Total	172.5	225.9	312	7,727	13.22	92.07		170	4,217				2,623	2,855	2,457
Max.	6.9	7.6	16	395	0.64	3.12		8	196				95	95	97
Min.	4.5	7.1	3	74	0.08	2.76		4	92				78	87	71
Avg.	5.6	7.3	10	249	0.43	2.97		5	136				85	92	79
			11	288				6	162						

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
DECEMBER, 1988 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	Other	Raw Sludge Gals.	Raw Sludge Total Solids Percent	Raw Sludge Vol. Solids Percent	Raw Sludge pH
1	7,800	2,880	760		199		6,000	4.4	60	5.8
2	6,600	2,880	1,020		298		6,000	4.3	74	5.8
3	6,100	2,880	640		298		4,000	4.3	75	6.1
4	6,400	2,760	800		199		4,000	4.3	73	6.0
5	6,300	3,000	840		298		6,000	4.3	74	5.8
6	5,000	2,760	780		199		6,000	4.1	79	5.9
7	6,500	2,880	820		199		6,000	4.6	73	6.1
8	7,800	2,880	790		298		6,000	4.2	74	6.1
9	9,900	2,880	850		199		6,000	4.3	75	6.0
10	9,400	2,880	660		397		4,000	4.2	79	6.0
11	11,700	3,000	720		199		4,000	4.3	77	5.9
12	11,300	3,000	750		298		6,000	4.4	76	5.9
13	6,700	2,760	700		298		6,000	4.4	80	5.9
14	7,400	2,880	840		298		6,000	4.3	78	6.0
15	8,700	3,000	750		298		6,000	4.5	79	5.9
16	10,100	3,000	890		298		6,000	4.0	78	5.9
17	9,800	3,000	590		199		4,000	3.9	76	6.0
18	8,500	3,000	740		298		4,000	4.3	78	5.8
19	3,800	2,760	790		199		6,000	4.7	77	5.8
20	4,200	2,880	730		199		6,000	4.4	75	5.8
21	7,100	2,880	730		0		6,000	4.1	79	5.8
22	5,900	2,880	900		397		6,000	4.7	76	5.8
23	5,600	2,760	740		199		4,000	3.7	76	6.2
24	6,000	2,880	850		298		5,000	4.2	78	6.0
25	8,700	3,000	860		298		3,000	4.0	78	6.0
26	7,900	2,880	950		298		4,000	3.8	78	6.1
27	6,900	2,880	980		298		6,000	4.3	78	5.8
28	8,500	3,000	720		298		6,000	4.0	80	5.9
29	10,700	3,000	760		298		5,500	4.1	77	6.1
30	8,600	2,880	730		298		6,000	4.2	78	6.1
31	7,700	2,880	660		298		4,000	3.9	78	6.1
Total	237,600	89,880	24,340		8,148		163,500	131.2	2,366	184.4
Max.	11,700	3,000	1,020		397		6,000	4.7	80	6.2
Min.	3,800	2,760	590		0		3,000	3.7	60	5.8
Avg.	7,665	2,899	785		263		5,274	4.2	76	5.9

Manpower & Hours

	Total Hr
Superintendent 1	^160
Asst. Supt. 1	^160
Operators 3	^488
Total	^808

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
JANUARY, 1990 - PLANT INFLUENT SHEET - SAMPLING CODE 500

	Weather		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1	1		2.64	50	7.3	63	1,387	54	1,189	1.80	40	48		
2	1		2.78	50	7.4	87	2,017	80	1,855	2.30	53	72		
3	4	0.38	2.97	51	7.2	84	2,081	70	1,734	2.10	52	62		
4	4	0.11	3.07	51	7.8	75	1,920	54	1,383	2.10	54	40		
5	1		2.96	51	7.3	81	2,000	30	741	1.95	48	22		
6	1		2.88	51	7.4	58	1,393	54	1,297	1.70	41	46		
7	1		2.90	51	7.3	48	1,161	50	1,209	1.80	44	42		
8	1		3.14	51	7.3	54	1,414	54	1,414	2.30	60	48		
9	4	0.18	3.09	52	7.5	120	3,092	64	1,649	3.95	102	46		
10	3		3.03	52	7.2	93	2,350	60	1,516	4.30	109	42		
11	5	0.06	3.04	52	7.3	122	3,093	200	5,071	4.30	109	162		
12	1		2.90	51	7.5	94	2,273	102	2,467	2.75	67	92		
13	1		2.70	51	7.2	90	2,027	76	1,711	2.10	47	66		
14	1		2.71	51	7.3	69	1,559	46	1,040	1.65	37	40		
15	3		2.77	51	7.5	123	2,842	72	1,663	2.40	55	60		
16	4	0.13	2.81	51	7.3	68	1,594	80	1,875	2.55	60	68		
17	4	0.08	2.83	52	7.3	105	2,478	64	1,511	1.95	46	58		
18	1		2.86	51	7.3	60	1,431	52	1,240	2.20	52	38		
19	1		2.77	52	7.4	112	2,587	88	2,033	2.10	49	84		
20	4&5	0.25	2.69	51	7.1	48	1,077	44	987	2.30	52	36		
21	3		2.74	51	7.0	111	2,537	50	1,143	2.10	48	36		
22	3		2.90	51	7.4	108	2,612	112	2,709	2.40	58	62		
23	4	0.01	2.86	51	7.2	90	2,147	40	954	2.45	58	52		
24	4	0.14	2.85	51	7.3	57	1,355	52	1,236	2.30	55	48		
25	4	0.34	2.94	51	7.7	111	2,722	72	1,765	3.40	83	54		
26	3		2.85	51	7.3	62	1,474	48	1,141	3.00	71	32		
27	3		2.81	50	7.5	122	2,859	86	2,015	4.20	98	58		
28	3		2.84	49	7.5	70	1,658	86	2,037	2.40	57	58		
29	1		2.93	50	7.5	60	1,466	130	3,177	3.75	92	62		
30	1		2.92	50	7.3	45	1,096	88	2,143	3.00	73	48		
31	4	0.03	2.88	50	7.3	78	1,873	102	2,450	2.75	66	62		
Total	75	1.71	89.06	1,578	227.9	2,568	61,575	2,260	54,355	80.35	1,936	1,744		
Max.	5	0.38	3.14	52	7.8	123	3,093	200	5,071	4.30	109	162		
Min.	1	0.01	2.64	49	7.0	45	1,077	30	741	1.65	37	22		
Avg.	3	0.16	2.87	51	7.4	83	1,986	73	1,753	2.59	62	56		

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
JANUARY, 1990 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	70	1,541	50	1,101	1.95	43	40		2.64	0	7	0
2	74	1,716	60	1,391	2.30	53	52		2.78	8	25	0
3	70	1,734	54	1,338	2.10	52	52		2.97	17	23	0
4	58	1,485	52	1,331	2.20	56	42		3.07	23	4	0
5	80	1,975	46	1,136	2.20	54	30		2.96	0	0	0
6	52	1,249	44	1,057	2.10	50	34		2.88	10	19	0
7	36	871	32	774	1.65	40	26		2.90	25	36	8
8	62	1,624	48	1,257	2.20	58	38		3.14	0	11	4
9	100	2,577	74	1,907	3.50	90	46		3.09	20	0	11
10									3.03			
11	120	3,042	68	1,724	4.95	126	58		3.04	1	66	0
12	84	2,032	72	1,741	2.65	64	68		2.90	11	29	4
13	74	1,666	68	1,531	2.55	57	50		2.70	27	11	0
14	54	1,220	58	1,311	1.80	41	58		2.71	22	0	0
15	92	2,125	56	1,294	2.30	53	46		2.77	25	22	4
16	48	1,125	54	1,266	2.55	60	44		2.81	29	33	0
17	80	1,888	56	1,322	2.10	50	52		2.83	23	13	0
18	86	2,051	78	1,860	2.45	58	66		2.86	0	0	0
19	98	2,264	54	1,247	2.65	61	52		2.77	13	38	0
20	66	1,481	42	942	1.70	38	34		2.69	0	5	26
21	78	1,782	44	1,005	1.70	39	42		2.74	30	12	19
22	50	1,209	54	1,306	2.05	50	36		2.90	54	51	15
23	70	1,670	56	1,336	2.30	55	38		2.86	22	0	6
24	82	1,949	42	998	2.30	55	36		2.85	0	19	0
25	88	2,158	42	1,030	3.30	81	40		2.94	21	42	3
26	78	1,854	54	1,284	3.75	89	38		2.85	0	0	0
27	100	2,344	60	1,406	3.65	86	48		2.81	18	30	13
28	80	1,895	38	900	2.05	49	24		2.84	0	56	15
29	40	977	56	1,368	3.75	92	40		2.93	33	56	0
30	26	633	44	1,072	2.85	69	30		2.92	42	50	5
31	40	961	32	769	2.45	59	22		2.88	48	69	11
Total	2,136	51,098	1,588	38,004	76.05	1,827	1,282		89.06	522	727	144
Max.	120	3,042	78	1,907	4.95	126	68		3.14	54	69	26
Min.	26	633	32	769	1.65	38	22		2.64	0	0	0
Avg.	71	1,703	53	1,267	2.54	61	43		2.87	17	24	5

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
JANUARY, 1990 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading f/m	Mix Liq SS mg/L	Mix Liq VSS mg/L	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mg/L	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mg/l	PE SS mg/L
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	3.3	3.8		1,408					243			63	46	2.64	70	50
2		3.1	2.8	0.60	1,300	963	12.0	1.08	7.2	240	0.28	0.20	60	52	2.78	74	60
3		2.9	2.9	0.60	1,305	968				235	0.31	0.23	56	49	2.97	70	54
4		2.8	3.0	0.50	1,316	986	11.5	1.14	6.3	238	0.32	0.24	55	49	3.07	58	52
5		2.9	3.4	0.70	1,275	949	11.5	1.11	6.6	239	0.32	0.24	48	49	2.96	80	46
6		3.0	3.7		1,292				5.4	240			58	50	2.88	52	44
7		3.0	4.8		1,253					240			58	50	2.90	36	32
8		2.7	2.7	0.64	1,152	843	10.0	1.15	5.8	234	0.28	0.20	53	50	3.14	62	48
9		2.8	1.8	0.90	1,170	952	10.0	1.17	3.0	235	0.33	0.24	52	50	3.09	100	74
10		2.8			1,420	1,079	12.0	1.18	3.3	235	0.35	0.27	54	58	3.03		
11		2.8	2.6	0.88	1,496	1,156	13.0	1.15	1.9	258	0.40	0.31	53	58	3.04	120	68
12		3.0	2.8	0.53	1,649	1,286	15.0	1.10	2.2	266	0.41	0.31	55	60	2.90	84	72
13		3.2	3.2		1,648					268			63	60	2.70	74	68
14		3.2	3.5		1,537					262			62	60	2.71	54	58
15		3.1	3.4	0.63	1,449	1,119	14.0	1.04	6.5	260	0.35	0.27	61	60	2.77	92	56
16		3.1	3.3	0.36	1,393	1,045	12.5	1.11	6.1	256	0.33	0.25	60	60	2.81	48	54
17		3.0	3.0	0.62	1,345	1,013	11.0	1.22	6.4	256	0.34	0.25	60	60	2.83	80	56
18		3.0	2.1	0.69	1,323	988	11.0	1.20	6.0	263	0.31	0.23	59	60	2.86	86	78
19		3.1	3.3	0.73	1,373	1,036	11.0	1.25	4.9	263	0.35	0.26	61	66	2.77	98	54
20		3.2	4.4		1,375				4.7	264			63	66	2.69	66	42
21		3.1	3.8		1,265				6.2	263			62	52	2.74	78	44
22		3.0	2.7	0.46	1,176	883	10.0	1.18	6.8	251	0.27	0.20	58	43	2.90	50	54
23		3.0	3.2	0.53	1,440	1,045	10.5	1.37	4.7	241	0.36	0.26	58	50	2.86	70	56
24		3.0	4.0	0.67	1,349	973	11.0	1.23	5.7	245	0.32	0.23	59	49	2.85	82	42
25		2.9	3.9	0.82	1,352	878	10.0	1.35	5.5	245	0.36	0.24	57	49	2.94	88	42
26		3.0	3.2	0.65	1,360	950	10.0	1.36	6.8	250	0.31	0.22	58	49	2.85	78	54
27		3.1	2.9		1,350					249			59	46	2.81	100	60
28		3.0	4.5		1,365					250			58	46	2.84	80	38
29		2.9	2.8	0.37	1,300	871	12.0	1.08	5.7	247	0.33	0.23	56	46	2.93	40	56
30		3.0	3.8	0.23	1,372	939	11.5	1.19	5.8	247	0.32	0.22	58	52	2.92	26	44
31		3.0	5.1	0.37	1,318	857	11.0	1.20	6.4	245	0.34	0.24	60	52	2.88	40	32
Total	48	93.1	100.7	12.49	42,126	21,779	240.5	24.88	129.9	7,728	7.29	5.34	1,797	1,647	89.06	2,136	1,588
Max.	48	3.3	5.1	0.90	1,649	1,286	15.0	1.37	7.2	268	0.41	0.31	63	66	3.14	120	78
Min.	48	2.7	1.8	0.23	1,152	843	10.0	1.04	1.9	234	0.27	0.20	48	43	2.64	26	32
Avg.	48	3.0	3.4	0.59	1,359	990	11.5	1.18	5.4	249	0.33	0.24	58	53	2.87	71	53

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 W. PEARL ST. MARSHALL MI. 49068 -PERMIT No.MI0023540
JANUARY, 1990 - DISCHARGE MONITORING REPORT - DISCHARGE No. 001A

	F.Eff. D.O. mg/L	F.Eff. pH SU	F.Eff. SS mg/L	F.Eff. SS Lbs.	F.Eff. Total-P mg/L	Flow MGD	F.Eff. Chlorine mg/L	F.Eff. BOD mg/L	F.Eff. BOD Lbs.	F.Eff. NH3 as N mg/L	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	6.7	7.3	9	198	0.58	2.64		6	132				83	90	79
2	7.0	7.6	9	209	0.42	2.78		7	162				89	92	82
3	5.9	7.3	5	124	0.28	2.97		6	149				93	93	87
4	5.7	7.3	13	333	0.48	3.07		8	205				76	89	77
5	5.8	7.4	13	321	0.41	2.96		7	173				57	91	79
6	6.9	7.3	16	384	0.95	2.88		8	192				70	86	44
7	6.2	7.3	13 12	314 300	0.55	2.90		7	169 159				74	85	69
8	6.2	7.2	7	183	0.42	3.14		7 9	183				87	87	81
9	3.2	7.3	13	335	0.78	3.09		13	335				80	89	80
10	3.0	7.2	9	227	0.97	3.03		10	253				85	89	77
11	3.4	7.2	8	203	0.87	3.04		14	355				96	88	80
12	4.2	7.1	13	314	0.46	2.90		6	145				87	94	83
13	4.6	7.1	7	158	0.38	2.70		7	158				91	92	82
14	4.2	7.1	6	136	0.30	2.71		5	113				87	93	82
15	6.1	7.2	8	185	0.35	2.77		6	139				89	95	85
16	6.0	7.2	4	94	0.38	2.81		4	94				95	94	85
17	5.9	7.2	5	118	0.32	2.83		6	142				92	94	84
18	5.9	7.2	6	143	0.37	2.86		5	119				88	92	83
19	4.7	7.4	9	208	0.51	2.77		8	185				90	93	76
20	5.7	7.1	7	157	0.37	2.69		7	157				84	85	84
21	6.2	7.2	7	160	0.51	2.74		8	183				86	93	76
22	5.8	7.7	10	242	0.41	2.90		7	169				91	94	83
23	5.5	7.2	8	191	0.48	2.86		8	191				91	91	80
24	5.8	7.2	4	95	0.48	2.85		6	143				92	89	79
25	5.3	7.3	8	196	0.82	2.94		7	172				89	94	76
26	5.9	7.3	15	357	1.00	2.85		8	190				69	87	67
27	6.3	7.6	10	234	0.90	2.81		9	211				88	93	79
28	6.2	7.6	5	118	0.51	2.84		7	166				94	90	79
29	5.5	7.4	12	293	1.00	2.93		12	293				91	80	73
30	5.4	7.2	7	170	1.02	2.92		4	97				92	91	66
31	5.9	7.2	8	192	0.95	2.88		5	120				92	94	65
Total	171.1	225.9	274	6,593	18.23	89.06		228	5,494				2,668	2,807	2,402
Max.	7.0	7.7	16	384	1.02	3.14		14	355				96	95	87
Min.	3.0	7.1	4	94	0.28	2.64		4	94				57	80	44
Avg.	5.5	7.3	9	213	0.59	2.87		7	177				86	91	77

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
JANUARY, 1990 - MISCELLOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferrous Chloride Lbs.	Other	Raw Sludge Gals.	Raw Sludge Total Solids Percent	Raw Sludge Vol. Solids Percent	Raw Sludge pH
1	9,600	2,760	370		213		4,000	4.5	77	5.7
2	8,400	3,000	520		266		6,000	4.5	77	5.7
3	6,400	2,640	360		213		6,000	4.2	78	5.8
4	8,000	2,880	660		213		6,000	4.0	77	5.8
5	9,000	2,880	420		213		6,000	4.6	76	5.9
6	8,600	2,880	360		213		4,000	3.9	77	6.1
7	8,300	2,880	430		213		4,000	4.3	74	6.1
8	6,500	2,880	420		213		4,000	4.4	76	5.9
9	7,700	2,880	420		213		4,000	4.3	76	5.8
10	8,500	2,880	480		213		1,000			
11	8,700	3,120	390		213		5,000	4.7	75	6.1
12	11,300	3,000	500		213		5,000	4.8	76	5.7
13	8,200	3,000	470		213		4,000	5.0	77	5.6
14	8,900	3,000	350		213		4,000	4.6	77	5.6
15	7,100	2,880	360		213		6,000	4.9	78	5.3
16	3,400	2,880	480		266		6,000	4.4	75	5.5
17	5,600	2,880	400		213		6,000	4.6	75	5.7
18	7,600	3,120	370		213		6,000	4.4	76	5.6
19	8,300	3,000	490		213		6,000	4.6	78	5.7
20	7,700	2,760	340		213		4,000	4.2	77	5.9
21	9,700	3,120	420		266		4,000	3.9	75	5.8
22	7,200	3,000	420		213		6,000	4.4	71	5.9
23	7,000	2,760	440		213		6,000	6.4	59	5.8
24	5,900	2,880	390		213		6,000	6.3	60	5.8
25	8,500	3,000	540		213		6,000	5.8	63	5.8
26	9,900	2,880	630		213		5,000	4.5	53	5.9
27	7,200	3,000	490		213		4,000	4.8	65	6.0
28	9,300	2,880	340		213		4,000	4.4	66	6.0
29	8,700	2,880	360		160		6,000	4.9	67	5.8
30	7,800	3,000	400		213		6,000	8.6	51	5.9
31	6,900	2,760	390		160		5,000	7.4	30	5.9
Total	245,900	90,360	13,410		6,656		155,000	146.3	2,112	174.1
Max.	11,300	3,120	660		266		6,000	8.6	78	6.1
Min.	3,400	2,640	340		160		1,000	3.9	30	5.3
Avg.	7,932	2,915	433		215		5,000	4.9	70	5.8

Manpower & Hours

	Total Hr
Superintendent 1	^176
Asst. Supt. 1	^176
Operators 3	^532
Total	^884

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
FEBUARY, 1990 - PLANT INFLUENT SHEET - SAMPLING CODE 500

	----Weather----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1	4	0.58	2.83	51	7.4	54	1,275	62	1,463	2.90	68	44		
2	4	0.02	2.80	50	7.5	120	2,802	100	2,335	3.00	70	64		
3	4&5	0.02	2.74	50	7.3	52	1,188	56	1,280	1.80	41	46		
4	1		2.78	50	7.4	45	1,043	58	1,345	1.60	37	56		
5	1		2.97	49	7.4	45	1,115	58	1,437	2.10	52	40		
6	1		2.95	50	7.8	39	960	72	1,771	2.40	59	56		
7	1		2.87	49	7.3	51	1,221	46	1,101	2.05	49	42		
8	1		3.01	49	7.5	51	1,280	58	1,456	1.90	48	48		
9	1		2.93	50	7.6	82	2,004	58	1,417	2.05	50	48		
10	1		2.84	49	7.4	50	1,184	54	1,279	1.65	39	42		
11	5	0.01	2.87	49	7.4	48	1,149	48	1,149	1.65	39	40		
12	1		2.91	49	8.0	51	1,238	64	1,553	2.45	59	58		
13	4	0.02	2.84	50	7.9	51	1,208	70	1,658	2.45	58	58		
14	5	1.14	2.86	50	7.4	66	1,574	66	1,574	2.40	57	54		
15	4	0.13	2.79	49	7.4	51	1,187	50	1,163	1.90	44	38		
16	5	0.04	2.80	49	7.2	54	1,261	42	981	2.20	51	38		
17	1		2.68	49	7.5	52	1,162	70	1,565	1.65	37	52		
18	1		2.80	48	7.4	54	1,261	56	1,308	1.65	39	52		
19	1		2.94	48	7.5	50	1,226	140	3,433	2.55	63	98		
20	1		2.80	49	7.4	60	1,401	126	2,942	3.30	77	106		
21	4	0.52	2.97	49	7.3	72	1,783	94	2,328	2.85	71	68		
22	4&5	1.00	2.65	49	7.3	84	1,856	68	1,503	2.75	61	36		
23	5	0.14	3.24	49	7.5	50	1,351	78	2,108	1.80	49	60		
24	5	0.08	2.97	48	7.4	40	991	98	2,427	1.00	25	56		
25	1		3.07	48	7.5	33	845	48	1,229	1.50	38	32		
26	1		3.18	49	7.5	54	1,432	78	2,069	1.70	45	60		
27	1		3.18	49	7.5	36	955	56	1,485	3.40	90	42		
28	1		3.06	49	7.4	111	2,833	60	1,531	1.35	34	48		
29														
30														
31														
Total	61	3.70	81.33	1,377	209.1	1,606	38,785	1,934	46,891	60.00	1,451	1,482		
Max.	5	1.14	3.24	51	8.0	120	2,833	140	3,433	3.40	90	106		
Min.	1	0.01	2.65	48	7.2	33	845	42	981	1.00	25	32		
Avg.	2	0.31	2.90	49	7.5	57	1,385	69	1,675	2.14	52	53		

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
FEBRUARY, 1990 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	32	755	34	802	2.75	65	24		2.83	37	45	5
2	118	2,756	70	1,635	3.65	85	60		2.80	1	30	0
3	94	2,148	46	1,051	2.05	47	38		2.74	0	18	0
4	26	603	44	1,020	1.95	45	34		2.78	42	24	0
5	28	694	40	991	1.90	47	20		2.97	38	31	10
6	22	541	40	984	2.05	50	32		2.95	44	44	15
7	30	718	42	1,005	1.90	45	36		2.87	42	9	7
8	26	653	40	1,004	1.60	40	32		3.01	48	31	16
9	110	2,688	40	977	3.10	76	28		2.93	0	31	0
10	42	995	44	1,042	1.90	45	34		2.84	16	19	0
11	24	574	28	670	1.40	34	14		2.87	50	41	15
12	22	534	38	922	2.05	50	32		2.91	57	41	16
13	24	568	34	805	1.90	45	26		2.84	53	37	22
14	26	620	40	954	1.80	43	20		2.86	61	39	25
15									2.79			
16	84	1,962	40	934	2.40	56	33		2.80	0	5	0
17	24	536	42	939	1.60	36	32		2.68	54	46	3
18	28	654	56	1,308	1.40	33	46		2.80	48	0	15
19	34	834	44	1,079	2.10	51	26		2.94	32	69	18
20	30	701	40	934	1.65	39	26		2.80	50	68	50
21	42	1,040	48	1,189	2.05	51	42		2.97	42	49	28
22	58	1,282	54	1,193	2.30	51	26		2.65	31	21	16
23	28	757	54	1,459	1.60	43	32		3.24	44	31	11
24	32	793	64	1,585	1.95	48	38		2.97	20	34	0
25	32	819	30	768	1.00	26	20		3.07	60	38	33
26	34	902	32	849	1.40	37	22		3.18	37	59	18
27	22	583	40	1,061	3.00	80	34		3.18	38	29	12
28	72	1,837	48	1,225	1.30	33	38		3.06	35	20	4
29												
30												
31												
Total	1,144	27,547	1,172	28,387	53.75	1,300	845		81.33	980	909	339
Max.	118	2,756	70	1,635	3.65	85	60		3.24	61	69	50
Min.	22	534	28	670	1.00	26	14		2.65	0	0	0
Avg.	42	1,020	43	1,051	1.99	48	31		2.90	36	34	13

Robert J. Swalwell
Superintendent

MARAHALL, MICHIGAN WASTEWATER TREATMENT PLANT
FEBRUARY, 1990 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	3.0	3.7	0.49	1,300	895	10.0	1.30	5.9	244	0.33	0.23	60	51	2.83	56	45
2		3.1	3.4	0.54	1,260	896	10.0	1.26	5.8	245	0.29	0.20	60	51	2.80	62	48
3		3.1	4.0		1,395					247			61	58	2.74	61	46
4		3.1	3.6		1,325					249			62	58	2.78	54	47
5		2.9	3.4	0.48	1,233	897	11.0	1.12	6.7	243	0.31	0.22	57	50	2.97	52	44
6		2.9	3.4	0.47	1,222	885	11.0	1.11	5.8	243	0.31	0.22	57	50	2.95	51	44
7		3.0	3.5	0.42	1,260	963	11.0	1.15	6.3	243	0.32	0.23	59	50	2.87	50	45
8		2.9	3.1	0.48	1,214	854	11.0	1.10	6.6	237	0.28	0.18	56	46	3.01	49	46
9		2.9	3.6	0.45	1,232	871	11.0	1.12	6.3	251	0.30	0.21	58	46	2.93	48	42
10		3.0	3.8		1,245					259			60	46	2.84	41	41
11		3.0	4.0		1,243					262			59	46	2.87	40	39
12		3.0	3.8	0.37	1,206	852	10.0	1.21	7.1	255	0.29	0.20	57	46	2.91	39	39
13		3.0	4.2	0.34	1,272	929	10.0	1.27	6.9	256	0.31	0.23	59	43	2.84	40	38
14		3.0	4.1	0.36	1,244	870	10.0	1.24	7.1	263	0.31	0.21	58	43	2.86	39	38
15		3.1	4.3	0.34	1,273	895	10.0	1.27	7.1	261	0.31	0.21	59	46	2.79	39	38
16		3.1	4.1	0.42	1,217	863	10.0	1.22	6.9	262	0.32	0.22	58	40	2.80	47	38
17		3.2	4.4		1,206					268			60	40	2.68	35	37
18		3.1	4.0		1,228					261			57	40	2.80	33	39
19		2.9	3.6		1,204					264			56	40	2.94	35	41
20		3.1	3.9	0.31	1,280	920	9.0	1.42	7.1	264	0.33	0.23	60	37	2.80	36	42
21		2.9	3.7	0.34	1,333	926	10.0	1.33	6.9	258	0.32	0.23	57	37	2.97	38	44
22		3.3	4.3	0.31	1,449	1,033	10.0	1.45	6.1	256	0.39	0.28	64	50	2.65	43	46
23		2.7	3.3	0.31	1,437	1,006	9.5	1.51	5.6	259	0.38	0.26	51	50	3.24	35	48
24		2.9	3.2		1,363					263			56	50	2.97	36	51
25		2.8	3.0		1,215					267			55	50	3.07	36	47
26		2.7	2.9	0.40	1,139	804	8.0	1.42	7.7	262	0.33	0.23	52	40	3.18	36	45
27		2.7	2.9	0.38	1,152	824	8.0	1.44	7.1	260	0.30	0.21	53	40	3.18	35	45
28		2.8	3.5	0.34	1,359	965	8.0	1.70	7.2	264	0.34	0.23	55	40	3.06	39	45
29																	
30																	
31																	
Total	48	83.3	102.7	7.55	35,506	17,148	187.5	24.65	126.2	7,166	6.07	4.23	1,616	1,284	81.33	1,205	1,208
Max.	48	3.3	4.4	0.54	1,449	1,033	11.0	1.70	7.7	268	0.39	0.28	64	58	3.24	62	51
Min.	48	2.7	2.9	0.31	1,139	804	8.0	1.10	5.6	237	0.28	0.18	51	37	2.65	33	37
Avg.	48	3.0	3.7	0.40	1,268	903	9.9	1.30	6.6	256	0.32	0.22	58	46	2.90	43	43

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 W. PEARL ST. MARSHALL MI. 49068 - PERMIT No. MI0023540
FEBRUARY, 1990 - DISCHARGE MONITORING REPORT - DISCHARGE No. 001A

	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. BOD mgIL	F.Eff. BOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	6.0	7.2	5	118	0.87	2.83		4	94				91	93	70
2	5.7	7.2	10	234	0.53	2.80		7	163				90	94	82
3	4.3	7.3	7	160	0.44	2.74		6	137				88	88	76
4	5.9	7.4	11	255	0.56	2.78		5	116				81	89	65
5	6.2	7.2	8	198	0.40	2.97		4	99				86	91	81
6	6.2	7.2	10	246	0.42	2.95		3	74				86	92	83
7	6.2	7.2	5	120	0.35	2.87		3	72				89	94	83
8	6.4	7.4	7	176	0.37	3.01		3	75				88	94	81
9	6.4	7.4	5	122	0.41	2.93		6	147				91	93	80
10	6.5	7.4	10	237	0.55	2.84		4	95				81	92	85
11	6.6	7.4	4	96	0.25	2.87		3	72				92	94	85
12	6.5	7.5	8	194	0.30	2.91		4	97				88	92	88
13	6.6	7.5	4	95	0.41	2.84		4	95				94	92	83
14	6.5	7.5	9	215	0.41	2.86		5	119				86	92	83
15	6.6	7.5	8	186	0.41	2.79		4	93				84	92	78
16	6.6	7.5	7	163	0.32	2.80		4	93				83	93	85
17	6.4	7.6	12	268	0.35	2.68		3	67				83	94	79
18	6.8	7.4	14	327	0.55	2.80		4	93				75	92	67
19	6.4	7.4	9	221	0.37	2.94		5	123				94	90	85
20	6.5	7.4	10	234	0.44	2.80		5	117				92	92	87
21	6.1	7.2	8	198	0.47	2.97		6	149				91	92	84
22	5.8	7.4	9	199	0.48	2.65		6	133				87	93	83
23	6.1	7.5	15	405	0.46	3.24		4	108				81	92	74
24	6.0	7.4	7	173	0.27	2.97		5	124				93	88	73
25	5.7	7.5	10	256	0.48	3.07		8	205				79	76	68
26	6.8	7.4	10	265	0.53	3.18		8	212				87	85	68
27	6.6	7.3	8	212	0.90	3.18		6	159				86	83	74
28	6.9	7.3	8	204	0.53	3.06		6	153				87	95	60
29															
30															
31															
Total	175.3	206.6	238	5,777	12.83	81.33		135	3,284				2,433	2,547	2,190
Max.	6.9	7.6	15	405	0.90	3.24		8	212				94	95	88
Min.	4.3	7.2	4	95	0.25	2.65		3	67				75	76	60
Avg.	6.3	7.4	9	206	0.46	2.90		5	117				87	91	78
			11	265				6	156						

Robert J. Swalwell

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
FEBRUARY , 1990 - MISCELLOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferrous Chloride Lbs.	Other	Raw Sludge Gals.	Raw Sludge Total Solids Percent	Raw Sludge Vol. Solids Percent	Raw Sludge pH
1	6,500	3,000	350		213		2,500			6.0
2	9,100	3,000	410		213		5,500	6.2	62	6.0
3	8,300	2,760	310		213		3,000	6.0	60	6.1
4	7,900	3,000	360		213		3,000	4.5	66	6.2
5	8,200	2,880	370		213		4,000	5.3	68	6.0
6	6,100	2,880	390		213		4,500	4.5	78	5.9
7	6,600	2,880	460		213		4,000	5.3	74	5.9
8	4,100	2,880	460		213		5,000	5.4	63	6.0
9	5,800	2,760	440		213		5,000	5.2	67	6.4
10	7,400	2,880	410		213		4,000	5.4	67	6.0
11	8,500	3,120	460		213		4,000	5.6	66	6.0
12	6,000	2,880	460		213		6,000	4.9	67	6.2
13	6,500	2,880	510		213		4,000	5.0	69	6.0
14	9,900	3,120	390		266		4,000	5.2	69	6.1
15	8,900	3,120	450		213		6,000	6.2	64	6.2
16	9,400	3,000	480		213		6,000	5.3	64	6.3
17	9,700	3,120	390		213		4,000	4.8	69	6.1
18	7,800	3,000	430		160		4,000	4.1	73	6.2
19	10,100	3,000	550		213		4,000	5.1	70	6.0
20	9,400	3,120	540		213		6,000	4.9	73	6.1
21	5,800	3,000	510		213		5,000	5.5	63	6.4
22	6,500	3,000	360		213		6,000	6.2	58	6.3
23	7,400	2,880	710		266		6,000	7.4	55	6.3
24	11,700	3,120	260		213		4,000	9.9	46	6.4
25	12,000	3,120	480		213		4,000	7.1	54	6.1
26	10,100	3,240	430		213		5,000	6.8	61	5.8
27	8,100	2,880	480		213		3,500	7.1	59	6.2
28	9,500	3,240	560		266		4,000	7.2	60	6.1
29										
30										
31										
Total	227,300	83,760	12,410		6,070		126,000	156.1	1,745	171.3
Max.	12,000	3,240	710		266		6,000	9.9	78	6.4
Min.	4,100	2,760	260		160		2,500	4.1	46	5.8
Avg.	8,118	2,991	443		217		4,500	5.8	65	6.1

Manpower & Hours

	Total Hr
Superintendent 1	^154
Asst. Supt. 1	^154
Operators 3	^439
Total	^747

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MARCH, 1990 - PLANT INFLUENT SHEET - SAMPLING CODE 500

	Weather		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1	1		3.08	49	7.7	27	694	66	1,695	2.45	63	46		
2	1		3.00	49	7.4	108	2,702	48	1,201	2.05	51	38		
3	1		2.90	49	7.4	48	1,161	68	1,645	3.40	82	60		
4	5	0.07	2.91	49	7.5	36	874	36	874	1.60	39	32		
5	5	0.04	3.12	49	7.5	33	859	50	1,301	2.65	69	36		
6	1		3.00	49	7.5	42	1,051	70	1,751	1.70	43	54		
7	1		3.11	49	7.2	36	934	66	1,712	2.65	69	27		
8	4	0.37	3.10	49	7.6	114	2,947	70	1,810	1.90	49	44		
9	4	0.03	3.28	49	7.5	114	3,118	60	1,641	1.95	53	42		
10	4	0.19	3.18	48	7.5	132	3,501	56	1,485	1.60	42	50		
11	4	0.23	3.35	48	7.4	86	2,403	48	1,341	1.20	34	34		
12	1		3.79	49	7.0	54	1,707	54	1,707	1.90	60	46		
13	1		3.79	49	7.3	60	1,897	110	3,477	2.65	84	104		
14	1		3.75	50	7.4	130	4,066	58	1,814	2.05	64	52		
15	4	0.12	3.60	50	7.3	96	2,882	44	1,321	2.05	62	34		
16	3		3.48	50	7.2	80	2,322	64	1,857	1.90	55	60		
17	1		3.43	49	7.2	76	2,174	76	2,174	1.65	47	58		
18	5	0.03	3.37	48	7.4	80	2,248	40	1,124	1.35	38	26		
19	1		3.40	49	7.1	106	3,006	54	1,531	4.55	129	46		
20	1		3.33	49	7.1	54	1,500	58	1,611	1.80	50	48		
21	4	0.01	3.30	50	7.1	54	1,486	54	1,486	1.80	50	46		
22	4	0.46	3.26	50	7.2	56	1,523	60	1,631	2.45	67	50		
23	1		3.27	50	7.5	60	1,636	42	1,145	1.70	46	32		
24	1		3.19	50	7.7	60	1,596	40	1,064	1.60	43	32		
25	1		3.19	49	7.4	60	1,596	62	1,649	1.60	43	46		
26	1		3.24	50	7.6	60	1,621	70	1,892	2.10	57	54		
27	1		3.20	50	7.5	78	2,082	60	1,601	1.90	51	44		
28	4	0.01	3.12	50	7.4	18	468	46	1,197	2.10	55	38		
29	4	0.43	3.18	50	7.4	96	2,546	44	1,167	1.90	50	40		
30	4	0.04	3.13	50	7.5	60	1,566	44	1,149	1.65	43	36		
31	4	0.28	2.88	50	8.1	64	1,537	74	1,777	1.70	41	66		
Total	78	2.31	100.93	1,529	229.6	2,178	59,703	1,792	48,832	63.55	1,727	1,421		
Max.	5	0.46	3.79	50	8.1	132	4,066	110	3,477	4.55	129	104		
Min.	1	0.01	2.88	48	7.0	18	468	36	874	1.20	34	26		
Avg.	3	0.17	3.26	49	7.4	70	1,926	58	1,575	2.05	56	46		

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MARCH, 1990 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	28	719	60	1,541	2.45	63	50		3.08	0	9	0
2	50	1,251	54	1,351	2.90	73	34		3.00	54	0	0
3	84	2,032	78	1,887	5.40	131	66		2.90	0	0	0
4									2.91			
5	36	937	44	1,145	2.20	57	30		3.12	0	12	16
6	30	751	44	1,101	1.60	40	30		3.00	29	37	5
7	20	519	52	1,349	2.45	64	23		3.11	44	21	8
8	68	1,758	46	1,189	1.65	43	40		3.10	40	34	13
9	88	2,407	60	1,641	1.90	52	40		3.28	22	0	3
10	112	2,970	44	1,167	1.20	32	28		3.18	15	21	25
11									3.35			
12	40	1,264	52	1,644	1.65	52	48		3.79	25	4	13
13	44	1,391	76	2,402	2.30	73	64		3.79	27	31	13
14	88	2,752	74	2,314	2.20	69	70		3.75	32	0	0
15	84	2,522	60	1,801	2.20	66	48		3.60	12	0	0
16	56	1,625	82	2,380	2.75	80	72		3.48	30	0	0
17	44	1,259	66	1,888	1.90	54	54		3.43	42	13	0
18	56	1,574	44	1,237	1.35	38	30		3.37	30	0	0
19	96	2,722	52	1,475	4.30	122	44		3.40	9	4	5
20	40	1,111	40	1,111	2.05	57	32		3.33	26	31	0
21	44	1,211	38	1,046	1.80	50	28		3.30	19	30	0
22	32	870	50	1,359	2.10	57	42		3.26	43	17	14
23	36	982	42	1,145	1.95	53	36		3.27	40	0	0
24	24	639	48	1,277	2.65	71	40		3.19	60	0	0
25									3.19			
26	44	1,189	66	1,783	2.10	57	48		3.24	27	6	0
27	52	1,388	48	1,281	1.80	48	34		3.20	33	20	5
28	16	416	24	624	1.70	44	20		3.12	11	47	19
29	40	1,061	40	1,061	1.60	42	23		3.18	58	9	15
30	36	940	44	1,149	1.40	37	38		3.13	40	0	15
31	40	961	62	1,489	1.20	29	54		2.88	38	16	29
Total	1,428	39,220	1,490	40,838	60.75	1,651	1,166		100.93	806	362	198
Max.	112	2,970	82	2,402	5.40	131	72		3.79	60	47	29
Min.	16	416	24	624	1.20	29	20		2.88	0	0	0
Avg.	51	1,401	53	1,458	2.17	59	42		3.26	29	13	7

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MARCH, 1990 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading f/m	Mix Liq SS mg/L	Mix Liq VSS mg/L	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mg/L	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mg/l	PE SS mg/L
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	2.8	3.0	0.35	1,202	859	8.0	1.50	7.0	257	0.34	0.23	54	43	3.08	35	47
2		2.9	3.3	0.35	1,294	924	8.0	1.62	6.2	256	0.36	0.25	56	49	3.00	39	47
3		3.0	3.2		1,273					264			58	49	2.90	46	49
4		3.0	3.3		1,300					264			57	49	2.91	46	49
5		2.8	2.8	0.45	1,243	916	9.0	1.38	6.9	264	0.32	0.23	54	49	3.12	47	51
6		2.9	2.7	0.44	1,212	876	9.0	1.35	6.9	262	0.32	0.23	56	49	3.00	46	53
7		2.8	2.7	0.42	1,279	955	9.5	1.35	6.0	262	0.31	0.22	55	49	3.11	46	54
8		2.8	2.8	0.40	1,314	965	10.0	1.31	6.0	256	0.34	0.25	54	49	3.10	45	54
9		2.6	2.8	0.48	1,374	1,030	11.0	1.25	5.8	255	0.37	0.28	52	52	3.28	54	54
10		2.7	3.3		1,551					257			54	63	3.18	63	53
11		2.6	2.7		1,344					264			52	63	3.35	63	53
12		2.3	2.5	0.63	1,224	945	10.0	1.22	6.6	242	0.37	0.28	45	63	3.79	56	46
13		2.3	2.3	0.62	1,287	973	12.0	1.07	6.2	244	0.36	0.27	44	63	3.79	57	53
14		2.3	2.4	0.60	1,469	1,152	13.0	1.13	4.9	242	0.41	0.32	45	69	3.75	66	58
15		2.4	2.6	0.61	1,536	1,238	15.0	1.02	2.4	263	0.43	0.34	47	69	3.60	75	59
16		2.5	2.3	0.63	1,422	1,128	15.0	0.95	5.6	267	0.41	0.32	49	60	3.48	73	64
17		2.5	2.2		1,389					257			50	60	3.43	67	65
18		2.6	2.2		1,343					256			50	60	3.37	59	65
19		2.5	2.0	0.68	1,243	933	11.0	1.13	7.5	239	0.32	0.24	52	55	3.40	67	65
20		2.6	2.1	0.70	1,194	870	10.0	1.19	7.4	235	0.33	0.24	55	52	3.33	66	60
21		2.6	2.3	0.64	1,166	866	10.0	1.17	7.7	230	0.31	0.22	56	46	3.30	60	55
22		2.6	2.5	0.55	1,202	875	10.0	1.20	6.6	231	0.33	0.24	56	46	3.26	53	53
23		2.6	2.9	0.50	1,222	909	10.0	1.22	6.3	237	0.31	0.23	55	46	3.27	50	47
24		2.7	3.1		1,233					238			57	46	3.19	47	45
25		2.7	3.1		1,244					235			56	46	3.19	47	45
26		2.7	2.7	0.35	1,175	1,168	10.0	1.18	6.6	235	0.31	0.22	57	46	3.24	45	48
27		2.7	2.9	0.40	1,233	862	10.5	1.17	6.2	234	0.32	0.22	60	50	3.20	39	47
28		2.8	3.2	0.36	1,238	853	11.5	1.08	5.7	231	0.31	0.23	65	50	3.12	35	45
29		2.7	3.1	0.37	1,220	840	12.0	1.02	6.8	231	0.29	0.20	63	50	3.18	35	45
30		2.8	3.1	0.36	1,205	847	12.5	0.96	6.9	230	0.32	0.21	64	58	3.13	35	45
31		3.0	3.1		1,173					220			68	58	2.88	35	47
Total	48	82.5	85.3	10.87	39,804	20,984	237.0	26.48	138.2	7,658	7.49	5.47	1,696	1,657	100.93	1,597	1,621
Max.	48	3.0	3.3	0.70	1,551	1,238	15.0	1.62	7.7	267	0.43	0.34	68	69	3.79	75	65
Min.	48	2.3	2.0	0.35	1,166	840	8.0	0.95	2.4	220	0.29	0.20	44	43	2.88	35	45
Avg.	48	2.7	2.8	0.49	1,284	954	10.8	1.20	6.3	247	0.34	0.25	55	53	3.26	52	52

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 W. PEARL ST. MARSHALL MI. 49068 - PERMIT No. MI0023540
MARCH, 1990 - DISCHARGE MONITORING REPORT - DISCHARGE No. 001A

	F.Eff. D.O. mg/L	F.Eff. pH SU	F.Eff. SS mg/L	F.Eff. SS Lbs.	F.Eff. Total-P mg/L	Flow MGD	F.Eff. Chlorine mg/L	F.Eff. BOD mg/L	F.Eff. BOD Lbs.	F.Eff. NH3 as N mg/L	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day			X	X				X	X						
1	6.1	7.3	12	308	0.53	3.08		9	231				82	67	78
2	5.4	7.3	24	600	0.78	3.00		9	225				50	92	61
3	6.1	7.3	18	435	0.30	2.90		8	193				74	83	91
4	5.9	7.4	14 14	340	0.53	2.91		6	146				61	83	67
5	5.9	7.3	7	182 353	0.51	3.12		5	130				86	85	81
6	6.1	7.5	14	350	0.64	3.00		5	125				80	88	62
7	6.3	7.3	10	259	0.53	3.11		5	130				85	86	80
8	5.2	7.5	11	284	0.37	3.10		10	259				84	91	81
9	5.4	7.4	5	137	0.41	3.28		13	356				92	89	79
10	5.7	7.5	16	424	0.71	3.18		9	239				71	93	56
11	5.2	7.2	10	279	0.34	3.35		7	196				79	92	72
12	5.2	7.2	2	63	0.34	3.79		8	253				96	85	82
13	5.2	7.3	12	379	0.91	3.79		7	221				89	88	66
14	3.2	7.3	8	250	0.47	3.75		7	219				86	95	77
15	5.4	7.2	5	150	0.47	3.60		13	390				89	86	77
16	6.0	7.2	9	261	0.35	3.48		11	319				86	86	82
17	7.0	7.3	9	257	0.30	3.43		16	458				88	79	82
18	7.4	7.4	15	422	0.44	3.37		8 17	225 335				63	90	67
19	6.5	7.2	10	284	0.90	3.40		17	482				81	84	80
20	6.9	7.4	13	361	0.90	3.33		9	250				78	83	50
21	6.2	7.3	10	275	0.42	3.30		8	220				81	85	77
22	6.1	7.3	13	353	0.50	3.26		14	381				78	75	80
23	6.1	7.4	9	245	0.44	3.27		9	245				79	85	74
24	6.0	7.4	16	426	0.56	3.19		5	133				60	92	65
25	6.1	7.4	10	266	0.46	3.19		7	186				84	95	71
26	6.2	7.5	14	378	0.48	3.24		6	162				80	90	77
27	5.8	7.5	12	320	0.46	3.20		7	187				80	91	76
28	5.4	7.4	8 3	208	0.47	3.12		5	130				83	72	78
29	6.2	7.4	13	345	0.48	3.18		5	133				70	95	74
30	6.0	7.5	16	418	0.62	3.13		4	104				64	93	62
31	6.0	7.7	16	384	0.39	2.88		5	120				78	92	77
Total	182.2	228.3	361	9,648	16.01	100.93		257	7,048				2,437	2,690	2,282
Max.	7.4	7.7	24	600	0.91	3.79		17	482				96	95	91
Min.	3.2	7.2	2	63	0.30	2.88		4	104				50	67	50
Avg.	5.9	7.4	12	311	0.52	3.26		8	227				79	87	74

Robert J. Swalwell

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MARCH, 1990 - MISCELLOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferrous Chloride Lbs.	Other	Raw Sludge Gals.	Raw Sludge Total Solids Percent	Raw Sludge Vol. Solids Percent	Raw Sludge pH
1	7,300	2,880	560		160		4,000	6.2	65	6.0
2	6,400	3,000	360		213		4,000	6.7	65	6.0
3	9,600	3,000	310		213		3,000	6.2	67	6.0
4	9,300	3,000	360		213		3,000	5.8	67	6.0
5	9,500	3,120	380		266		4,000	4.1	68	6.0
6	10,000	3,240	500		213		6,000	5.3	69	6.1
7	8,800	3,120	420		213		4,000	5.9	66	6.0
8	6,200	3,000	340		160		5,000	6.6	80	6.0
9	5,700	3,000	350		213		5,000	4.5	72	6.0
10	4,000	3,000	310		213		3,000	4.8	71	6.2
11	2,700	2,760	490		213		3,000	5.5	70	6.1
12	100	2,760	430		213		5,000	7.9	58	6.1
13	100	2,640	340		213		4,000	6.4	62	6.1
14	300	2,760	400		213		5,000	6.2	67	6.1
15	100	2,760	480		213		5,000	6.1	64	6.0
16	400	2,880	320		213		6,000	5.1	69	6.2
17	5,400	2,880	310		213		4,000	5.0	70	6.2
18	6,600	3,000	390		160		4,000	5.7	70	6.1
19	8,500	2,880	320		213		6,000	5.3	71	6.0
20	7,000	3,000	300		213		6,000	5.5	66	6.0
21	4,000	2,760	320		213		6,000	4.9	70	6.0
22	5,500	2,760	440		213		6,000	4.8	75	6.3
23	8,500	2,760	350		213		5,000	3.3	70	6.4
24	8,100	2,880	290		213		3,000	4.0	74	6.3
25	7,000	2,760	360		213		3,000	5.1	71	6.3
26	7,700	2,760	380		266		4,000	5.0	70	6.1
27	6,600	2,880	440		213		4,000	4.4	73	6.3
28	3,700	2,760	380		213		5,000	5.5	69	6.0
29	5,400	2,880	430		213		4,000	5.1	70	6.2
30	5,200	2,760	440		266		4,000	4.9	69	5.8
31	4,200	2,640	360		160		3,000	4.4	71	6.2
Total	173,900	89,280	11,860		6,550		136,000	166.2	2,139	189.1
Max.	10,000	3,240	560		266		6,000	7.9	80	6.4
Min.	100	2,640	290		160		3,000	3.3	58	5.8
Avg.	5,610	2,880	383		211		4,387	5.4	69	6.1

Manpower & Hours

	Total Hr
Superintendent 1	^176
Asst. Supt. 1	^176
Operators 3	^528
Total	^880

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
APRIL, 1990 - PLANT INFULENT SHEET - SAMPLING CODE 500

	----Weather-----		Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
	Type	Precip.												
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1	4	0.28	3.06	49	7.4	52	1,327	48	1,225	1.50	38	38		
2	4	0.05	3.17	50	7.6	48	1,269	52	1,375	1.95	52	42		
3	1		3.15	49	7.4	60	1,576	32	841	2.30	60	26		
4	1		3.21	50	7.4	66	1,767	60	1,606	2.10	56	48		
5	3		3.22	50	7.4	54	1,450	54	1,450	2.10	56	50		
6	5	0.02	3.14	50	7.4	60	1,571	70	1,833	1.65	43	58		
7	1		3.05	50	7.4	104	2,645	72	1,831	1.95	50	70		
8	1		3.16	49	7.4	64	1,687	38	1,001	1.60	42	34		
9	4	0.41	3.22	51	7.4	96	2,578	40	1,074	2.10	56	26		
10	4	0.46	3.23	50	7.5	60	1,616	72	1,940	2.75	74	60		
11	5	0.03	3.18	50	7.5	44	1,167	50	1,326	1.40	37	38		
12	1		3.17	50	7.4	40	1,058	28	740	1.35	36	16		
13	4	0.34	3.13	50	7.5	60	1,566	38	992	1.40	37	26		
14	4	0.04	3.14	50	7.5	64	1,676	42	1,100	1.65	43	28		
15	1		3.14	49	7.3	60	1,571	54	1,414	1.50	39	48		
16	4	0.16	3.31	50	7.4	48	1,325	54	1,491	2.10	58	44		
17	1		3.23	50	7.2	72	1,940	60	1,616	2.10	57	42		
18	1		3.15	51	7.3	84	2,207	66	1,734	1.90	50	54		
19	4	0.03	3.15	51	7.4	68	1,786	60	1,576	1.70	45	38		
20	4	1.11	3.18	51	7.4	80	2,122	62	1,644	1.95	52	44		
21	1		3.18	49	7.5	56	1,485	62	1,644	1.65	44	46		
22	1		3.25	49	7.4	88	2,385	52	1,409	1.65	45	40		
23	1		3.40	51	7.5	66	1,871	72	2,042	1.95	55	54		
24	1		3.35	51	7.3	54	1,509	68	1,900	1.35	38	66		
25	1		3.33	51	7.5									
26	1		3.31	51	7.3	84	2,319	92	2,540	1.50	41	74		
27	1		3.22	51	7.2	66	1,772	60	1,611	2.90	78	56		
28	3		3.10	51	7.2	52	1,344	74	1,913	1.60	41	56		
29	1		3.11	51	7.3	54	1,401	60	1,556	1.60	41	54		
30	1		3.31	51	7.2	60	1,656	112	3,092	1.90	52	90		
31														
Total	69	2.93	95.95	1,506	221.6	1,864	49,648	1,704	45,518	53.15	1,417	1,366		
Max.	5	1.11	3.40	51	7.6	104	2,645	112	3,092	2.90	78	90		
Min.	1	0.02	3.05	49	7.2	40	1,058	28	740	1.35	36	16		
Avg.	2	0.27	3.20	50	7.4	64	1,712	59	1,570	1.83	49	47		

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
APRIL, 1990 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mg/L	P Eff. BOD Lbs.	P Eff. SS mg/L	P. Eff. SS Lbs.	P Eff. Phos. mg/L	P Eff. Phos. Lbs.	P Eff. VSS mg/L	P Eff. NH3-N mg/L	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	8	204	20	510	0.90	23	14		3.06	85	58	40
2	40	1,058	36	952	1.40	37	30		3.17	17	44	28
3	40	1,051	32	841	1.65	43	28		3.15	33	0	28
4	24	643	34	910	2.05	55	20		3.21	64	43	2
5	28	752	36	967	1.65	44	32		3.22	48	33	21
6	32	838	30	786	1.15	30	22		3.14	47	57	30
7	56	1,424	28	712	1.35	34	26		3.05	46	61	31
8	40	1,054	24	633	1.10	29	20		3.16	38	37	31
9	50	1,343	32	859	1.20	32	22		3.22	48	20	43
10	36	970	36	970	1.70	46	30		3.23	40	50	38
11	32	849	40	1,061	1.50	40	34		3.18	27	20	0
12	16	423	32	846	1.20	32	18		3.17	60	0	11
13	48	1,253	20	522	0.95	25	14		3.13	20	47	32
14	44	1,152	28	733	1.50	39	22		3.14	31	33	9
15	36	943	36	943	1.30	34	26		3.14	40	33	13
16	40	1,104	40	1,104	1.90	52	26		3.31	17	26	10
17	44	1,185	64	1,724	2.30	62	50		3.23	39	0	0
18	56	1,471	66	1,734	1.60	42	58		3.15	33	0	16
19	44	1,156	50	1,314	1.60	42	30		3.15	35	17	6
20	36	955	30	796	1.65	44	20		3.18	55	52	15
21	44	1,167	44	1,167	1.40	37	30		3.18	21	35	12
22									3.25	0		
23	48	1,361	62	1,758	2.05	58	56		3.40	27	14	0
24	44	1,229	60	1,676	1.70	47	56		3.35	19	12	0
25									3.33			
26	56	1,546	56	1,546	1.50	41	44		3.31	33	39	0
27	40	1,074	26	698	2.10	56	22		3.22	39	57	28
28	40	1,034	48	1,241	1.50	39	38		3.10	23	35	6
29	24	622	46	1,193	1.65	43	44		3.11	56	23	0
30	40	1,104	44	1,215	1.90	52	34		3.31	33	61	0
31												
Total	1,086	28,965	1,100	29,410	43.45	1,160	866		95.95	1,074	907	450
Max.	56	1,546	66	1,758	2.30	62	58		3.40	85	61	43
Min.	8	204	20	510	0.90	23	14		3.05	0	0	0
Avg.	39	1,034	39	1,050	1.55	41	31		3.20	37	32	16

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
APRIL, 1990 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading f/m	Mix Liq SS mg/L	Mix Liq VSS mg/L	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mg/L	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mg/l	PE SS mg/L
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	2.8	2.9		1,081					215			57	69	3.06	34	43
2		2.7	3.0	0.46	1,031	633	13.0	0.79	6.2	213	0.24	0.17	56	69	3.17	33	39
3		2.7	3.0	0.40	974	682	12.0	0.81	6.2	213	0.24	0.16	62	63	3.15	31	37
4		2.7	3.1	0.34	1,056	858	13.5	0.78	6.8	212	0.23	0.16	54	36	3.21	33	38
5		2.7	3.3	0.34	1,117	828	13.0	0.86	6.3	213	0.25	0.18	52	60	3.22	31	38
6		2.7	3.2	0.38	1,003	698	12.5	0.80	6.9	192	0.22	0.15	53	60	3.14	30	36
7		2.8	3.8		995					192			55	60	3.05	33	31
8		2.7	3.5		956					188			53	60	3.16	37	31
9		2.7	3.3	0.54	931	648	14.0	0.67	6.1	185	0.23	0.16	51	60	3.22	39	31
10		2.7	3.5	0.47	987	734	15.0	0.66	3.9	186	0.25	0.17	51	53	3.23	38	31
11		2.7	3.5	0.47	985	731	15.0	0.66	6.5	188	0.27	0.19	52	53	3.18	39	32
12		2.7	3.4	0.48	969	681	14.5	0.67	6.1	188	0.23	0.15	52	58	3.17	37	32
13		2.8	3.8		992					187			53	58	3.13	40	30
14		2.7	3.8		994					187			52	58	3.14	38	30
15		2.7	3.6		1,008					187			52	58	3.14	37	32
16		2.6	3.3	0.47	998	702	13.0	0.77	6.8	192	0.26	0.18	50	58	3.31	36	33
17		2.7	3.2	0.44	1,068	764	14.5	0.74	6.5	200	0.29	0.19	51	58	3.23	37	37
18		2.7	3.0	0.43	1,089	767	14.5	0.75	7.3	199	0.26	0.18	53	58	3.15	38	41
19		2.7	3.1	0.49	1,152	796	16.0	0.72	5.5	197	0.28	0.20	53	60	3.15	44	43
20		2.7	3.1		1,254		17.0	0.74	5.8	196	0.29		52	65	3.18	43	45
21		2.7	2.9		1,220					197			52	65	3.18	42	47
22		2.7	2.8		1,172					196			51	65	3.25	43	47
23		2.5	2.4	0.48	1,179	853	12.5	0.94	5.5	192	0.29	0.21	47	65	3.40	43	51
24		2.6	2.3	0.30	1,149	1,381	11.5	1.00	4.4	189	0.33	0.25	55	65	3.35	45	54
25		2.6	2.3	0.48	1,151	862	11.0	1.05	4.4	214	0.29	0.22	57	60	3.33	45	54
26		2.6	2.5	0.47	1,201	885	11.0	1.09	6.0	224	0.29	0.22	57	60	3.31	45	53
27		2.7	2.8	0.47	1,187	891	10.0	1.19	5.8	223	0.30	0.22	59	58	3.22	47	47
28		2.8	3.2		1,318					226			62	65	3.10	45	47
29		2.8	3.0		1,262					228			62	65	3.11	45	49
30		2.6	2.5	0.49	1,152	848	9.0	1.28	6.9	229	0.27	0.20	58	65	3.31	45	49
31																	
Total	48	80.9	93.2	8.40	32,631	15,242	262.5	16.96	119.9	6,048	5.31	3.56	1,624	1,807	95.95	1,173	1,208
Max.	48	2.8	3.8	0.54	1,318	1,381	17.0	1.28	7.3	229	0.33	0.25	62	69	3.40	47	54
Min.	48	2.5	2.3	0.30	931	633	9.0	0.66	3.9	185	0.22	0.15	47	36	3.05	30	30
Avg.	48	2.7	3.1	0.44	1,088	802	13.1	0.85	6.0	202	0.27	0.19	54	60	3.20	39	40

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 W.PEARL ST. MARSHALL MI. 49068 - PERMIT No.MI0023540
APRIL, 1990 - DISCHARGE MONITORING REPORT - DISCHARGE No. 001A

	F.Eff. D.O. mg/L	F.Eff. pH SU	F.Eff. SS mg/L	F.Eff. SS Lbs.	F.Eff. Total-P mg/L	Flow MGD	F.Eff. Chlorine mg/L	F.Eff. BOD mg/L	F.Eff. BOD Lbs.	F.Eff. NH3 as N mg/L	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	6.6	7.5	7	179	0.32	3.06		3	77				87	94	79
2	6.8	7.3	7	185	0.30	3.17		4	106				87	92	85
3	6.1	7.3	10	263	0.38	3.15		5	131				69	92	83
4	6.8	7.3	5	134	0.38	3.21		4	107				91	94	82
5	6.4	7.4	7	188	0.41	3.22		4	107				87	93	80
6	6.1	7.3	8	210	0.34	3.14		4	105				86	93	79
7	6.2	7.3	9	229	0.34	3.05		4	102				88	96	83
8	6.5	7.3	7	184	0.32	3.16		5	132				82	92	80
9	5.7	7.2	4	107	0.34	3.22		5	134				90	95	84
10	5.1	7.3	8	216	0.44	3.23		3	81				89	95	84
11	6.4	7.3	8	212	0.32	3.18		1	27				84	98	77
12	6.1	7.3	5	132	0.46	3.17		2	53				82	97	66
13	6.0	7.4	4	104	0.50	3.13		2	52				89	97	64
14	5.9	7.2	7	183	0.44	3.14		3	79				83	95	73
15	6.1	7.2	5	131	0.22	3.14		2	52				91	96	85
16	5.1	7.5	5	138	0.27	3.31		6	166				91	88	87
17	5.2	7.5	11	296	0.28	3.23		5	135				82	93	87
18	6.2	7.3	12	315	0.32	3.15		5	131				82	94	83
19	5.3	7.4	10	263 252	0.30	3.15		5	131				83	93	82
20	5.1	7.2	8	212	0.37	3.18		4	106				87	95	81
21	5.4	7.4	12	318	0.28	3.18		5	133				81	91	83
22	5.5	7.4	7	190	0.50	3.25		13	352				86	85	70
23	3.6	7.2	6	170	0.32	3.40		8	227				92	88	84
24	3.8	7.3	10	279	0.35	3.35		10	279				85	81	74
25	4.0	7.4				3.33		9	210						
26	3.4	7.3	9	248	0.28	3.31		8	221				90	90	81
27	5.1	7.2	6	161	0.32	3.22		5	134				90	92	89
28	5.2	7.2	8	207	0.18	3.10		5	129				89	90	89
29	5.4	7.3	7	182	0.32	3.11		5	130				88	90	80
30	8.4	7.7	16	442	0.53	3.31		7	193				86	88	72
31															
Total	169.5	219.9	228	6,079	10.13	95.95		142	3,812				2,497	2,677	2,326
Max.	8.4	7.7	16	442	0.53	3.40		13	352				92	98	89
Min.	3.4	7.2	4	104	0.18	3.05		1	27				69	81	64
Avg.	5.7	7.3	8	210	0.35	3.20		5	131				86	92	80
			9	252				8	210						

Robert J. Swalwell

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
APRIL, 1990 - MISCELLOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferrous Chloride Lbs.	Other	Raw Sludge Gals.	Raw Sludge Total Solids Percent	Raw Sludge Vol. Solids Percent	Raw Sludge pH
1	3,400	2,640	360		213		4,000	4.3	71	6.2
2	6,600	2,640	640		213		6,000	4.6	70	6.1
3	6,900	2,760	380		266		6,000	4.5	71	6.1
4	6,300	2,520	360		213		6,000	4.6	73	6.2
5	6,800	2,760	380		266		6,000	5.2	71	6.2
6	8,100	2,640	490		266					
7	7,900	2,280	330		213		4,000	3.9	72	6.5
8	4,600	2,400	370		160		4,000	4.0	70	6.6
9	700	2,400	370		213		6,000	4.4	70	6.6
10	700	2,400	370		213		6,000	4.7	70	6.6
11	700	2,400	330		213		5,000	6.1	62	6.5
12	6,400	2,520	450		213		5,000	5.6	62	6.4
13	4,200	2,280	190		213		2,000	5.0	66	6.5
14	4,900	2,400	320		213		3,000	4.3	70	6.6
15	4,900	2,520	310		266		3,000	4.6	66	6.6
16	4,100	2,400	370		213		5,000	5.3	67	6.5
17	6,700	2,640	410		213		5,000	4.8	68	6.5
18	4,400	2,520	240		213		5,000	6.2	66	6.4
19	2,700	2,400	410		213		5,000	4.6	67	6.4
20	2,700	2,520	550		213		6,000	5.3	69	6.3
21	2,600	2,400	340		213		3,000	4.5	69	6.5
22	2,400	2,280	660		213		3,000	4.7	70	6.4
23	100	2,400	340		213		5,000	5.0	71	6.5
24	100	2,280	360		213		6,000	5.2	70	6.4
25	200	2,520	420		213		6,000	5.0	71	6.3
26	100	2,640	450		213		8,000	4.8	66	6.3
27	100	2,520	280		213		6,000	4.9	65	6.3
28	100	2,520	340		213		4,000	5.0	66	6.3
29	100	2,520	330		213		4,000	4.9	66	6.2
30	100	2,640	350		213		6,000	5.1	67	6.3
31										
Total	99,600	74,760	11,500		6,549		143,000	141.1	1,982	185.3
Max.	8,100	2,760	660		266		8,000	6.2	73	6.6
Min.	100	2,280	190		160		2,000	3.9	62	6.1
Avg.	3,320	2,492	383		218		4,931	4.9	68	6.4

Manpower & Hours

	Total Hr
Superintendent 1	^160
Asst. Supt. 1	^160
Operators 3	^484
Total	^804

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MAY, 1990 - PLANT INFLUENT SHEET - SAMPLING CODE 500

	----Weather-----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1	1		3.19	51	7.2	48	1,277	60	1,596	2.20	59	56	6.9	
2	1		3.24	51	7.5	66	1,783	86	2,324	2.55	69	78	6.9	
3	4	0.07	3.28	51	7.6	60	1,641	76	2,079	2.65	72	66	7.5	
4	4	0.65	3.30	52	7.7	54	1,486	42	1,156	1.90	52	34	7.6	
5	1		3.20	51	7.5									
6	1		3.25	51	7.4	60	1,626	68	1,843	1.90	51	58	6.6	
7	1		3.39	52	7.5	84	2,375	170	4,806	3.85	109	78	8.0	
8	1		3.00	52	7.5	54	1,351	100	2,502	1.95	49	58	6.6	
9	4	0.57	3.19	52	7.5	84	2,235	108	2,873	2.05	55	74	8.3	
10	4	0.10	3.12	52	7.5	60	1,561	58	1,509	1.80	47	42	7.0	
11	1		3.15	52	7.6	84	2,207	62	1,629	2.10	55	50	7.4	
12	4	0.68	3.00	52	7.5	64	1,601	64	1,601	1.90	48	48	6.0	
13	4	0.03	3.01	51	7.5	64	1,607	62	1,556	1.70	43	52	5.4	
14	3		2.85	52	7.7	80	1,902	74	1,759	4.95	118	62	10.0	
15	4	1.25	2.94	53	7.5	40	981	68	1,667	3.10	76	56	12.0	
16	4	0.65	2.88	54	7.6	76	1,825	68	1,633	2.55	61	50	7.6	
17	4	0.06	3.05	54	7.2	76	1,933	56	1,424	4.70	120	46	8.0	
18	1		3.02	54	7.2	28	705	66	1,662	3.00	76	54	6.9	
19	4	0.12	2.96	54	7.5	52	1,284	38	938	2.20	54	28	6.0	
20	1		3.00	53	7.4	60	1,501	58	1,451	2.55	64	44	5.9	
21	1		3.11	53	7.4	102	2,646	76	1,971	4.95	128	64	10.0	
22	1		3.03	54	7.4	60	1,516	82	2,072	2.65	67	56	9.0	
23	4	0.07	3.06	54	7.3	66	1,684	100	2,552	2.40	61	80	8.2	
24	4	0.13	3.11	54	7.3	78	2,023	78	2,023	3.10	80	76	9.1	
25	4	0.51	3.20	54	7.5	42	1,121	44	1,174	2.65	71	36	8.8	
26	1		3.00	54	7.0	78	1,952	28	701	3.20	80	14	8.6	
27	1		2.81	54	7.3	78	1,828	58	1,359	2.90	68	46	10.0	
28	1		2.93	54	7.5	54	1,320	68	1,662	2.20	54	46	6.1	
29	1		3.05	54	7.6	66	1,679	66	1,679	2.30	59	62	10.0	
30	1		3.00	54	7.5	126	3,153	80	2,002	2.75	69	60	8.2	
31	1		3.33	54	7.5	84	2,333	88	2,444	2.30	64	78	7.1	
Total	72	4.89	95.65	1,637	230.9	2,028	52,136	2,152	55,650	81.00	2,077	1,652	235.7	
Max.	4	1.25	3.39	54	7.7	126	3,153	170	4,806	4.95	128	80	12.0	
Min.	1	0.03	2.81	51	7.0	28	705	28	701	1.70	43	14	5.4	
Avg.	2	0.38	3.09	53	7.4	68	1,738	72	1,855	2.70	69	55	7.9	

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MAY, 1990 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mg/L	P Eff. BOD Lbs.	P Eff. SS mg/L	P. Eff. SS Lbs.	P Eff. Phos. mg/L	P Eff. Phos. Lbs.	P Eff. VSS mg/L	P Eff. NH3-N mg/L	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	28	745	48	1,277	2.45	65	42	9.5	3.19	42	20	0
2	28	757	42	1,135	1.50	41	36	8.4	3.24	58	51	41
3	24	657	20	547	1.95	53	7	8.7	3.28	60	74	26
4	36	991	34	936	1.90	52	26	7.2	3.30	33	43	0
5									3.20			
6	36	976	34	922	1.60	43	28	6.2	3.25	40	50	15
7	40	1,131	42	1,187	3.00	85	32	7.4	3.39	52	75	22
8	32	801	48	1,201	1.65	41	40	6.8	3.00	41	52	15
9	44	1,171	32	851	1.60	43	28	8.0	3.19	48	70	12
10	48	1,249	54	1,405	1.80	47	42	8.9	3.12	20	7	0
11	32	841	36	946	1.65	43	28	6.8	3.15	62	42	21
12	36	901	34	851	1.35	34	24	5.8	3.00	44	47	29
13	32	803	44	1,105	1.30	33	38	5.1	3.01	50	29	23
14	52	1,236	60	1,426	3.75	89	52	8.8	2.85	35	19	25
15	28	687	32	785	3.10	76	30	11.0	2.94	30	53	0
16									2.88			
17	44	1,119	46	1,170	2.40	61	38	9.0	3.05	42	18	48
18	20	504	64	1,612	2.55	64	52	6.9	3.02	28	3	15
19	72	1,777	26	642	2.20	54	20	5.9	2.96	0	32	0
20	36	901	24	600	1.65	41	12	5.5	3.00	40	59	35
21	56	1,452	46	1,193	3.75	97	40	9.2	3.11	45	39	24
22	48	1,213	52	1,314	2.30	58	44	7.8	3.03	20	36	13
23	36	919	54	1,378	1.90	48	48	7.2	3.06	45	46	21
24	44	1,141	48	1,245	2.55	66	44	9.0	3.11	44	38	18
25	40	1,068	42	1,121	2.45	65	24	7.9	3.20	4	4	7
26									3.00			
27	28	656	38	891	2.90	68	34	7.0	2.81	64	48	0
28	32	782	48	1,173	2.20	54	38	6.4	2.93	41	68	0
29	52	1,323	42	1,068	1.65	42	30	9.2	3.05	21	36	28
30	60	1,501	52	1,301	1.95	49	40	9.2	3.00	52	21	29
31	48	1,333	58	1,611	2.30	64	50	8.4	3.33	43	34	0
Total	1,112	28,632	1,200	30,892	61.35	1,578	967	217.2	95.65	1,104	1,114	467
Max.	72	1,777	64	1,612	3.75	97	52	11.0	3.39	64	75	48
Min.	20	504	20	547	1.30	33	7	5.1	2.81	0	3	0
Avg.	40	1,023	43	1,103	2.19	56	35	7.8	3.09	39	40	17

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MAY, 1990 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	2.7	2.7	0.41	1,145	821	9.0	1.27	6.6	232	0.29	0.21	61	60	3.19	38	47
2		2.7	2.8	0.43	1,123	779	9.0	1.25	7.0	230	0.28	0.20	60	60	3.24	37	44
3		2.6	3.0	0.35	1,161	829	9.0	1.29	6.5	231	0.28	0.19	58	60	3.28	32	42
4		2.6	2.7	0.43	1,085	663	8.5	1.28	7.2	231	0.27	0.18	56	60	3.30	31	43
5		2.7	2.8		1,059					231			59	60	3.20	31	43
6		2.7	2.7		1,000					231			58	60	3.25	31	41
7		2.5	2.5	0.46	980	682	8.5	1.15	6.9	225	0.26	0.18	55	58	3.39	33	41
8		2.9	3.2	0.37	1,104	716	10.0	1.10	6.2	227	0.27	0.17	64	60	3.00	32	41
9		2.7	3.3	0.56	1,128	543	11.0	1.03	6.7	224	0.28	0.18	61	60	3.19	34	39
10		2.8	3.2	0.43	1,133	751	11.5	0.99	6.5	231	0.26	0.17	63	65	3.12	37	41
11		2.7	2.9	0.49	1,028	674	11.0	0.93	6.9	231	0.28	0.18	61	60	3.15	38	40
12		2.9	3.3		1,105					231			64	60	3.00	38	40
13		2.9	3.1		1,076					235			64	60	3.01	37	41
14		3.0								228			70	58	2.85	39	44
15		2.9	3.7	0.36	1,268	853	11.0	1.15	4.4	226	0.32	0.21	66	58	2.94	38	42
16		3.0	3.7	0.35	1,257	866	15.0	0.84	5.6	223	0.31	0.21	68	65	2.88	38	42
17		2.8	3.1	0.42	1,147	776	13.5	0.85	5.0	228	0.27	0.19	63	65	3.05	38	44
18		2.9	3.1	0.37	1,178	804	13.5	0.87	5.8	229	0.26	0.17	62	66	3.02	35	45
19		2.9	3.1		1,130					229			65	66	2.96	41	44
20		2.9	3.1		1,101					229			64	66	3.00	41	42
21		2.8	2.8	0.55	1,047	698	12.0	0.87	6.6	229	0.25	0.17	61	66	3.11	44	43
22		2.8	3.2	0.40	1,116	954	14.0	0.80	5.9	229	0.28	0.19	63	66	3.03	45	41
23		2.8	3.0	0.50	1,150	787	14.0	0.82	6.1	228	0.27	0.19	62	66	3.06	46	45
24		2.8	3.0	0.48	1,185	832	13.0	0.91	6.1	227	0.28	0.20	61	66	3.11	46	45
25		2.7	3.2	0.52	1,191	836	15.0	0.79	6.0	226	0.30	0.21	60	66	3.20	49	42
26		2.9	3.5		1,229					227			64	66	3.00	49	42
27		3.1	3.7		1,180					229			68	72	2.81	42	41
28		2.9	3.2		1,109					227			66	69	2.93	42	43
29		2.8	2.9	0.46	1,080	752	12.0	0.90	5.2	230	0.26	0.17	61	65	3.05	41	44
30		2.9	3.2	0.44	1,178	797	15.0	0.79	5.3	229	0.28	0.19	64	65	3.00	42	44
31		2.6	3.0	0.46	1,254	864	18.0	0.70	3.5	227	0.27	0.17	58	66	3.33	43	45
Total	48	86.7	92.9	9.24	33,927	16,277	253.5	20.58	126.0	7,090	5.82	3.93	1,930	1,960	95.65	1,208	1,321
Max.	48	3.1	3.7	0.56	1,268	954	18.0	1.29	7.2	235	0.32	0.21	70	72	3.39	49	47
Min.	48	2.5	2.5	0.35	980	543	8.5	0.70	3.5	223	0.25	0.17	55	58	2.81	31	39
Avg.	48	2.8	3.1	0.44	1,131	775	12.1	0.98	6.0	229	0.28	0.19	62	63	3.09	39	43

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 W. PEARL ST. MARSHALL MI. 49068 - PERMIT No. MI0023540
MAY, 1990 - DISCHARGE MONITORING REPORT - DISCHARGE No. 001A

	F.Eff. D.O. mg/L	F.Eff. pH SU	F.Eff. SS mg/L	F.Eff. SS Lbs.	F.Eff. Total-P mg/L	Flow MGD	F.Eff. Chlorine mg/L	F.Eff. BOD mg/L	F.Eff. BOD Lbs.	F.Eff. NH3 as N mg/L	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	7.2	7.5	9	239	0.27	3.19	0.00	4	106	8.9	237	24	85	92	88
2	7.6	7.8	10	270	0.40	3.24	0.00	6	162	7.1	192	14	88	91	84
3	7.6	7.4	9	246	0.46	3.28	0.00	5	137	6.9	189	70	88	92	83
4	7.5	7.7	6	165	1.22	3.30	0.00	5	138	7.4	204	24	86	91	41
5	7.6	7.4				3.20	0.00	53			185	6			
6	7.5	7.4	7	190	0.44	3.25	0.00	6	163 143	5.5	149	4	89	90	77
7	7.2	7.5	10	283	0.87	3.39	0.00	6	170	6.4	181	200	94	93	78
8	7.8	7.3	6	150	0.48	3.00	0.00	5	125	5.7	143	40	94	91	75
9	7.3	7.5	4	106	0.37	3.19	0.00	4	106	7.0	186	10	96	95	82
10	7.4	7.4	5	130	0.48	3.12	0.00	4	104	6.7	174	20	91	93	73
11	7.6	7.5	6	158	0.40	3.15	0.00	3	79	6.1	160	260	90	96	81
12	7.4	7.5	7	175	0.44	3.00	0.00	4	100	5.1	128	2	89	94	77
13	7.5	7.4	12	301	0.34	3.01	0.00	6	151	5.4	136	8	81	91	80
14	7.1	7.4	9	214	0.56	2.85	0.00	6	143	6.9	164	8	87	93	89
15	7.2	7.4	10	245	1.00	2.94	0.00	5	123	7.7	189	10	85	88	68
16	7.0	7.6	6	144	0.56	2.88	0.00	4	96	5.9	142	12	91	95	78
17	7.1	7.3	4	102	1.00	3.05	0.00	5	127	7.1	181	16	93	93	78
18	7.3	7.4	5	126	0.41	3.02	0.00	4	101	5.9	149	12	92	86	86
19	7.3	7.5	3	74	0.32	2.96	0.00	4	99	5.2	128	4	92	92	85
20	7.4	7.3	2	50	0.38	3.00	0.00	2	50	4.3	108	4	96	97	85
21	7.5	7.5	7	182	0.95	3.11	0.00	4	104	7.6	197	8	90	96	81
22	8.0	7.5	7	177	0.82	3.03	0.00	4	101	6.3	159	4	91	93	69
23	6.5	7.3	11	281	0.61	3.06	0.00	5	128	6.4	163	150	89	92	75
24	7.0	7.3	10	259	0.74	3.11	0.00	5	130	7.1	184	68	88	94	76
25	6.8	7.3	9	240 220	0.58	3.20	0.00	4	107	6.9	184	40	80	90	78
26	7.1	7.1	7 8	175	0.38	3.00	0.00	4	100	5.5	138	12	75	92	88
27	7.0	7.1	8	187	0.42	2.81	0.00	4	94	5.8	136	8	86	95	86
28	7.0	7.5	5	122	0.35	2.93	0.00	3	73	5.7	139	6	93	94	84
29	6.7	7.5	11	280	0.40	3.05	0.00	5	127	8.1	206	78	83	92	83
30	6.8	7.4	10	250	0.28	3.00	0.00	5	125	7.2	180	50	88	96	90
31	6.3	7.4	8	222	0.30	3.33	0.00	6	167	6.8	189	44	91	93	87
Total	224.3	230.1	223	5,745	16.23	95.65	0.00	137	3,533	194.6	5,013	1,216	2,661	2,780	2,385
Max.	8.0	7.8	12	301	1.22	3.39	0.00	6	170	8.9	237	260	96	97	90
Min.	6.3	7.1	2	50	0.27	2.81	0.00	2	50	4.3	108	2	75	86	41
Avg.	7.2	7.4	7	191	0.54	3.09	0.00	5	118	6.5	167	18	89	93	80

Robert J. Swalwell

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MAY, 1990 - MISCELLOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferrous Chloride Lbs.	Sulfer Dioxide Lbs.	Raw Sludge Gals.	Raw Sludge Total Solids Percent	Raw Sludge Vol. Solids Percent	pH
1		2,640	310	29	244	24	6,000	4.8	70	6.1
2		2,640	260	31	244	22	6,000	5.0	70	6.2
3		2,520	380	33	366	27	6,000	4.8	71	6.2
4		2,760	290	31	244	26	6,000	5.5	64	6.2
5		2,640	250	23	244	25	4,000	5.3	71	6.1
6		2,760	310	32	244	17	4,000	4.9	70	6.0
7		2,520	250	24	244	20	6,000	6.1	59	6.2
8		2,520	370	30	244	24	6,000	9.4	41	6.3
9		2,520	390	30	244	26	6,000	7.1	51	6.2
10		2,760	380	34	244	24	6,000	6.4	53	6.2
11		2,760	330	30	305	26	6,000	6.5	54	6.5
12		2,640	230	32	244	28	3,000	4.8	61	6.4
13		2,400	300	33	244	15	3,000	4.9	64	6.2
14		2,520	320	32	244	20	4,500	5.0	66	6.1
15		2,520	470	21	305	25	6,000	5.5	66	6.1
16		2,520	470	23	244	25	5,200	5.0	67	6.1
17		2,640	540	27	305	23	5,000	5.2	69	6.1
18		2,640	470	29	183	25	5,000	4.7	68	7.2
19		2,520	420	31	244	17	4,000	4.8	68	6.1
20		2,520	470	37	244	20	4,000	4.7	67	6.0
21		2,640	460	27	244	24	6,000	4.7	68	6.0
22		2,640	350	33	244	24	5,000	5.0	66	6.1
23		2,640	910	32	244	25	5,500	4.8	67	6.0
24		2,640	360	37	244	27	6,000	6.1	61	6.1
25		2,640	370	20	244	25	5,000	4.8	74	6.0
26		2,520	330	26	366	25	4,000	4.7	70	6.0
27		2,520	390	26	305	20	3,000	5.3	68	5.9
28		2,640	345	30	244	22	4,000	4.6	67	6.1
29		2,640	345	30	244	23	6,000	5.6	67	6.3
30		2,640	320	36	671	25	6,000	5.0	67	6.0
31		2,640	450	27	427	25	6,000	5.0	67	6.6
Total		80,760	11,840	916	8,601	724	158,200	166.0	2,012	191.6
Max.		2,760	910	37	671	28	6,000	9.4	74	7.2
Min.		2,400	230	20	183	15	3,000	4.6	41	5.9
Avg.		2,605	382	30	277	23	5,103	5.4	65	6.2

Manpower & Hours

	Total Hr
Superintendent 1	^176
Asst. Supt. 1	^176
Operators 3	^532
Total	^884

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
JUNE, 1990 - PLANT INFLUENT SHEET - SAMPLING CODE 500

	Weather		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	Remarks or Other Parameters
	Type	Precip.	MGD	F	SU	mg/L	Lbs.	mg/L	Lbs.	mg/L	Lbs.	mg/L	mg/L	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1	1		3.21	54	7.2	80	2,142	94	2,517	1.80	48	80	6.6	
2	4	0.26	3.16	53	7.5	108	2,846	76	2,003	1.90	50	60	12.6	
3	4	0.03	3.22	53	7.4	72	1,934	98	2,632	2.45	66	82	13.6	
4	3		3.34	53	7.6	72	2,006	102	2,841	2.55	71	86	10.1	
5	1		3.25	54	7.3	72	1,952	68	1,843	2.10	57	54	7.7	
6	1		3.09	54	7.4	72	1,855	74	1,907	2.45	63	62	7.4	
7	4	0.14	3.02	54	7.4	116	2,922	82	2,065	2.75	69	64	7.1	
8	4	0.16	3.01	54	7.4	72	1,807	70	1,757	1.95	49	60	6.5	
9	1		2.94	54	7.3	56	1,373	60	1,471	1.70	42	54	6.9	
10	1		2.84	54	7.4	84	1,990	72	1,705	1.95	46	64	8.3	
11	4	0.03	3.00	54	7.6	84	2,102	70	1,751	2.45	61	58	9.6	
12	1		3.32	54	7.3	60	1,661	56	1,551	2.90	80	52	6.7	
13	4	0.26	3.45	54	7.3	78	2,244	66	1,899	2.20	63	54	6.1	
14	1		3.54	54	7.2	84	2,480	90	2,657	2.40	71	78	6.5	
15	1		3.58	54	7.2	78	2,329	60	1,791	1.90	57	46	7.9	
16	1		3.60	54	7.2	54	1,621	46	1,381	2.45	74	24	7.4	
17	4	0.14	3.50	53	7.0	48	1,401	58	1,693	1.90	55	44	7.3	
18	1		3.77	55	7.2	96	3,018	82	2,578	2.20	69	54	9.1	
19	4	0.03	3.69	55	7.4	42	1,293	68	2,093	2.10	65	52	4.9	
20	4	0.04	3.72	55	7.2	78	2,420	62	1,924	1.90	59	54	7.3	
21	4	0.20	3.82	55	7.4	66	2,103	58	1,848	2.05	65	56	6.9	
22	4	0.70	3.81	55	7.4	86	2,733	74	2,351	2.30	73	68	6.3	
23	4	0.11	3.64	54	7.5	72	2,186	68	2,064	1.80	55	58	9.3	
24	1		3.94	54	7.4	78	2,563	60	1,972	1.35	44	50	7.4	
25	1		3.74	54	7.3	78	2,433	54	1,684	2.10	66	46	7.6	
26	3		3.77	54	7.2	126	3,962	104	3,270	3.00	94	94	9.5	
27	4	0.85	3.76	55	7.3	120	3,763	112	3,512	3.50	110	90	13.4	
28	4	0.45	3.81	56	7.3	78	2,478	92	2,923	2.30	73	74	6.2	
29	4	0.03	3.82	55	7.5	76	2,421	92	2,931	2.90	92	76	6.2	
30	1		3.57	55	7.4	56	1,667	80	2,382	1.70	51	66	6.4	
31														
Total	79	3.43	103.93	1,626	220.2	2,342	67,704	2,248	64,998	67.00	1,939	1,860	238.8	
Max.	4	0.85	3.94	56	7.6	126	3,962	112	3,512	3.50	110	94	13.6	
Min.	1	0.03	2.84	53	7.0	42	1,293	46	1,381	1.35	42	24	4.9	
Avg.	3	0.23	3.46	54	7.3	78	2,257	75	2,167	2.23	65	62	8.0	

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
JUNE, 1990 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	28	750	52	1,392	1.65	44	40	7.8	3.21	65	45	8
2	64	1,687	40	1,054	1.50	40	30	10.8	3.16	41	47	21
3	64	1,719	56	1,504	1.95	52	44	12.1	3.22	11	43	20
4	44	1,226	44	1,226	2.10	58	36	7.7	3.34	39	56	18
5	40	1,084	44	1,193	1.95	53	36	7.0	3.25	44	35	7
6	44	1,134	40	1,031	1.95	50	30	6.7	3.09	39	46	20
7	48	1,209	42	1,058	2.40	60	36	8.4	3.02	59	49	13
8	36	904	66	1,657	2.45	62	54	9.0	3.01	50	6	0
9	76	1,863	51	1,250	2.45	60	43	6.6	2.94	0	15	0
10	72	1,705	64	1,516	1.80	43	52	8.2	2.84	14	11	8
11	64	1,601	62	1,551	2.05	51	48	8.7	3.00	23	11	16
12	52	1,440	52	1,440	2.75	76	42	6.9	3.32	8	7	5
13	48	1,381	50	1,439	1.90	55	44	6.2	3.45	38	24	14
14	44	1,299	54	1,594	2.10	62	42	5.6	3.54	48	40	13
15	60	1,791	62	1,851	2.05	61	54	6.8	3.58	23	0	0
16	48	1,441	56	1,681	2.45	74	24	5.7	3.60	11	0	0
17									3.50			
18	60	1,887	84	2,641	2.40	75	60	5.9	3.77	38	0	0
19	44	1,354	56	1,723	2.10	65	40	4.3	3.69	0	18	0
20	44	1,365	40	1,241	1.70	53	30	5.9	3.72	44	35	11
21	52	1,657	58	1,848	2.05	65	50	6.3	3.82	21	0	0
22	62	1,970	54	1,716	2.20	70	48	6.7	3.81	28	27	4
23	52	1,579	74	2,246	2.10	64	60	7.8	3.64	28	0	0
24									3.94			
25	52	1,622	68	2,121	2.30	72	58	6.9	3.74	33	0	0
26	80	2,515	82	2,578	2.90	91	74	8.8	3.77	37	21	3
27	96	3,010	70	2,195	3.10	97	60	12.7	3.76	20	38	11
28	60	1,907	60	1,907	2.65	84	50	5.4	3.81	23	30	0
29	60	1,912	80	2,549	3.00	96	76	5.9	3.82	21	13	0
30	60	1,786	46	1,370	2.90	86	36	5.6	3.57	0	43	0
31												
Total	1,554	44,797	1,607	46,572	62.90	1,819	1,297	206.4	103.93	806	660	192
Max.	96	3,010	84	2,641	3.10	97	76	12.7	3.94	65	56	21
Min.	28	750	40	1,031	1.50	40	24	4.3	2.84	0	0	0
Avg.	56	1,600	57	1,663	2.25	65	46	7.4	3.46	29	24	7

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
JUNE, 1990 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	2.7	3.1	0.39	1,293	899	20.0	0.65	4.0	222	0.32	0.22	61	66	3.21	39	47
2		2.7	3.3		1,290					226			63	66	3.16	42	45
3		2.7	3.4		1,371					228			61	66	3.22	43	45
4		2.6	3.1	0.40	1,354	988	25.0	0.54	3.4	229	0.33	0.23	59	66	3.34	43	47
5		2.7	3.1	0.41	1,326	945	24.0	0.55	5.3	227	0.31	0.22	61	69	3.25	43	47
6		2.8	3.3	0.43	1,310	919	21.0	0.62	6.2	225	0.32	0.22	65	66	3.09	46	46
7		2.9	3.4	0.44	1,286	901	20.0	0.64	5.5	225	0.29	0.20	67	66	3.02	47	45
8		2.9	3.3	0.46	1,305	890	20.0	0.65	5.5	223	0.29	0.20	67	66	3.01	49	47
9		2.9	3.1		1,243					226			68	66	2.94	50	49
10		3.0	3.0		1,192					227			70	66	2.84	51	50
11		2.9	2.7	0.54	1,206	829	12.5	0.96	4.0	225	0.27	0.19	65	66	3.00	54	53
12		2.6	2.6	0.61	1,284	845	12.0	1.07	3.4	222	0.30	0.22	59	66	3.32	56	54
13		2.5	2.4	0.59	1,284	923	11.0	1.17	4.2	228	0.30	0.20	57	66	3.45	57	55
14		2.4	2.2	0.64	1,244	861	10.5	1.18	5.2	229	0.31	0.22	55	66	3.54	56	57
15		2.4	2.3	0.67	1,258	876	10.0	1.26	5.3	229	0.30	0.21	54	66	3.58	59	56
16		2.4	2.1		1,220					229			54	66	3.60	55	57
17		2.5	2.0		1,134					227			58	66	3.50	55	57
18		2.3	1.8	0.71	1,105	794	9.0	1.23	5.3	230	0.28	0.20	52	66	3.77	54	60
19		2.3	1.9	0.64	1,157	818	10.0	1.16	5.5	231	0.31	0.22	54	60	3.69	51	59
20		2.3	1.9	0.63	1,146	817	10.0	1.15	5.3	230	0.29	0.21	53	66	3.72	50	57
21		2.3	1.8	0.67	1,129	795	10.0	1.13	6.1	228	0.29	0.21	51	66	3.82	50	59
22		2.3	1.9	0.64	1,199	879	10.5	1.14	4.6	230	0.31	0.22	51	66	3.81	53	59
23		2.4	2.1		1,274					236			54	63	3.64	52	60
24		2.2	2.0		1,316					235			50	63	3.94	52	60
25		2.3	1.9	0.66	1,222	816	13.0	0.94	3.7	242	0.36	0.27	52	75	3.74	52	62
26		2.3	1.9	0.60	1,255	960	14.0	0.90	4.0	244	0.33	0.25	53	65	3.77	55	62
27		2.3	2.2	0.59	1,452	1,121	15.0	0.97	1.6	242	0.36	0.27	52	79	3.76	63	64
28		2.3	2.7	0.42	1,951	1,655	14.5	1.35	0.9	241	0.29	0.21	52	86	3.81	65	67
29		2.3	2.0	0.65	1,487	1,081	16.0	0.93	3.1	241	0.34	0.26	52	79	3.82	66	70
30		2.4	1.9		1,321					243			51	79	3.57	66	69
31																	
Total	48	75.3	74.5	11.82	38,614	19,612	308.0	20.19	92.1	6,920	6.50	4.65	1,721	2,038	103.93	1,574	1,665
Max.	48	3.0	3.4	0.71	1,951	1,655	25.0	1.35	6.2	244	0.36	0.27	70	86	3.94	66	70
Min.	48	2.2	1.8	0.39	1,105	794	9.0	0.54	0.9	222	0.27	0.19	50	60	2.84	39	45
Avg.	48	2.5	2.5	0.56	1,287	934	14.7	0.96	4.4	231	0.31	0.22	57	68	3.46	52	56

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 W. PEARL ST. MARSHALL MI. 49068 - PERMIT No. MI0023540
JUNE, 1990 - DISCHARGE MONITORING REPORT - DISCHARGE No. 001A

	F.Eff. D.O. mgIL	F.Eff. pH SU	X F.Eff. SS mgIL	X F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	X F.Eff. BOD mgIL	X F.Eff. BOD Lbs.	F.Eff. NH3 as N mgIL	X F.Eff. NH3-N Lbs.	X F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	6.5	7.2	12	321	0.27	3.21	0.00	8	214	5.9	158	62	87	90	85
2	6.6	7.4	13	343	0.28	3.16	0.00	5	132	8.0	211	6	83	95	85
3	6.5	7.4	9	242	0.25	3.22	0.00	2	54	9.8	263	6	91	97	90
4	6.6	7.4	8	223	0.28	3.34	0.00	5	139	7.0	195	42	92	93	89
5	6.9	7.0	10	271	0.27	3.25	0.00	4	108	6.2	168	14	85	94	87
6	7.2	7.4	5	129	0.32	3.09	0.00	3	77	6.1	157	18	93	96	87
7	7.1	7.3	7	176	0.23	3.02	0.00	4	101	6.9	174	22	91	97	92
8	6.9	7.3	6	151	0.19	3.01	0.00	16	402	6.9	173	14	91	78	91
9	6.7	7.3	7	172	0.16	2.94	0.00	4	98	6.7	164	24	88	93	91
10	6.4	7.3	6	142	0.25	2.84	0.00	5	118	7.9	187	16	92	94	87
11	6.1	7.5	8	200	0.30	3.00	0.00	6	150	9.1	228	28	89	93	88
12	6.9	7.2	8	222	0.34	3.32	0.00	5	138	6.8	188	58	86	92	88
13	6.3	7.3	4	115	0.22	3.45	0.00	5	144	6.1	176	26	94	94	90
14	6.4	7.3	8	236	0.44	3.54	0.00	6	177	5.0	148	52	91	93	82
15	6.6	7.3	8	239	0.48	3.58	0.00	7	209	6.5	194	88	87	91	75
16	6.3	7.1	9	270	1.00	3.60	0.00	6	180	5.1	153	20	80	89	59
17	6.7	7.2	8	234	0.47	3.50	0.00	7	204	5.8	169	20	86	85	75
18	5.9	7.3	19	597	0.55	3.77	0.00	8	252	6.5	204	32	77	92	75
19	6.6	7.3	10	308	0.42	3.69	0.00	6	185	3.4	105	302	85	85	80
20	6.5	7.3	11	341	0.48	3.72	0.00	7	217	4.9	152	246	82	91	75
21	6.5	7.6	7	223	0.47	3.82	0.00	5	159	5.9	188	150	88	92	77
22	5.8	7.3	10	318	0.70	3.81	0.00	9	286	5.7	181	108	86	90	70
23	6.1	7.3	13	395	0.47	3.64	0.00	7	213	7.3	222	34	81	90	74
24	6.0	7.5	6	197	0.23	3.94	0.00	7	230	6.3	207	46	90	91	76
25	6.0	7.4	13	405	0.47	3.74	0.00	9	281	5.5	172	380	76	88	78
26	5.4	7.3	13	409	0.53	3.77	0.00	10	314	6.0	189	40	88	92	82
27	5.5	7.3	18	564	0.91	3.76	0.00	22	690	6.6	207	100	84	82	74
28	5.8	7.4	15	477	0.85	3.81	0.00	18	572	7.3	232	400	84	77	63
29	6.2	7.4	14	446	0.82	3.82	0.00	10	319	3.9	124	400	85	87	37
30	6.6	7.3	7	208	0.50	3.57	0.00	8	238	4.8	143	300	91	86	71
31															
Total	191.6	219.6	292	8,573	13.15	103.93	0.00	224	6,602	189.9	5,431	3,054	2,603	2,707	2,373
Max.	7.2	7.6	19	597	1.00	3.94	0.00	22	690	9.8	263	400	94	97	92
Min.	5.4	7.0	4	115	0.16	2.84	0.00	2	54	3.4	105	6	76	77	37
Avg.	6.4	7.3	10	286	0.44	3.46	0.00	7	220	6.3	181	102	87	90	79
			13	413				12	378		201	50 / 165			

Robert J. Swalwell

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
JUNE, 1990 - MISCELLOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferrous Chloride Lbs.	Other SO2	Raw Sludge Gals.	Raw Sludge Total Solids Percent	Raw Sludge Vol. Solids Percent	Raw Sludge pH
1		2,640	420	31	320	25	6,000	6.2	60	6.5
2		2,640	350	30	320	20	4,000	5.5	54	6.6
3		2,520	400	26	320	22	4,000	5.2	63	6.5
4		2,760	340	31	320	25	6,000	5.3	62	6.5
5		2,640	420	24	320	25	7,000	4.8	65	6.3
6		2,520	520	27	213	24	6,000	4.8	63	6.7
7		2,520	400	26	266	24	6,000	4.8	69	6.6
8		2,640	330	29	266	20	6,000	4.5	68	6.9
9		2,640	290	29	320	12	4,000	4.7	66	6.6
10		2,520	380	37	320	21	4,000	4.6	68	6.6
11		2,640	360	29	266	22	6,000	4.9	67	6.6
12		2,640	410	30	266	23	6,000	4.7	64	6.3
13		2,640	870	30	213	22	6,000	4.3	67	7.1
14		2,640	420	31	213	24	6,000	4.9	68	6.2
15		2,520	510	20	213	22	6,000	4.9	65	6.3
16		2,640	450	25	160	18	3,000	4.9	68	6.1
17		2,640	520	28	160	21	3,000	4.9	67	6.0
18		2,760	1,160	28	213	21	6,000	5.2	65	6.1
19		2,640	560	28	160	24	6,000	5.3	67	5.9
20		2,640	1,930	34	160	30	6,000	5.2	65	6.0
21		2,640	1,830	28	160	18	6,000	5.7	63	5.6
22		2,760	500	27	160	22	6,000	5.3	62	5.9
23		2,760	360	30	213	10	3,000	5.1	68	5.9
24		2,640	510	32	160	22	3,000	4.8	70	6.1
25		2,760	570	28	107	20	6,000	5.2	65	5.7
26		2,760	1,660	25	160	23	6,000	4.8	69	5.8
27		2,760	1,860	28	107	24	6,000	5.6	68	5.8
28		2,760	420	28	160	23	6,000	5.5	69	6.0
29		2,760	490	26	160	23	6,000	5.7	67	5.9
30		2,640	330	33	160	23	4,000	5.4	66	5.9
31										
Total		79,680	19,570	858	6,556	653	159,000	152.7	1,968	187.0
Max.		2,760	1,930	37	320	30	7,000	6.2	70	7.1
Min.		2,520	290	20	107	10	3,000	4.3	54	5.6
Avg.		2,656	652	29	219	22	5,300	5.1	66	6.2

Manpower & Hours

	Total Hr
Superintendent 1	^168
Asst. Supt. 1	^168
Operators 3	^504
Total	^840

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
JULY, 1990 - PLANT INFLUENT SHEET - SAMPLING CODE 500

	Weather		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	Remarks or Other Parameters
	Type	Precip.	MGD	F	SU	mg/L	Lbs.	mg/L	Lbs.	mg/L	Lbs.	mg/L	mg/L	
PN-	100,033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
	1													
Day	1													
1	1		3.54	54	7.4	96	2,834	100	2,952	2.65	78	90	5.0	
2	1		3.83	55	7.4	66	2,108	80	2,555	2.05	65	72	5.8	
3	1		3.83	55	7.4	60	1,917	66	2,108	2.55	81	56	6.6	
4	1		3.63	55	7.3	48	1,453	44	1,332	1.10	33	34	4.4	
5	1		3.85	55	7.4	54	1,734	66	2,119	1.65	53	64	3.9	
6	1		3.80	55	7.5	54	1,711	52	1,648	1.95	62	48	6.3	
7	1		3.66	55	7.4	42	1,282	56	1,709	1.20	37	48	5.9	
8	1		3.74	53	7.2	42	1,310	68	2,121	1.80	56	52	5.5	
9	1		4.02	55	7.4	72	2,414	90	3,017	4.45	149	82	8.0	
10	4	0.20	4.11	56	7.3	60	2,057	70	2,399	3.10	106	62	5.9	
11	4	0.03	3.98	55	7.4	72	2,390	72	2,390	2.90	96	62	8.9	
12	1		3.94	55	7.5	84	2,760	70	2,300	2.75	90	64	9.1	
13	4	0.70	3.70	55	7.5	68	2,098	80	2,469	4.20	130	72	5.6	
14	4	0.28	3.61	55	7.3	84	2,529	62	1,867	1.65	50	52	3.0	
15	4	0.03	3.71	55	7.3	48	1,485	72	2,228	1.35	42	66	5.5	
16	4	0.73	3.87	55	7.3	78	2,518	78	2,518	1.65	53	52	4.8	
17	1		3.93	55	7.3	84	2,753	70	2,294	2.65	87	68	6.6	
18	1		3.79	55	7.2	84	2,655	70	2,213	1.95	62	56	5.9	
19	4	0.78	3.90	56	7.3	92	2,992	80	2,602	2.65	86	68	7.2	
20	4	0.14	3.88	56	7.3	84	2,718	88	2,848	3.20	104	64	6.1	
21	4	0.22	3.70	56	7.4	56	1,728	72	2,222	1.40	43	58	4.6	
22	4	0.37	3.77	56	7.3	84	2,641	64	2,012	1.40	44	44	3.2	
23	1		3.89	55	7.3	114	3,698	74	2,401	3.50	114	66	4.2	
24	4	0.18	3.85	55	7.3	60	1,927	74	2,376	2.85	92	60	4.4	
25	1		3.87	55	7.4	66	2,130	62	2,001	3.95	127	50	4.8	
26	1		3.87	56	7.6	102	3,292	98	3,163	3.95	127	78	4.6	
27	1		3.86	56	7.2	90	2,897	42	1,352	2.10	68	28	4.8	
28	1		3.71	55	6.8	162	5,013	50	1,547	1.90	59	42	5.1	
29	1		3.78	55	7.3	54	1,702	52	1,639	1.35	43	42	4.1	
30	1		3.97	56	7.4	138	4,569	100	3,311	4.30	142	88	9.9	
31	1		3.90	56	7.4	108	3,513	68	2,212	2.45	80	64	10.7	
Total	100,099	3.66	118.49	1,711	227.5	2,406	76,830	2,190	69,926	76.60	2,459	1,852	180.4	
Max.	100,033	0.78	4.11	56	7.6	162	5,013	100	3,311	4.45	149	90	10.7	
Min.	1	0.03	3.54	53	6.8	42	1,282	42	1,332	1.10	33	28	3.0	
Avg.	2,944	0.33	3.82	55	7.3	78	2,478	71	2,256	2.47	79	60	5.8	

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
JULY, 1990 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mg/L	P Eff. BOD Lbs.	P Eff. SS mg/L	P. Eff. SS Lbs.	P Eff. Phos. mg/L	P Eff. Phos. Lbs.	P Eff. VSS mg/L	P Eff. NH3-N mg/L	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	36	1,063	72	2,126	1.90	56	54	4.6	3.54	62	28	28
2	48	1,533	54	1,725	2.10	67	48	4.5	3.83	27	33	0
3	44	1,405	70	2,236	2.45	78	64	4.6	3.83	27	0	4
4	28	848	46	1,393	1.30	39	38	3.2	3.63	42	0	0
5	36	1,156	56	1,798	2.05	66	50	3.9	3.85	33	15	0
6	78	2,472	36	1,141	1.90	60	26	4.5	3.80	0	23	2
7	32	977	28	855	1.70	52	16	4.0	3.66	24	50	0
8	28	873	46	1,435	1.30	41	40	4.2	3.74	33	32	28
9	36	1,207	52	1,743	3.75	126	50	4.7	4.02	50	42	15
10	44	1,508	36	1,234	2.85	98	26	5.4	4.11	27	49	8
11	36	1,195	26	863	2.45	81	18	5.0	3.98	50	64	16
12	56	1,840	30	986	1.95	64	54	5.0	3.94	33	14	29
13	44	1,358	64	1,975	2.65	82	60	4.5	3.70	35	30	36
14									3.61			
15	40	1,238	34	1,052	1.20	37	30	3.9	3.71	16	53	11
16	56	1,807	46	1,485	1.80	58	28	6.8	3.87	28	41	0
17	48	1,573	46	1,508	2.40	79	42	5.1	3.93	43	34	9
18	48	1,517	46	1,454	2.10	66	34	4.1	3.79	43	34	0
19	32	1,041	50	1,626	2.65	86	42	4.3	3.90	65	38	0
20	52	1,683	44	1,424	2.55	83	40	4.9	3.88	38	50	20
21	40	1,234	36	1,111	1.20	37	30	3.8	3.70	29	50	14
22	20	629	42	1,321	1.30	41	30	2.6	3.77	76	34	7
23	52	1,687	52	1,687	2.00	65	46	2.8	3.89	54	30	43
24	36	1,156	44	1,413	2.40	77	30	3.5	3.85	40	41	16
25	44	1,420	40	1,291	2.45	79	34	3.1	3.87	33	19	38
26	56	1,807	40	1,291	3.30	107	32	3.6	3.87	45	59	16
27	60	1,932	50	1,610	2.40	77	28	3.7	3.86	33	0	0
28	88	2,723	34	1,052	2.45	76	32	3.4	3.71	46	32	0
29	44	1,387	34	1,072	1.10	35	32	3.1	3.78	19	35	19
30	80	2,649	52	1,722	3.20	106	40	3.7	3.97	42	48	26
31	72	2,342	50	1,626	2.20	72	46	6.8	3.90	33	26	10
Total	1,414	45,260	1,356	43,252	65.05	2,090	1,140	127.3	118.49	1,126	1,004	395
Max.	88	2,723	72	2,236	3.75	126	64	6.8	4.11	76	64	43
Min.	20	629	26	855	1.10	35	16	2.6	3.54	0	0	0
Avg.	47	1,509	45	1,442	2.17	70	38	4.2	3.82	38	33	13

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
JULY, 1990 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	2.4	1.0		654					246			56	58	3.54	63	68
2		2.2	1.6	0.77	1,147	874	11.5	1.00	6.3	243	0.31	0.23	52	58	3.83	63	66
3		2.2	1.7	0.68	1,209	904	11.0	1.10	6.0	240	0.30	0.23	52	58	3.83	58	65
4		2.4	2.0		1,207					238			55	58	3.63	48	61
5		2.2	1.7	0.61	1,094	791	10.0	1.09	5.4	242	0.26	0.19	51	58	3.85	45	61
6		2.3	1.9	0.61	1,100	810				246	0.27	0.20	51	58	3.80	47	54
7		2.4	2.1		1,125					246			54	58	3.66	43	52
8		2.3	2.1		1,055					240			53	58	3.74	42	48
9		2.1	1.8	0.64	982	697	9.0	1.09	6.2	239	0.27	0.19	49	58	4.02	40	48
10		2.1	2.2	0.61	1,073	748	10.0	1.07	5.3	242	0.30	0.21	48	46	4.11	40	43
11		2.2	2.7	0.51	1,212	889	110.0	0.11	4.2	243	0.34	0.25	49	52	3.98	41	40
12		2.2	2.6	0.56	1,183	857	12.0	0.99	4.9	244	0.31	0.22	49	52	3.94	44	41
13		2.3	2.7	0.43	1,268	931	13.5	0.94	4.9	243	0.35	0.26	52	52	3.70	39	45
14		2.4	2.9		1,310					246			54	52	3.61	39	45
15		2.3	2.7		1,235					245			52	52	3.71	41	45
16		2.2	2.3	0.62	1,139	788	12.0	0.95	5.8	242	0.31	0.22	50	52	3.87	45	45
17		2.2	2.4	0.61	1,188	825	15.0	0.79	5.8	241	0.29	0.20	49	52	3.93	46	45
18		2.3	2.6	0.55	1,257	895	16.0	0.79	2.4	240	0.34	0.24	50	52	3.79	47	46
19		2.2	2.3	0.56	1,249	897	18.0	0.69	5.2	240	0.33	0.21	51	55	3.90	46	49
20		2.2	2.5	0.54	1,281	923	19.0	0.67	5.0	240	0.35	0.25	51	52	3.88	46	47
21		2.3	2.7		1,196					242			54	65	3.70	45	43
22		2.3	2.4		1,104					247			54	60	3.77	42	44
23		2.2	2.1	0.62	1,036	737	16.0	0.65	6.4	243	0.28	0.20	53	60	3.89	42	45
24		2.2	2.3	0.54	1,117	792	16.0	0.70	5.3	242	0.28	0.20	53	60	3.85	40	45
25		2.2	2.3	0.55	1,106	771	17.5	0.63	5.7	242	0.29	0.21	53	62	3.87	39	44
26		2.2	2.4	0.60	1,102	778	18.0	0.61	5.9	242	0.28	0.20	53	65	3.87	43	43
27		2.2	2.6	0.56	1,187	839	19.0	0.62	5.4	242	0.31	0.22	53	65	3.86	44	43
28		2.3	2.6		1,150					242			55	65	3.71	51	43
29		2.3	2.4		1,046					240			54	65	3.78	54	42
30		2.2	2.1	0.94	959	685	15.0	0.64	6.0	241	0.25	0.17	52	65	3.97	58	42
31		2.2	2.4	0.84	1,109	810	18.0	0.62	4.7	245	0.30	0.22	52	65	3.90	63	43
Total	48	70.0	70.2	12.96	35,080	17,241	386.5	15.75	106.8	7,514	6.32	4.52	1,614	1,788	118.49	1,444	1,491
Max.	48	2.4	2.9	0.94	1,310	931	110.0	1.10	6.4	247	0.35	0.26	56	65	4.11	63	68
Min.	48	2.1	1.0	0.43	654	685	9.0	0.11	2.4	238	0.25	0.17	48	46	3.54	39	40
Avg.	48	2.3	2.3	0.62	1,132	821	19.3	0.79	5.3	242	0.30	0.22	52	58	3.82	47	48

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 W. PEARL ST. MARSHALL MI. 49068 - PERMIT No. MI0023540
JULY, 1990 - DISCHARGE MONITORING REPORT - DISCHARGE No. 001A

	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. BOD mgIL	F.Eff. BOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	6.4	7.4	16	472	0.51	3.54	0.00	10	295	4.2	124	300	84	90	81
2	6.2	7.5	11	351	0.53	3.83	0.00	16	511	4.3	137	360	86	76	74
3	6.6	7.4	18	575	0.48	3.83	0.01	7	224	4.1	131	400	73	88	81
4	6.4	7.3	19½	575,80	0.28	3.63	0.00	5 1	151 232	3.3	100	130	57	89	75
5	6.6	7.5	8	257	0.41	3.85	0.00	5	161	3.8	122	400	88	91	75
6	6.5	7.6	3	95	1.00	3.80	0.00	4	127	4.4	139	400	94	93	49
7	7.8	7.4	11	336	1.02	3.66	0.00	5	153	3.5	107	66	80	88	15
8	7.5	7.4	6	187	0.41	3.74	0.00	5	156	4.0	125	56	91	88	77
9	5.9	7.4	18	603	1.02	4.02	0.00	6	201	4.8	161 136	362	80	92	73
10	5.8	7.4	2	69	1.05	4.11	0.00	4	137	4.4	151	306	97	93	66
11	6.1	7.4	3	100	1.02	3.98	0.00	7	232	3.9	129	404	96	90	65
12	6.1	7.6	9	296	0.75	3.94	0.00	12	394	4.3	141	400	87	86	73
13	6.2	7.4	15	463	0.91	3.70	0.00	5	154	3.1	96	324	81	93	78
14	6.1	7.4	4	120	0.95	3.61	0.00	4	120	3.0	90	122	94	95	42
15	6.0	7.5	7	217	0.42	3.71	0.01	4	124	3.6	111	4	90	92	61
16	6.3	7.5	8	258	0.41	3.87	0.00	6	194	4.2	136	400	89	92	75
17	5.6	7.3	4	131	0.53	3.93	0.00	6	197	4.8	157	322	94	93	80
18	5.6	7.4	4	126	0.56	3.79	0.00	5	158	3.3	104	400	94	94	71
19	6.1	7.3	4	130	0.41	3.90	0.00	8	260	3.5	114	86	95	91	85
20	6.2	7.4	4	129	0.68	3.88	0.00	5	162	4.3	139	324	95	94	79
21	6.4	7.3	5	154	0.37	3.70	0.00	5	154	3.2	99	376	93	91	74
22	6.8	7.5	14	440	0.46	3.77	0.00	2	63	2.4	75	172	78	98	67
23	5.8	7.4	13	422	0.58	3.89	0.00	7	227	2.3	75	410	82	94	83
24	6.4	7.3	4	128	0.71	3.85	0.00	3	96	3.4	109	404	95	95	75
25	6.3	7.5	4	129	0.53	3.87	0.00	5	161	2.6	84	360	94	92	87
26	6.1	7.5	8	258	0.91	3.87	0.00	7	226	3.4	110	377	92	93	79
27	6.3	7.3	11	354	0.95	3.86	0.00	5	161	3.1	100	750	74	94	55
28	6.4	7.3	10	309	0.95	3.71	0.00	10	309	3.1	96	300	80	93	49
29	6.4	7.4	6	189	0.46	3.78	0.00	4	126	2.6	82	110	88	93	66
30	6.4	7.7	12	397	0.87	3.97	0.00	8	265	5.4	179	550	88	94	80
31	5.8	7.4	10	325	0.82	3.90	0.00	8	260	4.7	153	280	85	93	67
Total	195.1	230.1	271	8,599	20.96	118.49	0.02	193	6,160	115.0	3,676	9,655	2,694	2,838	2,157
Max.	7.8	7.7	19	603	1.05	4.11	0.01	16	511	5.4	179	750	97	98	87
Min.	5.6	7.3	2	69	0.28	3.54	0.00	2	63	2.3	75	4	57	76	15
Avg.	6.3	7.4	9	277	0.68	3.82	0.00	6	199	3.7	119	~~311~~	87	92	70
			12	380				7	232		136	7day 242 358			

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
JULY, 1990 - MISCELLOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferrous Chloride Lbs.	Other SO2	Raw Sludge Gals.	Raw Sludge Total Solids Percent	Raw Sludge Vol. Solids Percent	Raw Sludge pH
1		2,640	380	30	201	20	3,000	5.2	68	5.8
2		2,760	1,640	28	201	24	6,000	5.3	69	6.0
3		2,640	590	35	134	21	6,000	5.0	70	5.7
4		2,880	280	41	201	24	4,000	4.6	71	5.7
5		2,760	1,880	27	201	22	5,000	4.8	72	5.5
6		2,640	1,940	29	134	24	6,000	5.0	70	5.7
7		2,760	220	34	268	12	3,000	4.5	70	5.7
8		2,760	270	35	201	18	3,000	4.6	73	5.6
9		2,760	1,910	36	201	12	4,000	4.6	71	5.7
10		2,880	1,570	34	201	30	6,000	4.4	72	5.7
11		2,880	370	34	201	32	5,000	4.8	68	5.6
12		2,760	990	34	201	34	6,000	4.8	71	6.0
13		2,880	1,910	42	201	24	6,000	4.5	69	5.8
14		2,640	220	33	201	30	3,000	4.3	74	5.8
15		2,760	210	36	201	34	3,000	4.2	73	5.7
16		2,760	760	37	268	34	6,000	4.4	73	5.9
17		2,880	430	38	268	32	6,000	4.2	72	5.8
18		2,760	2,980	47	201	28	6,000	4.9	69	5.9
19		2,760	1,710	39	268	28	6,000	4.3	68	5.6
20		2,880	340	44	268	30	6,000	4.3	71	6.4
21		2,760	260	42	268	34	3,000	2.7	69	5.7
22		2,880	180	32	268	32	3,000	4.2	71	5.8
23		2,760	150	37	201	26	6,000	4.5	71	5.8
24		2,760	480	38	268	32	6,000	4.6	72	5.7
25		2,760	210	55	201	30	6,000	3.8	73	6.1
26		2,880	800	47	268	31	6,000	4.2	73	6.0
27		2,640	230	51	268	53	6,000	3.1	71	5.9
28		2,640	250	45	268	36	3,000	4.1	74	5.7
29		2,880	170	43	268	48	3,000	4.3	71	5.8
30		2,880	840	45	201	28	6,000	4.8	71	6.4
31		2,760	250	45	201	36	6,000	4.7	72	5.9
Total		86,040	24,420	1,193	6,901	899	153,000	137.7	2,202	180.4
Max.		2,880	2,980	55	268	53	6,000	5.3	74	6.4
Min.		2,640	150	27	134	12	3,000	2.7	68	5.5
Avg.		2,775	788	38	223	29	4,935	4.4	71	5.8

Manpower & Hours

	Total Hr
Superintendent 1	^168
Asst. Supt. 1	^168
Operators 3	^508
Total	^844

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
AUGUST, 1990 - PLANT INFLUENT SHEET - SAMPLING CODE 500

	Weather		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	Remarks or Other Parameters
	Type	Precip.	MGD	F	SU	mg/L	Lbs.	mg/L	Lbs.	mg/L	Lbs.	mg/L	mg/L	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1	1		3.85	57	7.4	114	3,660	88	2,826	3.00	96	76	9.8	
2	1		3.77	57	7.3	108	3,396	74	2,327	3.40	107	66	7.1	
3	1		3.73	57	7.3	72	2,240	100	3,111	1.90	59	68	5.1	
4	4	0.25	3.60	57	7.3	64	1,922	46	1,381	1.60	48	32	4.8	
5	1		3.66	57	7.3	60	1,831	76	2,320	1.70	52	66	4.7	
6	4	0.05	3.84	57	7.3	78	2,498	102	3,267	3.50	112	78	8.7	
7	1		3.82	57	7.2	66	2,103	102	3,250	2.10	67	80	5.9	
8	1		3.72	57	7.4	54	1,675	86	2,668	1.80	56	76	5.0	
9	1		3.78	56	7.2	60	1,892	138	4,350	3.00	95	116	7.2	
10	1		3.82	57	7.3	76	2,421	136	4,333	2.65	84	120	5.9	
11	4	0.30	3.71	56	7.5	44	1,361	90	2,785	1.60	50	78	5.0	
12	4	1.21	3.91	56	7.4	18	587	80	2,609	1.65	54	72	4.8	
13	1		4.10	56	7.4	72	2,462	76	2,599	2.55	87	68	5.7	
14	1		4.06	57	7.4	60	2,032	92	3,115	2.10	71	70	5.7	
15	1		4.18	57	7.3	84	2,928	92	3,207	1.95	68	84	6.2	
16	1		4.11	58	7.5	84	2,879	164	5,621	2.75	94	114	4.5	
17	4	0.12	4.14	57	7.4	70	2,417	144	4,972	2.65	91	30	7.4	
18	4	0.57	3.97	57	7.2	40	1,324	44	1,457	1.65	55	28	6.0	
19	4	0.07	4.03	55	7.3	51	1,714	68	2,285	1.90	64	36	6.1	
20	4	1.80	4.39	56	7.5	66	2,416	126	4,613	2.45	90	90	6.7	
21	4	0.14	4.45	56	7.4	72	2,672	126	4,676	2.30	85	78	8.4	
22	4	0.04	4.44	56	7.5	78	2,888	174	6,443	2.55	94	102	5.7	
23	4	0.02	4.43	56	7.5	84	3,103	172	6,355	2.65	98	102	6.3	
24	1		4.36	57	7.5	80	2,909	122	4,436	3.30	120	66	4.6	
25	1		2.51	55	7.3	54	1,130	80	1,675	1.80	38	62	5.5	
26	4	0.02	2.16	55	7.6	78	1,405	80	1,441	2.20	40	52	7.6	
27	1		2.26	61	8.4	90	1,696	116	2,186	2.75	52	86	9.7	
28	1		2.23	61	7.6	81	1,506	104	1,934	3.20	60	90	11.0	
29	1		2.19	63	7.4	123	2,247	110	2,009	3.75	68	98	8.1	
30	1		2.08	61	7.7	119	2,064	126	2,186	3.75	65	110	12.7	
31	1		1.98	61	7.5	102	1,684	152	2,510	3.65	60	110	9.5	
Total	67	4.59	111.28	1,776	230.3	2,302	67,066	3,286	98,947	77.80	2,280	2,404	211.4	
Max.	4	1.80	4.45	63	8.4	123	3,660	174	6,443	3.75	120	120	12.7	
Min.	1	0.02	1.98	55	7.2	18	587	44	1,381	1.60	38	28	4.5	
Avg.	2	0.38	3.59	57	7.4	74	2,163	106	3,192	2.51	74	78	6.8	

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
AUGUST, 1990 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	68	2,183	46	1,477	2.55	82	40	6.3	3.85	40	48	15
2	56	1,761	42	1,321	2.75	86	36	4.9	3.77	48	43	19
3	48	1,493	46	1,431	1.60	50	38	4.9	3.73	33	54	16
4	52	1,561	50	1,501	1.40	42	36	4.1	3.60	19	0	14
5	44	1,343	26	794	1.40	43	20	4.0	3.66	27	66	17
6	44	1,409	46	1,473	2.55	82	44	5.8	3.84	44	55	27
7	36	1,147	34	1,083	1.65	53	26	4.3	3.82	45	67	21
8	36	1,117	44	1,365	1.50	47	36	3.9	3.72	33	49	17
9	40	1,261	54	1,702	2.45	77	44	5.8	3.78	33	61	18
10	36	1,147	54	1,720	2.20	70	44	4.7	3.82	53	60	17
11	24	743	30	928	1.15	36	24	4.1	3.71	45	67	28
12	16	522	40	1,304	1.30	42	34	3.8	3.91	11	50	15
13	44	1,505	42	1,436	2.05	70	30	5.3	4.10	39	45	20
14	32	1,084	42	1,422	1.65	56	36	4.8	4.06	47	54	21
15	36	1,255	40	1,394	1.90	66	30	4.2	4.18	57	57	2
16	36	1,234	64	2,194	2.30	79	50	3.9	4.11	57	61	16
17	32	1,105	38	1,312	2.65	91	24	5.7	4.14	54	74	0
18	32	1,060	50	1,655	1.60	53	38	4.7	3.97	20	0	3
19	28	941	48	1,613	1.20	40	38	4.1	4.03	45	29	37
20	36	1,318	52	1,904	1.80	66	48	3.8	4.39	45	54	27
21	34	1,262	48	1,781	1.65	61	38	4.4	4.45	53	62	28
22	32	1,185	46	1,703	1.35	50	28	3.6	4.44	59	92	47
23	38	1,404	44	1,626	2.10	78	40	3.5	4.43	54	74	21
24	50	1,818	64	2,327	2.55	93	46	3.7	4.36	38	48	23
25	20	419	38	795	1.15	24	22	3.6	2.51	63	53	36
26	36	649	54	973	1.95	35	40	7.5	2.16	53	32	11
27	60	1,131	64	1,206	2.20	41	46	8.1	2.26	33	45	20
28	60	1,116	60	1,116	2.85	53	60	9.9	2.23	26	42	11
29	72	1,315	64	1,169	3.00	55	42	8.2	2.19	41	51	20
30	70	1,214	58	1,006	3.00	52	44	10.5	2.08	40	54	20
31	38	628	54	892	3.30	54	44	9.3	1.98	33	64	10
Total	1,286	37,327	1,482	43,626	62.75	1,827	1,166	165.4	111.28	1,288	1,611	597
Max.	72	2,183	64	2,327	3.30	93	60	10.5	4.45	63	92	47
Min.	16	419	26	794	1.15	24	20	3.5	1.98	11	0	0
Avg.	41	1,204	48	1,407	2.02	59	38	5.3	3.59	42	52	19

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
AUGUST, 1990 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading f/m	Mix Liq SS mg/L	Mix Liq VSS mg/L	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mg/L	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mg/l	PE SS mg/L
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	2.2	2.6	0.80	1,212	888	24.0	0.51	4.1	243	0.31	0.22	52	60	3.85	66	44
2		2.3	2.8	0.73	1,294	944	27.0	0.48	4.2	241	0.32	0.24	53	69	3.77	66	44
3		2.3	2.7	0.76	1,224	887	24.0	0.51	5.9	240	0.30	0.22	53	72	3.73	65	43
4		2.4	2.7		1,237					246			56	72	3.60	60	46
5		2.4	2.6		1,174					248			55	72	3.66	60	45
6		2.2	2.3	0.79	1,064	748	17.0	0.63	5.8	248	0.26	0.18	52	72	3.84	55	44
7		2.3	2.6	0.68	1,149	787	17.0	0.68	5.6	246	0.29	0.20	53	72	3.82	50	41
8		2.3	2.8	0.54	1,208	863	19.0	0.64	5.7	243	0.28	0.20	54	72	3.72	45	41
9		2.3	2.6	0.53	1,189	853	19.0	0.63	5.5	243	0.30	0.21	53	72	3.78	43	43
10		2.3	2.6	0.50	1,204	868	21.0	0.57	5.4	243	0.29	0.21	52	72	3.82	41	44
11		2.3	2.8		1,207					245			53	72	3.71	37	41
12		2.2	2.4		1,147					245			51	60	3.91	37	43
13		2.1	2.2	0.49	1,093	766	16.0	0.68	5.9	245	0.28	0.19	49	60	4.10	33	43
14		2.1	2.4	0.43	1,199	863	20.0	0.60	5.0	244	0.30	0.22	49	60	4.06	33	44
15		2.1	2.5	0.43	1,250	875	18.0	0.69	5.7	241	0.32	0.22	47	58	4.18	32	43
16		2.1	2.5	0.40	1,263	893	19.0	0.66	4.7	241	0.34	0.24	48	58	4.11	31	45
17		2.1	2.7	0.41	1,300	939	21.0	0.62	4.7	240	0.35	0.26	48	58	4.14	33	42
18		2.2	2.7		1,334					241			50	60	3.97	34	45
19		2.1	2.4		1,253					245			49	60	4.03	33	46
20		2.0	1.9	0.51	1,112	784	17.0	0.65	5.9	242	0.29	0.20	45	60	4.39	33	48
21		1.9	1.9	0.48	1,159	853	17.5	0.66	4.3	241	0.32	0.24	45	60	4.45	33	49
22		1.9	2.0	0.53	1,182	744	19.0	0.62	4.9	240	0.32	0.24	45	60	4.44	32	49
23		1.9	2.0	0.51	1,159	796	17.5	0.66	6.9	240	0.32	0.21	45	65	4.43	33	47
24		2.0	1.9	0.54	1,162	813	17.5	0.66	6.5	240	0.32	0.23	46	40	4.36	36	50
25		3.4	4.2		1,265					247			64	58	2.51	34	43
26		4.0	4.9		1,310					249			66	58	2.16	35	44
27		3.8	4.2	0.30	1,188	825	18.0	0.66	4.5	245	0.29	0.21	66	58	2.26	39	45
28		3.9	4.3	0.28	1,266	926	20.5	0.62	4.5	244	0.28	0.21	67	58	2.23	42	47
29		3.9	4.5	0.30	1,350	963	22.0	0.61	4.7	242	0.32	0.23	67	43	2.19	48	49
30		4.1	5.0	0.29	1,479	1,051	24.0	0.62	3.5	243	0.29	0.21	70	50	2.08	52	51
31		4.4	5.4	0.30	1,472	1,022	26.0	0.57	3.3	258	0.30	0.21	72	58	1.98	55	49
Total	48	79.5	91.3	11.52	38,105	19,951	461.0	14.23	117.2	7,559	6.99	5.00	1,675	1,919	111.28	1,326	1,398
Max.	48	4.4	5.4	0.80	1,479	1,051	27.0	0.69	6.9	258	0.35	0.26	72	72	4.45	66	51
Min.	48	1.9	1.9	0.28	1,064	744	16.0	0.48	3.3	240	0.26	0.18	45	40	1.98	31	41
Avg.	48	2.6	2.9	0.50	1,229	867	20.0	0.62	5.1	244	0.30	0.22	54	62	3.59	43	45

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 W. PEARL ST. MARSHALL MI. 49068 - PERMIT No. MI0023540
AUGUST, 1990 - DISCHARGE MONITORING REPORT - DISCHARGE No. 001A

	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. BOD mgIL	F.Eff. BOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	6.1	7.2	9	289	0.56	3.85	0.00	8	257	4.1	132	140	90	93	81
2	6.1	7.4	8	252	0.95	3.77	0.00	8	252	3.6	113	390	89	93	72
3	6.0	7.5	14	436	0.58	3.73	0.00	5	156	3.4	106	340	86	93	69
4	6.1	7.4	12	360	0.41	3.60	0.00	5	150	3.5	105	50	74	92	74
5	6.2	7.3	3	92	0.42	3.66	0.00	11	336	3.6	110	50	96	82	75
6	6.5	7.4	6	192	0.48	3.84	0.00	5	160	4.8	154	292	94	94	86
7	6.5	7.3	4	127	0.46	3.82	0.00	2	64	3.8	121	130	96	97	78
8	6.5	7.3	7	217	0.37	3.72	0.00	2	62	2.9	90	60	92	96	79
9	6.2	7.3	8	252	0.47	3.78	0.00	4	126	4.4	139	270	94	90	84
10	6.3	7.4	8	255	0.62	3.82	0.00	6	191	4.1	131	140	94	92	77
11	6.4	7.2	6	186	0.28	3.71	0.00	2	62	3.0	93	70	93	95	83
12	6.5	7.3	7	228	0.42	3.91	0.00	1	33	3.2	104	40	91	94	75
13	5.9	7.4	4	137	0.48	4.10	0.00	4	137	4.4	150	300	95	94	81
14	5.9	7.4	11	372	0.53	4.06	0.00	5	169	3.7	125	600	88	92	75
15	6.0	7.3	12	418	0.41	4.18	0.00	5	174	3.6	126	170	86	94	79
16	6.1	7.5	4	137	0.42	4.11	0.00	4	137	3.0	103	240	98	95	85
17	6.0	7.4	11	380	0.95	4.14	0.00	10	345	4.5	155	140	92	86	64
18	6.0	7.1	12	397	1.02	3.97	0.00	5	166	3.7	123	150	73	88	38
19	6.1	7.4	13	437	0.48	4.03	0.00	5	168	3.7	124	140	80	90	75
20	6.1	7.8	20	732	0.62	4.39	0.00	6	220	3.7	135	140	84	91	75
21	5.5	7.4	15	557	0.66	4.45	0.00	6	223	3.3	122	890	88	92	71
22	5.0	7.6	18	667	0.74	4.44	0.00	8	296	3.4	126	870	97	90	71
23	8.1	7.5	18	665	0.56	4.43	0.00	7	259	2.7	100	190	90	92	79
24	7.1	7.5	17	618	0.85	4.36	0.00	7	255	2.5	91	640	86	91	74
25	7.2	7.3	9	188	0.50	2.51	0.02	4	84	2.7	57	420	79	93	72
26	7.0	7.4	2	36	0.38	2.16	0.00	4	72	7.1	128	16	98	95	83
27	6.8	8.2	7	132	0.27	2.26	0.00	4	75	7.4	139	20	94	96	90
28	6.9	7.4	4	74	0.48	2.23	0.00	5	93	10.0	186	120	96	94	85
29	6.2	7.4	2	37	0.40	2.19	0.00	5	91	7.9	144	80	98	98	89
30	6.7	7.7	8	139	0.47	2.08	0.00	5	87	8.6	149	60	94	96	87
31	6.8	7.5	5	83	0.40	1.98	0.00	13	215	8.7	144	44	97	87	89
Total	196.8	230.2	284	9,092	16.64	111.28	0.02	171	5,113	139.0	3,825	7,202	2,802	2,865	2,395
Max.	8.1	8.2	20	732	1.02	4.45	0.02	13	345	10.0	186	890	98	98	90
Min.	5.0	7.1	2	36	0.27	1.98	0.00	1	33	2.5	57	16	73	82	38
Avg.	6.3	7.4	9	293	0.54	3.59	0.00	6	165	4.5	123	154	90	92	77

Robert J. Swalwell

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
AUGUST, 1990 - MISCELLOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferrous Chloride Lbs.	SO2	Raw Sludge Gals.	Raw Sludge Total Solids Percent	Raw Sludge Vol. Solids Percent	Raw Sludge pH
1		3,000	1,640	48	286	43	12,000	4.5	71	5.9
2		3,000	2,230	50	215	45	12,000	4.5	70	5.8
3		3,000	1,790	52	286	42	8,000	4.3	73	5.9
4		2,760	130	40	429	42	6,000	4.3	67	5.9
5		2,880	330	48	357	46	8,000	4.5	69	6.0
6		3,000	280	48	286	40	5,500	4.6	68	5.8
7		2,880	270	46	215	40	6,000	5.5	60	6.1
8		2,880	230	58	215	43	6,000	6.1	62	5.9
9		2,880	320	50	286	45	6,000	4.1	63	5.8
10		2,880	360	40	286	40	6,000	5.5	63	5.8
11		2,880	230	46	286	42	3,000	5.9	44	5.9
12		3,000	100	46	215	45	3,000	5.4	63	6.2
13		2,880	390	55	215	8	6,000	5.3	66	6.0
14		2,880	150	49	215	42	6,000	5.4	65	5.7
15		3,000	190	52	286	43	6,000	5.5	64	5.6
16		2,880	280	42	286	44	6,000	5.6	65	5.8
17		2,880	250	42	286	46	6,000	5.9	64	5.7
18		2,760	130	54	143	41	3,500	5.7	64	5.7
19		2,880	210	49	215	50	4,000	5.3	65	5.8
20		3,000	320	45	286	42	8,000	5.9	66	5.9
21		2,400	290	50	286	34	8,000	6.4	60	6.5
22		3,600	250	45	286	41	8,000	7.8	53	6.1
23		2,880	220	43	286	45	8,000	17.0	25	6.0
24		2,880	270	46	215	42	8,000	18.6	25	5.9
25		2,640	120	65	215	40	7,500	14.6	33	5.7
26		2,400	220	45	215	44	4,000	10.4	36	5.8
27		2,520	170	34	286	30	6,000	10.1	42	6.6
28		2,640	270	26	286	23	6,000	6.6	54	5.9
29		2,400	150	26	286	13	6,000	6.0	59	5.8
30		2,520	270	18	286	16	6,000	7.1	57	5.8
31		2,640	40	21	286	26	6,000	6.0	61	5.9
Total		87,720	12,100	1,379	8,227	1,183	200,500	214.4	1,797	183.2
Max.		3,600	2,230	65	429	50	12,000	18.6	73	6.6
Min.		2,400	40	18	143	8	3,000	4.1	25	5.6
Avg.		2,830	390	44	265	38	6,468	6.9	58	5.9

Manpower & Hours

	Total Hr
Superintendent 1	^184
Asst. Supt. 1	^184
Operators 3	^552
Total	^920

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
SEPTEMBER, 1990 - PLANT INFLUENT SHEET - SAMPLING CODE 500

	----Weather----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1	1		1.78	60	7.6	78	1,158	108	1,603	3.40	50	78	7.7	
2	1		1.73	61	7.6	70	1,010	98	1,414	2.45	35	72	8.4	
3	1		1.78	61	7.6	78	1,158	114	1,692	2.65	39	100	9.0	
4	1		2.11	61	7.5	135	2,376	176	3,097	4.70	83	144	10.4	
5	1		2.08	61	7.5	108	1,873	126	2,186	5.40	94	92	8.4	
6	4	1.08	2.10	61	7.5	106	1,856	162	2,837	5.40	95	138	8.2	
7	1		1.99	63	7.6	141	2,340	148	2,456	6.00	100	118	17.4	
8	1		1.78	61	7.5	120	1,781	126	1,870	3.85	57	102	20.7	
9	1		1.86	59	7.5	117	1,815	152	2,358	3.20	50	128	21.9	
10	4	0.04	2.05	61	7.6	108	1,846	150	2,565	3.10	53	126	15.4	
11	1		2.01	61	7.6	99	1,660	132	2,213	3.20	54	104	12.7	
12	1		1.97	61	7.5	135	2,218	122	2,004	3.85	63	104	7.6	
13	1		2.03	63	7.4	117	1,981	140	2,370	3.65	62	120	7.9	
14	4	0.71	1.98	62	7.5	96	1,585	116	1,916	4.45	73	98	12.7	
15	4	0.31	1.78	60	7.7	75	1,113	116	1,722	2.75	41	94	10.9	
16	1		1.84	58	7.4	78	1,197	104	1,596	2.45	38	84	9.4	
17	1		2.02	61	7.4	108	1,819	136	2,291	2.90	49	112	7.8	
18	4	0.24	2.02	61	7.5	105	1,769	148	2,493	4.10	69	120	12.7	
19	3		2.00	61	7.4	147	2,452	102	1,701	3.85	64	72	13.4	
20	3		2.03	61	7.4	142	2,404	140	2,370	2.75	47	118	13.0	
21	4	0.65	1.99	60	7.4	165	2,738	166	2,755	4.30	71	148	12.6	
22	4	0.05	1.80	60	7.6	141	2,117	94	1,411	3.65	55	82	12.1	
23	1		1.84	59	7.6	159	2,440	132	2,026	3.40	52	106	11.4	
24	1		1.92	60	7.6	138	2,210	104	1,665	3.40	54	92	12.2	
25	1		1.98	61	7.7	159	2,626	106	1,750	3.95	65	72	15.0	
26	1		1.95	61	7.5	132	2,147	122	1,984	3.00	49	108	10.1	
27	1		1.96	61	7.6	156	2,550	116	1,896	3.20	52	102	9.9	
28	1		1.96	61	7.2	177	2,893	128	2,092	5.50	90	94	13.4	
29	4	0.08	1.69	60	7.5	132	1,860	100	1,409	2.85	40	90	12.9	
30	1		1.76	59	7.4	132	1,938	132	1,938	2.90	43	104	13.2	
31														
Total	58	3.16	57.79	1,820	225.4	3,654	58,931	3,816	61,683	110.25	1,787	3,122	358.4	
Max.	4	1.08	2.11	63	7.7	177	2,893	176	3,097	6.00	100	148	21.9	
Min.	1	0.04	1.69	58	7.2	70	1,010	94	1,409	2.45	35	72	7.6	
Avg.	2	0.40	1.93	61	7.5	122	1,964	127	2,056	3.68	60	104	11.9	

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
SEPTEMBER, 1990 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mg/L	P Eff. BOD Lbs.	P Eff. SS mg/L	P. Eff. SS Lbs.	P Eff. Phos. mg/L	P Eff. Phos. Lbs.	P Eff. VSS mg/L	P Eff. NH3-N mg/L	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	58	861	74	1,099	3.20	48	56	8.3	1.78	26	31	5
2	52	750	74	1,068	2.10	30	56	8.9	1.73	26	24	14
3	60	891	68	1,009	2.20	33	54	8.9	1.78	23	40	17
4	84	1,478	58	1,021	3.75	66	48	9.6	2.11	38	67	20
5	38	659	54	937	3.40	59	36	12.7	2.08	65	57	37
6	72	1,261	68	1,191	5.50	96	60	7.8	2.10	32	58	0
7	88	1,461	76	1,261	4.95	82	60	16.0	1.99	38	49	18
8	80	1,188	68	1,009	3.30	49	64	20.1	1.78	33	46	14
9	84	1,303	92	1,427	2.55	40	80	20.6	1.86	28	39	20
10	75	1,282	94	1,607	3.00	51	88	14.4	2.05	31	37	3
11	63	1,056	70	1,173	2.90	49	56	10.2	2.01	36	47	9
12	87	1,429	88	1,446	3.40	56	80	7.8	1.97	36	28	12
13	81	1,371	94	1,591	3.20	54	74	7.2	2.03	31	33	12
14	51	842	60	991	3.75	62	48	9.7	1.98	47	49	16
15	63	935	80	1,188	2.45	36	72	8.9	1.78	16	29	11
16	54	829	70	1,074	2.40	37	64	8.3	1.84	31	33	2
17	66	1,112	92	1,550	2.75	46	76	8.9	2.02	39	32	5
18	75	1,264	90	1,516	3.85	65	72	11.4	2.02	29	39	6
19	129	2,152	68	1,134	3.95	66	48	9.8	2.00	12	33	0
20	141	2,387	54	914	2.75	47	40	10.5	2.03	0	61	0
21	112	1,859	72	1,195	3.30	55	64	12.2	1.99	32	57	23
22	94	1,411	66	991	2.75	41	54	11.4	1.80	33	30	25
23	123	1,888	74	1,136	2.65	41	70	11.6	1.84	23	44	22
24	120	1,922	88	1,409	2.85	46	72	11.6	1.92	13	15	16
25	121	1,998	68	1,123	3.95	65	60	11.6	1.98	24	36	0
26	150	2,439	86	1,399	3.75	61	76	12.2	1.95	0	30	0
27	144	2,354	94	1,537	2.90	47	84	11.9	1.96	8	19	9
28	144	2,354	66	1,079	4.70	77	52	13.0	1.96	19	48	15
29	105	1,480	70	987	3.30	47	58	12.4	1.69	20	30	0
30	126	1,849	82	1,204	2.75	40	74	11.4	1.76	4	38	5
31												
Total	2,740	44,065	2,258	36,265	98.25	1,591	1,896	339.3	57.79	793	1,179	336
Max.	150	2,439	94	1,607	5.50	96	88	20.6	2.11	65	67	37
Min.	38	659	54	914	2.10	30	36	7.2	1.69	0	15	0
Avg.	91	1,469	75	1,209	3.28	53	63	11.3	1.93	26	39	11

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
SEPTEMBER, 1990 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading fIm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	4.8	4.6		1,383					261			84	72	1.78	60	60
2		5.0	4.1		1,258					262			85	72	1.73	62	63
3		4.8	3.8		1,199					261			88	72	1.78	62	63
4		4.1	3.1	0.51	1,137	762	15.0	0.76	6.4	255	0.23	0.16	92	65	2.11	66	63
5		4.1	3.7	0.38	1,345	925	20.0	0.67	2.7	254	0.26	0.18	96	58	2.08	61	63
6		4.1	4.0	0.35	1,480	1,048	20.0	0.74	4.8	251	0.26	0.17	95	58	2.10	62	64
7		4.3	4.4	0.31	1,623	1,136	25.0	0.65	4.5	261	0.31	0.22	86	58	1.99	64	67
8		4.8	5.0		1,675					257			86	72	1.78	68	67
9		4.6	4.4		1,577					259			85	86	1.86	72	69
10		4.2	3.5	0.38	1,473	1,124	26.5	0.56	5.5	256	0.29	0.22	79	86	2.05	74	73
11		4.3	3.7	0.35	1,538	1,150	28.0	0.55	3.6	258	0.32	0.24	80	79	2.01	71	75
12		4.4	3.6	0.36	1,576	1,201	29.5	0.53	3.0	256	0.31	0.24	87	79	1.97	78	79
13		4.2	3.3	0.38	1,530	1,174	29.5	0.52	5.6	252	0.31	0.24	81	86	2.03	79	83
14		4.4	3.4	0.35	1,519	1,176	27.0	0.56	4.0	256	0.33	0.25	82	86	1.98	74	81
15		4.8	3.7		1,507					261			90	86	1.78	72	83
16		4.7	3.3		1,343					266			81	86	1.84	68	79
17		4.3	2.6	0.43	1,135	860	18.0	0.63	6.1	265	0.28	0.21	73	86	2.02	66	79
18		4.3	2.5	0.44	1,135	879	19.0	0.60	4.6	264	0.24	0.18	73	22	2.02	68	82
19		4.3	3.1	0.38	1,380	1,094	22.0	0.63	2.4	264	0.31	0.25	73	58	2.00	74	79
20		4.2	3.4	0.44	1,415	1,065	24.0	0.59	4.4	252	0.33	0.23	70	58	2.03	83	73
21		4.3	3.4	0.48	1,397	1,061	23.0	0.61	3.3	263	0.39	0.22	48	58	1.99	91	75
22		4.8	3.8		1,400					265			71	58	1.80	96	73
23		4.7	3.5		1,319					268			69	65	1.84	106	74
24		4.5	3.1	0.70	1,197	862	17.0	0.70	5.9	262	0.29	0.21	66	63	1.92	113	73
25		4.4	3.2	0.71	1,245	935	19.0	0.66	3.8	260	0.30	0.22	64	50	1.98	120	70
26		4.4	3.3	0.69	1,306	971	19.0	0.69	4.6	261	0.32	0.24	64	50	1.95	123	73
27		4.4	3.1	0.74	1,323	913	18.0	0.74	5.1	260	0.29	0.21	64	50	1.96	123	78
28		4.4	3.3	0.66	1,400	1,066	20.0	0.70	3.8	262	0.31	0.23	64	50	1.96	128	77
29		5.1	4.3		1,571					267			73	50	1.69	128	78
30		4.9	3.9		1,507					269			71	58	1.76	128	79
31																	
Total	48	134.7	108.1	9.00	41,893	19,402	419.5	12.07	84.1	7,808	5.68	4.12	2,320	1,977	57.79	2,540	2,195
Max.	48	5.1	5.0	0.74	1,675	1,201	29.5	0.76	6.4	269	0.39	0.25	96	86	2.11	128	83
Min.	48	4.1	2.5	0.31	1,135	762	15.0	0.52	2.4	251	0.23	0.16	48	22	1.69	60	60
Avg.	48	4.5	3.6	0.47	1,396	1,021	22.1	0.64	4.4	260	0.30	0.22	77	66	1.93	85	73

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 W. PEARL ST. MARSHALL MI. 49068 - PERMIT No. MI0023540
SEPTEMBER, 1990 - DISCHARGE MONITORING REPORT - DISCHARGE No. 001A

	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. BOD mgIL	F.Eff. BOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	6.8	7.5	5	74	1.00	1.78	0.00	3	45	8.9	132	18	96	96	71
2	6.7	7.5	6	87	0.58	1.73	0.00	3	43	8.9	128	42	94	96	76
3	7.3	7.6	8	119	0.44	1.78	0.00	3	45	8.7	129	28	93	96	83
4	7.1	7.6	3	53	0.66	2.11	0.00	8	141	8.7	153	52	98	94	86
5	6.0	7.5	4	69	1.00	2.08	0.00	4	69	8.0	139	82	97	96	81
6	6.6	7.5	7	123	0.97	2.10	0.00	3	53	6.3	110	76	96	97	82
7	6.6	7.6	8	133	1.00	1.99	0.00	5	83	9.7	161	64	95	96	83
8	5.5	7.3	10	148	1.01	1.78	0.00	5	74	9.3	138	40	92	96	74
9	5.5	7.4	6	93	0.56	1.86	0.00	4	62	9.4	146	34	96	97	83
10	5.9	7.7	8	137	0.61	2.05	0.00	5	85	9.2	157	118	95	95	80
11	5.7	7.7	2	34	0.70	2.01	0.00	3	50	8.2	137	140	98	97	78
12	6.6	7.3	7	115	0.70	1.97	0.00	9	148	6.0	99	60	94	93	82
13	6.0	7.5	9	152	0.68	2.03	0.00	5	85	4.4	74	2	94	96	81
14	5.5	7.5	10	165	1.00	1.98	0.00	5	83	6.5	107	128	91	95	78
15	5.8	7.6	9	134	0.97	1.78	0.00	5	74	7.5	111	6	92	93	65
16	5.9	7.6	5	77	0.62	1.84	0.00	1	15	9.0	138	8	95	99	75
17	7.0	7.6	9	152	0.62	2.02	0.00	3	51	7.8	131	26	93	97	79
18	6.8	7.5	9	152	0.78	2.02	0.00	4	67	8.8	148	30	94	96	81
19	6.5	7.5	7	117	0.80	2.00	0.00	8	133	9.9	165	36	93	95	79
20	6.3	7.5	6	102	0.68	2.03	0.00	8	135	9.8	166	36	95	94	75
21	6.1	7.6	8	133	0.87	1.99	0.00	8	133	10.5	174	26	95	95	80
22	6.1	7.4	4	60 155	0.78	1.80	0.00	8	120	10.3	155	14	96	94	79
23	6.7	7.6	11	169	0.64	1.84	0.00	8	123 154	10.1	155	18	92	95	81
24	7.0	7.6	11 10	176	0.50	1.92	0.00	8 10	128	10.6	170 166	10	89	94	88
25	6.6	7.5	20	330	0.82	1.98	0.00	10	165	10.8	178	18	81	94	79
26	6.2	7.6	6	98	1.00	1.95	0.00	18	293	9.3	151	14	95	86	67
27	6.6	7.5	5	82	0.70	1.96	0.00	8	131	11.0	180	40	96	95	78
28	6.4	7.5	4	65	1.10	1.96	0.00	8	131	10.5	172	80	97	95	80
29	6.0	7.4	8	113	2.34	1.69	0.00	7	99	10.5	148	64	92	95	15
30	6.0	7.5	10	147	0.66	1.76	0.00	6	88	10.5	154	68	92	95	77
31															
Total	189.8	225.7	225	3,606	24.79	57.79	0.00	183	2,951	269.1	4,309	1,378	2,816	2,852	2,296
Max.	7.3	7.7	20	330	2.34	2.11	0.00	18	293	11.0	180	140	98	99	88
Min.	5.5	7.3	2	34	0.44	1.69	0.00	1	15	4.4	74	2	81	86	15
Avg.	6.3	7.5	8	120	0.83	1.93	0.00	6	98	9.0	144	32	94	95	77

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
SEPTEMBER, 1990 - MISCELLOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferrous Chloride Lbs.	SO2 Lbs.	Raw Sludge Gals.	Raw Sludge Total Solids Percent	Raw Sludge Vol. Solids Percent	Raw Sludge pH
1		2,520	80	22	215	10	3,000	5.8	65	5.8
2		2,520	90	23	215	18	3,500	5.8	65	6.3
3		2,640	170	23	215	20	3,000	5.5	68	6.0
4		2,640	270	26	286	22	6,000	5.4	68	6.0
5		2,640	140	22	286	21	6,000	5.8	56	6.3
6		2,760	260	31	215	18	5,000	5.4	67	5.9
7		2,520	170	23	286	17	5,000	5.5	69	5.8
8		2,640	90	24	215	17	3,000	5.2	70	6.0
9		2,760	140	25	215	21	4,000	5.2	71	6.0
10		2,640	270	26	286	20	14,000	4.9	70	6.3
11		2,640	170	26	215	21	9,000	6.4	66	6.1
12		2,640	430	20	215	21	18,000	6.3	68	5.9
13		2,760	280	22	215	21	12,000	5.0	71	5.9
14		2,520	220	22	286	13	5,000	7.6	56	6.1
15		2,640	220	22	215	20	12,000	4.7	66	6.9
16		2,760	170	24	215	20	4,000	4.7	72	6.4
17		2,640	100	26	215	20	6,000	5.5	71	6.3
18		2,400	470	33	286	20	6,000	5.7	76	6.4
19		2,400	250	25	286	22	5,000	5.7	71	6.1
20		2,400	260	23	143	22	6,000	4.4	74	6.4
21		2,400	270	27	286	22	5,000	5.7	68	6.3
22		2,400	260	26	215	18	4,000	4.6	68	6.3
23		2,400	480	29	215	21	4,000	4.9	69	6.3
24		2,520	670	18	215	20	5,000	5.0	71	6.5
25		2,400	910	19	143	22	6,000	5.1	71	6.0
26		2,400	720	23	286	21	4,500	5.3	72	5.9
27		2,400	270	22	143	20	4,000	5.4	73	5.7
28		2,400	220	20	286	17	4,000	5.6	70	5.5
29		2,400	80	20	143	6	3,000	5.4	66	6.1
30		2,400	150	21	215	11	3,000	7.5	69	5.6
31										
Total		76,200	8,280	713	6,872	562	178,000	165.0	2,057	183.1
Max.		2,760	910	33	286	22	18,000	7.6	76	6.9
Min.		2,400	80	18	143	6	3,000	4.4	56	5.5
Avg.		2,540	276	24	229	19	5,933	5.5	69	6.1

Manpower & Hours

	Total Hr
Superintendent 1	^152
Asst. Supt. 1	^152
Operators 3	^460
Total	^764

Robert J. Swalwell
Superintendent

MARSHALL , MICHIGAN WASTEWATER TREATMENT PLANT
OCTOBER, 1990 - PLANT INFULENT SHEET - SAMPLING CODE 500

	----Weather-----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1	1		2.09	61	7.3	105	1,830	192	3,347	3.65	64	130		
2	1		1.99	60	7.6	111	1,842	114	1,892	5.10	85	76		
3	4	0.91	2.11	61	7.4	96	1,689	128	2,252	3.20	56	114		
4	4	0.04	2.07	61	7.4	75	1,295	92	1,588	3.40	59	82		
5	1		2.00	61	7.4	102	1,701	136	2,268	2.90	48	108		
6	1		1.66	61	7.5	81	1,121	154	2,132	3.00	42	126		
7	4	0.15	1.69	59	7.5	84	1,184	154	2,171	3.40	48	130		
8	4	1.10	2.02	60	7.4	108	1,819	142	2,392	7.35	124	112		
9	4	1.62	2.09	61	7.5	135	2,353	144	2,510	5.40	94	126		
10	4	0.24	2.10	60	8.2	99	1,734	124	2,172	3.50	61	92		
11	1		2.19	61	7.5	99	1,808	112	2,046	4.20	77	104		
12	1		2.09	59	7.4	81	1,412	80	1,394	2.90	51	48		
13	1		1.90	58	7.7	93	1,474	100	1,585	2.45	39	68		
14	4	0.27	1.93	56	7.6	78	1,256	82	1,320	2.65	43	58		
15	1		2.05	59	7.5	120	2,052	150	2,565	5.25	90	130		
16	4	0.02	2.15	59	7.4	100	1,793	150	2,690	3.95	71	106		
17	4	0.41	2.09	59	7.5	105	1,830	112	1,952	3.85	67	88		
18	4	0.05	2.19	60	7.5	93	1,699	110	2,009	4.30	79	96		
19	1		2.05	60	7.4	114	1,949	124	2,120	3.40	58	98		
20	1		1.86	59	7.5	84	1,303	80	1,241	2.55	40	64		
21	4	0.05	1.90	59	7.5	81	1,284	96	1,521	2.75	44	66		
22	1		2.13	59	7.6	120	2,132	118	2,096	4.95	88	98		
23	1		2.11	59	7.6	126	2,217	158	2,780	4.95	87	142		
24	1		2.09	59	7.4	120	2,092	122	2,127	4.45	78	96		
25	1		2.12	59	7.4	99	1,750	90	1,591	4.10	72	88		
26	1		2.01	59	7.7	90	1,509	114	1,911	3.50	59	100		
27	3		1.90	58	7.6	93	1,474	96	1,521	2.65	42	74		
28	1		1.88	56	7.5	84	1,317	86	1,348	2.85	45	64		
29	1		2.06	58	7.8	153	2,629	122	2,096	6.00	103	98		
30	1		2.00	58	7.4	135	2,252	94	1,568	5.85	98	82		
31	1		1.97	58	8.1	138	2,267	114	1,873	4.10	67	102		
Total	66	4.86	62.49	1,837	233.8	3,202	54,066	3,690	62,079	122.55	2,075	2,966		
Max.	4	1.62	2.19	61	8.2	153	2,629	192	3,347	7.35	124	142		
Min.	1	0.02	1.66	56	7.3	75	1,121	80	1,241	2.45	39	48		
Avg.	2	0.44	2.02	59	7.5	103	1,744	119	2,003	3.95	67	96		

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
OCTOBER , 1990 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	63	1,098	80	1,394	3.40	59	66		2.09	40	58	6
2	123	2,041	76	1,261	4.95	82	72		1.99	0	33	3
3	87	1,531	84	1,478	3.50	62	78		2.11	9	34	0
4	90	1,554	76	1,312	3.50	60	64		2.07	0	17	0
5	72	1,201	70	1,168	3.30	55	66		2.00	29	48	0
6	72	997	64	886	2.90	40	62		1.66	11	58	3
7	69	973	76	1,071	3.00	42	68		1.69	18	51	12
8	96	1,617	84	1,415	6.35	107	74		2.02	11	41	14
9	117	2,039	86	1,499	5.25	92	76		2.09	13	40	3
10	72	1,261	92	1,611	3.95	69	68		2.10	27	26	0
11	72	1,315	80	1,461	3.85	70	72		2.19	27	29	8
12	75	1,307	70	1,220	3.10	54	48		2.09	7	13	0
13	66	1,046	70	1,109	2.55	40	60		1.90	29	30	0
14	93	1,497	64	1,030	2.40	39	54		1.93	0	22	6
15	90	1,539	102	1,744	4.70	80	86		2.05	25	32	10
16	66	1,183	88	1,578	3.75	67	78		2.15	34	41	5
17	72	1,255	68	1,185	3.10	54	54		2.09	31	39	19
18	93	1,699	70	1,279	3.85	70	66		2.19	0	36	10
19	72	1,231	72	1,231	3.40	58	48		2.05	37	42	0
20	105	1,629	58	900	2.75	43	48		1.86	0	28	0
21	51	808	72	1,141	2.30	36	48		1.90	37	25	16
22	81	1,439	80	1,421	4.55	81	66		2.13	33	32	8
23	84	1,478	76	1,337	4.55	80	64		2.11	33	52	8
24	105	1,830	86	1,499	2.65	46	68		2.09	13	30	40
25	84	1,485	72	1,273	3.85	68	70		2.12	15	20	6
26	147	2,464	76	1,274	2.90	49	68		2.01	0	33	17
27	42	666	50	792	2.40	38	36		1.90	55	48	9
28	72	1,129	80	1,254	2.75	43	64		1.88	14	7	4
29	180	3,092	124	2,130	3.75	64	106		2.06	0	0	38
30	126	2,102	70	1,168	5.10	85	64		2.00	6	25	13
31	117	1,922	72	1,183	3.20	53	64		1.97	15	37	22
Total	2,754	46,429	2,388	40,306	111.55	1,888	2,026		62.49	569	1,027	280
Max.	180	3,092	124	2,130	6.35	107	106		2.19	55	58	40
Min.	42	666	50	792	2.30	36	36		1.66	0	0	0
Avg.	89	1,498	77	1,300	3.60	61	65		2.02	18	33	9

Robert J. Swalwell
Superintendent

MARSHALL , MICHIGAN WASTEWATER TREATMENT PLANT
OCTOBER , 1990 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	4.1	3.1	0.69	1,414	1,033	20.0	0.71	4.7	266	0.28	0.21	60	58	2.09	122	78
2		4.3	3.3	0.77	1,465	883	21.0	0.70	4.4	263	0.33	0.27	69	58	1.99	122	79
3		4.1	3.3	0.56	1,543	1,191	24.0	0.64	2.1	257	0.31	0.24	65	65	2.11	113	79
4		4.2	3.4	0.58	1,482	1,049	23.0	0.64	4.5	261	0.34	0.28	66	65	2.07	105	76
5		4.3	3.9	0.43	1,657	1,224	26.0	0.64	3.1	257	0.32	0.25	70	65	2.00	95	77
6		5.2	4.2		1,479					259			84	79	1.66	90	76
7		5.1	3.8		1,354					265			82	79	1.69	82	75
8		4.3	2.9	0.53	1,229	923	20.0	0.61	5.3	265	0.27	0.21	68	79	2.02	87	76
9		4.1	2.8	0.54	1,262	933	18.0	0.70	3.6	266	0.27	0.20	64	79	2.09	86	77
10		4.1	2.8	0.57	1,300	868	18.0	0.72	3.8	265	0.32	0.24	64	79	2.10	84	78
11		3.9	2.8	0.52	1,326	954	22.0	0.60	5.2	264	0.57	0.41	64	79	2.19	81	79
12		4.1	3.0	0.48	1,380	985	22.0	0.63	4.4	265	0.30	0.22	59	72	2.09	82	79
13		4.5	3.0		1,254					266			69	79	1.90	81	80
14		4.5	2.8		1,160					264			70	79	1.93	84	78
15		4.2	2.3	0.60	1,044	802	15.0	0.70	5.7	264	0.25	0.18	64	69	2.05	84	81
16		4.0	2.9	0.44	1,400	1,046	17.0	0.82	3.6	260	0.33	0.25	59	69	2.15	76	81
17		4.1	3.3	0.40	1,458	1,101	18.0	0.81	4.8	2,857	0.31	0.21	61	69	2.09	76	77
18		3.9	3.0	0.48	1,383	995	17.0	0.81	4.8	266	0.33	0.24	58	72	2.19	79	76
19		4.2	3.2	0.46	1,389	988	16.0	0.87	5.0	268	0.29	0.21	62	72	2.05	79	76
20		4.6	3.6		1,404					266			68	72	1.86	84	75
21		4.5	3.2		1,293					268			66	72	1.90	78	76
22		4.0	2.9	0.51	1,244	894	13.0	0.96	6.0	266	0.28	0.20	57	65	2.13	77	73
23		4.1	3.4	0.51	1,398	926	14.0	1.00	4.9	265	0.32	0.24	55	65	2.11	80	71
24		4.1	3.5	0.45	1,483	1,079	16.0	0.93	5.4	265	0.44	0.25	70	65	2.09	84	73
25		4.1	3.4	0.45	1,485	1,094	15.5	0.96	6.2	267	0.32	0.23	58	66	2.12	83	74
26		4.3	3.4	0.51	1,401	1,031	15.0	0.93	6.0	267	0.34	0.25	63	69	2.01	94	74
27		4.5	3.6		1,380					277			69	69	1.90	85	73
28		4.6	3.4		1,334					272			67	69	1.88	88	74
29		4.2	2.6	0.64	1,229	917	13.5	0.91	6.1	265	0.28	0.21	67	69	2.06	102	81
30		4.3	3.3	0.54	1,464	1,113	15.0	0.98	4.0	263	0.34	0.25	64	69	2.00	108	80
31		4.4	3.5	0.54	1,486	1,116	16.5	0.90	5.4	263	0.34	0.25	65	65	1.97	110	78
Total	48	133.1	99.4	12.18	42,580	23,145	415.5	18.17	109.0	10,802	7.48	5.50	2,027	2,181	62.49	2,781	2,380
Max.	48	5.2	4.2	0.77	1,657	1,224	26.0	1.00	6.2	2,857	0.57	0.41	84	79	2.19	122	81
Min.	48	3.9	2.3	0.40	1,044	802	13.0	0.60	2.1	257	0.25	0.18	55	58	1.66	76	71
Avg.	48	4.3	3.2	0.53	1,374	1,006	18.1	0.79	4.7	348	0.33	0.24	65	70	2.02	90	77

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 W. PEARL ST. MARSHALL MI. 49068 - PERMIT No. MI0023540
OCTOBER , 1990 - DISCHARGE MONITORING REPORT - DISCHARGE No. 001A

	F.Eff. D.O. mgIL	F.Eff. pH SU	X F.Eff. SS mgIL	X F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	X F.Eff. BOD mgIL	X F.Eff. BOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	X F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	6.4	7.5	16	279	0.80	2.09	0.00	5	87			168	92	95	78
2	6.2	7.5	9	149	1.00	1.99	0.00	7	116			220	92	94	80
3	6.3	7.4	11	194	1.02	2.11	0.00	7	123			500	91	93	68
4	5.9	7.4	10	173	1.14	2.07	0.00	7	121			360	89	91	66
5	6.0	7.4	11	183	0.97	2.00	0.00	8	133			140	92	92	66
6	6.1	7.4	5	69	0.61	1.66	0.00	4	55			78	97	95	80
7	6.0	7.5	10	141	0.66	1.69	0.00	4	56			94	94	95	81
8	6.7	7.6	7	118	1.02	2.02	0.00	5	84			102	95	95	86
9	6.5	7.5	9	157	1.08	2.09	0.00	8	139			184	94	94	80
10	6.4	7.2	16	280	0.75	2.10	0.00	4	70			168	87	96	79
11	6.4	7.6	17	310	0.85	2.19	0.00	6	110			38	85	94	80
12	6.9	7.6	8	139	0.75	2.09	0.00	5	87			16	90	94	74
13	6.9	7.5	8	127	0.44	1.90	0.02	5	79			6	92	95	82
14	6.8	7.5	5	80	0.34	1.93	0.00	1	16			36	94	99	87
15	7.0	7.5	8	137	0.37	2.05	0.00	4	68			36	95	97	93
16	6.0	7.4	14	251	0.48	2.15	0.00	5	90			422	91	95	89
17	6.5	7.5	3	52	0.35	2.09	0.00	5	87			82	97	95	91
18	6.2	7.5	5	91	0.34	2.19	0.00	4	73			42	95	96	92
19	6.5	7.4	7	120	0.35	2.05	0.00	4	68			120	94	96	90
20	6.1	7.3	2	31	0.34	1.86	0.00	3	47			4	98	96	87
21	6.5	7.3	6	95	0.25	1.90	0.00	3	48			8	94	96	91
22	6.9	7.5	6	107	0.37	2.13	0.00	4	71			28	95	97	93
23	6.3	7.3	9	158	0.47	2.11	0.00	5	88			88	94	96	91
24	6.4	7.4	12	209	0.74	2.09	0.00	5	87			18	90	96	83
25	6.9	7.4	9	159	0.91	2.12	0.00	1	18			32	90	99	78
26	7.0	7.5	10	168	0.53	2.01	0.00	4	67			6	91	96	85
27	6.6	7.3	6	95	0.42	1.90	0.03	4	63			4	94	96	84
28	6.9	7.5	7	110	0.50	1.88	0.00	4	63			2	92	95	82
29	7.2	7.6	9	155	0.50	2.06	0.00	5	86			2	93	97	92
30	6.7	7.3	4	67	0.62	2.00	0.00	4	67			6	96	97	89
31	6.8	7.4	7	115	0.61	1.97	0.00	4	66			22	94	97	85
Total	202.0	230.7	266	4,520	19.58	62.49	0.05	144	2,434			3,032	2,877	2,959	2,582
Max.	7.2	7.6	17	310	1.14	2.19	0.03	8	139			500	98	99	93
Min.	5.9	7.2	2	31	0.25	1.66	0.00	1	16			2	85	91	66
Avg.	6.5	7.4	9	146	0.63	2.02	0.00	5	79			38	93	95	83
7 day			11	182				6	99			187			

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
OCTOBER, 1990 - MISCELLOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferrous Chloride Lbs.	SO2 Lbs	Raw Sludge Gals.	Raw Sludge Total Solids Percent	Raw Sludge Vol. Solids Percent	Raw Sludge pH
1		2,520	190	32	253	12	4,000	6.0	70	5.5
2		2,520	210	18	190	12	4,000	5.8	74	5.6
3		2,400	230	22	127	14	4,000	6.0	72	5.7
4		2,520	210	20	190	13	6,000	5.2	69	5.7
5		2,520	320	22	190	15	6,000	5.8	71	5.5
6		2,280	100	20	190	15	4,000	5.4	71	5.7
7		2,400	180	23	127	15	4,000	4.1	72	5.8
8		2,400	166	14	190	12	5,000	5.4	73	5.7
9		3,000	220	17	190	16	6,000	5.3	72	5.9
10		2,640	190	24	316	18	6,000	5.4	71	5.7
11		2,640	200	24	316	18	6,000	4.0	83	5.7
12		2,520	330	26	316	21	5,000	5.8	70	5.6
13		2,400	160	24	316	21	4,000	5.4	63	5.7
14		2,400	340	12	253	21	4,000	5.2	69	5.8
15		2,400	270	44	316	22	6,000	5.2	70	5.8
16		2,520	120	28	253	20	5,000	5.4	70	5.7
17		2,400	120	26	316	22	6,000	5.4	69	5.8
18		2,640	180	18	316	17	6,000	5.7	70	5.8
19		2,520	230	11	253	16	6,100	5.6	68	5.8
20		2,640	90	50	316	21	4,000	4.9	70	5.9
21		2,400	180	21	316	21	4,000	5.4	70	5.7
22		2,760	320	24	190	20	6,000	5.1	70	6.0
23		2,640	330	25	316	22	6,000	6.7	69	6.4
24		2,640	420	25	190	22	6,000	5.6	69	5.9
25		2,880	230	26	190	17	6,000	5.6	69	5.6
26		2,760	200	32	190	19	6,000	4.9	71	5.9
27		2,640	240	24	190	18	4,000	4.4	71	6.0
28		2,880	160	24	190	22	4,000	4.7	72	5.9
29		2,640	200	24	127	21	6,000	5.1	73	6.0
30		2,640	310	18	190	13	6,000	5.3	74	5.8
31		2,520	120	16	190	12	6,000	5.0	74	5.8
Total		79,680	6,766	734	7,213	548	161,100	164.8	2,199	179.4
Max.		3,000	420	50	316	22	6,100	6.7	83	6.4
Min.		2,280	90	11	127	12	4,000	4.0	63	5.5
Avg.		2,570	218	24	233	18	5,197	5.3	71	5.8

Manpower & Hours

	Total Hr
Superintendent 1	^184
Asst. Supt. 1	^184
Operators 3	^552
Total 5	^920

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
NOVEMBER , 1990 - INFLUENT SHEET - SAMPLING CODE 300

	----Weather----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	X Inf. SS	X Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1	1		1.97	58	7.5	120	1,972	124	2,037	4.70	77	102		
2	1		1.86	58	7.5	93	1,443	118	1,830	3.65	57	96		
3	4	0.05	1.82	56	7.5	105	1,594	174	2,641	3.75	57	138		
4	4	1.10	1.94	56	7.5	140	2,265	100	1,618	2.75	44	80		
5	4	1.30	2.16	56	7.6	147	2,648	110	1,982	4.95	89	98		
6	4	0.04	2.01	56	7.5	132	2,213	98	1,643	3.50	59	84		
7	4	0.06	2.06	56	7.7	105	1,804	94	1,615	2.85	49	88		
8	1		2.05	56	7.5	156	2,667	108	1,846	4.20	72	108		
9	1		2.01	56	7.5	138	2,313	92	1,542	4.10	69	70		
10	1		1.81	56	7.5	78	1,177	86	1,298	3.30	50	58		
11	5	0.05	2.09	55	7.6	120	2,092	96	1,673	2.85	50	78		
12	1		2.03	56	7.4	150	2,540	122	2,065	4.55	77	106		
13	1		1.92	56	7.3	117	1,873	112	1,793	4.20	67	94		
14	1		1.97	57	7.8	171	2,809	122	2,004	3.10	51	112		
15	1		2.01	57	7.4	153	2,565	100	1,676	6.85	115	98		
16	3		1.87	55	7.6	105	1,638	100	1,560	3.40	53	86		
17	1		1.68	55	7.6	99	1,387	96	1,345	2.85	40	82		
18	1		1.73	55	7.6	117	1,688	136	1,962	3.10	45	120		
19	1		1.90	56	7.7	117	1,854	124	1,965	3.40	54	102		
20	1		1.83	56	7.4	156	2,381	104	1,587	4.30	66	86		
21	4	0.18	1.87	56	7.5	132	2,059	120	1,871	3.40	53	104		
22	1		1.65	57	7.5	96	1,321	124	1,706	2.85	39	108		
23	4	0.03	1.70	56	7.6	111	1,574	102	1,446	3.20	45	86		
24	1		1.68	55	7.5	93	1,303	114	1,597	3.95	55	100		
25	1		1.72	55	7.8	102	1,463	96	1,377	2.90	42	72		
26	4	0.27	1.85	55	7.5	174	2,685	132	2,037	3.65	56	124		
27	4	2.20	2.10	56	7.5	144	2,522	152	2,662	3.30	58	132		
28	4	0.02	2.05	57	7.4	105	1,795	80	1,368	3.00	51	64		
29	1		2.02	57	7.6	132	2,224	106	1,786	2.90	49	96		
30	1		1.97	55	7.3	126	2,070	104	1,709	3.10	51	90		
31														
Total	66	5.30	57.33	1,681	225.9	3,734	59,938	3,346	53,245	108.60	1,739	2,862		
Max.	5	2.20	2.16	58	7.8	174	2,809	174	2,662	6.85	115	138		
Min.	1	0.02	1.65	55	7.3	78	1,177	80	1,298	2.75	39	58		
Avg.	2	0.48	1.91	56	7.5	124	1,998	112	1,775	3.62	58	95		

Robert J. Swalwell
Superintendent

MARSHALL , MICHIGAN WASTEWATER TREATMENT PLANT
NOVEMBER , 1990 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mg/L	P Eff. BOD Lbs.	P Eff. SS mg/L	P. Eff. SS Lbs.	P Eff. Phos. mg/L	P Eff. Phos. Lbs.	P Eff. VSS mg/L	P Eff. NH3-N mg/L	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	165	2,711	76	1,249	3.95	65	68		1.97	0	39	16
2	75	1,163	78	1,210	3.30	51	60		1.86	8	34	10
3	63	956	84	1,275	3.00	46	70		1.82	40	52	20
4	129	2,087	66	1,068	2.75	44	54		1.94	8	34	0
5	135	2,432	70	1,261	4.70	85	60		2.16	8	36	5
6	108	1,810	58	972	2.90	49	54		2.01	18	41	17
7	129	2,216	64	1,100	2.85	49	56		2.06	0	32	0
8	132	2,257	70	1,197	3.85	66	70		2.05	15	35	8
9	135	2,263	60	1,006	4.10	69	46		2.01	2	35	0
10	135	2,038	86	1,298	3.00	45	62		1.81	0	0	9
11	142	2,475	68	1,185	3.10	54	54		2.09	0	29	0
12	129	2,184	104	1,761	4.55	77	92		2.03	14	15	0
13	162	2,594	76	1,217	4.45	71	66		1.92	0	32	0
14	123	2,021	66	1,084	3.50	58	52		1.97	28	46	0
15	141	2,364	92	1,542	6.85	115	80		2.01	8	8	0
16	168	2,620	70	1,092	3.30	51	64		1.87	0	30	3
17	135	1,892	66	925	2.90	41	58		1.68	0	31	0
18	87	1,255	84	1,212	2.90	42	74		1.73	25	38	6
19	90	1,426	90	1,426	3.30	52	72		1.90	23	27	2
20	132	2,015	80	1,221	4.20	64	70		1.83	15	23	2
21	117	1,825	68	1,061	3.75	58	62		1.87	11	43	0
22	144	1,982	98	1,349	2.85	39	84		1.65	0	21	0
23	180	2,552	76	1,078	3.20	45	64		1.70	0	25	0
24	69	967	68	953	4.30	60	60		1.68	26	40	0
25	87	1,248	70	1,004	3.20	46	54		1.72	15	27	0
26	111	1,713	96	1,481	4.95	76	92		1.85	36	27	0
27	120	2,102	82	1,436	3.30	58	76		2.10	17	46	0
28	168	2,872	80	1,368	2.90	50	64		2.05	0	0	3
29	153	2,578	64	1,078	2.90	49	56		2.02	0	56	0
30	87	1,429	68	1,117	3.00	49	50		1.97	31	35	3
31												
Total	3,751	60,046	2,278	36,224	107.80	1,724	1,944		57.33	348	937	104
Max.	180	2,872	104	1,761	6.85	115	92		2.16	40	56	20
Min.	63	956	58	925	2.75	39	46		1.65	0	0	0
Avg.	125	2,002	76	1,207	3.59	57	65		1.91	12	31	3

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
NOVEMBER, 1990 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading #/m	Mix Liq SS mg/L	Mix Liq VSS mg/L	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mg/L	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mg/l	PE SS mg/L
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	4.4	3.5	0.60	1,481	1,101	16.0	0.93	5.2	260	0.35	0.26	64	60	1.97	121	78
2		4.6	3.7	0.51	1,511	1,134	16.5	0.92	4.1	261	0.31	0.24	68	60	1.86	111	79
3		4.7	3.6		1,511					263			68	60	1.82	114	83
4		4.4	3.4		1,495					270			64	60	1.94	122	81
5		4.0	3.0	0.69	1,354	1,007	16.0	0.85	5.8	264	0.31	0.23	56	60	2.16	116	74
6		4.3	3.6	0.58	1,452	1,094	16.0	0.91	4.1	267	0.30	0.23	64	60	2.01	113	72
7		4.2	4.2	0.48	1,722	1,382	16.0	1.08	5.2	269	0.32	0.24	63	72	2.06	115	71
8		4.2	3.2	0.66	1,280	955	14.5	0.88	6.4	267	0.30	0.22	63	72	2.05	110	70
9		4.3	3.7	0.56	1,396	1,192	16.0	0.87	2.8	269	0.30	0.23	64	72	2.01	119	67
10		4.8	4.4		1,511					268			70	72	1.81	129	68
11		4.1	3.5		1,402					263			62	72	2.09	131	68
12		4.2	3.1	0.73	1,261	1,006	15.5	0.81	6.0	267	0.31	0.25	64	65	2.03	130	73
13		4.5	3.5	0.64	1,409	1,150	17.5	0.81	4.7	269	0.31	0.25	67	65	1.92	138	75
14		4.4	3.6	0.64	1,484	1,174	18.5	0.80	5.2	262	0.33	0.26	66	65	1.97	137	76
15		4.3	3.6	0.66	1,592	1,166	21.0	0.76	5.0	259	0.35	0.28	65	65	2.01	138	79
16		4.6	4.2	0.54	1,755	1,367	25.0	0.70	1.6	266	0.37	0.29	69	72	1.87	143	80
17		5.1	4.6		1,670					270			71	72	1.68	143	77
18		5.0	4.0		1,540					268			70	72	1.73	135	80
19		4.5	3.6	0.59	1,491	1,153	21.0	0.71	5.5	265	0.32	0.25	68	72	1.90	129	78
20		4.7	3.7	0.55	1,484	1,159	20.0	0.74	4.3	262	0.32	0.25	70	72	1.83	125	78
21		4.6	3.6	0.55	1,499	1,176	19.0	0.79	5.9	268	0.32	0.25	68	72	1.87	124	79
22		5.2	4.1		1,492					267			78	72	1.65	123	79
23		5.1	3.6		1,378					265			75	72	1.70	126	80
24		5.1	3.5		1,318					268			76	72	1.68	117	81
25		5.0	3.5		1,306					261			74	65	1.72	117	79
26		4.7	3.4	0.60	1,365	1,033	18.0	0.76	6.5	258	0.26	0.20	69	58	1.85	120	79
27		4.1	3.7	0.51	1,752	1,365	22.0	0.80	2.5	269	0.39	0.31	61	43	2.10	118	80
28		4.2	4.1	0.49	1,892	1,462	23.5	0.81	5.1	271	0.42	0.33	62	43	2.05	126	81
29		4.3	4.9	0.44	2,130	1,639	27.5	0.77	5.4	271	0.47	0.36	63	29	2.02	127	77
30		4.4	5.3	0.37	2,195	1,688	29.0	0.76	5.1	267	0.46	0.36	65	36	1.97	114	75
31																	
Total	48	136.0	113.6	11.39	46,128	24,403	388.5	16.44	96.4	7,974	6.82	5.29	2,007	1,902	57.33	3,731	2,297
Max.	48	5.2	5.3	0.73	2,195	1,688	29.0	1.08	6.5	271	0.47	0.36	78	72	2.16	143	83
Min.	48	4.0	3.0	0.37	1,261	955	14.5	0.70	1.6	258	0.26	0.20	56	29	1.65	110	67
Avg.	48	4.5	3.8	0.57	1,538	1,220	19.4	0.82	4.8	266	0.34	0.26	67	63	1.91	124	77

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 W. PEARL ST. MARSHALL MI. 49068 - PERMIT No. MI0023540
NOVEMBER , 1990 - DISCHARGE MONITORING REPORT - DISCHARGE No. 001A

	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. BOD mgIL	F.Eff. BOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	6.9	7.5	7	115	0.47	1.97		4	66				94	97	90
2	7.0	7.4	5	78	0.61	1.86		3	47				96	97	83
3	6.2	7.4	4	61	0.56	1.82		4	61				98	96	85
4	6.1	7.6	6	97	0.42	1.94		6	97				94	96	85
5	7.2	7.4	19	342	0.82	2.16		8	144				83	95	83
6	6.3	7.3	13	218	1.05	2.01		6	101				87	95	70
7	6.7	7.4	10	172	0.80	2.06		6	103				89	94	72
8	7.0	7.5	11	188	0.87	2.05		18	308				90	88	79
9	5.5	7.6	9	151	0.89	2.01		10	168				90	93	78
10	6.2	7.4	14	211	0.75	1.81		14	211				84	82	77
11	6.2	7.6	18	314	0.91	2.09		9	157				81	93	68
12	6.6	7.5	15	254	1.14	2.03		9	152				88	94	75
13	6.1	7.3	5	80	0.64	1.92		6	96				96	95	87
14	6.6	7.5	4	66	0.64	1.97		4	66				97	98	79
15	6.5	7.3	9	151	1.14	2.01		6	101				91	96	83
16	5.7	7.4	8	125	0.48	1.87		10	156				92	90	86
17	5.5	7.4	10	140	0.48	1.68		8	112				90	92	83
18	6.8	7.5	9	130	0.44	1.73		3	43				93	97	86
19	6.6	7.6	9	143	0.38	1.90		10	158				93	91	88
20	7.3	7.4	10	153	0.64	1.83		4	61				90	97	85
21	7.2	7.4	4	62	0.58	1.87		5	78				97	96	83
22	7.1	7.3	5	69	0.48	1.65		5	69				96	95	83
23	7.6	7.6	8	113	0.48	1.70		8	113				92	93	85
24	7.4	7.3	9	126	0.50	1.68		3	42				92	97	87
25	7.7	7.3	6	86	0.50	1.72		5	72				94	95	83
26	6.6	7.3	9	139	0.70	1.85		5	77				93	97	74
27	6.4	7.4	7	123	0.48	2.10		6	105				95	96	85
28	7.1	7.5	7	120	0.51	2.05		6	103				91	94	83
29	6.9	7.4	9	152	0.47	2.02		4	67				92	97	84
30	6.8	7.3	14	230	0.47	1.97		5	82				87	96	85
31															
Total	199.8	222.8	273	4,407	19.30	57.33		200	3,215				2,745	2,832	2,454
Max.	7.7	7.6	19	342	1.14	2.16		18	308				98	98	90
Min.	5.5	7.3	4	61	0.38	1.65		3	42				81	82	68
Avg.	6.7	7.4	9	147	0.64	1.91		7	107				92	94	82

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
NOVEMBER, 1990 - MISCELLOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Raw Sludge Gals.	Raw Sludge Total Solids Percent	Raw Sludge Vol. Solids Percent	Raw Sludge pH
1	200	2,520	590	16	199	7	6,000	4.6	72	6.0
2	100	2,400	160	10	299	8	6,000	5.1	73	6.0
3	100	2,400	180	12	199	7	4,000	4.6	73	5.9
4	200	2,520	240	12	199	11	4,000	4.8	74	5.8
5	6,900	2,760	280	14	199	10	6,000	4.5	75	5.8
6	5,200	2,880	130	12	199	6	6,000	5.1	75	5.8
7	7,200	2,760	350	15	299	6	6,000	4.7	71	5.9
8	6,500	2,880	420	13	199	7	6,000	4.5	74	5.7
9	6,700	2,880	310	18	199	8	6,000	5.1	78	5.4
10	6,900	2,760	320	12	99	8	4,000	5.3	74	5.8
11	7,800	2,880	440	15	0	6	4,000	4.4	76	5.8
12	7,400	2,880	460	13	99	8	6,000	5.1	77	5.6
13	7,000	2,760	380	25	299	6	6,000	4.8	73	5.6
14	3,500	2,760	400	13	299	10	6,000	4.8	77	5.6
15	2,500	2,760	270	15	299	4	6,000	4.8	77	5.6
16	4,800	2,640	420	15	299	8	6,000	4.8	77	5.6
17	7,700	2,880	240	15	299	14	4,000	4.6	76	5.7
18	7,400	2,640	380	15	299	3	4,000	3.9	78	5.6
19	6,900	2,760	420	15	299	8	7,000	4.5	76	5.6
20	4,900	2,880	620	18	299	11	15,000	4.6	76	5.6
21	3,600	2,640	440	15	397	10	4,300			
22	6,200	2,640	220	15	397	4	4,000	5.0	77	5.8
23	7,500	2,640	230	9	299	10	4,000	4.4	76	5.7
24	6,200	2,760	430	13	199	7	6,000	4.6	76	5.8
25	7,100	2,760	250	12	299	10	4,000	4.5	74	5.6
26	4,900	2,760	470	14	299	5	5,500	4.4	74	5.7
27	7,400	2,760	330	14	299	8	6,000	4.5	76	5.9
28	8,200	2,880	480	15	299	7	6,000	5.1	72	5.8
29	6,400	2,880	430	15	299	7	6,000	5.4	75	5.5
30	6,000	2,880	390	13	199	8	6,000	5.5	76	5.9
31										
Total	163,400	82,200	10,680	428	7,567	232	169,800	138.0	2,178	166.1
Max.	8,200	2,880	620	25	397	14	15,000	5.5	78	6.0
Min.	100	2,400	130	9	0	3	4,000	3.9	71	5.4
Avg.	5,447	2,740	356	14	252	8	5,660	4.8	75	5.7

Manpower & Hours

	Total Hr
Superintendent 1	^160
Asst. Supt. 1	^160
Operators 3	^488
Total	^808

Robert J. Swalwell
Superintendent

MARSHALL , MICHIGAN WASTEWATER TREATMENT PLANT
DECEMBER , 1990 - INFLUENT SHEET - SAMPLING CODE 500

	-----Weather-----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1	1		1.86	55	7.9	105	1,629	94	1,458			82		
2	5	0.18	1.87	55	7.4	93	1,450	78	1,216			68		
3	5	0.15	1.89	55	7.4	141	2,223	92	1,450			76		
4	3		1.93	55	7.5	213	3,428	166	2,672			158		
5	1		1.85	55	7.5	117	1,805	106	1,635	3.20	49	100		
6	1		1.99	55	7.5	117	1,942	110	1,826			90		
7	1		1.92	55	7.6	96	1,537	94	1,505			70		
8	1		1.82	54	7.6	93	1,412	96	1,457			74		
9	1		1.82	53	7.5	135	2,049	90	1,366			74		
10	1		1.91	55	7.3	126	2,007	130	2,071			112		
11	1		1.78	55	7.4	123	1,826	116	1,722	6.35	94	102		
12	4	0.01	1.79	55	7.3	108	1,612	116	1,732			98		
13	1		1.95	54	7.5	123	2,000	116	1,887			96		
14	5	0.13	1.83	54	8.5	153	2,335	206	3,144			120		
15	4	0.09	1.84	55	7.5	147	2,256	88	1,350			78		
16	1		1.87	53	7.9	81	1,263	82	1,279			74		
17	4	0.10	2.02	54	7.4	138	2,325	106	1,786	3.50	59	86		
18	4	0.03	1.98	53	7.5	120	1,982	86	1,420			68		
19	1		1.90	53	7.2	102	1,616	136	2,155			120		
20	1		1.95	53	8.1	144	2,342	88	1,431			80		
21	4	0.27	1.88	53	7.3	129	2,023	108	1,693			84		
22	5	0.34	1.81	53	7.3	123	1,857	64	966			48		
23	5	0.09	1.75	51	7.3	159	2,321	66	963			56		
24	3		1.77	52	7.4	120	1,771	96	1,417	2.65	39	96		
25	5	0.03	1.67	51	7.4	108	1,504	60	836			52		
26	1		1.84	51	7.4	156	2,394	136	2,087			108		
27	5	0.07	1.88	51	7.2	117	1,834	128	2,007			98		
28	4	0.79	1.94	51	7.5	123	1,990	92	1,489			80		
29	4	0.69	2.18	51	7.4	198	3,600	56	1,018			46		
30	5	0.14	2.24	52	7.3	105	1,962	52	971			40		
31	1		2.35	51	7.4	117	2,293	66	1,294	3.00	59	42		
Total	88	3.11	59.08	1,653	232.4	3,930	62,588	3,120	49,304	18.70	301	2,576		
Max.	5	0.79	2.35	55	8.5	213	3,600	206	3,144	6.35	94	158		
Min.	1	0.01	1.67	51	7.2	81	1,263	52	836	2.65	39	40		
Avg.	3	0.21	1.91	53	7.5	127	2,019	101	1,590	3.74	60	83		

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
DECEMBER, 1990 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	75	1,163	72	1,117			70		1.86	29	23	
2	81	1,263	70	1,092			52		1.87	13	10	
3	120	1,892	76	1,198			64		1.89	15	17	
4	102	1,642	84	1,352			82		1.93	52	49	
5	147	2,268	66	1,018	3.30	51	60		1.85	0	38	0
6	75	1,245	70	1,162			46		1.99	35	36	
7	84	1,345	72	1,153			52		1.92	13	23	
8	78	1,184	70	1,063			56		1.82	16	28	
9	129	1,958	70	1,063			60		1.82	4	22	
10	87	1,386	86	1,370			62		1.91	31	33	
11	117	1,737	68	1,009	5.40	80	58		1.78	5	41	14
12	95	1,418	80	1,194			70		1.79	12	31	
13	96	1,561	76	1,236			66		1.95	22	34	
14	99	1,511	80	1,221			76		1.83	35	13	
15	120	1,841	64	982			58		1.84	18	27	
16	72	1,123	68	1,061			64		1.87	11	13	
17	105	1,769	86	1,449	4.45	75	76		2.02	24	38	0
18	96	1,585	84	1,387			68		1.98	20	30	
19	87	1,379	78	1,236			66		1.90	15	24	
20	156	2,537	66	1,073			58		1.95	0	54	
21	102	1,599	68	1,066			62		1.88	21	47	
22	123	1,857	64	966			50		1.81	0	48	
23	132	1,927	60	876			50		1.75	16	62	
24	96	1,417	64	945	2.45	36	58		1.77	20	47	7
25	150	2,089	56	780			40		1.67	0	48	
26	204	3,131	94	1,442			68		1.84	0	40	
27	99	1,552	92	1,442			68		1.88	15	21	
28	165	2,670	86	1,391			78		1.94	0	30	
29	168	3,054	62	1,127			56		2.18	15	69	
30	84	1,569	58	1,084			48		2.24	20	45	
31	210	4,116	88	1,725	3.00	59	68		2.35	0	25	0
Total	3,554	56,788	2,278	36,280	18.60	301	1,910		59.08	477	1,066	21
Max.	210	4,116	94	1,725	5.40	80	82		2.35	52	69	14
Min.	72	1,123	56	780	2.45	36	40		1.67	0	10	0
Avg.	115	1,832	73	1,170	3.72	60	62		1.91	15	34	4

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
DECEMBER, 1990 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading fIm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	4.6	5.8		2,293					261			68	43	1.86	114	76
2		4.6	5.7		2,255					258			68	43	1.87	114	76
3		4.6	5.6	0.38	2,153	1,599	27.5	0.78	5.1	263	0.47	0.35	68	43	1.89	115	73
4		4.5	5.4	0.37	2,137	1,646	27.5	0.78	5.6	265	0.47	0.37	66	43	1.93	112	73
5		4.7	6.0	0.34	2,189	1,672	28.0	0.78	2.1	265	0.46	0.33	71	50	1.85	109	71
6		4.3	5.3	0.34	2,117	1,607	27.5	0.77	6.5	267	0.47	0.36	66	50	1.99	98	72
7		4.5	5.2	0.35	2,013	1,487	26.0	0.77	6.0	265	0.44	0.32	68	50	1.92	98	73
8		4.7	5.4		1,997					267			71	50	1.82	98	73
9		4.7	5.2		1,908					262			72	50	1.82	105	73
10		4.5	4.5	0.40	1,779	1,337	21.0	0.85	6.4	266	0.40	0.29	67	43	1.91	100	74
11		4.8	5.3	0.35	1,893	1,436	22.0	0.86	5.2	261	0.40	0.31	72	36	1.78	102	72
12		4.8	5.7	0.30	2,092	1,576	23.0	0.91	1.2	256	0.44	0.33	71	36	1.79	95	74
13		4.4	5.2	0.34	2,113	1,561	27.0	0.78	2.5	271	0.43	0.32	65	36	1.95	98	75
14		4.7	5.7	0.31	2,220	1,658	28.0	0.79	5.0	268	0.46	0.34	70	43	1.83	100	76
15		4.7	5.8		2,211					262			73	50	1.84	106	75
16		4.6	5.4		2,116					266			70	46	1.87	98	75
17		4.3	4.8	0.38	2,034	1,509	24.0	0.85	6.5	199	0.43	0.32	64	46	2.02	101	75
18		4.4	4.9	0.35	2,097	1,550	26.0	0.81	3.5	183	0.43	0.32	64	49	1.98	98	77
19		4.5	5.1	0.33	2,085	1,535	27.0	0.77	3.4	183	0.46	0.35	72	58	1.90	96	77
20		4.4	4.9	0.37	1,984	1,550	25.0	0.79	5.0	120	0.42	0.33	69	58	1.95	105	75
21		4.6	5.0	0.36	1,906	1,520	24.0	0.79	3.1	112	0.41	0.33	71	58	1.88	105	73
22		4.8	4.9		1,813					123			74	46	1.81	106	73
23		4.9	5.1		1,799					124			76	46	1.75	114	72
24		4.9	5.4	0.38	1,852	1,455	30.0	0.62	4.2	124	0.34	0.26	74	46	1.77	113	69
25		5.2	6.1		1,847					122			79	46	1.67	121	65
26		4.7	5.2	0.52	1,769	1,362	27.0	0.66	6.5	122	0.33	0.25	73	49	1.84	138	67
27		4.6	4.9	0.49	1,820	1,366	30.0	0.61	5.1	117	0.35	0.26	76	49	1.88	129	71
28		4.4	4.7	0.53	1,880	1,411	30.0	0.63	4.4	110	0.34	0.26	75	58	1.94	138	74
29		4.0	4.1		1,806					108			68	58	2.18	144	73
30		3.8	4.0		1,800					112			64	58	2.24	138	73
31		3.7	3.4	0.78	1,703	1,292	27.0	0.63	4.2	112	0.35	0.27	66	50	2.35	154	77
Total	48	140.8	159.6	7.96	61,681	30,129	527.5	15.23	91.5	6,194	8.30	6.27	2,171	1,487	59.08	3,462	2,272
Max.	48	5.2	6.1	0.78	2,293	1,672	30.0	0.91	6.5	271	0.47	0.37	79	58	2.35	154	77
Min.	48	3.7	3.4	0.30	1,703	1,292	21.0	0.61	1.2	108	0.33	0.25	64	36	1.67	95	65
Avg.	48	4.5	5.1	0.40	1,990	1,506	26.4	0.76	4.6	200	0.42	0.31	70	48	1.91	112	73

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 W. PEARL ST. MARSHALL MI. 49068 - PERMIT No. MI0023540
DECEMBER , 1990 - DISCHARGE MONITORING REPORT - DISCHARGE No. 001A

	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. BOD mgIL	F.Eff. BOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	6.4	7.3	12	186		1.86	0.00	5	78			12	87	95	
2	6.7	7.3	9	140		1.87	0.00	3	47			20	88	97	
3	6.7	7.4	8	126		1.89	0.00	4	63			298	91	97	
4	7.5	7.4	12 10	193 154		1.93	0.01	5	80			80	93	98	
5	7.6	7.4	9	139	0.78	1.85	0.00	4	62			368	92	97	76
6	6.5	7.4	7	116		1.99	0.00	5	83			38	94	96	
7	7.4	7.5	11	176		1.92	0.00	4	64			14	88	96	
8	6.8	7.4	11	167		1.82	0.01	5	76			8	89	95	
9	7.0	7.5	8	121		1.82	0.01	6	91			2	91	96	
10	7.1	7.3	7	112		1.91	0.01	4	64			10	95	97	
11	6.9	7.4	8	119	0.87	1.78	0.01	4	59			20	93	97	86
12	7.4	7.3	4	60		1.79	0.00	4	60			16	97	96	
13	6.5	7.3	9	146		1.95	0.00	7	114			116	92	94	
14	7.3	7.2	8	122		1.83	0.00	4	61			36	96	97	
15	7.3	7.2	4	61		1.84	0.00	3	46			26	95	98	
16	6.9	7.4	5	78		1.87	0.00	9	140			10	94	89	
17	7.4	7.4	9	152	0.50	2.02	0.00	4	67			164	92	97	86
18	7.8	7.4	7	116		1.98	0.00	7	116			624	92	94	
19	6.0	7.2	14	222		1.90	0.00	9	143			446	90	91	
20	6.4	7.4	10	163		1.95	0.00	12	195			996	89	92	
21	6.3	7.4	9 9	141		1.88	0.00	16	251			400	92	88	
22	6.0	7.3	6	91		1.81	0.00	11	166			20	91	92	
23	6.5	7.1	10	146		1.75	0.01	11	161			28	85	93	
24	6.7	7.2	9	133	0.42	1.77	0.00	11	162			400	91	91	84
25	6.9	7.5	5	70		1.67	0.00	10	139			468	92	91	
26	6.6	7.2	9	138		1.84	0.00	11	169			160	93	93	
27	7.0	7.4	15	235		1.88	0.03	11	172			116	88	91	
28	7.0	7.3	7	113		1.94	0.00	12 13	194 216			400	92	90	
29	6.7	7.2	5	91		2.18	0.00	13	236			82	91	93	
30	7.0	7.2	6	112		2.24	0.00	10	187			4	88	90	
31	7.2	7.2	11	216	0.44	2.35	0.00	21	412			22	83	82	85
Total	213.5	227.1	264	4,200	3.01	59.08	0.08	245	3,958			5,404	2,824	2,903	417
Max.	7.8	7.5	15	235	0.87	2.35	0.03	21	412			996	97	98	86
Min.	6.0	7.1	4	60	0.42	1.67	0.00	3	46			2	83	82	76
Avg.	6.9	7.3	9 10	135 154	0.60	1.91	0.00	8 13	128 216			59 220	91	94	83

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
DECEMBER , 1990 - MISCELLOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	So2 Lbs.	Raw Sludge Gals.	Raw Sludge Total Solids Percent	Raw Sludge Vol. Solids Percent	Raw Sludge pH
1	6,400	2,760	300	15	397	8	4,000	6.0	77	5.8
2	7,400	2,760	330	17	397	8	4,000	4.6	75	5.8
3	7,900	2,880	370	25	298	8	6,000	5.8	71	5.7
4	9,300	3,000	460	13	199	6	6,000	4.8	75	5.8
5	7,800	3,000	510	15	298	10	6,000	4.8	73	6.1
6	8,100	3,000	470	16	298	8	6,000	4.4	72	6.1
7	7,700	3,120	410	13	298	7	6,000	4.5	77	5.9
8	7,100	3,000	380	15	298	9	4,000	4.2	73	6.0
9	6,500	2,880	450	18	298	9	4,000	4.4	75	6.0
10	5,400	2,880	420	14	199	5	6,000	4.4	75	6.1
11	5,600	3,000	410	16	397	6	6,000	4.4	74	5.8
12	4,800	3,000	370	16	397	10	6,000	4.6	76	5.9
13	8,600	3,000	500	8	397	9	6,000	5.0	70	6.0
14	7,800	3,000	380	13	298	11	6,000	4.4	74	6.1
15	7,300	2,880	260	11	397	6	4,000	4.6	68	6.3
16	6,800	3,000	410	15	298	10	4,000	4.8	71	6.3
17	6,300	2,640	370	13	298	8	6,000	4.6	73	6.0
18	7,200	2,640	290	14	298	7	6,000	5.1	71	6.2
19	7,100	2,760	460	15	298	18	6,000	4.7	72	6.1
20	5,700	2,280	340	14	0	9	6,000	5.0	73	6.1
21	3,600	2,040	270	15	0	8	5,000	5.1	74	6.1
22	8,500	2,280	190	43	496	10	4,000	4.7	74	6.0
23	11,400	2,400	260	25	595	8	4,000	5.0	73	5.9
24	12,700	2,280	290	16	298	8	6,000	5.3	72	5.8
25	12,100	2,280	210	18	298	10				
26	12,600	2,520	390	18	298	22	6,000	5.0	75	5.8
27	10,300	2,400	220	22	298	20	6,000	5.0	73	6.0
28	7,900	2,520	320	25	199	20	6,000	5.4	77	6.2
29	6,200	2,400	290	26	397	17	4,000	5.2	74	6.0
30	9,600	2,400	320	17	298	27	4,000	4.9	72	5.9
31	11,500	2,520	370	24	397	10	6,000	5.7	67	5.9
Total	247,200	83,520	11,020	545	9,632	332	159,000	146.4	2,196	179.7
Max.	12,700	3,120	510	43	595	27	6,000	6.0	77	6.3
Min.	3,600	2,040	190	8	0	5	4,000	4.2	67	5.7
Avg.	7,974	2,694	355	18	311	11	5,300	4.9	73	6.0

Manpower & Hours

	Total Hr
Superintendent 1	^160
Asst. Supt. 1	^160
Operators 3	^484
Total	^804

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT

JANUARY, 1992 - PLANT INFLUENT SHEET - SAMPLING CODE 500

	-----Weather----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1	3		1.32	53	7.6	180	1,982	126	1,387		0	104		
2	4	0.27	1.47	52	7.7	195	2,391	136	1,667	3.60	44	124		
3	4	0.06	1.48	53	7.6	192	2,370	100	1,234		0	80		
4	3		1.39	53	7.6	162	1,878	110	1,275		0	84		
5	3		1.37	51	7.7	126	1,440	120	1,371		0	90		
6	3		1.50	53	7.5	225	2,815	136	1,701		0	134		
7	3		1.47	53	7.9	213	2,611	124	1,520		0	90		
8	4	0.30	1.43	53	7.6	198	2,361	114	1,360	6.80	81	110		
9	4	0.03	1.41	52	7.4	204	2,399	144	1,693		0	134		
10	3		1.42	52	7.6	150	1,776	120	1,421		0	92		
11	2		1.38	52	7.6	156	1,795	122	1,404		0	94		
12	4	0.04	1.29	52	7.6	147	1,582	154	1,657		0	128		
13	5	0.32	1.38	51	7.8	210	2,417	112	1,289		0	94		
14	2		1.40	52	7.8	177	2,067	148	1,728	3.60	42	126		
15	5	0.11	1.38	52	7.7	183	2,106	108	1,243		0	82		
16	5	0.02	1.44	52	7.8	195	2,342	128	1,537		0	102		
17	2		1.41	52	7.8	189	2,223	120	1,411		0	110		
18	2		1.39	52	7.8	168	1,948	126	1,461		0	104		
19	5	0.02	1.31	51	7.7	180	1,967	128	1,398		0	118		
20	2		1.47	52	7.4	216	2,648	116	1,422	4.10	50	108		
21	2		1.45	52	7.7	204	2,467	126	1,524		0	104		
22	4	0.02	1.45	52	7.6	189	2,286	124	1,500		0	118		
23	5	0.05	1.42	52	7.6	144	1,705	116	1,374		0	110		
24	5	0.02	1.42	52	7.6	180	2,132	160	1,895		0	132		
25	5	0.06	1.34	52	7.4	195	2,179	134	1,498		0	110		
26	2		1.34	51	7.7	150	1,676	142	1,587		0	126		
27	3		1.44	52	7.6	162	1,946	108	1,297		0	96		
28	3		1.48	51	7.4	150	1,851	104	1,284	3.70	46	76		
29	3		1.46	51	7.4	186	2,265	98	1,193		0	40		
30	3		1.49	52	7.7	198	2,460	144	1,789		0	104		
31	5	0.03	1.44	52	7.8	153	1,837	134	1,609		0	130		
Total	108	1.35	43.84	1,612	236.7	5,577	65,921	3,882	45,730	21.80	263	3,254		
Max.	5	0.32	1.50	53	7.9	225	2,815	160	1,895	6.80	81	134		
Min.	2	0.02	1.29	51	7.4	126	1,440	98	1,193	3.60	42	40		
Avg.	3	0.10	1.41	52	7.6	180	2,126	125	1,475	4.36	~~66~~ 53	105		

Robert J. Swalwell
Superintendent

[illegible] WASTEWATER TREATMENT PLANT
JANUARY, 1992 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	132	1,453	92	1,013			72		1.32	27	27	
2	171	2,096	116	1,422	3.90	48	108		1.47	12	15	0
3	186	2,296	94	1,160			76		1.48	3	6	
4	150	1,739	100	1,159			74		1.39	7	9	
5	108	1,234	100	1,143			76		1.37	14	17	
6	183	2,289	120	1,501			112		1.50	19	12	
7	186	2,280	120	1,471			96		1.47	13	3	
8	172	2,051	124	1,479	7.00	83	108		1.43	13	0	0
9	156	1,834	108	1,270			96		1.41	24	25	
10	153	1,812	120	1,421			100		1.42	0	0	
11	132	1,519	116	1,335			88		1.38	15	5	
12	120	1,291	108	1,162			84		1.29	18	30	
13	150	1,726	108	1,243			88		1.38	29	4	
14	165	1,927	148	1,728	3.90	46	116		1.40	7	0	7
15	81	932	116	1,335			80		1.38	56	0	
16	150	1,801	88	1,057			64		1.44	23	31	
17	156	1,834	86	1,011			74		1.41	17	28	
18	114	1,322	104	1,206			94		1.39	32	17	
19	99	1,082	86	940			74		1.31	45	33	
20	108	1,324	80	981	2.10	26	62		1.47	50	31	49
21	117	1,415	88	1,064			76		1.45	43	30	
22	156	1,887	90	1,088			86		1.45	17	27	
23	84	995	74	876			64		1.42	42	36	
24	126	1,492	76	900			70		1.42	30	53	
25	123	1,375	76	849			72		1.34	37	43	
26	102	1,140	76	849			70		1.34	32	46	
27	105	1,261	106	1,273			82		1.44	35	2	
28	111	1,370	80	987	2.40	30	60		1.48	26	23	35
29	117	1,425	76	925			54		1.46	35	22	
30	129	1,603	78	969			56		1.49	37	46	
31	129	1,549	94	1,129			90		1.44	16	30	
Total	4,171	49,355	3,048	35,948	19.30	232	2,522		43.84	774	651	91
Max.	186	2,296	148	1,728	7.00	83	116		1.50	56	53	49
Min.	81	932	74	849	2.10	26	54		1.29	0	0	0
Avg.	135	1,592	98	1,160	3.86	47	81		1.41	25	21	18

Robert J. Swalwell
Superintendent

JANUARY, 1992 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading fIm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day	48																
1		6.5								207			78	36	1.32	132	92
2		5.9	5.2	0.41	2,455	1,716	26.0	0.94	4.6	198	0.43	0.30	71	36	1.47	171	116
3		5.8	6.5	0.40	2,502	1,925	27.0	0.93	2.2	196	0.47	0.36	76	36	1.48	186	94
4		6.2								207			80	29	1.39	150	100
5		6.3								208			81	40	1.37	108	100
6		5.7	5.4	0.36	2,719	2,107	26.0	1.05	3.6	208	0.50	0.36	75	50	1.50	183	120
7		5.9	5.5	0.37	2,683	2,069	28.0	0.96	0.6	207	0.50	0.39	76	58	1.47	186	120
8		6.0	5.4	0.33	2,682	2,082	25.0	1.07	0.7	200	0.48	0.38	78	58	1.43	172	124
9		6.1	6.1	0.30	2,573	2,066	24.0	1.07	0.9	199	0.50	0.40	79	58	1.41	156	108
10		6.1	5.1	0.31	2,436	1,953	24.0	1.02	0.0	205	0.45	0.36	79	58	1.42	153	120
11		6.2								201			81	58	1.38	132	116
12		6.7								201			86	43	1.29	120	108
13		6.2	5.6	0.32	2,333	1,809	22.0	1.06	2.7	193	0.40	0.31	80	43	1.38	150	108
14		6.2	3.9	0.38	2,251	1,710	22.0	1.02	2.6	213	0.40	0.31	86	43	1.40	165	148
15		6.2	5.2	0.17	2,334	1,788	22.0	1.06	4.6	219	0.40	0.30	89	43	1.38	81	116
16		6.0	6.6	0.34	2,324	1,762	22.0	1.06	5.2	212	0.46	0.35	109	43	1.44	150	88
17		6.1	7.2	0.32	2,448	1,902	22.0	1.11	5.3	213	0.41	0.31	113	43	1.41	156	86
18		6.2								218			114	43	1.39	114	104
19		6.6								214			112	36	1.31	99	86
20		5.9	6.9	0.25	2,257	1,792	23.0	0.98	7.1	190	0.41	0.34	99	36	1.47	108	80
21		5.9	6.5	0.26	2,300	1,795	23.0	1.00	5.9	191	0.40	0.31	99	36	1.45	117	88
22		5.9	6.5	0.34	2,355	1,849	22.0	1.07	5.9	184	0.42	0.33	98	36	1.45	156	90
23		6.1	8.4	0.16	2,459	2,078	24.0	1.02	2.8	185	0.41	0.32	99	36	1.42	84	74
24		6.1	7.7	0.27	2,325	1,827	24.0	0.97	5.8	195	0.43	0.34	75	29	1.42	126	76
25		6.4								194			104	29	1.34	123	76
26		6.4								193			104	36	1.34	102	76
27		6.0	5.7	0.22	2,412	1,954	25.0	0.96	6.6	188	0.42	0.33	92	36	1.44	105	106
28		5.8	7.2	0.25	2,378	1,867	24.0	0.99	5.8	189	0.43	0.34	94	29	1.48	111	80
29		5.9	7.9	0.25	2,430	1,911	25.0	0.97	5.1	186	0.42	0.33	94	29	1.46	117	76
30		5.8	7.7	0.27	2,500	1,984	26.0	0.96	3.0	201	0.46	0.36	92	29	1.49	129	78
31		6.0	7.0	0.24	2,641	2,112	26.0	1.02	2.9	210	0.46	0.36	96	36	1.44	129	94
Total		189.2	139.2	6.52	53,797	42,058	532.0	22.30	83.9	6,225	9.66	7.49	2,789	1,251	43.84	4,171	3,048
Max.		6.7	8.4	0.41	2,719	2,112	28.0	1.11	7.1	219	0.50	0.40	114	58	1.50	186	148
Min.		5.7	3.9	0.16	2,251	1,710	22.0	0.93	0.0	184	0.40	0.30	71	29	1.29	81	74
Avg.		6.1	6.3	0.30	2,445	1,912	24.2	1.01	3.8	201	0.44	0.34	90	40	1.41	135	98

Robert J. Swalwell
Superintendent

JANUARY, 1992 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. BOD mgIL	F.Eff. BOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	6.4	7.3	7	77		1.32	0.00	7	77			54	94	96	
2	7.2	7.5	14	172	0.24	1.47	0.00	14	172			204	90	93	93
3	6.6	7.3	23	284		1.48	0.00	25	309			1,360	77	88	
4	7.3	7.3	19	220		1.39	0.00	19	220			600	83	88	
5	6.8	7.3	15	171		1.37	0.00	13	149			120	88	90	
6	6.3	7.3	16	200		1.50	0.00	16	200			20	88	93	
7	6.6	7.4	23	282		1.47	0.00	23	282			860	81	89	
8	6.6	7.3	23	274	1.10	1.43	0.00	18	215			10	80	91	83
9	7.7	7.3	20	235		1.41	0.00	13	153			308	86	94	
10	6.3	7.2	24	284		1.42	0.00	13	154			344	80	91	
11	5.7	7.2	21	242		1.38	0.00	13	150			2	83	92	
12	6.8	7.2	11	118		1.29	0.00	7	75			2	93	95	
13	7.4	7.3	13	150		1.38	0.00	16	184			2	88	92	
14		7.4	21	245	0.31	1.40	0.00	15	175			935	86	92	91
15	7.3	7.3	14	161		1.38	0.00	17	196			32	87	91	
16	7.8	7.1	17	204		1.44	0.00	13	156			2	87	93	
17	7.5	7.4	14	165		1.41	0.00	19	223			4	88	90	
18	8.3	7.4	19	220		1.39	0.00	10	116			25	85	94	
19	8.2	7.4	15	164		1.31	0.00	10	109			2	88	94	
20	8.5	7.5	12	147	0.31	1.47	0.00	10	123			2	90	95	92
21	7.9	7.5	14	169		1.45	0.00	13	157			2	89	94	
22	7.9	7.5	11	133		1.45	0.00	14	169			2	91	93	
23	7.8	7.4	11	130		1.42	0.00	7	83			56	91	95	
24	7.9	7.5	11	130		1.42	0.00	7	83			6	93	96	
25	7.1	7.3	13	145		1.34	0.00	8	89			20	90	96	
26	7.5	7.4	11	123		1.34	0.00	8	89			74	92	95	
27	8.0	7.5	8	96		1.44	0.00	6	72			22	93	96	
28	8.3	7.6	8	99	0.27	1.48	0.00	8	99			8	92	95	93
29	8.0	7.4	12	146		1.46	0.00	8	97			24	88	96	
30	7.0	7.3	17	211		1.49	0.00	8	99			24	88	96	
31	6.8	7.3	15	180		1.44	0.00	5	60			50	89	97	
Total	219.5	228.1	472	5,580	2.23	43.84	0.00	383	4,536			5,176	2,718	2,890	452
Max.	8.5	7.6	24	284	1.10	1.50	0.00	25	309			1,360	94	97	93
Min.	5.7	7.1	7	77	0.24	1.29	0.00	5	60			2	77	88	83
Avg.	7.3	7.4	15	180	0.45	1.41	0.00	12	146			25	88	93	90

Robert J. Swalwell
Superintendent

JANUARY, 1992 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	PH	Lbs. of Lime per lb. of Dry Solids
1	8,300	2,520	160	27	397	20	102	4,000	5.2	77	5.6	0.06
2	5,300	2,520	230	25	298	12	255	6,000	5.5	79	5.7	0.09
3	6,900	2,400	270	27	298	18	255	5,000	5.1	79	5.7	0.12
4	6,800	2,520	260	23	397	22	204	4,000	5.0	78	5.6	0.12
5	8,400	2,520	120	35	298	30	153	4,000	5.0	78	5.6	0.09
6	6,000	2,520	270	35	397	16	357	6,000	5.1	78	5.8	0.14
7	6,600	2,400	370	35	298	17	187	3,000	5.1	78	5.7	0.15
8	6,800	2,640	360	40	298	16	272	5,000	5.3	79	5.7	0.12
9	7,300	2,520	290	38	298	21	323	6,000	5.2	78	5.6	0.12
10	8,000	2,520	330	39	397	25	272	5,000	5.1	77	5.8	0.13
11	7,100	2,400	230	38	397	29	204	4,000	5.2	77	5.7	0.12
12	6,500	2,400	290	29	298	23	204	4,000	5.1	76	5.8	0.12
13	6,600	2,520	300	19	298	23	289	5,000	5.8	78	5.8	0.12
14	9,500	2,640	220	25	298	20	374	6,000	5.5	77	5.7	0.13
15	10,400	2,640	330	30	397	25	374	6,000	6.9	78	5.9	0.11
16	13,600	2,880	240	30	596	17	306	5,000	5.3	78	6.0	0.14
17	10,500	2,640	280	30	298	20	306	5,000	5.1	77	6.2	0.14
18	14,600	2,640	270	21	298	24	221	4,000	4.6	75	6.3	0.14
19	12,200	2,640	140	47	397	24	221	4,000	5.1	73	6.5	0.13
20	8,700	2,640	210	23	298	28	255	5,500	4.5	73	6.5	0.12
21	7,000	2,520	200	45	298	29	204	4,500	5.0	74	6.3	0.11
22	7,100	2,520	280	29	397	23	238	5,000	5.2	74	6.2	0.11
23	8,400	2,400	200	22	298	17	255	6,000	5.5	75	5.9	0.09
24	11,200	2,640	320	22	298	17	323	6,000	5.2	75	6.0	0.12
25	10,400	2,520	150	24	397	18	204	4,000	4.8	75	6.1	0.13
26	9,200	2,520	300	27	298	19	187	4,000	5.3	76	6.2	0.11
27	7,500	2,520	50	26	298	20	374	6,000	5.3	74	6.3	0.14
28	8,100	2,520	410	26	298	22	340	6,000	5.1	73	6.1	0.13
29	5,900	2,520	180	28	397	26	340	6,000	4.8	74	6.3	0.14
30	8,000	2,520	250	25	298	25	306	6,000	4.9	75	6.2	0.12
31	9,000	2,640	240	25	298	20	306	5,000	5.0	74	6.1	0.15
Total	261,900	78,960	7,750	915	10,526	666	8,211	155,000	160.8	2,362	184.9	3.76
Max.	14,600	2,880	410	47	596	30	374	6,000	6.9	79	6.5	0.15
Min.	5,300	2,400	50	19	298	12	102	3,000	4.5	73	5.6	0.06
Avg.	8,448	2,547	250	30	340	21	265	5,000	5.2	76	6.0	0.12

Manpower & Hours

	Total Hr
Superintendent	1
Asst. Supt.	1
Operators	2
Total	

Robert J. Swalwell
Superintendent

FEBRUARY, 1992 - PLANT INFLUENT SHEET - SAMPLING CODE 500

PN-Day	Weather: Type	Weather: Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	Remarks or Other Parameters
1			1.41	51	7.7	165	1,940	212	2,493			172		
2			1.33	52	7.6			110	1,220			80		
3			1.44	52	7.8			156	1,873			138		
4			1.41	52	8.0	216	2,540	132	1,552			120		
5			1.40	52	7.9	213	2,487	190	2,218	5.35	62	170		
6			1.47	52	7.7	240	2,942	196	2,403			174		
7	Snow	0.03	1.41	52	7.6	195	2,293	124	1,458			120		
8			1.29	52	7.7	179	1,926	96	1,033			78		
9			1.31	48	7.6	182	1,988	128	1,398			110		
10	Rain	0.02	1.44	50	7.6	234	2,810	126	1,513			104		
11			1.42	51	7.7	162	1,919	112	1,326			88		
12			1.38	49	7.0	222	2,555	176	2,026	3.20	37	160		
13	Rain	0.02	1.43	50	7.5	204	2,433	116	1,383			102		
14	Rain	0.31	1.43	50	7.7	210	2,505	146	1,741			142		
15	Rain	0.20	1.30	49	8.0	174	1,887	110	1,193			100		
16			1.31	49	8.0	162	1,770	94	1,027			90		
17	Rain	0.07	1.45	50	7.6	176	2,128	100	1,209			96		
18	Rain	0.03	1.47	50	7.8	228	2,795	152	1,863	3.50	43	138		
19	Rain	0.03	1.37	50	7.7	200	2,285	114	1,303			92		
20			1.44	50	7.6	171	2,054	116	1,393			100		
21	Rain	0.01	1.38	51	7.9	192	2,210	162	1,864			148		
22	Rain	0.03	1.30	50	7.7	231	2,505	136	1,475			122		
23			1.34	50	7.6	167	1,866	114	1,274			106		
24	Rain	0.10	1.39	50	7.7	165	1,913	164	1,901	3.30	38	138		
25			1.36	51	7.4	180	2,042	124	1,406			96		
26			1.38	51	7.1	198	2,279	120	1,381			98		
27			1.48	51	7.6	222	2,740	166	2,049			138		
28			1.36	50	7.7	170	1,928	124	1,406			90		
29			1.33	48	7.7	144	1,597	100	1,109			80		
30														
31														
Total	0	0.85	40.23	1,463	222.2	5,202	60,337	3,916	45,494	15.35	180	3,390		
Max.	0	0.31	1.48	52	8.0	240	2,942	212	2,493	5.35	62	174		
Min.	0	0.01	1.29	48	7.0	144	1,597	94	1,027	3.20	37	78		
Avg.	0	0.08	1.39	50	7.7	193	2,235	135	1,569	3.84	45	117		

Robert J. Swalwell
Superintendent

[illegible], MICHIGAN WASTEWATER TREATMENT PLANT
FEBRUARY, 1992 - PRIMARY EFFLUENT SHEET

PN- Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	123	1,446	92	1,082			72		1.41	25	57	
2			86	954			68		1.33		22	
3			108	1,297			98		1.44		31	
4	153	1,799	96	1,129			84		1.41	29	27	
5	117	1,366	94	1,098	2.75	32	80		1.40	47	51	49
6	147	1,802	104	1,275			90		1.47	39	47	
7	138	1,623	102	1,199			100		1.41	29	79	
8	135	1,452	82	882			56		1.29	25	15	
9	147	1,606	106	1,158			90		1.31	19	17	
10	147	1,765	76	913			70		1.44	37	40	
11	129	1,528	92	1,090	2.30	27	70		1.42	20	18	28
12	117	1,347	80	921			70		1.38	47	55	
13	126	1,503	88	1,050			82		1.43	38	24	
14	144	1,717	80	954			76		1.43	31	45	
15	108	1,171	70	759			62		1.30	38	36	
16	105	1,147	66	721			62		1.31	35	30	
17	123	1,487	62	750			56		1.45	30	38	
18	171	2,096	92	1,128	2.30	28	84		1.47	25	39	34
19	123	1,405	82	937			68		1.37	39	28	
20	129	1,549	82	985			92		1.44	25	29	
21	126	1,450	82	944			70		1.38	34	49	
22	72	781	46	499			36		1.30	69	66	
23	117	1,308	82	916			64		1.34	30	28	
24	117	1,356	96	1,113	2.20	26	84		1.39	29	41	33
25	54	612	84	953			66		1.36	70	32	
26	114	1,312	86	990			70		1.38	42	28	
27	144	1,777	82	1,012			72		1.48	35	51	
28	123	1,395	104	1,180			74		1.36	28	16	
29	108	1,198	94	1,043			86		1.33	25	6	
30												
31												
Total	3,357	39,001	2,496	28,929	9.55	113	2,152		40.23	940	1,045	144
Max.	171	2,096	108	1,297	2.75	32	100		1.48	70	79	49
Min.	54	612	46	499	2.20	26	36		1.29	19	6	28
Avg.	124	1,444	86	998	2.39	28	74		1.39	35	36	36

Robert J. Swalwell
Superintendent

FEBRUARY, 1992 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading fIm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	6.1								190			98	36	1.41	123	92
2		6.5								185			102	36	1.33		86
3		6.0	5.8		2,501	1,981	25.0	1.00	5.9	178	0.49	0.39	94	36	1.44		108
4		6.1	6.9	0.29	2,584	2,074	25.0	1.03	1.5	182	0.47	0.38	95	36	1.41	153	96
5		6.2	7.1	0.22	2,597	2,059	25.0	1.04	2.2	196	0.48	0.38	95	36	1.40	117	94
6		5.9	5.8	0.31	2,459	1,944	25.0	0.98	1.2	189	0.43	0.35	91	36	1.47	147	104
7		6.1	6.2	0.27	2,476	1,981	23.0	1.08	2.5	195	0.47	0.38	94	36	1.41	138	102
8		6.7								205			103	36	1.29	135	82
9		6.6								207			101	36	1.31	147	106
10		6.0	7.5	0.32	2,283	1,852	23.0	0.99	4.1	194	0.41	0.34	92	29	1.44	147	76
11		6.1	6.5	0.26	2,360	1,952	23.0	1.03	4.0	210	0.45	0.36	93	29	1.42	129	92
12		6.2	7.7	0.25	2,367	1,819	23.0	1.03	4.9	206	0.44	0.35	96	29	1.38	117	80
13		6.0	6.8	0.27	2,372	1,881	24.0	0.99	4.6	197	0.47	0.38	92	29	1.43	126	88
14		6.0	7.7	0.30	2,448	1,940	26.0	0.94	2.9	194	0.45	0.36	98	29	1.43	144	80
15		6.6								194			108	29	1.30	108	70
16		6.6								200			107	29	1.31	105	66
17		5.9								200			92	29	1.45	123	62
18		5.9	7.0	0.33	2,645	2,116	26.0	1.02	2.6	191	0.49	0.39	102	29	1.47	171	92
19		6.3	8.5	0.22	2,652	2,113	28.0	0.95	0.5	195	0.50	0.40	106	29	1.37	123	82
20		6.0	8.1	0.24	2,648	2,113	28.0	0.95	2.4	196	0.48	0.38	97	29	1.44	129	82
21		6.2	8.4	0.23	2,645	2,138	28.0	0.94	4.3	199	0.45	0.35	102	29	1.38	126	82
22		6.6								195			108	29	1.30	72	46
23		6.4								195			104	29	1.34	117	82
24		6.2	6.9	0.23	2,551	2,013	27.0	0.94	5.3	199	0.48	0.38	101	29	1.39	117	96
25		6.3	8.1	0.10	2,591	2,048	28.0	0.93	3.6	199	0.44	0.34	101	29	1.36	54	84
26		6.2	7.9	0.21	2,597	2,058	28.0	0.93	3.9	206	0.47	0.36	101	29	1.38	114	86
27		5.8	7.8	0.28	2,649	2,089	29.0	0.91	2.8	202	0.44	0.34	97	36	1.48	144	82
28		6.3	7.0	0.21	2,748	2,228	29.0	0.95	2.4	218	0.51	0.40	106	43	1.36	123	104
29		6.5								223			107	43	1.33		94
30																	
31																	
Total	48	180.4	137.4	4.54	48,173	38,399	493.0	18.62	61.6	5,741	8.82	7.01	2,883	939	40.23	3,249	2,496
Max.	48	6.7	8.5	0.33	2,748	2,228	29.0	1.08	5.9	223	0.51	0.40	108	43	1.48	171	108
Min.	48	5.8	5.8	0.10	2,283	1,819	23.0	0.91	0.5	178	0.41	0.34	91	29	1.29	54	46
Avg.	48	6.2	7.2	0.25	2,535	2,021	25.9	0.98	3.2	198	0.46	0.37	99	32	1.39	125	86

Robert J. Swalwell
Superintendent

FEBRUARY, 1992 - Discharge Monitoring REPORT - DISCHARGE NO. 001A

	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. BOD mgIL	F.Eff. BOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	F. Eff. Mercury mgIL	SS Rem. %	BOD Rem. %	Total-P Rem. %
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616		^81011	^91267	^81012
Day																
1	7.0	7.5	15	176		1.41	0.00	6	71			52		93	96	
2	6.9	7.4	10	111		1.33	0.00					2		91		
3	9.3	7.5	16	192		1.44	0.00					20		90		
4	6.7	7.4	13	153		1.41	0.00	8	94			134		90	96	
5	6.6	7.4	8	93	0.25	1.40	0.00	6	70			220		96	97	95
6	7.2	7.4	15	184		1.47	0.00	8	98			38		92	97	
7	6.5	7.4	14	165		1.41	0.00	10	118			40		97	95	
8	6.2	7.3	4	43		1.29	0.00	8	86			14		96	96	
9	7.4	7.4	12	131		1.31	0.00	7	76			42		91	96	
10	8.2	7.4	9	108		1.44	0.00	10	120			10		93	96	
11	7.4	7.5	9	107	0.30	1.42	0.00	8	95			2		92	95	91
12	8.0	7.2	10	115		1.38	0.00	8	92			2	<.0005	94	96	
13	7.7	7.4	14	167		1.43	0.00	7	83			2		88	97	
14	7.3	7.4	10	119		1.43	0.00	7	83			2		93	97	
15	7.3	7.4	5	54		1.30	0.00	4	43			20		95	98	
16	8.0	7.5	2	22		1.31	0.00	4	44			2		98	98	
17	7.9	7.4	4	48		1.45	0.00	7	85			2		96	96	
18	7.3	7.4	14	172	0.18	1.47	0.00	12	147			4	<.0005	91	95	91
19	6.6	7.3	10	114		1.37	0.00	10	114			120		91	95	
20	7.5	7.4	9	108		1.44	0.00	7	84			2		92	96	
21	7.9	7.4	9	104		1.38	0.00	5	58			2	<.0005	94	97	
22	7.1	7.4	5	54		1.30	0.00	3	33			10		96	99	
23	7.1	7.3	9	101		1.34	0.00	8	89			78		92	95	
24	8.1	7.5	13	151	0.19	1.39	0.00	8	93			4	<.0005	92	95	94
25	7.0	7.4	8	91		1.36	0.00	8	91			21		94	96	
26	7.1	7.8	8	92		1.38	0.00	7	81			26		93	96	
27	7.2	7.3	4	49		1.48	0.00	8	99			21		98	96	
28	6.5	7.5	17	193		1.36	0.00	7	79			30		86	96	
29	7.7	7.4	9	100		1.33	0.00	6	67			23		91	96	
30																
31																
Total	212.7	215.0	285	3,317	0.92	40.23	0.00	197	2,292			945		2,695	2,598	371
Max.	9.3	7.8	17	193	0.30	1.48	0.00	12	147			220	<.0005	98	99	95
Min.	6.2	7.2	2	22	0.18	1.29	0.00	3	33			2	<.0005	86	95	91
Avg.	7.3	7.4	10	114	0.23	1.39	0.00	7	85			G 12	<.0005	93	96	93

G - geometric mean

Robert J. Swalwell
Superintendent

FEBRUARY, 1992 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	PH	Lbs. of Lime per lb. of Dry Solids
1	7,900	2,520	170	25	397	21	204	4,000	4.4	74	6.2	0.14
2	8,000	2,520	170	33	298	22	204	4,000	4.7	74	6.2	0.13
3	6,300	2,400	140	27	397	22						
4	8,000	2,520	190	24	298	23	68	1,200	5.4	75	6.0	0.12
5	7,600	2,520	300	22	397	29	306	6,000	5.4	74	5.8	0.11
6	6,900	2,520	190	27	298	18	612	6,000	5.1	75	6.1	0.24
7	7,900	2,520	240	25	397	20	391	10,000	4.9	75	6.0	0.09
8	10,400	2,640	130	27	298	22	221	4,000	4.7	74	6.1	0.14
9	9,700	2,520	250	31	298	22	221	4,000	4.1	75	6.2	0.16
10	7,200	2,520	230	29	298	26	340	6,000	4.9	74	6.2	0.14
11	9,700	2,760	310	30	298	28	714	12,000	4.7	74	6.3	0.15
12	7,800	2,640	210	35	298	14	476	8,500	4.6	75	6.3	0.14
13	10,000	2,520	190	31	298	24	374	6,000	4.6	75	6.3	0.16
14	6,800	2,520	390	26	397	22	340	6,000	4.7	76	6.4	0.14
15	6,700	2,400	130	24	298	24	204	4,000	4.5	75	6.3	0.13
16	7,000	2,520	150	29	298	28	221	4,000	9.8	89	6.5	0.07
17	6,800	2,520	200	31	397	28	187	4,000	4.5	75	6.5	0.12
18	5,900	2,400	310	31	298	29	357	6,000	4.9	75	6.5	0.14
19	6,400	2,520	230	38	397	23	306	6,000	4.8	75	6.3	0.13
20	6,000	2,520	220	28	298	26	272	6,000	4.6	75	6.1	0.12
21	5,800	2,640	300	27	397	21	153	5,000	4.6	73	6.4	0.08
22	4,400	2,520	160	28	298	19	221	4,000	4.6	74	6.4	0.14
23	5,300	2,520	190	27	298	20	221	4,000	4.2	73	6.4	0.16
24	5,100	2,520	300	27	298	19	323	6,000	4.6	74	6.4	0.14
25	6,500	2,520	210	31	397	23	340	6,000	4.8	74	6.2	0.14
26	6,300	2,640	280	15	298	14	391	6,000	4.7	74	6.5	0.17
27	5,400	2,400	220	24	298	17	323	6,000	5.0	76	6.2	0.13
28	7,500	2,640	310	26	397	18	374	6,000	4.7	75	6.3	0.16
29	7,400	2,640	270	24	298	18	204	4,000	4.5	74	6.4	0.13
30												
31												
Total	206,700	73,560	6,590	802	9,632	640	8,568	154,700	137.0	2,101	175.5	3.83
Max.	10,400	2,760	390	38	397	29	714	12,000	9.8	89	6.5	0.24
Min.	4,400	2,400	130	15	298	14	68	1,200	4.1	73	5.8	0.07
Avg.	7,128	2,537	227	28	332	22	306	5,525	4.9	75	6.3	0.14

Manpower & Hours

	Total Hr
Superintendent 1	
Asst. Supt. 1	
Operators 2	
Total	

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MARCH, 1992 - PLANT INFLUENT SHEET

	----Weather-----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1			1.34	48	7.7	147	1,643	114	1,274			98		
2			1.38	51	8.2	240	2,762	106	1,220			88		
3			1.42	50	8.1	186	2,203	120	1,421			100		
4	Rain	0.02	1.43	51		174	2,075	112	1,336	4.60	55	100		
5	Rain	0.22	1.43	50	7.4	153	1,825	116	1,383			106		
6	Rain	0.05	1.45	50	8.2	240	2,902	148	1,790			118		
7			1.28	49	7.7	192	2,050	118	1,260			96		
8			1.36	49	7.6	186	2,110	146	1,656			128		
9	Rain	0.96	1.39	50	7.6	204	2,365	122	1,414			108		
10	Snow	0.11	1.33	49	7.5	147	1,631	128	1,420			120		
11			1.34	50	7.5	132	1,475	110	1,229			82		
12			1.37	50	7.6	185	2,114	116	1,325	3.30	38	98		
13			1.34	49	7.7	156	1,743	124	1,386			88		
14	Snow	0.02	1.33	48	7.7	135	1,497	126	1,398			96		
15			1.32	48	7.5	168	1,849	118	1,299			98		
16	Rain	0.12	1.42	50	7.3	168	1,990	154	1,824			138		
17			1.40	49	7.4	234	2,732	154	1,798	4.30	50	150		
18			1.42	50	7.4	192	2,274	120	1,421			104		
19			1.43	50	7.6	180	2,147	104	1,240			94		
20	Snow	0.03	1.40	50	7.4	222	2,592	156	1,821			126		
21	Snow	0.64	1.36	48	7.3	218	2,473	122	1,384			104		
22			1.34	49		171	1,911	134	1,498			106		
23			1.44	49	7.5	162	1,946	146	1,753	3.20	38	124		
24			1.52	49	7.8	192	2,434	144	1,825			108		
25	Rain	0.06	1.58	50	7.8	228	3,004	152	2,003			140		
26	Rain	0.12	1.45	50	7.7	222	2,685	164	1,983			142		
27			1.50	50	7.8	198	2,477	136	1,701			112		
28			1.47	50	7.7	174	2,133	116	1,422			96		
29	Snow	0.15	1.38	49	7.4	141	1,623	84	967			72		
30			1.50	50	7.9	180	2,252	150	1,877	2.70	34	106		
31			1.47	50	7.6	270	3,310	129	1,582			120		
Total		2.50	43.59	1,535	221.6	5,797	68,226	3,989	46,910	18.10	215	3,366		
Max.		0.96	1.58	51	8.2	270	3,310	164	2,003	4.60	55	150		
Min.		0.02	1.28	48	7.3	132	1,475	84	967	2.70	34	72		
Avg.		0.21	1.41	50	7.6	187	2,201	129	1,513	3.62	43	109		

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MARCH, 1992 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	96	1,073	80	894			70		1.34	35	30	
2	135	1,554	70	806			58		1.38	44	34	
3	144	1,705	52	616			42		1.42	23	57	
4	144	1,717	60	716	2.20	26	54		1.43	17	46	52
5	105	1,252	64	763			62		1.43	31	45	
6	132	1,596	52	629			40		1.45	45	65	
7	109	1,164	63	673			60		1.28	43	47	
8	102	1,157	66	749			58		1.36	45	55	
9	129	1,495	62	719			58		1.39	37	49	
10	99	1,098	60	666			52		1.33	39	53	
11	87	972	50	559			40		1.34	34	55	
12	99	1,131	66	754	1.80	21	54		1.37	46	43	45
13	102	1,140	60	671			48		1.34	35	52	
14	102	1,131	62	688			48		1.33	24	51	
15	108	1,189	54	594			38		1.32	36	54	
16	105	1,243	60	711			58		1.42	38	61	
17	129	1,506	56	654	2.30	27	48		1.40	45	64	47
18	93	1,101	46	545			38		1.42	52	62	
19	117	1,395	60	716			56		1.43	35	42	
20	111	1,296	58	677			48		1.40	50	63	
21	114	1,293	36	408			28		1.36	48	70	
22	105	1,173	50	559			46		1.34	39	63	
23	99	1,189	62	745	1.30	16	54		1.44	39	58	59
24	96	1,217	48	608			42		1.52	50	67	
25	99	1,305	54	712			58		1.58	57	64	
26	111	1,342	60	726			52		1.45	50	63	
27	117	1,464	54	676			44		1.50	41	60	
28	105	1,287	58	711			46		1.47	40	50	
29	84	967	44	506			40		1.38	40	48	
30	108	1,351	76	951	1.30	16	52		1.50	40	49	52
31	87	1,067	58	711			44		1.47	68	55	
Total	3,373	39,573	1,801	21,108	8.90	106	1,536		43.59	1,266	1,675	255
Max.	144	1,717	80	951	2.30	27	70		1.58	68	70	59
Min.	84	967	36	408	1.30	16	28		1.28	17	30	45
Avg.	109	1,277	58	681	1.78	21	50		1.41	41	54	51

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MARCH, 1992 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading fIm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	6.4								214			105	43	1.34	96	80
2		6.2	8.7	0.27	2,336	1,900	24.0	0.97	5.4	217	0.43	0.34	102	43	1.38	135	70
3		6.1	11.3	0.33	2,320	1,727	24.0	0.97	2.5	218	0.43	0.34	99	43	1.42	144	52
4		6.0	9.5	0.32	2,261	1,794	21.0	1.08	2.6	211	0.39	0.31	101	43	1.43	144	60
5		6.0	8.6	0.24	2,205	1,770	22.0	1.00	4.5	211	0.41	0.33	101	43	1.43	105	64
6		5.9	10.2	0.31	2,140	1,713	21.0	1.02	4.6	208	0.36	0.29	99	36	1.45	132	52
7		6.7								209			112	29	1.28	109	63
8		6.3								212			106	22	1.36	102	66
9		6.2	9.1	0.29	2,191	1,741	22.0	1.00	5.8	207	0.38	0.30	104	22	1.39	129	62
10		6.5	9.9	0.22	2,195	1,697	24.0	0.91	4.4	226	0.41	0.31	108	22	1.33	99	60
11		6.4	11.8	0.19	2,200	1,684	24.0	0.92	6.7	228	0.40	0.31	107	22	1.34	87	50
12		6.3	8.7	0.22	2,183	1,681	23.0	0.95	6.7	229	0.38	0.29	105	22	1.37	99	66
13		6.4	9.9	0.22	2,226	1,698	23.0	0.97	6.6	227	0.38	0.29	107	22	1.34	102	60
14		6.5								228			108	22	1.33	102	62
15		6.5								230			108	22	1.32	108	54
16		6.1	9.5	0.25	2,249	1,657	25.0	0.90	6.2	219	0.42	0.31	100	22	1.42	105	60
17		6.2	11.1	0.27	2,430	1,854	27.0	0.90	4.4	221	0.41	0.31	101	22	1.40	129	56
18		6.1	13.6	0.20	2,470	1,835	28.0	0.88	3.8	222	0.41	0.32	100	22	1.42	93	46
19		6.0	10.4	0.25	2,475	1,870	28.0	0.88	5.9	222	0.41	0.31	99	22	1.43	117	60
20		6.2	11.2	0.23	2,533	1,878	30.0	0.84	3.9	223	0.44	0.32	101	29	1.40	111	58
21		6.3								206			106	29	1.36	114	36
22		6.4								232			108	29	1.34	105	50
23		6.0	9.5	0.23	2,360	1,752	31.0	0.76	5.3	238	0.38	0.28	100	29	1.44	99	62
24		5.7	11.4	0.22	2,321	1,822	32.0	0.73	5.5	201	0.40	0.27	99	29	1.52	96	48
25		5.5	9.7	0.26	2,305	1,692	33.0	0.70	4.7	206	0.39	0.29	95	29	1.58	99	54
26		5.9	10.0	0.25	2,426	1,806	37.0	0.66	3.5	209	0.42	0.32	105	29	1.45	111	60
27		5.7	10.3	0.28	2,334	1,750	37.0	0.63	5.2	214	0.37	0.28	101	29	1.50	117	54
28		5.9								215			103	29	1.47	105	58
29		6.2								213			110	29	1.38	84	44
30		5.7	7.0	0.27	2,208	1,685	37.0	0.60	5.0	210	0.36	0.28	101	29	1.50	108	76
31		5.9	9.5	0.21	2,261	1,696	40.0	0.57	4.2	207	0.38	0.29	103	29	1.47	87	58
Total		190.4	220.8	5.53	50,629	38,702	613.0	18.83	107.4	6,733	8.76	6.69	3,204	892	43.59	3,373	1,801
Max.		6.7	13.6	0.33	2,533	1,900	40.0	1.08	6.7	238	0.44	0.34	112	43	1.58	144	80
Min.		5.5	7.0	0.19	2,140	1,657	21.0	0.57	2.5	201	0.36	0.27	95	22	1.28	84	36
Avg.		6.1	10.0	0.25	2,301	1,759	27.9	0.86	4.9	217	0.40	0.30	103	29	1.41	109	58

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540
MARCH, 1992 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. BOD mgIL	F.Eff. BOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%	
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	7.5	7.5	9	101		1.34	0.00	5	56			2	92	97	
2	7.8	7.5	5	58		1.38	0.00	7	81			6	95	97	
3	7.1	7.4	3	36		1.42	0.00	9	107			11	98	97	
4			6	72	0.22	1.43	0.00	10	119			2	95	97	95
5	7.6	7.7	5	60		1.43	0.00	6	72			2	96	96	
6	7.7	7.4	34	411		1.45	0.00	10	121			5	77	96	
7	7.5	7.4	4	43		1.28	0.00	6	64			4	97	97	
8	7.0	7.4	8	91		1.36	0.00	7	79			3	95	96	
9	7.6	7.4	9	104		1.39	0.00	8	93			2	93	96	
10	8.2	7.5	12	133		1.33	0.00	7	78			2	91	95	
11	8.7	7.3	11	123		1.34	0.00	6	67			2	90	95	
12	8.4	7.3	14	160	0.22	1.37	0.00	8	91			2	88	96	93
13	7.1	7.3	22	246		1.34	0.00	13	145			67	82	92	
14	8.1	7.7	9	100		1.33	0.00	7	78			39	93	95	
15	8.1	7.7	6	66		1.32	0.00	6	66			7	95	96	
16	8.4	7.6	8	95		1.42	0.00	7	83			2	95	96	
17	7.8	7.3	6	70	0.29	1.40	0.00	5	58			3	96	98	93
18	7.6	7.3	2	24		1.42	0.00	5	59			2	98	97	
19	7.8	7.2	11	131		1.43	0.00	5	60			2	89	97	
20		7.2	10	117		1.40	0.00	4	47			2	94	98	
21	7.9	7.2	4	45		1.36	0.00	4	45			6	97	98	
22	7.2	7.3	11	123		1.34	0.00	5	56			10	92	97	
23	8.3	7.2	15	180	0.22	1.44	0.00	5	60			2	90	97	93
24	7.9	7.5	7	89		1.52	0.00	6	76			3	95	97	
25	7.7	7.5	8	105		1.58	0.00	6	79			2	95	97	
26	7.1	7.5	8	97		1.45	0.00	6	73			5	95	97	
27	8.0	7.5	14	175		1.50	0.00	9	113			8	90	95	
28	8.4	7.5	12	147		1.47	0.00	5	61			5	90	97	
29	7.5	7.2	5	58		1.38	0.00	5	58			6	94	96	
30	7.9	7.5	18	225	0.29	1.50	0.00	6	75			7	88	97	89
31	7.3	7.5	7	86		1.47	0.00	4	49			28	95	99	
Total	225.2	222.5	303	3,568	1.24	43.59	0.00	202	2,367			249	2,870	2,991	463
Max.	8.7	7.7	34	411	0.29	1.58	0.00	13	145			67	98	99	95
Min.	7.0	7.2	2	24	0.22	1.28	0.00	4	45			2	77	92	89
Avg.	7.8	7.4	10	115	0.25	1.41	0.00	7	76			4	93	96	93

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MARCH, 1992 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	PH	Lbs. of Lime per lb. of Dry Solids
1	3,900	2,520	230	27	298	19	204	4,000	4.3	75	6.3	0.14
2	4,500	2,520	250	29	397	20	34	6,000	4.7	75	6.4	0.01
3	4,400	2,640	130	24	397	21	204	6,000	4.8	74	6.3	0.08
4	3,900	2,400	590	28	298	25	136	6,000	4.7	74	6.4	0.06
5	600	2,280	330	20	397	10	357	6,000	5.0	74	6.5	0.14
6	700	2,400	430	26	397	17	204	6,000	4.6	74	6.2	0.09
7	100	2,400	130	27	298	18	170	4,000	4.5	73	6.4	0.11
8	500	2,520	160	21	298	19	187	4,000	4.6	73	6.5	0.12
9	4,900	2,400	180	18	298	20	306	6,000	4.8	73	6.5	0.13
10	9,300	2,640	220	26	397	23	204	3,000	4.8	73	6.3	0.17
11	10,100	2,760	300	25	397	15	306	8,000	4.5	73	6.3	0.10
12	10,400	2,640	160	24	298	18	391	6,000	4.5	73	6.3	0.17
13	9,800	2,640	300	25	298	12	391	6,000	4.4	73	6.3	0.18
14	10,000	2,640	250	36	397	13	238	4,000	4.0	73	6.3	0.18
15	9,500	2,640	190	24	298	17	221	4,000	4.0	73	6.4	0.16
16	7,000	2,760	250	25	397	13	357	6,000	4.1	73	6.3	0.17
17	6,500	2,520	220	23	298	13	408	6,000	4.4	73	6.4	0.18
18	7,900	2,640	250	24	397	12	408	6,000	4.8	71	6.3	0.17
19	7,400	2,640	170	22	298	14	357	5,000	4.2	73	6.3	0.20
20	8,100	2,640	180	14	298	11	323	6,000	4.9	73	6.2	0.13
21	8,200	2,640	130	15	397	5	238	4,000	4.4	72	6.3	0.16
22	8,700	2,640	110	13	298	8	187	3,000	4.2	72	6.4	0.18
23	8,000	2,640	150	15	298	7	357	5,500	4.3	71	6.3	0.18
24	3,700	2,400	80	17	397	5	357	5,500	4.3	73	6.4	0.18
25	5,300	2,520	200	15	298	5	374	6,000	3.9	68	6.3	0.19
26	4,100	2,520	210	15	397	8	340	6,000	5.0	73	6.1	0.13
27	8,200	2,640	160	17	298	12	408	5,000	4.8	74	6.2	0.20
28	4,100	2,640	40	17	298	7	221	4,000	4.2	74	6.1	0.16
29	5,700	2,520	40	16	397	8	221	4,000	4.3	72	6.1	0.15
30	5,500	2,640	340	20	298	8	374	6,000	4.9	72	5.9	0.15
31	6,000	2,520	120	14	397	8	340	6,000	4.5	73	6.1	0.15
Total	187,000	79,560	6,500	662	10,624	411	8,823	163,000	139.4	2,260	195.1	4.54
Max.	10,400	2,760	590	36	397	25	408	8,000	5.0	75	6.5	0.20
Min.	100	2,280	40	13	298	5	34	3,000	3.9	68	5.9	0.01
Avg.	6,032	2,566	210	21	343	13	285	5,258	4.5	73	6.3	0.15

Manpower & Hours

	Total Hr
Superintendent 1	
Asst. Supt. 1	
Operators 2	
Total	

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
APRIL, 1992 - PLANT INFLUENT SHEET

	----Weather-----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1			1.43	50	8.0	222	2,648	130	1,550			108	11.9	
2			1.44	50	7.8	168	2,018	120	1,441			102	12.1	
3			1.37	50	7.6	180	2,057	106	1,211	3.40	39	92	12.6	
4			1.42	49	7.8	198	2,345	128	1,516			100	11.2	
5			1.35	48	7.6	138	1,554	120	1,351			100	10.2	
6			1.42	49	7.7	186	2,203	148	1,753			128	11.6	
7	Rain	0.07	1.40	49	7.7	186	2,172	136	1,588			136	12.1	
8			1.46	51	7.8	180	2,192	118	1,437	4.20	51	98	11.3	
9			1.40	50	7.6	180	2,102	116	1,354			102	11.4	
10	Rain	0.17	1.36	50	7.9	216	2,450	146	1,656			146	12.2	
11	Rain	0.03	1.31	50	7.6	156	1,704	124	1,355			106	11.0	
12			1.32	49	7.7	99	1,090	76	837			48	17.1	
13			1.49	50	7.3	196	2,436	140	1,740			116	15.2	
14			1.47	50	7.7	132	1,618	142	1,741			110	14.0	
15	Rain	0.21	1.48	51	7.6	192	2,370	136	1,679	6.00	74	114	12.6	
16	Rain	0.15	1.50	52	7.6	156	1,952	132	1,651			110	12.1	
17	Rain	0.04	1.38	51	7.7	216	2,486	152	1,749			116	13.8	
18			1.38	51	7.7	192	2,210	110	1,266			96	14.7	
19	Rain	0.22	1.40	50	7.8	122	1,424	102	1,191			88	12.5	
20	Rain	0.06	1.55	52	7.6	204	2,637	130	1,681			106	11.9	
21	Rain	0.22	1.53	52	7.5	159	2,029	158	2,016	3.50	45	148	11.9	
22	Rain	0.06	1.47	52	7.6	150	1,839	126	1,545			124	12.6	
23	Rain	0.70	1.55	52	7.5	153	1,978	118	1,525			108	12.1	
24	Rain	0.33	1.57	52	7.8	180	2,357	140	1,833			120	12.9	
25	Rain	0.10	1.55	50	7.5	173	2,236	126	1,629			100	11.4	
26	Rain	0.08	1.46	50	7.7	128	1,559	102	1,242			90	12.3	
27			1.65	52	7.5	143	1,968	104	1,431	3.00	41	92	12.4	
28			1.57	52	7.5	152	1,990	82	1,074			74	12.5	
29	Rain	0.28	1.53	52	7.5	144	1,837	128	1,633			116	13.3	
30	Rain	0.03	1.65	53	7.5	120	1,651	110	1,514			100	11.6	
31														
Total		2.75	43.86	1,519	229.4	5,021	61,110	3,706	45,188	20.10	250	3,194	374.5	
Max.		0.70	1.65	53	8.0	222	2,648	158	2,016	6.00	74	148	17.1	
Min.		0.03	1.31	48	7.3	99	1,090	76	837	3.00	39	48	10.2	
Avg.		0.17	1.46	51	7.6	167	2,037	124	1,506	4.02	50	106	12.5	

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
APRIL, 1992 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	84	1,002	66	787			54	14.4	1.43	62	49	
2	102	1,225	56	673			50	13.4	1.44	39	53	
3	108	1,234	56	640	2.00	23	52	13.1	1.37	40	47	41
4	111	1,315	70	829			52	11.2	1.42	44	45	
5	90	1,013	58	653			50	11.0	1.35	35	52	
6	114	1,350	66	782			62	12.5	1.42	39	55	
7	108	1,261	78	911			62	13.3	1.40	42	42	
8	135	1,644	112	1,364	3.10	38	96	13.0	1.46	25	5	26
9	126	1,471	62	724			50	11.3	1.40	30	47	
10	120	1,361	58	658			70	16.1	1.36	44	60	
11	96	1,049	76	830			72	13.8	1.31	38	39	
12	105	1,156	80	881			60	15.2	1.32	-6	-5	
13	123	1,528	94	1,168			76	15.5	1.49	37	33	
14	108	1,324	80	981			62	16.9	1.47	18	44	
15	132	1,629	80	987	2.00	25	70	16.1	1.48	31	41	67
16	147	1,839	108	1,351			102	17.0	1.50	6	18	
17	135	1,554	84	967			74	18.0	1.38	38	45	
18	120	1,381	96	1,105			78	17.2	1.38	38	13	
19	99	1,156	82	957			72	18.4	1.40	19	20	
20	156	2,017	100	1,293			86	16.9	1.55	24	23	
21	105	1,340	96	1,225	2.50	32	92	15.7	1.53	34	239	29
22	108	1,324	96	1,177			86	14.6	1.47	28	24	
23	114	1,474	104	1,344			100	13.9	1.55	25	12	
24	75	982	82	1,074			72	14.1	1.57	58	41	
25	112	1,448	85	1,099			75		1.55			
26	102	1,242	106	1,291			94	13.3	1.46	20	-4	
27	114	1,569	108	1,486			100	12.6	1.65	20	-4	7
28	105	1,375	68	890	2.80	37	60	17.0	1.57	31	17	
29	87	1,110	126	1,608			110	21.5	1.53	40	2	
30	120	1,651	128	1,761			120	16.2	1.65	0	-16	
31												
Total	3,361	41,023	2,561	31,495	12.40	154	2,259	433.2	43.86	899	1,037	170
Max.	156	2,017	128	1,761	3.10	38	120	21.5	1.65	62	239	67
Min.	75	982	56	640	2.00	23	50	11.0	1.31	-6	-16	7
Avg.	112	1,367	85	1,050	2.48	31	75	14.9	1.46	31	36	34

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
APRIL, 1992 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading fIm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	6.0	8.6	0.20	2,249	1,672	40.0	0.56	5.7	216	0.36	0.27	106	29	1.43	84	66
2		6.0	10.1	0.24	2,275	1,707	40.0	0.57	4.0	214	0.38	0.28	104	29	1.44	102	56
3		6.3	11.0	0.23	2,349	1,775	43.0	0.55	4.3	198	0.35	0.26	109	29	1.37	108	56
4		6.1								211			106	29	1.42	111	70
5		6.4								213			113	29	1.35	90	58
6		6.1	9.0	0.25	2,358	1,779	40.0	0.59	3.9	201	0.37	0.28	106	29	1.42	114	66
7		6.2	8.3	0.22	2,510	1,875	39.0	0.64	3.3	209	0.39	0.29	108	29	1.40	108	78
8		5.9	5.4	0.29	2,477	1,862	36.0	0.69	3.3	181	0.37	0.28	104	29	1.46	135	112
9		6.2	10.7	0.24	2,584	2,027	38.0	0.68	2.8	166	0.42	0.33	105	36	1.40	126	62
10		6.3	11.7	0.23	2,569	1,959	40.0	0.64	2.8	209	0.39	0.30	111	36	1.36	120	58
11		6.6								216			115	43	1.31	96	76
12		6.5								226			111	43	1.32	105	80
13		5.8	6.2	0.27	2,414	1,897	33.0	0.73	5.2	222	0.39	0.31	102	43	1.49	123	94
14		5.9	7.6	0.22	2,481	1,980	35.0	0.71	3.0	218	0.39	0.30	103	43	1.47	108	80
15		5.8	7.5	0.27	2,477	1,999	34.0	0.73	5.0	212	0.44	0.32	102	43	1.48	132	80
16		5.7	5.8	0.30	2,620	2,080	35.0	0.75	2.4	204	0.45	0.35	100	50	1.50	147	108
17		6.2								210			109	43	1.38	135	84
18		6.2								206			108	43	1.38	120	96
19		6.2								197			107	43	1.40	99	82
20		5.6	5.8	0.33	2,504	2,041	30.0	0.83	2.9	193	0.47	0.38	97	43	1.55	156	100
21		5.6	6.3	0.20	2,560	2,184	32.0	0.80	0.6	219	0.46	0.36	100	43	1.53	105	96
22		5.9	6.5	0.21	2,541	2,064	34.0	0.75	0.0	227	0.46	0.37	105	43	1.47	108	96
23		5.6	5.6	0.24	2,502	2,038	33.0	0.76	1.8	214	0.43	0.36	99	43	1.55	114	104
24		5.5	7.2	0.16	2,570	2,090	31.0	0.83	3.3	221	0.47	0.39	96	43	1.57	75	82
25		5.6								220			96	43	1.55	112	85
26		5.9								222			101	43	1.46	102	106
27		5.2	4.8	0.27	2,405	1,943	30.0	0.80	5.2	223	0.44	0.36	89	43	1.65	114	108
28		5.5	8.0	0.24	2,385	1,921	26.0	0.92	5.7	220	0.47	0.37	94	43	1.57	105	68
29		5.6	4.6	0.18	2,454	2,015	28.0	0.88	3.2	216	0.46	0.38	95	43	1.53	87	126
30		5.2	4.3	0.27	2,512	2,064	30.0	0.84	1.0	218	0.46	0.38	89	43	1.65	120	128
31																	
Total	48	177.4	154.8	5.09	51,796	40,972	727.0	15.24	69.4	6,322	8.82	6.92	3,090	1,171	43.86	3,361	2,561
Max.	48	6.6	11.7	0.33	2,620	2,184	43.0	0.92	5.7	227	0.47	0.39	115	50	1.65	156	128
Min.	48	5.2	4.3	0.16	2,249	1,672	26.0	0.55	0.0	166	0.35	0.26	89	29	1.31	75	56
Avg.	48	5.9	7.4	0.24	2,466	1,951	34.6	0.73	3.3	211	0.42	0.33	103	39	1.46	112	85

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540
APRIL, 1992 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. BOD mgIL	F.Eff. BOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mg/L
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%		
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012	
Day																
1	7.6	7.5	11	131		1.43	0.00	6	72	11.5	137	8	92	97		
2	7.9	7.5	12	144		1.44	0.00	8	96	12.0	144	6	90	95		
3	7.8	7.6	11	126	0.32	1.37	0.00	4	46	12.0	137	3	90	98	91	<0.0005
4	6.7	7.5	11	130		1.42	0.00	4	47	10.5	124	4	91	96		
5	7.3	7.4	4	45		1.35	0.00	6	68	8.4	95	2	97	96		
6	8.1	7.5	4	47		1.42	0.00	5	59	10.7	127	7	97	97		
7	7.1	7.4	7	82		1.40	0.00	7	82	10.1	118	11	95	96		
8	7.1	7.4	6	73	0.25	1.46	0.00	9	110	11.8	144	39	95	95	94	<0.0005
9	6.9	7.4	3	35		1.40	0.00	10	117	13.0	152	29	97	94		
10	6.9	7.4	6	68		1.36	0.00	6	68	12.6	143	234	96	97		
11	7.0	7.4	7	76		1.31	0.00	3	33	10.4	114	86	94	90		
12	7.5	7.5	7	77		1.32	0.00	4	44	11.8	130	16	91	96		
13	7.8	7.4	16	199		1.49	0.00	7	87	13.2	164	14	89	96		
14	7.3	7.6	5	61		1.47	0.00	13	159	14.1	173	51	96	90		
15	7.6	7.6	9	111	0.17	1.48	0.00	6	74	12.4	153	44	93	97	97	<0.0005
16	7.0	7.5	10	125		1.50	0.00	6	75	12.7	159	48	92	96		
17	6.9	7.4	5	58		1.38	0.00	8	92	13.5	155	80	97	96		
18	6.9	7.5	7	81		1.38	0.00	3	35	13.5	155	42	94	98		
19	6.0	7.5	5	58		1.40	0.00	4	47	14.5	169	29	95	97		
20	6.6	7.5	12	155		1.55	0.00	16	207	14.9	193	508	91	92		
21	7.2	7.4	15	191	0.24	1.53	0.00	12	153	13.9	177	690	91	92	89	<0.0005
22	6.3	7.3	11	135		1.47	0.00	11	135	10.0	123	30	91	93		
23	6.2	7.4	10	129		1.55	0.00	9	116	9.5	123	22	92	94		
24	7.1	7.3	8	105		1.57	0.00	5	65	9.5	124	10	94	97		
25	6.7	7.6	9	116		1.55	0.00	14	181	8.0	103	15	93	92		
26	6.4	7.5	6	73		1.46	0.00	5	61	8.4	102	2	94	96		
27	7.9	7.3	5	69	0.22	1.65	0.00	4	55	9.8	135	12	95	97	88	
28	8.1	7.3	10	131		1.57	0.00	11	144	12.8	168	7	88	93		
29	6.7	7.0	10	128		1.53	0.00	11	140	16.8	214	2	92	92		
30	7.1	7.3	7	96		1.65	0.00	10	138	15.5	213	39	94	92		
31																
Total	213.7	222.9	249	3,056	1.20	43.86	0.00	227	2,805	357.8	4,368	2,090	2,796	2,847	459	
Max.	8.1	7.6	16	199	0.32	1.65	0.00	16	207	16.8	214	690	97	98	97	<0.0005
Min.	6.0	7.0	3	35	0.17	1.31	0.00	3	33	8.0	95	2	88	90	88	<0.0005
Avg.	7.1	7.4	8	102	0.24	1.46	0.00	8	93	11.9	146	G. Mean 20	93	95	92	<0.0005

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
APRIL, 1992 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	PH	Lbs. of Lime per lb. of Dry Solids
1	7,800	2,541	240	15	397	8	374	6,000	4.3	71	6.2	0.17
2	7,000	2,640	220	15	298	8	340	6,000	4.5	73	5.9	0.15
3	6,700	2,400	300	16	397	9	374	6,000	4.2	73	6.2	0.18
4	6,000	2,520	210	14	298	8	204	4,000	3.9	73	6.3	0.16
5	4,700	2,520	240	14	298	8	204	4,000	4.0	72	6.2	0.15
6	100	2,280	200	17	298	9	374	6,000	4.2	73	6.2	0.18
7	2,000	2,520	360	15	397	10	340	6,000	4.3	73	6.1	0.16
8	1,400	2,400	130	10	298	5	357	6,000	4.5	75	6.3	0.16
9	100	2,160	210	10	298	4	340	6,000	4.1	73	6.2	0.16
10	3,200	2,520	290	7	397	5	323	6,000	4.2	73	6.3	0.15
11	4,000	2,520	150	8	298	4	321	4,000	4.2	73	6.3	0.23
12	5,500	2,640	190	8	298	4	238	4,000	4.5	71	6.5	0.16
13	5,500	2,520	230	9	298	5	357	6,000	4.3	73	6.3	0.16
14	5,000	2,640	220	9	199	4	357	6,000	4.7	74	6.2	0.15
15	3,900	2,520	310	9	397	5	255	6,000	4.4	73	6.2	0.11
16	0	2,280	170	10	298	5	357	6,000	4.3	73	6.1	0.16
17	200	2,400	120	10	298	5	221	4,000	3.8	73	6.3	0.17
18	0	2,520	110	10	298	12	221	4,000	4.0	73	6.2	0.16
19	300	2,400	270	10	298	4	272	4,000	4.2	73	6.3	0.19
20	100	2,280	300	10	298	2	459	8,000	4.3	72	6.3	0.16
21	100	2,520	300	15	397	8	510	8,000	4.7	73	6.2	0.16
22	200	2,400	260	21	298	12	459	8,000	4.6	72	6.2	0.15
23	100	2,520	320	26	397	12	408	8,000	4.7	74	6.2	0.13
24	3,900	2,640	290	18	298	10	459	8,000	5.3	72	6.1	0.13
25	3,800	2,520	160	14	298	10	204	4,000	4.4	73	6.2	0.14
26	3,000	2,520	240	16	298	6	204	4,000	4.6	74	6.1	0.13
27	3,400	2,640	190	17	298	11	442	8,000	4.6	73	6.0	0.14
28	2,000	2,520	710	17	298	9	442	8,000	4.6	73	6.1	0.14
29	3,600	2,520	220	16	298	11	442	8,000	3.9	72	6.2	0.17
30	100	2,400	240	19	397	11	442	8,000	4.5	74	6.1	0.15
31												
Total	83,700	74,421	7,400	405	9,633	224	10,300	180,000	130.8	2,187	186.0	4.72
Max.	7,800	2,640	710	26	397	12	510	8,000	5.3	75	6.5	0.23
Min.	0	2,160	110	7	199	2	204	4,000	3.8	71	5.9	0.11
Avg.	2,790	2,481	247	14	321	7	343	6,000	4.4	73	6.2	0.16

Manpower & Hours
Total Hr

Superintendent 1
Asst. Supt. 1
Operators 2
Total

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MAY, 1992 - PLANT INFLUENT SHEET

	----Weather-----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1			1.65	52	7.6	186	2,560	218	3,000			194	11.4	
2			1.52	53	7.7	198	2,510	176	2,231			154	11.7	
3			1.45	52	7.8	111	1,342	100	1,209			88	11.9	
4	Rain	0.15	1.65	52	7.9	146	2,009	146	2,009			132	11.4	
5			1.51	53	7.7	147	1,851	104	1,310			94	12.4	
6			1.56	52	7.7	150	1,952	132	1,717			116	12.1	
7			1.58	52	7.5	135	1,779	110	1,449			94	12.1	
8	Rain	0.07	1.44	53	7.7	168	2,018	116	1,393	3.30	40	106	13.2	
9			1.40	51	7.6	126	1,471	96	1,121			90	12.4	
10			1.42	50	7.7	96	1,137	80	947			64	12.3	
11			1.54	53	7.8	134	1,721	148	1,901			144	12.4	
12	Rain	0.48	1.63	54	7.7	135	1,835	114	1,550			102	11.0	
13			1.49	53	7.5	137	1,702	124	1,541			114	13.1	
14			1.43	54	7.4	135	1,610	136	1,622			114	13.4	
15			1.44	54	7.6	132	1,585	104	1,249	3.70	44	82	12.6	
16			1.41	53	7.6	132	1,552	106	1,246			86	11.3	
17	Rain	0.07	1.38	52	7.7	131	1,508	96	1,105			86	12.1	
18			1.49	54	7.7	168	2,088	126	1,566			116	13.4	
19			1.58	55	7.6	168	2,214	138	1,818			122	12.4	
20			1.58	55	7.5	174	2,293	144	1,898	4.40	58	128	12.2	
21			1.51	55	7.4	162	2,040	144	1,813			130	12.9	
22	Rain	0.12	1.52	55	7.5	132	1,673	178	2,256			152	15.5	
23	Rain	0.33	1.30	54	7.7	132	1,431	124	1,344			122	13.4	
24			1.24	54	7.7	162	1,675	124	1,282			106	19.9	
25	Rain	0.04	1.34	52	7.8	125	1,397	116	1,296			86	15.5	
26	Rain	0.02	1.52	55	7.6	154	1,952	144	1,825	2.80	35	130		
27			1.43	54	7.7	153	1,825	128	1,527			118	14.7	
28			1.50	57	7.7	144	1,801	134	1,676			122	13.6	
29	Rain	0.33	1.45	53	7.7	162	1,959	174	2,104			158	13.8	
30	Rain	0.52	1.50	53	7.5	144	1,801	150	1,877			138	14.0	
31			1.40	55	7.4	104	1,214	124	1,448			112	13.4	
Total		2.13	45.86	1,654	236.7	4,483	55,507	4,054	50,333	14.20	178	3,600	391.5	
Max.		0.52	1.65	57	7.9	198	2,560	218	3,000	4.40	58	194	19.9	
Min.		0.02	1.24	50	7.4	96	1,137	80	947	2.80	35	64	11.0	
Avg.		0.21	1.48	53	7.6	145	1,791	131	1,624	3.55	44	116	13.1	

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MAY, 1992 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	108	1,486	112	1,541			106	12.5	1.65	42	49	
2	123	1,559	106	1,344			100	13.6	1.52	38	40	
3	105	1,270	124	1,500			120	13.3	1.45	5	-24	
4	99	1,362	128	1,761			124	13.4	1.65	32	12	
5	90	1,133	76	957			68	15.1	1.51	39	27	
6	117	1,522	88	1,145			82	14.2	1.56	22	33	
7	102	1,344	44	580			54	13.0	1.58	24	60	
8	111	1,333	48	576	2.40	29	42	14.3	1.44	34	59	27
9	90	1,051	42	490			40	13.5	1.40	28	56	
10	72	853	34	403			28	13.4	1.42	25	58	
11	102	1,310	60	771			58	12.7	1.54	24	59	
12	93	1,264	66	897			48	14.3	1.63	31	42	
13	93	1,156	50	621			42	13.5	1.49	32	60	
14	87	1,038	42	501			34	13.9	1.43	36	69	
15	90	1,081	40	480	2.40	29	30	13.3	1.44	32	62	35
16	102	1,199	44	517			30	11.8	1.41	23	58	
17	90	1,036	40	460			38	12.0	1.38	31	58	
18	126	1,566	44	547			40	13.5	1.49	25	65	
19	117	1,542	60	791			48	12.6	1.58	30	57	
20	114	1,502	68	896	3.00	40	58	12.2	1.58	34	53	32
21	93	1,171	70	882			54	14.1	1.51	43	51	
22	102	1,293	52	659			38	15.8	1.52	23	71	
23	84	911	50	542			48	13.7	1.30	36	60	
24	84	869	36	372			28	19.4	1.24	48	71	
25	81	905	46	514			34	15.1	1.34	35	60	
26	96	1,217	60	761	1.50	19	48		1.52	38	58	46
27	102	1,216	58	692			56	14.8	1.43	33	55	
28	81	1,013	42	525			40	14.0	1.50	44	69	
29	114	1,379	92	1,113			86	12.0	1.45	30	47	
30	84	1,051	54	676			46	14.1	1.50	42	64	
31	75	876	40	467			32	13.6	1.40	21	68	
Total	3,027	37,508	1,916	23,981	9.30	116	1,700	412.7	45.86	980	1,627	140
Max.	126	1,566	128	1,761	3.00	40	124	19.4	1.65	48	71	46
Min.	72	853	34	372	1.50	19	28	11.8	1.24	5	-24	27
Avg.	98	1,210	62	774	2.33	29	55	13.8	1.48	32	52	35

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MAY, 1992 - ACTIVATED SLUDGE SHEET

PN-	Aerat Volume KCF ^80993	Deten. Time Hrs. ^81001	Sludge Age Days ^80990	Organic Loading fIm ^80992	Mix Liq SS mgIL ^70323	Mix Liq VSS mgIL ^70324	Mix Liq Settl. % ^81004	Mix Liq SDI % ^81007	Mix Liq DO mgIL ^00300	Air Cu Ft. X 10000 ^81000	Return SS % ^81006	Return VSS % ^70325	Return % ^81014	Waste Sludge KGal ^80991	Daily Flow MGD ^50050	PE BOD mgIl ^00310	PE SS mgIL ^00530
Day																	
1	48	5.2	4.8	0.24	2,477	2,030	28.0	0.88	2.5	208	0.49	0.40	89	43	1.65	108	112
2		5.7								212			95	43	1.52	123	106
3		5.9								220			102	43	1.45	105	124
4		5.2	4.2	0.23	2,445	1,998	27.0	0.91	5.0	218	0.41	0.33	90	43	1.65	99	128
5		5.7	7.7	0.19	2,458	2,010	28.0	0.88	3.5	221	0.46	0.37	98	43	1.51	90	76
6		5.5	6.2	0.26	2,371	1,925	26.0	0.91	4.8	219	0.38	0.31	94	43	1.56	117	88
7		5.5	12.2	0.23	2,359	1,945	25.0	0.94	5.0	214	0.42	0.35	97	43	1.58	102	44
8		6.0	12.1	0.23	2,338	1,926	25.0	0.94	2.6	203	0.41	0.34	106	36	1.44	111	48
9		6.2								205			108	36	1.40	90	42
10		6.1								205			107	36	1.42	72	34
11		5.6	8.3	0.25	2,140	1,724	28.0	0.76	2.5	206	0.41	0.33	99	29	1.54	102	60
12		5.3	6.9	0.24	2,081	1,736	33.0	0.63	0.9	201	0.40	0.32	93	29	1.63	93	66
13		5.8	10.8	0.22	2,250	1,780	30.0	0.75	1.5	216	0.40	0.32	102	29	1.49	93	50
14		6.0	13.1	0.19	2,195	1,829	30.0	0.73	2.7	218	0.41	0.32	106	29	1.43	87	42
15		6.0	13.6	0.20	2,181	1,761	30.0	0.73	4.2	213	0.38	0.31	104	29	1.44	90	40
16		6.1								208			106	29	1.41	102	44
17		6.2								207			107	29	1.38	90	40
18		5.8	11.5	0.32	2,093	1,640	26.0	0.81	3.5	215	0.39	0.31	99	29	1.49	126	44
19		5.5	8.2	0.30	2,155	1,689	29.0	0.74	2.5	213	0.39	0.31	94	29	1.58	117	60
20		5.5	7.7	0.27	2,305	1,836	29.0	0.79	1.6	204	0.43	0.34	95	29	1.58	114	68
21		5.7	8.1	0.21	2,383	1,892	35.0	0.68	0.4	204	0.42	0.33	99	29	1.51	93	70
22		5.7	11.2	0.22	2,474	1,968	38.0	0.65	1.5	198	0.41	0.33	99	29	1.52	102	52
23		6.6								209			114	29	1.30	84	50
24		6.9								220			120	29	1.24	84	36
25		6.4								217			111	29	1.34	81	46
26		5.7	8.7	0.22	2,215	1,822	44.0	0.50	5.0	212	0.40	0.29	97	29	1.52	96	60
27		6.0	10.0	0.23	2,304	1,796	61.0	0.38	2.3	208	0.42	0.33	102	29	1.43	102	58
28		5.7	13.0	0.19	2,290	1,787	44.0	0.52	3.3	212	0.36	0.28	99	29	1.50	81	42
29		5.9	6.2	0.26	2,305	1,778	43.0	0.54	2.5	207	0.41	0.32	98	29	1.45	114	92
30		5.7								203			92	29	1.50	84	54
31		6.2								207			98	29	1.40	75	40
Total	48	181.3	184.6	4.72	45,819	36,872	659.0	14.67	57.8	6,523	8.20	6.54	3,120	1,018	45.86	3,027	1,916
Max.	48	6.9	13.6	0.32	2,477	2,030	61.0	0.94	5.0	221	0.49	0.40	120	43	1.65	126	128
Min.	48	5.2	4.2	0.19	2,081	1,640	25.0	0.38	0.4	198	0.36	0.28	89	29	1.24	72	34
Avg.	48	5.8	9.2	0.24	2,291	1,844	33.0	0.73	2.9	210	0.41	0.33	101	33	1.48	98	62

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540
MAY, 1992 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. BOD mgIL	F.Eff. BOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mg/L
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%		
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012	
Day																
1	7.0	7.4	9	124		1.65	0.00	8	110	11.0	151	22	96	96		
2	6.4	7.4	6	76		1.52	0.00	10	127	10.3	131	18	97	95		
3	6.9	7.5	5	60		1.45	0.00	5	60	11.0	133	3	95	95		
4	7.4	7.5	7	96		1.65	0.00	4	55	11.7	161	10	95	97		<0.0005
5	7.2	7.5	5	63		1.51	0.00	8	101	12.3	155	12	95	95		
6	6.0	7.4	7	91		1.56	0.00	6	78	13.1	170	7	95	96		
7	7.8	7.5	6	79		1.58	0.00	5	66	13.0	171	14	95	96		
8	7.4	7.5	3	36	0.32	1.44	0.00	2	24	13.7	165	24	97	99	90	
9	6.8	7.4	4	47		1.40	0.00	6	70	13.7	160	22	96	95		
10	6.6	7.5	4	47		1.42	0.00	5	59	13.5	160	59	95	95		
11	6.7	7.5	4	51		1.54	0.00	6	77	13.4	172	12	97	96		
12	6.4	7.4	10	136		1.63	0.00	5	68	13.3	181	421	91	96		<0.0005
13	6.4	7.5	3	37		1.49	0.00	4	50	12.1	150	24	98	97		
14	7.3	7.5	6	72		1.43	0.00	3	36	13.8	165	126	96	98		
15	6.3	7.4	2	24	0.27	1.44	0.00	3	36	13.3	160	12	98	98	93	<0.0005
16	6.2	7.5	1	12		1.41	0.00	2	24	12.0	141	7	99	98		
17	6.1	7.5	1	12		1.38	0.00	4	46	11.2	129	8	99	97		
18	7.8	7.6	2	25		1.49	0.00	5	62	12.9	160	11	98	97		
19	6.7	7.5	5	66		1.58	0.00	5	66	12.1	159	30	96	97		
20	6.9	7.4	13	171	0.89	1.58	0.00	7	92	11.0	145	55	91	96	80	<0.0005
21	6.5	7.2	9	113		1.51	0.00	7	88	11.0	139	242	94	96		
22	6.5	7.5	5	63		1.52	0.00	8	101	12.2	155	154	97	94		
23	6.4	7.5	7	76		1.30	0.00	7	76	11.7	127	512	94	95		
24	6.5	7.6	7	72		1.24	0.00	2	21	13.9	144	94	94	99		
25	7.4	7.7	8	89		1.34	0.00	9	101	13.8	154	28	93	93		
26	7.7	7.6	7	89	0.21	1.52	0.00	4	51			9	95	97	93	<0.0005
27	7.1	7.5	8	95		1.43	0.00	6	72	11.6	138	16	94	96		
28	7.2	7.6	4	50		1.50	0.00	3	38	11.0	138	14	97	98		
29	6.3	7.5	2	24		1.45	0.00	4	48	10.7	129	15	99	98		
30	6.5	7.5	8	100		1.50	0.00	3	38	11.5	144	14	95	98		
31	6.6	7.5	3	35		1.40	0.00	5	58	11.2	131	37	98	95		
Total	211.0	232.1	171	2,133	1.69	45.86	0.00	161	1,998	367.0	4,517	2,032	2,969	2,988	356	<0.0005
Max.	7.8	7.7	13	171	0.89	1.65	0.00	10	127	13.9	181	512	99	99	93	<0.0005
Min.	6.0	7.2	1	12	0.21	1.24	0.00	2	21	10.3	127	3	91	93	80	<0.0005
Avg.	6.8	7.5	6	69	0.42	1.48	0.00	5	64	12.2	151	G 26	96	96	89	<0.0005

G - Geometric Mean

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
MAY, 1992 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	PH	Lbs. of Lime per lb. of Dry Solids
1		2,400	240	16	298	12	442	8,000	4.5	71	6.3	0.15
2		2,280	240	10	298	10	238	4,000	4.4	74	6.2	0.16
3		2,400	200	15	298	10	221	4,000	4.4	74	6.3	0.15
4		2,520	130	10	397	10	459	8,000	4.5	74	6.1	0.15
5		2,520	270	10	298	10	459	8,000	4.8	73	6.2	0.14
6		2,520	290	10	298	4	459	8,000	4.5	74	6.2	0.15
7		2,400	240	12	298	4	459	8,000	4.4	74	6.2	0.16
8		2,400	290	11	199	5	714	12,000	4.5	75	6.2	0.16
9		2,280	110	11	199	7	408	7,500	3.8	74	6.0	0.17
10		2,400	200	11	199	5	204	3,800	4.1	74	6.0	0.16
11		2,280	390	11	199	6	986	16,500	4.2	74	6.0	0.17
12		2,280	250	10	298	7	255	4,500	4.3	77	6.0	0.16
13		2,400	180	12	199	6	153	2,500	4.3	72	5.9	0.17
14		2,400	470	10	298	6	459	8,500	4.3	73	5.8	0.15
15		2,400	250	17	298	5	748	13,400	3.0	77		0.22
16		2,280	200	9	199	5	255	8,000	4.0	75	6.0	0.09
17		2,280	250	10	199	7	204	4,000	3.6	75	6.0	0.17
18		2,280	230	11	298	6	204	3,000	4.5	75	6.1	0.18
19		2,280	240	12	199	6	204	3,000	4.5	76	5.9	0.18
20		2,400	270	11	298	6	935	14,300	4.5	74	6.0	0.17
21		2,160	320	12	199	5	221	4,000	4.4	74	5.9	0.15
22		2,280	260	10	199	8	238	4,000	4.2	78	5.7	0.17
23		2,280	130	15	199	8	170	3,000	4.2	77	5.8	0.16
24		2,400	170	15	298	8	102	2,000	4.4	77	5.7	0.14
25		2,400	230	18	99	9	187	4,000	3.9	77	5.9	0.14
26		2,280	150	19	298	11	153	3,000	4.1	78	5.7	0.15
27		2,400	280	7	199	9	884	17,000	5.6	76	6.6	0.11
28		2,280	190	11	199	8	238	4,000	4.7	74	6.6	0.15
29		2,280	230	13	298	9	289	4,500	4.3	77	5.8	0.18
30		2,160	80	14	199	8	68	1,000	5.9	76	5.6	0.14
31		2,400	100	14	298	8	102	1,500	6.8	76	5.5	0.12
Total		72,720	7,080	377	7,752	228	11,118	197,000	137.6	2,325	180.2	4.81
Max.		2,520	470	19	397	12	986	17,000	6.8	78	6.6	0.22
Min.		2,160	80	7	99	4	68	1,000	3.0	71	5.5	0.09
Avg.		2,346	228	12	250	7	359	6,355	4.4	75	6.0	0.16

Manpower & Hours

	Total Hr
Superintendent 1	
Asst. Supt. 1	
Operators 2	
Total 4	

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
JUNE, 1992 - PLANT INFLUENT SHEET

	----Weather-----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1			1.47	55	7.6	135	1,655	186	2,280			166		
2			1.50	55	7.5	162	2,027	198	2,477			172	14.6	
3			1.54	56	7.5	168	2,158	276	3,545			238	14.0	
4	Rain	0.10	1.48	57	7.7	152	1,876	146	1,802			136	15.8	
5	Rain	0.22	1.46	55	7.4	150	1,826	214	2,606	4.00	49	182	12.0	
6	Rain	0.65	1.48	54	8.1	126	1,555	112	1,382			100	12.3	
7			1.38	56	7.6	150	1,726	106	1,220			90	13.4	
8			1.49	56	7.5	173	2,150	168	2,088			146	14.0	
9			1.46	57	7.5	141	1,717	132	1,607			122	12.9	
10			1.48	56	7.4	149	1,839	138	1,703			120	12.3	
11			1.55	57	7.4	140	1,810	134	1,732	3.90	50	118	11.8	
12			1.47	57	7.2	108	1,324	162	1,986			150	12.9	
13			1.42	57	7.6	138	1,634	214	2,534			190	11.3	
14			1.32	56	7.6	108	1,189	104	1,145			90	10.7	
15			1.43	56	7.5	153	1,825	148	1,765			134	13.0	
16			1.42	58	7.3	144	1,705	152	1,800			132	12.1	
17	Rain	0.90	1.50	58	7.4	144	1,801	146	1,826	3.90	49	142	13.0	
18	Rain	0.04	1.48	58	7.6	144	1,777	122	1,506			112	8.8	
19			1.36	58	7.6	156	1,769	96	1,089			88	12.4	
20			1.29	56	7.8	174	1,872	172	1,850			162	11.3	
21			1.27	56	8.3	173	1,832	126	1,335			118	13.6	
22			1.39	58	7.8	120	1,391	136	1,577	4.70	54	120	15.1	
23	Rain	0.45	1.38	58	7.7	156	1,795	134	1,542			122	14.1	
24			1.34	58	7.2	158	1,766	148	1,654			146	13.7	
25	Rain	0.05	1.38	59	7.8	160	1,841	120	1,381			116	17.0	
26			1.39	56	7.6	156	1,808	150	1,739			128	13.4	
27			1.36	57	8.1	144	1,633	128	1,452			102	11.6	
28			1.28	58	7.6	144	1,537	116	1,238			114	12.0	
29			1.46	57	7.6	162	1,973	148	1,802			138	12.1	
30			1.44	59	7.4	156	1,873	162	1,946			148	13.5	
31														
Total		2.41	42.67	1,704	227.9	4,444	52,688	4,494	53,610	16.50	202	4,042	374.7	
Max.		0.90	1.55	59	8.3	174	2,158	276	3,545	4.70	54	238	17.0	
Min.		0.04	1.27	54	7.2	108	1,189	96	1,089	3.90	49	88	8.8	
Avg.		0.34	1.42	57	7.6	148	1,756	150	1,787	4.13	51	135	12.9	

Robert J. Swalwell
Superintendent

JUNE, 1992 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	5.8	10.9	0.18	2,363	1,897	45.0	0.53	2.1	204	0.42	0.33	95	29	1.49	84	52
2		5.7	9.5	0.20	2,382	1,877	55.0	0.43	3.0	204	0.42	0.33	94	29	1.50	90	60
3		5.6	8.0	0.21	2,457	1,936	68.0	0.36	2.8	203	0.42	0.33	91	29	1.54	93	72
4		5.8	12.6	0.23	2,489	1,967	42.0	0.59	2.5	231	0.44	0.34	93	29	1.48	108	48
5		5.9	16.8	0.19	2,603	2,069	48.0	0.54	1.9	241	0.45	0.36	93	36	1.46	99	38
6		5.8								242			90	36	1.48	90	42
7		6.2								247			95	36	1.38	90	52
8		5.8	10.7	0.26	2,228	1,728	43.0	0.52	5.3	246	0.39	0.30	88	29	1.49	108	50
9		5.9	11.6	0.11	2,270	1,745	47.0	0.48	4.6	245	0.39	0.30	89	29	1.46	48	48
10		5.8	9.9	0.23	2,206	1,694	32.0	0.69	5.0	246	0.37	0.29	88	29	1.48	96	54
11		5.6	9.1	0.25	2,201	1,585	30.0	0.73	4.3	245	0.43	0.35	83	29	1.55	93	56
12		5.9	11.0	0.18	2,163	1,833	32.0	0.68	4.0	243	0.32	0.24	87	29	1.47	81	48
13		6.1								239			92	29	1.42	87	28
14		6.5								240			99	29	1.32	45	46
15		6.0	11.0	0.24	2,190	1,670	33.0	0.66	4.5	242	0.37	0.29	91	29	1.43	99	50
16		6.1	13.7	0.22	2,173	1,641	33.0	0.66	4.8	241	0.32	0.26	92	29	1.42	90	40
17		5.7	12.1	0.25	2,333	1,806	33.0	0.71	3.2	233	0.41	0.32	85	29	1.50	108	46
18		5.8	12.1	0.24	2,195	1,820	36.0	0.61	2.3	236	0.40	0.32	87	29	1.48	105	44
19		6.3	9.8	0.21	2,298	1,834	46.0	0.50	3.3	248	0.35	0.28	96	29	1.36	102	62
20		6.7								253			100	29	1.29	69	110
21		6.8								252			102	29	1.27	96	72
22		6.2	10.1	0.25	2,258	1,738	40.0	0.56	5.1	243	0.37	0.29	97	29	1.39	114	58
23		6.2	12.9	0.25	2,286	1,766	36.0	0.64	3.7	245	0.38	0.29	97	29	1.38	114	46
24		6.4	11.5	0.22	2,310	1,798	39.0	0.59	4.0	242	0.35	0.29	100	29	1.34	108	54
25		6.2	13.1	0.21	2,320	1,790	34.0	0.68	3.5	239	0.39	0.30	97	29	1.38	99	46
26		6.2	11.1	0.21	2,324	1,812	38.0	0.61	3.0	242	0.38	0.30	96	29	1.39	99	54
27		6.3								245			97	29	1.36	51	62
28		6.7								243			104	29	1.28	81	52
29		5.9	10.6	0.19	2,336	1,824	42.0	0.56	4.5	234	0.39	0.31	93	29	1.46	84	54
30		6.0	4.5	0.16	2,283	1,831	38.0	0.60	4.7	236	0.38	0.30	93	29	1.44	72	126
31																	
Total	48	182.2	242.8	4.70	50,668	39,661	890.0	12.94	82.1	7,150	8.54	6.72	2,804	891	42.69	2,703	1,670
Max.	48	6.8	16.8	0.26	2,603	2,069	68.0	0.73	5.3	253	0.45	0.36	104	36	1.55	114	126
Min.	48	5.6	4.5	0.11	2,163	1,585	30.0	0.36	1.9	203	0.32	0.24	83	29	1.27	45	28
Avg.	48	6.1	11.0	0.21	2,303	1,803	40.5	0.59	3.7	238	0.39	0.31	93	30	1.42	90	56

Robert J. Swalwell
Superintendent

JUNE, 1992 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. BOD mgIL	F.Eff. BOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mg/L
Limit-																
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012	
Day																
1	7.5	7.5	3	37		1.49	0.00	4	50			21	98	97		
2	7.1	7.5	8	100		1.50	0.00	3	38	11.0	138	21	96	98		
3	6.8	7.4	15	193		1.54	0.00	4	51	11.0	141	30	95	98		
4	6.0	7.4	6	74		1.48	0.00	5	62	11.0	136	80	96	97		<0.0005
5	6.9	7.4	2	24	0.86	1.46	0.00	4	49	11.0	134	37	99	97	79	
6	6.8	7.4	3	37		1.48	0.00	2	25	10.6	131	26	97	98		
7	6.2	7.4	2	23		1.38	0.00	4	46	12.0	138	25	98	97		
8	7.6	7.2	4	50		1.49	0.00	4	50	12.0	149	34	98	98		
9	7.5	7.4	3	37		1.46	0.00	2	24	11.4	139	10	98	99		
10	7.1	7.5	3	37		1.48	0.00	3	37	12.1	149	5	98	98		
11	7.0	7.4	6	78	0.51	1.55	0.00	4	52	10.4	134	20	96	97	87	<0.0005
12	6.8	7.3	4	49		1.47	0.00	1	12	11.3	139	6	98	99		
13	6.7	7.5	4	47		1.42	0.00	3	36	11.0	130	32	98	98		
14	6.5	7.5	3	33		1.32	0.00	3	33	9.9	109	6	97	97		
15	7.5	7.5	6	72		1.43	0.00	3	36	11.4	136	17	96	98		
16	7.1	7.3	4	47		1.42	0.00	3	36	12.8	152	60	97	98		<0.0005
17	6.5	7.3	9	113	0.66	1.50	0.00	5	63	13.7	171	61	94	97	83	
18	6.5	7.4	7	86		1.48	0.00	5	62	9.7	120	71	94	97		
19	6.6	7.5	3	34		1.36	0.00	3	34	10.6	120	60	97	98		
20	6.7	7.6	4	43		1.29	0.00	3	32	10.6	114	106	98	98		
21	7.1	7.6	6	64		1.27	0.00	4	42	13.4	142	146	95	98		
22	7.4	7.6	8	93	0.32	1.39	0.00	3	35	15.6	181	49	94	98	93	<0.0005
23	6.7	7.6	12	138		1.38	0.00	4	46	15.9	183	16	91	97		
24		7.6	10	112		1.34	0.00	3	34	15.7	175	208	93	98		
25	6.9	7.6	2	23		1.38	0.00	2	23	15.5	178	166	98	99		
26	6.5	7.6	3	35		1.39	0.00	2	23	14.2	165	216	98	99		
27	6.6	7.7	2	23		1.36	0.00	3	34	13.3	151	164	98	98		
28	6.5	7.8	3	32		1.28	0.00	2	21	13.0	139	11	97	99		
29	7.4	7.5	6	73		1.46	0.00	3	37	13.0	158	35	96	98		
30	7.4	7.5	6	72		1.44	0.00	2	24	13.9	167	24	96	99		
31																
Total	199.9	224.5	157	1,878	2.35	42.69	0.00	96	1,144	357.0	4,219	1,763	2,894	2,937	342	<0.0005
Max.	7.6	7.8	15	193	0.86	1.55	0.00	5	63	15.9	183	216	99	99	93	<0.0005
Min.	6.0	7.2	2	23	0.32	1.27	0.00	1	12	9.7	109	5	91	97	79	<0.0005
Avg.	6.9	7.5	5	63	0.59	1.42	0.00	3	38	12.3	145	G 36	96	98	86	<0.0005

G - Geometric Mean

Sample of June 4th - Copper <0.01 mg/l Zinc 0.047 mg/l

Robert J. Swalwell
Superintendent

[illegible] WASTEWATER TREATMENT PLANT
JUNE, 1992 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	PH	Lbs. of Lime per lb. of Dry Solids
1		2,160	460	15	199	7	969	16,000	4.5	77	5.9	0.16
2		2,280	310	17	199	8	255	4,000	5.7	77	6.0	0.13
3		2,280	710	12	298	10	289	4,500	5.0	78	5.8	0.15
4		2,280	140	16	298	8	136	3,000	5.1	73	5.2	0.11
5		2,280	330	19	298	8	680	12,500	3.5	76	5.4	0.19
6		2,640	90	15	298	9	187	3,000	4.2	77	5.7	0.18
7		2,400	150	10	298	10	204	3,000	4.1	75	5.8	0.20
8		2,400	270	13	199	7	357	6,000	4.1	75	5.7	0.17
9		2,520	840	15	298	10	1,003	18,000	3.0	75	6.6	0.22
10		2,280	750	17	298	8	221	4,000	3.7	76	5.7	0.18
11		2,520	1,750	15	298	10	340	5,500	4.4	76	5.7	0.17
12		2,400	1,240	15	298	10	306	5,000	4.4	75	5.7	0.17
13		2,280	210	15	298	10	221	4,000	4.0	75	5.8	0.16
14		2,520	560	16	298	5	204	4,000	4.2	73	5.9	0.14
15		2,280	320	16	298	7	1,037	17,200	3.1	79	6.7	0.23
16		2,400	1,150	18	298	8	272	4,000	4.3	73	5.9	0.19
17		2,400	220	15	298	8	204	3,000	4.2	74	5.9	0.19
18		2,400	280	13	199	7	425	5,500	5.5	72	6.0	0.17
19		2,400	160	13	298	8	289	4,000	4.4	72	5.9	0.20
20		2,280	50	13	298	8	204	3,000	4.2	74	6.0	0.19
21		2,520	110	15	199	8	221	4,000	4.3	75		0.15
22		2,400	290	15	298	9	1,122	18,000	4.3	74	5.8	0.17
23		2,280	560	15	298	8	323	6,100	4.1	74	5.6	0.15
24		2,400	50	15	298	9	68	6,000	4.2	74	5.7	0.03
25		2,400	210	17	199	11	238	4,500	4.2	74	5.7	0.15
26		2,400	200	14	298	8	204	3,500	3.9	73	5.9	0.18
27		2,400	170	14	298	7	255	4,000	3.8	72	6.0	0.20
28		2,280	240	15	298	9	255	4,000	4.3	76	5.8	0.18
29		2,400	330	15	199	9	969	17,000	3.9	76	6.5	0.17
30		2,400	200	14	298	9	391	6,000	5.7	76	5.8	0.14
31												
Total		71,280	12,350	447	8,247	253	11,849	202,300	128.3	2,246	170.1	5.02
Max.		2,640	1,750	19	298	11	1,122	18,000	5.7	79	6.7	0.23
Min.		2,160	50	10	199	5	68	3,000	3.0	72	5.2	0.03
Avg.		2,376	412	15	275	8	395	6,743	4.3	75	5.9	0.17

Manpower & Hours

	Total Hr
Superintendent 1	^168
Asst. Supt. 1	^168
Operators 3	^520
Total	^856

Robert J. Swalwell
Superintendent

JUNE, 1992 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	84	1,044	52	646			50		1.49	38	72	
2	90	1,126	60	751			48		1.50	44	70	
3	93	1,194	72	925			66		1.54	45	74	
4	108	1,333	48	592			46		1.48	29	67	
5	99	1,205	38	463	2.80	34	30		1.46	34	82	30
6	90	1,111	42	518			34		1.48	29	63	
7	90	1,036	52	598			49		1.38	40	51	
8	108	1,342	50	621			40		1.49	38	70	
9	48	584	48	584			42	13.4	1.46	66	64	
10	96	1,185	54	667			48	12.2	1.48	36	61	
11	93	1,202	56	724	3.00	39	48	11.9	1.55	34	58	23
12	81	993	48	588			38	11.8	1.47	25	70	
13	87	1,030	28	332			44	12.5	1.42	37	87	
14	45	495	46	506			40	11.0	1.32	58	56	
15	99	1,181	50	596			42	13.7	1.43	35	66	
16	90	1,066	40	474			38	14.5	1.42	38	74	
17	108	1,351	46	575	2.20	28	44	14.3	1.50	25	68	44
18	105	1,296	44	543			42	10.1	1.48	27	64	
19	102	1,157	62	703			56	13.5	1.36	35	35	
20	69	742	110	1,183			102	9.5	1.29	60	36	
21	96	1,017	72	763			68	15.2	1.27	45	43	
22	114	1,322	58	672	2.10	24	50	17.6	1.39	5	57	55
23	114	1,312	46	529			42	16.2	1.38	27	66	
24	108	1,207	54	603			52	15.9	1.34	32	64	
25	99	1,139	46	529			42	15.2	1.38	38	62	
26	99	1,148	54	626			44	14.9	1.39	37	64	
27	51	578	62	703			48	13.3	1.36	65	52	
28	81	865	52	555			50	13.7	1.28	44	55	
29	84	1,023	54	658			52	13.2	1.46	48	64	
30	72	865	126	1,513			112	15.0	1.44	54	22	
31												
Total	2,703	32,150	1,670	19,744	10.10	125	1,507	298.6	42.69	1,168	1,837	152
Max.	114	1,351	126	1,513	3.00	39	112	17.6	1.55	66	87	55
Min.	45	495	28	332	2.10	24	30	9.5	1.27	5	22	23
Avg.	90	1,072	56	658	2.53	31	50	13.6	1.42	39	61	38

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
JULY, 1992 - PLANT INFLUENT SHEET

	----Weather----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1			1.43	58	7.5	138	1,646	170	2,027	4.40	52	152	12.4	
2			1.29	60	7.3	126	1,356	158	1,700			146	12.4	
3			1.27	58	7.7	132	1,398	154	1,631			136	14.4	
4	Rain	0.38	1.27	58	7.6	114	1,207	132	1,398			112	16.1	
5			1.25	58	7.5	110	1,147	90	938			72	19.5	
6			1.41	59	7.6	153	1,799	160	1,882			142	11.8	
7			1.42	59	7.6	150	1,776	148	1,753			134	12.0	
8	Rain	0.20	1.46	59	7.3	144	1,753	146	1,778	3.40	41	130	11.1	
9			1.44	59	7.5	158	1,898	90	1,081			152	11.1	
10			1.35	59	7.8	162	1,824	104	1,171			94	12.7	
11	Rain	0.08	1.28	59	7.6	138	1,473	126	1,345			112	12.3	
12	Rain	0.42	1.36	58	7.6	108	1,225	78	885			68	12.4	
13	Rain	0.63	1.43	59	7.7	135	1,610	130	1,550			112	10.7	
14	Rain	0.68	1.50	59	7.5	134	1,676	148	1,851			128	12.0	
15			1.42	59	7.4	159	1,883	150	1,776			138	12.5	
16	Rain	0.18	1.48	60	7.4	161	1,987	156	1,926	3.70	46	138	11.5	
17			1.44	60	7.6	132	1,585	122	1,465			94	12.8	
18	Rain	0.15	1.39	59	7.7	144	1,669	116	1,345			84	11.2	
19			1.32	59	7.7	108	1,189	138	1,519			122	10.6	
20			1.48	59	7.7	148	1,827	130	1,605			114	12.2	
21			1.38	60	7.7	162	1,864	128	1,473			108	12.4	
22	Rain	0.51	1.38	60	7.5	165	1,899	176	2,026	5.70	66	154	13.4	
23	Rain	0.36	1.47	59	7.6	141	1,729	138	1,692			120	12.5	
24			1.51	60	7.5	270	3,400	150	1,889			136	11.9	
25	Rain	0.84	1.40	59	7.6	132	1,541	126	1,471			120	10.5	
26	Rain	0.02	1.34	59	7.4	98	1,095	110	1,229			102	12.0	
27			1.52	58	7.5	152	1,927	152	1,927			140	11.3	
28	Rain	0.24	1.53	61	7.4	150	1,914	146	1,863			130	11.0	
29	Rain	0.06	1.46	61	7.5	179	2,180	152	1,851			140	11.8	
30	Rain	1.85	1.48	60	7.4	145	1,790	146	1,802			126	14.5	
31	Rain	0.08	1.57	60	7.5	174	2,278	156	2,043			146	11.4	
Total		6.68	43.73	1,835	233.9	4,522	53,547	4,226	49,892	17.20	205	3,802	384.4	
Max.		1.85	1.57	61	7.8	270	3,400	176	2,043	5.70	66	154	19.5	
Min.		0.02	1.25	58	7.3	98	1,095	78	885	3.40	41	68	10.5	
Avg.		0.42	1.41	59	7.5	146	1,727	136	1,609	4.30	51	123	12.4	

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
JULY, 1992 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	96	1,145	96	1,145	2.20	26	78	15.9	1.43	30	44	50
2	96	1,033	64	689			46	17.4	1.29	24	59	
3	90	953	68	720			54	17.7	1.27	32	56	
4	78	826	60	636			40	18.4	1.27	32	55	
5	69	719	62	646			48	17.6	1.25	37	31	
6	93	1,094	52	611			48	14.8	1.41	39	68	
7	84	995	62	734			56	13.4	1.42	44	58	
8	75	913	81	986	2.20	27	73	12.6	1.46	48	45	35
9	93	1,117	52	624			36	13.0	1.44	41	71	
10	99	1,115	46	518			40	13.8	1.35	39	56	
11	105	1,121	70	747			58	12.7	1.28	24	44	
12	81	919	66	749			54	13.1	1.36	25	15	
13	81	966	44	525			38	11.1	1.43	40	66	
14	81	1,013	54	676			50	12.9	1.50	40	64	
15	96	1,137	50	592			40	13.7	1.42	40	67	
16	92	1,136	60	741	2.60	32	50		1.48	43	62	30
17	90	1,081	60	721			40	13.5	1.44	32	51	
18	81	939	42	487			26	11.5	1.39	44	64	
19	66	727	50	550			38	10.8	1.32	39	64	
20	87	1,074	42	518			32	12.1	1.48	41	68	
21	108	1,243	42	483			28	12.1	1.38	33	67	
22	96	1,105	46	529	2.70	31	28	13.6	1.38	42	74	53
23	96	1,177	54	662			42	12.8	1.47	32	61	
24	156	1,965	62	781			58	10.7	1.51	42	59	
25	92	1,074	46	537			44	11.0	1.40	30	63	
26	92	1,028	56	626			50		1.34	6	49	
27	81	1,027	44	558			48	11.8	1.52	47	71	
28	93	1,187	50	638			44	11.6	1.53	38	66	
29	117	1,425	60	731			58	11.8	1.46	35	61	
30	92	1,136	56	691			50		1.48	37	62	
31	96	1,257	50	655			44	11.6	1.57	45	68	
Total	2,852	33,644	1,747	20,506	9.70	116	1,439	373.0	43.73	1,121	1,809	168
Max.	156	1,965	96	1,145	2.70	32	78	18.4	1.57	48	74	53
Min.	66	719	42	483	2.20	26	26	10.7	1.25	6	15	30
Avg.	92	1,085	56	661	2.43	29	46	13.3	1.41	36	58	42

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
JULY, 1992 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading fIm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	6.0	6.0	0.21	2,308	1,849	30.0	0.77	3.0	235	0.41	0.33	94	29	1.43	96	96
2		6.7	11.1	0.16	2,549	2,096	35.0	0.73	3.4	231	0.43	0.35	101	36	1.29	96	64
3		6.8								240			109	36	1.27	90	68
4		6.8								237			108	36	1.27	78	60
5		6.9								241			110	36	1.25	69	62
6		6.1	11.5	0.19	2,352	1,918	37.0	0.64	5.3	241	0.38	0.31	97	36	1.41	93	52
7		6.1	9.4	0.17	2,309	1,918	40.0	0.58	4.3	239	0.39	0.28	96	36	1.42	84	62
8		5.9	6.8	0.17	2,246	1,787	41.0	0.55	4.5	232	0.39	0.29	93	36	1.46	75	81
9		6.0	10.4	0.22	2,160	1,734	34.0	0.64	4.4	235	0.38	0.29	95	36	1.44	93	52
10		6.4	12.7	0.21	2,195	1,770	34.0	0.65	3.4	236	0.38	0.30	101	36	1.35	99	46
11		6.7								235			106	36	1.28	105	70
12		6.3								235			100	29	1.36	81	66
13		6.0	12.6	0.19	2,200	1,657	34.0	0.65	3.5	234	0.36	0.28	95	29	1.43	81	44
14		5.7	9.9	0.20	2,232	1,677	32.0	0.70	3.6	235	0.40	0.30	88	29	1.50	81	54
15		6.1	10.9	0.24	2,156	1,615	32.0	0.67	3.9	237	0.37	0.28	96	29	1.42	96	50
16		5.8	8.7	0.23	2,154	1,666	37.0	0.58	2.7	239	0.36	0.28	95	29	1.48	92	60
17		6.0	9.1	0.21	2,193	1,709	35.0	0.63	2.8	235	0.37	0.29	97	29	1.44	90	60
18		6.2								238			100	29	1.39	81	42
19		6.5								235			105	29	1.32	66	50
20		5.8	12.9	0.21	2,226	1,683	38.0	0.59	2.8	240	0.37	0.29	89	29	1.48	87	42
21		6.2	13.3	0.25	2,155	1,667	42.0	0.51	3.1	242	0.38	0.29	102	29	1.38	108	42
22		6.2	12.2	0.22	2,158	1,645	45.0	0.48	2.8	241	0.35	0.27	102	29	1.38	96	46
23		5.9	9.8	0.23	2,175	1,680	40.0	0.54	3.0	237	0.38	0.29	96	29	1.47	96	54
24		5.7	8.4	0.38	2,200	1,706	40.0	0.55	1.8	238	0.37	0.29	93	29	1.51	156	62
25		6.2								234			102	29	1.40	92	46
26		6.4								234			105	29	1.34	92	56
27		5.7	12.7	0.18	2,374	1,856	57.0	0.42	2.4	236	0.37	0.29	92	36	1.52	81	44
28		5.6	10.7	0.22	2,275	1,762	56.0	0.41	3.3	232	0.39	0.30	96	36	1.53	93	50
29		5.9	9.3	0.27	2,265	1,750	65.0	0.35	2.2	233	0.37	0.29	101	36	1.46	117	60
30		5.8	10.3	0.21	2,374	1,847	79.0	0.30	2.5	239	0.36	0.29	99	36	1.48	92	56
31		5.5	10.2	0.24	2,233	1,732	60.0	0.37	3.4	239	0.41	0.32	94	36	1.57	96	50
Total	48	190.0	229.0	4.84	49,489	38,724	943.0	12.28	72.1	7,335	8.37	6.50	3,057	1,004	43.73	2,852	1,747
Max.	48	6.9	13.3	0.38	2,549	2,096	79.0	0.77	5.3	242	0.43	0.35	110	36	1.57	156	96
Min.	48	5.5	6.0	0.16	2,154	1,615	30.0	0.30	1.8	231	0.35	0.27	88	29	1.25	66	42
Avg.	48	6.1	10.4	0.22	2,250	1,760	42.9	0.56	3.3	237	0.38	0.30	99	32	1.41	92	56

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540
JULY, 1992 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. BOD mgIL	F.Eff. BOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mg/L
Limit-	>4.0	6 & 9	30 & 45	751 & ^1,126	<1.0			20 & 30	500 & ^751	<11.0	7 Day ^275	200 & 400	>85%	>85%		
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012	
Day																
1	6.7	7.5	4	48	0.24	1.43	0.00	3	36	14.2	169	37	98	98	95	<.0005
2	6.4	7.4	5	54		1.29	0.00	2	22	14.5	156	78	97	98		
3	6.4	7.6	5	53		1.27	0.00	2	21	13.9	147	94	97	98		
4	6.6	7.5	8	85		1.27	0.00	1	11	15.3	162	25	94	99		
5	7.0	7.5	4	42		1.25	0.00	5	52	16.3	170	15	96	95		
6	7.2	7.4	10	118		1.41	0.00	3	35	14.4	169	58	94	98		
7	6.7	7.5	5	59		1.42	0.00	3	36	11.8	140	150	97	98		
8	7.0	7.4	7	85	0.16	1.46	0.00	4	49	11.0	134	17	95	97	95	
9	6.9	7.3	7	84		1.44	0.00	3	36	11.3	136	43	92	98		<.0005
10	6.3	7.4	1	11		1.35	0.00	3	34	11.8	133	45	99	98		
11	6.7	7.5	11	117		1.28	0.00	3	32	11.1	118	65	91	98		
12	6.4	7.4	3	34		1.36	0.00	3	34	10.8	122	52	96	97		
13		7.5	12	143		1.43	0.00	4	48	9.8	117	38	91	97		
14	6.6	7.4	4	50		1.50	0.00	3	38	11.7	146	127	97	98		<.0005
15	6.9	7.5	6	71		1.42	0.00	3	36	11.8	140	28	96	98		
16	6.4	7.7	12	148	0.36	1.48	0.00	4	49	12.1	149	101	92	98	90	
17	6.2	7.4	10	120		1.44	0.00	2	24	11.3	136	87	92	98		
18	5.9	7.6	4	46		1.39	0.00	3	35	10.5	122	93	97	98		
19	6.6	7.6	6	66		1.32	0.00	2	22	9.0	99	38	96	98		
20	6.4	7.6	4	49		1.48	0.00	4	49	9.8	121	68	97	97		
21	6.5	7.5	7	81		1.38	0.00	4	46	9.1	105	38	95	98		<.0005
22	6.3	7.4	5	58	0.21	1.38	0.00	4	46	9.9	114	26	97	98	96	
23	6.3	7.5	9	110		1.47	0.00	4	49	9.7	119	21	93	97		
24	6.1	7.5	6	76		1.51	0.00	5	63	9.3	117	34	96	98		
25	5.8	7.4	8	93		1.40	0.00	5	58	7.8	91	270	94	96		
26	5.4	7.4	6	67		1.34	0.00	3	34	7.8	87	189	95	97		
27	5.9	7.5	5	63		1.52	0.00	3	38	8.2	104	25	97	98		
28	6.4	7.4	5	64		1.53	0.00	3	38	8.1	103	15	97	98		
29	6.1	7.5	2	24		1.46	0.00	3	37	8.8	107	136	99	98		
30	5.8	7.4	7	86		1.48	0.00	4	49	7.8	96	232	95	97		
31	6.7	7.4	5	65		1.57	0.00	3	39	8.3	109	40	97	98		
Total	192.6	231.6	193	2,272	0.97	43.73	0.00	101	1,194	337.2	3,939	2,285	2,959	3,027	376	<.0005
Max.	7.2	7.7	12	148	0.36	1.57	0.00	5	63	16.3	170	270	99	99	96	<.0005
Min.	5.4	7.3	1	11	0.16	1.25	0.00	1	11	7.8	87	15	91	95	90	<.0005
Avg.	6.4	7.5	6	73	0.24	1.41	0.00	3	39	10.9	127	G 54	95	98	94	<.0005

G - Geometric Mean

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
JULY, 1992 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	PH	Lbs. of Lime per lb. of Dry Solids	Manpower
1		2,400	1,950	15	298	8	408	6,000	4.6	76	5.8	0.18	
2		2,400	1,550	15	199	4	578	8,000	4.2	75	5.8	0.20	Superintendent 1
3		2,400	1,000	15	397	5	255	4,000	3.3	75	5.9	0.23	Asst. Supt.
4		2,280	900	15	298	5	221	4,000	3.3	75	5.9	0.20	Operators 3
5		2,400	250	17	298	5	255	4,000	3.5	74	6.0	0.22	Total 4
6		2,400	280	17	397	9	544	9,000	3.6	76	5.9	0.20	
7		2,400	260	14	298	6	510	8,000	3.5	74	6.4	0.22	
8		2,400	250	6	298	9	510	8,000	3.4	76	5.9	0.22	
9		2,400	210	9	298	9	510	5,500	3.7	75		0.30	
10		2,160	300	14	298	9	340	8,000	3.5	75	5.8	0.14	
11		2,400	130	13	298	9	306	5,000	3.5	72	5.9	0.21	
12		2,400	180	14	298	8	255	4,500	4.0	74	5.8	0.17	
13		2,400	300	14	298	10	510	8,000	3.6	73	5.9	0.21	
14		2,400	300	15	298	9	561	8,000	4.0	73	5.9	0.21	
15		2,400	280	10	397	9	510	8,000	3.9	74	5.9	0.19	
16		2,280	280	20	298	10	306	8,000	3.9	74	5.7	0.12	
17		2,520	330	15	397	12	442	7,000	3.7	74	5.9	0.20	
18		2,280	270	10	298	8	238	4,000	3.8	73	5.9	0.19	
19		2,400	200	15	298	18	238	4,000	4.0	74	5.9	0.18	
20		2,520	280	14	298	6	425	7,000	3.7	73	5.9	0.20	
21		2,280	460	14	298	6	442	7,000	3.8	74	5.8	0.20	
22		2,520	280	16	298	8	459	7,000	3.6	75	5.7	0.22	
23		2,400	320	15	298	9	1,020	19,000	3.9	74	5.8	0.16	
24		2,400	280	16	298	9	340	6,000	3.9	72	5.9	0.17	
25		2,280	270	15	298	8	221	4,000	3.8	73	5.8	0.17	
26		2,520	190	15	298	8	221	4,000	3.7	74	5.9	0.18	
27		2,400	190	15	298	10	391	6,000	3.5	72	5.7	0.22	
28		2,400	250	15	298	10	221	6,000	3.8	74	5.8	0.12	
29		2,400	350	12	298	6	901	16,800	4.1	76	5.9	0.16	
30		2,400	270	10	298	4	391	6,000	4.5	74	5.9	0.17	
31		2,400	280	13	298	5	391	6,000	4.3	77	5.9	0.18	
Total		74,040	12,640	433	9,535	251	12,920	215,800	117.6	2,300	176.2	5.93	
Max.		2,520	1,950	20	397	18	1,020	19,000	4.6	77	6.4	0.30	
Min.		2,160	130	6	199	4	221	4,000	3.3	72	5.7	0.12	
Avg.		2,388	408	14	308	8	417	6,961	3.8	74	5.9	0.19	

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT

AUGUST, 1992 - PLANT INFLUENT SHEET

	----Weather-----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1			1.42	60	7.5	126	1,492	90	1,066			86	10.2	
2	Rain	0.03	1.44	58	7.4	126	1,513	100	1,201			92	11.0	
3	Rain	0.05	1.55	59	7.7	147	1,900	122	1,577			104	10.5	
4			1.48	59	7.4	159	1,963	132	1,629			112	12.4	
5			1.58	60	7.5	145	1,911	122	1,608			108	11.0	
6			1.64	60	7.5	144	1,970	114	1,559	4.70	64	96	11.0	
7	Rain	0.85	1.64	60	7.5	177	2,421	138	1,888			122	10.8	
8			1.48	60	7.6	132	1,629	98	1,210			80	10.7	
9			1.41	60	7.6	132	1,552	108	1,270			100	8.3	
10			1.67	59	7.7	177	2,465	160	2,228			148	9.5	
11			1.57	62	7.7	159	2,082	178	2,331			154	10.0	
12	Rain	0.18	1.57	61	7.7	171	2,239	130	1,702	3.60	47	110	10.0	
13			1.52	61	7.6	152	1,927	122	1,547			108	12.6	
14			1.55	60	7.5	210	2,715	154	1,991			142	10.3	
15			1.33	60	7.8	138	1,531	138	1,531			120	11.6	
16			1.34	60	7.7	150	1,676	138	1,542			118	12.9	
17			1.48	60	7.9	159	1,963	154	1,901			132	11.8	
18	Rain	0.03	1.50	61	7.8	165	2,064	136	1,701			118	13.4	
19			1.42	61	7.7	179	2,120	168	1,990	4.10	49	148	14.1	
20			1.47	60	7.7	170	2,084	128	1,569			112	13.3	
21			1.46	60	7.6	204	2,484	134	1,632			124	14.4	
22			1.31	61	7.5	186	2,032	136	1,486			126	14.1	
23			1.31	59	7.5	131	1,431	124	1,355			118	12.8	
24			1.55	60	7.7	258	3,335	154	1,991	2.40	31	140	11.0	
25			1.46	61	7.7	180	2,192	154	1,875			144	11.9	
26	Rain	0.06	1.53	61	7.4	222	2,833	150	1,914			136		
27	Rain	0.75	1.48	62	7.6	264	3,259	100	1,234			88	13.2	
28	Rain	0.02	1.42	61	7.6	168	1,990	96	1,137			80	13.3	
29			1.33	61	7.6	150	1,664	106	1,176			92	13.0	
30			1.31	58	7.6	152	1,661	150	1,639			126	13.4	
31			1.41	62	7.8	180	2,117	152	1,787			122	14.1	
Total		1.97	45.63	1,867	236.1	5,213	64,213	4,086	50,265	14.80	191	3,606	356.6	
Max.		0.85	1.67	62	7.9	264	3,335	178	2,331	4.70	64	154	14.4	
Min.		0.02	1.31	58	7.4	126	1,431	90	1,066	2.40	31	80	8.3	
Avg.		0.25	1.47	60	7.6	168	2,071	132	1,621	3.70	48	116	11.9	

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
AUGUST, 1992 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	90	1,066	38	450			32	10.3	1.42	29	58	
2	87	1,045	52	624			46	11.2	1.44	31	48	
3	90	1,163	44	569			36	11.1	1.55	39	64	
4	84	1,037	48	592			40	11.2	1.48	47	64	
5	90	1,186	32	422			24	11.4	1.58	38	74	
6	90	1,231	40	547	3.60	49	30	10.9	1.64	38	65	26
7	96	1,313	82	1,122			54	11.6	1.64	46	41	
8	98	1,210	48	592			47		1.48	26	51	
9	92	1,082	46	541			42	8.8	1.41	30	57	
10	90	1,254	44	613			40	9.7	1.67	49	73	
11	87	1,139	58	759			40	9.8	1.57	45	67	
12	84	1,100	50	655	2.80	37	40	11.9	1.57	51	62	22
13	96	1,217	58	735			48	12.4	1.52	37	52	
14	114	1,474	66	853			60	10.0	1.55	46	57	
15	75	832	28	311			22	9.8	1.33	46	80	
16	90	1,006	56	626			38	12.4	1.34	40	59	
17	98	1,210	49	605			47		1.48	40	68	
18	81	1,013	106	1,326			70	14.7	1.50	51	22	
19	102	1,208	58	687	3.20	38	48	15.2	1.42	43	65	22
20	57	699	82	1,005			68	14.9	1.47	66	36	
21	111	1,352	48	584			44	15.9	1.46	46	64	
22	108	1,180	50	546			44	15.0	1.31	42	63	
23	78	852	48	524			46	14.1	1.31	40	61	
24	102	1,319	52	672	2.70	35	50	12.7	1.55	60	66	0
25	117	1,425	62	755			60	11.9	1.46	35	60	
26	150	1,914	62	791			60		1.53	32	59	
27	165	2,037	82	1,012			66	13.2	1.48	38	18	
28	123	1,457	58	687			50	13.3	1.42	27	40	
29	99	1,098	76	843			66	13.0	1.33	34	28	
30	87	951	82	896			48	13.4	1.31	43	45	
31	105	1,235	80	941			62	14.1	1.41	42	47	
Total	3,036	37,301	1,785	21,886	12.30	159	1,468	343.9	45.63	1,277	1,714	70
Max.	165	2,037	106	1,326	3.60	49	70	15.9	1.67	66	80	26
Min.	57	699	28	311	2.70	35	22	8.8	1.31	26	18	0
Avg.	98	1,203	58	706	3.08	40	47	12.3	1.47	41	55	18

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
AUGUST, 1992 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading fIm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	6.1								237			104	36	1.42	90	38
2		6.0								235			102	36	1.44	87	52
3		5.6	11.7	0.23	2,223	1,720	38.0	0.59	2.2	234	0.37	0.29	93	36	1.55	90	44
4		5.8	10.6	0.22	2,089	1,606	35.0	0.60	2.6	241	0.38	0.29	96	29	1.48	84	48
5		5.5	14.9	0.25	2,092	1,607	28.0	0.75	2.3	239	0.36	0.28	90	29	1.58	90	32
6		5.3	11.6	0.25	2,117	1,619	30.0	0.71	2.1	238	0.41	0.31	88	29	1.64	90	40
7		5.3	5.9	0.26	2,221	1,692	32.0	0.69	2.0	231	0.39	0.31	88	29	1.64	96	82
8		5.8								238			97	29	1.48	98	48
9		6.1								230			101	29	1.41	92	46
10		5.2	11.3	0.23	2,311	1,792	35.0	0.66	1.9	226	0.40	0.31	85	29	1.67	90	44
11		5.5	8.8	0.22	2,231	1,718	33.0	0.68	1.4	237	0.42	0.32	92	29	1.57	87	58
12		5.5	10.5	0.21	2,306	1,768	33.0	0.70	2.3	241	0.40	0.31	92	29	1.57	84	50
13		5.7	9.3	0.24	2,280	1,701	35.0	0.65	2.3	242	0.37	0.27	95	29	1.52	96	58
14		5.6	7.9	0.30	2,245	1,661	30.0	0.75	2.7	242	0.40	0.30	91	29	1.55	114	66
15		6.5								241			106	29	1.33	75	28
16		6.4								242			107	29	1.34	90	56
17		5.8	11.7	0.22	2,360	1,810	58.0	0.41	2.6	238	0.37	0.29	95	29	1.48	98	49
18		5.7	5.3	0.18	2,368	1,840	51.0	0.46	2.0	237	0.38	0.30	93	29	1.50	81	106
19		6.1	10.4	0.22	2,388	1,799	70.0	0.34	2.1	240	0.37	0.28	99	29	1.42	102	58
20		5.9	7.3	0.12	2,436	1,904	67.0	0.36	2.3	239	0.41	0.32	95	29	1.47	57	82
21		5.9	12.9	0.23	2,515	1,972	74.0	0.34	1.8	238	0.39	0.31	96	29	1.46	111	48
22		6.6								240			107	36	1.31	108	50
23		6.6								239			106	36	1.31	78	48
24		5.6	10.8	0.23	2,433	1,892	79.0	0.31	1.4	233	0.39	0.30	90	36	1.55	102	52
25		5.9	9.5	0.27	2,390	1,755	74.0	0.32	1.9	230	0.37	0.27	95	36	1.46	117	62
26		5.6	9.1	0.34	2,400	1,908	79.0	0.30	1.8	234	0.39	0.30	90	36	1.53	150	62
27		5.8	7.3	0.36	2,474	1,908	79.0	0.31	1.5	237	0.38	0.29	97	36	1.48	165	82
28		6.1	11.2	0.24	2,560	1,995	79.0	0.32	0.5	242	0.39	0.30	101	43	1.42	123	58
29		6.5								237			108	43	1.33	99	76
30		6.6								238			109	43	1.31	87	82
31		6.1	7.5	0.23	2,345	1,809	79.0	0.30	2.3	240	0.39	0.29	102	43	1.41	105	80
Total	48	182.3	205.3	5.05	48,784	37,476	1118.0	10.55	42.0	7,356	8.13	6.24	3,010	1,018	45.63	3,036	1,785
Max.	48	6.6	14.9	0.36	2,560	1,995	79.0	0.75	2.7	242	0.42	0.32	109	43	1.67	165	106
Min.	48	5.2	5.3	0.12	2,089	1,606	28.0	0.30	0.5	226	0.36	0.27	85	29	1.31	57	28
Avg.	48	5.9	9.8	0.24	2,323	1,785	53.2	0.50	2.0	237	0.39	0.30	97	33	1.47	98	58

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540
AUGUST, 1992 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. BOD mgIL	F.Eff. BOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	MERCURY mg/L
Limit-																
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012	
Day																
1	6.4	7.4	2	24		1.42	0.00	10	118	7.5	89	72	98	92		
2	6.2	7.4	6	72		1.44	0.00	3	36	6.9	83	78	94	98		
3	6.8	7.5	1	13		1.55	0.00	3	39	7.2	93	50	99	98		
4	6.7	7.2	3	37		1.48	0.00	3	37	6.8	84	37	98	98		
5		7.3	2	26		1.58	0.00	3	40	7.8	103	32	98	98		
6	6.5	7.3	2	27	0.27	1.64	0.00	3	41	7.5	103	71	98	98	94	
7	6.2	7.4	10	137		1.64	0.00	3	41	8.6	118	103	93	98		<0.0005
8	5.5	7.6	5	62		1.48	0.00	3	37	7.8	96	142	95	98		
9	5.4	7.5	2	24		1.41	0.00	~~13~~	~~270~~ 35	6.4	75	133	98	98		
10	6.4	7.4	7	97		1.67	0.00	3	42	7.0	97	22	96	98		
11	6.4	7.5	5	65		1.57	0.00	3	39	6.7	88	125	97	98		
12	6.0	7.5	9	118	0.16	1.57	0.00	3	39	7.0	92	18	93	98	96	<0.0005
13	6.6	7.4	5	63		1.52	0.00	3	38	6.3	80	24	96	98		
14	6.4	7.4	9	116		1.55	0.00	3	39	8.0	103	78	94	99		
15	6.2	7.6	7	78		1.33	0.00	3	33	7.3	81	160 -	95	98		
16	5.8	7.5	4	45		1.34	0.00	4	45	6.0	67	40 -	97	97		
17	6.3	7.6	4	49		1.48	0.00	3	37	7.6	94	102 -	97	98		
18	5.9	7.5	8	100		1.50	0.00	4	50	9.6	120	94 -	94	98		
19	6.2	7.5	4	47	0.32	1.42	0.00	3	36	9.8	116	16 -	98	98	92	<0.0005
20	6.0	7.4	4	49		1.47	0.00	1	12	10.3	126	122 -	97	99		
21	6.3	7.4	4	49		1.46	0.00	2	24	10.4	127	173 -	97	99		
22	6.0	7.4	4	44		1.31	0.00	3	33	9.5	104	110	97	98		
23	6.1	7.4	4	44		1.31	0.00	2	22	8.2	90	60	97	98		
24	6.1	7.4	7	90	0.15	1.55	0.00	5	65	8.3	107	64	95	98	95	
25	6.2	7.4	6 -	73 -		1.46	0.00	4 -	49 -	8.0	97	30	96	98		<0.0005
26	6.3	7.4	6 -	77 -		1.53	0.00	5 -	64 -			54	96	98		
27	6.2	7.7	10 -	123 -		1.48	0.00	4 -	49 -	8.3	102	41	90	98		
28	5.7	7.5	6 -	71 -		1.42	0.00	(6) -	71 -	8.8	104	124	94	96		
29	6.0	7.4	9 -	100 -		1.33	0.00	4 -	44 -	7.6	84	168	92	97		
30	5.7	7.5	9 -	98 -		1.31	0.00	5 -	55 -	6.1	67	162	94	97		
31	6.3	7.5	12 -	141 -		1.41	0.00	6 -	71 -	7.8	92	92	92	97		
Total	184.8	230.9	176	2,160	0.90	45.63	0.00	133	~~1,615~~ 1380	235.1	2,882	2,597	2,965	3,029	377	<0.0005
Max.	6.8	7.7	12	141	0.32	1.67	0.00	~~13~~	~~270~~ 118	10.4	127	173	99	99	96	<0.0005
Min.	5.4	7.2	1	13	0.15	1.31	0.00	1	12	6.0	67	16	90	92	92	<0.0005
Avg.	6.2	7.4	6	70	0.23	1.47	0.00	4	~~52~~ 45	7.8	96	G 68	96	98	94	<0.0005

G - Geometric Mean

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
AUGUST, 1992 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	PH	Lbs. of Lime per lb. of Dry Solids
1		2,280	110	14	199	8	187	3,500	3.8	71	5.9	0.17
2		2,520	150	14	397	5	170	3,500	3.9	70	5.9	0.15
3		2,400	390	13	298	8	1,122	18,000	4.3	74	6.0	0.17
4		2,520	250	14	298	6	204	3,000	4.2	74	5.9	0.19
5		2,400	530	15	199	6	204	3,000	4.7	73	6.0	0.17
6		2,040	280	15	298	8	255	4,500	4.2	69	6.0	0.16
7		2,520	230	16	199	6	255	5,000	4.5	68	6.2	0.13
8		2,400	130	15	397	9	238	4,000	4.1	72	6.1	0.17
9		2,400	250	12	298	7	221	4,000	4.9	76	5.9	0.13
10		2,400	400	14	298	8	519	10,000	4.5	72	6.2	0.14
11		2,400	280	14	298	5	519	10,000	4.0	72	5.8	0.15
12		2,520	770	13	298	7	646	10,000	4.0	72	5.8	0.19
13		2,280	170	17	298	8	391	6,600	3.5	72	5.8	0.20
14		2,520	300	14	298	8	663	10,000	3.5	78	5.8	0.23
15		2,280	1,240	16	397	8	221	4,000	3.6	75	5.8	0.18
16		2,400	1,280	16	199	9	238	4,000	3.3	77	5.7	0.21
17		2,400	130	18	298	7	510	7,500	3.4	74	5.9	0.24
18		2,400	200	18	298	18	476	6,600	2.8	79	5.8	0.31
19		2,520	290	15	298	12	374	9,200	3.4	71	6.0	0.14
20		2,280	370	20	298	16	476	4,400	3.2	73	6.0	0.40
21		2,400	210	17	199	14	493	8,000	3.7	72	5.8	0.20
22		2,280	80	19	298	18	221	4,000	3.1	72	5.7	0.21
23		2,520	100	22	298	10	374	4,000	3.2	74	5.7	0.35
24		2,280	200	19	298	10	459	8,000	3.3	73	5.9	0.21
25		2,520	290	20	298	8	629	8,000	3.3	74	5.8	0.28
26		2,400	200	18	199	12	289	8,000	3.5	72	6.0	0.12
27		2,400	430	22	397	10	578	3,000	3.4	73	6.0	0.67
28		2,280	150	20	199	13	510	5,000	3.8	72	5.8	0.32
29		2,400	110	20	298	12	170	5,000	3.4	73	5.8	0.12
30		2,400	90	22	199	13	170	5,000	3.2	79	5.8	0.13
31		2,280	360	21	298	12	493	5,000	3.6	71	5.8	0.33
Total		74,040	9,970	523	8,842	301	12,275	193,800	115.3	2,267	182.6	6.79
Max.		2,520	1,280	22	397	18	1,122	18,000	4.9	79	6.2	0.67
Min.		2,040	80	12	199	5	170	3,000	2.8	68	5.7	0.12
Avg.		2,388	322	17	285	10	396	6,252	3.7	73	5.9	0.22

Manpower

Superintendent	1
Asst. Supt.	1
Operators	2
Total	4

Robert J. Swalwell
Superintendent

SEPTEMBER, 1992 - PLANT INFLUENT SHEET

	----Weather-----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1			1.49	61	8.4	207	2,572	150	1,864			126	13.7	
2	Rain	0.41	1.44	62	7.5	222	2,666	154	1,849			136	13.8	
3			1.43	62	7.6	138	1,646	152	1,813			128	12.5	
4			1.39	62	7.7	150	1,739	108	1,252			88	13.2	
5			1.27	60	7.8	135	1,430	88	932			68	12.9	
6	Rain	0.09	1.25	58	7.6	123	1,282	94	980			80	11.7	
7	Rain	0.12	1.38	59	7.6	135	1,554	112	1,289			94	11.5	
8			1.48	62	7.3	176	2,172	134	1,654			136	12.1	
9	Rain	1.69	1.54	62	7.3	144	1,849	154	1,978	4.00	51	138	12.7	
10			1.58	62	7.5	162	2,135	108	1,423			96	11.3	
11			1.57	60	7.3	186	2,435	106	1,388			90	11.9	
12			1.43	61	7.5	138	1,646	104	1,240			92	13.7	
13			1.36	58	7.7	138	1,565	132	1,497			120	11.2	
14	Rain	0.02	1.45	60	7.7	134	1,620	148	1,790			128	12.9	
15	Rain	0.13	1.49	62	7.5	147	1,827	128	1,591	3.90	48	110	12.5	
16			1.39	61	7.6	164	1,901	192	2,226			164	13.7	
17			1.47	62	7.6	153	1,876	118	1,447			100	13.1	
18	Rain	0.60	1.43	62	7.6	282	3,363	120	1,431			108	13.1	
19			1.29	60	7.7	150	1,614	128	1,377			118	13.1	
20	Rain	0.51	1.31	59	7.8	150	1,639	130	1,420			122	13.2	
21	Rain	0.13	1.43	60	7.6	164	1,956	132	1,574	3.90	47	124	12.7	
22			1.43	60	7.5	149	1,777	180	2,147			162	12.8	
23			1.43	60	7.8	161	1,920	120	1,431			108	12.1	
24			1.39	61	7.6	150	1,739	148	1,716			144	14.0	
25			1.47	61	7.6	216	2,648	134	1,643			128	11.9	
26	Rain	0.37	1.44	60	7.6	228	2,738	164	1,970			150	13.3	
27			1.59	60	7.5	134	1,777	120	1,591			112	14.0	
28			1.39	59	7.5	192	2,226	154	1,785			138	14.1	
29			1.51	60		216	2,720	150	1,889			130	16.2	
30			1.36	60	7.7	192	2,178	156	1,769			140	16.2	
31														
Total		4.07	42.88	1,816	220.7	5,036	60,211	4,018	47,956	11.80	146	3,578	391.1	
Max.		1.69	1.59	62	8.4	282	3,363	192	2,226	4.00	51	164	16.2	
Min.		0.02	1.25	58	7.3	123	1,282	88	932	3.90	47	68	11.2	
Avg.		0.41	1.43	61	7.6	168	2,007	134	1,599	3.93	49	119	13.0	

Robert J. Swalwell
Superintendent

SEPTEMBER, 1992 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	159	1,976	82	1,019			76	13.9	1.49	23	45	
2	141	1,693	72	865			64	15.0	1.44	36	53	
3	114	1,360	72	859			62	14.5	1.43	17	53	
4	102	1,182	52	603			34	14.5	1.39	32	52	
5	63	667	52	551			40	9.8	1.27	53	41	
6	97	1,011	66	688			50		1.25	21	30	
7	99	1,139	74	852			60	12.3	1.38	27	34	
8	102	1,259	78	963			70	12.7	1.48	42	42	
9	78	1,002	74	950	3.90	50	70	12.4	1.54	46	52	3
10	114	1,502	68	896			60	12.5	1.58	30	37	
11	102	1,336	66	864			62	12.9	1.57	45	38	
12	90	1,073	50	596			40	13.8	1.43	35	52	
13	75	851	70	794			64	12.5	1.36	46	47	
14	81	980	62	750			52	12.9	1.45	40	58	
15	93	1,156	46	572	3.10	39	38	13.2	1.49	37	64	21
16	87	1,009	58	672			50	14.3	1.39	47	70	
17	105	1,287	64	785			56	12.9	1.47	31	46	
18	105	1,252	50	596			46	13.5	1.43	63	58	
19	99	1,065	52	559			52	12.8	1.29	34	59	
20	81	885	40	437			36	12.5	1.31	46	69	
21	96	1,145	58	692	2.00	24	54	12.5	1.43	41	56	49
22	84	1,002	40	477			34	14.0	1.43	40	78	
23	93	1,109	42	501			34	12.3	1.43	42	65	
24	84	974	44	510			44	14.3	1.39	44	70	
25	111	1,361	40	490			34	11.8	1.47	49	70	
26	117	1,405	34	408			34	11.8	1.44	49	79	
27	63	835	48	637			46	12.1	1.59	53	60	
28	108	1,252	52	603			42	13.9	1.39	44	66	
29	75	945	62	781			46	15.0	1.51	65	59	
30	108	1,225	54	612			52	13.4	1.36	44	65	
31												
Total	2,926	34,938	1,722	20,582	9.00	112	1,502	380.0	42.88	1,222	1,668	73
Max.	159	1,976	82	1,019	3.90	50	76	15.0	1.59	65	79	49
Min.	63	667	34	408	2.00	24	34	9.8	1.25	17	30	3
Avg.	98	1,165	57	686	3.00	37	50	13.1	1.43	41	56	24

Robert J. Swalwell
Superintendent

SEPTEMBER, 1992 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading fIm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	5.8	6.7	0.38	2,269	1,721	55.0	0.41	1.3	237	0.38	0.29	93	36	1.49	159	82
2		6.0	8.1	0.31	2,335	1,832	70.0	0.33	0.8	233	0.41	0.32	95	36	1.44	141	72
3		6.0	8.2	0.24	2,360	1,887	50.0	0.47	0.4	236	0.40	0.32	96	36	1.43	114	72
4		6.2	12.1	0.20	2,433	1,937	85.0	0.29	1.0	240	0.39	0.31	99	36	1.39	102	52
5		6.8								237			108	36	1.27	63	52
6		6.9								237			109	36	1.25	97	66
7		6.2								233			102	36	1.38	99	74
8		5.8	7.4	0.23	2,388	1,845	82.0	0.29	2.2	234	0.37	0.28	95	36	1.48	102	78
9		5.6	7.3	0.19	2,311	1,782	88.0	0.26	1.6	250	0.37	0.28	90	36	1.54	78	74
10		5.5	7.1	0.30	2,139	1,695	54.0	0.40	1.7	254	0.42	0.33	89	29	1.58	114	68
11		5.5	8.2	0.24	2,379	1,875	86.0	0.28	1.0	260	0.40	0.30	90	29	1.57	102	66
12		6.0								257			99	29	1.43	90	50
13		6.3								258			104	29	1.36	75	70
14		5.9								247			97	29	1.45	81	62
15		5.8	12.7	0.20	2,424	1,891	85.0	0.29	1.6	249	0.40	0.31	95	29	1.49	93	46
16		6.2	10.3	0.18	2,312	1,870	89.0	0.26	2.3	247	0.37	0.30	102	29	1.39	87	58
17		5.9	9.0	0.23	2,361	1,884	93.0	0.25	1.6	247	0.38	0.30	96	36	1.47	105	64
18		6.0	11.9	0.22	2,374	1,904	85.0	0.28	2.0	256	0.37	0.29	99	36	1.43	105	50
19		6.7								260			109	36	1.29	99	52
20		6.6								254			106	36	1.31	81	40
21		6.0	9.8	0.22	2,255	1,745	91.0	0.25	2.0	248	0.35	0.27	96	36	1.43	96	58
22		6.0	14.1	0.19	2,243	1,748	85.0	0.26	1.5	264	0.35	0.28	98	36	1.43	84	40
23		6.0	12.8	0.22	2,145	1,657	78.0	0.28	2.4	260	0.35	0.28	98	29	1.43	93	42
24		6.2	12.8	0.19	2,186	1,728	76.0	0.29	1.7	262	0.34	0.27	101	29	1.39	84	44
25		5.9	13.4	0.26	2,198	1,724	85.0	0.26	2.2	255	0.35	0.27	99	29	1.47	111	40
26		6.0								252			103	29	1.44	117	34
27		5.4								256			97	29	1.59	63	48
28		6.2	11.6	0.23	2,344	1,814	89.0	0.26	2.2	262	0.34	0.28	112	29	1.39	108	52
29		5.7	9.3	0.17	2,421	1,857	78.0	0.31	1.7	261	0.39	0.30	97	29	1.51	75	62
30		6.3	11.6	0.22	2,364	1,845	84.0	0.28	3.2	261	0.37	0.29	115	29	1.36	108	54
31																	
Total	48	181.5	204.5	4.63	46,241	36,241	1588.0	6.00	34.4	7,507	7.50	5.87	2,989	975	42.88	2,926	1,722
Max.	48	6.9	14.1	0.38	2,433	1,937	93.0	0.47	3.2	264	0.42	0.33	115	36	1.59	159	82
Min.	48	5.4	6.7	0.17	2,139	1,657	50.0	0.25	0.4	233	0.34	0.27	89	29	1.25	63	34
Avg.	48	6.0	10.2	0.23	2,312	1,812	79.4	0.30	1.7	250	0.38	0.29	100	33	1.43	98	57

Robert J. Swalwell
Superintendent

SEPTEMBER, 1992 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. BOD mgIL	F.Eff. BOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %
Limit-															
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012
Day															
1	6.3	7.5	8	99		1.49	0.00	5	62	9.5	118	170	95	98	
2	5.7	7.4	12	144		1.44	0.00	8	96	11.7	141	728	92	96	
3	6.1	7.6	13	155		1.43	0.00	5	60	11.5	137	604	91	96	
4	6.2	7.4	5	58		1.39	0.00	4	46	10.0	116	820 230	95	97	
5	5.5	7.4	3	32		1.27	0.00	3	32	8.9	94	152	97	98	
6	5.6	7.5	4	42		1.25	0.00	3	31	6.8	71	52	96	98	
7	5.7	7.3	6	69		1.38	0.00	4	46	6.8	78	70	95	97	
8	6.4	7.3	10	123		1.48	0.00	3	37	8.0	99	125	93	98	
9	6.7	7.4	16	205	0.60	1.54	0.00	4	51	8.4	108	42	90	97	85
10	6.2	7.5	9	119		1.58	0.00	4	53	8.5	112	194	92	98	
11	6.2	7.2	9	118		1.57	0.00	3	39	9.0	118	160	92	98	
12	6.2	7.3	8	95		1.43	0.00	3	36	8.8	105	70	92	98	
13	6.3	7.6	10	113		1.36	0.00			7.8	88		92		
14	6.6	7.5	11	133		1.45	0.00	4	48	8.0	97	44	93	97	
15	6.3	7.4	6	75	0.71	1.49	0.00	4	50	8.2	102	116	95	97	82
16	6.0	7.5	11	128		1.39	0.00	4	46	8.5	99		94	98	
17	6.3	7.5	7	86		1.47	0.00	4	49	8.7	107	166	94	97	
18	6.6	7.5	9	107		1.43	0.00	4	48	8.7	104	192	93	98	
19	6.4	7.5	9	97		1.29	0.00	4	43	6.4	69	672	93	97	
20	6.2	7.4	11	120		1.31	0.00	6	66	5.0	55	96	92	96	
21	6.4	7.6	12	143	0.44	1.43	0.00	3	36	5.4	64	206	91	98	89
22	6.6	7.4	6	72		1.43	0.00	3	36	6.6	79	122 202	97	98	
23	6.5	7.4	6	72		1.43	0.00	3	36	4.9	58	208	95	98	
24	6.5	7.3	7	81		1.39	0.00	3	35	5.1	59	210	95	98	
25	6.1	7.3	8	98		1.47	0.00	3	37	7.7	94	96	94	99	
26	5.9	7.4	8	96		1.44	0.00	3	36	6.7	80	116	95	99	
27	5.6	7.4	5	66		1.59	0.00	2	27	6.8	90	118	96	99	
28	6.3	7.3	7	81		1.39	0.00	2	23	7.0	81	22	95	99	
29	6.4		7	88		1.51	0.00	4	50	7.7	97		95	98	
30	6.5	7.3	4	45		1.36	0.00	4	45	6.1	69	32	97	98	
31															
Total	186.3	215.1	247	2,961	1.75	42.88	0.00	109	1,300	233.2	2,789	5,603	2,816	2,833	256
Max.	6.7	7.6	16	205	0.71	1.59	0.00	8	96	11.7	141	820	97	99	89
Min.	5.5	7.2	3	32	0.44	1.25	0.00	2	23	4.9	55	22	90	96	82
Avg.	6.2	7.4	8	99	0.58	1.43	0.00	4	45	7.8	93	G 136	94	98	85

G - Geometric Mean

Robert J. Swalwell
Superintendent

SEPTEMBER, 1992 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	PH	Lbs. of Lime per lb. of Dry Solids
1		2,400	360	23	298	15	595	6,600	3.5	72	5.9	0.31
2		2,520	170	22	199	15	510	7,600	4.0	71	5.8	0.20
3		2,280	170	17	298	12	476	8,200	4.1	72	5.7	0.17
4		2,400	410	21	199	12	510	8,000	3.3	76	5.6	0.23
5		2,400	210	24	298	16	630	8,000	3.3	74	5.7	0.28
6		2,400	240	18	298	10	459	8,000	3.0	76	5.8	0.23
7		2,160	110	21	298	11	459	8,000	3.5	72	5.8	0.20
8		2,400	240	19	199	9	544	13,000	3.1	74	5.8	0.16
9		2,520	310	20	199	18	459	9,000	3.5	73	5.7	0.17
10		2,520	300	20	199	10	561	9,000	3.7	70	5.7	0.20
11		2,400	350	19	298	11	459	7,500	3.9	72	5.8	0.19
12		2,400	120	19	298	13	340	7,500	3.4	70	5.8	0.16
13		2,520	120	22	298	14	374	4,500	3.3	75	5.9	0.30
14		2,400	210	20	298	14	459	8,000	3.7	74	5.9	0.18
15		2,400	280	20	298	14	493	8,000	3.6	75	5.9	0.20
16		2,400	380	23	397	20	459	8,000	3.7	72	5.9	0.18
17		2,520	290	21	199	10	493	8,000	3.4	73	5.9	0.22
18		2,400	180	11	397	12	476	8,000	3.6	74	5.9	0.20
19		2,520	220	17	298	12	493	8,000	3.6	74	5.8	0.20
20		2,400	220	18	199	12	442	7,500	3.1	74	5.8	0.23
21		2,280	250	20	298	12	459	8,000	3.5	74	5.8	0.20
22		2,520	270	18	397	14	493	8,000	3.5	76	5.8	0.21
23		2,520	270	19	298	13	493	8,000	3.3	74	5.8	0.22
24		2,400	490	21	298	13	510	8,000	4.5	77	5.7	0.17
25		2,520	620	20	298	18	1,207	19,900	3.4	75	5.8	0.21
26		2,280	260	20	298	10	459	8,000	3.1	74	5.9	0.22
27		2,520	300	16	397	14	459	9,000	2.8	73	5.8	0.22
28		2,520	230	20	298	14	561	7,500	2.8	74	5.9	0.32
29		2,520	250	23	298	11	493	8,000	3.2	74	6.1	0.23
30		2,520	250	25	298	15	408	8,000	2.8	74	5.9	0.22
31												
Total		72,960	8,080	597	8,643	394	15,233	252,800	103.2	2,208	174.6	6.42
Max.		2,520	620	25	397	20	1,207	19,900	4.5	77	6.1	0.32
Min.		2,160	110	11	199	9	340	4,500	2.8	70	5.6	0.16
Avg.		2,432	269	20	288	13	508	8,427	3.4	74	5.8	0.21

Manpower

Superintendent	1
Asst. Supt.	1
Operators	2
Total	4

Robert J. Swalwell
Superintendent

[illegible] WASTEWATER TREATMENT PLANT

OCTOBER, 1992 - PLANT INFLUENT SHEET

	-----Weather----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-	^00033	^00045	^50050	^00011	^00400	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	
Day														
1			1.36	60	7.5	162	1,837	130	1,475			120		
2			1.31	60	7.5	216	2,360	160	1,748			150		
3			1.30	60	7.6	204	2,212	152	1,648			140		
4			1.26	60	7.4	153	1,608	136	1,429			112		
5			1.40	60	7.5	264	3,082	200	2,335	4.60	54	184		
6			1.49	61	7.5	216	2,684	132	1,640			126		
7			1.29	59	7.6	198	2,130	164	1,764			136		
8	Rain	0.81	1.36	59	7.9	138	1,565	118	1,338			88		
9	Rain	0.02	1.33	60	7.6	162	1,797	144	1,597			118		
10	Rain	0.02	1.30	58	7.8	177	1,919	132	1,431			112		
11	Rain	0.14	1.32	58	7.8	177	1,949	150	1,651			140		
12			1.32	59	7.6	180	1,982	138	1,519			122		
13	Rain	0.35	1.37	59	7.8	187	2,137	154	1,760			134		
14	Rain	1.03	1.37	59	7.6	187	2,137	148	1,691	4.10	47	132		
15	Rain	0.55	1.45	61	7.6	174	2,104	134	1,620			128		
16	Rain	0.08	1.34	60	7.7	210	2,347	160	1,788			128		
17			1.32	60	7.7	168	1,849	130	1,431			122		
18	Rain	0.13	1.25	59	7.7	204	2,127	98	1,022			98		
19	Snow	0.12	1.46	59	7.6	167	2,033	120	1,461			130		
20	Rain	0.04	1.51	59	7.6	252	3,174	160	2,015			156		
21			1.46	59	7.9	210	2,557	136	1,656	2.80	34	124		
22			1.47	59	7.7	166	2,035	158	1,937			150		
23			1.44	59	7.7	180	2,162	170	2,042			148		
24			1.42	58	7.7	216	2,558	194	2,298			180		
25			1.43	58	7.7	142	1,694	114	1,360			104		
26			1.44	58	7.8	167	2,006	126	1,513	4.00	48	110		
27			1.54	59	7.7			124	1,593			106		
28			1.42	59	7.5			168	1,990			146		
29			1.35	59	7.6	246	2,770	140	1,576			120		
30			1.37	58	7.8	234	2,674	154	1,760			126		
31			1.27	58	7.8	195	2,065	144	1,525			110		
Total	0	3.29	42.72	1,834	237.5	5,552	63,552	4,488	51,613	15.50	183	4,000		
Max.	0	1.03	1.54	61	7.9	264	3,174	200	2,335	4.60	54	184		
Min.	0	0.02	1.25	59	7.4	138	1,565	98	1,022	2.80	34	88		
Avg.	0	0.30	1.38	59	7.7	191	2,191	144	1,665	3.88	46	129		

Robert J. Swalwell
Superintendent

[illegible] WASTEWATER TREATMENT PLANT

OCTOBER, 1991 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
PN-	^00310	^85001	^00530	^85002	^00665	^85004	^00535	^00610	^50050			
Day												
1	102	1,157	52	590			48		1.36	37	60	
2	123	1,344	116	1,267			102		1.31	43	28	
3	123	1,334	86	932			86		1.30	40	43	
4			68	715			58		1.26		50	
5	174	2,032	68	794	3.00	35	64		1.40	34	66	35
6	132	1,640	44	547			42		1.49	39	67	
7	105	1,130	50	538			42		1.29	47	70	
8	96	1,089	58	658			38		1.36	30	51	
9	114	1,265	62	688			42		1.33	30	57	
10	108	1,171	50	542			44		1.30	39	62	
11	99	1,090	54	594			54		1.32	44	64	
12	111	1,222	56	616			42		1.32	39	59	
13	120	1,371	66	754			52		1.37	36	57	
14	159	1,817	90	1,028	3.30	38	84		1.37	15	39	20
15	141	1,705	88	1,064			82		1.45	19	34	
16	141	1,576	76	849			76		1.34	33	53	
17	123	1,354	72	793			72		1.32	27	45	
18	117	1,220	68	709			58		1.25	43	31	
19	129	1,571	76	925			74		1.46	23	37	
20	171	2,153	72	907			70		1.51	32	55	
21	123	1,498	68	828	5.80	71	64		1.46	41	50	0
22	120	1,471	64	785			60		1.47	28	59	
23	123	1,477	60	721			56		1.44	32	65	
24	165	1,954	70	829			62		1.42	24	64	
25	120	1,431	64	763			58		1.43	15	44	
26	132	1,585	76	913	5.10	61	70		1.44	21	40	0
27			84	1,079			76		1.54		32	
28			86	1,018			74		1.42		49	
29	174	1,959	70	788			62		1.35	29	50	
30	156	1,782	70	800			58		1.37	33	55	
31	156	1,652	74	784			52		1.27		49	
Total	3,657	42,049	2,158	24,818	17.20	205	1,922		42.72	873	1,585	55
Max.	174	2,153	116	1,267	5.80	71	102		1.54	47	70	35
Min.	96	1,089	44	538	3.00	35	38		1.25	15	28	0
Avg.	131	1,502	70	801	4.30	51	62		1.38	31	51	14

Robert J. Swalwell
Superintendent

MARSHALL MUNICIPAL WASTEWATER TREATMENT PLANT

OCTOBER, 1992 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
PN-	^80993	^81001	^80990	^80992	^70323	^70324	^81004	^81007	^00300	^81000	^81006	^70325	^81014	^80991	^50050	^00310	^00530
Day																	
1	48	6.3	11.8	0.21	2,328	1,820	80.0	0.29	2.8	256	0.37	0.28	115	29	1.36	102	52
2		6.6	5.7	0.23	2,402	1,958	65.0	0.37	2.4	250	0.37	0.27	118	29	1.31	123	116
3		6.6								252			118	29	1.30	123	86
4		6.8								260			114	29	1.26		68
5		6.2	9.3	0.36	2,465	1,862	67.0	0.37	2.4	283	0.37	0.30	110	36	1.40	174	68
6		5.8	13.8	0.27	2,519	2,004	79.0	0.32	1.7	298	0.41	0.33	103	36	1.49	132	44
7		6.7	13.9	0.19	2,493	1,981	86.0	0.29	2.0	245	0.40	0.32	119	36	1.29	105	50
8		6.3	11.2	0.19	2,464	1,911	88.0	0.28	2.4	246	0.37	0.29	113	36	1.36	96	58
9		6.5	10.1	0.24	2,330	1,772	82.0	0.28	2.1	253	0.38	0.29	115	43	1.33	114	62
10		6.6								255			116	43	1.30	108	50
11		6.5								254			114	43	1.32	99	54
12		6.5	11.2	0.24	2,298	1,709	80.0	0.29	3.9	278	0.36	0.27	112	43	1.32	111	56
13		6.3	8.3	0.29	2,080	1,599	80.0	0.26	4.0	282	0.34	0.26	104	43	1.37	120	66
14		6.3	6.6	0.33	2,276	1,821	74.0	0.31	1.8	273	0.37	0.30	104	43	1.37	159	90
15		5.9	6.3	0.33	2,245	1,742	79.0	0.28	1.4	273	0.38	0.30	98	43	1.45	141	88
16		6.4	8.1	0.28	2,309	1,847	87.0	0.27	1.3	286	0.38	0.30	105	43	1.34	141	76
17		6.5								288			109	43	1.32	123	72
18		6.9								293			114	43	1.25	117	68
19		5.9	7.6	0.29	2,360	1,808	91.0	0.26	3.3	288			107	50	1.46	129	76
20		5.7	7.7	0.39	2,342	1,847	93.0	0.25	2.2	282	0.36	0.30	106	58	1.51	171	72
21		5.9	9.2	0.26	2,558	1,950	92.0	0.28	1.1	287	0.40	0.32	109	58	1.46	123	68
22		5.9	9.1	0.26	2,374	1,862	94.0	0.25	0.7	280	0.38	0.30	108	65	1.47	120	64
23		6.0	9.7	0.27	2,325	1,831	94.0	0.25	1.7	265	0.39	0.30	110	65	1.44	123	60
24		6.1								280				65	1.42	165	70
25		6.0								291				58	1.43	120	64
26		6.0	7.2	0.29	2,195	1,833	90.0	0.24	1.2	277	0.36	0.26	109	58	1.44	132	76
27		5.6	5.8		2,104	1,664	90.0	0.23	1.5	284	0.33	0.27	97	58	1.54		84
28		6.1	6.1		2,069	1,677	87.0	0.24	2.1	278	0.34	0.27	104	58	1.42		86
29		6.4	8.0	0.40	2,104	1,642	80.0	0.26	2.3	285	0.34	0.27	109	58	1.35	174	70
30		6.3	7.9	0.37	2,107	1,621	83.0	0.25	1.8	288	0.34	0.26	106	58	1.37	156	70
31		6.8								286			113	58	1.27	156	74
Total	48	194.4	194.7	5.69	50,747	39,761	1841.0	6.13	46.1	8,496	7.74	6.06	3,179	1,457	42.72	3,657	2,158
Max.	48	6.9	13.9	0.40	2,558	2,004	94.0	0.37	4.0	298	0.41	0.33	119	65	1.54	174	116
Min.	48	5.6	5.7	0.19	2,069	1,599	65.0	0.23	0.7	245	0.33	0.26	97	29	1.25	96	44
Avg.	48	6.2	8.9	0.28	2,307	1,807	84.0	0.28	2.1	274	0.37	0.29	110	47	1.38	131	70

Robert J. Swalwell
Superintendent

MARSHALL WWTP 881 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0020540

OCTOBER, 1992 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. BOD mgIL	F.Eff. BOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mgIL
PN-	^00300	^00400	^00530	^00530	^00665	^50050	^50060	^80082	^80082	^00610	^00610	^31616	^81011	^91267	^81012	
Day																
1	6.6	7.3	6	68		1.36	0.00	3	34			14	95	98		
2	6.5	7.3	5	55		1.31	0.00	8	87			26	97	96		
3	6.2	7.4	3	33		1.30	0.00	10	108			11	98	95		
4	6.1	7.3	5	53		1.26	0.00	3	32			8	96	98		
5	6.8	7.3	6	70	0.32	1.40	0.00	4	47			10	97	98	93	<0.0005
6	7.3	7.4	5	62		1.49	0.00	2	25			6	96	99		
7	6.6	7.4	4	43		1.29	0.00	3	32			62	98	98		
8	6.5	7.5	7	79		1.36	0.00	3	34			63	94	98		
9	6.7	7.5	6	67		1.33	0.00	3	33			24	96	98		
10	5.8	7.6	3	33		1.30	0.00	3	33			32	98	98		
11	5.9	7.5	6	66		1.32	0.00	3	33			22	96	98		
12	6.7	7.5	7	77		1.32	0.00	4	44			28	95	98		
13	7.3	7.5	4	46		1.37	0.00	4	46			7	97	98		
14	6.4	7.6	5	57	0.34	1.37	0.00	6	69			222	97	97	92	<0.0005
15	6.1	7.5	11	133		1.45	0.00	9	109			75	92	95		
16	6.4	7.5	10	112		1.34	0.00	6	67			56	94	97		
17	6.0	7.4	4	44		1.32	0.00	5	55			171	97	97		
18	6.0	7.4	2	21		1.25	0.00	4	42			9	98	98		
19	6.9	7.5	9	110		1.46	0.00	4	49			87	93	98		
20	6.5	7.5	8	101		1.51	0.00	7	88			77	95	97		
21	6.3	7.8	11	134	0.96	1.46	0.00	8	97			1,300	92	96	66	<0.0005
22	6.5	7.4	2	25		1.47	0.00	7	86			126	99	96		
23	6.6	7.4	4	48		1.44	0.00	6	72			122	98	97		
24	6.8	7.5	6	71		1.42	0.00	6	71			16	97	97		
25	6.4	7.4	11	131		1.43	0.00	10	119			230	90	93		
26	6.2	7.5	8	96	0.84	1.44	0.00	9	108			640	94	95	79	<0.0005
27	6.3	7.5	11	141		1.54	0.00					830	91			
28	6.2	7.4	13	154		1.42	0.00					86	92			
29	6.3	7.4	9	101		1.35	0.00	10	113			26	94	96		
30	6.8	7.4	11	126		1.37	0.00	6	69			59	93	97		
31	6.4	7.5	4	42		1.27	0.00					41	97			
Total	200.1	231.1	206	2,397	2.46	42.72	0.00	156	1,801			4,486	2,956	2,716	330	<0.0005
Max.	7.3	7.8	13	154	0.96	1.54	0.00	10	119			1,300	99	99	93	<0.0005
Min.	5.8	7.3	2	21	0.32	1.25	0.00	2	25			6	90	93	66	<0.0005
Avg.	6.5	7.5	7	77	0.62	1.38	0.00	6	64			G 50	95	97	83	<0.0005

G-Geometric Mean

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT

OCTOBER, 1992 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	PH	Lbs. of Lime per lb. of Dry Solids
1		2,520	250	28	298	18	425	7,500	3.0	74	5.8	0.22
2		2,280	340	28	298	19	425	8,000	3.1	74	5.8	0.20
3		2,400	140	19	298	19	204	4,000	2.9	75	5.8	0.21
4		2,520	290	23	298	20	204	3,000	3.2	74	5.8	0.25
5		2,520	340	24	397	20	1,088	18,860	3.3	72	6.0	0.21
6		2,520	290	25	298	20	425	7,000	4.0	74	5.8	0.18
7		2,280	210	23	298	20	374	6,000	3.9	73	6.1	0.19
8		2,400	340	23	397	20	374	6,000	3.7	76	5.7	0.20
9		2,520	210	19	397	20	1,054	20,000	4.1	75	5.8	0.15
10		2,280	130	30	199	15	264	4,000	3.6	77	6.1	0.22
11		2,400	280	18	298	14	204	4,200	3.8	74	5.7	0.15
12		2,520	40	20	397	11	357	6,000	4.3	75	5.6	0.16
13		2,520	280	21	298	15	306	6,000	3.9	76	5.8	0.16
14		2,520	370	25	199	14	1,190	22,800	3.4	73	5.9	0.18
15		2,400	230	20	199	13	459	8,000	3.5	74	5.6	0.20
16		2,640	310	22	199	8	748	10,300	3.2	77	5.6	0.27
17		2,520	200	15	199	10	204	4,000	3.9	77	6.0	0.16
18		2,640	210	21	199	9	187	4,000	3.4	77	5.9	0.16
19		2,640	340	17	99	11	272	5,000	3.2	77	5.7	0.20
20		2,760	250	19	199	13	782	18,000	3.4	79	5.8	0.15
21		2,760	330	25	199	17	238	3,500	3.6			0.22
22		2,760	280	24	199	20	85	4,000	3.5	79	5.5	0.07
23		2,640	320	31	199	19	901	17,360	3.2	79	5.7	0.19
24		2,640	240	25	199	21	204	4,000	3.3	78	5.7	0.18
25		2,760	30	28	99	22	221	4,000	3.5	79	5.4	0.19
26		2,760	450	26	99	16	867	18,500	4.1	78	5.8	0.14
27	4,700	2,760	210	27	0	17	119	2,300	4.3	76	5.5	0.14
28	3,800	2,760	330	29	199	18	663	12,800	3.8	78	5.5	0.16
29	4,000	2,760	430	14	397	19	204	4,000	3.6	79	5.5	0.17
30	5,200	2,880	240	20	298	20	204	4,000	3.7	80	5.4	0.16
31	4,300	2,640	260	25	397	18	221	4,000	3.5	80	5.8	0.19
Total	22,000	79,920	8,170	714	7,749	516	13,473	251,120	110.9	2,289	172.1	5.66
Max.	5,200	2,880	450	31	397	22	1,190	22,800	4.3	80	6.1	0.27
Min.	3,800	2,280	30	14	0	8	85	2,300	2.9	72	5.4	0.07
Avg.	4,400	2,578	264	23	250	17	435	8,101	3.6	76	5.7	0.18

Manpower

Superintendent	1
Asst. Supt.	1
Operators	2
Total	4

Total	4
Max.	4
Min.	4
Avg.	4

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT

NOVEMBER, 1992 - PLANT INFLUENT SHEET

PN-Day	Weather: Type	Weather: Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
1	Rain	1.52	1.31	58	7.8	218	2,382	178	1,945			148		
2	Rain	0.65	1.53	58	7.9	258	3,292	144	1,837	4.30	55	120		
3	Rain	0.05	1.43	57	7.7	170	2,027	140	1,670			116		
4	Rain	0.02	1.49	57	7.7	234	2,908	132	1,640			112		
5	Snow	0.11	1.40	57	7.7	185	2,160	138	1,611			118		
6			1.38	58	7.6	198	2,279	128	1,473			122		
7			1.34	56	7.6	198	2,213	126	1,408			118		
8			1.30	56	7.7	153	1,659	104	1,128			100		
9	Rain	0.03	1.41	57	7.6	172	2,023	128	1,505			120		
10	Rain	0.23	1.37	57	7.7	209	2,388	142	1,622	5.30	61	134		
11	Rain	0.74	1.46	58	7.7	168	2,046	136	1,656			134		
12	Rain	0.86	1.55	56	7.6	156	2,017	126	1,629			100		
13	Snow	0.05	1.46	57	7.8	174	2,119	122	1,486			102		
14	Snow	0.04	1.43	57	7.7	209	2,493	110	1,312			100		
15			1.43	56	7.6	111	1,324	86	1,026			72		
16			1.48	56	7.5	140	1,728	120	1,481	3.80	47	120		
17			1.49	56	7.6	196	2,436	138	1,715			128		
18			1.46	57	7.7	201	2,447	138	1,680	5.00	61	110		
19			1.47	56	7.8	192	2,354	132	1,618			116		
20	Rain	0.06	1.50	56	7.6	192	2,402	142	1,776			114		
21	Rain	0.05	1.40	58	7.7	126	1,471	112	1,308			86		
22	Rain	1.10	1.51	56	7.6	173	2,179	136	1,713	4.30	54	102		
23	Rain	0.03	1.67	54	7.5	200	2,786	130	1,811			108		
24	Rain	0.03	1.65	54	7.7	155	2,133	102	1,404			90		
25	Rain	0.04	1.60	55	7.5	189	2,522	112	1,495			94		
26	Rain	0.02	1.35	54	7.4	180	2,027	126	1,419			106		
27			1.41	54	7.5	210	2,469	100	1,176			90		
28	Rain	0.01	1.41	54	7.6	138	1,623	110	1,294			102		
29			1.43	52	7.6	128	1,527	98	1,169			98		
30	Rain	0.04	1.51	54	7.5	143	1,801	127	1,599			122		
31														
Total	0	5.68	43.63	1,681	229.2	5,376	65,231	3,763	45,604	22.70	277	3,302		
Max.	0	1.52	1.67	58	7.9	258	3,292	178	1,945	5.30	61	148		
Min.	0	0.01	1.30	52	7.4	111	1,324	86	1,026	3.80	47	72		
Avg.	0	0.28	1.45	56	7.6	179	2,174	125	1,520	4.54	55	110		
Count	20	20.00	30.00	30	30.0	30	30	30	30	5.00	5	30		

Robert J. Swalwell
Superintendent

MARSHALL MUNICIPAL WASTEWATER TREATMENT PLANT

NOVEMBER, 1992 - PRIMARY EFFLUENT SHEET

PM-Day	P Eff. BOD mg/L	P Eff. BOD Lbs.	P Eff. SS mg/L	P. Eff. SS Lbs.	P Eff. Phos. mg/L	P Eff. Phos. Lbs.	P Eff. VSS mg/L	P Eff. NH3-N mg/L	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	153	1,672	82	896			74		1.31	30	54	
2	201	2,565	76	970	4.00	51	62		1.53	22	47	7
3	162	1,932	70	835			56		1.43	5	50	
4	168	2,088	90	1,118			72		1.49	28	32	
5	147	1,716	74	864			64		1.40	21	46	
6	168	1,934	84	967			82		1.38	15	34	
7	159	1,777	70	782			70		1.34	20	44	
8	180	1,952	72	781			64		1.30	0	31	
9	102	1,199	86	1,011			84		1.41	41	33	
10	130	1,485	72	823			63		1.37	38	49	
11	141	1,717	76	925			64		1.46	16	44	
12	129	1,668	66	853			52		1.55	17	48	
13	126	1,534	66	804			56		1.46	28	46	
14	147	1,753	26	310			22		1.43	30	76	
15	111	1,324	72	859			56		1.43	0	16	
16	120	1,481	76	938	4.30	53	76		1.48	14	37	0
17	114	1,417	78	969			78		1.49	42	43	
18	168	2,046	82	998	5.00	61	64		1.46	16	41	0
19	147	1,802	68	834			60		1.47	23	48	
20	141	1,764	82	1,026			68		1.50	27	42	
21	120	1,401	66	771			50		1.40	5	41	
22	75	945	46	579	4.80	60	36		1.51	57	66	0
23	132	1,838	76	1,059			66		1.67	34	42	
24	51	702	76	1,046			70		1.65	67	25	
25	96	1,281	56	747			46		1.60	49	50	
26	114	1,284	70	788			60		1.35	37	44	
27	78	917	78	917			66		1.41	63	2	
28	93	1,094	78	917			70		1.41	33	29	
29	84	1,002	76	906			76		1.43	34	22	
30	130	1,637	72	907			63		1.51	9	43	
31												
Total	3,887	46,925	2,162	26,200	18.10	225	1,890		43.63	821	1,225	7
Max.	201	2,565	90	1,118	5.00	61	84		1.67	67	76	7
Min.	51	702	26	310	4.00	51	22		1.30	0	2	0
Avg.	130	1,564	72	873	4.53	56	63		1.45	27	41	2
Count	30	30	30	30	4.00	4	30		30.00	30	30	4

Robert J. Swalwell
Superintendent

[illegible] WASTEWATER TREATMENT PLANT

NOVEMBER, 1992 - ACTIVATED SLUDGE SHEET

PN-Day	Aerat Volume MCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading #/M	Mix Liq SS mg/L	Mix Liq VSS mg/L	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mg/L	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mg/l	PE SS mg/L
1	48	6.6								280			108	58	1.31	153	82
2		5.6	6.5	0.53	2,103	1,604	82.0	0.26	4.0	291	0.35	0.26	92	58	1.53	201	76
3		6.0	7.8	0.39	2,183	1,665	80.0	0.27	2.6	302	0.35	0.26	100	58	1.43	162	70
4		5.8	5.7	0.43	2,139	1,635	79.0	0.27	3.0	302	0.32	0.26	101	58	1.49	168	90
5		6.2	7.7	0.33	2,217	1,724	88.0	0.25	3.5	302	0.34	0.26	108	58	1.40	147	74
6		6.2	6.7	0.39	2,175	1,671	90.0	0.24	4.9	302	0.36	0.28	107	58	1.38	168	84
7		6.4								302			109	58	1.34	159	70
8		6.6								302			112	58	1.30	180	72
9		6.1	6.7	0.23	2,259	1,716	91.0	0.25	2.8	302	0.36	0.25	103	58	1.41	102	86
10		6.3	7.9	0.29	2,166	1,700	80.0	0.27	3.5	302	0.35	0.27	106	58	1.37	130	72
11		5.9	7.3	0.32	2,248	1,793	80.0	0.28	3.8	301	0.35	0.25	100	58	1.46	141	76
12		5.6	7.6	0.34	2,164	1,661	76.0	0.28	2.8	295	0.38	0.30	93	58	1.55	129	66
13		5.9	7.9	0.30	2,133	1,700	77.0	0.28	4.0	301	0.35	0.26	100	58	1.46	126	66
14		6.0								302			100	58	1.43	147	26
15		6.0								304			100	50	1.43	111	72
16		5.8	6.9	0.31	2,165	1,596	80.0	0.27	5.2	301	0.34	0.26	101	50	1.48	120	76
17		5.8	6.8	0.28	2,197	1,692	77.0	0.29	3.4	301	0.35	0.27	100	50	1.49	114	78
18		5.9	6.5	0.41	2,177	1,678	59.0	0.37	4.5	302	0.36	0.27	102	50	1.46	168	82
19		5.9	7.9	0.33	2,200	1,830	82.0	0.27	3.0	302	0.34	0.23	100	50	1.47	147	68
20		5.7	6.2	0.36	2,135	1,616	76.0	0.28	3.3	297	0.36	0.28	99	50	1.50	141	82
21		6.2								297			106	50	1.40	120	66
22		5.7								300			98	58	1.51	75	46
23		5.2	5.8	0.39	2,053	1,558	52.0	0.39	5.2	302	0.34	0.24	89	58	1.67	132	76
24		5.2	5.9	0.15	2,078	1,528	51.0	0.41	4.0	302	0.35	0.26	90	58	1.65	51	76
25		5.4	7.8	0.30	1,938	1,435	55.0	0.35	4.5	302	0.34	0.26	92	58	1.60	96	56
26		6.4								301			110	50	1.35	114	70
27		6.1								302			106	43	1.41	78	78
28		6.1								303			106	43	1.41	93	78
29		6.0								300			102	43	1.43	84	76
30		5.7	6.2	0.40	1,883	1,371	43.0	0.44	4.9	303	0.32	0.23	98	43	1.51	130	72
31																	
Total	48	178.4	131.9	6.48	40,613	31,173	1398.0	5.72	72.9	9,005	6.61	4.95	3,038	1,616	43.63	3,887	2,162
Max.	48	6.6	7.9	0.53	2,259	1,830	91.0	0.44	5.2	304	0.38	0.30	112	58	1.67	201	90
Min.	48	5.2	5.7	0.15	1,883	1,371	43.0	0.24	2.6	280	0.32	0.23	89	43	1.30	51	26
Avg.	48	5.9	6.9	0.34	2,138	1,641	73.6	0.30	3.8	300	0.35	0.26	101	54	1.45	130	72
Count	1	30.0	19.0	19.00	19	19	19.0	19.00	19.0	30	19.00	19.00	30	30	30.00	30	30

Robert J. Swalwell
Superintendent

MARSHALL WWTP 601 INDUSTRIAL RD. MARSHALL MI 49068 PERMIT MI0010540

NOVEMBER, 1992 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. BOD mgIL	F.Eff. BOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mgIL
1	6.8	7.7	5	55		1.31	0.012	4	44			14	97	98		<0.0005
2	7.1	7.5	7	89	1.41	1.53	0.000	8	102			51	95	97	67	
3	6.7	7.5	9	107		1.43	0.023	5	60			24	94	97		
4	6.8	7.5	9	112		1.49	0.000	4	50			100	93	98		
5	6.9	7.5	11	128		1.40	0.005	5	58			96	92	97		
6	7.2	7.5	8	92		1.38	0.000	3	35			12	94	98		
7	6.5	7.6	7	78		1.34	0.000	4	45			27	94	98		
8	6.9	7.5	4	43		1.30	0.000	5	54			16	96	97		
9	6.5	7.5	6	71		1.41	0.000	3	35			20	95	98		
10	7.0	7.5	2	23	0.28	1.37	0.000	3	34			10	99	99	95	
11	7.0	7.5	9	110		1.46	0.000	5	61			74	93	97		<0.0005
12	6.6	7.6	7	90		1.55	0.000	4	52			32	94	97		
13	7.1	7.5	9	110		1.46	0.007	4	49			19	93	98		
14	7.5	7.6	12	143		1.43	0.000	4	48			13	89	98		
15	6.9	7.5	14	167		1.43	0.000	4	48			25	84	96		
16	7.6	7.5	8	99	0.60	1.48	0.000	5	62			28	93	96	84	
17	6.9	7.5	7	87		1.49	0.000	5	62			100	95	97		
18	7.2	7.6	15	183	0.81	1.46	0.000	7	85			32	89	97	84	<0.0005
19	6.9	7.4	9	110		1.47	0.000	6	74			30	93	97		
20	7.0	7.5	8	100		1.50	0.000	5	63			88	94	97		
21	6.5	7.6	4	47		1.40	0.000	4	47			17	96	97		
22	6.8	7.6	1	13	0.98	1.51	0.000	5	63			51	99	97	77	<0.0005
23	7.7	7.4	9	125		1.67	0.000	5	70			320	93	98		
24	7.2	7.4	15	206		1.65	0.000	3	41			34	85	98		
25	7.8	7.4	6	80		1.60	0.000	3	40			14	95	98		
26	7.2	7.3	4	45		1.35	0.000	3	34			32	97	98		
27	7.6	7.3	13	153		1.41	0.007	4	47			17	87	98		
28	7.4	7.4	11	129		1.41	0.000	3	35			59	90	98		
29	7.5	7.4	8	95		1.43	0.000	6	72			49	92	95		
30	8.0	7.4	7	88		1.51	0.000	5	63			43	94	97		
31																
Total	212.8	224.7	244	2,979	4.08	43.63	0.054	134	1,630			1,447	2,794	2,921	407	<0.0005
Max.	8.0	7.7	15	206	1.41	1.67	0.023	8	102			320	99	99	95	<0.0005
Min.	6.5	7.3	1	13	0.28	1.30	0.000	3	34			10	84	95	67	<0.0005
Avg.	7.1	7.5	8	99	0.82	1.45	0.002	4	54			G 33	93	97	81	<0.0005
Count	30.0	30.0	30	30	5.00	30.00	30.000	30	30			30	30	30	5	4

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Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT

NOVEMBER, 1992 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	PH	Lbs. of Lime per lb. of Dry Solids
1	4,800	2,760	170	24	199	20	136	2,500	4.4	80		0.15
2	3,900	2,880	370	25	199	13	799	19,500	4.9	79	5.6	0.10
3	3,900	3,000	290	25	199	27	187	2,500	4.3	77	5.7	0.21
4	5,900	3,000	320	25	397	18	204	3,000	3.9	79	5.7	0.21
5	7,000	3,000	250	25	199	17	153	2,500	3.8	78	5.7	0.19
6	7,200	3,120	270	28	199	19	935	18,500	4.2	79	5.8	0.14
7	6,900	2,880	70	27	298	18	136	2,500	4.0	78	5.7	0.16
8	7,100	3,000	60	27	199	22	119	2,500	4.4	78	5.7	0.13
9	3,300	3,000	130	29	199	21	187	4,500	4.0	79	5.7	0.12
10	3,400	2,880	200	20	298	20	136	3,500	3.3	77	5.8	0.14
11	4,400	2,880	320	22	298	14	901	18,360	3.4	78	5.9	0.17
12	5,100	2,880	210	25	298	16	272	3,500	3.6	78	5.6	0.26
13	7,900	3,000	170	22	99	17	187	3,500	4.2	80	5.7	0.15
14	7,900	3,000	50	26	298	19	153	3,000	3.4	78	5.7	0.18
15	8,100	3,000	140	24	298	19	136	3,000	4.2	80	5.6	0.13
16	7,000	3,000	170	28	199	20	221	4,000	3.4	76	5.8	0.19
17	5,300	3,000	330	22	298	20	680	17,500	3.4	77	5.9	0.14
18	7,000	3,000	350	25	199	20	136	2,500	3.3	77	5.7	0.20
19	5,500	3,000	220	25	199	10	340	6,500	3.1	76	5.7	0.20
20	3,500	2,880	480	30	199	12	255	5,000	3.5	76	5.6	0.17
21	3,800	2,760	420	24	298	18	663	17,000	2.8	73		0.17
22	5,000	2,760	430	11	199	16	442	10,000	3.4	77	5.9	0.15
23	6,300	3,000	140	15	199	19	425	10,000	3.6	82	5.7	0.14
24	5,400	2,880	130	20	298	20	357	8,000	3.6	76	5.8	0.15
25	5,200	2,880	110	25	199	20	340	8,000	3.6	76	6.0	0.14
26	6,700	3,000	110	25	298	20	170	4,000	3.4	77	5.8	0.15
27	6,800	3,000	130	22	298	20	204	4,000	3.3	76	5.9	0.18
28	7,500	3,000	140	26	199	20	187	4,200	3.2	75	5.9	0.17
29	6,400	2,880	200	26	298	17	204	4,000	3.1	75	5.9	0.20
30	7,200	3,120	230	22	298	18	204	7,000	3.4	74	5.9	0.10
31												
Total	175,400	88,440	6,610	720	7,355	550	9,469	204,560	110.1	2,321	161.4	4.88
Max.	8,100	3,120	480	30	397	27	935	19,500	4.9	82	6.0	0.26
Min.	3,300	2,760	50	11	99	10	119	2,500	2.8	73	5.6	0.10
Avg.	5,847	2,948	220	24	245	18	316	6,819	3.7	77	5.8	0.16

Manpower

Superintendent	1
Asst. Supt.	1
Operators	2
Total	

Robert J. Swalwell
Superintendent

[illegible] WASTEWATER TREATMENT PLANT
DECEMBER, 1992 - PLANT INFLUENT SHEET

PN-Day	Weather Type	Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mg/L	Inf. BOD Lbs.	Inf. SS mg/L	Inf. SS Lbs.	Inf. Phos. mg/L	Inf. Phos. Lbs.	Inf. VSS mg/L	Inf. NH3-N mg/L	--Remarks or Other Parameters--
1	Snow	0.03	1.50	54	7.4	174	2,177	134	1,676			112		
2	Snow	0.08	1.54	56	7.9	270	3,468	166	2,132			140		
3	Snow	0.02	1.50	56	7.8	168	2,102	104	1,301	5.70	71	92		
4	Snow	0.05	1.48	55	7.6	222	2,740	228	2,814			214		
5	Snow	0.02	1.34	54	7.6	228	2,548	98	1,095			94		
6	Snow	0.01	1.34	55	7.6	171	1,911	104	1,162			104		
7			1.47	54	7.9	198	2,427	124	1,520			100		
8			1.45	54	7.7	240	2,902	128	1,548			96		
9	Snow	0.48	1.48	54	7.7	264	3,259	148	1,827			124		
10	Snow	0.06	1.52	55	7.6	210	2,662	96	1,217	4.80	61	80		
11			1.47	54	7.7	270	3,310	148	1,814			128		
12			1.36	54	7.8	146	1,656	86	975			66		
13			1.40	55	7.8	123	1,436	70	817			50		
14			1.60	55	7.6	149	1,988	92	1,228			78		
15	Rain	0.07	1.64	53	8.1	242	3,310	154	2,106			128		
16			1.52	54	7.6	187	2,371	136	1,724			116		
17			1.57	52	7.7	162	2,121	176	2,305			128		
18			1.58	52	7.8	156	2,056	226	2,978			160		
19	Snow	0.19	1.39	51	7.7	132	1,530	150	1,739			130		
20			1.38	51	7.8	132	1,519	108	1,243	3.20	37	114		
21			1.55	52	7.6	174	2,249	130	1,681			112		
22			1.51	52	7.7	180	2,267	124	1,562			102		
23	Snow	0.01	1.53	53	7.5	150	1,914	132	1,684			116		
24			1.37	51	7.4	114	1,303	132	1,508			108		
25			1.18	50	7.7	90	886	100	984			92		
26			1.32	50	7.7	126	1,387	126	1,387			108		
27			1.33	49	7.4	105	1,165	128	1,420			106		
28	Rain	0.03	1.40	50	7.8	132	1,541	164	1,915			136		
29	Rain	0.38	1.38	50	8.2	78	898	82	944			72		
30	Rain	1.13	1.49	51	7.8	108	1,342	108	1,342			90		
31	Snow	0.02	1.48	52	7.2	102	1,259	106	1,308			60		
Total	0	2.58	45.07	1,638	238.4	5,203	63,704	4,008	48,957	13.70	169	3,356		
Max.	0	1.13	1.64	56	8.2	270	3,468	228	2,978	5.70	71	214		
Min.	0	0.01	1.18	49	7.2	78	886	70	817	3.20	37	50		
Avg.	0	0.17	1.45	53	7.7	168	2,055	129	1,579	4.57	56	108		
Count	15	15.00	31.00	31	31.0	31	31	31	31	3.00	3	31		

Robert J. Swalwell
Superintendent

[illegible] WASTE WATER TREATMENT PLANT
DECEMBER - 1992 - PRIMARY EFFLUENT SHEET

PN- Day	P Eff. BOD mg/L	P Eff. BOD Lbs.	P Eff. SS mg/L	P. Eff. SS Lbs.	P Eff. Phos. mg/L	P Eff. Phos. Lbs.	P Eff. VSS mg/L	P Eff. NH3-N mg/L	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	126	1,576	88	1,101			68		1.50	28	34	
2	165	2,119	74	950			66		1.54	39	55	
3	129	1,614	78	976	6.70	84	68		1.50	23	25	
4	132	1,629	84	1,037			84		1.48	41	63	
5	102	1,140	68	760			58		1.34	55	31	
6	117	1,308	68	760			68		1.34	32	35	
7	123	1,508	74	907			52		1.47	38	40	
8	126	1,524	70	847			48		1.45	48	45	
9	174	2,148	88	1,086			72		1.48	34	41	
10	156	1,978	66	837	4.50	57	58		1.52	26	31	
11	125	1,532	66	809			56		1.47	53	55	
12	96	1,089	66	749			64		1.36	34	23	
13	84	981	58	677			42		1.40	32	17	
14	132	1,761	54	721			46		1.60	11	41	
15	125	1,710	66	903			56		1.64	48	57	
16	105	1,331	64	811			54		1.52	44	53	
17	102	1,336	46	602			38		1.57	37	74	
18	87	1,146	44	580			44		1.58	44	81	
19	78	904	42	487			42		1.39	41	72	
20	75	863	62	714	1.80	21	58		1.38	43	43	
21	93	1,202	60	776			56		1.55	47	54	
22	93	1,171	60	756			54		1.51	48	52	
23	105	1,340	80	1,021			68		1.53	30	39	
24	87	994	58	663			48		1.37	24	56	
25	69	679	70	689			58		1.18	23	30	
26	81	892	52	572			50		1.32	36	59	
27	57	632	64	710			42		1.33	46	50	
28	51	595	46	537			36		1.40	61	72	
29	78	898	60	691			50		1.38	0	27	
30	62	770	64	795			54		1.49	43	41	
31	78	963	104	1,284			76		1.48	24	2	
Total	3,213	39,333	2,044	24,805	13.00	162	1,734		45.07	1,133	1,398	
Max.	174	2,148	104	1,284	6.70	84	84		1.64	61	81	
Min.	104	1,269	66	800	4.33	54	56		1.45	37	45	
Avg.	104	1,269	66	800	4.33	54	56		1.45	37	45	
Count	31	31	31	31	3.00	3	31		31.00	31	31	

Robert J. Swalwell
Superintendent

[redacted] WASTEWATER TREATMENT PLANT

DECEMBER, 1991 - ACTIVATED SLUDGE SHEET

PN-Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading #/m	Mix Liq SS mg/L	Mix Liq VSS mg/L	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mg/L	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mg/l	PE SS mg/L
1	48	5.7	5.2	0.38	1,894	1,373	42.0	0.45	4.7	302	0.32	0.23	98	43	1.50	126	88
2		5.6	6.2	0.49	1,969	1,433	49.0	0.40	3.7	302	0.34	0.25	95	43	1.54	165	74
3		5.7	6.0	0.38	1,947	1,427	52.0	0.37	3.2	302	0.32	0.24	100	43	1.50	129	78
4		5.8	6.0	0.35	2,081	1,535	60.0	0.35	3.5	301	0.36	0.26	101	36	1.48	132	84
5		6.4								302			112	36	1.34	102	68
6		6.4								304			110	36	1.34	117	68
7		5.9	7.6	0.31	2,300	1,641	78.0	0.29	5.8	229	0.38	0.27	103	50	1.47	123	74
8		5.9	7.8	0.32	2,200	1,586	85.0	0.26	2.6	239	0.34	0.24	104	50	1.45	126	70
9		5.8	5.9	0.48	2,128	1,505	75.0	0.28	2.6	229	0.36	0.26	101	50	1.48	174	88
10		5.7	7.9	0.42	2,211	1,591	88.0	0.25	1.5	233	0.34	0.25	97	50	1.52	156	66
11		5.9	7.6	0.34	2,043	1,496	70.0	0.29	2.3	238	0.36	0.27	100	50	1.47	125	66
12		6.3								239			108	36	1.36	96	66
13		6.2								242			105	43	1.40	84	58
14		5.4	8.0	0.40	1,930	1,482	84.0	0.23	5.2	231	0.31	0.24	91	43	1.60	132	54
15		5.3	6.0	0.39	1,811	1,446	80.0	0.23	2.5	223	0.33	0.26	89	36	1.64	125	66
16		5.7	7.1	0.28	1,920	1,578	70.0	0.27	2.3	231	0.36	0.30	97	36	1.52	105	64
17		5.5	9.7	0.28	1,942	1,590	85.0	0.23	2.2	232	0.38	0.31	95	36	1.57	102	46
18		5.5	9.9	0.25	1,908	1,543	92.0	0.21	2.5	232	0.34	0.28	94	36	1.58	87	44
19		6.2								233			106	36	1.39	78	42
20		6.2								238			106	36	1.38	75	62
21		5.6	7.9	0.24	2,058	1,682	95.0	0.22	5.4	227	0.35	0.29	94	43	1.55	93	60
22		5.7	7.8	0.24	1,967	1,597	95.0	0.21	5.2	230	0.35	0.29	97	43	1.51	93	60
23		5.6	5.7	0.28	1,932	1,586	96.0	0.20	4.5	233	0.35	0.29	95	43	1.53	105	80
24		6.3	8.9	0.21	1,969	1,604	95.0	0.21	4.2	236	0.35	0.29	109	43	1.37	87	58
25		7.3								235			127	43	1.18	69	70
26		6.5								243			111	43	1.32	81	52
27		6.5								233			110	43	1.33	57	64
28		6.2	10.8	0.12	1,938	1,611	93.0	0.21	5.5	232	0.33	0.27	104	36	1.40	51	46
29		6.2	8.2	0.19	1,897	1,568	70.0	0.27	4.5	229	0.32	0.29	108	36	1.38	78	60
30		5.8	7.1	0.16	1,876	1,583	89.0	0.21	4.4	221	0.30	0.26	102	36	1.49	62	64
31		5.8	4.3	0.21	1,852	1,546	81.0	0.23	5.4	236	0.33	0.27	94	36	1.48	78	104
Total	48	184.6	161.4	6.73	43,773	34,003	1724.0	5.87	83.7	7,637	7.52	5.91	3,163	1,270	45.07	3,213	2,044
Max.	48	7.3	10.8	0.49	2,300	1,682	96.0	0.45	5.8	304	0.38	0.31	127	50	1.64	174	104
Min.	48	5.3	4.3	0.12	1,811	1,373	42.0	0.20	1.5	221	0.30	0.23	89	36	1.18	51	42
Avg.	48	6.0	7.3	0.31	1,990	1,546	78.4	0.27	3.8	246	0.34	0.27	102	41	1.45	104	66
Count	1	31.0	22.0	22.00	22	22	22.0	22.00	22.0	31	22.00	22.00	31	31	31.00	31	31

Robert J. Swalwell
Superintendent

MARSHALL MFG. CO. MARSHALL, MI 49068 PERMIT MI0018848

DECEMBER, 1992 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. BOD mgIL	F.Eff. BOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mgIL
1	7.6	7.3	11	138		1.50	0.00	5	63			43	92	97		
2	7.3	7.6	7	90		1.54	0.00	7	90			76	96	97		
3	6.9	7.5	9	113	1.10	1.50	0.00	7	88			3	91	96	81	
4	6.5	7.5	9	111		1.48	0.00	5	62			66	96	98		<0.0005
5	7.4	7.4	6	67		1.34	0.00	6	67			308	94	97		
6	8.2	7.5	6	67		1.34	0.00	8	89			500	94	95		
7	7.2	7.4	9	110		1.47	0.00	7	86			64	93	96		
8	6.8	7.4	6	73		1.45	0.00	8	97			140	95	97		
9	6.5	7.5	7	86		1.48	0.00	11	136			125	95	96		<0.0005
10	6.8	7.4	14	177	0.73	1.52	0.00	13	165			600	85	94	85	
11	6.5	7.4	8	98		1.47	0.00	8	98			880	95	97		
12	6.7	7.6	6	68		1.36	0.00	6	68			360	93	96		
13	7.4	7.4	7	82		1.40	0.00	6	70			56	90	95		
14	7.7	7.4	9	120		1.60	0.00	8	107			370	90	95		
15	6.5	7.5	10	137		1.64	0.00	14	191			224	94	94		
16	6.5	7.4	15	190		1.52	0.00	13	165			80	89	93		<0.0005
17	6.9	7.4	12	157		1.57	0.00	13	170			12	93	92		
18	6.7	7.4	7	92		1.58	0.00	9	119			5	97	94		
19	6.3	7.5	7	81		1.39	0.00	8	93			3	95	94		
20	7.2	7.5	8	92	0.28	1.38	0.00	13	150			92	93	90	91	<0.0005
21	7.9	7.5	5	65		1.55	0.00	5	65			84	96	97		
22	7.5	7.4	3	38		1.51	0.00	5	63			51	98	97		
23	7.4	7.4	7	89		1.53	0.00	5	64			93	95	97		
24	7.8	7.4	3	34		1.37	0.00	4	46			138	98	96		
25	7.9	7.6	6	59		1.18	0.00	3	30			26	94	97		
26	9.0	7.8	3	33		1.32	0.00	12	132			84	98	90		
27	8.0	7.4	6	67		1.33	0.00	2	22			92	95	98		
28	7.7	7.3	5	58		1.40	0.00	3	35			140	97	98		
29	7.7	8.1	7	81		1.38	0.00	4	46			83	91	95		
30	7.9	7.7	4	50		1.49	0.00	4	50			420	96	96		
31	7.8	7.1	2	25		1.48	0.00	3	37			20	98	97		
Total	226.2	231.7	224	2,748	2.11	45.07	0.00	225	2,760			5,238	2,916	2,961	257	<0.0005
Max.	9.0	8.1	15	190	1.10	1.64	0.00	14	191			880	98	98	91	<0.0005
Min.	6.3	7.1	2	25	0.28	1.18	0.00	2	22			3	85	90	81	<0.0005
Avg.	7.3	7.5	7	89	0.70	1.45	0.00	7	89			G 81	94	96	86	<0.0005
Count	31.0	31.0	31	31	3.00	31.00	31.00	31	31			31	31	31	3	4

G - Geometric Mean

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT
DECEMBER, 1992 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	PH	Lbs. of Lime per lb. of Dry Solids
1	7,300	3,000	400	24	99	16	493	9,500	3.2	75	5.9	0.19
2	7,300	3,000	690	25	199	17	442	9,000	4.2	73	5.9	0.14
3	7,500	3,000	400	27	298	9	799	17,000	3.3	77	5.8	0.17
4	8,100	3,120	410	26	298	20	289	5,000	3.2	75	5.8	0.22
5	9,400	3,000	70	23	298	21	187	5,000	3.4	76	5.7	0.13
6	9,400	3,000	120	21	298	22	170	4,000	3.0	76	5.8	0.17
7	8,000	2,760	290	24	298	17	323	6,000	3.2	76	6.0	0.20
8	8,000	2,880	230	24	298	20	272	6,000	3.3	75	6.0	0.16
9	7,800	2,880	210	30	199	28	289	5,400	3.2	73	5.8	0.20
10	7,400	2,760	370	24	298	12	255	6,000	4.0	69	6.0	0.13
11	7,500	2,880	230	16	199	28	272	4,000	3.7	72	6.0	0.22
12	6,800	2,760	160	33	298	23	153	4,000	3.5	73	6.0	0.13
13	6,700	2,640	190	27	298	25	170	14,500	3.4	74	5.9	0.04
14	7,200	2,760	180	31	298	22	340	9,000	3.9	67	6.5	0.12
15	5,200	2,760	270	34	298	25	374	9,500	3.6	72	5.9	0.13
16	6,200	2,640	270	34	298	25	221	5,500	3.8	72	6.0	0.13
17	8,100	2,880	140	21	298	29	289	8,000	4.0	66	6.0	0.11
18	6,200	2,760	250	30	397	26	272	6,000	5.2	56	6.0	0.10
19	7,000	2,760	110	27	298	20	170	4,000	5.6	57	6.0	0.09
20	10,000	2,760	100	25	397	19	170	4,000	5.2	59	5.9	0.10
21	8,500	2,880	310	26	298	19	340	6,000	5.2	62	6.0	0.13
22	6,900	2,520	550	31	199	19	340	7,000	4.8	63	6.0	0.12
23	8,900	3,000	20	21	298	22	340	9,000	4.3	65	5.9	0.10
24	9,500	2,880	520	28	199	22	544	6,000	4.6	66	5.8	0.23
25	11,500	2,880	110	25	298	21	153	4,000	4.6	65	5.9	0.10
26	10,600	2,880	210	27	298	21	170	4,000	4.6	66	5.8	0.11
27	7,700	3,000	120	30	298	14	187	4,000	4.4	67	5.9	0.13
28	5,700	2,540	260	18	298	15	493	8,000	4.4	67	6.0	0.17
29	5,100	2,880	2,990	23	199	15	510	6,300	4.2	68	6.0	0.23
30	4,300	2,640	200	34	199	36	374	8,000	4.5	68	6.1	0.12
31	7,900	2,880	510	35	0	31	357	6,000	4.4	67	6.1	0.16
Total	237,700	87,980	10,890	824	8,246	659	9,758	209,700	125.9	2,137	184.4	4.47
Max.	11,500	3,120	2,990	35	397	36	799	17,000	5.6	77	6.5	0.23
Min.	4,300	2,520	20	16	0	9	153	4,000	3.0	56	5.7	0.04
Avg.	7,668	2,838	351	27	266	21	315	6,765	4.1	69	5.9	0.14

Manpower

Superintendent	1
Asst. Supt.	1
Operators	2
Total	4

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JANUARY 1994 - PLANT INFLUENT SHEET

	Weather		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
PN-														
Day														
1	R&S	0.03	1.33	54	7.7	174	1,930	136	1,509			100		
2			1.39	54	7.6	150	1,739	200	2,319			176	13.9	
3			1.57	57	7.3	150	1,964	138	1,807	3.80	50	110		
4	Snow	0.02	1.58	56	7.5	150	1,977	138	1,818			122		
5	Snow	0.22	1.58	57	7.5	210	2,767	196	2,583			176		
6	Snow	0.21	1.47	55	7.7	183	2,244	208	2,550			184		
7	Snow	0.02	1.46	55	7.5	159	1,936	136	1,656			136		
8	Snow	0.01	1.30	48	7.8	179	1,941	88	954			80		
9			1.30	48	7.5	138	1,496	172	1,865			160		
10	Snow	0.09	1.45	55	7.5	162	1,959	190	2,298			172	12.8	
11			1.39	56	7.6	145	1,681	192	2,226	3.70	43	162		
12			1.40	55	7.5	159	1,856	248	2,896			244		
13	Snow	0.01	1.40	55	7.7	164	1,915	184	2,148			172		
14	Snow	0.01	1.38	55	7.6	176	2,026	188	2,164			156	14.6	
15	Snow	0.02	1.29	55	7.5	174	1,872	160	1,721			120		
16	Snow	0.20	1.35	54	7.8	120	1,351	164	1,846			150		
17	Snow	0.02	1.44	55	7.4	131	1,573	242	2,906			242	13.7	
18	Snow	0.02	1.41	54	7.4	172	2,023	180	2,117			170		
19			1.43	50	7.8	146	1,741	222	2,648	3.40	41	222		
20			1.53	55	7.9	153	1,952	218	2,782			218		
21			1.45	55	7.7	216	2,612	260	3,144			124		
22	Snow	0.01	1.35	55	7.7	216	2,432	296	3,333			236		
23			1.35	55	7.8	192	2,162	172	1,937			142		
24			1.55	55	7.6	171	2,211	260	3,361			246		
25	Snow	0.04	1.44	55	7.3	180	2,162	168	2,018			168		
26	Snow	0.03	1.42	55	7.5	152	1,800	152	1,800			140	15.5	
27	Rain	0.94	1.58	55	7.7	125	1,647	172	2,266	2.90	38	162		
28	Snow	0.02	1.65	51	7.7	152	2,092	166	2,284			166		
29	Snow	0.08	1.37	52	7.7	171	1,954	110	1,257			110		
30	Snow	0.01	1.38	53	7.6	144	1,657	162	1,864			148		
31			1.48	54	7.7	137	1,691	148	1,827			148		
Total	0	2.01	44.47	1,678	235.8	5,051	60,362	5,666	67,903	13.80	171	5,062	70.5	
Max.	0	0.94	1.65	57	7.9	216	2,767	296	3,361	3.80	50	246	15.5	
Min.	0	0.01	1.29	48	7.3	120	1,351	88	954	2.90	38	80	12.8	
Avg.	0	0.10	1.43	54	7.6	163	1,947	183	2,190	3.45	43	163	14.1	
Count	20	20.00	31.00	31	31.0	31	31	31	31	4.00	4	31	5.0	

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JANUARY 1994 - PRIMARY EFFLUENT SHEET

PN- Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	117	1,298	104	1,154			104		1.33	33	24	
2	105	1,217	104	1,206			96	16.1	1.39	30	48	
3	99	1,296	100	1,309	3.80	50	84		1.57	34	28	0
4	111	1,463	96	1,265			84		1.58	26	30	
5	138	1,818	112	1,476			88		1.58	34	43	
6	123	1,508	100	1,226			76		1.47	33	52	
7	108	1,315	84	1,023			80		1.46	32	38	
8	114	1,236	84	911			84		1.30	36	5	
9	108	1,171	80	867			80		1.30	22	53	
10	96	1,161	92	1,113			92	14.7	1.45	41	52	
11	102	1,182	116	1,345	3.60	42	88		1.39	30	40	3
12	105	1,226	92	1,074			92		1.40	34	63	
13	108	1,261	100	1,168			92	15.6	1.40	34	46	
14	129	1,485	104	1,197			104		1.38	27	45	
15	123	1,323	92	990			76		1.29	29	43	
16	99	1,115	84	946			84		1.35	18	49	
17	99	1,189	84	1,009			84	14.2	1.44	24	65	
18	105	1,235	88	1,035			88		1.41	39	51	
19	99	1,181	76	906	3.40	41	76		1.43	32	66	0
20	96	1,225	76	970			76		1.53	37	65	
21	129	1,560	108	1,306			108		1.45	40	58	
22	129	1,452	100	1,126			96		1.35	40	66	
23	120	1,351	104	1,171			80		1.35	38	40	
24	126	1,629	112	1,448			112		1.55	26	57	
25	120	1,441	96	1,153			96		1.44	33	43	
26	117	1,386	88	1,042			56	15.9	1.42	23	42	
27	108	1,423	120	1,581	3.60	47	120		1.58	14	30	-24
28	114	1,569	68	936			68		1.65	25	59	
29	111	1,268	80	914			80		1.37	35	27	
30	102	1,174	96	1,105			96		1.38	29	41	
31	105	1,296	96	1,185			96		1.48	23	35	
Total	3,465	41,454	2,936	35,154	14.40	179	2,736	76.5	44.47	951	1,404	-21
Max.	138	1,818	120	1,581	3.80	50	120	16.1	1.65	41	66	3
Min.	96	1,115	68	867	3.40	41	56	14.2	1.29	14	5	-24
Avg.	112	1,337	95	1,134	3.60	45	88	15.3	1.43	31	45	-5
Count	31	31	31	31	4.00	4	31	5.0	31.00	31	31	4

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JANUARY 1994 - ACTIVATED SLUDGE SHEET

PN-Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	6.5								193			84	65	1.33	117	104
2		6.2								198			81	60	1.39	105	104
3		5.5	3.3	0.38	1,434	1,144	14.0	1.02	6.5	176	0.33	0.26	74	50	1.57	99	100
4		5.5	3.8	0.38	1,610	1,289	16.0	1.01	4.0	200	0.31	0.24	74	50	1.58	111	96
5		5.5	3.6	0.44	1,765	1,382	17.0	1.04	4.6	211	0.36	0.28	70	58	1.58	138	112
6		5.9	4.9	0.31	2,000	1,607	19.0	1.05	3.4	208	0.38	0.30	75	65	1.47	123	100
7		5.9	5.7	0.28	1,936	1,584	19.0	1.02	4.6	213	0.39	0.30	75	65	1.46	108	84
8		6.6								223			85	65	1.30	114	84
9		6.6								201			84	65	1.30	108	80
10		5.9	5.0	0.27	1,860	1,453	18.0	1.03	5.9	205	0.33	0.26	76	65	1.45	96	92
11		6.2	4.3	0.26	1,938	1,542	19.0	1.02	5.6	211	0.32	0.26	79	72	1.39	102	116
12		6.2	5.1	0.28	1,842	1,455	18.0	1.02	5.9	205	0.37	0.29	74	72	1.40	105	92
13		6.2	4.5	0.31	1,746	1,373	18.0	0.97	5.8	209	0.36	0.28	71	72	1.40	108	100
14		6.2	3.7	0.42	1,491	1,179	15.0	0.99	6.3	216	0.29	0.23	72	65	1.38	129	104
15		6.7								226			76	50	1.29	123	92
16		6.4								217			72	50	1.35	99	84
17		6.0	3.7	0.40	1,243	997	12.0	1.04	7.7	216	0.23	0.18	67	36	1.44	99	84
18		6.1	3.7	0.40	1,273	1,020	12.0	1.06	7.3	226	0.24	0.19	68	29	1.41	105	88
19		6.0	4.6	0.35	1,382	1,120	12.0	1.15	7.2	187	0.25	0.20	69	29	1.43	99	76
20		5.6	4.4	0.36	1,423	1,126	14.0	1.02	5.4	195	0.31	0.25	66	29	1.53	96	76
21		5.9	3.6	0.45	1,566	1,169	15.0	1.04	4.8	190	0.34	0.28	71	22	1.45	129	108
22		6.4								187			77	14	1.35	129	100
23		6.4								181			77	29	1.35	120	104
24		5.6	4.0	0.36	1,941	1,511	21.0	0.92	3.0	186	0.41	0.32	65	29	1.55	126	112
25		6.0	5.1	0.29	1,963	1,646	24.0	0.82	2.6	212	0.41	0.35	72	36	1.44	120	96
26		6.1	5.3	0.33	1,842	1,401	22.0	0.84	6.8	216	0.38	0.27	71	36	1.42	117	88
27		5.5	3.4	0.34	1,791	1,388	22.0	0.81	8.2	181	0.34	0.27	63	36	1.58	108	120
28		5.2	5.3	0.41	1,644	1,286	19.0	0.87	4.4	204	0.43	0.34	60	36	1.65	114	68
29		6.3								219			71	36	1.37	111	80
30		6.2								226			71	36	1.38	102	96
31		5.8	3.8	0.36	1,502	1,197	17.0	0.88	7.2	223	0.31	0.24	69	36	1.48	105	96
Total	48	186.9	90.7	7.38	35,192	27,869	363.0	20.63	117.2	6,361	7.09	5.59	2,259	1,458	44.47	3,465	2,936
Max.	48	6.7	5.7	0.45	2,000	1,646	24.0	1.15	8.2	226	0.43	0.35	85	72	1.65	138	120
Min.	48	5.2	3.3	0.26	1,243	997	12.0	0.81	2.6	176	0.23	0.18	60	14	1.29	96	68
Avg.	48	6.0	4.3	0.35	1,676	1,327	17.3	0.98	5.6	205	0.34	0.27	73	47	1.43	112	95
Count	1	31.0	21.0	21.00	21	21	21.0	21.00	21.0	31	21.00	21.00	31	31	31.00	31	31

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

JANUARY 1994 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mgIL
1	8.0	7.5	7	78		1.33	0.000	8	89			54	95	95		
2	8.5	7.5	13	151		1.39	0.025	6	70	12.4	144	80	94	96		<0.0005
3	7.8	7.4	10	131	0.39	1.57	0.000					40	93		90	
4	6.9	7.4	12	158		1.58	0.000	7	92			62	91	95		
5	7.1	7.9	10	132		1.58	0.000	7	92			22	95	97		
6	6.8	7.4	13	159		1.47	0.000	9	110			15	94	95		
7	7.1	7.4	11	134		1.46	0.000	7	85			12	92	96		
8	8.0	7.5	3	33		1.30	0.000	6	65			54	97	97		
9	8.2	7.4	9	98		1.30	0.000	5	54			24	95	96		<0.0005
10	8.1	7.1	8	97		1.45	0.000	4	48	12.6	152	4	96	98		
11	7.7	7.4	11	128	0.40	1.39	0.000	4	46			4	94	97	89	
12	7.6	7.5	14	163		1.40	0.000	7	82			78	94	96		
13	7.9	7.4	10	117		1.40	0.000	6	70	12.3	144	9	95	97		
14	8.0	7.5	17	196		1.38	0.000	7	81			23	91	96		
15	9.0	7.5	5	54		1.29	0.000	9	97			33	97	95		
16	9.4	7.7	13	146		1.35	0.000	7	79			59	92	94		<0.0005
17	8.6	7.4	11	132		1.44	0.000	7	84	12.0	144	144	95	95		
18	8.2	7.2	18	212		1.41	0.000	9	106			168	90	95		
19	8.4	7.5	19	227	0.48	1.43	0.000	11	131			14	91	93	86	<0.0005
20	7.7	7.5	18	230		1.53	0.000	10	128			18	92	93		
21	7.5	7.4	23	278		1.45	0.000	10	121			40	91	95		
22	7.3	7.4	18	203		1.35	0.000	11	124			95	94	95		
23	6.8	7.5	18	203		1.35	0.000	9	101			128	90	96		
24	6.9	7.4	13	168		1.55	0.000	10	129			340 -	95	94		
25	6.6	7.7	5 -	60 -		1.44	0.000	9 -	108 -			600 -	97	95		
26	8.4	7.4	18 -	213 -		1.42	0.000	16 -	189 -	12.8	152	2 -	88	89		
27	7.4	7.6	27 -	356 -	0.76	1.58	0.000	16 -	211 -			20 -	84	88	74	
28	7.0	7.5	23 -	317 -		1.65	0.000	11 -	151 -			17 -	86	93		
29	7.6	7.6	31 -	354 -		1.37	0.000	17 -	194 -			600 -	72	90		
30	8.2	7.6	28 -	322 -		1.38	0.000	14 -	161 -			240 -	83	90		
31	8.0	7.6	18 -	222 -		1.48	0.000	12 -	148 -			16	88	91		
Total	240.7	231.8	454	5,469	2.03	44.47	0.025	271	3,248	62.1	735	3,015	2,841	2,832	339	<0.0005
Max.	9.4	7.9	31	356	0.76	1.65	0.025	17	211	12.8	152	600	97	98	90	<0.0005
Min.	6.6	7.1	3	33	0.39	1.29	0.000	4	46	12.0	144	2	72	88	74	<0.0005
Avg.	7.8	7.5	15	176	0.51	1.43	0.001	9	108	12.4	147	G 39	92	94	85	<0.0005
Count	31.0	31.0	31	31	4.00	31.00	31.000	30	30	5.0	5	31	31	30	4	4

G = Geometric Mean

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JANUARY 1994 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hours	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1	7,700	2,760	500	23	199	20	320	6,000	4.0	71	6.0	12.18	11.58	53.33
2	9,300	2,640	400	24	298	18	300	6,000	4.0	72	6.0	12.08	11.46	50.00
3	8,400	3,000	480	28	298	34	360	6,000	3.9	74	6.0	12.30	11.94	60.00
4	9,800	2,880	410	32	199	22	320	6,000	3.9	74	5.8	12.12	12.03	53.33
5	10,500	2,880	320	25	199	27	320	6,000	3.8	75	5.8	12.02	12.02	53.33
6	9,900	2,880	500	23	298	20	320	6,000	3.9	75	5.8	12.21	11.93	53.33
7	11,400	2,880	350	20	298	18	300	6,000	6.0	49	5.8	12.12	10.81	50.00
8	12,800	3,000	430	21	199	21	280	6,000	3.8	76	5.9	12.29	10.77	46.67
9	11,500	2,760	340	26	199	22	240	6,000	3.8	76	5.8	12.19	11.07	40.00
10	10,200	3,000	390	22	199	20	260	5,000	3.8	74	5.9	12.10	11.09	52.00
11	8,500	2,760	400	11	298	9	240	5,000	3.9	75	5.9	12.01	11.50	48.00
12	7,900	2,880	340	7	199	9	320	5,000	4.1	76	6.1	12.17	12.27	64.00
13	9,800	2,880	510	6	298	8	300	5,000	4.1	74	6.0	12.42	12.18	60.00
14	13,700	2,880	340	9	199	8	260	5,000	4.0	74	6.1	12.05	12.20	52.00
15	14,300	3,000	380	9	199	8	240	5,000	4.0	74	6.6	12.12	12.22	48.00
16	15,600	2,880	420	9	199	10	240	5,000	4.1	72	6.7	12.21	11.91	48.00
17	13,000	2,880	410	10	199	9	280	5,000	4.2	74	5.9	11.79	11.21	56.00
18	16,600	3,120	350	10	199	11	240	5,000	4.3	75	5.9	12.12	11.97	48.00
19	15,900	2,760	340	10	199	9	360	5,000	4.4	76	5.9	12.39	12.51	72.00
20	13,000	2,880	420	10	199	9	280	5,000	4.3	74	6.0	12.10	12.37	56.00
21	12,200	2,760	370	10	298	11	260	5,000	4.3	75	5.9	12.19	12.14	52.00
22	9,100	2,520	340	9	298	9	240	5,000	4.3	76	6.0	12.23	12.12	48.00
23	5,800	2,640	380	11	199	10	220	5,000	4.2	72	5.8	12.46	12.03	44.00
24	8,900	2,760	440	5	298	9	320	5,000	4.7	63		12.29	12.80	64.00
25	8,800	2,880	390	3	199	13	280	5,000	4.3	73	6.0	12.01	11.26	56.00
26	11,500	3,000	360	12	199	20	260	5,000	4.4	72	6.0	12.15	12.17	52.00
27	8,000	2,880	410	22	298	14	280	5,000	4.3	74	6.0	12.04	11.89	56.00
28	8,400	2,760	510	13	199	14	380	5,000	4.8	67	6.0	12.42	12.59	76.00
29	11,800	2,880	410	15	298	15	240	5,000	4.4	71	5.8	12.03	11.88	48.00
30	11,700	2,880	420	16	298	15	260	5,000	4.4	70	6.2	12.11	12.51	52.00
31	13,200	3,000	390	14	199	15	260	5,000	4.0	73	6.0	12.00	11.74	52.00
Total	339,200	88,560	12,450	465	7,357	457	8,780	164,000	130.4	2,246	179.6	376.92	368.17	1664.00
Max.	16,600	3,120	510	32	298	34	380	6,000	6.0	76	6.7	12.46	12.80	76.00
Min.	5,800	2,520	320	3	199	8	220	5,000	3.8	49	5.8	11.79	10.77	40.00
Avg.	10,942	2,857	402	15	237	15	283	5,290	4.2	72	6.0	12.16	11.88	53.68

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

FEBRUARY 1994 - PLANT INFLUENT SHEET

PN- Day	Weather Type	Weather Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
1			1.63	54	7.7	198	2,692	170	2,311			158	12.8	
2	Snow	0.04	1.53	55	7.8	162	2,067	152	1,940			134		
3			1.57	55	7.7	150	1,964	168	2,200			148		
4			1.49	55	7.7	228	2,833	288	3,579			280		
5			1.38	55	7.6	132	1,519	156	1,795			140		
6			1.38	49	7.7	146	1,680	166	1,911			150		
7	Snow	0.13	1.48	53	7.6	149	1,839	130	1,605			124	15.1	
8	Snow	0.05	1.39	55	7.7	146	1,693	146	1,693	3.56	41	120		
9			1.22	54	7.7	180	1,831	182	1,852			162		
10			1.41	53	7.7	140	1,646	152	1,787			138		
11			1.47	55	7.4	192	2,354	232	2,844			176	14.8	
12	Snow	0.02	1.31	55	7.7	167	1,825	204	2,229			140		
13			1.35	53	7.7	147	1,655	152	1,711	3.50	39	130		
14			1.42	54	7.6	132	1,563	150	1,776			130		
15			1.46	55	7.7	138	1,680	170	2,070			140		
16			1.47	55	7.7	143	1,753	146	1,790	3.87	47	128		
17			1.50	54	7.6	158	1,977	174	2,177			158	14.4	
18			1.62	55	7.7	240	3,243	192	2,594			152		
19			1.46	55	7.6	155	1,887	224	2,728			188		
20	Rain	0.02	1.46	55	7.8	143	1,741	160	1,948			128		
21			1.62	54	7.5	138	1,864	140	1,892			138		
22	Snow	0.09	1.63	54	7.6	134	1,822	160	2,175	3.85	52	138		
23	Snow	0.18	1.57	55	7.6	167	2,187	212	2,776			196		
24			1.52	54	7.6	129	1,635	172	2,180			168		
25	Snow	0.38	1.48	54	7.8	162	2,000	100	1,234			60		
26			1.38	54	7.6	157	1,807	124	1,427			80		
27			1.44	54	7.5	144	1,729	166	1,994			158		
28	Snow	0.05	1.55	54	7.5	171	2,211	174	2,249			162	13.9	
29														
30														
31														
Total	0	0.96	41.19	1,517	214.1	4,448	54,698	4,762	58,466	14.78	180	4,124	71.0	
Max.	0	0.38	1.63	55	7.8	240	3,243	288	3,579	3.87	52	280	15.1	
Min.	0	0.02	1.22	49	7.4	129	1,519	100	1,234	3.50	39	60	12.8	
Avg.	0	0.11	1.47	54	7.6	159	1,953	170	2,088	3.70	45	147	14.2	
Count	9	9.00	28.00	28	28.0	28	28	28	28	4.00	4	28	5.0	

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

FEBRUARY 1994 - PRIMARY EFFLUENT SHEET

PN- Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	150	2,039	112	1,523			112	13.7	1.63	24	34	
2	108	1,378	96	1,225			84		1.53	33	37	
3	93	1,218	100	1,309			96		1.57	38	40	
4	117	1,454	100	1,243			100		1.49	49	65	
5	105	1,208	96	1,105			96		1.38	20	39	
6	96	1,105	92	1,059			92		1.38	34	45	
7	105	1,296	52	642			52	16.5	1.48	30	60	
8	108	1,252	100	1,159	4.60	53	84		1.39	26	32	-29
9	114	1,160	88	895			88		1.22	37	52	
10	102	1,199	92	1,082			92		1.41	27	39	
11	156	1,913	104	1,275			84	16.3	1.47	19	55	
12	120	1,311	56	612			56		1.31	28	73	
13	102	1,148	104	1,171	3.30	37	92		1.35	31	32	6
14	108	1,279	100	1,184			88		1.42	18	33	
15	126	1,534	112	1,364			88		1.46	9	34	
16	138	1,692	112	1,373			108		1.47	3	23	
17	150	1,877	116	1,451			112	20.4	1.50	5	33	
18	225	3,040	132	1,783			112		1.62	6	31	
19	153	1,863	148	1,802			124		1.46	0	34	
20	99	1,205	92	1,120			68		1.46	31	42	
21	105	1,419	132	1,783			132		1.62	24	6	
22	165	2,243	136	1,849	4.30	58	136		1.63	-23	15	-12
23	195	2,553	152	1,990			152		1.57	-16	28	
24	138	1,749	152	1,927			148		1.52	-7	12	
25	108	1,333	116	1,432			60		1.48	33	-16	
26	126	1,450	144	1,657			116		1.38	20	-16	
27	87	1,045	108	1,297			102		1.44	40	35	
28	87	1,125	116	1,500			116	14.3	1.55	51	33	
29												
30												
31												
Total	3,486	43,089	3,060	37,813	12.20	149	2,790	81.2	41.19	590	930	-35
Max.	225	3,040	152	1,990	4.60	58	152	20.4	1.63	51	73	6
Min.	87	1,045	52	612	3.30	37	52	13.7	1.22	-23	-16	-29
Avg.	125	1,539	109	1,350	4.07	50	100	16.2	1.47	21	33	-12
Count	28	28	28	28	3.00	3	28	5.0	28.00	28	28	3

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

FEBRUARY 1994 - ACTIVATED SLUDGE SHEET

PN-Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading fIm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	5.3	3.3	0.52	1,673	1,314	18.0	0.93	6.3	222	0.32	0.26	61	36	1.63	150	112
2		5.6	4.8	0.27	1,974	1,683	20.0	0.99	4.5	224	0.43	0.31	63	43	1.53	108	96
3		5.5	4.5	0.27	1,950	1,500	22.0	0.89	4.5	227	0.45	0.35	56	43	1.57	93	100
4		5.8	2.2	0.68	921	715	11.0	0.84	7.2	224	0.20	0.15	62	43	1.49	117	100
5		6.2								234			68	58	1.38	105	96
6		6.2								243			68	58	1.38	96	92
7		5.8	8.2	0.31	1,753	1,402	17.0	1.03	6.6	194	0.45	0.35	70	58	1.48	105	52
8		6.2	4.6	0.30	1,772	1,380	19.0	0.93	4.9	182	0.37	0.29	74	58	1.39	108	100
9		7.1	6.2	0.29	1,864	1,321	19.0	0.98	5.4	166	0.43	0.34	85	58	1.22	114	88
10		6.1	4.8	0.30	1,748	1,340	22.0	0.79	5.0	179	0.36	0.27	79	50	1.41	102	92
11		5.9	4.1	0.47	1,767	1,358	21.0	0.84	4.9	173	0.40	0.31	77	50	1.47	156	104
12		6.6								176			86	50	1.31	120	56
13		6.4								178			82	50	1.35	102	104
14		6.1	4.9	0.29	1,948	1,496	22.0	0.89	4.6	165	0.46	0.35	78	50	1.42	108	100
15		5.9	4.4	0.34	1,989	1,521	27.0	0.74	2.4	177	0.46	0.35	77	50	1.46	126	112
16		5.9	4.5	0.36	2,060	1,580	23.0	0.90	3.3	174	0.43	0.33	76	50	1.47	138	112
17		5.7	4.3	0.39	2,091	1,614	28.0	0.75	2.9	196	0.48	0.36	74	50	1.50	150	116
18		5.3	4.3	0.49	2,538	2,053	32.0	0.79	2.2	254	0.41	0.30	69	65	1.62	225	132
19		5.9								256			76	65	1.46	153	148
20		5.9								263			74	65	1.46	99	92
21		5.3								275			65	65	1.62	105	132
22		5.3	3.1	0.49	1,929	1,526	23.0	0.84	7.9	189	0.50	0.39	63	65	1.63	165	136
23		5.5	2.8	0.57	1,852	1,502	24.0	0.77	3.3	224	0.41	0.33	65	65	1.57	195	152
24		5.7	2.7	0.40	1,745	1,465	21.0	0.83	2.9	229	0.41	0.34	67	65	1.52	138	152
25		5.8	3.1	0.36	1,472	1,236	16.0	0.92	6.7	216	0.35	0.28	71	50	1.48	108	116
26		6.2								196			76	50	1.38	126	144
27		6.0								211			73	50	1.44	87	108
28		5.6	3.2	0.30	1,586	1,246	18.0	0.88	8.4	178	0.27	0.29	68	50	1.55	87	116
29																	
30																	
31																	
Total	48	164.8	80.0	7.40	34,632	27,252	403.0	16.52	93.9	5,825	7.59	5.95	2,003	1,510	41.19	3,486	3,060
Max.	48	7.1	8.2	0.68	2,538	2,053	32.0	1.03	8.4	275	0.50	0.39	86	65	1.63	225	152
Min.	48	5.3	2.2	0.27	921	715	11.0	0.74	2.2	165	0.20	0.15	56	36	1.22	87	52
Avg.	48	5.9	4.2	0.39	1,823	1,434	21.2	0.87	4.9	208	0.40	0.31	72	54	1.47	125	109
Count	1	28.0	19.0	19.00	19	19	19.0	19.00	19.0	28	19.00	19.00	28	28	28.00	28	28

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

FEBRUARY 1994 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mgIL
1	8.3	7.6	20	272		1.63	0.000	13	177	12.2	166	8	88	93		
2	7.9	7.5	15	191		1.53	0.001	12	153			10	90	93		
3	7.6	7.6	11	144		1.57	0.008	9	118			49	93	94		<0.0005
4	8.0	7.6	21	261		1.49	0.016	9	112			57	93	96		
5	7.4	7.6	24	276		1.38	0.000	12	138			240	85	91		
6	7.8	7.6	16	184		1.38	0.000	12	138			240	90	92		
7	8.1	7.6	8	99		1.48	0.000	9	111	14.4	178	22	97	94		
8	7.4	7.6	10	116	0.60	1.39	0.000	7	81			184	93	95	83	
9	7.8	7.6	8	81		1.22	0.008	7	71			50	96	96		<0.0005
10	7.6	7.6	7	82		1.41	0.000	7	82			7	95	95		
11	7.4	7.6	7	86		1.47	0.002	10	123	14.3	175	74	97	95		
12	6.9	7.3	33	361		1.31	0.000	15	164			120	84	91		
13	7.0	7.4	10	113	0.54	1.35	0.005	11	124			24	93	92	85	
14	7.0	7.4	12	142		1.42	0.000	11	130			148	92	92		
15	6.8	7.5	15	183		1.46	0.000	17	207			372	91	88		<0.0005
16	6.8	7.4	20	245	0.50	1.47	0.000	19	233			610	86	87	87	
17	6.5	7.4	27	338		1.50	0.000	24	300	17.1	214	5	84	85		
18	6.8	7.3	21	284		1.62	0.000	23	311			300	89	90		
19	7.2	7.5	32	390		1.46	0.000	23	280			267	86	85		
20	7.2	7.5	19	231		1.46	0.000	17	207			110	88	88		
21	8.2	7.5	22	297		1.62	0.000	17	230			455	84	88		<0.0005
22	8.4	7.6	40	544	1.24	1.63	0.000	29	394			150	75	79	68	
23	6.8	7.5	52	681		1.57	0.000	37	484			84	75	78		
24	6.7	7.5	62	786		1.52	0.000	27	342			80	64	79		
25	7.3	7.4	6	74		1.48	0.000	25	309			184	94	85		
26	9.0	7.5	20	230		1.38	0.018	25	288			428	84	84		
27	9.4	7.5	26	312		1.44	0.000	15	180			222	84	90		
28	8.1	7.4	26	336		1.55	0.000	16	207	11.2	145	8	85	91		
29																
30																
31																
Total	211.4	210.1	590	7,339	2.88	41.19	0.058	458	5,694	69.2	878	4,508	2,455	2,506	323	<0.0005
Max.	9.4	7.6	62	786	1.24	1.63	0.018	37	484	17.1	214	610	97	96	87	<0.0005
Min.	6.5	7.3	6	74	0.50	1.22	0.000	7	71	11.2	145	5	64	78	68	<0.0005
Avg.	7.6	7.5	21	262	0.72	1.47	0.002	16	203	13.8	176	G 82	88	90	81	<0.0005
Count	28.0	28.0	28	28	4.00	28.00	28.000	28	28	5.0	5	28	28	28	4	4

G = Geometric Mean

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

FEBRUARY 1994 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hours	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1	127	2,880	320	18	298	10	195	5,000	4.1	71	5.8	12.33	11.96	39.00
2	125	3,000	320	16	298	8	195	5,000	4.0	75	5.9	12.02		39.00
3	132	2,880	490	16	298	8	195	5,000	4.3	75	5.9	12.14	11.81	39.00
4	106	2,880	550	15	298	9	225	5,000	4.0	76	5.9	12.40	12.23	45.00
5	107	2,880	260	14	0	8	180	5,000	4.3	72	6.0	12.02	11.54	36.00
6	103	2,880	350	11	0	7	195	5,500	4.4	70	5.8	12.00	11.53	35.45
7	126	3,000	420	5	298	5	210	5,000	4.4	74	6.0	12.07	11.82	42.00
8	136	2,760	600	10	298	17	210	5,000	4.5	73	6.0	12.05	12.24	42.00
9	129	2,760	430	8	298	5	255	6,000	4.0	74	6.1	12.43	11.96	42.50
10	126	2,760	400	12	298	8	210	5,000	4.2	73	6.0	12.24	11.85	42.00
11	119	2,880	400	10	298	5	195	5,000	4.2	74	6.0	12.21	12.27	39.00
12	112	2,760	430	13	298	6	180	5,000	4.1	73	6.1	12.12	11.79	36.00
13	117	2,880	460	12	298	9	195	5,600	3.9	72	6.1	12.22	11.97	34.82
14	70	2,520	380	12	397	6	210	5,100	4.2	75	6.0	12.22	12.19	41.18
15	83	2,760	410	13	298	9	255	5,000	4.1	70	6.0	12.47	12.68	51.00
16	77	2,760	320	13	298	7	240	5,500	4.2	74	6.1	12.05	11.85	43.64
17	62	2,760	1,660	17	298	15	195	5,000	4.6	72	6.1	12.03	11.56	39.00
18	57	2,880	460	30	397	18	180	5,000	4.7	73	6.1	12.09	11.99	36.00
19	24	3,120	430	19	298	19	180	5,000	5.1	69	6.0	12.23	12.01	36.00
20	54	2,760	350	18	298	18	165	5,000	5.3	71	6.0	12.52	11.97	33.00
21	84	3,000	270	21	199	25	195	5,500	4.6	73	6.0	12.32	12.33	35.45
22	107	2,880	560	22	298	14	180	5,000	4.9	71	6.2	12.60	12.36	36.00
23	111	2,880	310	27	298	21	165	4,000	5.2	70	6.0	12.16	12.26	41.25
24	120	3,000	530	28	0	26	165	4,500	5.3	71	6.1	12.09	12.16	36.67
25	129	2,760	440	20	397	12	150	4,000	5.5	74	6.1	12.25	12.17	37.50
26	128	2,880	240	20	496	25	135	4,000	5.3	70	6.1	12.34	12.46	33.75
27	122	2,880	390	22	397	25	165	4,000	4.9	71	6.2	12.47	11.59	41.25
28	115	2,760	420	28	298	20	165	4,000	5.5	71	6.1	12.02	11.32	41.25
29														
30														
31														
Total	2,908	79,800	12,600	470	7,945	365	5,385	137,700	127.8	2,027	168.7	342.11	323.87	1094.71
Max.	136	3,120	1,660	30	496	26	255	6,000	5.5	76	6.2	12.60	12.68	51.00
Min.	24	2,520	240	5	0	5	135	4,000	3.9	69	5.8	12.00	11.32	33.00
Avg.	104	2,850	450	17	284	13	192	4,918	4.6	72	6.0	12.22	12.00	39.10

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

MARCH 1994 - PLANT INFLUENT SHEET

PN-Day	Weather: Type	Weather: Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
1			1.68	54	7.5	143	2,004	162	2,270			140		
2			1.80	54	7.6	162	2,432	176	2,642	4.10	62	164		
3			1.73	57	7.6	137	1,977	176	2,539			168	14.4	
4			1.87	54	7.6	162	2,527	222	3,462			170		
5	Rain	0.08	1.63	54	7.9	170	2,311	168	2,284			140		
6			1.66	54	7.9	135	1,869	156	2,160	3.90	54	146		
7			1.77	54	7.6	156	2,303	200	2,952			176		
8			1.78	54	7.7	141	2,093	172	2,553			156	13.3	
9			1.78	54	7.6	144	2,138	156	2,316			148		
10			1.76	54	7.6	100	1,468	128	1,879			118		
11			1.73	54	7.6	171	2,467	250	3,607			198		
12	Rain	0.04	1.63	53	7.8	177	2,406	246	3,344			172		
13			1.62	59	7.8	146	1,973	228	3,080			170		
14			1.76	55	7.7	108	1,585	166	2,437			148		
15			1.66	55	7.7	99	1,371	200	2,769			176		
16			1.65	55	7.7	117	1,610	144	1,982	3.40	47	122	12.6	
17	Snow	0.01	1.68	54	8.0	153	2,144	166	2,326			146		
18	Snow	0.01	1.67	55	7.8	153	2,131	142	1,978			102		
19			1.63	55	7.8	146	1,985	176	2,393			138		
20	Rain	1.21	1.68	55	7.9	114	1,597	146	2,046			128		
21			1.91	55	7.6	120	1,912	146	2,326			128		
22			1.84	55	8.0	126	1,934	180	2,762			144		
23			1.86	55	7.8	120	1,861	146	2,265			144	11.3	
24			1.77	55	7.8	123	1,816	122	1,801			116		
25			1.78	55	7.7	126	1,870	104	1,544			70		
26	R&S	0.36	1.68	55	7.6	114	1,597	132	1,849			132		
27			1.38	54	7.6	105	1,208	120	1,381			114		
28	Rain	0.08	1.77	55	7.6	93	1,373	132	1,949	3.40	50	124	12.6	
29	Rain	0.09	1.81	55	7.6	117	1,766	160	2,415			142		
30			1.77	55	7.6	114	1,683	128	1,890			108		
31			1.69	55	7.6	108	1,522	120	1,691			108		
Total	0	1.88	53.43	1,697	238.9	4,100	58,931	5,070	72,891	14.80	213	4,356	64.2	
Max.	0	1.21	1.91	59	8.0	177	2,527	250	3,607	4.10	62	198	14.4	
Min.	0	0.01	1.38	53	7.5	93	1,208	104	1,381	3.40	47	70	11.3	
Avg.	0	0.24	1.72	55	7.7	132	1,901	164	2,351	3.70	53	141	12.8	
Count	8	8.00	31.00	31	31.0	31	31	31	31	4.00	4	31	5.0	

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

MARCH 1994 - PRIMARY EFFLUENT SHEET

PN-Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	78	1,093	72	1,009			64		1.68	45	56	
2	120	1,801	110	1,651	4.90	74	102		1.80	26	38	-17
3	87	1,255	76	1,097			76	15.6	1.73	36	57	
4	138	2,152	92	1,435			60		1.87	15	59	
5	108	1,468	84	1,142			68		1.63	36	50	
6	96	1,329	76	1,052	3.10	43	76		1.66	29	51	21
7	105	1,550	48	709			48		1.77	33	76	
8	102	1,514	104	1,544			104	14.2	1.78	28	40	
9	105	1,559	108	1,603			108		1.78	27	31	
10	99	1,453	104	1,527			104		1.76	1	19	
11	123	1,775	132	1,905			76		1.73	28	47	
12	120	1,631	92	1,251			64		1.63	32	63	
13	114	1,540	132	1,783			124		1.62	22	42	
14	87	1,277	120	1,761			116		1.76	19	28	
15	75	1,038	120	1,661			120		1.66	24	40	
16	87	1,197	112	1,541	3.60	50	96	16.1	1.65	26	22	-6
17	99	1,387	132	1,849			128		1.68	35	20	
18	105	1,462	104	1,448			60		1.67	31	27	
19	126	1,713	116	1,577			84		1.63	14	34	
20	102	1,429	140	1,962			120		1.68	11	4	
21	123	1,959	128	2,039			108		1.91	-3	12	
22	111	1,703	148	2,271			128		1.84	12	18	
23	111	1,722	140	2,172			124	15.1	1.86	8	4	
24	108	1,594	136	2,008			136		1.77	12	-11	
25	123	1,826	96	1,425			80		1.78	2	8	
26	150	2,102	116	1,625			116		1.68	-32	12	
27	111	1,278	140	1,611			140		1.38	-6	-17	
28	102	1,506	144	2,126	4.30	63	140		1.77	-10	-9	-26
29	132	1,993	136	2,053			120		1.81	-12	15	
30	114	1,683	140	2,067			140		1.77	0	-9	
31	102	1,438	144	2,030			140		1.69	6	-20	
Total	3,363	48,428	3,542	50,933	15.90	229	3,170	61.0	53.43	495	807	-28
Max.	150	2,152	148	2,271	4.90	74	140	16.1	1.91	45	76	21
Min.	75	1,038	48	709	3.10	43	48	14.2	1.38	-32	-20	-26
Avg.	108	1,562	114	1,643	3.98	57	102	15.3	1.72	16	26	-7
Count	31	31	31	31	4.00	4	31	4.0	31.00	31	31	4

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

MARCH 1994 - ACTIVATED SLUDGE SHEET

PN-Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading fIm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	5.1	5.0	0.27	1,680	1,347	18.0	0.93	5.8	162	0.39	0.31	65	36	1.68	78	72
2		4.8	3.3	0.47	1,795	1,283	18.0	1.00	5.6	157	0.47	0.39	62	36	1.80	120	110
3		5.0	5.6	0.26	2,046	1,624	22.0	0.93	3.6	152	0.52	0.41	65	36	1.73	87	76
4		4.6	4.5	0.43	2,149	1,666	25.0	0.86	2.9	163	0.60	0.46	55	36	1.87	138	92
5		5.3								162			59	36	1.63	108	84
6		5.2								164			56	36	1.66	96	76
7		4.9	10.0	0.29	2,373	1,778	26.0	0.91	3.0	170	0.68	0.50	51	43	1.77	105	48
8		4.8	4.3	0.31	2,240	1,657	26.0	0.86	2.6	178	0.57	0.42	48	43	1.78	102	104
9		4.8	4.1	0.32	2,172	1,615	22.0	0.99	4.9	173	0.63	0.46	49	43	1.78	105	108
10		4.9	4.3	0.30	2,186	1,623	24.0	0.91	4.9	174	0.59	0.44	51	43	1.76	99	104
11		5.0	3.2	0.39	2,042	1,528	23.0	0.89	5.4	169	0.54	0.40	53	50	1.73	123	132
12		5.3								168			56	50	1.63	120	92
13		5.3								171			55	50	1.62	114	132
14		4.9	3.1	0.30	1,839	1,424	19.0	0.97	3.4	188	0.45	0.34	54	50	1.76	87	120
15		5.2	3.3	0.25	1,810	1,372	19.0	0.95	5.8	198	0.37	0.27	56	50	1.66	75	120
16		5.2	3.2	0.28	1,629	1,404	18.0	0.91	7.2	184	0.47	0.38	55	43	1.65	87	112
17		5.1	2.9	0.33	1,766	1,401	18.0	0.98	5.9	174	0.38	0.30	54	43	1.68	99	132
18		5.2								174			54	43	1.67	105	104
19		5.3								174			55	43	1.63	126	116
20		5.1								174			54	50	1.68	102	140
21		4.5	2.7	0.45	1,869	1,466	18.0	1.04	4.3	170	0.47	0.36	46	50	1.91	123	128
22		4.7	2.4	0.39	1,829	1,450	19.0	0.96	4.5	164	0.45	0.36	49	50	1.84	111	148
23		4.6	2.5	0.39	1,822	1,456	18.0	1.01	4.1	162	0.49	0.39	49	50	1.86	111	140
24		4.9	2.7	0.38	1,790	1,417	18.0	0.99	4.4	174	0.43	0.34	51	50	1.77	108	136
25		4.8	3.7	0.43	1,774	1,409	17.0	1.04	5.5	177	0.41	0.33	51	50	1.78	123	96
26		5.1								173			54	50	1.68	150	116
27		6.2								175			65	50	1.38	111	140
28		4.9	2.5	0.36	1,741	1,384	18.0	0.97	5.7	140	0.42	0.33	51	50	1.77	102	144
29		4.8	2.5	0.49	1,723	1,366	18.0	0.96	3.4	139	0.56	0.44	50	50	1.81	132	136
30		4.9	2.5	0.41	1,733	1,381	17.0	1.02	4.1	139	0.47	0.37	52	50	1.77	114	140
31		5.1	2.5	0.36	1,682	1,340	16.0	1.05	3.1	135	0.41	0.33	53	43	1.69	102	144
Total	48	155.5	80.7	7.86	41,690	32,391	437.0	21.13	100.1	5,177	10.77	8.33	1,678	1,403	53.43	3,363	3,542
Max.	48	6.2	10.0	0.49	2,373	1,778	26.0	1.05	7.2	198	0.68	0.50	65	50	1.91	150	148
Min.	48	4.5	2.4	0.25	1,629	1,283	16.0	0.86	2.6	135	0.37	0.27	46	36	1.38	75	48
Avg.	48	5.0	3.7	0.36	1,895	1,472	19.9	0.96	4.6	167	0.49	0.38	54	45	1.72	108	114
Count	1	31.0	22.0	22.00	22	22	22.0	22.00	22.0	31	22.00	22.00	31	31	31.00	31	31

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

MARCH 1994 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mgIL
1	7.8	7.3	32	448		1.68	0.000	21	294			4	80	85		
2	7.5	7.3	34	510	1.00	1.80	0.000	25	375			8	81	85	76	
3	6.6	7.3	18	260		1.73	0.000	16	231	13.3	192	4	90	88		
4	6.9	7.3	10	156		1.87	0.000	20	312			8	95	88		
5	8.0	7.5	16	218		1.63	0.000	29	394			80	90	83		
6	7.2	7.6	10	138	0.63	1.66	0.000	12	166			438	94	91	84	
7	6.8	7.3	18	266		1.77	0.000	20	295			70	91	87		
8	7.0	7.5	22	327		1.78	0.000	18	267	11.5	171	732	87	87		<0.0005
9	7.4	7.4	20	297		1.78	0.000	13	193			14	87	91		
10	7.4	7.5	8	117		1.76	0.000	9	132			17	94	91		
11	7.5	7.5	8	115		1.73	0.000	11	159	13.8	199	2	97	94		<0.0005
12	7.5	7.5	6	82		1.63	0.000	12	163			444	98	93		
13	7.1	7.5	8	108		1.62	0.000	13	176			440	96	91		
14	7.0	7.6	16	235		1.76	0.000	11	161			1,980	90	90		
15	7.4	7.5	14	194		1.66	0.000	4	55			2	93	96		
16	8.0	7.6	9	124	0.32	1.65	0.000	16	220			88	94	86	91	
17	7.9	7.6	11	154		1.68	0.002	6	84			10	93	96		<0.0005
18	7.4	7.6	8	111		1.67	0.000	6	84			118	94	96		
19	7.9	7.6	6	82		1.63	0.005	10	136			205	97	93		
20	7.2	7.5	13	182		1.68	0.000	11	154			522	91	91		
21	7.5	7.4	13	207		1.91	0.000	16	255			447	91	87		<0.0005
22	7.1	7.5	15	230		1.84	0.000	11	169			409	92	91		
23	7.1	7.6	15	233		1.86	0.000	14	217	12.6	195	2	90	88		
24	6.7	7.5	9	133		1.77	0.000	9	133			40	93	93		
25	7.9	7.4	9	134		1.78	0.000	11	163				91	91		
26	8.0	7.5	8	112		1.68	0.000	9	126			176	94	92		
27	8.1	7.5	8	92		1.38	0.000	7	81			222	93	94		
28	6.9	7.4	17	251	0.39	1.77	0.000	10	148			2	87	89		
29	7.0	7.4	16	242		1.81	0.000	15	226	14.5	219	6	90	87	89	
30	7.1	7.4	19	280		1.77	0.000	15	221			3	85	87		
31	7.3	7.4	38	536		1.69	0.000	36	507			16	68	67		
Total	228.2	231.5	454	6,573	2.34	53.43	0.007	436	6,299	65.7	976	6,509	2,806	2,768	340	<0.0005
Max.	8.1	7.6	38	536	1.00	1.91	0.005	36	507	14.5	219	1,980	98	96	91	<0.0005
Min.	6.6	7.3	6	82	0.32	1.38	0.000	4	55	11.5	171	2	68	67	76	<0.0005
Avg.	7.4	7.5	15	212	0.59	1.72	0.000	14	203	13.1	195	G 44	91	89	85	<0.0005
Count	31.0	31.0	31	31	4.00	31.00	31.000	31	31	5.0	5	30	31	31	4	4

G - Geometric Mean

March 11th - Zinc 0.07 mg/l, Copper 0.02 mg/l

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

MARCH 1994 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hours	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1	103	2,760	420	20	397	13	352	5,000	5.5	70	6.2	12.12	11.76	70.40
2	101	2,760	280	19	298	17	352	5,000	4.9	74	6.0	12.08	11.99	70.40
3	80	2,760	450	19	298	20	320	4,000	4.9	72	5.9	12.02	12.14	80.00
4	74	2,640	510	23	298	17	320	4,000	4.8	72	5.9	12.00	12.03	80.00
5	62	2,880	400	15	298	18	320	4,000	4.7	74	6.0	12.38	12.20	80.00
6	48	2,760	390	15	298	20	320	4,000	5.4	69		12.46	12.36	80.00
7	50	2,640	1,830	17	397	19	288	4,000	4.9	72	6.1	12.31	12.40	72.00
8	64	2,760	360	15	397	21	288	4,000	5.1	70	6.9	12.20	11.96	72.00
9	74	2,880	420	17	397	15	352	4,000	4.9	72	6.3	12.13	12.00	88.00
10	67	2,880	390	16	397	16	320	4,500	4.8	73	6.1	12.25	11.98	71.11
11	60	2,880	470	15	298	16	320	4,800	5.0	72	6.0	12.00	12.34	66.67
12	40	2,640	440	17	397	18	288	4,000	5.0	72	6.8	12.10	11.57	72.00
13	51	2,640	450	12	298	18	288	4,000	5.1	70	6.4	12.03	11.52	72.00
14	59	2,760	440	9	298	16	320	4,000	5.2	71	6.1	12.08	12.00	80.00
15	54	3,000	490	19	298	14	320	4,500	5.1	72	6.2	12.21	11.80	71.11
16	92	2,760	520	14	298	11	320	4,000	5.1	73	6.2	12.20		80.00
17	65	2,760	530	14	199	8	320	4,500	4.9	72	6.1	12.01	11.84	71.11
18	71	2,880	390	13	199	8	288	4,000	5.2	74	6.1	12.04	11.47	72.00
19	52	2,640	520	17	397	7	288	4,000	4.6	72	6.1	12.03	10.93	72.00
20	37	2,640	520	13	199	8	288	4,000	4.5	72	6.1	12.21	11.26	72.00
21	49	2,760	480	19	298	10	320	4,000	5.4	70	6.0	12.01	12.29	80.00
22	31	2,640	590	20	298	12	252	4,500	5.1	70	6.0	12.05	10.86	56.00
23	25	2,520	750	26	199	14	256	4,000	4.9	72	6.1	12.03	12.51	64.00
24	60	2,760	500	19	298	14	320	4,000	5.0	72	6.0	12.02	11.64	80.00
25	53	2,760	390	20	298	12	320	4,000	4.8	72	6.0	12.01	11.06	80.00
26	45	2,760	410	21	199	14	288	4,000	4.9	70	6.1	12.00	11.73	72.00
27	57	2,760	430	21	298	15	288	4,000	4.6	73	6.0	12.07	11.06	72.00
28	55	2,640	480	22	298	16	320	4,000	5.2	73	6.0	12.45	12.33	80.00
29	60	2,640	350	23	199	16	384	4,000	5.5	69	6.3	12.16	11.59	96.00
30	59	2,640	380	10	199	15	320	4,650	5.1	74	5.9	12.28	12.26	68.82
31	47	2,640	380	13	0	13	384	4,000	5.1	74	5.9	12.17	12.01	96.00
Total	1,845	84,840	15,360	533	8,940	451	9,724	129,450	155.2	2,227	183.8	376.11	354.89	2337.62
Max.	103	3,000	1,830	26	397	21	384	5,000	5.5	74	6.9	12.46	12.51	96.00
Min.	25	2,520	280	9	0	7	252	4,000	4.5	69	5.9	12.00	10.86	56.00
Avg.	60	2,737	495	17	288	15	314	4,176	5.0	72	6.1	12.13	11.83	75.41

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

APRIL 1994 - PLANT INFLUENT SHEET

PN-Day	Weather Type	Weather Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
1			1.67	55	7.6	99	1,379	104	1,448			90		
2			1.65	55	7.5	105	1,445	94	1,294			80	11.0	
3			1.58	55	7.7	96	1,265	134	1,766			120		
4	Rain	0.02	1.71	55	7.6	93	1,326	178	2,539			174		
5	R&S	0.11	1.68	55	7.7	99	1,387	120	1,681			114		
6			1.67	55	7.7	90	1,254	150	2,089			138		
7			1.73	53	7.7	81	1,169	142	2,049			134		
8			1.65	55	7.6	96	1,321	122	1,679			120		
9			1.62	54	7.8	185	2,499	142	1,919			132		
10			1.65	55	7.7	135	1,858	158	2,174			142		
11	Rain	0.42	1.70	55	7.6	90	1,276	122	1,730	3.50	50	112	11.1	
12	Rain	0.62	1.81	54	7.7	108	1,630	128	1,932			118		
13	Rain	0.06	1.86	55	7.7	111	1,722	168	2,606			144		
14			1.85	57	7.5	108	1,666	132	2,037	3.80	59	118		
15	Rain	0.33	1.83	55	7.6	81	1,236	88	1,343			82		
16			1.68	56	7.7	132	1,849	112	1,569			100		
17			1.66	55	7.6	120	1,661	131	1,814			120		
18	Rain	0.04	1.84	57	7.6	108	1,657	144	2,210			142	12.8	
19			1.88	57	7.7	137	2,148	136	2,132	3.80	60	122		
20			1.85	57	7.7	108	1,666	148	2,283			142		
21			1.81	57	7.5	123	1,857	146	2,204			138		
22			1.81	57	7.7	210	3,170	232	3,502			182		
23			1.67	57	7.5	150	2,089	172	2,396			132		
24			1.67	59	7.7	129	1,797	200	2,786	3.10	43	166		
25	Rain	0.07	1.78	58	7.6	158	2,346	248	3,682			198		
26	Rain	1.00	1.82	59	7.5	126	1,913	200	3,036			192		
27	Rain	0.04	1.81	59	7.7	150	2,264	168	2,536			166		
28	Rain	0.64	1.80	59	7.6	126	1,892	164	2,462			160		
29			1.84	57	7.7	132	2,026	122	1,872			110		
30	Rain	0.57	1.75	57	7.8	87	1,270	168	2,452			80		
31														
Total	0	3.92	52.33	1,684	229.3	3,573	52,038	4,473	65,220	14.20	211	3,968	34.9	
Max.	0	1.00	1.88	59	7.8	210	3,170	248	3,682	3.80	60	198	12.8	
Min.	0	0.02	1.58	53	7.5	81	1,169	88	1,294	3.10	43	80	11.0	
Avg.	0	0.33	1.74	56	7.6	119	1,735	149	2,174	3.55	53	132	11.6	
Count	12	12.00	30.00	30	30.0	30	30	30	30	4.00	4	30	3.0	

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

APRIL 1994 - PRIMARY EFFLUENT SHEET

PN-Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	120	1,671	144	2,006			136		1.67	-21	-38	
2	126	1,734	148	2,037			124	14.1	1.65	-20	-57	
3	108	1,423	148	1,950			148		1.58	-13	-10	
4	135	1,925	136	1,940			136		1.71	-45	24	
5	66	925	92	1,289			92		1.68	33	23	
6	51	710	68	947			68		1.67	35	55	
7	51	736	72	1,039			72		1.73	37	49	
8	57	784	80	1,101			80		1.65	41	34	
9	90	1,216	64	865			64		1.62	51	55	
10	87	1,197	76	1,046			68		1.65	36	52	
11	69	978	68	964	2.60	37	60	13.3	1.70	23	44	26
12	76	1,147	36	543			36		1.81	30	72	
13	57	884	52	807			52		1.86	49	69	
14	74	1,142	54	833	2.10	32	50		1.85	31	59	45
15	60	916	64	977			58		1.83	26	27	
16	90	1,261	52	729			52		1.68	32	54	
17	86	1,191	68	941			62		1.66	28	48	
18	76	1,166	76	1,166			76	15.3	1.84	30	47	
19	108	1,693	68	1,066	2.60	41	66		1.88	21	50	32
20	86	1,327	66	1,018			66		1.85	20	55	
21	94	1,419	70	1,057			68		1.81	24	52	
22	114	1,721	100	1,510			64		1.81	46	57	
23	96	1,337	76	1,059			40		1.67	36	56	
24	78	1,086	88	1,226	2.50	35	64		1.67	40	56	19
25	104	1,544	100	1,485			85		1.78	34	60	
26	72	1,093	92	1,396			88		1.82	43	54	
27	102	1,540	168	2,536			148		1.81	32	0	
28	75	1,126	100	1,501			92		1.80	48	39	
29	57	875	80	1,228			72		1.84	57	34	
30	33	482	80	1,168			80		1.75	62	52	
31												
Total	2,498	36,249	2,586	37,427	9.80	145	2,367	42.7	52.33	846	1,172	122
Max.	135	1,925	168	2,536	2.60	41	148	15.3	1.88	62	72	45
Min.	33	482	36	543	2.10	32	36	13.3	1.58	-45	-57	19
Avg.	83	1,208	86	1,248	2.45	36	79	14.2	1.74	28	39	31
Count	30	30	30	30	4.00	4	30	3.0	30.00	30	30	4

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

APRIL 1994 - ACTIVATED SLUDGE SHEET

PN-Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	5.2								136			52	43	1.67	120	144
2		5.2								120			52	43	1.65	126	148
3		5.5								139			54	43	1.58	108	148
4		5.0	2.3	0.52	1,516	1,245	15.0	1.01	3.9	179	0.31	0.25	50	43	1.71	135	136
5		5.1	3.7	0.25	1,585	1,243	16.0	0.99	4.7	197	0.36	0.32	51	36	1.68	66	92
6		5.2	5.0	0.18	1,581	1,302	16.0	0.99	6.7	160	0.35	0.29	51	36	1.67	51	68
7		5.0	4.6	0.19	1,589	1,282	18.0	0.88	6.5	171	0.44	0.35	49	36	1.73	51	72
8		5.2	4.4	0.20	1,602	1,284	18.0	0.89	6.4	173	0.35	0.28	52	36	1.65	57	80
9		5.3								171			52	36	1.62	90	64
10		5.2								170			56	29	1.65	87	76
11		5.1	5.0	0.25	1,614	1,296	18.0	0.90	5.8	164	0.43	0.36	52	29	1.70	69	68
12		4.8	9.5	0.28	1,723	1,355	19.0	0.91	4.8	150	0.38	0.30	53	29	1.81	76	36
13		4.6	6.8	0.21	1,837	1,433	20.0	0.92	5.2	147	0.42	0.34	53	29	1.86	57	52
14		4.7	6.8	0.26	1,897	1,458	22.0	0.86	4.5	145	0.50	0.38	50	36	1.85	74	54
15		4.7	6.1	0.20	1,983	1,534	23.0	0.86	3.3	191	0.48	0.37	49	43	1.83	60	64
16		5.1								201			52	43	1.68	90	52
17		5.2								209			51	43	1.66	86	68
18		4.7	5.0	0.26	1,960	1,522	21.0	0.93	5.4	195	0.46	0.35	47	43	1.84	76	76
19		4.6	5.9	0.34	2,088	1,640	22.0	0.95	4.5	197	0.49	0.38	48	43	1.88	108	68
20		4.7	6.3	0.26	2,154	1,693	24.0	0.90	3.0	209	0.53	0.41	48	50	1.85	86	66
21		4.8	5.9	0.33	2,092	1,443	24.0	0.87	5.9	196	0.52	0.43	49	50	1.81	94	70
22		4.8	4.2	0.35	2,100	1,623	24.0	0.88	5.3	189	0.58	0.45	49	50	1.81	114	100
23		5.2								182			53	50	1.67	96	76
24		5.2								169			53	50	1.67	78	88
25		4.8	4.1	0.33	2,011	1,572	20.0	1.01	2.0	168	0.49	0.37	52	50	1.78	104	100
26		4.7								213			51	46	1.82	72	92
27		4.8	2.1	0.37	1,817	1,399	20.0	0.91	2.7	229	0.40	0.31	50	46	1.81	102	168
28		4.8	3.1	0.33	1,542	1,138	15.0	1.03	6.5	193	0.35	0.28	50	46	1.80	75	100
29		4.7	3.4	0.27	1,377	1,077	13.0	1.06	6.2	190	0.34	0.27		36	1.84	57	80
30		4.9								192			50	29	1.75	33	80
31																	
Total	48	148.5	94.1	5.39	34,068	26,539	368.0	17.74	93.3	5,345	8.18	6.49	1,479	1,222	52.33	2,498	2,586
Max.	48	5.5	9.5	0.52	2,154	1,693	24.0	1.06	6.7	229	0.58	0.45	56	50	1.88	135	168
Min.	48	4.6	2.1	0.18	1,377	1,077	13.0	0.86	2.0	120	0.31	0.25	47	29	1.58	33	36
Avg.	48	5.0	5.0	0.28	1,793	1,397	19.4	0.93	4.9	178	0.43	0.34	51	41	1.74	83	86
Count	1	30.0	19.0	19.00	19	19	19.0	19.00	19.0	30	19.00	19.00	29	30	30.00	30	30

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

APRIL 1994 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mgIL
1	7.1	7.3	36	501		1.67	0.000	25	348			2	65	75		
2	7.1	7.5	32	440		1.65	0.000	28	385	13.4	184	870	66	73		
3	7.1	7.5	36	474		1.58	0.000	18	237			860	73	78		
4	7.1	7.4	22	314		1.71	0.000	19	271			120	88	79		
5	7.2	7.5	14	196		1.68	0.000	17	238			20	88	83		
6	8.4	7.6	6	84		1.67	0.000	10	139			2	96	88		
7	8.2	7.6	10	144		1.73	0.000	11	159			2	93	86		<0.0005
8	8.0	7.5	14	193		1.65	0.000	8	110			106	89	92		
9	8.1	7.6	10	135		1.62	0.000	8	108			226	93	96		
10	7.6	7.5	12	165		1.65	0.000	8	110			88	92	94		
11	6.5	7.5	10	142	0.28	1.70	0.000	7	99	11.3	160	4	92	92	92	
12	6.7	7.5	10	151		1.81	0.000	10	151			4	92	91		
13	7.1	7.5	9	140		1.86	0.000	6	93			84	95	95		
14	7.2	7.5	11	170	0.36	1.85	0.000	11	170			134	92	90	91	<0.0005
15	7.1	7.4	12	183		1.83	0.000	8	122			2	86	90		
16	7.8	7.5	6	84		1.68	0.000	6	84			72	95	95		
17	8.0	7.6	8	111		1.66	0.000	4	55			12	94	97		
18	7.1	7.5	10	153		1.84	0.000	4	61	14.7	226	2	93	96		<0.0005
19	7.8	7.5	12	188	0.26	1.88	0.000	9	141			2	91	93	93	
20	7.1	7.5	7	108		1.85	0.000	6	93			2	95	94		
21	7.3	7.5	8	121		1.81	0.000	5	75			2	95	96		
22	8.1	7.4	28	423		1.81	0.000	9	136			2	88	96		
23	7.5	7.4	15	209		1.67	0.000	11	153			132	91	93		
24	7.2	7.5	16	223	0.45	1.67	0.000	11	153			26	92	91	85	<0.0005
25	7.9	7.4	16	238		1.78	0.000	14	208			2	94	91		
26	7.0	7.4	5	76		1.82	0.000	7	106			42	98	94		
27	7.9	7.6	9	136		1.81		6	91			2	95	96		
28	7.8	7.6	11	165		1.80	0.000	7	105			84	93	94		
29	7.9	7.6	10	153		1.84	0.000	9	138			3	92	93		
30	7.6	7.7	6	88		1.75	0.000	7	102			20	96	92		
31																
Total	224.5	225.1	411	5,907	1.35	52.33	0.000	309	4,443	39.4	570	2,929	2,702	2,713	361	<0.0005
Max.	8.4	7.7	36	501	0.45	1.88	0.000	28	385	14.7	226	870	98	97	93	<0.0005
Min.	6.5	7.3	5	76	0.26	1.58	0.000	4	55	11.3	160	2	65	73	85	<0.0005
Avg.	7.5	7.5	14	197	0.34	1.74	0.000	10	148	13.1	190	G 16	90	90	90	<0.0005
Count	30.0	30.0	30	30	4.00	30.00	29.000	30	30	3.0	3	30	30	30	4	4

G Geometric Mean

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

APRIL 1994 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hours	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1	27	2,520	540	15	99	11	540	8,000	4.8	74	5.8	12.01	11.08	67.50
2	28	2,400	460	16	0	12	486	8,000	4.3	74	5.9	12.04	11.12	60.75
3	44	2,520	440	17	99	15	540	8,000	4.6	74	5.9	12.28	11.47	67.50
4	32	2,760	710	19	199	13	540	8,000	4.5	76	5.8	12.22	11.96	67.50
5	53	2,760	640	20	199	14	540	8,000	4.5	75	5.7	12.55	12.14	67.50
6	69	2,640	450	20	496	15	459	8,000	4.3	77	5.9	12.21	12.19	57.38
7	53	2,640	420	19	298	13	459	8,000	4.1	76	6.0	12.31	12.27	57.38
8	29	2,640	690	26	397	15	216	4,000	4.2	77	6.1	12.24	12.17	54.00
9	33	2,520	450	17	496	13	270	4,000	4.9	72	7.3	12.33	12.36	67.50
10	28	2,760	330	20	298	12	270	4,000	4.3	73	6.1	12.30	12.26	67.50
11	24	2,640	500	19	397	12	270	4,000	4.7	76	6.0	12.56	12.12	67.50
12	31	2,640	380	20	397	12	297	4,000	4.7	75	6.0	12.45	12.24	74.25
13	43	2,760	390	21	397	14	297	4,000	4.9	74	6.0	12.52	12.59	74.25
14	21	2,520	400	20	397	12	297	4,000	5.3	72	6.0	12.47	12.50	74.25
15	25	2,640	510	18	199	15	297	4,000	5.0	72	6.1	12.32	12.42	74.25
16	46	2,760	410	8	397	13	297	4,000	4.8	73	6.0	12.28	12.14	74.25
17	21	2,760	440	12	397	15	243	4,000	4.5	74	6.1	12.28	12.13	60.75
18	14	2,640	550	18	397	14	270	4,000	4.9	73	6.0	12.24	12.07	67.50
19	10	2,760	380	17	596	15	216	5,000	5.0	73	6.0	12.15	12.18	43.20
20	39	2,760	410	17	199	15	216	3,000	5.5	72	6.0	12.18	12.45	72.00
21	41	2,760	410	18	298	13	216	3,000	5.3	73	5.9	12.22	12.79	72.00
22	20	2,640	490	20	298	14	189	4,000	5.1	73	5.9	12.02	11.76	47.25
23	25	2,640	708	20	397	18	216	3,000	4.9	74	5.8	12.04	9.77	72.00
24	5	2,520	450	20	397	11	243	4,000	4.9	75	5.7	12.07	9.51	60.75
25	1	2,520	410	19	397	11	270	4,000	4.9	74	5.8	12.00	9.57	67.50
26	1	2,520	390	20	397	11	243	4,000	6.0	71	5.8	12.06	12.19	60.75
27	1	2,640	340	21	596	13	351	4,000	5.0	75	6.0	12.34	12.21	87.75
28	28	2,760	210	20	596	14	216	4,000	5.8	72	5.9	12.26	12.20	54.00
29	32	2,760	470	22	0	12	432	4,000	6.1	69	6.0		11.52	108.00
30	45	2,760	700	23	397	12	297	4,000	5.7	62	6.8	12.01	10.02	74.25
31														
Total	869	79,560	14,078	562	10,127	399	9,693	146,000	147.5	2,200	180.3	354.96	353.40	2020.95
Max.	69	2,760	710	26	596	18	540	8,000	6.1	77	7.3	12.56	12.79	108.00
Min.	1	2,400	210	8	0	11	189	3,000	4.1	62	5.7	12.00	9.51	43.20
Avg.	29	2,652	469	19	338	13	323	4,867	4.9	73	6.0	12.24	11.78	67.36

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

MAY 1994 - PLANT INFLUENT SHEET

PN-Day	Weather Type	Weather Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	Remarks or Other Parameters
1			1.77	59	7.5	96	1,417	180	2,657			156	10.6	
2			1.94	58	7.6	87	1,408	164	2,653			148	12.0	
3			1.88	58	7.4	225	3,528	184	2,885			160	13.0	
4			1.88	59	7.3	108	1,693	136	2,132	4.30	67	126	11.1	
5			1.89	59	7.6	99	1,560	168	2,648			150	12.3	
6			1.68	59	7.4	111	1,555	112	1,569			72	11.7	
7	Rain	0.44	1.73	58	7.5	108	1,558	108	1,558			96	11.7	
8	Rain	0.02	1.68	59	7.5	123	1,723	216	3,026			190	11.8	
9			1.92	59	7.6	171	2,738	180	2,882			166	11.6	
10			1.66	59	7.6	173	2,395	262	3,627	3.70	51	246	12.3	
11	Rain	0.15	1.80	59	7.8	75	1,126	148	2,222			130	12.2	
12			1.87	59	7.5	108	1,684	180	2,807			154	12.3	
13			1.76	59	7.5	126	1,849	142	2,084			128	10.8	
14	Rain	0.01	1.61	59	7.4	114	1,531	126	1,692			124	11.8	
15			1.53	59	7.5	90	1,148	154	1,965			140	13.4	
16			1.79	60	7.4	96	1,433	186	2,777			156	14.1	
17			1.88	59	7.6	93	1,458	138	2,164			120	11.1	
18			1.73	59	7.5	132	1,905	130	1,876	4.00	58	118	11.1	
19			1.65	60	7.6	228	3,138	288	3,963			264	11.6	
20			1.72	60	7.4	164	2,353	122	1,750			122	10.9	
21			1.64	60	7.5	150	2,052	102	1,395			92	10.5	
22			1.70	60	7.5	168	2,382	164	2,325			152	10.1	
23	Rain	0.10	1.83	61	7.7	143	2,182	148	2,259			120	10.8	
24	Rain	0.01	1.80	60	7.5	166	2,492	214	3,213	4.60	69	190	10.1	
25	Rain	0.10	1.84	63	7.6	133	2,041	170	2,609			152	9.3	
26	Rain	0.02	1.71	63	7.6	132	1,883	172	2,453			158	11.7	
27			1.52	62	7.5	162	2,054	176	2,231			166	13.4	
28			1.51	62	7.4	182	2,292	260	3,274			236	10.1	
29			1.47	62	7.4	149	1,827	216	2,648			192	9.6	
30			1.59	63	7.7	153	2,029	200	2,652			180	9.6	
31	Rain	0.03	1.80	63	7.4	176	2,642	230	3,453			206	10.2	
Total	0	0.88	53.78	1,859	233.0	4,241	61,076	5,376	77,451	16.60	245	4,810	352.8	
Max.	0	0.44	1.94	63	7.8	228	3,528	288	3,963	4.60	69	264	14.1	
Min.	0	0.01	1.47	58	7.3	75	1,126	102	1,395	3.70	51	72	9.3	
Avg.	0	0.10	1.73	60	7.5	137	1,970	173	2,498	4.15	61	155	11.4	
Count	9	9.00	31.00	31	31.0	31	31	31	31	4.00	4	31	31.0	

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

MAY 1994 - PRIMARY EFFLUENT SHEET

PN-Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	42	620	56	827			56	11.7	1.77	56	69	
2	32	518	36	582			36	13.3	1.94	63	78	
3	42	659	38	596			36	13.6	1.88	81	79	
4	56	878	40	627	1.50	24	26	13.3	1.88	48	71	65
5	50	788	42	662			38	13.5	1.89	49	75	
6	36	504	36	504			24	12.5	1.68	68	68	
7	48	693	48	693			40	12.8	1.73	56	56	
8	48	673	50	701			46	12.5	1.68	61	77	
9	46	737	44	705	1.90	30	44	12.7	1.92	73	76	49
10	44	609	44	609			40	13.6	1.66	75	83	
11	36	540	44	661			38	13.7	1.80	52	70	
12	54	842	42	655			34	12.7	1.87	50	77	
13	58	851	40	587			36	12.8	1.76	54	72	
14	36	483	34	457			34	12.8	1.61	68	73	
15	32	408	38	485			32	14.4	1.53	64	75	
16	34	508	58	866			38	14.8	1.79	65	69	
17	48	753	38	596			28	12.5	1.88	48	72	
18	48	693	30	433	1.30	19	22	12.8	1.73	64	77	68
19	88	1,211	32	440			24	13.4	1.65	61	89	
20	111	1,592	38	545			32	13.3	1.72	32	69	
21	88	1,204	36	492			26	12.6	1.64	41	65	
22	81	1,148	30	425			30	11.9	1.70	52	82	
23	96	1,465	50	763			38	12.2	1.83	33	66	
24	58	871	34	510	1.60	24	28	12.6	1.80	65	84	65
25	66	1,013	42	645			32	11.5	1.84	50	75	
26	60	856	34	485			30	12.8	1.71	55	80	
27	66	837	24	304			22	15.2	1.52	59	86	
28	82	1,033	42	529			40	12.0	1.51	55	84	
29	86	1,054	30	368			28	11.3	1.47	42	86	
30	58	769	46	610			40	11.9	1.59	62	77	
31	80	1,201	46	691			40	13.1	1.80	55	80	
Total	1,810	26,009	1,242	18,052	6.30	97	1,058	399.8	53.78	1,757	2,340	247
Max.	111	1,592	58	866	1.90	30	56	15.2	1.94	81	89	68
Min.	32	408	24	304	1.30	19	22	11.3	1.47	32	56	49
Avg.	58	839	40	582	1.58	24	34	12.9	1.73	57	75	62
Count	31	31	31	31	4.00	4	31	31.0	31.00	31	31	4

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

MAY 1994 - ACTIVATED SLUDGE SHEET

PN-Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	4.9								193			54	22	1.77	42	56
2		4.4	8.0	0.14	1,547	1,204	16.0	0.97	7.0	188	0.37	0.29	49	22	1.94	32	36
3		4.6	8.2	0.17	1,633	1,266	17.0	0.96	6.3	186	0.40	0.31	50	22	1.88	42	38
4		4.6	8.6	0.21	1,793	1,392	18.0	1.00	6.5	133	0.38	0.30	50	29	1.88	56	40
5		4.6	8.4	0.18	1,849	1,453	19.0	0.97	3.8	168	0.47	0.37	51	29	1.89	50	42
6		5.1	10.5	0.12	1,772	1,387	17.0	1.04	7.6	184	0.47	0.36	56	29	1.68	36	36
7		5.0								184			47	29	1.73	48	48
8		5.1								176			53	29	1.68	48	50
9		4.5	5.4	0.23	1,274	1,068	14.0	0.91	7.9	177	0.34	0.26	47	22	1.92	46	44
10		5.2	6.7	0.18	1,361	1,110	13.0	1.05	7.2	204	0.38	0.33	55	22	1.66	44	44
11		4.8	6.3	0.17	1,392	1,069	13.0	1.07	7.1	212	0.26	0.17	48	22	1.80	36	44
12		4.6	6.4	0.25	1,397	1,111	14.0	1.00	6.7	217	0.35	0.27	48	20	1.87	54	42
13		4.9	7.5	0.24	1,463	1,174	14.0	1.05	5.1	216	0.44	0.35	50	22	1.76	58	40
14		5.4								211			54	22	1.61	36	34
15		5.6								214			56	22	1.53	32	38
16		4.8	5.6	0.13	1,622	1,356	17.0	0.95	6.9	220	0.31	0.23	54	21	1.79	34	58
17		4.6	8.7	0.19	1,731	1,303	17.0	1.02	5.2	221	0.31	0.16	53	20	1.88	48	38
18		5.0	12.8	0.15	1,850	1,541	18.0	1.03	3.8	218	0.44	0.33	58	20	1.73	48	30
19		5.2	12.7	0.27	1,863	1,472	19.0	0.98	6.0	216	0.48	0.37	57	25	1.65	88	32
20		5.0	9.7	0.37	1,772	1,424	18.0	0.98	5.0	211	0.35	0.29	53	24	1.72	111	38
21		5.3								210			53	23	1.64	88	36
22		5.1								208			59	23	1.70	81	30
23		4.7	6.0	0.40	1,530	1,224	17.0	0.90	5.2	208	0.36	0.29	56	12	1.83	96	50
24		4.8	9.6	0.22	1,642	1,293	18.0	0.91	5.1	206	0.41	0.32	57	14	1.80	58	34
25		4.7	8.1	0.24	1,746	1,402	20.0	0.87	3.8	232	0.45	0.37	55	21	1.84	66	42
26		5.0	11.2	0.20	1,820	1,444	19.0	0.96	4.5	258	0.41	0.32	58	22	1.71	60	34
27		5.7	17.9	0.20	1,814	1,430	20.0	0.91	4.5	258	0.36	0.29	61	23	1.52	66	24
28		5.7								249			64	23	1.51	82	42
29		5.9								245			65	23	1.47	86	30
30		5.4								239			58	23	1.59	58	46
31		4.8	4.9	0.45	1,130	883	13.0	0.87	5.4	242	0.24	0.18	54	19	1.80	80	46
Total	48	154.8	183.1	4.74	34,001	27,006	351.0	20.39	120.6	6,504	7.98	6.16	1,683	699	53.78	1,810	1,242
Max.	48	5.9	17.9	0.45	1,863	1,541	20.0	1.07	7.9	258	0.48	0.37	65	29	1.94	111	58
Min.	48	4.4	4.9	0.12	1,130	883	13.0	0.87	3.8	133	0.24	0.16	47	12	1.47	32	24
Avg.	48	5.0	8.7	0.23	1,619	1,286	16.7	0.97	5.7	210	0.38	0.29	54	23	1.73	58	40
Count	1	31.0	21.0	21.00	21	21	21.0	21.00	21.0	31	21.00	21.00	31	31	31.00	31	31

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

MAY 1994 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mgIL
1	8.2	7.5	14	207		1.77	0.000	4	59	10.2	151	20	92	96		
2	8.1	7.4	5	81		1.94	0.008	2	32	11.9	193	7	97	98		<0.0005
3	8.2	7.4	10	157		1.88	0.000	2	31	12.7	199	2	95	99		
4	8.0	7.4	9	141	0.38	1.88	0.000	3	47	13.4	210	16	93	97	91	
5	8.1	7.4	11	173		1.89	0.000	3	47	13.0	205	44	93	97		
6	7.8	7.6	7	98		1.68	0.000	3	42	11.4	160	52	94	97		
7	8.5	7.6	9	130		1.73	0.000	3	43	12.0	173	22	92	97		
8	8.6	7.6	9	126		1.68	0.000	2	28	11.6	163	36	96	98		
9	8.2	7.6	4	64	0.23	1.92	0.000	5	80	12.0	192	72	98	97	94	
10	8.0	7.6	5	69		1.66	0.000	4	55	12.8	177	42	98	98		
11	7.8	7.5	3	45		1.80	0.000	2	30	12.2	183	20	98	97		<0.0005
12	8.0	7.5	4	62		1.87	0.000	5	78	13.4	209		98	95		
13	7.2	7.5	6	88		1.76	0.000	3	44	12.4	182	48	96	98		
14	8.6	7.5	3	40		1.61	0.000	3	40	12.7	171	10	98	97		
15	8.1	7.5	5	64		1.53	0.000	1	13	14.2	181	10	97	99		<0.0005
16	7.9	7.4	10	149		1.79	0.000	2	30	14.0	209	2	95	98		
17	7.9	7.6	6	94		1.88	0.000	2	31	13.5	212	48	96	98		
18	7.9	7.5	1	14	0.20	1.73	0.001	2	29	13.0	188	21	99	98	95	
19	7.5	7.6	2	28		1.65	0.003	4	55	14.1	194	4	99	98		
20	7.2	7.5	4	57		1.72	0.001	4	57	13.6	195	166	97	98		
21	7.9	7.5	2	27		1.64	0.005	6	82	11.7	160	212	98	96		
22	8.0	7.6	1	14		1.70	0.000	6	85	11.0	156	188	99	97		<0.0005
23	7.8	7.6	9	137		1.83	0.008	4	61	11.6	177	76	94	97		
24	7.6	7.5	2	30	0.72	1.80	0.006	6	90	11.7	176	151	99	96	84	
25	6.5	7.6	8	123		1.84	0.001	5	77	11.5	176	328	95	96		
26	6.9	7.5	5	71		1.71	0.006	4	57	13.3	190	96	97	97		
27	7.7	7.6	2	25		1.52	0.012	4	51	14.5	184	52	99	98		
28	7.3	7.6	8	101		1.51	0.016	4	50	12.6	159	24	97	98		
29	7.5	7.5	3	37		1.47	0.025	4	49	11.1	136	16	99	97		
30	7.9	7.7	11	146		1.59	0.022	4	53	12.1	160	32	95	97		
31	7.4	7.4	6	90		1.80	0.017	6	90	12.8	192	92	97	97		
Total	242.3	233.3	184	2,690	1.53	53.78	0.131	112	1,619	388.0	5,611	1,909	2,990	3,016	364	<0.0005
Max.	8.6	7.7	14	207	0.72	1.94	0.025	6	90	14.5	212	328	99	99	95	<0.0005
Min.	6.5	7.4	1	14	0.20	1.47	0.000	1	13	10.2	136	2	92	95	84	<0.0005
Avg.	7.8	7.5	6	87	0.38	1.73	0.004	4	52	12.5	181	G 33	96	97	91	<0.0005
Count	31.0	31.0	31	31	4.00	31.00	31.000	31	31	31.0	31	30	31	31	4	4

G = Geometric Mean

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

MAY 1994 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hours	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1	42	2,760	400	21	322	15	238	4,000	5.2	72	5.9	12.34	9.67	59.50
2	31	2,880	370	12	242	15	238	4,000	5.3	73	6.0	12.07	11.31	59.50
3	16	2,520	350	21	242	15	291	4,000	5.2	73	5.9	12.29	11.65	72.75
4	1	2,400	460	14	242	15	238	4,000	5.1	72	5.9	12.30	11.14	59.50
5	1	2,400	440	15	242	15	291	5,000	5.2	72	5.9	12.17	10.71	58.20
6	1	2,640	330	14	242	6	317	5,000	4.9	74	5.9	12.20	10.73	63.40
7	1	2,520	580	15	242	8	317	5,000	4.8	74	5.9	12.01	10.22	63.40
8	2	2,520	430	15	242	8	291	5,000	4.5	74	6.0	12.12	10.26	58.20
9	2	2,520	490	17	242	7	476	6,000	4.5	74	6.0	12.07	11.74	79.33
10	1	2,400	830	13	242	8	423	6,000	4.7	75	6.1	12.03	11.06	70.50
11	1	2,520	430	23	242	11	344	6,000	4.5	74	6.2	12.26	11.21	57.33
12	1	2,640	540	16	242	7	397	6,000	4.3	73	5.9	12.00	10.10	66.17
13	1	2,520	430	13	242	8	397	7,000	4.4	74	6.0	12.39	12.49	56.71
14	1	2,400	410	18	161	10	370	6,000	4.3	74	6.0	12.00	10.80	61.67
15	2	2,400	390	15	242	10	370	6,000	4.2	74	6.0	12.03	11.37	61.67
16	2	2,520	450	12	242	12	503	8,000	4.9	77	5.8	12.00	10.97	62.88
17	1	2,520	390	9	322	3	291	5,000	4.2	73	5.9	12.10	11.45	58.20
18	1	2,520	400	10	161	3	529	8,000	4.1	74	5.9	12.05	11.44	66.13
19	1	2,400	510	12	242	2	370	7,000	4.4	74	6.0	12.00	11.59	52.86
20	1	2,400	460	10	242	4	370	6,000	4.0	74	6.1	12.17	12.36	61.67
21	1	2,400	420	8	161	3	370	6,000	4.0	74	5.7	12.02	12.50	61.67
22	1	2,520	510	12	242	3	238	4,000	3.8	74	5.9	12.39	10.28	59.50
23	0	2,520	430	10	242	4	503	8,000	3.7	75	5.9	12.01	11.55	62.88
24	0	2,520	370	4	242	2	503	8,000	4.3	61	5.9	12.21	11.76	62.88
25	0	2,520	470	4	242	2	476	7,000	4.2	75	5.9	12.27		68.00
26	0	2,640	610	4	242	2	370	6,000	3.7	75	5.9	12.18	11.84	61.67
27	0	2,520	400	9	242	2	370	6,000	4.0	74	5.8	12.30	12.08	61.67
28	0	2,640	390	9	161	2	423	6,000	4.8	50		12.50	12.13	70.50
29	0	2,520	450	7	242	4	370	6,000	4.1	67	6.5	12.24	11.62	61.67
30	0	2,520	350	9	242	2	423	6,000	3.6	73	5.7	12.22	11.55	70.50
31	0	2,640	410	7	242	2	423	6,000	4.3	74	6.0	12.31	11.89	70.50
Total	112	78,360	13,900	378	7,338	210	11,530	182,000	137.2	2,246	178.5	377.25	339.47	1960.97
Max.	42	2,880	830	23	322	15	529	8,000	5.3	77	6.5	12.50	12.50	79.33
Min.	0	2,400	330	4	161	2	238	4,000	3.6	50	5.7	12.00	9.67	52.86
Avg.	4	2,528	448	12	237	7	372	5,871	4.4	72	6.0	12.17	11.32	63.26

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JUNE 1994 - PLANT INFLUENT SHEET

PN-Day	Weather Type	Weather Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	Remarks or Other Parameters
1			1.76	60	7.6	131	1,923	152	2,231			132	10.1	
2			1.72	62	7.3	146	2,094	154	2,209			138	11.6	
3			1.73	62	7.6	161	2,323	112	1,616			104	12.1	
4			1.60	62	7.5	175	2,335	172	2,295			140	13.1	
5	Rain	0.39	1.65	64	7.5	149	2,050	196	2,697	3.50	48	176	12.4	
6			1.87	64	7.4	253	3,946	252	3,930			212	11.7	
7			1.73	63	7.3	140	2,020	152	2,193			128	11.8	
8			1.73	64	7.6	162	2,337	240	3,463			216	11.7	
9			1.74	64	7.4	194	2,815	272	3,947			176	14.4	
10			1.71	64	7.5	174	2,481	126	1,797			112	13.0	
11	Rain	0.07	1.58	64	7.4	196	2,583	156	2,056			142	12.0	
12	Rain	0.13	1.65	63	7.3	166	2,284	128	1,761			126		
13	Rain	1.81	1.93	64	7.4	209	3,364	270	4,346			180	10.4	
14			1.85	63	7.6	175	2,700	178	2,746	4.10	63	150	10.0	
15			1.84	64	7.5	130	1,995	174	2,670			150	10.3	
16			1.82	63	7.6	157	2,383	178	2,702			154	10.2	
17			1.50	63	7.6	149	1,864	176	2,202			140	11.1	
18			1.60	63	7.7	148	1,975	130	1,735			98	11.0	
19			1.55	63	7.6	161	2,081	160	2,068			120	11.4	
20	Rain	0.64	1.88	66	7.5	166	2,603	184	2,885			148	11.2	
21			1.89	65	7.5	130	2,049	178	2,806	4.00	63	146	10.5	
22			1.81	65	7.5	152	2,295	110	1,660			86	9.8	
23	Rain	1.88	1.96	66	7.5	144	2,354	202	3,302			162	12.4	
24	Rain	0.83	1.94	65	7.6	120	1,942	96	1,553			84	12.3	
25	Rain	0.07	1.83	65	7.6	133	2,030	134	2,045			116	13.7	
26	Rain	0.05	1.80	65	7.6	142	2,132	218	3,273			196	11.1	
27			1.94	65	7.5	162	2,621	148	2,395	3.20	52	128	11.3	
28	Rain	0.12	1.96	65	7.5	158	2,583	168	2,746			152	11.0	
29			1.93	65	7.3	174	2,801	154	2,479			136	10.8	
30			1.88	65	7.3	152	2,383	200	3,136			176	13.0	
31														
Total	0	5.99	53.38	1,916	224.8	4,809	71,346	5,170	76,944	14.80	226	4,324	335.4	
Max.	0	1.88	1.96	66	7.7	253	3,946	272	4,346	4.10	63	216	14.4	
Min.	0	0.05	1.50	60	7.3	120	1,864	96	1,553	3.20	48	84	9.8	
Avg.	0	0.60	1.78	64	7.5	160	2,378	172	2,565	3.70	57	144	11.6	
Count	10	10.00	30.00	30	30.0	30	30	30	30	4.00	4	30	29.0	

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JUNE 1994 - PRIMARY EFFLUENT SHEET

PN-Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	63	925	34	499			32	11.9	1.76	52	78	
2	81	1,162	34	488			34	12.2	1.72	45	78	
3	79	1,140	36	519			22	12.8	1.73	51	68	
4	117	1,561	20	267			8	13.0	1.60	33	88	
5	63	867	30	413	1.00	14	28	12.1	1.65	58	85	71
6	110	1,716	48	749			40	10.6	1.87	56	81	
7	65	938	32	462			26	13.0	1.73	54	79	
8	67	967	36	519			32	14.1	1.73	59	85	
9	78	1,132	30	435			24	14.8	1.74	60	89	
10	102	1,455	36	513			32	13.5	1.71	41	71	
11	83	1,094	58	764			52	12.7	1.58	58	63	
12	76	1,046	40	550			32		1.65	51	69	
13	85	1,368	50	805			36	11.6	1.93	59	81	
14	77	1,188	46	710	1.80	28	30	10.1	1.85	56	74	56
15	68	1,044	40	614			26	10.7	1.84	48	77	
16	125	1,897	44	668			32	11.5	1.82	20	75	
17	85	1,063	48	600			28	11.3	1.50	43	73	
18	85	1,134	54	721			30	10.8	1.60	43	58	
19	81	1,047	42	543			24	10.8	1.55	50	74	
20			42	659			42	11.4	1.88		77	
21	73	1,151	60	946	2.10	33	40	11.2	1.89	44	66	48
22	127	1,917	52	785			38	11.5	1.81	16	53	
23	84	1,373	66	1,079			56	13.3	1.96	42	67	
24	100	1,618	58	938			52	14.8	1.94	17	40	
25	97	1,480	70	1,068			56	15.1	1.83	27	48	
26	85	1,276	64	961	2.70	41	52	12.5	1.80	38	71	16
27	83	1,343	56	906			38	12.3	1.94	49	62	
28	135	2,207	54	883			42	11.9	1.96	15	68	
29	113	1,819	46	740			38	11.8	1.93	35	70	
30	103	1,615	42	659			36	14.0	1.88	32	79	
31												
Total	2,590	38,541	1,368	20,463	7.60	115	1,058	357.3	53.38	1,252	2,147	191
Max.	135	2,207	70	1,079	2.70	41	56	15.1	1.96	60	89	71
Min.	63	867	20	267	1.00	14	8	10.1	1.50	15	40	16
Avg.	89	1,329	46	682	1.90	29	35	12.3	1.78	43	72	48
Count	29	29	30	30	4.00	4	30	29.0	30.00	29	30	4

Robert J. Swalwell
Superintendent

MARSHALL, MICHIGAN WASTEWATER TREATMENT PLANT

JUNE 1994 - ACTIVATED SLUDGE SHEET

PN-Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	4.9	10.4	0.23	1,739	1,363	21.0	0.83	2.9	126	0.38	0.29	56	21	1.76	63	34
2		5.0	10.3	0.30	1,682	1,306	20.0	0.84	4.1	127	0.31	0.24	58	23	1.72	81	34
3		5.0	9.1	0.31	1,576	1,231	20.0	0.79	3.2	124	0.30	0.24	58	17	1.73	79	36
4		5.4								122			62	12	1.60	117	20
5		5.2								118			60	5	1.65	63	30
6		4.6	4.7	0.63	1,165	906	15.0	0.78	4.4	118	0.27	0.21	52	6	1.87	110	48
7		5.0	12.4	0.21	1,910	1,484	24.0	0.80	1.3	142	0.40	0.33	61	17	1.73	65	32
8		5.0	11.6	0.20	2,014	1,576	25.0	0.81	3.0	147	0.43	0.33	62	27	1.73	67	36
9		5.0	13.1	0.25	1,912	1,504	27.0	0.71	2.9	146	0.44	0.35	61	28	1.74	78	30
10		5.0	10.7	0.34	1,838	1,446	25.0	0.74	3.0	144	0.40	0.31	62	24	1.71	102	36
11		5.5								144			67	22	1.58	83	58
12		5.2								140			64	19	1.65	76	40
13		4.5	6.5	0.33	1,757	1,383	22.0	0.80	2.4	139	0.37	0.29	50	19	1.93	85	50
14		4.7	8.0	0.27	1,907	1,460	30.0	0.64	1.7	136	0.43	0.33	57	13	1.85	77	46
15		4.7	9.6	0.23	1,967	1,533	29.0	0.68	1.9	136	0.50	0.38	58	21	1.84	68	40
16		4.7	8.0	0.42	1,788	1,494	29.0	0.62	2.4	137	0.39	0.31	59	30	1.82	125	44
17		5.7	9.0	0.25	1,805	1,436	29.0	0.62	2.4	129	0.43	0.34	72	29	1.50	85	48
18		5.4								128			68	29	1.60	85	54
19		5.6								126			70	29	1.55	81	42
20		4.6	7.4	0.00	1,619	1,259	25.0	0.65	2.6	131	0.34	0.27	56	30	1.88		42
21		4.6	5.1	0.32	1,623	1,203	24.0	0.68	2.2	147	0.40	0.34	57	31	1.89	73	60
22		4.8	5.8	0.51	1,531	1,265	25.0	0.61	3.7	148	0.37	0.26	63	29	1.81	127	52
23		4.4	4.3	0.39	1,549	1,177	24.0	0.65	3.2	151	0.39	0.32	52	21	1.96	84	66
24		4.4	5.2	0.42	1,620	1,301	24.0	0.68	3.4	149	0.47	0.37	53	28	1.94	100	58
25		4.7								149			56	7	1.83	97	70
26		4.8								149			56	8	1.80	85	64
27		4.4	6.5	0.29	1,963	1,569	29.0	0.68	2.0	150	0.47	0.37	54	35	1.94	83	56
28		4.4	6.6	0.47	1,955	1,556	30.0	0.65	2.9	148	0.48	0.38	54	37	1.96	135	54
29		4.5	8.0	0.39	1,981	1,575	30.0	0.66	1.7	140	0.53	0.42	54	37	1.93	113	46
30		4.6	9.1	0.33	2,010	1,618	40.0	0.50	1.8	133	0.44	0.35	56	39	1.88	103	42
31																	
Total	48	146.1	181.6	7.08	38,911	30,645	567.0	15.38	59.1	4,124	8.94	7.03	1,768	693	53.38	2,590	1,368
Max.	48	5.7	13.1	0.63	2,014	1,618	40.0	0.84	4.4	151	0.53	0.42	72	39	1.96	135	70
Min.	48	4.4	4.3	0.00	1,165	906	15.0	0.50	1.3	118	0.27	0.21	50	5	1.50	63	20
Avg.	48	4.9	8.3	0.32	1,769	1,393	25.8	0.70	2.7	137	0.41	0.32	59	23	1.78	89	46
Count	1	30.0	22.0	22.00	22	22	22.0	22.00	22.0	30	22.00	22.00	30	30	30.00	29	30

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

JUNE 1994 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mgIL
1	6.9	7.4	4	59		1.76	0.01	4	59	10.8	159	54	97	97		
2	7.3	7.2	5	72		1.72	0.01	4	57	11.0	158	62	97	97		<0.0005
3		7.5	5	72		1.73	0.00	4	58	11.4	164	85	96	98		
4	6.9	7.5	2	27		1.60	0.01	5	67	11.9	159	92	99	97		
5	7.4	7.6	4	55	0.36	1.65	0.01	4	55	11.3	155	228	98	97	90	
6	7.0	7.5	9	140		1.87	0.01	7	109	10.5	164	1,090	96	97		
7	6.4	7.4	5	72		1.73	0.03	5	72	7.3	105	125	97	96		<0.0005
8	7.2	7.5	6	87		1.73	0.00	5	72	10.6	153	124	98	97		
9	7.4	7.5	5	73		1.74	0.00	5	73	13.4	194	100	98	97		
10	6.9	7.5	4	57		1.71	0.00	6	86	10.5	150	140	97	97		
11	6.7	7.5	16	211		1.58	0.00	5	66	9.3	123	60	90	97		
12	6.8	7.4	4	55		1.65	0.01	5	69			130	97	97		
13	6.9	7.4	11	177		1.93	0.00	8	129	7.9	127	140	96	96		<0.0005
14	6.6	7.6	7	108	0.41	1.85	0.01	6	93	6.9	106	860	96	97	90	
15	6.6	7.5	5	77		1.84	0.00	4	61	6.5	100	2,220	97	97		
16	6.4	7.5	3	46		1.82	0.00	5	76	7.0	106	50	98	97		
17	6.0	7.4	7	88		1.50	0.00	5	63	6.9	86	150	96	96		
18	6.5	7.4	6	80		1.60	0.00	5	67	4.1	55	140	95	97		
19	6.1	7.4	4	52		1.55	0.00	5	65	1.9	25	780	98	97		<0.0005
20	6.1	7.3	6	94		1.88	0.00	7	110	3.7	58	206	97	96		
21	6.4	7.4	6	95	0.39	1.89	0.00	6	95	1.5	24	176	97	96	90	
22	6.9	7.4	3	45		1.81	0.00	6	91	2.3	35	400	97	96		
23	6.2	7.4	8	131		1.96	0.00	6	98	4.1	67	202	96	96		
24	6.1	7.4	5	81		1.94	0.00	6	97	1.2	19	634	95	95		
25	6.5	7.4	9	137		1.83	0.00	5	76	2.5	38	250	93	96		
26	6.6	7.4	5	75	1.05	1.80	0.00	4	60	1.5	23	475	98	97	67	
27	6.3	7.3	8	129		1.94	0.00	5	81	2.3	37	222	95	97		
28	7.4	7.3	7	114		1.96	0.00	5	82	3.6	59	390	96	97		
29	6.1	7.3	6	97		1.93	0.00	6	97	4.5	72	40	96	97		
30	6.2	7.3	5	78		1.88	0.00	5	78	4.5	71	20	98	97		
31																
Total	192.8	222.6	180	2,682	2.21	53.38	0.10	158	2,358	190.9	2,792	9,645	2,894	2,901	337	<0.0005
Max.	7.4	7.6	16	211	1.05	1.96	0.03	8	129	13.4	194	2,220	99	98	90	<0.0005
Min.	6.0	7.2	2	27	0.36	1.50	0.00	4	55	1.2	19	20	90	95	67	<0.0005
Avg.	6.6	7.4	6	89	0.55	1.78	0.00	5	79	6.6	96	G 179	96	97	84	<0.0005
Count	29.0	30.0	30	30	4.00	30.00	30.00	30	30	29.0	29	30	30	30	4	4

G = Geometric Mean

Sample on June 13 - Zinc 0.05 mg/L, Copper <0.01 mg/L

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JUNE 1994 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hours	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1		2,640	400	9	242	3	465	6,000	4.2	75	6.0	12.09	11.77	77.50
2		2,640	500	9	242	2	403	6,500	3.9	74	6.0	12.41	11.55	62.00
3		2,520	430	9	242	1	403	5,000	3.9	73	6.0	12.16	11.87	80.60
4		2,640	520	9	161	3	279	4,000	3.6	74	6.0	12.32	11.70	69.75
5		2,400	370	8	322	7	279	4,000	3.8	74	5.8	12.34	11.64	69.75
6		2,520	390	9	161	2	403	5,000	3.5	74	5.9	12.23	11.92	80.60
7		2,760	720	13	322	5	372	5,000	4.2	74	5.9	12.15	11.91	74.40
8		2,640	1,200	13	161	5	403	5,000	3.7	74	5.8	12.28	11.81	80.60
9		2,520	1,260	15	242	8	372	6,000	3.9	75	5.9	12.27	11.74	62.00
10		2,880	1,630	19	242	8	372	5,000	3.9	71	5.9	12.22	11.80	74.40
11		2,640	420	14	161	7	310	5,000	3.5	74	5.9	12.22	11.64	62.00
12		2,880	390	12	161	7	412	5,000	3.3	73	5.8	12.26	11.75	82.40
13		2,640	1,120	5	242	10	372	5,000	3.6	73	5.9	12.41	10.82	74.40
14		2,640	720	4	242	7	341	5,000	4.3	67	5.9	12.05	11.65	68.20
15		2,640	450	1	161	8	496	5,000	4.0	69	5.9	12.29	11.84	99.20
16		2,640	2,070	12	242	8	589	5,000	3.7	72	5.8	12.31	12.11	117.80
17		2,640	1,450	15	161	7	496	6,000	3.5	73	5.8	12.27	12.03	82.67
18		2,640	420	15	242	8	434	6,000	3.6	71	5.9	12.26	12.09	72.33
19		2,640	420	6	161	8	403	6,000	3.1	71	5.8	12.41	11.96	67.17
20		2,640	1,140	27	161	9	527	6,000	3.2	72	5.9	12.28	11.91	87.83
21		2,880	550	14	161	11	434	6,000	3.3	71	5.9	12.35	11.98	72.33
22		2,760	450	23	161	15	434	6,500	3.3	69	5.9	12.33	11.94	66.77
23		2,760	420	20	161	5	465	6,500	3.1	69	5.8	12.27	11.95	71.54
24		2,880	530	23	161	24	310	4,000	3.2	71	5.8	12.35	12.17	77.50
25		2,640	410	41	161	17	310	4,000	3.2	72	5.8	12.37	11.98	77.50
26		2,760	380	12	161	16	279	4,000	3.0	69	6.3	12.42	11.98	69.75
27		2,880	680	32	161	25	248	4,000	3.4	74	5.7	12.30	12.12	62.00
28		2,760	500	24	161	25	651	8,000	3.3	73	5.7	12.39	12.22	81.38
29		2,760	450	36	322	25	403	6,000	3.5	74	5.8	12.25	12.22	67.17
30		2,640	430	18	322	25	403	6,000	3.5	73	5.6	12.34	12.40	67.17
31														
Total		80,520	20,820	467	6,203	311	12,068	160,500	107.2	2,168	176.1	368.60	356.47	2258.70
Max.		2,880	2,070	41	322	25	651	8,000	4.3	75	6.3	12.42	12.40	117.80
Min.		2,400	370	1	161	1	248	4,000	3.0	67	5.6	12.05	10.82	62.00
Avg.		2,684	694	16	207	10	402	5,350	3.6	72	5.9	12.29	11.88	75.29

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JULY 1994 - PLANT INFLUENT SHEET

PN-Day	Weather Type	Weather Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	Remarks or Other Parameters
1			1.72	65	7.4	142	2,037	146	2,094			120	12.5	
2			1.67	65	7.2	145	2,020	114	1,588			96	10.9	
3			1.64	65	7.6	128	1,751	138	1,888			118	10.8	
4	Rain	1.04	1.70	64	7.4	157	2,226	190	2,694			176	12.4	
5	Rain	0.12	1.86	65	7.3	151	2,342	216	3,351			188	13.3	
6			1.82	65	7.4	136	2,064	184	2,793	2.90	44	168	12.8	
7	Rain	0.16	1.82	64	7.3	140	2,125	162	2,459			146	13.3	
8	Rain	0.31	1.81	65	7.5	119	1,796	114	1,721			96	13.8	
9	Rain	0.02	1.71	65	7.2	118	1,683	90	1,284			82	12.4	
10			1.70	64	7.3	136	1,928	144	2,042			132	13.7	
11			1.88	64	7.6	155	2,430	184	2,885			166	12.5	
12	Rain	0.32	1.90	64	7.6	137	2,171	150	2,377			140	13.9	
13			1.87	64	7.5	119	1,856	152	2,371	5.10	80	130	12.0	
14	Rain	0.42	1.90	66	7.6	158	2,504	222	3,518			194	11.6	
15			1.81	65	7.3	135	2,038	144	2,174			116	11.2	
16			1.65	65	7.6	163	2,243	160	2,202			138	11.0	
17	Rain	0.05	1.62	67	7.6	141	1,905	212	2,864			188	12.1	
18			1.87	66	7.5	162	2,527	164	2,558			138	12.4	
19			1.78	66		129	1,915	154	2,286			136	14.6	
20	Rain	0.52	1.84	66		129	1,980	134	2,056			112	13.6	
21	Rain	0.05	1.84	66	7.3	98	1,504	122	1,872	3.60	55	94	12.6	
22	Rain	0.25	1.82	66	7.4	146	2,216	152	2,307			138	13.7	
23			1.63	65	7.7	93	1,264	120	1,631			112	12.4	
24			1.66	65	7.7	171	2,367	192	2,658			180	15.4	
25	Rain	0.14	1.93	64	7.5	158	2,543	224	3,606			196	11.5	
26			1.96	68	7.6	143	2,338	158	2,583	6.20	101	140	11.5	
27			1.86	68	7.6	154	2,389	408	6,329			288	13.6	
28			1.92	68	7.5	176	2,818	160	2,562			138	11.3	
29			1.83	68	7.4	152	2,320	164	2,503			142	14.7	
30			1.59	66	7.5	130	1,724	182	2,413			164	14.7	
31			1.82	68	7.4	145	2,201	148	2,246			122	14.7	
Total	0	3.40	55.43	2,032	216.5	4,366	65,224	5,204	77,913	17.80	280	4,494	396.9	
Max.	0	1.04	1.96	68	7.7	176	2,818	408	6,329	6.20	101	288	15.4	
Min.	0	0.02	1.59	64	7.2	93	1,264	90	1,284	2.90	44	82	10.8	
Avg.	0	0.28	1.79	66	7.5	141	2,104	168	2,513	4.45	70	145	12.8	
Count	12	12.00	31.00	31	29.0	31	31	31	31	4.00	4	31	31.0	

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JULY 1994 - PRIMARY EFFLUENT SHEET

PN-Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	71	1,018	42	602			32	13.0	1.72	50	42	
2	56	780	36	501			28	13.2	1.67	61	36	
3	64	875	34	465			26	11.4	1.64	50	34	
4	88	1,248	28	397			26	11.6	1.70	44	28	
5	61	946	42	652			38	13.3	1.86	60	42	
6	71	1,078	34	516	0.90	14	26	14.1	1.82	48	34	69
7	90	1,366	42	638			42	13.8	1.82	36	42	
8	69	1,042	44	664			40	14.1	1.81	42	44	
9	87	1,241	48	685			36	13.9	1.71	26	48	
10	88	1,248	42	595			34	15.0	1.70	35	42	
11	80	1,254	50	784			42	13.8	1.88	48	50	
12	87	1,379	44	697			40	13.7	1.90	36	44	
13	110	1,716	60	936	3.40	53	44	14.5	1.87	8	60	33
14	126	1,997	76	1,204			68	14.6	1.90	20	76	
15	108	1,630	66	996			46	13.1	1.81	20	66	
16	134	1,844	54	743			42	13.7	1.65	18	54	
17	74	1,000	58	784			42	15.2	1.62	48	58	
18	93	1,450	90	1,404			68	13.5	1.87	43	90	
19	74	1,099	60	891			52	13.7	1.78	43	60	
20	79	1,212	70	1,074			50	13.7	1.84	39	70	
21	95	1,458	66	1,013	2.20	34	44	13.7	1.84	3	66	39
22	141	2,140	66	1,002			58	14.0	1.82	3	66	
23	65	884	62	843			54	12.8	1.63	30	62	
24	66	914	54	748			52	15.3	1.66	62	54	
25	73	1,175	58	934			48	12.1	1.93	54	58	
26	86	1,406	58	948	4.60	75	48	12.9	1.96	40	58	26
27	87	1,350	56	869			48	13.3	1.86	44	56	
28	80	1,281	28	448			44	12.5	1.92	55	28	
29	143	2,182	54	824			42	14.8	1.83	6	54	
30	86	1,140	36	477			34	15.4	1.59	34	36	
31	91	1,381	46	698			36	14.3	1.82	37	46	
Total	2,723	40,733	1,604	24,032	11.10	176	1,330	424.0	55.43	1,143	1,604	167
Max.	143	2,182	90	1,404	4.60	75	68	15.4	1.96	62	90	69
Min.	56	780	28	397	0.90	14	26	11.4	1.59	3	28	26
Avg.	88	1,314	52	775	2.78	44	43	13.7	1.79	37	52	42
Count	31	31	31	31	4.00	4	31	31.0	31.00	31	31	4

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JULY 1994 - ACTIVATED SLUDGE SHEET

PN-Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	5.0	9.9	0.21	1,987	1,584	42.0	0.47	1.5	26	0.42	0.34	61	42	1.72	71	42
2		5.2								137			63	42	1.67	56	36
3		5.3								134			61	42	1.64	64	34
4		5.1								134			60	35	1.70	88	28
5		4.6	7.5	0.24	1,640	1,304	27.0	0.61	4.9	134	0.05	0.04	55	31	1.86	61	42
6		4.7	9.9	0.27	1,707	1,353	30.0	0.57	3.8	133	0.37	0.29	57	32	1.82	71	34
7		4.7	7.8	0.35	1,660	1,308	35.0	0.47	2.7	136	0.38	0.30	58	28	1.82	90	42
8		4.8	7.4	0.27	1,640	1,300	30.0	0.55	4.0	137	0.38	0.30	57	25	1.81	69	44
9		5.0								139			58	26	1.71	87	48
10		5.1								137			58	25	1.70	88	42
11		4.6	6.0	0.34	1,582	1,232	27.0	0.59	4.2	138	0.38	0.30	53	26	1.88	80	50
12		4.5	7.1	0.36	1,651	1,278	27.0	0.61	3.1	136	0.40	0.30	54	22	1.90	87	44
13		4.6	5.2	0.44	1,618	1,315	35.0	0.46	1.8	138	0.40	0.32	55	5	1.87	110	60
14		4.5	5.2	0.43	2,084	1,551	54.0	0.39	1.8	137	0.45	0.36	55	22	1.90	126	76
15		4.8	7.0	0.30	2,335	1,840	61.0	0.38	0.6	140	0.47	0.37	59	38	1.81	108	66
16		5.2								138			65	42	1.65	134	54
17		5.3								140			66	42	1.62	74	58
18		4.6	4.1	0.32	1,944	1,520	31.0	0.63	4.8	137	0.43	0.33	57	41	1.87	93	90
19		4.8	6.5	0.24	1,946	1,520	30.0	0.65	1.8	136	0.39	0.30	60	40	1.78	74	60
20		4.7	5.3	0.27	1,894	1,508	28.0	0.68	1.5	135	0.37	0.29	58	35	1.84	79	70
21		4.7	5.6	0.33	1,894	1,472	38.0	0.50	2.2	137	0.34	0.26	55	34	1.84	95	66
22		4.7	5.4	0.51	1,818	1,402	33.0	0.55	2.7	136	0.40	0.30	55	36	1.82	141	66
23		5.3								138			61	36	1.63	65	62
24		5.2								140			60	36	1.66	66	54
25		4.5	5.3	0.31	1,640	1,270	26.0	0.63	3.6	134	0.37	0.28	54	36	1.93	73	58
26		4.4	5.3	0.37	1,667	1,265	25.0	0.67	3.1	137	0.42	0.32	53	36	1.96	86	58
27		4.6	6.1	0.34	1,757	1,319	28.0	0.63	1.5	139	0.41	0.31	56	32	1.86	87	56
28		4.5	12.2	0.30	1,833	1,441	32.0	0.57	3.6	139	0.43	0.33	54	36	1.92	80	28
29		4.7	6.8	0.55	1,875	1,337	31.0	0.60	2.0	179	0.40	0.33	57	38	1.83	143	54
30		5.4								140			65	44	1.59	86	36
31		4.7								137			56	46	1.82	91	46
Total	48	149.9	135.6	6.73	36,172	28,119	670.0	11.20	55.2	4,178	7.66	5.97	1,796	1,051	55.43	2,723	1,604
Max.	48	5.4	12.2	0.55	2,335	1,840	61.0	0.68	4.9	179	0.47	0.37	66	46	1.96	143	90
Min.	48	4.4	4.1	0.21	1,582	1,232	25.0	0.38	0.6	26	0.05	0.04	53	5	1.59	56	28
Avg.	48	4.8	6.8	0.34	1,809	1,406	33.5	0.56	2.8	135	0.38	0.30	58	34	1.79	88	52
Count	1	31.0	20.0	20.00	20	20	20.0	20.00	20.0	31	20.00	20.00	31	31	31.00	31	31

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

JULY 1994 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mgIL
1	6.5	7.4	6	86		1.72	0.000	4	57	2.6	37	52	96	97		
2	7.2	7.3	6	84		1.67	0.000	3	42	1.3	18	724 -	95	98		
3	6.5	7.5	5	68		1.64	0.000	4	55	0.9	12	415 -	96	97		
4	7.6	7.4	4	57		1.70	0.000	4	57	0.9	13	755 -	98	97		
5	6.4	7.3	5	78		1.86	0.000	4	62	0.7	11	790 -	98	97		<0.0005
6	6.9	7.3	4	61	0.18	1.82	0.000	4	61	3.4	52	86 -	98	97	94	<0.0005
7	6.7	7.3	4	61		1.82	0.000	4	61	1.4	21	80 -	98	97		
8	7.0	7.3	2	30		1.81	0.000	3	45 -	1.3	20	220 -	98	97		
9	7.2	7.2	7	100		1.71	0.000	4	57 -	0.4	6	20	92	97		
10	8.3	7.3	2	28		1.70	0.000	4	57 -	0.2	3	60	99	97		
11	7.6	7.6	6	94		1.88	0.000	4	63 -	1.2	19	700	97	97		
12	6.4	7.4	6	95		1.90	0.000	4	63 -	3.2	51	207	96	97		
13	6.4	7.3	2	31	0.43	1.87	0.000	6	94 -	7.3	114 -	225	99	95	92	<0.0005
14	6.6	7.3	8	127		1.90	0.000	13	206 -	8.8	139 -	232	96	92		
15	6.1	7.3	8	121		1.81	0.000	3	45	5.1	77 -	100	94	98		
16	6.6	7.4	3	41		1.65	0.000	5	69	3.5	48 -	370	98	95		
17	6.2	7.4	4	54		1.62	0.000	3	41	1.8	24 -	40	98	98		
18	7.3	7.4	11 -	172		1.87	0.000	4	62	4.8	75 -	92	93	7		
19			3 -	45		1.78	0.000	3	45	5.8	86 -		98	98		<0.0005
20			7 -	107		1.84	0.000	4	61	5.9	91		95	97		
21	6.3	7.3	7 -	107	0.15	1.84	0.000	2	31	1.8	28		94	98	96	<0.0005
22	5.7	7.4	11 -	167		1.82	0.000	3	46	3.1	47	456	93	98		
23	6.6	7.5	9 -	122		1.63	0.000	3	41	0.7	10	52	93	97		
24	7.0	7.6	4 -	55		1.66	0.000	2	28	1.2	17	42	98	99		
25	7.2	7.2	4	64		1.93	0.000	3	48	1.8	29	12	98	98		
26	6.5	7.3	4	65	0.87	1.96	0.000	2	33	2.9	47	51	97	99	86	
27	7.0	7.3	2	31		1.86	0.000	3	47	3.2	50	9	99	98		
28	6.8	7.3	3	48		1.92	0.000	3	48	3.5	56	18	98	98		
29	6.7	7.2	4	61		1.83	0.000	4	61			9	98	97		
30	6.0	7.4	6	80		1.59	0.000	3	40	7.2	95	8	97	98		
31	6.6	7.4	5	76		1.82	0.005	3	46	3.4	52	5	97	98		
Total	195.9	213.3	162	2,416	1.63	55.43	0.005	118	1,768	89.3	1,346	5,830	2,994	2,923	368	<0.0005
Max.	8.3	7.6	11	172	0.87	1.96	0.005	13	206	8.8	139	790	99	99	96	<0.0005
Min.	5.7	7.2	2	28	0.15	1.59	0.000	2	28	0.2	3	5	92	7	86	<0.0005
Avg.	6.8	7.4	5	78	0.41	1.79	0.000	4	57	3.0	45	G 77	97	94	92	<0.0005
Count	29.0	29.0	31	31	4.00	31.00	31.000	31	31	30.0	30	28	31	31	4	<0.0005

G = Geometric Mean

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JULY 1994 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hours	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1		2,649	450	30	322	23	472	6,400	3.3	73	5.6	12.38	12.14	73.75
2		2,760	420	31	322	27	371	5,000	3.5	73	5.7	12.34	12.21	74.20
3		2,640	440	33	322	27	438	6,000	3.2	71	6.1	12.36	12.11	73.00
4		2,640	530	28	322	32	506	6,000	3.0	72	5.9	12.35	12.05	84.33
5		2,880	900	37	403	30	404	5,000	3.1	71	6.0	12.40	12.23	80.80
6		2,640	430	38	322	31	404	6,000	3.3	70	6.1	12.27	12.08	67.33
7		2,640	460	35	322	30	404	6,000	3.2	70	6.0	12.29	11.56	67.33
8		2,640	560	30	322	32	506	6,000	3.8	70	5.9	12.42	12.41	84.33
9		2,640	360	32	322	33	438	6,000	3.4	67	6.0	12.41	12.09	73.00
10		2,640	430	38	242	30	371	5,400	3.1	67	6.5	12.39	11.81	68.70
11		3,000	430	37	322	30	472	6,000	3.4	69	6.1	12.15	11.76	78.67
12		2,760	340	43	242	29	371	6,000	3.3	70	6.1	12.32	11.70	61.83
13		2,640	430	30	242	31	371	6,000	3.4	70	6.1	12.46	12.41	61.83
14		2,760	520	37	322	35	640	7,000	3.3	71	5.9	12.37	12.50	91.43
15		2,640	470	38	242	35	1,314	20,000	4.2	55	6.1	12.41	12.01	65.70
16		2,760	290	25	242	28	371	6,000	3.2	70	5.9	12.32	11.88	61.83
17		2,880	350	31	242	29	404	6,000	3.1	70	5.9	12.28	11.80	67.33
18		2,640	460	32	322	31	472	6,000	3.2	69	6.0	12.30	12.01	78.67
19		2,640	400	36	242	32	472	6,000	2.9	69	6.1	12.31	11.97	78.67
20		2,880	450	41	242	30	404	6,000	3.0	70	6.0	12.24	11.79	67.33
21		2,880	590	26	242	26	438	6,000	2.9	70	5.9	12.34	12.00	73.00
22		2,760	510	34	242	29	438	6,000	2.9	67	6.0	12.32	12.33	73.00
23		2,640	390	33	322	32	371	6,000	2.9	70	5.9	12.37	12.08	61.83
24		2,760	790	37	242	33	438	6,000	3.2	65	6.1	12.46	12.32	73.00
25		2,760	510	42	242	32	438	6,000	2.6	71	6.0	12.50		73.00
26		2,760	350	36	242	28	438	6,000	4.0	70	5.7	12.56	12.38	73.00
27		2,760	470	16	242	30	674	6,000	5.0	66	5.9	12.47	12.01	112.33
28		2,640	400	36	322	32	472	7,000	4.7	67	5.8	12.40	12.00	67.43
29		2,640	440	36	322	34	438	6,000	5.8	64	5.7	12.14	12.00	73.00
30		2,640	400	24	322	30	472	6,100	4.4	68	5.8	12.18	12.01	77.38
31		2,760	350	25	242	20	404	6,000	3.9	70	5.8	12.04	11.70	67.33
Total		84,369	14,320	1,027	8,863	931	14,626	199,900	108.2	2,135	184.6	382.55	361.35	2284.39
Max.		3,000	900	43	403	35	1,314	20,000	5.8	73	6.5	12.56	12.50	112.33
Min.		2,640	290	16	242	20	371	5,000	2.6	55	5.6	12.04	11.56	61.83
Avg.		2,722	462	33	286	30	472	6,448	3.5	69	6.0	12.34	12.05	73.69

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

AUGUST 1994 - PLANT INFLUENT SHEET

PN-Day	Weather Type	Weather Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	Remarks or Other Parameters
1			1.91	68	7.4	135	2,150	184	2,931			158	13.5	
2			1.81	68	7.4	129	1,947	184	2,778	4.40	66	148	13.0	
3	Rain	0.76	1.80	68	7.4	125	1,877	176	2,642			146	13.6	
4	Rain	0.93	1.79	68	7.5	108	1,612	142	2,120			116	12.1	
5			1.69	68	7.4	163	2,297	110	1,550			92	14.3	
6			1.51	68	7.3	155	1,952	120	1,511			100	13.7	
7			1.53	68	7.4	135	1,723	150	1,914			132	14.0	
8			1.81	68	7.6	143	2,159	182	2,747			166	13.7	
9			1.76	68	7.5	150	2,202	130	1,908	5.90	87	118	13.3	
10	Rain	1.17	1.81	68	7.4	165	2,491	166	2,506			144	12.8	
11	Rain	1.38	2.03	68	7.5	160	2,709	180	3,047			150	12.6	
12	Rain	1.11	1.94	68	7.5	142	2,298	108	1,747			76	12.2	
13	Rain	1.19	2.08	68	7.6	84	1,457	90	1,561			60	11.1	
14			1.96	68	7.4	111	1,814	124	2,027			104	11.2	
15			2.08	68	7.4	126	2,186	148	2,567			134	12.6	
16			2.08	68	7.3	146	2,533	138	2,394	4.00	69	124	11.9	
17			2.03	68	7.4	130	2,201	162	2,743			144	13.8	
18	Rain	0.05	1.98	66	7.2	135	2,229	134	2,213			120	13.1	
19	Rain	0.25	2.06	68	7.3	127	2,182	112	1,924			102	15.2	
20	Rain	0.49	1.82	68	7.6	113	1,715	82	1,245			74	15.6	
21	Rain	0.04	1.78	68	7.6	118	1,752	138	2,049			110	13.4	
22			2.00	67	7.4	113	1,885	152	2,535			124	12.1	
23			1.94	68	7.5	106	1,715	128	2,071	3.40	55	112	10.6	
24	Rain	0.14	1.98	68	7.4	152	2,510	174	2,873			150	9.9	
25			1.93	68	7.6	122	1,964	192	3,090			170	10.5	
26			1.85	68	7.5	141	2,175	134	2,067			120	11.9	
27	Rain	0.01	1.86	68	7.4	126	1,955	102	1,582			88	12.2	
28	Rain	0.07	1.77	68	7.4	122	1,801	170	2,510			150	14.1	
29			1.87	68	7.6	115	1,794	170	2,651			136	13.8	
30	Rain	0.11	1.78	67	7.6	139	2,063	148	2,197			132	14.5	
31			1.71	68	7.5	140	1,997	154	2,196			142	14.6	
Total	0	7.70	57.95	2,104	231.0	4,076	63,343	4,484	69,899	17.70	277	3,842	400.9	
Max.	0	1.38	2.08	68	7.6	165	2,709	192	3,090	5.90	87	170	15.6	
Min.	0	0.01	1.51	66	7.2	84	1,457	82	1,245	3.40	55	60	9.9	
Avg.	0	0.55	1.87	68	7.5	131	2,043	145	2,255	4.43	69	124	12.9	
Count	14	14.00	31.00	31	31.0	31	31	31	31	4.00	4	31	31.0	

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

AUGUST 1994 - PRIMARY EFFLUENT SHEET

PN-Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	76	1,211	52	828			48	14.6	1.91	44	72	
2	62	936	42	634	1.80	27	40	13.3	1.81	53	77	59
3	60	901	40	600			38	14.1	1.80	52	77	
4	70	1,045	46	687			42	13.6	1.79	35	68	
5	74	1,043	40	564			28	16.2	1.69	55	64	
6	106	1,335	28	353			24	13.9	1.51	32	77	
7	67	855	34	434			34	14.7	1.53	50	77	
8	74	1,117	44	664			42	14.7	1.81	48	76	
9	77	1,130	36	528	3.90	57	34	14.4	1.76	48	72	34
10	89	1,343	48	725			42	14.2	1.81	46	71	
11	87	1,473	40	677			40	12.3	2.03	46	78	
12	132	2,136	44	712			30	14.0	1.94	7	59	
13	54	937	42	729			26	12.0	2.08	36	53	
14	49	801	42	687			36	12.0	1.96	56	66	
15	52	902	42	729			40	12.8	2.08	59	72	
16	93	1,613	40	694	1.80	31	32	12.7	2.08	36	71	55
17	61	1,033	38	643			30	13.8	2.03	58	77	
18	121	1,998	42	694			42	15.2	1.98	10	69	
19	82	1,409	42	722			40	15.7	2.06	35	63	
20	79	1,199	40	607			36	16.4	1.82	30	51	
21	70	1,039	52	772			40	15.5	1.78	40	62	
22	121	2,018	50	834			42	12.9	2.00	-7	67	
23	62	1,003	52	841	2.10	34	42	12.5	1.94	42	59	38
24	122	2,015	50	826			40	11.6	1.98	20	71	
25	74	1,191	44	708			38	13.1	1.93	39	77	
26	78	1,203	40	617			36	13.2	1.85	45	70	
27	78	1,210	42	652			42	12.8	1.86	38	59	
28	124	1,830	56	827			46	13.5	1.77	0	67	
29	67	1,045	54	842			36	14.4	1.87	42	68	
30	134	1,989	38	564			36	15.1	1.78	4	74	
31	86	1,226	46	656			38	16.0	1.71	39	70	
Total	2,581	40,187	1,346	21,048	9.60	150	1,160	431.2	57.95	1,138	2,134	186
Max.	134	2,136	56	842	3.90	57	48	16.4	2.08	59	78	59
Min.	49	801	28	353	1.80	27	24	11.6	1.51	-7	51	34
Avg.	83	1,296	43	679	2.40	37	37	13.9	1.87	37	69	47
Count	31	31	31	31	4.00	4	31	31.0	31.00	31	31	4

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

AUGUST 1994 - ACTIVATED SLUDGE SHEET

PN-Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading fIm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	4.5	6.6	0.28	1,821	1,430	30.0	0.61	3.6	138	0.41	0.32	54	42	1.91	76	52
2		4.8	8.2	0.23	1,746	1,380	32.0	0.55	2.1	140	0.40	0.32	57	38	1.81	62	42
3		4.8	7.9	0.24	1,594	1,245	23.0	0.69	4.2	138	0.42	0.32	57	36	1.80	60	40
4		4.8	6.6	0.35	1,513	1,003	21.0	0.72	3.4	141	0.38	0.33	57	14	1.79	70	46
5		5.1	8.6	0.28	1,619	1,249	23.0	0.70	2.2	143	0.38	0.29	61	25	1.69	74	40
6		5.7								139			68	29	1.51	106	28
7		5.6								137			67	25	1.53	67	34
8		4.8	6.4	0.34	1,425	1,112	17.0	0.84	4.7	134	0.35	0.27	57	18	1.81	74	44
9		4.9	8.6	0.32	1,518	1,171	21.0	0.72	5.2	142	0.33	0.26	59	16	1.76	77	36
10		4.8	6.6	0.37	1,586	1,226	30.0	0.53	5.0	142	0.41	0.32	57	14	1.81	89	48
11		4.2	7.2	0.38	1,637	1,291	37.0	0.44	3.5	140	0.44	0.35	50	23	2.03	87	40
12		4.4	7.6	0.51	1,818	1,404	50.0	0.36	2.0	138	0.42	0.32	53	29	1.94	132	44
13		4.1								135			49	30	2.08	54	42
14		4.4								139			45	19	1.96	49	42
15		4.1	7.1	0.23	1,716	1,338	52.0	0.33	5.9	137	0.44	0.33	50	10	2.08	52	42
16		4.1	7.4	0.41	1,708	1,321	40.0	0.43	5.0	136	0.44	0.34	50	22	2.08	93	40
17		4.2	8.3	0.25	1,782	1,385	46.0	0.39	4.2	136	0.40	0.31	52	22	2.03	61	38
18		4.4	7.6	0.48	1,761	1,402	63.0	0.28	3.9	135	0.40	0.32	53	35	1.98	121	42
19		4.2	7.1	0.35	1,706	1,362	55.0	0.31	2.7	138	0.38	0.31	51	38	2.06	82	42
20		4.7								136			58	38	1.82	79	40
21		4.8								138			56	26	1.78	70	52
22		4.3	5.3	0.57	1,488	1,189	47.0	0.32	2.1	137	0.38	0.31	52	26	2.00	121	50
23		4.4	5.6	0.29	1,576	1,172	42.0	0.38	2.7	137	0.36	0.33	55	30	1.94	62	52
24		4.4	5.9	0.49	1,617	1,374	51.0	0.32	3.5	135	0.36	0.25	53	32	1.98	122	50
25		4.5	7.2	0.29	1,706	1,382	73.0	0.23	2.7	134	0.36	0.29	54	38	1.93	74	44
26		4.7	7.7	0.31	1,591	1,291	61.0	0.26	2.1	136	0.34	0.27	57	38	1.85	78	40
27		4.6								137			57	38	1.86	78	42
28		4.9								138			60	38	1.77	124	56
29		4.6	4.9	0.31	1,387	1,117	63.0	0.22	4.0	123	0.31	0.25	59	43	1.87	67	54
30		4.8	7.4	0.59	1,394	1,133	44.0	0.32	2.2	112	0.32	0.26	64	27	1.78	134	38
31		5.0	6.6	0.35	1,450	1,176	45.0	0.32	1.9	113	0.32	0.26	62	28	1.71	86	46
Total	48	143.8	162.5	8.18	37,159	29,153	966.0	10.26	78.8	4,204	8.75	6.93	1,734	887	57.95	2,581	1,346
Max.	48	5.7	8.6	0.59	1,821	1,430	73.0	0.84	5.9	143	0.44	0.35	68	43	2.08	134	56
Min.	48	4.1	4.9	0.23	1,387	1,003	17.0	0.22	1.9	112	0.31	0.25	45	10	1.51	49	28
Avg.	48	4.6	7.1	0.36	1,616	1,268	42.0	0.45	3.4	136	0.38	0.30	56	29	1.87	83	43
Count	1	31.0	23.0	23.00	23	23	23.0	23.00	23.0	31	23.00	23.00	31	31	31.00	31	31

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

AUGUST 1994 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mgIL
1	6.9	7.3	5	80		1.91	0.000	3	48	4.1	65	7	97	98		<0.0005
2	6.5	7.2	7	106	0.21	1.81	0.000	2	30	2.7	41	4	96	98	95	
3	6.6	7.4	4	60		1.80	0.000	3	45	1.1	17	23	98	98		
4	6.3	7.1	6	90		1.79	0.000	4	60	2.7	40	18	96	96		
5	6.6	7.2	5	70		1.69	0.000	3	42	2.3	32	5	95	98		
6	7.2	7.3	4	50		1.51	0.000	3	38	0.7	9	20	97	98		
7	7.6	7.3	6	77		1.53	0.000	3	38	0.7	9	14	96	98		<0.0005
8	7.3	7.5	6	91		1.81	0.000	3	45	1.9	29	8	97	98		
9	7.2	7.5	4	59	0.44	1.76	0.000	2	29	1.6	23	6	97	99	93	
10	7.0	7.4	9	136		1.81	0.000	4	60	1.4	21	41	95	98		
11	6.4	7.3	2	34		2.03	0.000	6	102	2.1	36	33	99	96		
12	6.4	7.2	4	65		1.94	0.000	6	97	3.6	58	5	96	96		
13	6.8	7.3	8	139		2.08	0.000	2	35	1.1	19	10	91	98		
14	7.3	7.4	4	65		1.96	0.000	2	33	0.3	5	11	97	98		
15	7.7	7.4	6	104		2.08	0.000	2	35	0.8	14	20	96	98		
16	7.6	7.3	4	69	0.61	2.08	0.000	3	52	1.5	26	21	97	98	85	<0.0005
17	7.0	7.4	5	85		2.03	0.000	2	34	2.3	39	9	97	98		
18	7.1	7.3	5	83		1.98	0.000	3	50	2.5	41	17	96	98		<0.0005
19	6.8	7.3	5	86		2.06	0.000	3	52	3.1	53	15	96	98		
20	6.5	7.4	5	76		1.82	0.000	2	30	3.8	58	25	94	98		
21	6.6	7.6	5	74		1.78	0.000	2	30	2.4	36	4	96	98		
22	6.7	7.1	3	50		2.00	0.000	2	33	2.8	47	32	98	98		
23	6.8	7.4	9	146	0.98	1.94	0.000	2	32	2.7	44	15	93	98	71	
24	6.5	7.4	4	66		1.98	0.000	3	50	2.1	35	37	98	98		
25	6.4	7.4	2	32		1.93	0.000	2	32	4.5	72	21	99	98		
26	6.1	7.4	7	108		1.85	0.000	3	46	3.9	60	21	95	98		
27	6.5	7.4	3	47		1.86	0.000	3	47	2.5	39	2	97	98		
28	6.4	7.4	7	103		1.77	0.000	3	44	1.4	21	58	96	98		
29	6.8	7.4	10	156		1.87	0.000	2	31	3.6	56	28	94	98		
30	6.6	7.3	2	30		1.78	0.000	3	45	6.4	95	11	99	98		
31	6.7	7.4	4	57		1.71	0.000	3	43	8.1	116	9	97	98		
Total	210.9	227.7	160	2,491	2.24	57.95	0.000	89	1,387	80.7	1,255	550	2,985	3,033	344	<0.0005
Max.	7.7	7.6	10	156	0.98	2.08	0.000	6	102	8.1	116	58	99	99	95	<0.0005
Min.	6.1	7.1	2	30	0.21	1.51	0.000	2	29	0.3	5	2	91	96	71	<0.0005
Avg.	6.8	7.3	5	80	0.56	1.87	0.000	3	45	2.6	40	G 14	96	98	86	<0.0005
Count	31.0	31.0	31	31	4.00	31.00	31.000	31	31	31.0	31	31	31	31	4	4

G = Geometric Mean

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

AUGUST 1994 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hours	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1		2,640	480	29	242	22	542	9,500	5.1	72	5.6			57.05
2		2,760	560	30	242	22	1,308	21,500	4.4	71	5.7	12.39		60.84
3		2,640	580	29	242	22	861	14,000	4.3	70	5.9	12.27		61.50
4		2,760	370	37	242	25	893	14,000	4.4	70	5.8	12.26		63.79
5		2,640	540	30	242	21	638	14,000	4.0	69	5.9	12.27		45.57
6		2,760	390	32	242	12	383	6,000	4.0	70	5.7	12.16	10.68	63.83
7		2,640	330	33	242	20	383	6,000	3.2	66	6.7	12.09	10.58	63.83
8		2,760	660	32	322	20	383	6,000	3.4	70	6.3	11.93	11.70	63.83
9		2,760	460	19	322	20	447	6,000				11.81	11.26	74.50
10		2,760	1,570	26	242	24	383	6,000	3.3	71	5.7		10.19	63.83
11		2,760	470	28	322	24	383	6,000	3.9	72	5.7	11.88	11.39	63.83
12		2,760	430	32	161	5	319	6,000	4.0	69	5.6	11.78	9.75	53.17
13		2,760	410	29	242	18	383	6,000	4.2	66	5.9	12.01	10.05	63.83
14		2,520	400	39	322	34	351	6,000	5.1	65	5.6	12.42	10.24	58.50
15		2,760	380	30	242	17	510	6,500	4.0	68	5.7	12.02	10.89	78.46
16		2,760	520	32	161	23	479	9,000	4.6	68	5.7	12.22	11.74	53.22
17		2,640	490	33	242	23	447	6,000	3.9	70	5.7	12.01	11.06	74.50
18		2,760	390	27	161	22	383	6,000	3.4	70	6.1	12.08	11.91	63.83
19		2,760	600	23	161	21	383	7,700			5.9	12.18	11.46	49.74
20		2,760	390	26	242	20	351	6,000	2.6	69	6.9	12.11	11.89	58.50
21		2,640	290	29	161	19	351	6,000	3.9	65	5.8	12.34	12.00	58.50
22		2,640	440	29	242	20	415	6,500	5.4	50	5.8	12.19	12.19	63.85
23		2,760	520	30	81	22	447	6,000	2.8	75	5.7	12.41	12.31	74.50
24		2,760	970	39	242	23	383	7,000	3.4	74	5.7	12.34	12.24	54.71
25		2,760	2,330	30	242	22	415	6,000	3.3	73	5.7	12.26	11.95	69.17
26		2,760	2,340	30	242	19	351	6,000	3.1	73	5.7	12.37	12.16	58.50
27		2,760	2,240	32	242	13	415	7,000	1.8	74	6.0	12.11	11.73	59.29
28		2,640	2,200	30	322	26	351	6,000	2.6	74	5.7	12.24	11.74	58.50
29		2,640	2,300	27	161	19	510	8,100	3.2	69		12.19	11.77	62.96
30		2,640	2,160	25	242	19	415	6,000	2.8	74	5.8	12.34	11.76	69.17
31		2,640	2,530	28	242	19	383	6,000	2.7	76	5.8	12.30	12.12	63.83
Total		84,000	28,740	925	7,255	636	14,646	238,800	106.8	2,023	169.8			1929.15
Max.		2,760	2,530	39	322	34	1,308	21,500	5.4	76	6.9			78.46
Min.		2,520	290	19	81	5	319	6,000	1.8	50	5.6			45.57
Avg.		2,710	927	30	234	21	472	7,703	3.7	70	5.9			62.23

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

SEPTEMBER 1994 - PLANT INFLUENT SHEET

PN-Day	Weather Type	Weather Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	Remarks or Other Parameters
1			1.78	68	7.5	157	2,331	134	1,989	3.50	52	120	13.3	
2			1.76	68	7.3	171	2,510	140	2,055			130	13.4	
3			1.59	68	7.5	132	1,750	144	1,910			130	13.5	
4			1.54	68	7.5	119	1,528	116	1,490			116	13.3	
5			1.62	68	7.5	121	1,635	136	1,837			120	13.0	
6	Rain	0.03	1.85	68	7.4	150	2,314	220	3,394			192	12.6	
7			1.82	68	7.4	143	2,171	178	2,702			158	11.8	
8			1.77	68	7.3	148	2,185	174	2,569	3.30	49	158	13.1	
9			1.70	64	7.4	156	2,212	140	1,985			126	14.0	
10			1.64	67	7.6	161	2,202	150	2,052			132	16.0	
11			1.69	66	7.5	150	2,114	196	2,763			172	15.5	
12			1.76	64	7.6	149	2,187	190	2,789			162	13.5	
13			1.79	64	7.4	218	3,254	192	2,866	33.80	505	164	14.7	
14			1.81	65	7.6	175	2,642	174	2,627			150	11.0	
15			1.81	65	7.5	198	2,989	166	2,506			144	12.2	
16	Rain	0.40	1.83	66	7.6	175	2,671	140	2,137			128	11.4	
17	Rain	0.08	1.73	66	7.3	258	3,722	150	2,164			132	11.3	
18			1.58	65	7.5	125	1,647	156	2,056			136	12.0	
19			1.63	64	7.9	146	1,985	188	2,556	3.90	53	172	12.7	
20			1.62	64	7.4	160	2,162	146	1,973			130	11.9	
21			1.85	64	7.3	134	2,067	174	2,685	3.90	60	154	16.5	
22			1.72	68	7.4	158	2,266	196	2,812			174	12.5	
23			1.65	66	7.3	165	2,271	120	1,651			118	12.7	
24	Rain	0.58	1.49	65	7.3	145	1,802	164	2,038			152	12.3	
25	Rain	0.06	1.51	68	7.6	163	2,053	172	2,166			148	12.5	
26	Rain	0.04	1.70	68	7.3	171	2,424	168	2,382	4.70	67	138	12.0	
27	Rain	0.06	1.65	65	7.5	146	2,009	146	2,009			136	13.1	
28	Rain	0.58	1.67	64	7.5	168	2,340	176	2,451			152	12.7	
29			1.57	66	7.5	219	2,868	224	2,933			198	14.0	
30	Rain	0.08	1.54	64	7.4	160	2,055	132	1,695			122	14.3	
31														
Total	0	1.91	50.67	1,982	223.8	4,841	68,366	4,902	69,240	53.10	785	4,364	392.8	
Max.	0	0.58	1.85	68	7.9	258	3,722	224	3,394	33.80	505	198	16.5	
Min.	0	0.03	1.49	64	7.3	119	1,528	116	1,490	3.30	49	116	11.0	
Avg.	0	0.21	1.69	66	7.5	161	2,279	163	2,308	8.85	131	145	13.1	
Count	9	9.00	30.00	30	30.0	30	30	30	30	6.00	6	30	30.0	

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

SEPTEMBER 1994 - PRIMARY EFFLUENT SHEET

PN- Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	105	1,559	52	772	2.60	39	46	14.9	1.78	35	61	26
2	108	1,585	48	705			44	14.7	1.76	37	66	
3	141	1,870	50	663			44	14.8	1.59	-6	65	
4	71	912	40	514			40	14.2	1.54	40	66	
5			56	757			50	13.2	1.62		59	
6	119	1,836	72	1,111			58	14.0	1.85	21	67	
7	105	1,594	54	820			46	13.4	1.82	27	70	
8	118	1,742	60	886	3.00	44	52	14.1	1.77	20	66	10
9	144	2,042	48	681			48	15.1	1.70	8	66	
10	105	1,436	54	739			50	17.6	1.64	35	64	
11	172	2,424	60	846			54	16.6	1.69	-15	69	
12	145	2,128	74	1,086			60	15.1	1.76	2	61	
13	140	2,090	62	926	16.90	252	50	15.8	1.79	36	68	50
14	144	2,174	62	936			50	12.2	1.81	18	64	
15	141	2,128	48	725			42	12.1	1.81	29	71	
16	110	1,679	40	610			40	12.1	1.83	37	71	
17	141	2,034	60	866			46	11.6	1.73	45	60	
18	69	909	46	606			40	12.5	1.58	45	71	
19	76	1,033	50	680	2.20	30	44	13.4	1.63	48	73	44
20	140	1,892	44	594			34	12.8	1.62	13	70	
21	79	1,219	52	802			44	17.9	1.85	41	70	
22	105	1,506	46	660			38	13.7	1.72	34	77	
23	94	1,294	48	661			42	13.3	1.65	43	60	
24	79	982	58	721			54	13.2	1.49	46	65	
25	89	1,121	50	630			42	13.1	1.51	45	71	
26			62	879	2.10	30	48	13.8	1.70		63	55
27	90	1,238	58	798			56	13.7	1.65	38	60	
28	119	1,657	60	836			48	13.3	1.67	29	66	
29	93	1,218	66	864			50	14.3	1.57	58	71	
30	99	1,272	58	745			52	15.0	1.54	38	56	
31												
Total	3,141	44,573	1,638	23,115	26.80	395	1,412	421.5	50.67	847	1,987	185
Max.	172	2,424	74	1,111	16.90	252	60	17.9	1.85	58	77	55
Min.	69	909	40	514	2.10	30	34	11.6	1.49	-15	56	10
Avg.	112	1,592	55	770	5.36	79	47	14.1	1.69	30	66	37
Count	28	28	30	30	5.00	5	30	30.0	30.00	28	30	5

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

SEPTEMBER 1994 - ACTIVATED SLUDGE SHEET

PN-Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading fIm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	4.8	5.7	0.44	1,471	1,173	71.0	0.21	2.3	116	0.29	0.23	58	34	1.78	105	52
2		4.9	6.6	0.42	1,563	1,256	66.0	0.24	2.2	115	0.30	0.24	59	33	1.76	108	48
3		5.4								116			65	32	1.59	141	50
4		5.6								115			67	32	1.54	71	40
5		5.3	6.4	0.00	1,625	1,312				113	0.32	0.26	63	32	1.62		56
6		4.7	4.3	0.47	1,610	1,307	70.0	0.23	2.5	112	0.32	0.25	52	33	1.85	119	72
7		4.7	6.1	0.39	1,683	1,372	80.0	0.21	2.0	113	0.34	0.28	58	30	1.82	105	54
8		4.9	6.3	0.51	1,851	1,147	80.0	0.23	2.0	112	0.36	0.30	60	33	1.77	118	60
9		5.1	8.3	0.42	1,894	1,618	90.0	0.21	1.5	111	0.35	0.27	64	31	1.70	144	48
10		5.3								113			66	35	1.64	105	54
11		5.1								114			64	37	1.69	172	60
12		4.9	5.3	0.47	1,912	1,499	93.0	0.21	3.0	111	0.34	0.27	62	49	1.76	145	74
13		4.8	6.1	0.46	1,898	1,521	93.0	0.20	1.4	111	0.34	0.27	61	49	1.79	140	62
14		4.8	6.2	0.49	1,944	1,484	87.0	0.22	2.3	132	0.36	0.28	61	51	1.81	144	62
15		4.8	8.2	0.46	1,993	1,555	92.0	0.22	2.3	132	0.36	0.28	61	57	1.81	141	48
16		4.7	9.5	0.37	1,944	1,522	90.0	0.22	3.0	132	0.35	0.27	61	60	1.83	110	40
17		5.0								176			64	60	1.73	141	60
18		5.5								138			70	59	1.58	69	46
19		5.3	7.8	0.26	1,774	1,333	95.0	0.19	5.6	137	0.32	0.24	65	58	1.63	76	50
20		5.3	8.9	0.47	1,776	1,345	92.0	0.19	5.2	126	0.32	0.24	65	59	1.62	140	44
21		4.7	6.3	0.32	1,700	1,269	78.0	0.22	4.4	122	0.31	0.23	57	60	1.85	79	52
22		5.0	7.3	0.41	1,612	1,219	90.0	0.18	4.1	121	0.31	0.23	62	60	1.72	105	46
23		5.2	7.4	0.35	1,631	1,225	84.0	0.19	3.8	122	0.32	0.24	64	60	1.65	94	48
24		5.8								122			71	59	1.49	79	58
25		5.7								122			71	57	1.51	89	50
26		5.1	5.2	0.00	1,532	1,124	46.0	0.33	3.8	123	0.28	0.21	63	55	1.70		62
27		5.2	5.7	0.36	1,529	1,150	63.0	0.24	3.4	123	0.29	0.21	65	56	1.65	90	58
28		5.2	5.4	0.49	1,498	1,131	60.0	0.25	3.4	123	0.29	0.21	64	56	1.67	119	60
29		5.5	5.1	0.37	1,483	1,091	51.0	0.29	3.6	124	0.27	0.20	68	56	1.57	93	66
30		5.6	5.7	0.41	1,418	1,042	47.0	0.30	3.6	122	0.28	0.20	70	48	1.54	99	58
31																	
Total	48	153.6	144.2	8.34	37,341	28,695	1618.0	4.78	65.4	3,669	7.02	5.41	1,901	1,431	50.67	3,141	1,638
Max.	48	5.8	9.5	0.51	1,993	1,618	95.0	0.33	5.6	176	0.36	0.30	71	60	1.85	172	74
Min.	48	4.7	4.3	0.00	1,418	1,042	46.0	0.00	1.4	111	0.27	0.20	52	30	1.49	69	40
Avg.	48	5.1	6.6	0.38	1,697	1,304	77.0	0.22	3.1	122	0.32	0.25	63	48	1.69	112	55
Count	1	30.0	22.0	22.00	22	22	21.0	22.00	21.0	30	22.00	22.00	30	30	30.00	28	30

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

SEPTEMBER 1994 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mgIL
1	6.8	7.5	5	74	0.88	1.78	0.000	3	45	8.2	122	16 -	96	98	75	<0.0005
2	6.6	7.4	5	73		1.76	0.000	3	44	8.4	123	82 -	96	98		
3	6.4	7.4	5	66		1.59	0.000	4	53	9.1	121	92 -	97	97		
4	6.7	7.5	4	51		1.54	0.000	2	26	6.3	81	74 -	97	98		
5	6.6	7.7	8	108		1.62	0.000	3	41	5.7	77	28 -	94	97		
6	6.5	7.4	12 -	185 -		1.85	0.000	4	62	9.0	139	14 -	95	98		<0.0005
7	6.5	7.4	10 -	152 -		1.82	0.000	5	76	9.6	146	29 -	94	97		
8	5.9	7.3	7 -	103 -	0.46	1.77	0.000	4	59	10.1	149	6	96	97	86	
9	5.9	7.3	4 -	57 -		1.70	0.000	4	57	11.6	164 -	5	97	97		
10	6.3	7.5	6 -	82 -		1.64	0.000	3	41	12.6	172 -	16	96	98		
11	6.4	7.5	6 -	85 -		1.69	0.000	3	42	12.8	180 -	242	97	98		
12	6.2	7.5	11 -	161 -		1.76	0.000	3	44	14.6	214 -	2	94	98		
13	5.9	7.5	6	90	1.70	1.79	0.000	10	149 -	13.5	202 -	18	97	95	95	<0.0005
14	6.3	7.3	6	91		1.81	0.000	14	211 -	10.2	154 -	4	97	92		
15	6.3	7.5	2	30		1.81	0.000	8	121 -	10.2	154 -	170	99	96		
16	6.3	7.4	3	46		1.83	0.000	6	92 -	9.9	151	4	98	97		
17	6.3	7.4	6	87		1.73	0.000	6	87 -	8.1	117	26	96	98		
18	6.9	7.4	3	40		1.58	0.000	5	66 -	8.2	108	87	98	96		
19	7.2	7.5	4	54	0.19	1.63	0.000	7	95 -	8.7	118	14	98	95	95	<0.0005
20	7.1	7.4	5	68		1.62	0.000	5	68	8.2	111	3	97	97		
21	6.5	7.3	7	108	0.17	1.85	0.000	5	77	11.3	174	10	96	96	96	
22	7.0	7.3	6	86		1.72	0.000	5	72	9.9	142	3	97	97		
23	6.5	7.2	3	41		1.65	0.000	4	55	8.4	116	5	98	98		
24	6.6	7.6	6	75		1.49	0.000	4	50	6.9	86	45	96	97		
25	6.3	7.5	5	63		1.51	0.000	5	63	5.7	72	58	97	97		
26	6.7	7.3	5	71	0.26	1.70	0.000	5	71	7.8	111	10	97	97	94	
27	6.2	7.4	4	55		1.65	0.000	4	55	7.5	103	7	97	97		
28	6.9	7.5	6	84		1.67	0.000	4	56	6.8	95	14	97	98		
29	6.8	7.4	5	65		1.57	0.000	4	52	7.5	98	10	98	98		
30	6.6	7.4	4	51		1.54	0.000	4	51	7.2	92	5	97	98		
31																
Total	195.2	222.7	169	2,402	3.66	50.67	0.000	146	2,079	274.0	3,892	1,099	2,899	2,910	541	<0.0005
Max.	7.2	7.7	12	185	1.70	1.85	0.000	14	211	14.6	214	242	99	98	96	<0.0005
Min.	5.9	7.2	2	30	0.17	1.49	0.000	2	26	5.7	72	2	94	92	75	<0.0005
Avg.	6.5	7.4	6	80	0.61	1.69	0.000	5	69	9.1	130	G 16	97	97	90	<0.0005
Count	30.0	30.0	30	30	6.00	30.00	30.000	30	30	30.0	30	30	30	30	6	4

G = Geometric Mean

Sample on September 19 - Zinc 0.04 mg/L, Copper <0.01 mg/L

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

SEPTEMBER 1994 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hours	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1		2,640	2,300	25	242	22	426	6,000	2.6	76	5.8	12.46	12.20	71.00
2		2,640	2,220	23	242	15	394	6,000	2.6	74	5.6	12.44	12.36	65.67
3		2,760	2,280	40	242	17	361	6,000	2.1	75	5.9	12.24	11.90	60.17
4		2,520	2,320	22	403	20	361	6,400	2.4	71	5.9	12.31	11.80	56.41
5		2,520	2,450	26	161	20	459	6,000	2.2	78	6.0	12.40	12.13	76.50
6		2,640	2,330	28	322	12	722	7,500	3.7	76	5.8	12.38	12.02	96.27
7		2,640	2,370	26	322	17	492	8,000	2.6	75	6.2	12.41	12.41	61.50
8		2,640	2,300	26	322	14	524	8,000	3.7	76	5.8	12.41	12.11	65.50
9		2,640	2,270	16	322	17	426	8,000	2.5	75	5.8	12.28	12.10	53.25
10		2,640	2,240	20	403	16	426	8,000	2.6	76	5.7	12.38	12.16	53.25
11		2,640	2,300	22	322	15	459	8,000	2.8	76	5.7	12.38	12.02	57.38
12		2,640	940	24	403	13	524	9,000	2.7	78	5.9	12.38	12.11	58.22
13		2,640	350	22	322	24	492	8,000	2.6	75	5.8	12.29	12.04	61.50
14		2,640	490	25	403	25	459	8,000	3.0	77	5.6	12.23	11.77	57.38
15		2,760	810	36	483	16	492	8,000	3.0	70	5.6	12.25	11.97	61.50
16		2,640	450	21	483	16	492	10,500	3.0	74	5.7	12.34	12.10	46.86
17		2,640	420	26	322	15	459	8,000	3.2	73	5.7	12.37	12.12	57.38
18		2,880	420	26	403	20	492	8,000	2.8	72	6.1	12.28	11.89	61.50
19		2,760	480	26	403	20	492	8,000	2.9	75	5.8	12.37	12.20	61.50
20		2,640	830	25	403	20	525	9,500	2.9	77	5.9	12.38	12.15	55.26
21		2,640	880	22	322	30	492	8,000	2.8	74	6.0	12.50	12.22	61.50
22		2,520	930	13	403	12	394	8,000	2.9	73	5.9	12.14	11.70	49.25
23		2,640	890	19	322	16	492	9,800	2.9	74	5.9	12.26	12.12	50.20
24		2,640	860	16	403	12	459	8,000	2.8	73	5.9	12.07	11.56	57.38
25		2,520	910	18	403	15	459	8,000	2.7	72	6.1	12.21	11.56	57.38
26		2,640	910	19	322	15	459	9,800	2.9	72	6.0	12.00	11.12	46.84
27		2,520	850	18	322	12	459	8,000	2.8	72	6.0	12.03	11.57	57.38
28		2,760	920	21	403	20	459	8,000	3.0	73	6.1	12.14	11.66	57.38
29		2,520	1,320	11	322	13	525	8,000	2.8	72	6.0	12.25	11.86	65.63
30		2,640	1,970	38	322	6	459	10,000	2.9	71	6.0	12.19	11.88	45.90
31														
Total		79,200	41,010	700	10,472	505	14,134	240,500	84.4	2,225	176.2	368.77	358.81	1786.79
Max.		2,880	2,450	40	483	30	722	10,500	3.7	78	6.2	12.50	12.41	96.27
Min.		2,520	350	11	161	6	361	6,000	2.1	70	5.6	12.00	11.12	45.90
Avg.		2,640	1,367	23	349	17	471	8,017	2.8	74	5.9	12.29	11.96	59.56

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

OCTOBER 1994 - PLANT INFLUENT SHEET

PN-Day	Weather Type	Weather Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
1	Rain	0.02	1.50	65	7.3	147	1,839	92	1,151			86		
2			1.56	63	7.5	175	2,277	196	2,550			178	12.4	
3			1.60	63	7.5	145	1,935	182	2,429	4.30	57	150		
4			1.61	63	7.5	187	2,511	250	3,357			220		
5			1.66	64	7.5	151	2,091	180	2,492			164		
6			1.58	64	7.5	167	2,201	154	2,029	3.20	42	138	13.1	
7			1.58	64	7.4	133	1,753	144	1,898			136		
8	Rain	0.59	1.54	64	7.4	146	1,875	84	1,079			80		
9	Rain	0.06	1.52	63	7.4	140	1,775	154	1,952			144		
10			1.64	63	7.4	151	2,065	206	2,818			174	13.5	
11			1.62	63	7.4	170	2,297	166	2,243			142		
12			1.61	63	7.6	152	2,041	170	2,283	3.80	51	152	13.3	
13			1.68	64	7.4	170	2,382	292	4,091			266		
14			1.64	64	7.2	175	2,394	138	1,888			122		
15			1.52	64	7.1	145	1,838	130	1,648			112		
16			1.57	63	7.3	188	2,462	160	2,095			144	12.8	
17			1.80	63	7.0	169	2,537	142	2,132			120		
18	Rain	0.72	1.71	63	7.1	142	2,025	158	2,253	4.70	67	134		
19	Rain	0.07	1.60	63	7.4	120	1,601	142	1,895			134		
20			1.61	64	7.3	142	1,907	148	1,987			136	12.4	
21			1.60	64	7.3	177	2,362	166	2,215			150		
22	Rain	0.10	1.48	63	7.3	144	1,777	132	1,629			124		
23			1.54	63	7.2	176	2,260	212	2,723			182		
24	Rain	0.08	1.62	63	7.4	146	1,973	160	2,162			156	14.0	
25	Rain	0.05	1.62	63	7.4	134	1,810	194	2,621	3.80	51	184		
26			1.57	63	7.4	115	1,506	174	2,278			152		
27			1.55	63	7.5	135	1,745	160	2,068			148	13.0	
28			1.55	64	7.5	153	1,978	136	1,758			124		
29			1.44	63	7.6	121	1,453	124	1,489			104		
30	Rain	0.04	1.48	63	7.5	189	2,333	172	2,123			154		
31	Rain	1.52	1.69	62	7.8	120	1,691	140	1,973			132		
Total	0	3.25	49.29	1,964	229.1	4,725	62,693	5,058	67,308	19.80	269	4,542	104.5	
Max.	0	1.52	1.80	65	7.8	189	2,537	292	4,091	4.70	67	266	14.0	
Min.	0	0.02	1.44	62	7.0	115	1,453	84	1,079	3.20	42	80	12.4	
Avg.	0	0.33	1.59	63	7.4	152	2,022	163	2,171	3.96	54	147	13.1	
Count	10	10.00	31.00	31	31.0	31	31	31	31	5.00	5	31	8.0	

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

OCTOBER 1994 - PRIMARY EFFLUENT SHEET

PN-Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	97	1,213	58	726			52		1.50	34	37	
2			54	703			48	13.3	1.56		72	
3	75	1,001	60	801	2.10	28	44		1.60	48	67	51
4	133	1,786	50	671			42		1.61	29	80	
5	91	1,260	48	665			38		1.66	40	73	
6	83	1,094	50	659	1.80	24	38	13.9	1.58	50	68	44
7	88	1,160	48	633			48		1.58	34	67	
8	143	1,837	46	591			46		1.54	2	45	
9	84	1,065	48	608			44		1.52	40	69	
10	136	1,860	54	739			38	14.1	1.64	10	74	
11	91	1,229	48	649			36		1.62	46	71	
12	104	1,396	58	779	2.70	36	46	14.0	1.61	34	66	29
13	133	1,863	70	981			50		1.68	22	76	
14	146	1,997	60	821			44		1.64	17	57	
15	94	1,192	58	735			48		1.52	35	55	
16	140	1,833	70	917			64	13.3	1.57	16	56	
17	92	1,381	68	1,021			64		1.80	46	52	
18	90	1,284	56	799	4.10	58	48		1.71	37	65	13
19	90	1,201	64	854			64		1.60	25	55	
20	97	1,302	70	940			68	13.9	1.61	32	53	
21	49	654	56	747			48		1.60	72	66	
22	101	1,247	66	815			62		1.48	30	50	
23	113	1,451	74	950			60		1.54	36	65	
24	102	1,378	66	892			64	15.4	1.62	30	59	
25	123	1,662	62	838	4.00	54	60		1.62	8	68	-5
26	105	1,375	66	864			52		1.57	9	62	
27	105	1,357	64	827			56	14.4	1.55	22	60	
28	115	1,487	68	879			64		1.55	25	50	
29	132	1,585	74	889			66		1.44	-9	40	
30	128	1,580	74	913			60		1.48	32	57	
31	116	1,635	74	1,043			74		1.69	3	47	
Total	3,196	42,365	1,882	24,945	14.70	201	1,636	112.3	49.29	855	1,882	132
Max.	146	1,997	74	1,043	4.10	58	74	15.4	1.80	72	80	51
Min.	49	654	46	591	1.80	24	36	13.3	1.44	-9	37	-5
Avg.	107	1,412	61	805	2.94	40	53	14.0	1.59	29	61	26
Count	30	30	31	31	5.00	5	31	8.0	31.00	30	31	5

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

OCTOBER 1994 - ACTIVATED SLUDGE SHEET

PN-Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading fIm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	5.7								124			72	46	1.50	97	58
2		5.5								126			64	42	1.56		54
3		5.4	5.2	0.32	1,395	1,044	51.0	0.27	3.5	126	0.27	0.20	64	40	1.60	75	60
4		5.4	6.2	0.57	1,394	1,050	46.0	0.30	3.4	126	0.27	0.20	65	40	1.61	133	50
5		5.2	6.3	0.40	1,408	1,053	46.0	0.31	3.0	126	0.29	0.22	64	39	1.66	91	48
6		5.5	6.8	0.32	1,505	1,133	45.0	0.33	3.0	122	0.29	0.22	67	41	1.58	83	50
7		5.5	7.0	0.36	1,475	1,085	55.0	0.27	2.9	116	0.29	0.21	66	39	1.58	88	48
8		5.6								119			68	37	1.54	143	46
9		5.7								127			69	34	1.52	84	48
10		5.3	6.1	0.56	1,505	1,107	60.0	0.25	4.0	126	0.30	0.22	63	29	1.64	136	54
11		5.3	7.3	0.35	1,586	1,185	68.0	0.23	2.8	128	0.31	0.23	65	32	1.62	91	48
12		5.4	6.3	0.38	1,627	1,218	63.0	0.26	4.2	126	0.31	0.23	66	40	1.61	104	58
13		5.1	4.9	0.53	1,601	1,172	69.0	0.23	2.8	124	0.29	0.21	62	36	1.68	133	70
14		5.3	5.8	0.58	1,583	1,157	55.0	0.29	2.6	123	0.31	0.23	64	33	1.64	146	60
15		5.7								123			69	35	1.52	94	58
16		5.5								122			72	36	1.57	140	70
17		4.8	4.6	0.40	1,580	1,146	37.0	0.43	2.8	121	0.31	0.23	80	38	1.80	92	68
18		5.0	5.2	0.44	1,383	984	36.0	0.38	2.7	121	0.28	0.20	86	45	1.71	90	56
19		5.4	4.9	0.40	1,397	1,008	35.0	0.40	2.8	121	0.31	0.23	93	37	1.60	90	64
20		5.4	4.8	0.39	1,500	1,116	35.0	0.43	2.8	125	0.32	0.24	93	37	1.61	97	70
21		5.4	6.2	0.19	1,544	1,137	35.0	0.44	3.0	123	0.32	0.23	94	38	1.60	49	56
22		5.8								123			62	40	1.48	101	66
23		5.6								126			59	35	1.54	113	74
24		5.3	5.4	0.40	1,622	1,158	36.0	0.45	3.3	126	0.37	0.26	52	35	1.62	102	66
25		5.3	6.0	0.48	1,671	1,168	51.0	0.33	3.8	127	0.36	0.26	60	35	1.62	123	62
26		5.5	5.9	0.38	1,717	1,212	35.0	0.49	3.4	127	0.34	0.24	65	37	1.57	105	66
27		5.6	6.4	0.36	1,761	1,268	41.0	0.43	3.7	108	0.32	0.22	67	43	1.55	105	64
28		5.6	6.0	0.40	1,759	1,256	44.0	0.40	3.5	103	0.32	0.22	66	43	1.55	115	68
29		6.0								105			70	42	1.44	132	74
30		5.8								107			69	45	1.48	128	74
31		5.1	5.2	0.43	1,822	1,280	50.0	0.36	3.2	160	0.34	0.24	59	52	1.69	116	74
Total	48	168.3	122.6	8.61	32,835	23,937	993.0	7.29	67.2	3,807	6.52	4.74	2,135	1,201	49.29	3,196	1,882
Max.	48	6.0	7.3	0.58	1,822	1,280	69.0	0.49	4.2	160	0.37	0.26	94	52	1.80	146	74
Min.	48	4.8	4.6	0.19	1,383	984	35.0	0.23	2.6	103	0.27	0.20	52	29	1.44	49	46
Avg.	48	5.4	5.8	0.41	1,564	1,140	47.3	0.35	3.2	123	0.31	0.23	69	39	1.59	107	61
Count	1	31.0	21.0	21.00	21	21	21.0	21.00	21.0	31	21.00	21.00	31	31	31.00	30	31

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

OCTOBER 1994 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mgIL
Day																
1	6.6	7.5	10	125		1.50	0.000	4	50			66	89	97		
2	6.8	7.4	6	78		1.56	0.000	5	65	3.8	49	60	97	97		
3	6.9	7.4	11	147	0.22	1.60	0.000	4	53			36	94	98	95	<0.0005
4	6.8	7.3	8	107		1.61	0.000	3	40			12	97	98		
5	6.5	7.3	5	69		1.66	0.000	4	55			3	97	97		
6	6.6	7.3	8	105	0.20	1.58	0.000	5	66	4.0	53	14	95	97	94	
7	6.3	7.4	4	53		1.58	0.000	3	40			7	97	98		
8	5.8	7.4	5	64		1.54	0.000	5	64			79	94	97		
9	6.8	7.3	6	76		1.52	0.000	3	38			60	96	98		
10	7.2	7.3	8	109		1.64	0.000	4	55	2.9	40	4	96	98		<0.0005
11	6.8	7.2	8	108		1.62	0.000	6	81			13	95	97		
12	7.1	7.2	8	107	0.30	1.61	0.003	5	67	3.5	47	84	95	97	92	
13	7.1	7.2	10	140		1.68	0.009	5	70			10	97	97		
14	6.9	7.3	6	82		1.64		6	82			18	96	97		
15	7.3	7.2	8	101		1.52	0.000	4	51			20	94	98		
16	7.4	7.5	32	419		1.57	0.000	5	65	2.2	29	30	80	97		
17	6.5	7.2	7	105		1.80	0.000	5	75			54	95	97		
18	6.7	7.2	15	214	1.13	1.71	0.000	4	57			42	91	98	76	
19	6.6	7.4	16	214		1.60	0.011	5	67			57	89	96		
20	7.1	7.1	17	228		1.61	0.000	5	67	4.6	62	61	89	96		<0.0005
21	7.1	7.1	15	200		1.60	0.000	4	53			46	91	98		
22	6.9	7.2	11	136		1.48	0.017	4	49			208	92	97		
23	6.5	7.3	10	128		1.54	0.003	5	64			124	95	97		
24	7.3	7.3	7	95		1.62	0.000	4	54	3.7	50	20	96	97		<0.0005
25	7.1	7.4	9	122	0.47	1.62	0.000	4	54			30	95	97	88	
26	7.3	7.4	8	105		1.57	0.000	4	52			11	95	96		
27	6.7	7.4	7	90		1.55	0.000	4	52			27	96	97		
28	6.7	7.4	6	78		1.55	0.000	4	52			67	96	97		
29	6.0	7.5	11	132		1.44	0.004	4	48				91	97		
30	6.5	7.4	8	99		1.48	0.000	5	62			186	95	98		
31	7.1	7.4	8	113		1.69	0.000	4	56			25	94	97		
Total	211.0	226.9	298	3,950	2.32	49.29	0.047	136	1,806	24.7	329	1,474	2,909	3,013	445	<0.0005
Max.	7.4	7.5	32	419	1.13	1.80	0.017	6	82	4.6	62	208	97	98	95	<0.0005
Min.	5.8	7.1	4	53	0.20	1.44	0.000	3	38	2.2	29	3	80	96	76	<0.0005
Avg.	6.8	7.3	10	127	0.46	1.59	0.002	4	58	3.5	47	G 31	94	97	89	<0.0005
Count	31.0	31.0	31	31	5.00	31.00	30.000	31	31	7.0	7	30	31	31	5	4

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

OCTOBER 1994 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	S02 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hours	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1		2,640	2,140	20	242	5	332	8,000	2.9	71	5.8	12.04	11.26	41.50
2		2,760	1,040	22	403	24	281	11,000	2.8	71	5.9	12.25	10.00	25.55
3		2,760	1,030	22	322	8	332	8,000	2.8	71	6.0	12.03	11.49	41.50
4		2,640	920	20	322	10	306	9,750	2.8	72	6.1	12.11	11.82	31.38
5		2,760	440	21	242	11	204	8,000	3.4	73	6.0	12.45	12.40	25.50
6		2,520	500	17	322	11	281	8,000	3.0	72	6.1	12.02	10.97	35.13
7		2,540	830	20	242	10	485	16,000	3.3	71	6.1	12.13	11.99	30.31
8		2,520	800	16	322	11	383	14,000	2.8	72	5.9	12.01		27.36
9		2,760	380	20	322	13	332	8,000	3.2	71	5.9	12.01	11.85	41.50
10		2,760	400	15	322	14	255	5,000	3.4	73	6.0	12.13		51.00
11		2,760	420	21	242	12	459	20,500	2.9	70	5.9	12.08	11.72	22.39
12		2,640	480	18	161	11	510	13,000	2.8	73	6.0	12.01	11.62	39.23
13		2,640	1,400	24	161	13	281	7,500	2.5	74	6.3	12.12	11.88	37.47
14		2,640	1,510	29	81	11	230	6,000	2.9	75	5.9	12.20	11.83	38.33
15		2,760	580	20	161	14	128	4,000	3.1	75	6.2	12.00	11.33	32.00
16		2,520	2,470	17	161	6	153	4,000	2.6	75	5.9	12.11	10.09	38.25
17		2,400	750	20	81	9	179	4,000	3.0	74	5.7	12.07	10.98	44.75
18		2,520	1,370	23	242	10	230	7,000	2.9	71	5.9	12.03	11.21	32.86
19		2,640	1,420	20	242	8	230	6,700	2.6	74	5.8	12.07	11.06	34.33
20		2,520	1,530	23	161	11	179	6,000	2.7	73	6.2	12.03		29.83
21		2,640	1,560	22	242	12	179	6,000	2.9	73	6.0	12.04	10.33	29.83
22		2,640	1,410	10	161	11	204	8,000	3.0	66	6.1	12.10	10.30	25.50
23		2,520	1,430	18	242	12	204	6,000	2.7	74	5.9	12.29	10.98	34.00
24		2,760	1,580	16	242	10	306	7,000	2.8	75	5.9	12.28	12.04	43.71
25		2,760	1,580	16	242	11	306	7,000	2.6	74	5.9	12.12	11.95	43.71
26		2,760	2,440	20	161	14	255	7,000	2.7	74	5.9	12.42	12.32	36.43
27		2,640	2,200	20	161	10	306	6,000	3.0	75	5.8	12.00	11.32	51.00
28		2,640	2,330	20	161	12	255	7,800	2.7	74	5.8	12.43	11.39	32.69
29		2,520	2,330	10	242	5	230	6,000	2.5	76	5.9	12.33	10.91	38.33
30		2,760	2,220	25	242	11	204	6,000	2.8	72			10.91	34.00
31		2,640	2,370	19	161	9	230	6,500	2.8	75	5.9	12.34	11.53	35.38
Total		81,980	41,860	604	7,011	339	8,449	247,750	88.9	2,259	178.7	364.25	317.48	1104.77
Max.		2,760	2,470	29	403	24	510	20,500	3.4	76	6.3	12.45	12.40	51.00
Min.		2,400	380	10	81	5	128	4,000	2.5	66	5.7	12.00	10.00	22.39
Avg.		2,645	1,350	19	226	11	273	7,992	2.9	73	6.0	12.14	11.34	35.64

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

NOVEMBER 1994 - PLANT INFLUENT SHEET

PN-Day	Weather: Type	Weather: Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
1	Rain	0.27	1.77	63	7.6	123	1,816	166	2,450			144	11.8	
2			1.71	61	7.4	142	2,025	124	1,768	3.60	51	104		
3	Rain	0.27	1.68	61	7.5	135	1,892	144	2,018			140		
4	Rain	0.27	1.66	61	7.4	132	1,827	140	1,938			138		
5	Rain	0.89	1.56	60	7.5	148	1,926	108	1,405			98		
6	Rain	0.04	1.60	61	7.5	253	3,376	352	4,697			168		
7			1.72	61	7.7	122	1,750	182	2,611			174		
8	Rain	0.52	1.68	60	7.6	129	1,807	176	2,466			174	11.5	
9	Rain	0.26	1.69	60	7.7	111	1,565	160	2,255	3.50	49	148		
10			1.72	61	7.5	142	2,037	200	2,869			188	10.3	
11			1.72	60	7.6	148	2,123	188	2,697			152		
12	Rain	0.02	1.61	61	7.7	150	2,014	182	2,444			162		
13	Rain	0.15	1.61	61	7.6	134	1,799	138	1,853			126		
14	Rain	0.03	1.68	60	7.6	126	1,765	162	2,270			156		
15			1.64	60	7.6	136	1,860	182	2,489			170	13.0	
16			1.66	62	7.6	152	2,104	136	1,883	3.80	53	126		
17			1.77	61	7.6	132	1,949	136	2,008			130		
18			1.80		7.5	124	1,861	154	2,312			128		
19			1.70	61	7.5	126	1,786	70	992			58		
20	Rain	0.26	1.66	60	7.5	121	1,675	156	2,160			132		
21	Rain	0.03	1.75	59	7.5	134	1,956	174	2,540			152		
22			1.64	59	7.7	136	1,860	142	1,942	3.60	49	130	13.4	
23			1.67	59	7.4	145	2,020	298	4,150			258		
24			1.47	61	7.6	153	1,876	186	2,280			172		
25			1.51	60	7.5	138	1,738	128	1,612			116		
26			1.50	61	7.4	162	2,027	114	1,426			108		
27	Rain	1.14	1.45	61	7.6	141	1,705	162	1,959					
28	Rain	0.02	1.70	59	7.6	162	2,297	134	1,900			134		
29			1.64	59	7.7	132	1,805	132	1,805			124		
30			1.61	59	7.6	143	1,920	128	1,719			128		
31														
Total	0	4.17	49.58	1,752	226.8	4,232	58,161	4,854	66,919	14.50	203	4,138	60.0	
Max.	0	1.14	1.80	63	7.7	253	3,376	352	4,697	3.80	53	258	13.4	
Min.	0	0.02	1.45	59	7.4	111	1,565	70	992	3.50	49	58	10.3	
Avg.	0	0.30	1.65	60	7.6	141	1,939	162	2,231	3.63	51	143	12.0	
Count	14	14.00	30.00	29	30.0	30	30	30	30	4.00	4	29	5.0	

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

NOVEMBER 1994 - PRIMARY EFFLUENT SHEET

PN-Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	90	1,329	68	1,004			68	13.5	1.77	27	59	
2	99	1,412	82	1,169	3.50	50	76		1.71	30	34	3
3	90	1,261	72	1,009			68		1.68	33	50	
4	139	1,924	68	941			68		1.66	-5	51	
5	145	1,887	80	1,041			74		1.56	2	26	
6	166	2,215	64	854			64		1.60	34	82	
7	107	1,535	96	1,377			96		1.72	12	47	
8	91	1,275	72	1,009			72	13.5	1.68	30	59	
9	94	1,325	76	1,071	4.20	59	76		1.69	15	53	-20
10	143	2,051	80	1,148			80	12.1	1.72	0	60	
11	100	1,434	76	1,090			56		1.72	32	60	
12	174	2,336	72	967			60		1.61	-16	60	
13	96	1,289	80	1,074			76		1.61	28	42	
14	94	1,317	68	953			68		1.68	25	58	
15	95	1,299	78	1,067			72	14.3	1.64	30	57	
16	94	1,301	76	1,052	3.90	54	72		1.66	38	44	-3
17	88	1,299	84	1,240			76		1.77	33	38	
18	71	1,066	64	961			44		1.80	45	58	
19	89	1,262	64	907			40		1.70	29	9	
20	85	1,177	48	665			48		1.66	30	69	
21	87	1,270	80	1,168			76		1.75	35	54	
22	102	1,395	92	1,258	3.80	52	84	14.7	1.64	25	35	-6
23	109	1,518	96	1,337			84		1.67	25	68	
24	91	1,116	72	883			56		1.47	41	61	
25	137	1,725	88	1,108			80		1.51	0	31	
26	105	1,314	88	1,101			88		1.50	35	23	
27	118	1,427	104	1,258			84		1.45	16	36	
28	110	1,560	100	1,418			96		1.70	32	25	
29	102	1,395	84	1,149			80	14.5	1.64	23	36	
30	103	1,383	100	1,343			92		1.61	28	22	
31												
Total	3,214	44,097	2,372	32,621	15.40	215	2,174	82.6	49.58	712	1,407	-26
Max.	174	2,336	104	1,418	4.20	59	96	14.7	1.80	45	82	3
Min.	71	1,066	48	665	3.50	50	40	12.1	1.45	-16	9	-20
Avg.	107	1,470	79	1,087	3.85	54	72	13.8	1.65	24	47	-7
Count	30	30	30	30	4.00	4	30	6.0	30.00	30	30	4

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

NOVEMBER 1994 - ACTIVATED SLUDGE SHEET

PN-Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading fIm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	4.9	5.6	0.33	1,882	1,328	57.0	0.33	3.3	213	0.37	0.25	58	53	1.77	90	68
2		5.0	4.8	0.35	1,894	1,340	50.0	0.38	3.7	210	0.32	0.24	60	59	1.71	99	82
3		5.1	5.2	0.35	1,740	1,214	45.0	0.39	1.8	201	0.30	0.21	61	59	1.68	90	72
4		5.2								200			65	56	1.66	139	68
5		5.5								202			69	55	1.56	145	80
6		5.4								217			66	55	1.60	166	64
7		5.0	3.7	0.42	1,682	1,229	38.0	0.44	1.4	214	0.30	0.23	59	54	1.72	107	96
8		5.1	5.1	0.34	1,710	1,237	38.0	0.45	2.8	207	0.32	0.23	64	58	1.68	91	72
9		5.1	4.6	0.37	1,630	1,200	35.0	0.47	3.0	217	0.31	0.23	62	58	1.69	94	76
10		5.0	4.2	0.60	1,591	1,135	39.0	0.41	3.4	219	0.31	0.22	62	51	1.72	143	80
11		5.0	4.4	0.42	1,591	1,141	43.0	0.37	3.4	214	0.31	0.23	60	46	1.72	100	76
12		5.4								209			66	44	1.61	174	72
13		5.4								203			60	41	1.61	96	80
14		5.1	5.7	0.32	1,822	1,359	40.0	0.46	3.0	208	0.33	0.25	61	35	1.68	94	68
15		5.3	5.1	0.33	1,814	1,335	60.0	0.30	3.0	221	0.33	0.24	64	32	1.64	95	78
16		5.2	5.7	0.29	2,005	1,478	68.0	0.29	2.7	217	0.35	0.26	63	37	1.66	94	76
17		4.9	5.0	0.28	2,064	1,572	57.0	0.36	1.6	211	0.36	0.27	62	40	1.77	88	84
18		4.8	6.4	0.23	2,061	1,565	64.0	0.32	2.3	216	0.38	0.28	63	44	1.80	71	64
19		5.1								226			65	40	1.70	89	64
20		5.2								217			66	27	1.66	85	48
21		4.9	5.7	0.26	2,214	1,650	84.0	0.26	2.2	214	0.38	0.27	63	41	1.75	87	80
22		5.3	5.3	0.28	2,230	1,676	83.0	0.27	2.7	224	0.36	0.27	68	49	1.64	102	92
23		5.2	4.9	0.32	2,170	1,584	45.0	0.48	2.9	225	0.38	0.28	67	52	1.67	109	96
24		5.9								220			75	54	1.47	91	72
25		5.7								216			72	55	1.51	137	88
26		5.7								228			73	54	1.50	105	88
27		5.9								220			75	51	1.45	118	104
28		5.1	4.4	0.34	2,084	1,529	69.0	0.30	1.8	230	0.36	0.27	55	31	1.70	110	100
29		5.3	5.7	0.29	2,172	1,631	50.0	0.43	2.2	235	0.36	0.27	63	43	1.64	102	84
30		5.4	4.8	0.29	2,166	1,615	63.0	0.34	3.0	238	0.37	0.28	68	47	1.61	103	100
31																	
Total	48	156.8	96.1	6.40	36,522	26,818	1028.0	7.06	50.2	6,492	6.50	4.78	1,935	1,421	49.58	3,214	2,372
Max.	48	5.9	6.4	0.60	2,230	1,676	84.0	0.48	3.7	238	0.38	0.28	75	59	1.80	174	104
Min.	48	4.8	3.7	0.23	1,591	1,135	35.0	0.26	1.4	200	0.30	0.21	55	27	1.45	71	48
Avg.	48	5.2	5.1	0.34	1,922	1,411	54.1	0.37	2.6	216	0.34	0.25	65	47	1.65	107	79
Count	1	30.0	19.0	19.00	19	19	19.0	19.00	19.0	30	19.00	19.00	30	30	30.00	30	30

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

NOVEMBER 1994 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mgIL
1	7.4	7.5	13	192		1.77	0.002	4	59	6.9	102	230	92	97		<0.0005
2	6.8	7.4	12	171	0.46	1.71	0.015	4	57			36	90	97	87	
3	6.3	7.5	8	112		1.68	0.011	4	56			164	94	97		
4	6.6	7.4	2	28		1.66	0.001	4	55			160	99	97		<0.0005
5	6.2	7.4	6	78		1.56	0.000	4	52			142	94	97		
6	6.9	7.5	10	133		1.60	0.000	4	53			108	97	98		
7	7.3	7.6	10	143		1.72	0.013	2	29			140	95	98		
8	6.3	7.5	9	126		1.68	0.000	5	70	9.3	130	328	95	96		
9	6.6	7.5	6	85	0.47	1.69	0.010	4	56			352	96	96	87	<0.0005
10	7.1	7.5	6	86		1.72	0.022	5	72	8.1	116	413	97	96		
11	7.1	7.5	4	57		1.72	0.000	4	57			188	98	97		<0.0005
12	6.7	7.5	6	81		1.61	0.000	6	81			120	97	96		
13	6.7	7.5	3	40		1.61	0.000	4	54			200	98	97		
14	6.6	7.5	2	28		1.68	0.002	3	42			230	99	98		
15	7.1	7.5	7	96		1.64	0.000	4	55	8.2	112	148	96	97		
16	7.0	7.5	3	42	1.10	1.66	0.000	4	55			92	98	98	71	
17	6.7	7.5	7	103		1.77	0.018	4	59			194	95	97		
18	6.9	7.5	8	120		1.80	0.009	2	30			200	95	98		
19	7.0	7.4	16	227		1.70	0.000	4	57			585	77	97		
20	7.1	7.5	11	152		1.66	0.000	5	69				93	96		
21	7.0	7.5	7	102		1.75	0.000	4	58			328	96	97		
22	7.1	7.5	7	96	0.43	1.64	0.002	5	68	8.1	111	170	95	96	88	
23	7.2	7.5	8	111		1.67	0.020	2	28			169	97	98		
24	6.9	7.5	4	49		1.47	0.001	3	37			140	98	98		
25	7.7	7.5	3	38		1.51	0.011	2	25			176	98	99		
26	7.6	7.5	10	125		1.50	0.014	4	50			196	91	98		
27	7.3	7.5	10	121		1.45	0.017	3	36			232	94	98		
28	6.9	7.5	13	184		1.70	0.013	6	85			156	90			
29	7.2	7.5	10	137		1.64	0.000	6	82	8.7	119	310	92	95		
30	7.2	7.5	15	201		1.61	0.000	6	81			220	88	96		
31																
Total	208.5	224.7	236	3,265	2.46	49.58	0.180	121	1,669	49.3	690	6,127	2,834	2,815	333	<0.0005
Max.	7.7	7.6	16	227	1.10	1.80	0.022	6	85	9.3	130	585	99	99	88	<0.0005
Min.	6.2	7.4	2	28	0.43	1.45	0.000	2	25	6.9	102	36	77	95	71	<0.0005
Avg.	7.0	7.5	8	109	0.62	1.65	0.006	4	56	8.2	115	G 187	94	97	83	<0.0005
Count	30.0	30.0	30	30	4.00	30.00	30.000	30	30	6.0	6	29	30	29	4	4

G = Geometric Mean

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

NOVEMBER 1994 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hours	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1	73	2,880	2,230	20	161	10	365	7,500	2.7	74	6.0	12.30	12.10	48.67
2	41	2,640	2,470	21	242	10	329	7,000	2.7	74	6.1	12.10	11.80	47.00
3	26	2,640	2,150	20	161	10	365	8,000	2.6	64	6.3	12.20	12.10	45.63
4	1	2,640	2,190	20	161	10	329	6,000	2.5	72	6.0	12.20	12.10	54.83
5	2	2,640	2,190	25	161	10	329	6,000	2.7	73	6.2	12.50	12.10	54.83
6	4	2,520	2,150	12	242	10	329	6,000			6.4	12.40	11.80	54.83
7	15	2,760	2,310	17	161	10	329	7,500	2.9	74	6.0	12.00	11.80	43.87
8	15	2,640	2,150	16	161	12	329	7,000	2.9	74	6.0	12.10	12.00	47.00
9	18	2,760	2,210	17	161	13	438	9,000	2.8	74	6.0	12.10	12.20	48.67
10	43	2,880	2,160	18	161	11	365	5,700	3.0	73	6.4	12.50	12.50	64.04
11	37	2,640	2,250	30	161	9	438	6,000	3.0	75	6.0	12.20	12.50	73.00
12	18	2,760	2,200	8	81	12	329	5,000	3.2	73	6.5	12.50	12.40	65.80
13	35	2,760	2,150	20	161	15	256	5,500	3.2	69	6.6	12.60	11.80	46.55
14	36	2,640	2,280	27	161	8	292	5,500	2.9	75	6.1	12.30	12.00	53.09
15	24	2,880	2,200	17	242	10	329	5,500	3.1	75	5.9	12.40	11.90	59.82
16	34	2,760	2,290	23	161	12	219	6,000	3.2	75	6.0	12.20	12.10	36.50
17	31	2,880	2,210	18	81	9	292	5,500	3.0	75	5.9	12.00	10.90	53.09
18	28	2,760	2,730	7	322	11	402	6,500	2.9	75	5.9	12.10	12.10	61.85
19	33	2,760	2,150	2	322	10	365	6,600	3.0	74	6.2	12.30	12.20	55.30
20	30	2,760	2,220	18	322	11	292	7,200	3.0	74	6.1	12.50	11.90	40.56
21	34	2,760	2,150	20	242	11	292	5,500	3.0	74	6.0	12.20	11.40	53.09
22	53	2,760	2,160	22	161	10	256	5,500	3.1	75	5.9	12.00	11.70	46.55
23	78	2,880	2,250	18	242	14	292	5,500	3.0	73	6.0	12.00	11.20	53.09
24	40	2,760	2,240	15	161	12	256	6,700	2.8	74	6.0	12.20	12.10	38.21
25	55	2,640	2,200	17	161	9	329	6,000	3.2	64		12.60	11.70	54.83
26	63	2,760	2,200	20	242	10	329	6,000	2.9	77	6.0	12.20	11.80	54.83
27	37	2,640	2,170	16	161	6	292	5,500	3.5	59		12.50	11.70	53.09
28	58	2,880	2,180	20	161	13	219	5,500	3.2	74	6.1	11.30	11.40	39.82
29	74	3,000	2,160	22	242	12	365	6,000	3.0	74	5.8	12.10	12.10	60.83
30	61	2,880	2,180	20	161	13	402	6,000	3.0	74	5.9	12.50	12.30	67.00
31														
Total	1,097	82,560	66,780	546	5,720	323	9,753	187,200	86.0	2,110	170.3	367.10	357.70	1576.26
Max.	78	3,000	2,730	30	322	15	438	9,000	3.5	77	6.6	12.60	12.50	73.00
Min.	1	2,520	2,150	2	81	6	219	5,000	2.5	59	5.8	11.30	10.90	36.50
Avg.	37	2,752	2,226	18	191	11	325	6,240	3.0	73	6.1	12.24	11.92	52.54

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

DECEMBER 1994 - PLANT INFLUENT SHEET

PN-Day	Weather Type	Weather Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	Remarks or Other Parameters
1			1.65	59	7.6	159	2,188	184	2,532	2.80	39	172	13.5	
2	Rain	0.20	1.66	60	7.6	131	1,814	128	1,772			112		
3			1.55	60	7.5	121	1,564	100	1,293			94		
4	Rain	0.09	1.58	59	7.5	135	1,779	154	2,029			142		
5			1.70	59	7.6	144	2,042						13.6	
6	Snow	0.53	1.63	60	7.8	161	2,189	130	1,767	4.70	64	124	13.1	
7	Snow	0.02	1.60	59	7.6	134	1,788	136	1,815			132	13.4	
8	Rain	0.20	1.67	57	7.6	131	1,825	100	1,393	3.50	49	94		
9			1.71	57	7.5	202	2,881	140	1,997			140	13.6	
10			1.62	58	7.5	140	1,892	94	1,270			92		
11	Rain	0.02	1.64	57	7.5	142	1,942	146	1,997			132	12.3	
12			1.66	57	7.5	117	1,620	124	1,717			116		
13			1.71	57	7.7	136	1,940	172	2,453			162		
14			1.77	57	7.5	140	2,067	146	2,155			134		
15			1.81	57	7.4	144	2,174	244	3,683	5.90	89	218	11.7	
16	Rain	0.50	1.72	57	7.6	148	2,123	112	1,607			100		
17			1.71	57	7.3	185	2,638	144	2,054			132		
18			1.70	56	7.6	139	1,971	132	1,871			124		
19			1.82	56	7.3	161	2,444	146	2,216			138		
20			1.81	56	7.4	154	2,325	166	2,506			160	12.6	
21			1.79	57	7.3	128	1,911	160	2,389	4.00	60	132		
22			1.77	59	7.5	163	2,406	240	3,543			210		
23			1.76	59	7.6	170	2,495	116	1,703			98		
24			1.68	58	7.5	120	1,681	110	1,541			98		
25			1.52	59	7.4	107	1,356	124	1,572			118		
26			1.63	54	7.6	128	1,740	142	1,930			132	12.7	
27			1.67	54	7.5	137	1,908	158	2,201			152		
28			1.64	54	7.5	122	1,669	124	1,696			118		
29			1.64	54	7.6	150	2,052	206	2,818			188		
30	Rain	0.02	1.64	54	7.6	128	1,751	104	1,422			98		
31	R&S	0.29	1.65	54	7.6	132	1,816	100	1,376			88		
Total	0	1.87	52.11	1,771	233.3	4,409	61,988	4,282	60,317	20.90	300	3,950	116.5	
Max.	0	0.53	1.82	60	7.8	202	2,881	244	3,683	5.90	89	218	13.6	
Min.	0	0.02	1.52	54	7.3	107	1,356	94	1,270	2.80	39	88	11.7	
Avg.	0	0.21	1.68	57	7.5	142	2,000	143	2,011	4.18	60	132	12.9	
Count	9	9.00	31.00	31	31.0	31	31	30	30	5.00	5	30	9.0	

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

DECEMBER 1994 - PRIMARY EFFLUENT SHEET

PN- Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	124	1,706	84	1,156	2.70	37	80	14.9	1.65	22	54	4
2	95	1,315	52	720			52		1.66	27	59	
3	122	1,577	86	1,112			80		1.55	-1	14	
4	111	1,463	84	1,107			76		1.58	18	45	
5	109	1,545						14.7	1.70	24		
6	118	1,604	88	1,196	4.50	61	88	15.0	1.63	27	32	4
7			80	1,068			80	14.5	1.60		41	
8	92	1,281	80	1,114	4.30	60	80	15.5	1.67	30	20	-23
9	115	1,640	88	1,255			88		1.71	43	37	
10	107	1,446	44	594			36		1.62	24	53	
11	103	1,409	92	1,258			92	13.9	1.64	27	37	
12	110	1,523	124	1,717			124		1.66	6	0	
13	109	1,554	88	1,255			84		1.71	20	49	
14	101	1,491	88	1,299			72		1.77	28	40	
15	103	1,555	108	1,630			100	14.0	1.81	28	56	
16	106	1,521	76	1,090	6.60	95	76		1.72	28	32	-12
17	144	2,054	84	1,198			76		1.71	22	42	
18	111	1,574	76	1,078			76		1.70	20	42	
19	114	1,730	72	1,093			72		1.82	29	51	
20	101	1,525	76	1,147			76	14.2	1.81	34	54	
21	103	1,538	80	1,194	4.00	60	68		1.79	20	50	0
22	93	1,373	80	1,181			68		1.77	43	67	
23	132	1,938	68	998			68		1.76	22	41	
24	87	1,219	68	953			68		1.68	28	38	
25	76	963	68	862			64		1.52	29	45	
26	92	1,251	80	1,088			80	13.3	1.63	28	44	
27	101	1,407	64	891			60		1.67	26	59	
28	100	1,368	80	1,094			80		1.64	18	35	
29	118	1,614	54	739			56		1.64	21	74	
30	66	903	24	328			24		1.64	48	77	
31	100	1,376	68	936			64		1.65	32	32	
Total	3,163	44,461	2,304	32,351	22.10	313	2,208	130.0	52.11	771	1,320	-27
Max.	144	2,054	124	1,717	6.60	95	124	15.5	1.82	48	77	4
Min.	66	903	24	328	2.70	37	24	13.3	1.52	-1	0	-23
Avg.	105	1,482	77	1,078	4.42	63	74	14.4	1.68	26	44	-5
Count	30	30	30	30	5.00	5	30	9.0	31.00	30	30	5

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

DECEMBER 1994 - ACTIVATED SLUDGE SHEET

PN-Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading fIm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	5.2	5.8	0.34	2,258	1,672	55.0	0.41	3.1	229	0.40	0.29	66	54	1.65	124	84
2		5.2	9.3	0.27	2,233	1,636	49.0	0.46	3.3	227	0.37	0.27	66	61	1.66	95	52
3		5.6								225			72	20	1.55	122	86
4		5.5								223			70	31	1.58	111	84
5		5.1	5.8	0.33	2,115	1,570	57.0	0.37	2.2	224	0.49	0.36	65	43	1.70	109	77
6		5.3	6.0	0.30	2,381	1,787	42.0	0.57	2.4	216	0.42	0.31	68	56	1.63	118	88
7		5.4	6.3	0.00	2,240	1,648	56.0	0.40	2.8	226	0.39	0.29	70	59	1.60		80
8		5.2	5.7	0.27	2,120	1,584	44.0	0.48	4.5	245	0.37	0.27	66	59	1.67	92	80
9		5.0	4.8	0.36	2,028	1,516	41.0	0.49	4.2	240	0.39	0.29	65	54	1.71	115	88
10		5.3								244			68	54	1.62	107	44
11		5.3								251			67	54	1.64	103	92
12		5.2	3.6	0.32	2,042	1,570	39.0	0.52	4.9	252	0.34	0.26	66	51	1.66	110	124
13		5.0	4.8	0.34	1,994	1,526	32.0	0.62	4.3	247	0.36	0.27	63	45	1.71	109	88
14		4.9	4.6	0.32	2,010	1,537	37.0	0.54	4.2	243	0.40	0.30	61	51	1.77	101	88
15		4.8	3.8	0.34	2,056	1,540	39.0	0.53	4.1	238	0.39	0.29	59	52	1.81	103	108
16		5.0	5.8	0.32	2,103	1,580	36.0	0.58	3.4	224	0.38	0.29	63	52	1.72	106	76
17		5.0								236			63	52	1.71	144	84
18		5.1								240			59	50	1.70	111	76
19		4.7	5.6	0.37	2,062	1,583	30.0	0.69	3.0	246	0.39	0.29	60	45	1.82	114	72
20		4.8	5.6	0.31	2,145	1,624	34.0	0.63	2.9	240	0.42	0.31	61	49	1.81	101	76
21		4.8	5.6	0.31	2,229	1,668	37.0	0.60	3.5	239	0.41	0.30	62	55	1.79	103	80
22		4.9	5.6	0.28	2,207	1,621	37.0	0.60	3.8	239	0.41	0.30	63	57	1.77	93	80
23		4.9	6.6	0.40	2,204	1,634	33.0	0.67	4.0	264	0.39	0.29	64	57	1.76	132	68
24		5.1								245			61	56	1.68	87	68
25		5.7								247			66	49	1.52	76	68
26		5.3								249			61	44	1.63	92	80
27		5.2	6.9	0.32	2,054	1,466	27.0	0.76	5.2	245	0.34	0.26	60	44	1.67	101	64
28		5.3	5.5	0.31	2,018	1,485	27.0	0.75	4.8	245	0.35	0.26	62	43	1.64	100	80
29		5.3	8.2	0.36	2,032	1,516	31.0	0.66	4.6	254	0.36	0.27	62	41	1.64	118	54
30		5.3	18.5	0.20	2,033	1,497	30.0	0.68	5.5	243	0.36	0.27	61	41	1.64	66	24
31		5.2								240			60	41	1.65	100	68
Total	48	159.2	134.5	6.37	44,564	33,260	813.0	12.01	80.7	7,426	8.13	6.04	1,980	1,520	52.11	3,163	2,381
Max.	48	5.7	18.5	0.40	2,381	1,787	57.0	0.76	5.5	264	0.49	0.36	72	61	1.82	144	124
Min.	48	4.7	3.6	0.00	1,994	1,466	27.0	0.37	2.2	216	0.34	0.26	59	20	1.52	66	24
Avg.	48	5.1	6.4	0.30	2,122	1,584	38.7	0.57	3.8	240	0.39	0.29	64	49	1.68	105	77
Count	1	31.0	21.0	21.00	21	21	21.0	21.00	21.0	31	21.00	21.00	31	31	31.00	30	31

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

DECEMBER 1994 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mgIL
1	7.2	7.6	6	83	0.35	1.65	0.000	6	83	8.9	122	204 -	97	96	88	
2	7.2	7.4	11	152		1.66	0.000	4	55			299 -	91	97		
3	6.9	7.4	9	116		1.55	0.000	5	65			132 -	91	96		
4	6.4	7.4	5	66		1.58	0.018	4	53			72 -	97	97		<0.0002
5	6.9	7.5				1.70	0.000	4	57	10.3	146	144 -		97		
6	7.0	7.6	7	95	0.33	1.63	0.000	5	68	10.5	143	240 -	95	97	93	
7	7.2	7.5	15	200		1.60	0.000	9 -	120	9.7	129	262 -	89	93		
8	8.0	7.6	12	167	0.55	1.67	0.001	7 -	97			6	88	95	84	<0.0002
9	7.5	7.5	11 -	157 -		1.71	0.001	10 -	143			15	92	95		
10	7.3	7.5	10 -	135 -		1.62	0.000	8 -	108			95	89	94		
11	8.0	7.5	12 -	164 -		1.64	0.000	6 -	82	8.6	118	104	92	96		<0.0002
12	7.8	7.4	11 -	152 -		1.66	0.000	5 -	69			201	91	95		
13	7.8	7.6	12 -	171 -		1.71	0.000	7 -	100			138	93	95		
14	8.0	7.4	14 -	207 -		1.77	0.000	6	89			26	90	96		
15	7.6	7.3	15 -	226 -	0.50	1.81	0.000	5	75	9.5	143	8	94	97	90	<0.0002
16	6.9	7.6	10	143		1.72	0.000	6	86			12	91	96		
17	7.1	7.4	8	114		1.71	0.010	8	114			31	94	96		
18	7.2	7.6	9	128		1.70	0.000	7	99			120	93	96		
19	7.4	7.4	16	243		1.82	0.000	7	106			94	89	95		
20	7.4	7.3	7	106		1.81	0.000	4	60	10.4	157	18	96	97		
21	7.5	7.1	16	239	0.46	1.79	0.000	7	105			14	90	95	89	
22	7.4	7.4	10	148		1.77	0.000	5	74			17	96	97		
23	7.3	7.6	11	161		1.76	0.016	7	103			20	91	96		
24	7.9	7.5	8	112		1.68	0.000	4	56			60	93	97		
25	7.6	7.5	9	114		1.52	0.000	4	51			86	93	96		
26	8.3	7.5	11	150		1.63	0.000	5	68	10.4	141	10	92	96		
27	8.2	7.5	7	97		1.67	0.001	4	56			43	96	97		
28	8.0	7.4	8	109		1.64	0.001	5	68			70	94	96		
29	8.3	7.6	8	109		1.64	0.000	5	68			17	96	97		
30	8.2	7.5	7	96		1.64	0.003	4	55			16	93	97		
31	7.9	7.5	5	69		1.65	0.000	4	55			26	95	97		
Total	233.4	231.6	300	4,230	2.19	52.11	0.052	177	2,487	78.3	1,100	2,600	2,781	2,977	444	<0.0002
Max.	8.3	7.6	16	243	0.55	1.82	0.018	10	143	10.5	157	299	97	97	93	<0.0002
Min.	6.4	7.1	5	66	0.33	1.52	0.000	4	51	8.6	118	6	88	93	84	<0.0002
Avg.	7.5	7.5	10	141	0.44	1.68	0.002	6	80	9.8	138	G 48	93	96	89	<0.0002
Count	31.0	31.0	30	30	5.00	31.00	31.000	31	31	8.0	8	31	30	31	5	4

G = Geometric Mean

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

DECEMBER 1994 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	S02 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hours	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1	49	2,760	2,120	29	242	16	204	7,000	3.1	76	5.9	12.18	12.06	29.14
2	36	2,760	2,210	19	242	14	204	5,000	3.1	76	6.1	12.25	12.05	40.80
3	29	2,640	2,090	22	161	16	306	5,000	3.3	70		12.11	12.00	61.20
4	35	2,880	2,120	20	161	15	230	6,000	3.0	76	5.8	12.17	12.02	38.33
5	19	2,760	2,450	22	242	16	230	5,500	3.2	68	5.9	12.16	12.04	41.82
6	57	2,880	2,050	23	161	18	204	7,000	3.1	72	6.0	12.27	12.07	29.14
7	83	2,880	2,110	25	242	16	204	5,500	2.9	76	6.0	12.21	12.02	37.09
8	73	2,880	2,120	14	161	15	179	6,000	3.2	70	6.1	12.15	12.09	29.83
9	75	2,880	2,160	15	161	13	179	7,500	2.9	75	6.1	12.26	12.13	23.87
10	62	2,760	2,100	16	161	15	230	6,000	3.0	76	6.0	12.30	12.01	38.33
11	37	3,240	2,060	20	242	16	230	6,000	3.1	75	6.0	12.50	12.42	38.33
12	88	3,000	2,200	17	161	17	204	7,400	3.3	74	6.2	12.24	12.22	27.57
13	82	3,000	1,980	23	161	17	204	6,000	3.9	74	6.7	12.58	12.54	34.00
14	82	3,000	600	21	242	15	230	6,000	3.1	75	5.9	12.10	12.03	38.33
15	77	2,880	470	23	161	15	128	11,000	3.4	74	5.9			11.64
16	51	2,880	610	29	161	15	230	15,500	3.1	76	5.9	12.57	12.46	14.84
17	69	2,760	370	20	161	12	255	6,000	3.0	76	5.9	12.49	12.32	42.50
18	54	2,880	400	22	161	17	306	7,500	3.2	75	5.9	12.49	12.32	40.80
19	74	2,880	500	22	242	13	204	11,000	3.2	74	5.4	12.40	12.38	18.55
20	58	3,000	530	26	322	15	255	10,000	3.6	75	5.9	12.58	12.27	25.50
21	61	2,880	650	22	403	15	153	10,000	4.9	52	5.9	12.23	12.18	15.30
22	53	2,880	420	20	242	15	153	11,000	3.7	70	5.9	12.59	12.43	13.91
23	56	2,880	530	5	322	17	230	6,000	3.5	72	6.0			38.33
24	53	2,880	400	15	242	17	230	6,500	3.4	74	6.0	12.62	12.34	35.38
25	72	2,760	400	20	322	16	153	8,500	3.5	73	5.9	12.59	12.24	18.00
26	67	3,000	460	19	322	17	230	5,750	3.3	74	6.0			40.00
27	60	2,880	460	19	242	22	459	10,000				12.16	12.00	45.90
28	58	2,760	480	18	242	12	408	10,000	4.5	80	6.1	12.57	12.37	40.80
29	73	3,000	630	20	242	17	357	8,000	3.2	74	6.2	12.63	12.42	44.63
30	63	2,880	380	20	322	15	255	5,000	3.4	75	6.0	12.61	12.30	51.00
31	60	2,880	400	30	242	16	204	5,000				12.59	12.31	40.80
Total	1,866	89,280	36,460	636	7,091	485	7,248	232,650	97.1	2,127	167.6	346.60	342.04	1045.67
Max.	88	3,240	2,450	30	403	22	459	15,500	4.9	80	6.7	12.63	12.54	61.20
Min.	19	2,640	370	5	161	12	128	5,000	2.9	52	5.4	12.10	12.00	11.64
Avg.	60	2,880	1,176	21	229	16	234	7,505	3.3	73	6.0	12.38	12.22	36.06

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JANUARY 1996 - PLANT INFLUENT SHEET

Day	Weather: Type	Weather: Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
1			1.35	57	7.8	107	1,205	224	2,522			200	15.9	
2			1.53	57	7.5	176	2,246	156	1,991			152		
3			1.57	59	7.3	107	1,401	164	2,147			156	12.2	
4			1.50	59	7.5	139	1,739	128	1,601	4.50	56	120		
5			1.46	57	7.4	140	1,705	108	1,315			80		
6			1.36	57	7.5	141	1,599	164	1,860			124		
7			1.31	57	7.9	152	1,661	272	2,972			240		
8	Snow	0.05	1.51	55	7.4	183	2,305	156	1,965			228	14.7	
9	Snow	0.08	1.46	55	7.6	189	2,301	148	1,802	2.80	34	144		
10			1.38	55	7.5	250	2,877	204	2,348			200	17.3	
11	Snow	0.10	1.40	57		237	2,767	184	2,148			168		
12			1.44	55		271	3,255	192	2,306			148		
13			1.36	55	7.3	182	2,064	184	2,087			164		
14			1.33	54	7.4	188	2,085	160	1,775			136		
15			1.50	54	7.5	266	3,328	224	2,802			176		
16	Rain	0.03	1.43	55	7.7	231	2,755	200	2,385			172	13.7	
17	Rain	0.34	1.52	54	7.7	282	3,575	228	2,890	4.30	55	208	15.4	
18	Rain	0.68	1.51	54	7.6	272	3,425	200	2,519			188		
19	Snow	0.01	1.49	54	7.7	166	2,063	152	1,889			140		
20			1.37	54	7.8	162	1,851	140	1,600			116		
21			1.38	54	7.7	206	2,371	184	2,118			160	15.1	
22	Rain	0.01	1.52	54	7.7	139	1,762	132	1,673			132		
23	Rain	0.27	1.57	54	7.7	172	2,252	160	2,095	3.70	48	152		
24	Snow	0.02	1.65	54	7.6	160	2,202	184	2,532			156	13.3	
25			1.65	52	8.0	165	2,271	152	2,092			116		
26			1.61	54	7.6	148	1,987	116	1,558			108		
27	Snow	0.23	1.32	54	7.7	183	2,015	136	1,497			108		
28	Snow	0.03	1.36	54	7.8	214	2,427	208	2,359			192	14.9	
29			1.58	54	7.8	171	2,253	176	2,319			168		
30	Snow	0.01	1.55	54	7.8	403	5,210	484	6,257			428		
31			1.57	54	7.9	227	2,972	224	2,933			212		
Total	0	1.86	45.54	1,706	221.4	6,029	73,928	5,744	70,356	15.30	193	5,192	132.5	
Max.	0	0.68	1.65	59	8.0	403	5,210	484	6,257	4.50	56	428	17.3	
Min.	0	0.01	1.31	52	7.3	107	1,205	108	1,315	2.80	34	80	12.2	
Avg.	0	0.14	1.47	55	7.6	194	2,385	185	2,270	3.83	48	167	14.7	
Count	13	13.00	31.00	31	29.0	31	31	31	31	4.00	4	31	9.0	

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JANUARY 1996 - PRIMARY EFFLUENT SHEET

PN-Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	86	968	100	1,126			92	15.5	1.35	20	55	
2	125	1,595	112	1,429			108		1.53	29	28	
3	124	1,624	112	1,467			108	14.3	1.57	-16	32	
4	150	1,877	132	1,651	5.60	70	132		1.50	-8	-3	-24
5	140	1,705	124	1,510			105		1.46	0	-15	
6	87	987	112	1,270			44		1.36	38	32	
7	102	1,114	104	1,136			88		1.31	33	62	
8	134	1,688	112	1,410			104	16.8	1.51	27	28	
9	163	1,985	100	1,218	2.50	30	100		1.46	14	32	11
10	144	1,657	128	1,473			124	18.8	1.38	42	37	
11	268	3,129	144	1,681			132		1.40	-13	22	
12	139	1,669	108	1,297			100		1.44	49	44	
13	143	1,622	108	1,225			104		1.36	21	41	
14	138	1,531	116	1,287			104		1.33	27	28	
15	190	2,377	136	1,701			124		1.50	29	39	
16	156	1,860	104	1,240			88	15.1	1.43	32	48	
17	218	2,764	112	1,420	3.50	44	108		1.52	23	51	19
18	121	1,524	108	1,360			108	16.0	1.51	56	46	
19	129	1,603	116	1,441			112		1.49	22	24	
20	152	1,737	108	1,234			104		1.37	6	23	
21	114	1,312	116	1,335			108	16.6	1.38	45	37	
22	115	1,458	84	1,065			84		1.52	17	36	
23	124	1,624	100	1,309	4.60	60	100		1.57	28	38	-24
24	120	1,651	100	1,376			60	14.7	1.65	25	46	
25	125	1,720	80	1,101			56		1.65	24	47	
26	113	1,517	88	1,182			68		1.61	24	24	
27	139	1,530	88	969			72		1.32	24	35	
28	136	1,543	92	1,044			88	15.4	1.36	36	56	
29	114	1,502	92	1,212			92		1.58	33	48	
30	181	2,340	100	1,293			96		1.55	55	79	
31	146	1,912	108	1,414			96		1.57	36	52	
Total	4,336	53,123	3,344	40,877	16.20	205	3,009	143.2	45.54	778	1,152	-18
Max.	268	3,129	144	1,701	5.60	70	132	18.8	1.65	56	79	19
Min.	86	968	80	969	2.50	30	44	14.3	1.31	-16	-15	-24
Avg.	140	1,714	108	1,319	4.05	51	97	15.9	1.47	25	37	-5
Count	31	31	31	31	4.00	4	31	9.0	31.00	31	31	4

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JANUARY 1996 - ACTIVATED SLUDGE SHEET

PN- Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	6.4								237			66	56.9	1.35	86	100
2		5.6	4.5	0.32	2,153	1,650	20.0	1.08	5.6	247	0.33	0.25	59	56.6	1.53	125	112
3		5.5	4.4	0.32	2,171	1,680	23.0	0.94	4.6	248	0.38	0.29	58	52.8	1.57	124	112
4		5.7	4.1	0.37	2,247	1,701	22.0	1.02	5.7	249	0.39	0.29	61	58.6	1.50	150	132
5		5.9	4.5	0.33	2,294	1,749	24.0	0.96	3.3	256	0.37	0.28	63	58.1	1.46	140	124
6		6.3								251			68	57.6	1.36	87	112
7		6.6								250			70	34.0	1.31	102	104
8		5.7	4.9	0.30	2,310	1,896	26.0	0.89	5.9	246	0.37	0.26	60	54.7	1.51	134	112
9		5.9	5.7	0.37	2,322	1,782	22.0	1.06	4.6	242	0.39	0.22	62	58.9	1.46	163	100
10		6.2	4.5	0.32	2,211	1,715	20.0	1.11	4.9	247	0.36	0.27	66	61.8	1.38	144	128
11		6.2	3.9	0.62	2,201	1,685	22.0	1.00	5.9	244	0.36	0.27	65	62.8	1.40	268	144
12		6.0	5.3	0.31	2,294	1,810	20.0	1.15	3.6	241	0.36	0.28	64	63.4	1.44	139	108
13		6.3								236			68	63.7	1.36	143	108
14		6.5								234			69	63.8	1.33	138	116
15		5.7	3.7	0.48	2,126	1,668	20.0	1.06	5.3	247	0.35	0.27	61	64.9	1.50	190	136
16		6.0	5.4	0.37	2,227	1,666	19.0	1.17	2.9	229	0.36	0.31	64	64.0	1.43	156	104
17		5.7	4.6	0.53	2,201	1,753	18.0	1.22	1.3	243	0.37	0.30	60	66.5	1.52	218	112
18		5.7	4.8	0.29	2,166	1,739	23.0	0.94	2.2	242	0.39	0.31	60	65.9	1.51	121	108
19		5.8	4.2	0.33	2,036	1,629	21.0	0.97	4.5	274	0.30	0.24	61	65.4	1.49	129	116
20		6.3								241			66	65.7	1.37	152	108
21		6.2								232			66	66.1	1.38	114	116
22		5.7	5.1	0.34	1,830	1,443	23.0	0.80	4.8	236	0.32	0.25	61	62.4	1.52	115	84
23		5.5	4.2	0.38	1,830	1,438	15.0	1.22	3.7	235	0.29	0.23	58	64.1	1.57	124	100
24		5.2	4.0	0.38	1,851	1,456	15.0	1.23	2.4	237	0.32	0.25	56	54.0	1.65	120	100
25		5.2	5.1	0.39	1,864	1,478	15.0	1.24	3.2	239	0.34	0.27	56	50.5	1.65	125	80
26		5.4	4.9	0.33	1,937	1,549	16.0	1.21	2.6	238	0.36	0.28	57	50.8	1.61	113	88
27		6.5								239			70	50.6	1.32	139	88
28		6.3								243			67	49.9	1.36	136	92
29		5.5	4.8	0.32	1,937	1,576	16.0	1.21	4.6	242	0.33	0.27	53	47.7	1.58	114	92
30		5.6	4.5	0.50	1,926	1,574	16.0	1.20	5.1	241	0.30	0.25	53	47.2	1.55	181	100
31		5.5	4.2	0.39	1,976	1,635	17.0	1.16	0.9	253	0.33	0.27	54	44.3	1.57	146	108
Total	48	182.6	101.4	8.27	46,110	36,272	433.0	23.84	87.6	7,539	7.67	5.91	1,922	1783.7	45.54	4,336	3,344
Max.	48	6.6	5.7	0.62	2,322	1,896	26.0	1.24	5.9	274	0.39	0.31	70	66.5	1.65	268	144
Min.	48	5.2	3.7	0.29	1,830	1,438	15.0	0.80	0.9	229	0.29	0.22	53	34.0	1.31	86	80
Avg.	48	5.9	4.6	0.38	2,096	1,649	19.7	1.08	4.0	243	0.35	0.27	62	57.5	1.47	140	108
Count	1	31.0	22.0	22.00	22	22	22.0	22.00	22.0	31	22.00	22.00	31	31.0	31.00	31	31

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

JANUARY 1996 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mgIL
1	7.0	7.8	12	135		1.35	0.000	7	79	12.1	136	8	95	93		
2	7.4	7.4	13	166		1.53	0.000	5	64			18	92	97		<0.0002
3	7.4	7.3	13	170		1.57	0.000	5	65	10.6	139	2	92	95		
4		7.3	14	175	0.73	1.50	0.014	8	100			23	89	94	84	
5	7.3	7.2	12	146		1.46	0.000	9	110			5	89	94		
6	7.5	7.5	9	102		1.36	0.033	4	45			18	95	97		
7	7.6	7.8	11	120		1.31	0.001	4	44			10	96	97		
8	7.7	7.4	9	113		1.51		4	50	14.2	179	11	94	98		<0.0002
9	7.6	7.5	11	134	0.54	1.46	0.000	8	97			12	93	96	81	
10	7.5	7.4	13	150		1.38	0.000	7	81	16.4	189	20	94	97		
11			13	152		1.40		10	117				93	96		
12			10	120		1.44		10	120				95	96		
13	7.9	7.3	10	113		1.36	0.000	8	91				95	96		
14	6.9	7.4	12	133		1.33	0.013	8	89			5	93	96		
15	8.0	7.5	17	213		1.50	0.000	8	100			8	92	97		<0.0002
16	7.4	7.4	12	143		1.43	0.000	11	131	14.7	175	22	94	95		<0.0002
17	5.9	7.4	17	216	0.45	1.52	0.000	14	177			2	93	95	90	
18	7.0	7.5	10	126		1.51	0.000	8	101	14.6	184	4	95	97		
19	8.0	7.6	22	273		1.49	0.000	11	137			11	86	93		
20	8.4	7.6	12	137		1.37	0.000	9	103			7	91	94		
21	8.0	7.5	13	150		1.38	0.000	8	92	15.9	183	8	93	96		
22	8.2	7.6	14	177		1.52	0.000	7	89			5	89	95		
23	7.2	7.6	10	131	0.99	1.57		8	105			8	94	95	73	
24	7.1	7.6	20	275		1.65	0.004	10	138	14.0	193	41	89	94		
25	7.2	7.9	16	220		1.65	0.000	12	165			166	89	93		
26	7.0	7.5	9	121		1.61	0.001	7	94			30	92	95		
27	6.9	7.6	15	165		1.32	0.001	10	110			28	89	95		
28	8.3	7.5	9	102		1.36	0.008	9	102	13.6	154	15	96	96		
29	8.2	7.9	11	145		1.58	0.012	9	119			81	94	95		
30	8.1	7.8	9	116		1.55	0.002	11	142			18	98	97		
31	7.0	7.9	16	210		1.57	0.000	14	183			56	93	94		
Total	209.7	218.7	394	4,850	2.71	45.54	0.089	263	3,239	126.1	1,532	642	2,872	2,958	328	<0.0002
Max.	8.4	7.9	22	275	0.99	1.65	0.033	14	183	16.4	193	166	98	98	90	<0.0002
Min.	5.9	7.2	9	102	0.45	1.31	0.000	4	44	10.6	136	2	86	93	73	<0.0002
Avg.	7.5	7.5	13	156	0.68	1.47	0.003	8	104	14.0	170	G 13	93	95	82	<0.0002
Count	28.0	29.0	31	31	4.00	31.00	27.000	31	31	9.0	9	28	31	31	4	4

G = Geometric Mean

Sample taken 01/16/96 - zinc 0.05 mg/L and copper <0.01

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JANUARY 1996 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hours	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1	2,700	2,760	780	18	242	14	300	7,500	3.6	72	6.1	12.00	10.45	40.00
2	3,800	3,000	620	18	242	12	327	7,500	4.0	72	6.0		9.76	43.60
3	5,200	3,000	720	18	322	10	409	7,500	3.9	75	6.0	12.12	11.40	54.53
4	2,900	3,000	580	19	161	12	409	7,500	3.8	75	6.1	12.26	12.02	54.53
5	4,200	3,000	620	24	322	13	409	9,000	3.9	74	6.0	12.20	12.04	45.44
6	4,200	3,000	650	24	242	13	409	7,800	3.9	75	5.9	12.68	12.51	52.44
7	4,700	2,880	580	24	242	13	409	7,500	3.8	72	6.7	12.65	12.43	54.53
8	4,200	2,880	550	25	161	13	327	7,500	4.0	75	5.9	12.53	12.50	43.60
9	3,800	2,880	640	15	322	14	327	7,500	4.0	71	6.2	12.29	11.76	43.60
10	3,000	2,880	620	15	322	25	300	7,500	4.1	75	6.0	12.26	11.74	40.00
11	3,100	2,760	760	16	242	11	327	6,000	3.8	72	6.1			54.50
12	5,200	3,000	780	19	322	13	409	8,000	5.1	72	6.1			51.13
13	2,600	2,760	600	17	161	13	409	12,600	4.1	74	6.2	12.15	11.33	32.46
14	2,500	2,640	580	19	242	9	327	7,500	4.1	73	6.2	10.86	9.80	43.60
15	3,300	2,760	590	16	322	8	327	7,500	4.4	71	6.1	12.06	11.04	43.60
16	3,200	2,880	540	14	161	6	409	8,000	4.2	72	6.2	11.63	12.54	51.13
17	1,300	2,760	680	20	161	16	382	7,500	4.5	75	6.0	12.04	11.38	50.93
18	1,700	2,760	660	18	322	6	572	7,000	6.5	55	6.0	12.63	12.51	81.71
19	2,600	2,880	550	21	161	6	354	7,000	4.8	71	6.3	12.14	12.68	50.57
20	6,000	2,760	440	20	242	7	300	7,000	3.9	75	6.1	11.96	11.08	42.86
21	3,500	2,760	590	21	242	8	300	7,000	4.0	75	6.1	11.77	12.27	42.86
22	2,800	2,640	860	20	242	5	327	7,000	4.3	75	6.1		11.77	46.71
23	3,300	2,760	650	15	242	7	245	7,000	4.1	75	6.2	12.03	11.09	35.00
24	2,700	2,880	590	19	161	5	327	6,000	5.2	74	6.2	12.06	11.66	54.50
25	3,300	2,880	660	8	81	8	382	7,250	4.9	76	5.9	12.24	12.05	52.69
26	3,000	2,760	620	14	322	6	382	6,000	4.5	76	6.2	12.19	12.04	63.67
27	3,700	2,880	670	13	242	6	300	6,000	5.1	76	6.2	12.35	12.09	50.00
28	3,400	2,760	500	13	242	7	354	6,000	4.4	77	5.9	12.20	11.87	59.00
29	4,000	2,760	530	11	322	5	164	3,000	4.3	73	6.7			54.67
30	4,300	2,880	520	14	322	11	273	6,000	4.8	75	6.7		11.68	45.50
31	5,000	3,000	700	15	242	9	354	6,000	4.8	74	5.8	12.39	12.04	59.00
Total	109,200	88,200	19,430	543	7,574	311	10,850	222,150	134.8	2,272	190.2	303.69	327.53	1538.36
Max.	6,000	3,000	860	25	322	25	572	12,600	6.5	77	6.7	12.68	12.68	81.71
Min.	1,300	2,640	440	8	81	5	164	3,000	3.6	55	5.8	10.86	9.76	32.46
Avg.	3,523	2,845	627	18	244	10	350	7,166	4.3	73	6.1	12.15	11.70	49.62

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

FEBRUARY 1996 - PLANT INFLUENT SHEET

Day	Weather Type	Weather Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	Remarks or Other Parameters
1			1.56	54	7.7	172	2,238	148	1,926	4.10	53	128		
2			1.53	52	7.7	173	2,208	136	1,735			124		
3			1.40	52	7.6	202	2,359	188	2,195			148		
4			1.39	52	7.5	173	2,006	148	1,716			132		
5			1.59	52	7.5	190	2,520	216	2,864			196		
6			1.49	54	7.6	182	2,262	238	2,958	4.70	58	184		
7	Rain	0.04	1.42	54	8.4	210	2,487	132	1,563			120	13.8	
8	Rain	0.12	1.40	54	7.5	184	2,148	132	1,541			124	14.5	
9			1.43	54	7.9	192	2,290	160	1,908			136		
10	Rain	0.14	1.34	54	7.5			232	2,593			232		
11			1.34	54	7.7	148	1,654	120	1,341	3.90	44	112		
12	Snow	0.01	1.47	54	7.6	182	2,231	176	2,158			148	13.5	
13	Snow	0.11	1.43	54	7.6	193	2,302	180	2,147			144		
14	Snow	0.02	1.45	54	7.6	217	2,624	204	2,467			192		
15	Snow	0.03	1.46	55	7.6	203	2,472	172	2,094			152		
16	Snow	0.03	1.39	54	7.5	225	2,608	300	3,478			252		
17			1.27	54	7.8	186	1,970	180	1,907			152		
18	Snow	0.02	1.30	52	7.6	194	2,103	236	2,559			192		
19	Rain	0.02	1.43	52	7.6	170	2,027	140	1,670			132	14.6	
20	Rain	0.02	1.42	54	7.6	176	2,084	202	2,392	3.90	46	200		
21			1.41	54	7.4	216	2,540	172	2,023			148	14.2	
22			1.50	54	7.4	194	2,427	128	1,601			104		
23			1.43	54	7.4	173	2,063	128	1,527			120		
24			1.36	52	7.6	190	2,155	156	1,769			128		
25	Rain	0.30	1.35	54	7.6	142	1,599	144	1,621			124	13.1	
26	Rain	0.71	1.46	54	7.5	148	1,802	128	1,559			104	13.5	
27	Rain	0.23	1.53	54	7.6	138	1,761	158	2,016			132		
28			1.47	54	7.9	147	1,802	154	1,888			128	14.2	
29			1.49	54	7.7	133	1,653	112	1,392			104		
30														
31														
Total	0	1.80	41.51	1,553	221.2	5,053	60,394	4,920	58,606	16.60	202	4,292	111.4	
Max.	0	0.71	1.59	55	8.4	225	2,624	300	3,478	4.70	58	252	14.6	
Min.	0	0.01	1.27	52	7.4	133	1,599	112	1,341	3.90	44	104	13.1	
Avg.	0	0.13	1.43	54	7.6	180	2,157	170	2,021	4.15	50	148	13.9	
Count	14	14.00	29.00	29	29.0	28	28	29	29	4.00	4	29	8.0	

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

FEBRUARY 1996 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
Day												
1	121	1,574	96	1,249	4.60	60	92		1.56	30	35	-12
2	136	1,735	92	1,174			64		1.53	21	32	
3	136	1,588	72	841			60		1.40	33	62	
4	103	1,194	68	788			64		1.39	40	54	
5	94	1,246	72	955			64		1.59	51	67	
6	105	1,305	68	845	1.80	22	60		1.49	42	71	62
7	126	1,492	64	758			64	16.6	1.42	40	52	
8	109	1,273	68	794			64	16.3	1.40	41	48	
9	157	1,872	92	1,097			80		1.43	18	43	
10			84	939			84		1.34		64	
11	140	1,565	72	805	1.60	18	68		1.34	5	40	59
12	129	1,582	96	1,177			84	17.3	1.47	29	45	
13	128	1,527	80	954			64		1.43	34	56	
14	151	1,826	88	1,064			88		1.45	30	57	
15	246	2,995	84	1,023			76		1.46	-21	51	
16	153	1,774	83	962			68		1.39	32	72	
17	149	1,578	68	720			48		1.27	20	62	
18	133	1,442	72	781			52		1.30	31	69	
19	136	1,622	76	906			72	17.3	1.43	20	46	
20	125	1,480	88	1,042	1.50	18	84		1.42	29	56	62
21	158	1,858	84	988			72	18.9	1.41	27	51	
22	135	1,689	84	1,051			72		1.50	30	34	
23	117	1,395	104	1,240			88		1.43	32	19	
24	134	1,520	112	1,270			100		1.36	29	28	
25	106	1,193	48	540			36	14.2	1.35	25	67	
26	96	1,169	72	877			70	14.5	1.46	35	44	
27	121	1,544	84	1,072			80		1.53	12	47	
28	149	1,827	84	1,030			74	19.6	1.47	-1	45	
29	147	1,827	80	994			72		1.49	-11	29	
30												
31												
Total	3,740	44,692	2,335	27,936	9.50	118	2,064	134.7	41.51	703	1,446	171
Max.	246	2,995	112	1,270	4.60	60	100	19.6	1.59	51	72	62
Min.	94	1,169	48	540	1.50	18	36	14.2	1.27	-21	19	-12
Avg.	134	1,596	81	963	2.38	29	71	16.8	1.43	25	50	43
Count	28	28	29	29	4.00	4	29	8.0	29.00	28	29	4

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

FEBRUARY 1996 - ACTIVATED SLUDGE SHEET

Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	5.5	5.0	0.31	2,067	1,702	18.0	1.15	2.0	248	0.32	0.26	56	42.5	1.56	121	96
2		5.6	5.4	0.33	2,115	1,752	20.0	1.06	2.6	258	0.31	0.25	58	44.0	1.53	136	92
3		6.2								246			63	44.7	1.40	136	72
4		6.2								248			62	41.7	1.39	103	68
5		5.4	5.8	0.26	1,855	1,574	16.0	1.16	6.4	245	0.27	0.23	55	37.5	1.59	94	72
6		5.8	6.5	0.29	1,839	1,529	15.0	1.23	5.8	236	0.31	0.26	59	37.1	1.49	105	68
7		6.1	7.4	0.32	1,862	1,572	16.0	1.16	4.2	223	0.33	0.28	78	36.5	1.42	126	64
8		6.2	7.3	0.26	1,928	1,648	15.0	1.29	3.7	224	0.29	0.24	80	36.5	1.40	109	68
9		6.0	5.1	0.39	1,873	1,606	20.0	0.94	5.2	223	0.28	0.24	70	36.7	1.43	157	92
10		6.4								226			72	32.9	1.34		84
11		6.4								221			72	30.2	1.34	140	72
12		5.9								234			68	33.9	1.47	129	96
13		6.0	6.5	0.28	2,081	1,801	18.0	1.16	3.0	236	0.35	0.29	70	37.2	1.43	128	80
14		5.9	5.8	0.34	2,056	1,792	18.0	1.14	1.7	229	0.35	0.31	70	38.0	1.45	151	88
15		5.9	6.2	0.54	2,125	1,861	15.0	1.42	1.7	234	0.32	0.28	68	37.1	1.46	246	84
16		6.2	6.6	0.32	2,113	1,849	15.0	1.41	2.6	239	0.32	0.27	72	36.6	1.39	153	83
17		6.8								235			78	8.0	1.27	149	68
18		6.6								233			76	36.7	1.30	133	72
19		6.0								226			70	28.5	1.43	136	76
20		6.1	7.2	0.23	2,514	2,186	21.0	1.20	2.3	221	0.38	0.33	72	47.9	1.42	125	88
21		6.1	7.2	0.31	2,367	2,031	16.0	1.48	3.0	232	0.40	0.34	72	52.3	1.41	158	84
22		5.7	6.4	0.29	2,258	1,958	16.0	1.41	2.2	240	0.37	0.32	68	52.0	1.50	135	84
23		6.0	5.3	0.25	2,182	1,889	18.0	1.21	3.7	221	0.35	0.31	70	52.0	1.43	117	104
24		6.3								232			74	40.1	1.36	134	112
25		6.4								229			76	0.0	1.35	106	48
26		5.9	7.9	0.19	2,320	2,006	21.0	1.10	4.5	238	0.39	0.33	66	41.1	1.46	96	72
27		5.6	6.0	0.28	2,131	1,818	19.0	1.12	4.9	238	0.34	0.29	62	46.7	1.53	121	84
28		5.9	5.9	0.36	2,018	1,715	20.0	1.01	4.0	247	0.33	0.28	64	48.3	1.47	149	84
29		5.8	6.1	0.37	2,036	1,651	19.0	1.07	4.8	248	0.31	0.26	62	48.1	1.49	147	80
30																	
31																	
Total	48	175.0	119.5	5.91	39,740	33,940	336.0	22.71	68.3	6,810	6.32	5.37	1,983	1104.8	41.51	3,740	2,335
Max.	48	6.8	7.9	0.54	2,514	2,186	21.0	1.48	6.4	258	0.40	0.34	80	52.3	1.59	246	112
Min.	48	5.4	5.0	0.19	1,839	1,529	15.0	0.94	1.7	221	0.27	0.23	55	0.0	1.27	94	48
Avg.	48	6.0	6.3	0.31	2,092	1,786	17.7	1.20	3.6	235	0.33	0.28	68	38.1	1.43	134	81
Count	1	29.0	19.0	19.00	19	19	19.0	19.00	19.0	29	19.00	19.00	29	29.0	29.00	28	29

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

FEBRUARY 1996 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mgIL
1	7.3	7.5	18	234	1.67	1.56	0.000	12	156			12	88	93	59	
2	7.5	7.5	21	268		1.53	0.001	12	153			265	85	93		
3	7.9	7.5	19	222		1.40	0.000	12	140			142	90	94		
4	8.0	7.5	16	185		1.39	0.000	10	116			320	89	94		
5	9.0	7.5	17	225		1.59	0.000	10	133			144	92	95		<0.0002
6	8.5	7.5	12	149	0.39	1.49	0.000	8	99			2	95	96	92	
7	7.5	7.5	12	142		1.42	0.000	8	95	15.6	185	2	91	96		
8	6.9	7.6	13	152		1.40	0.000	10	117	16.6	194	42	90	95		
9	8.1	7.8	6	72		1.43	0.005	9	107			5	96	95		
10	6.5	7.5	20	224		1.34	0.000					24	91			
11	7.1	7.4	20	224	0.49	1.34	0.000	16	179			146	83	89	87	<0.0002
12	7.2	7.4	20	245		1.47	0.000	14	172	15.3	188	8	89	92		
13	6.8	7.4	13	155		1.43	0.000	11	131			8	93	94		
14	6.6	7.5	27	327		1.45	0.000	18	218			16	87	92		<0.0002
15	6.3	7.5	25	304		1.46	0.000	19	231			800	85	91		
16	6.9	7.4	19	220		1.39	0.000	15	174			2	94	93		
17	7.3	7.4	20	212		1.27	0.000	14	148			5	89	92		
18	7.9	7.6	17	184		1.30	0.000	8	87			3	93	96		
19	7.1	7.4	13	155		1.43	0.000	10	119	15.8	188	2	91	94		
20	6.7	7.3	18	213	0.31	1.42	0.000	11	130			3	91	94	92	
21	7.0	7.2	25	294		1.41	0.000	13	153	17.6	207	5	85	94		<0.0002
22	6.8	7.3	22	275		1.50	0.000	18	225			7	83	91		
23	7.0	7.3	23	274		1.43	0.000	12	143			2	82	93		
24	7.7	7.7	25	284		1.36	0.000	12	136			12	84	94		
25	7.8	7.5	8	90		1.35	0.000	10	113	14.2	160	5	94	93		
26	7.4	7.4	11	134		1.46	0.001	7	85	14.8	180	5	91	95		
27	7.6	7.4	12	153		1.53	0.000	8	102			4	92	94		
28	7.7	7.6	17	208		1.47	0.000	10	123	18.3	224	6	89	93		
29	7.7	7.5	16	199		1.49	0.000	12	149			4	86	91		
30																
31																
Total	213.8	216.6	505	6,024	2.86	41.51	0.007	329	3,934	128.2	1,526	2,001	2,588	2,616	330	<0.0002
Max.	9.0	7.8	27	327	1.67	1.59	0.005	19	231	18.3	224	800	96	96	92	<0.0002
Min.	6.3	7.2	6	72	0.31	1.27	0.000	7	85	14.2	160	2	82	89	59	<0.0002
Avg.	7.4	7.5	17	208	0.72	1.43	0.000	12	141	16.0	191	G 12	89	93	83	<0.0002
Count	29.0	29.0	29	29	4.00	29.00	29.000	28	28	8.0	8	29	29	28	4	4

G = Geometric Mean

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

FEBRUARY 1996 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hours	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1	4,900	2,880	2,630	13	322	10	350	6,000	4.6	79	5.7	12.15	12.60	58.33
2	5,700	3,120	3,690	10	322	11	297	5,900	4.2	76	5.7	12.41	12.05	50.34
3	5,800	2,880	790	5	322	11	270	5,000	4.4	79	5.9	12.50	11.95	54.00
4	5,300	2,760	470	9	322	9	270	5,000	5.1	79	5.8	11.90	10.77	54.00
5	4,800	2,880	870	9	322	10	350	6,000	5.1	79	6.0	12.19	11.74	58.33
6	3,700	2,760	540	6	483	10	350	6,000	5.3	78	5.7	12.10	11.35	58.33
7	2,500	2,880	530	13	403	9	324	6,000	4.9	77	5.8	12.13	10.58	54.00
8	2,200	2,880	630	25	403	8	350	6,000	5.1	76	5.8	11.74	11.04	58.33
9	1,900	2,760	570	15	403	15	377	7,500	5.6	74	6.1	11.94	10.86	50.27
10	1,700	2,640	490	16	322	8	350	6,000	4.5	73	6.8	12.08	11.06	58.33
11	3,300	3,000	460	16	403	9	350	6,000	4.7	73	6.4	12.02	10.71	58.33
12	3,100	2,880	600	16	322	10	377	6,000	5.1	75	6.1	11.88	11.47	62.83
13	4,000	2,880	550	18	403	9	458	6,000	4.4	74	6.0	12.30	12.46	76.33
14	3,500	2,760	510	17	403	10	431	6,000	4.6	75	6.0	12.46	12.17	71.83
15	4,700	2,880	550	15	403	14	404	6,000	4.6	75	6.0	12.32	11.95	67.33
16	3,000	2,880	700	14	322	15	377	7,300	4.8	76	6.0	12.23	11.69	51.64
17	4,300	2,760	470	17	403	14	324	6,000	4.5	74	6.4	11.12	10.89	54.00
18	4,100	2,760	470	17	403	14	404	6,200	4.4	74	6.0	11.55	12.23	65.16
19	2,900	2,760	550	18	322	12	324	6,000	4.5	73	6.2	12.16	11.53	54.00
20	1,900	2,760	670	18	322	13	350	6,000	4.8	74	6.3	11.76	11.01	58.33
21	3,100	2,760	560	20	322	11	458	6,000	4.5	73	6.5	12.48	12.37	76.33
22	2,500	2,760	700	19	403	10	431	6,000	4.6	74	6.3	12.46	12.44	71.83
23	1,800	2,880	690	19	403	14	404	6,000	4.0	76	6.4	12.48	12.29	67.33
24	1,600	2,640	450	20	403	11	324	6,000	4.4	75	6.2	11.66	11.66	54.00
25	1,900	2,760	480	18	322	11	404	6,000	4.9	75	6.1	12.55	12.22	67.33
26	1,700	2,760	650	20	403	15	512	8,000	4.8	73	6.4		11.99	64.00
27	1,300	2,640	620	19	403	13	297	6,000	4.5	78	6.3	11.89	11.57	49.50
28	2,000	2,880	540	25	322	15	0	3,000	5.5	74	5.6			0.00
29	3,400	2,880	550	20	322	14	566	6,000	4.6	74	6.2		11.90	94.33
30														
31														
Total	92,600	81,720	21,980	467	10,633	335	10,483	173,900	137.0	2,185	176.7	314.46	326.55	1718.74
Max.	5,800	3,120	3,690	25	483	15	566	8,000	5.6	79	6.8	12.55	12.60	94.33
Min.	1,300	2,640	450	5	322	8	0	3,000	4.0	73	5.6	11.12	10.58	0.00
Avg.	3,193	2,818	758	16	367	12	361	5,997	4.7	75	6.1	12.09	11.66	59.27

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

MARCH 1996 - PLANT INFLUENT SHEET

Day	Weather Type	Weather Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
1	Snow	0.07	1.48	54	7.8	158	1,950	164	2,024			152		
2	Snow	0.03	1.36	54	7.7	136	1,543	100	1,134			80		
3			1.36	54	7.5	159	1,803	128	1,452			118	15.1	
4	Rain	0.29	1.49	54	7.6	164	2,038	144	1,789			124		
5			1.50	54	7.8	226	2,827	144	1,801	4.10	51	130		
6	Snow	0.16	1.44	54	7.8	149	1,789	140	1,681			130		
7			1.47	54	7.6	460	5,640	284	3,482			252	13.9	
8	Snow	0.02	1.47	54	7.6	216	2,648	132	1,618			120		
9			1.38	54	7.5	203	2,336	196	2,256			148		
10			1.36	54	7.5	183	2,076	172	1,951			146		
11			1.55	54	7.6	166	2,146	144	1,861			120	13.5	
12			1.49	54	7.5	171	2,125	131	1,628			123		
13			1.49	54	7.6	187	2,324	140	1,740			124		
14			1.57	54	7.5	177	2,318	160	2,095	3.80	50	152		
15			1.47	54	7.4	161	1,974	104	1,275			80		
16			1.32	54	7.5	176	1,938	180	1,982			150		
17			1.34	54	7.7	148	1,654	138	1,542			118		
18			1.50	54	7.5	194	2,427	182	2,277			158		
19	Snow	0.04	1.44	54	7.6	171	2,054	121	1,453	3.80	46	106	14.6	
20			1.48	54	7.6	273	3,370	288	3,555			256	14.9	
21			1.47	54	7.5	144	1,765	126	1,545			104	12.8	
22			1.38	54	7.5	170	1,957	138	1,588			114		
23			1.36	52	7.6	178	2,019	154	1,747			124		
24	Rain	0.03	1.35	52	7.6	167	1,880	138	1,554			124		
25	Snow	0.04	1.46	52	7.7	162	1,973	138	1,680	3.50	43	126		
26			1.44	53	7.6	146	1,753	143	1,717			116	13.2	
27			1.46	53	7.7	150	1,826	154	1,875			132		
28			1.46	53	7.6	162	1,973	152	1,851			132		
29			1.35	54	7.5	157	1,768	364	4,098			276		
30			1.31	54	7.5	173	1,890	272	2,972			224		
31	Rain	0.03	1.26	54	7.5	146	1,534	232	2,438			180		
Total	0	0.71	44.26	1,665	235.2	5,633	67,317	5,203	61,662	15.20	189	4,439	98.0	
Max.	0	0.29	1.57	54	7.8	460	5,640	364	4,098	4.10	51	276	15.1	
Min.	0	0.02	1.26	52	7.4	136	1,534	100	1,134	3.50	43	80	12.8	
Avg.	0	0.08	1.43	54	7.6	182	2,172	168	1,989	3.80	47	143	14.0	
Count	9	9.00	31.00	31	31.0	31	31	31	31	4.00	4	31	7.0	

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

MARCH 1996 - PRIMARY EFFLUENT SHEET

Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	136	1,679	84	1,037			84		1.48	14	49	
2	122	1,384	100	1,134			76		1.36	10	0	
3	126	1,429	70	794			68	16.7	1.36	21	45	
4	129	1,603	72	895			68		1.49	21	50	
5			78	976	1.90	24	68		1.50		46	54
6	114	1,369	72	865			68		1.44	23	49	
7	195	2,391	84	1,030			76	16.8	1.47	58	70	
8	185	2,268	100	1,226			72		1.47	14	24	
9	139	1,600	100	1,151			76		1.38	32	49	
10	125	1,418	96	1,089			82		1.36	32	44	
11	72	931	102	1,319			94	15.2	1.55	57	29	
12	140	1,740	76	944			72		1.49	18	42	
13	143	1,777	102	1,268			94		1.49	24	27	
14	63	825	80	1,048	2.70	35	80		1.57	64	50	29
15	83	1,018	88	1,079			20		1.47	48	15	
16	125	1,376	80	881			66		1.32	29	56	
17	103	1,151	68	760			64		1.34	30	51	
18	108	1,351	76	951			70		1.50	44	48	
19	108	1,297	80	961	2.10	25	76	14.6	1.44	37	34	45
20	132	1,629	82	1,012			78	15.1	1.48	52	72	
21	114	1,398	74	907			64	15.6	1.47	21	41	
22	111	1,278	92	1,059			74		1.38	35	33	
23	126	1,429	84	953			68		1.36	29	45	
24	116	1,306	96	1,081			92		1.35	31	30	
25	115	1,400	116	1,412	2.90	35	104		1.46	29	16	17
26	122	1,465	72	865			68	15.1	1.44	16	50	
27	125	1,522	76	925			76		1.46	17	51	
28	119	1,449	86	1,047			80		1.46	27	43	
29	115	1,295	104	1,171			94		1.35	27	71	
30	125	1,366	90	983			84		1.31	28	67	
31	111	1,166	92	967			78		1.26	24	60	
Total	3,647	43,308	2,672	31,787	9.60	120	2,334	109.1	44.26	912	1,357	145
Max.	195	2,391	116	1,412	2.90	35	104	16.8	1.57	64	72	54
Min.	63	825	68	760	1.90	24	20	14.6	1.26	10	0	17
Avg.	122	1,444	86	1,025	2.40	30	75	15.6	1.43	30	44	36
Count	30	30	31	31	4.00	4	31	7.0	31.00	30	31	4

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

MARCH 1996 - ACTIVATED SLUDGE SHEET

Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	5.8	5.4	0.35	1,862	1,590	17.0	1.10	5.7	246	0.27	0.25	62	44.6	1.48	136	84
2		6.3								246			67	42.7	1.36	122	100
3		6.3								238			67	42.4	1.36	126	70
4		5.8	5.6	0.37	1,682	1,453	17.0	0.99	5.5	230	0.27	0.24	65	32.9	1.49	129	72
5		5.7	5.5	0.00	1,793	1,569	15.0	1.20	3.2	226	0.28	0.24	66	29.9	1.50		78
6		6.0	6.4	0.29	1,834	1,586	18.0	1.02	3.3	235	0.28	0.24	68	29.9	1.44	114	72
7		5.9	5.3	0.50	1,831	1,586	19.0	0.96	6.3	164	0.30	0.26	66	30.0	1.47	195	84
8		5.9	4.9	0.44	2,000	1,738	20.0	1.00	1.0	239	0.33	0.29	66	30.6	1.47	185	100
9		6.2								239			71	30.1	1.38	139	100
10		6.3								228			69	33.0	1.36	125	96
11		5.6	4.7	0.17	2,063	1,781	20.0	1.03	3.6	224	0.34	0.30	60	29.3	1.55	72	102
12		5.8	6.9	0.31	2,181	1,897	20.0	1.09	1.8	218	0.37	0.32	62	29.8	1.49	140	76
13		5.8	5.3	0.31	2,235	1,945	21.0	1.06	1.7	216	0.36	0.31	62	29.9	1.49	143	102
14		5.5	6.5	0.14	2,260	1,970	17.0	1.33	1.6	215	0.36	0.31	59	30.0	1.57	63	80
15		5.9	6.3	0.17	2,258	1,965	22.0	1.03	1.9	223	0.40	0.35	66	27.6	1.47	83	88
16		6.5								219			74	25.4	1.32	125	80
17		6.4								212			75	25.4	1.34	103	68
18		5.7	7.3	0.22	2,320	2,013	21.0	1.10	4.8	218	0.36	0.31	65	34.9	1.50	108	76
19		6.0	6.8	0.23	2,196	1,889	20.0	1.10	5.2	216	0.35	0.30	68	36.8	1.44	108	80
20		5.8	6.4	0.29	2,165	1,849	19.0	1.14	5.3	224	0.34	0.29	65	37.1	1.48	132	82
21		5.9	7.2	0.25	2,190	1,876	21.0	1.04	4.8	221	0.35	0.30	66	37.2	1.47	114	74
22		6.2	6.0	0.23	2,138	1,834	20.0	1.07	5.7	220	0.34	0.29	70	36.7	1.38	111	92
23		6.3								219			71	36.8	1.36	126	84
24		6.4								191			74	35.1	1.35	116	96
25		5.9	4.5	0.26	2,100	1,773	20.0	1.05	3.8	228	0.35	0.30	69	32.8	1.46	115	116
26		6.0	7.3	0.27	2,105	1,783	22.0	0.96	5.9	207	0.34	0.29	70	35.4	1.44	122	72
27		5.9	7.1	0.29	2,183	1,765	23.0	0.95	5.0	202	0.34	0.29	69	35.5	1.46	125	76
28		5.9	6.1	0.27	2,147	1,813	23.0	0.93	3.5	199	0.36	0.31	69	34.0	1.46	119	86
29		6.4	5.6	0.23	2,186	1,849	26.0	0.84	3.1	194	0.33	0.28	74	33.0	1.35	115	104
30		6.6								187			77	29.4	1.31	125	90
31		6.8								192			80	27.3	1.26	111	92
Total	48	187.6	127.0	5.60	43,729	37,524	421.0	21.99	82.7	6,736	7.02	6.07	2,112	1025.5	44.26	3,647	2,672
Max.	48	6.8	7.3	0.50	2,320	2,013	26.0	1.33	6.3	246	0.40	0.35	80	44.6	1.57	195	116
Min.	48	5.5	4.5	0.00	1,682	1,453	15.0	0.84	1.0	164	0.27	0.24	59	25.4	1.26	63	68
Avg.	48	6.1	6.0	0.27	2,082	1,787	20.0	1.05	3.9	217	0.33	0.29	68	33.1	1.43	122	86
Count	1	31.0	21.0	21.00	21	21	21.0	21.00	21.0	31	21.00	21.00	31	31.0	31.00	30	31

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

MARCH 1996 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mgIL
1	8.1	7.8	20	247		1.48	0.000	12	148			4	88	92		
2	7.5	7.6	18	204		1.36	0.000	10	113			3	82	93		
3	8.5	7.5	6	68		1.36	0.000	12	136	15.3	174	4	95	92		
4	8.1	7.6	8	99		1.49	0.000	10	124			5	94	94		
5	7.2	7.3	18	225	0.34	1.50	0.000	12	150			4	88	95	92	
6	7.1	7.5	8	96		1.44	0.000	10	120			2	94	93		
7	8.1	7.5	14	172		1.47	0.003	19	233	15.5	190	8	95	96		
8	6.2	7.5	28	343		1.47	0.000	21	257			876	79	90		
9	6.3	7.6	34	391		1.38	0.000	23	265			590	83	89		
10	6.9	7.4	24	272		1.36	0.000	17	193			2	86	91		
11	7.3	7.8	7	90		1.55	0.000	14	181	12.3	159	6	95	92		
12	6.3	7.4	20	249		1.49	0.000	15	186			3,000	85	91		
13	6.3	7.4	28	348		1.49	0.000	25	311			8	80	87		
14	6.0	7.4	26	340	0.69	1.57	0.000	29	380			8	84	84	82	
15	6.3	7.3	8	98		1.47	0.002	18	221			31	92	89		
16	7.1	7.4	18	198		1.32	0.000	15	165			4	90	91		
17	7.2	7.4	15	168		1.34	0.009	10	112			2	89	93		<0.0002
18	7.5	7.3	12	150		1.50	0.002	8	100			2	93	96		<0.0002
19	8.0	7.4	12	144	0.31	1.44	0.002	9	108	14.1	169	3	90	95	92	
20	8.2	7.3	16	197		1.48	0.000	10	123	15.8	195	3	94	96		<0.0002
21	7.8	7.4	15	184		1.47	0.000	14	172	16.3	200	2	88	90		<0.0002
22	8.2	7.6	20	230		1.38	0.000	11	127			2	86	94		
23	8.2	7.6	16	181		1.36	0.000	11	125			8	90	94		
24	7.8	7.7	10	113		1.35	0.000	10	113			4	93	94		
25	7.5	7.7	13	158	0.52	1.46	0.000	10	122			13	91	94	85	
26	8.5	7.6	10	120		1.44	0.000	10	120	14.3	172	7	93	93		
27	7.9	7.6	15	183		1.46	0.000	11	134			4	90	93		
28	7.1	7.5	10	122		1.46	0.000	11	134			4	93	93		
29	6.5	7.5	15	281		1.35	0.000	11	124			3	96	93		
30	6.9	7.5	13	142		1.31	0.000	11	120			3	95	94		
31	7.0	7.5	17	179		1.26	0.000	14	147			3	93	90		
Total	227.6	232.6	494	5,994	1.86	44.26	0.018	423	5,063	103.6	1,258	4,618	2,784	2,861	351	<0.0002
Max.	8.5	7.8	34	391	0.69	1.57	0.009	29	380	16.3	200	3,000	96	96	92	<0.0002
Min.	6.0	7.3	6	68	0.31	1.26	0.000	8	100	12.3	159	2	79	84	82	<0.0002
Avg.	7.3	7.5	16	193	0.47	1.43	0.001	14	163	14.8	180	G 7	90	92	88	<0.0002
Count	31.0	31.0	31	31	4.00	31.00	31.000	31	31	7.0	7	31	31	31	4	4

G = Geometric Mean

Sample taken 3/21/96 - zinc 0.03 mg/l & copper 0.01 mg/l

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

MARCH 1996 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hours	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1	3,200	2,880	530	27	403	16	353	6,000	5.1	75	6.1	12.54	12.34	58.83
2	3,500	2,880	650	10	403	15	378	6,000	4.4	74	6.0	10.62	10.26	63.00
3	3,000	2,760	560	15	322	13	252	6,000	4.1	73	6.0	12.61	12.43	42.00
4	2,500	2,760	660	19	403	11	302	6,000	4.8	75	6.0	12.69	12.53	50.33
5	4,000	3,000	540	18	403	14	277	6,600	4.6	74	6.2	12.64	12.52	41.97
6	5,100	2,760	500	18	483	12	126	3,500	4.9	74	6.1		11.89	36.00
7	3,200	2,880	490	19	644	10	378	6,000	4.6	75	6.1	12.32	12.99	63.00
8	4,200	3,000	600	13	242	10	302	6,400	4.0	76	6.1	12.29	9.18	47.19
9	3,500	2,880	540	14	161	8	378	6,000	4.2	77	5.9	11.33	9.66	63.00
10	2,800	2,640	570	8	161	12	327	6,000	4.8	72	6.5	11.03	9.37	54.50
11	1,900	2,880	530	31	242	14	453	6,000	4.8	77	5.7	12.51	12.20	75.50
12	1,300	2,760	480	20	161	15	302	5,000	5.0	76	5.9		11.02	60.40
13	1,100	2,520	640	25	322	14	403	6,000	4.9	78	5.9	12.23	11.41	67.17
14	800	2,880	620	27	322	8	378	8,000	4.8	77	5.9	12.10	11.22	47.25
15	1,500	2,640	2,020	30	322	9	353	6,000	3.7	67	5.9	12.39	11.97	58.83
16	1,300	2,760	470	28	322	5	252	6,000	6.5	82	6.0	11.77	10.63	42.00
17	1,300	2,520	640	14	322	22	378	6,000	5.0	79	6.1	12.13	11.09	63.00
18	1,500	2,760	510	24	322	11	453	7,000	4.7	74	6.0	12.07	11.39	64.71
19	2,900	2,760	500	18	322	10	428	6,000	5.1	73	6.2	12.43	12.32	71.33
20	3,100	2,760	580	19	161	13	378	6,000	4.5	77	6.1	12.21	12.48	63.00
21	2,500	2,760	490	21	322	12	378	6,000	4.6	77	6.0	12.36	12.28	63.00
22	2,500	2,880	520	19	242	11	428	8,000	4.8	76	5.9	12.44	12.38	53.50
23	1,100	2,760	580	10	242	9	327	6,000	4.8	75	6.2	12.43	12.13	54.50
24	800	2,520	570	27	322	8	353	6,000	4.5	75	6.1	12.50	12.26	58.83
25	2,000	3,000	490	13	322	9	378	6,000	4.4	77	5.8	12.37	11.94	63.00
26	3,300	2,880	500	15	161	8	378	6,600	4.6	76	6.1	12.22	12.27	57.27
27	3,500	2,880	490	15	242	9	378	6,000	4.0	80	6.0	12.31	12.25	63.00
28	500	2,640	510	15	161	10	504	6,000	4.4	78	5.8	12.53	12.40	84.00
29	1,000	2,760	660	17	242	9	428	7,100	4.7	68	5.8		12.37	60.28
30	500	2,520	540	16	242	8	378	6,000	4.2	79	5.7	12.56	12.39	63.00
31	2,100	2,760	530	17	242	9	428	6,000	3.7	79	5.7	12.60	12.34	71.33
Total	71,500	86,040	18,510	582	9,183	344	11,209	190,200	143.2	2,345	185.8	342.23	363.91	1824.74
Max.	5,100	3,000	2,020	31	644	22	504	8,000	6.5	82	6.5	12.69	12.99	84.00
Min.	500	2,520	470	8	161	5	126	3,500	3.7	67	5.7	10.62	9.18	36.00
Avg.	2,306	2,775	597	19	296	11	362	6,135	4.6	76	6.0	12.22	11.74	58.86

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

APRIL 1996 - PLANT INFLUENT SHEET

Day	Weather Type	Weather Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
1			1.40	53	7.5	171	1,997	174	2,032			148	13.7	
2			1.39	52	7.8	165	1,913	180	2,087			152		
3	Rain	0.02	1.38	53	7.7	158	1,818	146	1,680			140		
4	Rain	0.01	1.34	53	7.4	141	1,576	146	1,632			126		
5			1.30	54	7.6	196	2,125	160	1,735			152		
6			1.34	54	7.3	180	2,012	188	2,101			184		
7	Snow	0.04	1.30	52	7.3	165	1,789	166	1,800			140		
8	Snow	0.02	1.39	52	7.6	177	2,052	166	1,924	3.70	43	146	17.1	
9			1.41	52	7.6	173	2,034	153	1,799			138		
10			1.40	53	7.5	185	2,160	164	1,915			128	16.1	
11			1.43	52	7.7	171	2,039	174	2,075			134		
12	Rain	0.21	1.38	52		188	2,164	200	2,302			176		
13			1.29	52	7.7	154	1,657	156	1,678			140		
14	Rain	0.16	1.33	53	7.7	168	1,863	170	1,886			160	14.7	
15	Rain	0.27	1.57	52	7.6	194	2,540	264	3,457			232		
16	Rain	0.04	1.61	54	7.8	147	1,974	110	1,477			94		
17			1.57	54	7.7	148	1,938	130	1,702			116		
18	Rain	0.14	1.57	54	7.7	199	2,606	200	2,619	3.90	51	182	14.6	
19	Rain	1.36	1.45	54	7.7	135	1,633	146	1,766			126		
20			1.38	54	7.6	128	1,473	130	1,496			108		
21	Rain	0.76	1.42	53	7.6	114	1,350	112	1,326	3.40	40	94	13.8	
22	Rain	0.20	1.72	53	7.6	120	1,721	138	1,980			124		
23			1.70	53	7.6	146	2,070	120	1,701			110		
24			1.56	54	7.5	145	1,887	160	2,082			140	16.6	
25	Rain	0.22	1.55	54	7.6	204	2,637	168	2,172			150		
26			1.46	54	7.5	194	2,362	224	2,728			180		
27			1.44	54	7.8	146	1,753	132	1,585			88		
28	Rain	0.19	1.47	53	7.6	229	2,807	148	1,814	4.00	49	128		
29	Rain	0.44	1.59	52	7.6	163	2,161	184	2,440			176		
30	Rain	0.11	1.60	53	7.2	150	2,002	156	2,082			148		
31														
Total	0	4.19	43.74	1,592	220.1	4,954	60,113	4,865	59,071	15.00	183	4,260	106.6	
Max.	0	1.36	1.72	54	7.8	229	2,807	264	3,457	4.00	51	232	17.1	
Min.	0	0.01	1.29	52	7.2	114	1,350	110	1,326	3.40	40	88	13.7	
Avg.	0	0.26	1.46	53	7.6	165	2,004	162	1,969	3.75	46	142	15.2	
Count	16	16.00	30.00	30	29.0	30	30	30	30	4.00	4	30	7.0	

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

APRIL 1996 - PRIMARY EFFLUENT SHEET

Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	95	1,109	104	1,214			86	14.6	1.40	44	40	
2	127	1,472	72	835			72		1.39	23	60	
3	114	1,312	80	921			80		1.38	28	45	
4	86	961	80	894			76		1.34	39	45	
5	102	1,106	72	781			72		1.30	48	55	
6	112	1,252	60	671			60		1.34	38	68	
7	94	1,019	58	629			58		1.30	43	65	
8	75	869	62	719	1.50	17	56	16.5	1.39	58	63	59
9	102	1,199	74	870			58		1.41	41	52	
10	114	1,331	96	1,121			68	19.5	1.40	38	41	
11	85	1,014	58	692			34		1.43	50	67	
12	93	1,070	44	506			40		1.38	51	78	
13	87	936	54	581			46		1.29	44	65	
14	87	965	44	488			40	15.5	1.33	48	74	
15	109	1,427	92	1,205			72		1.57	44	65	
16	98	1,316	44	591			32		1.61	33	60	
17	95	1,244	82	1,074			70		1.57	36	37	
18	82	1,074	68	890	2.30	30	56	14.0	1.57	59	66	41
19	89	1,076	50	605			46		1.45	34	66	
20	74	852	46	529			34		1.38	42	65	
21	80	947	42	497	1.00	12	36	14.1	1.42	30	63	71
22	72	1,033	40	574			34		1.72	40	71	
23	80	1,134	48	681			42		1.70	45	60	
24	78	1,015	34	442			30	15.1	1.56	46	79	
25	84	1,086	40	517			38		1.55	59	76	
26	98	1,193	40	487			28		1.46	49	82	
27	85	1,021	38	456			28		1.44	42	71	
28	146	1,790	42	515	1.40	17	32		1.47	36	72	65
29	107	1,419	30	398			24		1.59	34	84	
30	87	1,161	36	480			30		1.60	42	77	
31												
Total	2,837	34,404	1,730	20,862	6.20	77	1,478	109.3	43.74	1,264	1,912	236
Max.	146	1,790	104	1,214	2.30	30	86	19.5	1.72	59	84	71
Min.	72	852	30	398	1.00	12	24	14.0	1.29	23	37	41
Avg.	95	1,147	58	695	1.55	19	49	15.6	1.46	42	64	59
Count	30	30	30	30	4.00	4	30	7.0	30.00	30	30	4

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

APRIL 1996 - ACTIVATED SLUDGE SHEET

Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading fIm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	6.2	5.6	0.19	2,275	1,904	30.0	0.76	3.5	194	0.33	0.28	71	26.3	1.40	95	104
2		6.2	8.3	0.25	2,327	1,941	29.0	0.80	4.0	187	0.35	0.29	71	31.8	1.39	127	72
3		6.2	7.6	0.22	2,350	1,976	30.0	0.78	2.2	219	0.34	0.28	72	35.1	1.38	114	80
4		6.4	7.9	0.16	2,354	2,011	39.0	0.60	3.8	253	0.35	0.30	74	34.5	1.34	86	80
5		6.6								250			76	34.8	1.30	102	72
6		6.4								206			70	32.7	1.34	112	60
7		6.6								215			71	32.6	1.30	94	58
8		6.2	7.8	0.18	1,884	1,598	24.0	0.79	5.6	217	0.29	0.24	70	34.7	1.39	75	62
9		6.1	6.5	0.25	1,876	1,581	20.0	0.94	4.4	236	0.31	0.25	68	33.3	1.41	102	74
10		6.2	4.9	0.29	1,817	1,521	20.0	0.91	1.8		0.39	0.33	68	30.4	1.40	114	96
11		6.0	8.4	0.21	1,934	1,618	20.0	0.97	3.2		0.47	0.40	66	31.6	1.43	85	58
12		6.2	11.9	0.21	2,021	1,684	21.0	0.96	2.8	199	0.42	0.35	69	31.2	1.38	93	44
13		6.7								256			73	34.9	1.29	87	54
14		6.5								218			71	34.9	1.33	87	44
15		5.5	4.2	0.35	1,687	1,369	14.0	1.21	4.6	221	0.25	0.19	59	37.9	1.57	109	92
16		5.4	8.0	0.34	1,571	1,288	14.0	1.12		231	0.34	0.28	59	20.3	1.61	98	44
17		5.5	3.7	0.38	1,314	1,080	14.0	0.94	4.8	264	0.23	0.19	61	34.3	1.57	95	82
18		5.5	5.1	0.29	1,514	1,256	16.0	0.95	0.6	279	0.28	0.23	60	36.2	1.57	82	68
19		5.9	5.7	0.36	1,142	985	14.0	0.82	5.7	278	0.20	0.15	65	26.5	1.45	89	50
20		6.2								279			68	28.7	1.38	74	46
21		6.1								223			66	22.8	1.42	80	42
22		5.0	6.9	0.32	1,317	1,078	22.0	0.60	5.6	223	0.22	0.18	55	22.7	1.72	72	40
23		5.1	5.9	0.35	1,333	1,076	30.0	0.44	6.7	270	0.22	0.18	56	23.3	1.70	80	48
24		5.5	9.4	0.30	1,390	1,137	38.0	0.37	6.0	267	0.22	0.18	65	23.9	1.56	78	34
25		5.6	8.3	0.31	1,436	1,173	48.0	0.30	5.8	264	0.22	0.18	67	27.4	1.55	84	40
26		5.9	8.9	0.34	1,441	1,175	55.0	0.26	5.6	293	0.22	0.18	66	24.9	1.46	98	40
27		6.0								281			67	23.5	1.44	85	38
28		5.9								181			65	20.0	1.47	146	42
29		5.4	10.8	0.40	1,433	1,196	85.0	0.17	2.0	272	0.16	0.13	73	19.5	1.59	107	30
30		5.4	8.5	0.34	1,371	1,131	80.0	0.17	4.8	258	0.21	0.17	74	50.9	1.60	87	36
31																	
Total	48	178.4	154.2	6.06	35,787	29,778	663.0	14.85	83.5	6,734	6.02	4.96	2,016	901.6	43.74	2,837	1,730
Max.	48	6.7	11.9	0.40	2,354	2,011	85.0	1.21	6.7	293	0.47	0.40	76	50.9	1.72	146	104
Min.	48	5.0	3.7	0.16	1,142	985	14.0	0.17	0.6	181	0.16	0.13	55	19.5	1.29	72	30
Avg.	48	5.9	7.3	0.29	1,704	1,418	31.6	0.71	4.2	241	0.29	0.24	67	30.1	1.46	95	58
Count	1	30.0	21.0	21.00	21	21	21.0	21.00	20.0	28	21.00	21.00	30	30.0	30.00	30	30

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

APRIL 1996 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mgIL
1	7.4	7.5	11	128		1.40	0.000	11	128	14.0	163	2	94	94		<0.0002
2	7.1	7.6	14	162		1.39	0.000	12	139			6	92	93		
3	6.6	7.5	11	127		1.38	0.000	11	127			324	92	93		<0.0002
4	7.3	7.7	12	134		1.34	0.000	8	89			152	92	94		
5	8.5	7.4	15	163		1.30	0.000	9	98			26	91	95		
6	8.3	7.4	5	56		1.34	0.000	8	89			14	97	96		
7	7.6	7.3	5	54		1.30	0.000	7	76			186	97	96		
8	8.3	7.5	7	81	0.25	1.39	0.000	6	70	17.0	197	200	96	97	93	
9	7.6	7.5	20	235		1.41	0.000	15	176			266	87	91		
10	6.7	7.4	14	163		1.40	0.000	15	175	21.0	245	1,000	91	92		
11	6.5	7.4	13	155		1.43	0.000	11	131			120	93	94		
12			18	207		1.38		10	115				91	95		
13	7.3	7.6	15	161		1.29	0.000	11	118			4	90	93		
14	8.2	7.7	8	89		1.33	0.000	9	100	16.8	186	6	95	95		
15	6.4	7.4	18	236		1.57	0.000	14	183			980	93	93		
16	7.0	7.5	14	188		1.61	0.000	18	242			40	87	88		
17	7.5	7.4	18	236		1.57	0.000	15	196			38	86	90		<0.0002
18	6.3	7.4	12	157	0.28	1.57	0.000	7	92	14.1	185	1,050	94	96	93	
19	8.1	7.6	8	97		1.45	0.004	7	85			6	95	95		
20	7.7	7.6	6	69		1.38	0.000	6	69			4	95	95		
21	7.9	7.6	8	95	0.14	1.42	0.000	4	47	14.3	169	2	93	96	96	
22	8.2	7.6	7	100		1.72	0.000	4	57			5	95	97		<0.0002
23	8.1	7.6	7	99		1.70	0.000	4	57			6	94	97		
24	7.9	7.6	9	117		1.56	0.002	5	65	15.2	198	150	94	97		
25	7.6	7.6	8	103		1.55	0.012	4	52			4	95	98		
26	7.6	7.3	5	61		1.46	0.011	6	73			120	98	97		
27	8.0	7.7	3	36		1.44	0.000	4	48			6	98	97		
28	8.3	7.7	5	61	0.19	1.47	0.000	3	37			100	97	99	95	
29	5.3	7.2	66	875		1.59	0.000	18	239				64	89		
30	6.4	7.2	34	454		1.60	0.000	16	214				78	89		
31																
Total	215.7	217.5	396	4,901	0.86	43.74	0.028	278	3,387	112.4	1,344	4,817	2,754	2,831	377	<0.0002
Max.	8.5	7.7	66	875	0.28	1.72	0.012	18	242	21.0	245	1,050	98	99	96	<0.0002
Min.	5.3	7.2	3	36	0.14	1.29	0.000	3	37	14.0	163	2	64	88	93	<0.0002
Avg.	7.4	7.5	13	163	0.22	1.46	0.001	9	113	16.1	192	G 35	92	94	94	<0.0002
Count	29.0	29.0	30	30	4.00	30.00	29.000	30	30	7.0	7	27	30	30	4	4

G = Geometric Mean

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

APRIL 1996 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hours	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1	1,800	2,760	650	14	242	10	562	6,000	4.2	93	5.7	12.51	12.39	93.67
2	1,300	2,640	610	16	242	4	499	5,000	3.5	80	5.9	12.51	12.40	99.80
3	800	2,640	1,190	10	242	6	406	5,000	3.5	80	6.1	12.48	12.40	81.20
4	2,100	3,000	570	8	322	9	406	5,000	3.4	79	5.9	12.51	12.39	81.20
5	1,900	2,880	610	10	322	8	312	5,000	3.4	77	6.3	12.59	12.30	62.40
6	1,600	2,640	630	9	322	9	437	6,000	3.6	76	6.1	12.42	12.12	72.83
7	2,000	2,640	580	8	403	7	374	6,000	3.3	78	6.4	12.16	11.60	62.33
8	2,100	2,880	470	8	322	10	468	6,600	3.5	77	6.6	12.22	12.00	70.91
9	2,100	2,640	470	9	322	7	562	6,300	3.7	75	6.3	12.62	12.36	89.21
10	1,000	2,760	520	15	322	10	499	6,000	3.9	79	6.1	12.51	12.33	83.17
11	300	2,640	490	17	322	7	468	6,000	4.0	77	6.2	12.25	12.12	78.00
12	300	2,880	470	15	322	7	437	6,000	4.1	75	6.1	12.26	12.30	72.83
13	1,200	2,760	530	16	322	9	437	6,000	4.4	75	6.0	12.63	12.48	72.83
14	1,300	2,640	550	13	403	7	468	8,000	3.8	74	5.9	12.63	12.29	58.50
15	1,400	2,640	560	26	322	8	374	6,000	4.2	76	6.3	12.28	12.21	62.33
16	2,100	2,760	540	18	322	12	437	6,000	4.2	75	6.1	12.20	11.43	72.83
17	700	2,520	490	18	322	12	437	6,000	4.4	73	5.9	12.30	11.99	72.83
18	200	2,760	670	22	242	15	437	6,000	4.3	73	6.0	12.19	11.39	72.83
19	200	2,760	490	18	322	7	499	8,700	4.5	73	5.9	12.42	12.26	57.36
20	200	2,520	450	15	322	7	437	6,000	4.6	71	5.9	12.49	12.35	72.83
21	100	2,640	450	16	322	6	468	6,000	4.1	72	6.0	12.52	12.43	78.00
22	600	2,760	480	17	322	7	468	6,000	4.6	73	5.9	12.46	12.27	78.00
23	900	2,880	370	34	322	8	468	6,800	3.6	71	6.1	12.28	11.92	68.82
24	200	2,540	370	14	322	6	499	6,000	4.3	73	5.9	12.15	12.01	83.17
25	100	2,640	520	14	242	8	530	6,000	4.2	73	6.0	12.36	12.19	88.33
26	700	2,880	610	19	242	10	499	7,000	4.0	75	6.0	12.48	12.16	71.29
27	600	2,760	540	16	242	8	530	6,200	3.5	74	6.0	12.52	12.42	85.48
28	700	2,760	480	15	242	10	468	6,000	3.8	75	6.1		12.32	78.00
29	1,100	2,760	520	23	322	10	562	6,000	3.8	73	6.6	12.45	12.20	93.67
30	1,600	2,760	520	22	242		468	6,750	3.7	75	5.9	12.49	12.24	69.33
31														
Total	31,200	81,740	16,400	475	9,102	244	13,916	184,350	118.1	2,270	182.2	359.89	365.27	2284.00
Max.	2,100	3,000	1,190	34	403	15	562	8,700	4.6	93	6.6	12.63	12.48	99.80
Min.	100	2,520	370	8	242	4	312	5,000	3.3	71	5.7	12.15	11.39	57.36
Avg.	1,040	2,725	547	16	303	8	464	6,145	3.9	76	6.1	12.41	12.18	76.13

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

MAY 1996 - PLANT INFLUENT SHEET

Day	Weather Type	Weather Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
1			1.65	54	7.2	131	1,803	112	1,541			100	13.6	
2	Rain	0.07	1.58	54	7.5	184	2,425	200	2,635	4.00	53	180	14.7	
3			1.45	54	7.6	102	1,233	124	1,500			116		
4			1.44	54	7.6	146	1,753	154	1,849			134	13.4	
5			1.41	55	7.7	115	1,352	128	1,505			122	14.5	
6			1.44	54	7.7	124	1,489	160	1,922			136	16.1	
7			1.59	55	7.8	145	1,923	182	2,413			162	12.8	
8	Rain	0.03	1.52	57	7.6	130	1,648	144	1,825			126	15.2	
9	Rain	0.83	1.64	57	7.4	149	2,038	134	1,833	4.10	56	120	13.1	
10	Rain	0.16	1.67	55	7.6	131	1,825	120	1,671			110	13.3	
11			1.51	55	7.5	109	1,373	84	1,058			78	14.6	
12			1.51	55	7.3	112	1,410	124	1,562			112	12.9	
13			1.62	55	7.5	126	1,702	134	1,810			118	13.5	
14	Rain	0.15	1.62	55	7.5	166	2,243	178	2,405			164	14.3	
15	Rain	0.23	1.65	56	7.4	111	1,527	122	1,679	3.70	51	106	14.6	
16	Rain	0.02	1.60	56	7.6	120	1,601	162	2,162			140	14.6	
17			1.49	57	7.9	177	2,200	130	1,615			110	15.3	
18			1.49	57	7.5	119	1,479	116	1,441			102	15.0	
19			1.53	57	7.3	112	1,429	96	1,225			86	10.6	
20	Rain	0.78	1.56	57	7.4	132	1,717	140	1,821			120		
21	Rain	0.03	1.55	57	7.7	91	1,176	153	1,978			136		
22			1.59	55	7.6	128	1,697	214	2,838			184		
23	Rain	0.14	1.57	55	7.5	99	1,296	134	1,755			112	13.7	
24			1.52	54	7.6	105	1,331	108	1,369	4.30	55	102		
25			1.44	54	8.0	94	1,129	108	1,297			98	12.1	
26			1.38	56	7.8	85	978	142	1,634			126	12.6	
27	Rain	0.18	1.46	57	7.6	119	1,449	182	2,216			164	13.1	
28			1.61	56	7.6	106	1,423	144	1,934			124	12.0	
29			1.54	57	7.5	123	1,580	186	2,389			164	14.3	
30			1.61	59	7.3	161	2,162	168	2,256			150	13.6	
31			1.62	57	7.5	214	2,891	148	2,000			144	12.6	
Total	0	2.62	47.86	1,726	234.3	3,966	51,284	4,431	57,139	16.10	214	3,946	356.1	
Max.	0	0.83	1.67	59	8.0	214	2,891	214	2,838	4.30	56	184	16.1	
Min.	0	0.02	1.38	54	7.2	85	978	84	1,058	3.70	51	78	10.6	
Avg.	0	0.24	1.54	56	7.6	128	1,654	143	1,843	4.03	54	127	13.7	
Count	11	11.00	31.00	31	31.0	31	31	31	31	4.00	4	31	26.0	

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

MAY 1996 - PRIMARY EFFLUENT SHEET

Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	99	1,362	54	743			50	15.6	1.65	24	52	
2	104	1,370	60	791	4.60	61	52	14.8	1.58	43	70	-15
3	802	9,699	44	532			42		1.45	22	65	
4	91	1,093	62	745			62	14.8	1.44	38	60	
5	78	917	64	753			58	14.9	1.41	32	50	
6	77	925	74	889			64	16.4	1.44	38	54	
7	104	1,379	64	849			56	14.7	1.59	28	65	
8	112	1,420	76	963			46	7.7	1.52	14	47	
9	135	1,846	88	1,204	4.90	67	80	14.7	1.64	9	34	-20
10	141	1,964	74	1,031			68	15.6	1.67	-8	38	
11	103	1,297	74	932			64	15.4	1.51	6	12	
12	108	1,360	100	1,259			88	15.4	1.51	4	19	
13	101	1,365	92	1,243			72	15.7	1.62	20	31	
14	139	1,878	76	1,027			68	17.1	1.62	16	57	
15	148	2,037	72	991	4.30	59	68	17.0	1.65	-33	41	-14
16	117	1,561	100	1,334			84	17.0	1.60	3	38	
17	53	659	116	1,441			94	18.5	1.49	70	11	
18	135	1,678	94	1,168			84	17.4	1.49	-13	19	
19	122	1,557	80	1,021			76	14.0	1.53	-9	17	
20	92	1,197	80	1,041			72		1.56	30	43	
21	87	1,125	80	1,034			64		1.55	4	48	
22	85	1,127	88	1,167			84		1.59	34	59	
23	76	995	88	1,152			76	15.1	1.57	23	34	
24	47	596	128	1,623	3.50	44	112		1.52	55	-19	19
25	116	1,393	98	1,177			84	14.9	1.44	-23	9	
26	80	921	80	921			72	14.2	1.38	6	44	
27	95	1,157	84	1,023			76	14.2	1.46	20	54	
28	93	1,249	124	1,665			104	14.4	1.61	12	14	
29	107	1,374	88	1,130			84	16.5	1.54	13	53	
30	133	1,786	80	1,074			68	16.7	1.61	17	52	
31	156	2,108	94	1,270			94	14.8	1.62	27	36	
Total	3,936	50,393	2,576	33,192	17.30	231	2,266	397.5	47.86	522	1,207	-30
Max.	802	9,699	128	1,665	4.90	67	112	18.5	1.67	70	70	19
Min.	47	596	44	532	3.50	44	42	7.7	1.38	-33	-19	-20
Avg.	127	1,626	83	1,071	4.33	58	73	15.3	1.54	17	39	-8
Count	31	31	31	31	4.00	4	31	26.0	31.00	31	31	4

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

MAY 1996 - ACTIVATED SLUDGE SHEET

Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading fIm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	5.2	5.2	0.43	1,296	1,070	75.0	0.17	5.9	229	0.20	0.16	79	83.5	1.65	99	54
2		5.5	4.7	0.45	1,228	1,014	71.0	0.17	3.6	264	0.18	0.15	79	103.4	1.58	104	60
3		5.9	7.6	0.29	1,350	1,096	71.0	0.19	5.5	284	0.20	0.16	85	104.4	1.45	80	44
4		6.0								252			79	105.0	1.44	91	62
5		6.1								241			79	102.1	1.41	78	64
6		6.0	4.6	0.29	1,361	1,061	44.0	0.31	6.2	246	0.21	0.16	78	100.0	1.44	77	74
7		5.4	4.7	0.43	1,338	1,083	31.0	0.43	8.3	246	0.21	0.15	70	100.0	1.59	104	64
8		5.7	4.4	0.42	1,422	1,128	23.0	0.62	5.7	244	0.23	0.17	83	68.9	1.52	112	76
9		5.3								239			63	44.5	1.64	135	88
10		5.2	5.2	0.46	1,800	1,416	25.0	0.72	1.8	259	0.38	0.30	61	41.5	1.67	141	74
11		5.7								244			67	42.3	1.51	103	74
12		5.7								259			67	40.3	1.51	108	100
13		5.3	5.3	0.27	2,191	1,658	26.0	0.84	5.5	247	0.40	0.30	59	46.8	1.62	101	92
14		5.3	6.4	0.37	2,210	1,688	24.0	0.92	4.1	246	0.42	0.31	61	52.2	1.62	139	76
15		5.2	7.0	0.38	2,310	1,775	24.0	0.96	2.6	247	0.46	0.35	60	55.3	1.65	148	72
16		5.4	5.4	0.28	2,395	1,859	25.0	0.96	1.9	242	0.47	0.36	62	66.3	1.60	117	100
17		5.8	4.8	0.12	2,325	1,799	23.0	1.01	2.4	260	0.46	0.35	66	75.8	1.49	53	116
18		5.8								262			70	74.1	1.49	135	94
19		5.6								253			70	71.9	1.53	122	80
20		5.5	6.0	0.24	2,099	1,641	20.0	1.05	2.4	285	0.41	0.32	68	74.0	1.56	92	80
21		5.6	5.9	0.22	2,032	1,691	20.0	1.02	5.9	293	0.40	0.31	69	69.6	1.55	87	80
22		5.4	5.2	0.24	2,026	1,577	19.0	1.07	5.6	291	0.38	0.29	67	71.7	1.59	85	88
23		5.5	5.2	0.22	2,005	1,541	20.0	1.00	5.2	296	0.33	0.25	68	67.8	1.57	76	88
24		5.7	3.6	0.13	1,927	1,480	20.0	0.96	6.1	277	0.34	0.26	71	58.5	1.52	47	128
25		6.0								265			74	56.9	1.44	116	98
26		6.2								261			77	56.7	1.38	80	80
27		5.9								266			73	51.7	1.46	95	84
28		5.4	3.6	0.28	1,986	1,508	19.0	1.05	5.5	254	0.37	0.28	66	53.3	1.61	93	124
29		5.6	5.5	0.27	2,094	1,708	18.0	1.16	5.1	270	0.31	0.19	69	47.7	1.54	107	88
30		5.4	5.9	0.37	2,120	1,601	19.0	1.12	3.9	261	0.38	0.28	67	51.5	1.61	133	80
31		5.3	5.1	0.43	2,160	1,628	21.0	1.03	1.9	269	0.42	0.31	66	55.6	1.62	156	94
Total	48	173.4	111.3	6.61	39,675	31,022	638.0	16.76	95.1	8,052	7.16	5.41	2,173	2093.3	47.86	3,214	2,576
Max.	48	6.2	7.6	0.46	2,395	1,859	75.0	1.16	8.3	296	0.47	0.36	85	105.0	1.67	156	128
Min.	48	5.2	3.6	0.12	1,228	1,014	18.0	0.17	1.8	229	0.18	0.15	59	40.3	1.38	47	44
Avg.	48	5.6	5.3	0.31	1,889	1,477	30.4	0.80	4.5	260	0.34	0.26	70	67.5	1.54	104	83
Count	1	31.0	21.0	21.00	21	21	21.0	21.00	21.0	31	21.00	21.00	31	31.0	31.00	31	31

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

MAY 1996 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mgIL
1	6.7	7.2	40	550		1.65	0.002	14	193	13.8	190	10	64	89		
2	6.2	7.7	52	685	0.98	1.58	0.000	14	184	12.6	166	220	74	92	76	
3	7.2	7.6	4	48		1.45	0.014	3	36			2	97	97		
4	7.7	7.6	8	96		1.44	0.022	4	48	13.0	156	2	95	97		
5	8.2	7.7	6	71		1.41	0.001	4	47	13.2	155	2	95	97		
6	8.3	7.7	6	72		1.44	0.000	2	24	12.9	155	2	96	98		
7	7.7	7.8	6	80		1.59	0.006	3	40	13.2	175	27	97	98		<0.0002
8	7.6	7.5				1.52	0.000					9				
9	7.8	7.4	13	178	0.35	1.64	0.001	8	109	12.4	170	27	90	95	91	
10	7.0	7.4	12	167		1.67	0.001	7	97	11.5	160	18	90	95		
11	7.4	7.4	12	151		1.51	0.017	5	63	12.5	157	17	86	95		
12	7.6	7.4	10	126		1.51	0.019	4	50	11.8	149	33	92	96		
13	7.9	7.5	7	95		1.62	0.013	3	41	12.7	172	6	95	98		<0.0002
14	7.3	7.4	9	122		1.62	0.015	5	68	14.2	192	10	95	97		
15	7.0	7.4	15	206	0.36	1.65	0.000	7	96	15.1	208	13	88	94	90	<0.0002
16	7.1	7.5	12	160		1.60	0.000	7	93	13.6	181	88	93	94		
17	6.9	7.5	7	87		1.49	0.003	4	50	14.9	185	14	95	98		
18	7.4	7.6	12	149		1.49	0.000	4	50	17.6	219	8	90	97		
19	7.4	7.5	6	77		1.53	0.030	3	38	10.6	135	11	94	97		
20	7.1	7.5	2	26		1.56	0.025	2	26			13	99	98		
21	7.6	7.6	4	52		1.55	0.028	2	26			9	97	98		<0.0002
22	7.7	7.6	2	27		1.59	0.000	2	27			20	99	98		
23	7.5	7.5	7	92		1.57	0.000	2	26	13.5	177	27	95	98		
24	8.0	7.5	10	127	0.24	1.52	0.000	3	38			35	91	97	94	
25	8.1	7.7	8	96		1.44	0.000	3	36	14.3	172	27	93	97		
26	7.7	7.6	7	81		1.38	0.000	2	23	12.8	147	23	95	98		
27	8.1	7.5	7	85		1.46	0.000	3	37	13.7	167	79	96	97		
28	7.9	7.4	9	121		1.61	0.000	2	27	13.1	176	40	94	98		
29	7.6	7.5	11	141		1.54	0.000	3	39	14.7	189	15	94	98		
30	7.5	7.3	11	148		1.61	0.000	7	94	15.4	207	25	93	96		
31	7.5	7.6	12	162		1.62	0.000	7	95	14.6	197	45	92	97		
Total	232.7	233.1	327	4,276	1.93	47.86	0.196	139	1,820	337.7	4,356	877	2,764	2,894	351	<0.0002
Max.	8.3	7.8	52	685	0.98	1.67	0.030	14	193	17.6	219	220	99	98	94	<0.0002
Min.	6.2	7.2	2	26	0.24	1.38	0.000	2	23	10.6	135	2	64	89	76	<0.0002
Avg.	7.5	7.5	11	143	0.48	1.54	0.006	5	61	13.5	174	G 16	92	96	88	<0.0002
Count	31.0	31.0	30	30	4.00	31.00	31.000	30	30	25.0	25	31	30	30	4	4

G = Geometric Mean

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

MAY 1996 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hours	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1	700	2,760	430	15	242	11	418	6,000	4.0	75	5.9		12.15	69.67
2	200	2,520	450	17	322	4	392	6,000	3.3	76	5.9	12.53	12.28	65.33
3	200	2,880	560	18	242	8	418	7,800	3.3	77	5.8		12.39	53.59
4	300	2,640	510	15	242	8	418	6,000	3.3	78	5.9	12.55	12.42	69.67
5	600	2,640	470	12	322	5	366	6,000	3.1	76	6.0	12.55	12.38	61.00
6	300	2,640	460	16	242	8	392	7,000	3.0	78	6.0	12.60	12.41	56.00
7	100	2,640	590	16	242	7	418	6,000	2.9	77	6.1	12.60	12.47	69.67
8	500	2,640	550	14	242	6	418	6,250	2.8	76	6.0		12.42	66.88
9	200	2,520	520	12	322	8	392	8,000	2.9	77	5.9	12.47	12.35	49.00
10	200	2,760	510	20	403	7	444	6,000	3.3	79	5.7	12.48	12.35	74.00
11	600	2,640	480	20	242	7	418	6,000	3.2	76	5.8	12.54	12.47	69.67
12	1,000	2,640	640	11	322	6	340	6,000	2.5	76	5.8	12.55	12.34	56.67
13	400	2,760	570	13	322	5	314	8,100	3.2	77	5.7	12.46	12.34	38.77
14	400	2,640	470	14	242	3	418	6,000	3.2	75	5.9	12.38	12.27	69.67
15	500	2,760	560	15	161	5	392	6,500	3.4	78	5.8		12.29	60.31
16	300	2,640	560	16	322	4	392	8,300	3.3	77	5.9	12.45	12.36	47.23
17	100	2,640	500	17	161	10	392	6,000	3.2	76	5.8	12.47	12.38	65.33
18		2,640	700	14	242	10	392	6,000	3.2	80	5.8	12.52	12.39	65.33
19		2,520	490	16	242	10	392	6,000	3.1	73	5.8	12.58	12.01	65.33
20		2,640	580	16	322	9	418	8,500	3.6	75	5.9	12.34	11.84	49.18
21		2,760	730	8	242	9	392	6,500	3.6	76	5.9	12.29	11.94	60.31
22		2,520	450	7	242	8	418	6,500	3.7	76	6.0	12.31	12.12	64.31
23		2,880	620	12	322	8	496	6,500	3.9	78	5.9	12.10	11.70	76.31
24		2,520	470	13	161	10	496	8,500	4.1	75	5.9	12.35	12.24	58.35
25		2,640	490	10	322	9	366	6,500	3.9	76	5.9	12.30	12.14	56.31
26		2,640	510	13	242	7	444	6,500	3.7	75	5.8	12.30	11.95	68.31
27		2,520	700	13	242	10	470	8,000	4.5	69		12.29	12.18	58.75
28		2,520	550	11	161	8	418	6,500	3.9	74	6.0	12.41	12.16	64.31
29		2,760	580	13	322	11	366	6,500	4.1	75	5.9	12.39	12.06	56.31
30		2,760	570	10	242	9	444	6,500	4.0	74	5.9	12.25	12.03	68.31
31		2,640	560	10	161	13	418	8,500	4.2	75	5.7	12.22	12.12	49.18
Total	6,600	82,320	16,830	427	8,058	243	12,672	209,450	107.4	2,355	176.3	335.28	378.95	1903.02
Max.	1,000	2,880	730	20	403	13	496	8,500	4.5	80	6.1	12.60	12.47	76.31
Min.	100	2,520	430	7	161	3	314	6,000	2.5	69	5.7	12.10	11.70	38.77
Avg.	388	2,655	543	14	260	8	409	6,756	3.5	76	5.9	12.42	12.22	61.39

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JUNE 1996 - PLANT INFLUENT SHEET

	-----Weather-----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
Day														
1	Rain	0.45	1.51	57	7.7	128	1,612	96	1,209			94	13.2	
2	Rain	0.12	1.52	57	7.7	144	1,825	120	1,521			116	12.1	
3	Rain	0.02	1.72	57	7.7	220	3,156	224	3,213			174	14.2	
4	Rain	0.07	1.65	55	7.5	194	2,670	242	3,330			204	13.0	
5	Rain	0.56	1.59	55	7.6	242	3,209	186	2,466	4.00	53	166	13.5	
6	Rain	0.17	1.64	57	7.5	187	2,558	164	2,243			144	12.3	
7			1.64	59	7.5	185	2,530	142	1,942			126	12.5	
8	Rain	0.69	1.56	57	7.7	140	1,821	106	1,379			90	11.8	
9	Rain	0.25	1.62	57	7.4	130	1,756	130	1,756			114	12.2	
10			1.76	59	7.5	180	2,642	128	1,879			112	10.9	
11			1.65	59	7.6	157	2,160	138	1,899	3.90	54	120	11.7	
12	Rain	0.07	1.80	59	7.6	197	2,957	160	2,402			154	11.2	
13	Rain	0.13	1.75	59	7.5	134	1,956	122	1,781	4.90	72	106	10.9	
14			1.50	59	7.5	146	1,826	134	1,676			130	12.1	
15			1.43	58	7.5	153	1,825	110	1,312			102	10.4	
16	Rain	0.02	1.44	59	7.5	120	1,441	120	1,441			108	11.9	
17	Rain	1.42	1.77	59	7.4	138	2,037	166	2,450	4.50	66	140	11.5	
18	Rain	0.16	1.80	61	7.3	159	2,387	115	1,726			106	11.7	
19	Rain	0.14	1.64	59	7.6	158	2,161	200	2,736	4.10	56	184	11.6	
20			1.64	61	7.5	199	2,722	78	1,067			66	11.3	
21			1.57	61	7.5	173	2,265	140	1,833			118	12.6	
22			1.46	61	7.5	144	1,753	116	1,412			94	11.1	
23	Rain	0.63	1.49	60	7.6	142	1,765	134	1,665			120	12.1	
24			1.61	61	7.6	154	2,068	186	2,497			182	11.9	
25			1.57	61	7.6	155	2,030	148	1,938			130	11.9	
26			1.56	61	7.6	141	1,834	150	1,952			134	11.8	
27			1.54	61	7.4	141	1,811	124	1,593			108	11.3	
28			1.53	61	7.6	158	2,016	164	2,093			152	10.9	
29			1.47	61	7.6	115	1,410	132	1,618			112	11.3	
30			1.47	61	7.5	136	1,667	142	1,741			118	11.0	
31														
Total	0	4.90	47.90	1,772	226.3	4,770	63,872	4,317	57,772	21.40	301	3,824	355.9	
Max.	0	1.42	1.80	61	7.7	242	3,209	242	3,330	4.90	72	204	14.2	
Min.	0	0.02	1.43	55	7.3	115	1,410	78	1,067	3.90	53	66	10.4	
Avg.	0	0.33	1.60	59	7.5	159	2,129	144	1,926	4.28	60	127	11.9	
Count	15	15.00	30.00	30	30.0	30	30	30	30	5.00	5	30	30.0	

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JUNE 1996 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
Day												
1	128	1,612	100	1,259			100	16.1	1.51	0	-4	
2	131	1,661	80	1,014			80	13.6	1.52	9	33	
3	151	2,166	96	1,377			96	15.2	1.72	31	57	
4	140	1,927	84	1,156			76	16.2	1.65	28	65	
5	172	2,281	100	1,326	4.35	58	88	15.6	1.59	29	46	-9
6	160	2,188	88	1,204			80	15.4	1.64	14	46	
7	161	2,202	108	1,477			90	14.8	1.64	13	24	
8	147	1,913	100	1,301			76	13.7	1.56	-5	6	
9	145	1,959	116	1,567			108	13.3	1.62	-12	11	
10	128	1,879	96	1,409			80	11.5	1.76	29	25	
11	122	1,679	102	1,404	4.35	60	94	13.1	1.65	22	26	-10
12	135	2,027	96	1,441			88	13.1	1.80	31	40	
13	108	1,576	64	934	5.00	73	64	12.4	1.75	19	48	-2
14	122	1,526	80	1,001			76	12.9	1.50	16	40	
15	123	1,467	96	1,145			84	12.9	1.43	20	13	
16	114	1,369	72	865			68	12.9	1.44	5	40	
17	109	1,609	80	1,181	5.30	78	60	13.8	1.77	21	52	-18
18	135	2,027	68	1,021			52	14.1	1.80	15	41	
19	118	1,614	80	1,094	4.90	67	76	13.0	1.64	25	60	-20
20	126	1,723	84	1,149			72	13.3	1.64	37	-8	
21	123	1,611	88	1,152			70	14.5	1.57	29	37	
22	115	1,400	72	877			48	13.8	1.46	20	38	
23	99	1,230	76	944			68	12.8	1.49	30	43	
24	102	1,370	68	913			68	13.5	1.61	34	63	
25	100	1,309	56	733			48	14.1	1.57	35	62	
26	93	1,210	64	833			58	13.7	1.56	34	57	
27	92	1,182	64	822			38	13.5	1.54	35	48	
28	104	1,327	80	1,021			64	12.5	1.53	34	51	
29	83	1,018	64	785			60	11.8	1.47	28	52	
30	83	1,018	56	687			48	11.2	1.47	39	61	
31												
Total	3,669	49,078	2,478	33,091	23.90	336	2,178	408.3	47.90	665	1,173	-59
Max.	172	2,281	116	1,567	5.30	78	108	16.2	1.80	39	65	-2
Min.	83	1,018	56	687	4.35	58	38	11.2	1.43	-12	-8	-20
Avg.	122	1,636	83	1,103	4.78	67	73	13.6	1.60	22	39	-12
Count	30	30	30	30	5.00	5	30	30.0	30.00	30	30	5

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JUNE 1996 - ACTIVATED SLUDGE SHEET

Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading fIm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	5.7								252			61	58.9	1.51	128	100
2		5.7								253			67	55.8	1.52	131	80
3		5.0	4.6	0.44	2,136	1,629	21.0	1.02	4.0	255	0.40	0.31	57	56.9	1.72	151	96
4		5.2	5.6	0.38	2,162	1,688	19.0	1.14	1.9	260	0.41	0.31	58	58.2	1.65	140	84
5		5.4	4.8	0.46	2,115	1,671	17.0	1.24	1.2	260	0.42	0.31	65	54.6	1.59	172	100
6		5.3	5.5	0.41	2,200	1,778	20.0	1.10	0.6	254	0.44	0.35	63	61.1	1.64	160	88
7		5.3	4.3	0.42	2,145	1,737	21.0	1.02	1.0	262	0.38	0.31	63	65.5	1.64	161	108
8		5.5								258			65	61.5	1.56	147	100
9		5.3								252			62	62.7	1.62	145	116
10		4.9	4.1	0.39	1,953	1,595	15.0	1.30	1.8	278	0.39	0.32	57	58.4	1.76	128	96
11		5.2	4.2	0.35	1,957	1,616	15.0	1.30	2.3	275	0.34	0.28	61	57.0	1.65	122	102
12		4.8	4.1	0.42	1,966	1,610	17.0	1.16	3.4	288	0.38	0.32	56	57.1	1.80	135	96
13		4.9	6.7	0.31	2,077	1,707	19.0	1.09	1.9	296	0.37	0.30	58	33.6	1.75	108	64
14		5.7	6.8	0.28	2,289	1,844	20.0	1.14	3.4	300	0.40	0.32	68	28.8	1.50	122	80
15		6.0								307			71	28.8	1.43	123	96
16		6.0								294			70	28.6	1.44	114	72
17		4.9	6.4	0.28	2,531	1,892	29.0	0.87	3.8	298	0.42	0.31	48	28.7	1.77	109	80
18		4.8	7.8	0.33	2,670	2,040	30.0	0.89	2.2	305	0.48	0.36	53	29.2	1.80	135	68
19		5.3	7.6	0.25	2,794	2,135	30.0	0.93	1.6	298	0.45	0.35	57	29.8	1.64	118	80
20		5.3	7.5	0.26	2,890	2,184	33.0	0.88	2.3	297	0.48	0.36	58	35.2	1.64	126	84
21		5.5	7.7	0.24	2,959	2,229	32.0	0.92	2.1	307	0.50	0.37	61	41.8	1.57	123	88
22		5.9								300			65	42.9	1.46	115	72
23		5.8								296			64	42.9	1.49	99	76
24		5.4	8.9	0.23	2,721	1,952	30.0	0.91	3.3	300	0.42	0.31	59	43.3	1.61	102	68
25		5.5	10.7	0.25	2,612	1,739	28.0	0.93	3.7	302	0.43	0.31	59	39.2	1.57	100	56
26		5.5	9.4	0.22	2,611	1,817	29.0	0.90	3.7	301	0.43	0.30	59	38.7	1.56	93	64
27		5.6	9.3	0.22	2,550	1,793	30.0	0.85	4.2	298	0.45	0.32	62	32.6	1.54	92	64
28		5.6	7.6	0.25	2,597	1,795	30.0	0.87	4.3	308	0.42	0.29	62	30.8	1.53	104	80
29		5.9								302			64	30.8	1.47	83	64
30		5.9								306			63	28.7	1.47	83	56
31																	
Total	48	162.6	133.7	6.41	47,935	36,451	485.0	20.47	52.7	8,562	8.41	6.41	1,836	1322.1	47.90	3,669	2,478
Max.	48	6.0	10.7	0.46	2,959	2,229	33.0	1.30	4.3	308	0.50	0.37	71	65.5	1.80	172	116
Min.	48	4.8	4.1	0.22	1,953	1,595	15.0	0.85	0.6	252	0.34	0.28	48	28.6	1.43	83	56
Avg.	48	5.4	6.7	0.32	2,397	1,823	24.3	1.02	2.6	285	0.42	0.32	61	44.1	1.60	122	83
Count	1	30.0	20.0	20.00	20	20	20.0	20.00	20.0	30	20.00	20.00	30	30.0	30.00	30	30

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

JUNE 1996 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mgIL
1	7.4	7.5	11	139		1.51	0.000	6	76	12.8	161	32	89	95		
2	7.5	7.6	7	89		1.52	0.000	5	63	11.5	146	38	94	97		<0.0002
3	7.7	7.6	9	129		1.72	0.000	9	129	12.2	175	47	96	96		
4	7.2	7.5	13	179		1.65	0.000	14	193	13.0	179	364	95	93		
5	6.2	7.6	21	278	1.53	1.59	0.000	15	199	13.5	179	260	89	94	62	
6	6.4	7.5	20	274		1.64	0.000	14	191	12.0	164	460	88	93		
7	6.2	7.5	24	328		1.64	0.000	15	205	12.3	168	249	83	92		
8	6.4	7.5	22	286		1.56	0.003	14	182	11.0	143	121	79	90		
9	6.4	7.3	12	162		1.62	0.010	15	203	10.5	142	200	91	88		
10	6.4	7.5	20	294		1.76	0.000	15	220	9.8	144	80	84	92		
11	6.3	7.5	18	248	0.82	1.65	0.004	12	165	8.8	121	72	87	92	79	
12	6.6	7.5	22	330		1.80	0.001	12	180	10.7	161	116	86	94		<0.0002
13	6.4	7.4	14	204	0.50	1.75	0.001	14	204	10.8	158	164	89	90	90	
14	6.9	7.5	6	75		1.50	0.003	5	63	11.0	138	13	96	97		
15	7.3	7.5	8	95		1.43	0.000	6	72	12.3	147	381	93	96		
16	7.5	7.5	10	120		1.44	0.000	6	72	12.8	154	20	92	95		
17	7.2	7.3	19	280	0.69	1.77	0.004	7	103	13.7	202	47	89	95	85	
18	6.3	7.3	10	150		1.80	0.001	8	120	13.1	197	80	91	95		
19	6.0	7.5	11	150	0.58	1.64	0.013	6	82	11.9	163	40	95	96	86	<0.0002
20	6.6	7.5	13	178		1.64	0.006	7	96	12.4	170	33	83	96		
21	6.5	7.5	14	183		1.57	0.006	6	79	13.2	173	63	90	97		
22	6.6	7.6	9	110		1.46	0.029	6	73	13.6	166	58	92	96		
23	7.2	7.6	8	99		1.49	0.018	5	62	13.9	173	68	94	96		<0.0002
24	6.9	7.5	6	81		1.61	0.014	5	67	14.1	189	54	97	97		
25	7.1	7.6	8	105		1.57	0.028	5	65	14.4	189	42	95	97		
26	7.3	7.6	7	91		1.56	0.017	5	65	14.4	187	24	95	96		
27	7.3	7.5	8	103		1.54	0.013	4	51	14.1	181	26	94	97		
28	7.1	7.5	11	140		1.53	0.018	4	51	12.9	165	92	93	97		
29	7.0	7.6	7	86		1.47	0.000	3	37	11.8	145	31	95	97		
30	7.0	7.7	8	98		1.47	0.000	3	37	11.7	143	18	94	98		
31																
Total	204.9	225.3	376	5,085	4.12	47.90	0.188	251	3,406	370.2	4,920	3,293	2,728	2,844	402	<0.0002
Max.	7.7	7.7	24	330	1.53	1.80	0.029	15	220	14.4	202	460	97	98	90	<0.0002
Min.	6.0	7.3	6	75	0.50	1.43	0.000	3	37	8.8	121	13	79	88	62	<0.0002
Avg.	6.8	7.5	13	169	0.82	1.60	0.006	8	114	12.3	164	G 69	91	95	80	<0.0002
Count	30.0	30.0	30	30	5.00	30.00	30.000	30	30	30.0	30	30	30	30	5	4

G = Geometric Mean

Sample of 6/23/96 - zinc 0.02 mg/l - copper <0.01mg/l

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JUNE 1996 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hours	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1		2,520	500	14	242	10	426	6,500	3.8	75	5.7	12.58	12.42	65.54
2		2,520	510	16	161	12	480	6,500	3.9	74	5.7		12.35	73.85
3		2,640	580	14	322	11	426	6,500	4.0	75	5.8	12.34	12.24	65.54
4		2,520	510	14	242	12	400	8,000	4.0	75	5.8	12.33	12.10	50.00
5		2,640	660	16	242	12	400	6,500	4.3	75	5.8	12.37	12.25	61.54
6		2,520	490	21	161	8	400	6,500	4.2	76	5.6	12.34	12.25	61.54
7		2,640	580	20	161	10	426	8,500	3.9	76	5.7	12.27	12.31	50.12
8		2,640	570	22	161	14	346	6,500	4.1	76	5.6	12.35	12.44	53.23
9		2,400	510	21	161	8	480	6,500	3.9	77	5.6	12.40	12.28	73.85
10		2,760	530	16	322	11	426	6,500	1.7	40	5.7	12.32	12.38	65.54
11		2,640	480	17	322	11	426	7,000	6.7	84	5.6	12.44	12.27	60.86
12		2,760	640	16	242	10	400	6,500	3.8	77	5.8		12.25	61.54
13		2,640	1,120	18	322	12	480	7,500	4.2	76	5.6	12.32	12.25	64.00
14		2,540	1,240	18	322	10	453	8,000	4.2	72	5.5	12.36	12.28	56.63
15		2,880	1,160	21	322	9	400	6,500	3.8	74	5.7	12.30	12.43	61.54
16		2,760	540	18	403	8	373	6,500	3.7	76	5.5	12.46	12.39	57.38
17		2,760	540	16	483	7	506	6,500	3.9	76	5.6	12.35	12.33	77.85
18		2,760	460	38	322	9	453	7,000	3.9	76	5.7	12.27	12.34	64.71
19		2,760	460	18	322	7	453	7,500	3.8	76	5.5	12.37	12.21	60.40
20		2,760	450	19	322	9	453	6,500	3.9	75	5.6	12.34	12.27	69.69
21		2,880	600	22	242	7	426	7,200	3.7	77	5.6	12.30	12.32	59.17
22		2,640	500	20	322	7	400	6,500	3.7	74	5.6	12.38	12.30	61.54
23		2,640	510	20	322	7	426	6,500	3.6	74	5.7	12.35	12.40	65.54
24		2,760	630	25	242	8	400	7,700	3.7	75	5.8	12.36	12.24	51.95
25		2,760	560	17	322	8	506	6,500	3.7	74	6.0	12.33	12.33	77.85
26		2,760	1,180	16	322	6	453	6,500	3.6	74	5.9	12.30	12.26	69.69
27		2,640	1,140	15	322	15	400	6,500	3.6	74	5.9	12.29	12.25	61.54
28		2,880	1,030	20	242	15	453	6,500	4.1	75	5.9	12.22	12.19	69.69
29		2,640	680	19	322	18	400	6,500	3.7	74	5.8	12.46	12.42	61.54
30		2,760	1,560	16	322	17	400	6,500	3.4	74	5.8	12.35	12.37	61.54
31														
Total		80,420	20,920	563	8,537	308	12,871	204,900	116.5	2,226	171.1	345.85	369.12	1895.37
Max.		2,880	1,560	38	483	18	506	8,500	6.7	84	6.0	12.58	12.44	77.85
Min.		2,400	450	14	161	6	346	6,500	1.7	40	5.5	12.22	12.10	50.00
Avg.		2,681	697	19	285	10	429	6,830	3.9	74	5.7	12.35	12.30	63.18

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JULY 1996 - PLANT INFLUENT SHEET

Day	Weather Type	Weather Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
1			1.50	61	7.5	131	1,639	114	1,426			98	11.8	
2			1.50	61	7.4	131	1,639	116	1,451			104	12.8	
3			1.48	61	7.5	132	1,629	144	1,777			132	13.0	
4			1.33	61	7.4	117	1,298	112	1,242			106	12.7	
5			1.42	59	7.6	143	1,694	110	1,303			106	12.0	
6			1.46	59	7.6	139	1,693	142	1,729			120	12.5	
7			1.44	59	7.5	146	1,753	164	1,970			142	12.3	
8			1.51	61	7.5	138	1,738	160	2,015	3.13	39	140	12.8	
9			1.44	61	7.6	141	1,693	130	1,561			108	13.5	
10			1.48	61	7.6	119	1,469	152	1,876			132	13.6	
11			1.54	61	7.6	143	1,837	160	2,055			142	12.8	
12			1.65	61	7.7			176	2,422			164		
13	Rain	0.06	1.40	61	7.5	137	1,600	228	2,662			188	12.2	
14	Rain	0.66	1.45	61	7.7	150	1,814	306	3,700			258	8.8	
15	Rain	0.06	1.47	61	7.5	181	2,219	170	2,084	4.35	53	142	13.5	
16			1.66	61	7.5	187	2,589	212	2,935			210	12.1	
17	Rain	0.02	1.64	61	7.6	196	2,681	200	2,736			174	12.6	
18			1.68	64	7.6	172	2,410	148	2,074	4.33	61	134	12.0	
19			1.65	62	7.6	246	3,385	222	3,055			182	12.1	
20			1.38	61	7.4	169	1,945	158	1,818			130	13.8	
21	Rain	0.03	1.34	64	7.5	170	1,900	156	1,743			128	12.2	
22			1.44	64	7.5	166	1,994	206	2,474			188	14.0	
23	Rain	0.29	1.56	66	7.6	198	2,576	213	2,771			204	12.9	
24	Rain	0.52	1.65	64	7.5	178	2,449	176	2,422			160	11.4	
25			1.65	64	7.4	195	2,683	230	3,165	4.13	57	208	11.9	
26			1.58	64	7.5	184	2,425	172	2,266			154	11.7	
27			1.33	64	7.5	161	1,786	144	1,597			134	12.0	
28	Rain	0.06	1.31	64	7.5									
29	Rain	0.87	1.65	64	7.4	199	2,738	234	3,220			208	10.9	
30	Rain	0.03	1.66	64	7.6	136	1,883	144	1,994			134	11.5	
31	Rain	0.04	1.61	64	7.5	171	2,296	216	2,900			194	11.6	
Total	0	2.64	46.86	1,924	233.4	4,676	59,454	5,215	66,445	15.94	210	4,624	357.0	
Max.	0	0.87	1.68	66	7.7	246	3,385	306	3,700	4.35	61	258	14.0	
Min.	0	0.02	1.31	59	7.4	117	1,298	110	1,242	3.13	39	98	8.8	
Avg.	0	0.24	1.51	62	7.5	161	2,050	174	2,215	3.99	53	154	12.3	
Count	11	11.00	31.00	31	31.0	29	29	30	30	4.00	4	30	29.0	

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JULY 1996 - PRIMARY EFFLUENT SHEET

Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	70	876	62	776			56	13.2	1.50	47	46	
2	94	1,176	52	651			44	13.9	1.50	28	55	
3	89	1,099	60	741			56	13.2	1.48	33	58	
4	82	910	52	577			42	13.7	1.33	30	54	
5	87	1,030	62	734			52	12.8	1.42	39	44	
6	90	1,096	68	828			52	13.3	1.46	35	52	
7	94	1,129	56	673			48	12.6	1.44	36	66	
8	89	1,121	60	756	2.40	30	54	13.5	1.51	36	63	23
9	96	1,153	50	600			42	14.6	1.44	32	62	
10	97	1,197	66	815			50	14.4	1.48	18	57	
11	99	1,272	64	822			50	13.7	1.54	31	60	
12			68	936			60		1.65		61	
13	101	1,179	64	747			56	13.5	1.40	26	72	
14	72	871	74	895			66	13.4	1.45	52	76	
15	98	1,201	62	760	2.50	31	44	13.7	1.47	46	64	43
16	110	1,523	66	914			48	12.8	1.66	41	69	
17	96	1,313	52	711			46	13.0	1.64	51	74	
18	110	1,541	80	1,121	2.90	41	70	12.9	1.68	36	46	33
19	115	1,583	80	1,101			60	13.1	1.65	53	64	
20	119	1,370	114	1,312			64	13.5	1.38	30	28	
21	102	1,140	70	782			60	12.3	1.34	40	55	
22	101	1,213	70	841			66	13.8	1.44	30	66	
23	115	1,496	74	963			70	13.5	1.56	42	65	
24	102	1,404	70	963			62	13.1	1.65	43	60	
25	119	1,638	76	1,046	3.70	51	70	12.6	1.65	39	67	10
26	104	1,370	82	1,081			68	13.4	1.58	43	52	
27	109	1,209	104	1,154			78	13.2	1.33	32	28	
28									1.31			
29	123	1,693	72	991			68	12.6	1.65	38	69	
30	98	1,357	68	941			56	13.9	1.66	28	53	
31	96	1,289	78	1,047			70	13.3	1.61	44	64	
Total	2,877	36,446	2,076	26,276	11.50	152	1,728	386.5	46.86	1,079	1,750	109
Max.	123	1,693	114	1,312	3.70	51	78	14.6	1.68	53	76	43
Min.	70	871	50	577	2.40	30	42	12.3	1.31	18	28	10
Avg.	99	1,257	69	876	2.88	38	58	13.3	1.51	37	58	27
Count	29	29	30	30	4.00	4	30	29.0	31.00	29	30	4

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JULY 1996 - ACTIVATED SLUDGE SHEET

Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading fIm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	5.7	10.1	0.17	2,612	1,769	35.0	0.75	4.2	297	0.42	0.29	61	26.7	1.50	70	62
2		5.7	12.4	0.21	2,695	1,878	33.0	0.82	5.0	302	0.34	0.23	61	29.1	1.50	94	52
3		5.8	10.8	0.20	2,674	1,867	35.0	0.76	4.3	257	0.46	0.32	62	29.6	1.48	89	60
4		6.5								265			69	29.3	1.33	82	52
5		6.1	10.7	0.19	2,623	1,836	40.0	0.66	4.5	256	0.37	0.25	68	40.6	1.42	87	62
6		5.9								253			66	42.2	1.46	90	68
7		6.0								249			67	49.6	1.44	94	56
8		5.7	9.7	0.20	2,449	1,852	37.0	0.66	3.8	255	0.40	0.28	64	45.9	1.51	89	60
9		6.0	12.1	0.23	2,433	1,669	37.0	0.66	4.2	264	0.40	0.27	70	43.4	1.44	96	50
10		5.8	8.8	0.24	2,389	1,653	35.0	0.68	4.9	265	0.35	0.26	72	41.1	1.48	97	66
11		5.6	9.0	0.25	2,459	1,694	35.0	0.70	4.9	259	0.39	0.28	70	39.9	1.54	99	64
12		5.2	7.9	0.00	2,476	1,723	37.0	0.67	3.2	254	0.40	0.28	65	44.3	1.65		68
13		6.2								250			77	44.1	1.40	101	64
14		5.9								249			72	43.1	1.45	72	74
15		5.9	9.8	0.23	2,476	1,769	38.0	0.65	3.5	253	0.38	0.27	72	43.2	1.47	98	62
16		5.2	8.2	0.26	2,489	1,980	37.0	0.67	3.1	254	0.38	0.27	64	42.8	1.66	110	66
17		5.3	10.8	0.24	2,562	1,836	39.0	0.66	2.6	249	0.42	0.30	65	43.3	1.64	96	52
18		5.1	6.9	0.28	2,569	1,817	40.0	0.64	2.3	264	0.42	0.30	63	43.5	1.68	110	80
19		5.2	7.3	0.27	2,700	1,961	40.0	0.68	1.7	278	0.42	0.31	65	48.4	1.65	115	80
20		6.2								282			77	47.9	1.38	119	114
21		6.4								278			77	48.4	1.34	102	70
22		6.0	9.1	0.23	2,566	1,727	40.0	0.64	3.6	274	0.39	0.28	74	48.6	1.44	101	70
23		5.5	8.1	0.27	2,596	1,840	38.0	0.68	3.4	274	0.41	0.29	68	50.8	1.56	115	74
24		5.2	8.1	0.25	2,609	1,882	36.0	0.72	2.6	272	0.39	0.28	64	49.2	1.65	102	70
25		5.2	7.4	0.29	2,591	1,896	35.0	0.74	2.1	277	0.40	0.29	65	49.3	1.65	119	76
26		5.5	7.0	0.24	2,517	1,917	36.0	0.70	2.0	286	0.41	0.30	68	51.2	1.58	104	82
27		6.5								278			80	52.1	1.33	109	104
28		6.6								280			81	47.2	1.31		
29		5.2	7.8	0.30	2,582	1,886	37.0	0.70	3.2	278	0.41	0.29	64	43.4	1.65	123	72
30		5.2	8.5	0.23	2,675	1,965	35.0	0.76		270	0.41	0.31	63	43.0	1.66	98	68
31		5.4	7.7	0.22	2,705	1,981	41.0	0.66	1.6	277	0.42	0.31	66	46.7	1.61	96	78
Total	48	177.7	198.1	4.99	56,447	40,398	816.0	15.27	70.7	8,299	8.79	6.26	2,120	1347.9	46.86	2,877	2,076
Max.	48	6.6	12.4	0.30	2,705	1,981	41.0	0.82	5.0	302	0.46	0.32	81	52.1	1.68	123	114
Min.	48	5.1	6.9	0.00	2,389	1,653	33.0	0.64	1.6	249	0.34	0.23	61	26.7	1.31	70	50
Avg.	48	5.7	9.0	0.23	2,566	1,836	37.1	0.69	3.4	268	0.40	0.28	68	43.5	1.51	99	69
Count	1	31.0	22.0	22.00	22	22	22.0	22.00	21.0	31	22.00	22.00	31	31.0	31.00	29	30

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

JULY 1996 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mgIL
1	7.0	7.5	4	50		1.50	0.000	3	38	12.3	154	17	96	98		<0.0002
2	6.8	7.4	5	63		1.50	0.000	3	38	13.3	166	8	96	98		
3	6.9	7.4	5	62		1.48	0.000	3	37	13.0	160	13	97	98		
4	7.1	7.6	5	55		1.33	0.000	3	33	13.1	145	25	96	97		
5	7.3	7.6	7	83		1.42	0.000	3	36	12.1	143	19	94	98		
6	7.1	7.6	7	85		1.46	0.000	3	37	11.6	141	11	95	98		
7	7.0	7.7	4	48		1.44	0.000	3	36	10.9	131	14	98	98		
8	7.0	7.6	5	63	0.14	1.51	0.000	2	25	11.4	144	62	97	99	95	<0.0002
9	7.1	7.5	3	36		1.44	0.000	3	36	11.1	133	15	98	98		
10	7.1	7.6	5	62		1.48	0.000	2	25	11.3	139	22	97	98		
11	7.1	7.5	6	77		1.54	0.000	3	39	10.2	131	44	96	98		
12	6.5	7.6	4	55		1.65	0.000					18	98			
13	6.6	7.5	5	58		1.40	0.000	3	35	10.2	119	12	98	98		
14	6.8	7.6	4	48		1.45	0.000	3	36	9.3	112	15	99	98		
15	6.8	7.4	3	37	0.14	1.47	0.000	3	37	9.2	113	6	98	98	97	<0.0002
16	6.8	7.4	4	55		1.66	0.003	4	55	9.9	137	23	98	98		
17	6.5	7.6	4	55		1.64	0.000	4	55	10.6	145	7	98	98		
18	6.3	7.6	6	84	0.25	1.68	0.000	4	56	10.8	151	22	96	98	94	
19	6.0	7.6	9	124		1.65	0.000	5	69	10.7	147	13	96	98		
20	6.2	7.5	6	69		1.38	0.000	4	46	9.2	106	6	96	98		
21	6.4	7.5	3	34		1.34	0.000	5	56	7.5	84	11	98	97		
22	6.4	7.5	3	36		1.44	0.001	5	60	9.2	110	4	99	97		<0.0002
23	6.3	7.6	4	52		1.56	0.000	5	65	9.8	128	17	98	97		
24	6.3	7.6	8	110		1.65	0.000	5	69	10.4	143	28	95	97		
25	6.1	7.5	5	69	0.22	1.65	0.000	5	69	10.5	144	14	98	97	95	
26	6.2	7.5	8	105		1.58	0.000	4	53	11.3	149	13	95	98		
27	6.2	7.5	4	44		1.33	0.000	3	33	9.5	105	3	97	98		
28	6.2	7.5				1.31	0.000					3				
29	6.4	7.4	8	110		1.65	0.000	4	55	10.3	142	12	97	98		
30	6.2	7.4	7	97		1.66	0.000	4	55	11.3	156	13	95	97		
31	5.9	7.6	3	40		1.61	0.000	3	40	11.3	152	23	99	98		
Total	204.6	233.4	154	1,967	0.75	46.86	0.004	104	1,322	311.3	3,933	513	2,908	2,836	381	<0.0002
Max.	7.3	7.7	9	124	0.25	1.68	0.003	5	69	13.3	166	62	99	99	97	<0.0002
Min.	5.9	7.4	3	34	0.14	1.31	0.000	2	25	7.5	84	3	94	97	94	<0.0002
Avg.	6.6	7.5	5	66	0.19	1.51	0.000	4	46	10.7	136	G 13	97	98	95	<0.0002
Count	31.0	31.0	30	30	4.00	31.00	31.000	29	29	29.0	29	31	30	29	4	4.000

G = Geometric Mean

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JULY 1996 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hours	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1	0	2,640	1,300	14	322	16	600	7,400	3.7	74	5.9	12.40	12.29	81.08
2	0	2,640	860	10	322	19	600	6,500	3.4	74	5.8	12.39	12.35	92.31
3	0	2,760	1,240	27	322	18	480	6,000	3.3	74	5.9	12.06	11.77	80.00
4	0	2,640	630	27	322	22	510	6,000	3.5	75	6.0	12.31	12.09	85.00
5	0	2,520	1,390	16	322	16	450	6,000	3.1	74	6.1	12.02	10.90	75.00
6	0	2,760	1,440	17	322	16	450	6,000	3.3	70	6.7	12.00	11.60	75.00
7	0	2,640	590	18	242	18	450	6,000	3.3	73	6.1	12.30	12.15	75.00
8	0	2,640	1,470	14	322	10	480	6,500	3.4	72	6.2	12.36	12.32	73.85
9	0	2,640	1,300	19	322	10	450	7,800	3.4	72	6.3	12.31	12.32	57.69
10	0	2,520	2,040	18	322	8	480	6,500	4.9	80	6.2	12.36	12.23	73.85
11	0	2,640	1,080	20	322	12	480	6,500	3.4	71	5.8	12.32	12.27	73.85
12	0	2,760	1,260	20	322	10	480	7,800	3.3	71	6.3	12.32	12.43	61.54
13	0	2,520	560	12	322	4	480	6,500	2.3	58	6.0	12.45	12.33	73.85
14	0	2,520	1,170	13	322	6	450	6,500	3.6	72	6.0	12.22	12.19	69.23
15	0	2,640	600	15	322	38	240	3,000	3.4	73	6.1	12.44	12.40	80.00
16	0	2,640	850	15	322	11	540	8,900	3.0	72	6.3	12.41	12.35	60.67
17	0	2,760	1,410	15	322	10	540	7,500	3.4	73	6.1	12.45	12.38	72.00
18	0	2,520	920	17	322	11	480	6,000	3.0	73	6.0	12.43	12.41	80.00
19	0	2,760	1,980	13	322	12	510	7,200	3.4	70	5.9	12.37	12.36	70.83
20	0	2,760	1,950	10	322	11	450	6,500	3.2	71	5.8	12.39	12.44	69.23
21	0	2,520	550	38	322	9	450	6,000	3.2	72	5.9	12.41	12.32	75.00
22	0	2,640	2,900	18	322	10	480	6,000	3.1	73	6.1	12.41	12.38	80.00
23	0	2,760	560	15	322	11	480	8,000	2.9	72	6.2	12.43	12.30	60.00
24	0	2,640	740	17	242	8	420	6,500	3.4	73	6.1	12.41	12.37	64.62
25	0	2,760	650	20	242	7	420	6,500	3.2	73	6.1	12.39	12.39	64.62
26	0	2,760	2,220	18	322	9	480	7,800	3.1	73	6.0	12.38	12.43	61.54
27	0	2,760	690	19	322	10	390	6,500	3.0	71	6.1	12.47	12.47	60.00
28	0	2,520	570	17	242	34	390	6,500	2.8	73	6.1	12.38	12.38	60.00
29	0	2,640	570	18	242	11	420	6,500	3.8	79	6.1	12.33	12.32	64.62
30	0	2,760	550	8	322	10	510	8,000	2.4	63	6.0	12.34	12.41	63.75
31	0	2,760	650	14	242	13	450	6,500	3.1	72	6.0	12.33	12.33	69.23
Total	0	82,440	34,690	532	9,502	410	14,490	205,900	101.3	2,236	188.2	382.59	379.68	2203.34
Max.	0	2,760	2,900	38	322	38	600	8,900	4.9	80	6.7	12.47	12.47	92.31
Min.	0	2,520	550	8	242	4	240	3,000	2.3	58	5.8	12.00	10.90	57.69
Avg.	0	2,659	1,119	17	307	13	467	6,642	3.3	72	6.1	12.34	12.25	71.08

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

AUGUST 1996 - PLANT INFLUENT SHEET

Day	Weather Type	Weather Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mg/L	Inf. BOD Lbs.	Inf. SS mg/L	Inf. SS Lbs.	Inf. Phos. mg/L	Inf. Phos. Lbs.	Inf. VSS mg/L	Inf. NH3-N mg/L	Remarks or Other Parameters
1			1.52	64	7.2	324	4,107	344	4,361			296	13.3	
2			1.35	64	7.4	133	1,497	186	2,094			164	13.1	
3			1.32	64	7.6	131	1,442	178	1,960			154	12.0	
4			1.30	64	7.5	134	1,453	198	2,147			176	12.6	
5			1.64	66	7.5	151	2,065	206	2,818	3.90	53	186	11.0	
6			1.62	66	7.5	103	1,392	162	2,189			160	11.7	
7	Rain	0.51	1.69	66	7.6	160	2,255	244	3,439			210	10.8	
8			1.67	65	7.6	149	2,075	128	1,783			112	13.3	
9			1.39	65	7.5	148	1,716	180	2,087			154	15.3	
10			1.35	65	7.5	140	1,576	170	1,914			144	14.0	
11			1.36	65	7.5	120	1,361	158	1,792			144	14.1	
12			1.67	65	7.5	120	1,671	206	2,869			184	12.1	
13			1.68	65	7.6	168	2,354	188	2,634			180	12.0	
14	Rain	0.45	1.71	66	7.4	198	2,824	174	2,481			152	14.2	
15			1.62	66	7.5	155	2,094	162	2,189			170	12.3	
16			1.47	66	7.4	205	2,513	224	2,746			212	14.0	
17			1.33	66	7.6	184	2,041	170	1,886			152	15.0	
18			1.32	65	7.5	165	1,816	160	1,761			174	14.2	
19	Rain	0.53	1.54	65	7.5	172	2,209	208	2,671	4.10	53	198	11.7	
20	Rain	0.22	1.62	65	7.4	152	2,054	221	2,986			164	12.7	
21			1.57	65	7.4			306	4,007			248	12.7	
22	Rain	0.86	1.56	65	7.4	132	1,717	226	2,940			196	11.7	
23			1.49	65	7.3	118	1,466	186	2,311			146	14.8	
24			1.46	62	7.4	160	1,948	168	2,046			144	11.9	
25			1.45	64	7.4	104	1,258	136	1,645	4.10	50	108	11.6	
26			1.55	66	7.4	134	1,732	170	2,198			154	12.7	
27			1.57	66	7.5	228	2,985	244	3,195	4.60	60	216	14.6	
28			1.54	65	7.6	222	2,851	290	3,725			254	15.1	
29			1.55	65	7.4	311	4,020	246	3,180			216	13.6	
30			1.39	65	7.6	160	1,855	126	1,461			110	14.4	
31			1.29	65	7.4	205	2,206	184	1,980			170	13.1	
Total	0	2.57	46.59	2,016	231.6	4,986	62,556	6,149	77,492	16.70	216	5,448	405.6	
Max.	0	0.86	1.71	66	7.6	324	4,107	344	4,361	4.60	60	296	15.3	
Min.	0	0.22	1.29	62	7.2	103	1,258	126	1,461	3.90	50	108	10.8	
Avg.	0	0.51	1.50	65	7.5	166	2,085	198	2,500	4.18	54	176	13.1	
Count	5	5.00	31.00	31	31.0	30	30	31	31	4.00	4	31	31.0	

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

AUGUST 1996 - PRIMARY EFFLUENT SHEET

Day	P Eff. BOD mg/L	P Eff. BOD Lbs.	P Eff. SS mg/L	P. Eff. SS Lbs.	P Eff. Phos. mg/L	P Eff. Phos. Lbs.	P Eff. VSS mg/L	P Eff. NH3-N mg/L	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	209	2,649	114	1,445			96	14.9	1.52	35	67	
2	109	1,227	104	1,171			90	14.7	1.35	18	44	
3	104	1,145	106	1,167			86	13.4	1.32	21	40	
4	99	1,073	100	1,084			84	13.1	1.30	26	49	
5	100	1,368	84	1,149	2.90	40	84	12.7	1.64	34	59	26
6	96	1,297	88	1,189			84	12.9	1.62	7	46	
7	133	1,875	108	1,522			92	13.9	1.69	17	56	
8	129	1,797	138	1,922			116	15.9	1.67	13	-8	
9	118	1,368	106	1,229			86	17.2	1.39	20	41	
10	94	1,058	66	743			54	14.2	1.35	33	61	
11	102	1,157	94	1,066			82	15.6	1.36	15	41	
12	94	1,309	84	1,170			76	13.6	1.67	22	59	
13	132	1,849	76	1,065			76	14.3	1.68	21	60	
14	147	2,096	104	1,483			80	14.2	1.71	26	40	
15	113	1,527	88	1,189			76	15.1	1.62	27	46	
16	121	1,483	80	981			72	19.3	1.47	41	64	
17	122	1,353	88	976			78	16.7	1.33	34	48	
18	110	1,211	82	903			76	15.8	1.32	33	49	
19	110	1,413	92	1,182	4.10	53	88	13.5	1.54	33	56	0
20	120	1,621	82	1,108			74	14.3	1.62	21	63	
21			80	1,048			70	15.1	1.57		74	
22	88	1,145	70	911			64	13.3	1.56	33	69	
23	90	1,118	86	1,069			56	13.0	1.49	24	54	
24	91	1,108	88	1,072			68	13.2	1.46	43	48	
25	91	1,100	88	1,064	4.00	48	78	12.4	1.45	13	35	2
26	96	1,241	82	1,060			74	13.5	1.55	28	52	
27	147	1,925	76	995	3.60	47	72	16.1	1.57	36	69	22
28	150	1,927	68	873			48	17.5	1.54	32	77	
29	174	2,249	92	1,189			76	15.1	1.55	44	63	
30	127	1,472	78	904			74	15.4	1.39	21	38	
31	144	1,549	88	947			78	15.1	1.29	30	52	
Total	3,560	44,713	2,780	34,875	14.60	188	2,408	455.0	46.59	801	1,612	50
Max.	209	2,649	138	1,922	4.10	53	116	19.3	1.71	44	77	26
Min.	88	1,058	66	743	2.90	40	48	12.4	1.29	7	-8	0
Avg.	119	1,490	90	1,125	3.65	47	78	14.7	1.50	27	52	13
Count	30	30	31	31	4.00	4	31	31.0	31.00	30	31	4

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

AUGUST 1996 - ACTIVATED SLUDGE SHEET

Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading f/m	Mix Liq SS mg/L	Mix Liq VSS mg/L	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mg/L	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mg/l	PE SS mg/L
1	48	5.7	5.6	0.45	2,700	1,953	44.0	0.61	2.5	295	0.41	0.30	70	46.7	1.52	209	114
2		6.4	7.4	0.19	2,894	2,126	45.0	0.64	0.0	307	0.42	0.32	79	57.7	1.35	109	104
3		6.5								300			80	61.4	1.32	104	106
4		6.6								295			81	57.4	1.30	99	100
5		5.3	6.7	0.24	2,557	1,916	37.0	0.69	3.9	297	0.41	0.31	65	51.2	1.64	100	84
6		5.3	6.7	0.22	2,670	1,981	37.0	0.72	2.4	299	0.39	0.29	65	49.9	1.62	96	88
7		5.1	5.0	0.33	2,524	1,870	37.0	0.68	3.0	299	0.40	0.30	63	50.8	1.69	133	108
8		5.2	3.9	0.32	2,486	1,877	38.0	0.65	1.5	300	0.40	0.30	64	50.8	1.67	129	138
9		6.2	6.2	0.23	2,550	1,975	38.0	0.67	2.5	304	0.39	0.28	77	51.7	1.39	118	106
10		6.4								300			79	52.1	1.35	94	66
11		6.3								297			78	52.2	1.36	102	94
12		5.2	6.2	0.25	2,442	1,766	40.0	0.61	3.6	299	0.39	0.28	63	49.7	1.67	94	84
13		5.1	7.0	0.33	2,500	1,860	40.0	0.63	3.2	300	0.39	0.29	63	51.1	1.68	132	76
14		5.0	5.1	0.37	2,540	1,905	46.0	0.55	2.8	302	0.41	0.30	63	50.4	1.71	147	104
15		5.3	6.5	0.27	2,581	1,902	45.0	0.57	1.3	301	0.43	0.31	66	50.2	1.62	113	88
16		5.9	8.0	0.26	2,608	1,904	45.0	0.58	2.3	304	0.43	0.32	72	52.2	1.47	121	80
17		6.5								301			80	53.7	1.33	122	88
18		6.5								296			80	53.7	1.32	110	82
19		5.6	6.5	0.26	2,575	1,903	42.0	0.61	2.6	301	0.42	0.32	68	51.6	1.54	116	92
20		5.3	7.0	0.28	2,598	1,940	42.0	0.62	2.2	304	0.43	0.32	68	53.4	1.62	120	82
21		5.5	7.1	0.00	2,472	1,825	40.0	0.62	2.0	296	0.43	0.32	70	51.8	1.57		80
22		5.5	8.9	0.19	2,703	1,966	48.0	0.56	1.6	303	0.40	0.28	71	51.4	1.56	88	70
23		5.8	7.2	0.20	2,576	1,882	42.0	0.61	2.1	311	0.36	0.29	74	51.2	1.49	90	86
24		5.9								297			75	51.0	1.46	91	88
25		5.9								297			75	49.1	1.45	91	88
26		5.6	6.8	0.24	2,410	1,747	47.0	0.51	2.3	301	0.38	0.28	69	50.7	1.55	96	82
27		5.5	7.0	0.38	2,342	1,711	46.0	0.51	2.5	301	0.38	0.28	68	50.8	1.57	147	76
28		5.6	8.2	0.37	2,395	1,745	48.0	0.50	2.1	302	0.37	0.27	70	52.7	1.54	150	68
29		5.6	5.9	0.44	2,363	1,722	48.0	0.49	2.2	300	0.40	0.35	71	52.5	1.55	174	92
30		6.2	7.8	0.27	2,365	1,793	53.0	0.45	2.5	305	0.35	0.26	82	50.8	1.39	127	78
31		6.7								302			85	48.3	1.29	144	88
Total	48	179.1	146.9	6.09	55,851	41,269	948.0	13.10	51.1	9,316	8.79	6.57	2,234	1608.2	46.59	3,566	2,780
Max.	48	6.7	8.9	0.45	2,894	2,126	53.0	0.72	3.9	311	0.43	0.35	85	61.4	1.71	209	138
Min.	48	5.0	3.9	0.00	2,342	1,711	37.0	0.45	0.0	295	0.35	0.26	63	46.7	1.29	88	66
Avg.	48	5.8	6.7	0.28	2,539	1,876	43.1	0.60	2.3	301	0.40	0.30	72	51.9	1.50	119	90
Count	1	31.0	22.0	22.00	22	22	22.0	22.00	22.0	31	22.00	22.00	31	31.0	31.00	30	31

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

AUGUST 1996 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Mercury mgIL
1	5.9	7.5	4	51		1.52	0.000	9	114	11.6	147	56	99	97		
2	6.0	7.2	4	45		1.35	0.000	10	113	11.2	126	39	98	92		
3	5.7	7.4	4	44		1.32	0.000	3	33	8.9	98	16	98	98		
4	6.5	7.3	1	11		1.30	0.000	3	33	8.6	93	25	99	98		
5	6.8	7.6	13	178	0.29	1.64	0.000	4	55	10.7	146	37	94	97	93	<0.0002
6	6.5	7.6	9	122		1.62	0.000	3	41	11.6	157	14	94	97		
7	6.5	7.6	11	155		1.69	0.000	3	42	12.1	171	23	95	98		
8	6.4	7.6	5	70		1.67	0.001	3	42	13.4	187	19	96	98		
9	6.3	7.5	4	46		1.39	0.000	2	23	14.0	162	49	98	99		
10	6.8	7.5	4	45		1.35	0.000	3	34	12.2	137	59	98	98		
11	6.7	7.5	5	57		1.36	0.000	4	45	10.5	119	116	97	97		
12	7.3	7.5	7	97		1.67	0.000	4	56	9.4	131	216	97	97		<0.0002
13	6.9	7.5	7	98		1.68	0.000	4	56	9.1	128	232	96	98		<0.0002
14	6.8	7.6	9	128		1.71	0.000	5	71	10.7	153	174	95	97		
15	6.5	7.5	6	81		1.62	0.000	4	54	10.5	142	55	96	97		
16	6.6	7.5	5	61		1.47	0.000	3	37	8.9	109	20	98	99		
17	6.8	7.5	6	67		1.33	0.000	4	44	9.8	109	31	96	98		
18	6.7	7.4	8	88		1.32	0.000	3	33	8.3	91	45	95	98		
19	7.0	7.5	8	103	0.26	1.54	0.002	3	39	7.6	98	80	96	98	94	<0.0002
20	6.9	7.3	5	68		1.62	0.001	3	41	8.9	120	22	98	98		
21	6.5	7.2	9	118		1.57	0.000			9.6	126	14	97			
22	6.5	7.3	4	52		1.56	0.001	3	39	8.3	108	17	98	98		
23	6.6	7.4	8	99		1.49	0.000	3	37	7.0	87	20	96	97		
24	6.6	7.3	11	134		1.46		2	24	6.9	84	67	93	99		
25	6.6	7.3	4	48	0.23	1.45	0.000	2	24	5.2	63	34	97	98	94	
26	6.9	7.4	4	52		1.55	0.000	2	26	6.3	81	24	98	99		
27	6.5	7.5	7	92	0.25	1.57	0.000	4	52	8.6	113	26	97	98	95	
28	6.9	7.5	6	77		1.54	0.000	5	64	9.3	119	20	98	98		
29	6.6	7.4	7	90		1.55	0.000	5	65	8.9	115	166	97	98		
30	6.8	7.5	4	46		1.39	0.000	5	58	5.8	67	50	97	97		
31	7.0	7.5	4	43		1.29	0.000	5	54	3.1	33	81	98	98		
Total	205.1	230.9	193	2,466	1.03	46.59	0.005	116	1,448	287.0	3,620	1,847	2,999	2,929	376	<0.0002
Max.	7.3	7.6	13	178	0.29	1.71	0.002	10	114	14.0	187	232	99	99	95	<0.0002
Min.	5.7	7.2	1	11	0.23	1.29	0.000	2	23	3.1	33	14	93	92	93	<0.0002
Avg.	6.6	7.4	6	80	0.26	1.50	0.000	4	48	9.3	117	G 34	97	98	94	<0.0002
Count	31.0	31.0	31	31	4.00	31.00	30.000	30	30	31.0	31	31	31	30	4	4

G = Geometric Mean

Amenable cyanide samples taken 8/5/96 & 8/12/96
Total cyanide samples taken 8/13/96 & 8/19/96
All samples were below detection limit of 0.01 mg/l

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

AUGUST 1996 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hours	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1	0	2,640	570	13	322	12	392	7,800	3.2	72	6.0	12.30	12.22	50.26
2	0	2,880	640	17	322	15	365	6,000	3.1	58	5.9	12.21	12.28	60.83
3	0	2,760	640	16	322	10	365	6,500	3.0	73	6.0	12.35	12.29	56.15
4	0	2,640	750	15	242	11	392	6,500	4.3	28	6.0	12.41	12.24	60.31
5	0	2,760	1,020	15	242	9	444	8,200	2.9	72	6.2	12.39	12.47	54.15
6	0	2,760	2,700	11	242	10	392	6,500	3.0	71	6.1	12.41	12.43	60.31
7	0	2,760	2,340	12	242	10	418	6,500	3.1	66	6.2	12.39	12.39	64.31
8	0	2,880	620	39	242	11	470	6,000	3.1	80	6.2	12.44	12.49	78.33
9	0	2,880	2,080	20	322	21	496	8,000	3.0	71	6.2	12.43	12.50	62.00
10	0	2,760	760	16	322	8	392	7,000	2.9	70	6.1		12.35	56.00
11	0	2,640	750	17	322	10	392	6,800	3.0	73	6.2	12.48	12.55	57.65
12	0	2,880	1,510	19	322	11	392	6,500	2.8	74	6.3	12.42	12.47	60.31
13	0	2,760	2,140	17	322	11	418	8,000	3.0	73	6.3	12.41	12.50	52.25
14	0	2,760	2,500	19	322	12	626	11,000	3.5	71	6.2	12.49	12.45	56.91
15	0	2,880	580	22	322	11	653	11,000	3.4	72	6.2	12.54	12.58	59.36
16	0	2,880	2,100	11	322	13	1,018	22,000	3.0	68	6.1	12.13	11.52	46.27
17	0	2,760	660	17	322	12	365	6,000	2.6	71	6.2			60.83
18	0	2,640	1,020	17	322	11	365	6,000	2.8	73	6.1			60.83
19	0	2,760	760	16	322	13	1,096	21,000	3.3	73	6.1	12.52	12.56	52.19
20	0	2,760	790	18	322	12	1,070	20,000	2.7	72	6.2	12.45	12.48	53.50
21	0	2,760	570	18	322	13	392	6,500	2.9	73	6.2	12.38	12.30	60.31
22	0	2,760	860	11	322	21	470	8,700	2.8	71	6.2	12.32	12.36	54.02
23	0	2,880	920	9	242	12	444	6,500	2.8	72	6.2	12.28	12.35	68.31
24	0	2,760	640	48	242	10	287	5,200	2.8	72	6.1		12.23	55.19
25	0	2,760	610	20	322	12	418	6,500	2.8	72	6.2	12.41	12.04	64.31
26	0	2,640	660	18	322	13	444	7,000	3.7	74	6.2	12.27	12.35	63.43
27	0	2,880	660	21	322	12	418	8,500	2.8	72	6.3	12.41	12.38	49.18
28	0	2,760	590	20	322	13	418	6,500	2.9	70	6.1	12.42	12.48	64.31
29	0	2,880	650	22	322	12	392	6,500	2.9	72	6.0	12.33	12.37	60.31
30	0	2,760	690	25	322	15	365	6,000	2.7	72	6.1		12.47	60.83
31	0	2,760	620	19	322	12	365	6,000	2.8	73	6.1		12.52	60.83
Total	0	86,040	32,400	578	9,422	378	14,934	261,200	93.6	2,174	190.5	309.59	358.62	1823.78
Max.	0	2,880	2,700	48	322	21	1,096	22,000	4.3	80	6.3	12.54	12.58	78.33
Min.	0	2,640	570	9	242	8	287	5,200	2.6	28	5.9	12.13	11.52	46.27
Avg.	0	2,775	1,045	19	304	12	482	8,426	3.0	70	6.1	12.38	12.37	58.83

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

SEPTEMBER 1996 - PLANT INFLUENT SHEET

Day	-----Weather---- Type	Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
1			1.27	66	7.6	147	1,557	158	1,674			128	12.5	
2			1.34	66	7.7	181	2,023	226	2,526			202	12.8	
3			1.41	66	7.5	172	2,023	182	2,140			158	13.9	
4			1.40	64	7.6	191	2,230	120	1,401			100	12.8	
5			1.52	64	7.5	219	2,776	340	4,310	4.20	53	310	14.9	
6	Rain	0.02	1.50	64	7.6	248	3,102	244	3,052			212	15.3	
7			1.40	66	7.6	191	2,230	210	2,452			204	15.0	
8			1.38	66	7.7	178	2,049	214	2,463			202	15.3	
9	Rain	0.10	1.45	66	7.5	180	2,177	184	2,225			162	14.9	
10			1.47	66	7.5	209	2,562	254	3,114			222	14.8	
11	Rain	0.08	1.42	66	7.5	268	3,174	254	3,008			208	16.8	
12	Rain	0.02	1.40	66	7.5	202	2,359	262	3,059			236	14.9	
13	Rain	0.02	1.37	63	7.2	186	2,125	200	2,285	5.00	57	182	15.3	
14	Rain	0.28	1.23	62	7.6	202	2,072	220	2,257			182	15.1	
15	Rain	0.02	1.28	62	7.6	148	1,580	152	1,623			134	15.8	
16			1.44	62	7.5	221	2,654	298	3,579			274	15.1	
17	Rain	0.02	1.38	62	7.5	204	2,348	205	2,359			180	14.9	
18			1.44	66	7.4	182	2,186	202	2,426			182	15.8	
19			1.49	66	7.5	216	2,684	220	2,734			214	13.2	
20	Rain	0.03	1.43	64	7.4	244	2,910	238	2,838			210	14.3	
21	Rain	0.79	1.26	64	7.5	160	1,681	254	2,669			214	14.4	
22	Rain	0.09	1.29	64	7.6	156	1,678	186	2,001	3.50	38	162	14.9	
23	Rain	0.08	1.46	66	7.5	412	5,017	198	2,411			170	14.2	
24			1.48	66	7.3	221	2,728	284	3,505			254	13.4	
25			1.48	66	7.3	161	1,987	188	2,321	3.90	48	164	13.9	
26	Rain	0.74	1.47	66	7.5	189	2,317	180	2,207			154	15.2	
27	Rain	0.08	1.38	66	7.6	180	2,072	200	2,302			180	16.4	
28	Rain	0.01	1.27	66	7.4	170	1,801	192	2,034			164	16.1	
29			1.28	66	7.6	153	1,633	188	2,007			172	15.6	
30			1.43	64	7.6	227	2,707	286	3,411			238	14.5	
31														
Total	0	2.38	41.82	1,947	225.4	6,018	70,442	6,539	76,393	16.60	196	5,774	442.0	
Max.	0	0.79	1.52	66	7.7	412	5,017	340	4,310	5.00	57	310	16.8	
Min.	0	0.01	1.23	62	7.2	147	1,557	120	1,401	3.50	38	100	12.5	
Avg.	0	0.16	1.39	65	7.5	201	2,348	218	2,546	4.15	49	192	14.7	
Count	15	15.00	30.00	30	30.0	30	30	30	30	4.00	4	30	30.0	

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

SEPTEMBER 1996 - PRIMARY EFFLUENT SHEET

Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	101	1,070	80	847			66	13.1	1.27	31	49	
2	100	1,118	92	1,028			80	12.6	1.34	45	59	
3	104	1,223	60	706			48	14.5	1.41	40	67	
4	133	1,553	68	794			64	14.2	1.40	30	43	
5	142	1,800	84	1,065	3.10	39	76	14.6	1.52	35	75	26
6	143	1,789	88	1,101			68	15.5	1.50	42	64	
7	119	1,389	86	1,004			82	16.2	1.40	38	59	
8	119	1,370	80	921			78	14.7	1.38	33	63	
9	125	1,512	76	919			72	16.0	1.45	31	59	
10	200	2,452	108	1,324			104	16.8	1.47	4	57	
11	168	1,990	84	995			68	18.9	1.42	37	67	
12	127	1,483	92	1,074			72	16.7	1.40	37	65	
13	137	1,565	112	1,280	4.40	50	68	16.6	1.37	26	44	12
14	107	1,098	104	1,067			72	13.4	1.23	47	53	
15	123	1,313	92	982			88	15.5	1.28	17	39	
16	140	1,681	92	1,105			92	15.8	1.44	37	69	
17	138	1,588	104	1,197			88	16.7	1.38	32	49	
18	139	1,669	116	1,393			112	15.3	1.44	24	43	
19	167	2,075	108	1,342			104	15.9	1.49	23	51	
20	190	2,266	108	1,288			96	15.5	1.43	22	55	
21	122	1,282	120	1,261			104	16.2	1.26	24	53	
22	113	1,216	116	1,248	2.70	29	108	15.6	1.29	28	38	23
23	134	1,632	140	1,705			140	15.7	1.46	67	29	
24	123	1,518	80	987			76	15.5	1.48	44	72	
25	127	1,568	88	1,086	2.40	30	68	16.4	1.48	21	53	38
26	149	1,827	108	1,324			100	16.7	1.47	21	40	
27	132	1,519	124	1,427			92	18.8	1.38	27	38	
28	134	1,419	124	1,313			68	19.3	1.27	21	35	
29	135	1,441	108	1,153			92	16.8	1.28	12	43	
30	125	1,491	116	1,383			112	16.7	1.43	45	59	
31												
Total	4,016	46,916	2,958	34,320	12.60	148	2,558	476.2	41.82	941	1,590	99
Max.	200	2,452	140	1,705	4.40	50	140	19.3	1.52	67	75	38
Min.	100	1,070	60	706	2.40	29	48	12.6	1.23	4	29	12
Avg.	134	1,564	99	1,144	3.15	37	85	15.9	1.39	31	53	25
Count	30	30	30	30	4.00	4	30	30.0	30.00	30	30	4

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

SEPTEMBER 1996 - ACTIVATED SLUDGE SHEET

Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading fIm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	6.8								150			85	46.2	1.27	101	80
2		6.4								149			80	45.7	1.34	100	92
3		6.1	9.9	0.25	2,323	1,646	49.0	0.47	2.7	151	0.34	0.24	75	43.1	1.41	104	60
4		6.2	8.4	0.32	2,218	1,599	50.0	0.44	2.7	150	0.37	0.26	75	41.5	1.40	133	68
5		5.7	6.6	0.37	2,336	1,636	50.0	0.47	1.6	150	0.39	0.27	69	41.6	1.52	142	84
6		5.7	6.6	0.35	2,423	1,706	50.0	0.48	1.0	153	0.39	0.28	70	40.0	1.50	143	88
7		6.2								151			75	37.1	1.40	119	86
8		6.2								148			76	38.9	1.38	119	80
9		5.9	8.5	0.27	2,598	1,860	60.0	0.43	2.0	150	0.40	0.28	74	37.9	1.45	125	76
10		5.9	5.8	0.44	2,548	1,878	62.0	0.41	1.7	152	0.40	0.28	74	37.7	1.47	200	108
11		6.1	8.1	0.32	2,690	2,069	66.0	0.41	1.4	150	0.43	0.27	80	52.8	1.42	168	84
12		6.2	7.3	0.27	2,636	1,867	67.0	0.39	2.0	148	0.41	0.29	82	63.6	1.40	127	92
13		6.3	6.0	0.29	2,561	1,804	62.0	0.41	2.1	154	0.40	0.28	83	79.0	1.37	137	112
14		7.0								149			92	81.1	1.23	107	104
15		6.7								149			88	80.9	1.28	123	92
16		6.0	5.9	0.37	2,165	1,537	40.0	0.54	3.5	150	0.35	0.24	78	80.7	1.44	140	92
17		6.2	5.6	0.33	2,222	1,596	39.0	0.57	2.3	151	0.33	0.24	81	80.9	1.38	138	104
18		6.0	4.4	0.38	2,025	1,464	33.0	0.61	2.2	147	0.31	0.22	77	79.7	1.44	139	116
19		5.8	4.4	0.47	1,980	1,468	30.0	0.66	2.8	187	0.29	0.23	75	68.4	1.49	167	108
20		6.0	4.9	0.48	2,104	1,582	32.0	0.66	2.0	184	0.32	0.24	78	63.3	1.43	190	108
21		6.8								182			86	61.3	1.26	122	120
22		6.7								159			83	63.1	1.29	113	116
23		5.9	3.8	0.39	2,183	1,408	32.0	0.68	3.1	181	0.32	0.26	75	58.1	1.46	134	140
24		5.8	7.0	0.29	2,302	1,764	38.0	0.61	2.0	186	0.36	0.27	76	48.1	1.48	123	80
25		5.8	6.2	0.30	2,257	1,737	35.0	0.64	2.7	187	0.34	0.26	75	59.4	1.48	127	88
26		5.9	5.2	0.35	2,281	1,753	38.0	0.60	3.3	184	0.38	0.30	76	54.4	1.47	149	108
27		6.2	4.9	0.27	2,317	1,867	38.0	0.61	2.5	183	0.35	0.28	82	50.8	1.38	132	124
28		6.8								187			89	50.5	1.27	134	124
29		6.7								188			88	50.8	1.28	135	108
30		6.0	4.9	0.29	2,271	1,721	36.0	0.63	2.5	186	0.36	0.27	79	50.4	1.43	125	116
31																	
Total	48	186.1	124.1	6.79	46,440	33,962	907.0	10.74	46.1	4,896	7.24	5.26	2,376	1687.0	41.82	4,016	2,958
Max.	48	7.0	9.9	0.48	2,690	2,069	67.0	0.68	3.5	188	0.43	0.30	92	81.1	1.52	200	140
Min.	48	5.7	3.8	0.25	1,980	1,408	30.0	0.39	1.0	147	0.29	0.22	69	37.1	1.23	100	60
Avg.	48	6.2	6.2	0.34	2,322	1,698	45.4	0.54	2.3	163	0.36	0.26	79	56.2	1.39	134	99
Count	1	30.0	20.0	20.00	20	20	20.0	20.00	20.0	30	20.00	20.00	30	30.0	30.00	30	30

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

SEPTEMBER 1996 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Amenable Cyanide mg/l
1	7.3	7.6	7	74		1.27	0.000	4	42	0.7	8	130 -	96	97		
2	6.8	7.6	6	67		1.34	0.000	4	45	1.5	16	1,320 -	97	98		
3	6.1	7.4	2	24		1.41	0.000	4	47	2.1	24	560 -	99	98		
4	6.4	7.4	7	82		1.40	0.000	6	70	2.4	27	2,000 -	94	97		
5	6.3	7.4	7	89	0.26	1.52	0.000	6	76	4.0	51	150 -	98	97	94	<0.01
6	6.4	7.6	8	100		1.50	0.000	5	63	6.8	85	52 -	97	98		
7	6.3	7.5	4	47		1.40	0.000	5	58	6.6	77	53 -	98	97		
8	6.3	7.4	7	81		1.38	0.000	5	58	5.7	66	96	97	97		
9	6.1	7.4	4	48		1.45	0.000	5	60	7.2	88	111	98	97		
10	6.1	7.4	8	98		1.47	0.000	6 -	74 -	9.7	119	84 -	97	97		<0.01
11	5.9	7.4	5	59		1.42	0.000	6 -	71 -	12.3	146	66	98	98		
12	6.3	7.3	6	70		1.40	0.000	6 -	70 -	7.7	90	147	98	97		
13	6.5	7.1	7	80	0.35	1.37	0.000	7 -	80 -	4.3	49	88	97	96	93	
14	6.7	7.4	5	51		1.23	0.000	7 -	72 -	10.5	108	1,000	98	97		
15	7.2	7.5	8	85		1.28	0.009	5 -	53 -	0.9	10	360	95	97		
16	6.7	7.5	9	108		1.44	0.000	5 -	60 -	3.1	38	110	97	98		
17	6.2	7.4	8	92		1.38	0.000	3	35	2.9	33	73	96	99		
18	6.6	7.6	9	108		1.44	0.000	4	48	4.5	54	33	96	98		
19	6.9	7.5	8	99		1.49	0.000	4	50	5.1	63	61	96	98		
20	6.7	7.5	13 -	155 -		1.43	0.000	4	48	7.4	89	20	95	98		
21	6.3	7.4	13 -	137 -		1.26	0.000	3	32	7.1	74	16	95	98		
22	6.7	7.4	10 -	108 -	0.27	1.29	0.000	3	32	7.2	78	6	95	98	92	<0.01
23	6.7	7.5	9 -	110 -		1.46	0.000	3	37	9.4	115	6	95	99		
24	6.5	7.0	11 -	136 -		1.48	0.000	4	49	10.4	128	16	96	98		
25	6.8	7.2	9 -	111 -	0.28	1.48	0.000	3	37	7.4	91	11	95	98	93	<0.01
26	6.9	7.4	12 -	147 -		1.47	0.000	6	74	9.3	114	37	93	97		
27	6.6	7.6	7	81		1.38	0.000	3	35	11.2	129	23	97	98		
28	6.8	7.5	9	95		1.27	0.000	3	32	10.0	105	27	95	98		
29	7.0	7.5	10	107		1.28	0.000	4	43	8.4	90	26	95	97		
30	7.2	7.5	12	143		1.43	0.000	5	60	9.1	109	28	96	98		
31																
Total	197.3	222.9	240	2,791	1.16	41.82	0.009	138	1,608	195.1	2,275	6,710	2,889	2,928	372	<0.01
Max.	7.3	7.6	13	155	0.35	1.52	0.009	7	80	12.3	146	2,000	99	99	94	<0.01
Min.	5.9	7.0	2	24	0.26	1.23	0.000	3	32	0.7	8	6	93	96	92	<0.01
Avg.	6.6	7.4	8	93	0.29	1.39	0.000	5	54	6.5	76	G 69	96	98	93	<0.01
Count	30.0	30.0	30	30	4.00	30.00	30.000	30	30	30.0	30	30	30	30	4	4

G = Geometric Mean

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

SEPTEMBER 1996 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hours	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1	0	2,760	780	10	322	9	516	6,500	2.6	72	6.3		12.56	79.38
2	0	2,640	660	17	322	11	516	6,500	2.4	73	6.3	12.48	12.25	79.38
3	0	2,880	1,000	16	483	7	590	8,500	2.6	74	6.3	12.39	12.49	69.41
4	0	2,640	760	18	322	9	516	6,500	2.6	71	6.2	12.44	12.44	79.38
5	0	2,880	620	24	322	13	627	7,500	2.6	72	6.2	12.38	12.46	83.60
6	0	2,880	650	30	322	19	590	8,250	2.6	72	6.2	12.40	12.47	71.52
7	0	2,760	640	25	322	17	516	6,500	2.1	72	6.2	12.47	12.53	79.38
8	0	2,760	2,250	25	161	17	516	7,500	2.6	73	6.1	12.44	12.46	68.80
9	0	2,880	660	15	322	17	553	8,500	2.5	73	6.1	12.38	12.41	65.06
10	0	2,760	600	25	322	17	516	7,000	2.9	73	6.1	12.33	12.45	73.71
11	0	2,880	600	25	322	19	553	6,500	3.1	72	6.1	12.34	12.41	85.08
12	0	2,760	670	25	322	13	516	6,500	3.5	72	6.2	12.31	12.36	79.38
13	0	2,880	620	27	322	29	553	8,000	2.9	72	6.1	12.36	12.39	69.13
14	0	2,760	770	20	322	17	480	6,500	2.7	71	6.3	12.49	12.39	73.85
15	0	2,760	770	23	322	20	516	6,500	2.8	71	6.3	12.43	12.49	79.38
16	0	2,880	730	22	322	18	480	8,000	2.9	70	6.4	12.47	12.42	60.00
17	0	2,760	670	24	161	19	480	6,500	2.9	71	6.4	12.43	12.40	73.85
18	0	2,880	1,300	21	0	20	516	6,500	3.0	71	6.3	12.47	12.40	79.38
19	0	2,760	910	24	161	19	516	8,500	3.0	71	6.3	12.46	12.43	60.71
20	0	2,880	1,280	24	483	19	553	7,000	3.0	70	6.3	12.38	12.48	79.00
21	0	2,760	840	24	322	16	516	6,500	3.1	73	6.2	12.53	12.42	79.38
22	0	2,640	640	27	161	14	443	6,500	3.3	73	6.2	12.16	11.55	68.15
23	0	2,760	800	21	161	10	480	6,500	3.1	72	6.3	12.16	11.95	73.85
24	0	2,880	620	20	1,449	12	516	7,800	3.2	71	6.2	12.34	12.08	66.15
25	0	2,880	760	23	322	11	516	6,500	2.9	69	6.4	12.02	11.62	79.38
26	0	2,880	720	22	322	10	553	7,500	3.1	71	6.4		12.38	73.73
27	0	2,880	730	19	161	13	516	8,500	3.1	70	6.7	12.34	12.38	60.71
28	0	2,880	830	20	161	12	443	6,500	2.9	70	6.5	12.34	12.27	68.15
29	0	2,880	680	17	161	11	443	6,500			6.4	12.45	12.08	68.15
30	0	2,880	680	16	161	11	480	7,500	3.0	72	6.4	12.30	12.28	64.00
31														
Total	0	84,360	24,240	649	9,338	449	15,525	214,050	83.0	2,077	188.4	346.49	369.70	2191.06
Max.	0	2,880	2,250	30	1,449	29	627	8,500	3.5	74	6.7	12.53	12.56	85.08
Min.	0	2,640	600	10	0	7	443	6,500	2.1	69	6.1	12.02	11.55	60.00
Avg.	0	2,812	808	22	311	15	518	7,135	2.9	72	6.3	12.37	12.32	73.04

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

OCTOBER 1996 - PLANT INFLUENT SHEET

Day	Weather Type	Weather Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
1			1.41	64	7.5	225	2,646	267	3,140			222		
2	Rain	0.03	1.55	64	7.4	230	2,973	224	2,896	4.10	53	196		
3			1.39	64	7.6	126	1,461	154	1,785			124	15.3	
4			1.55	64	7.5	154	1,991	164	2,120			132		
5			1.45	64	7.5	159	1,923	184	2,225			160		
6			1.43	64	7.4	212	2,528	260	3,101			240	11.7	
7			1.51	66	7.4	219	2,758	210	2,645			194		
8	Rain	0.34	1.46	64	7.5	156	1,900	176	2,143	4.10	50	160		
9	Rain	0.03	1.45	63	7.4	175	2,116	160	1,935			178		
10	Rain	0.03	1.47	63	7.2	246	3,016	202	2,476			174	14.2	
11			1.49	63	7.4	173	2,150	184	2,286			184		
12			1.39	64	7.2	231	2,678	232	2,689			220		
13			1.32	62	7.3	370	4,073	316	3,479			306		
14			1.45	62	7.6	219	2,648	264	3,193			224		
15			1.55	62	7.5	116	1,500	166	2,146			140	15.4	
16	Rain	0.02	1.51	64	7.5	190	2,393	176	2,216			164		
17	Rain	0.82	1.49	63	7.4	238	2,958	234	2,908	5.00	62	212	13.0	
18			1.37	64	7.6	175	2,000	212	2,422			184		
19			1.51	64	7.6	177	2,229	164	2,065			148		
20			1.39	63	7.6	204	2,365	180	2,087			160		
21			1.40	63	7.6			172	2,008			162	13.3	
22	Rain	0.62	1.37	62	7.7	254	2,902	268	3,062			244		
23	Rain	0.33	1.52	66	7.1	224	2,840	160	2,028			146		
24			1.50	64	7.1	210	2,627	200	2,502	4.40	55	182		
25			1.44	64	7.4	171	2,054	240	2,882			220		
26	Rain	0.02	1.15	64	7.5	138	1,324	160	1,535			152		
27			1.19	64	7.6	163	1,618	182	1,806			164		
28			1.44	64	7.3	143	1,717	156	1,873			140	15.1	
29	Rain	1.14	1.46	64	7.2	192	2,338	182	2,216			170		
30			1.43	64	7.4	118	1,407	132	1,574			116	15.5	
31			1.33	64	7.4	224	2,485	272	3,017			116		
Total	0	3.38	44.37	1,974	230.4	5,832	69,615	6,253	74,462	17.60	220	5,534	113.5	
Max.	0	1.14	1.55	66	7.7	370	4,073	316	3,479	5.00	62	306	15.5	
Min.	0	0.02	1.15	62	7.1	116	1,324	132	1,535	4.10	50	116	11.7	
Avg.	0	0.34	1.43	64	7.4	194	2,320	202	2,402	4.40	55	179	14.2	
Count	10	10.00	31.00	31	31.0	30	30	31	31	4.00	4	31	8.0	

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

OCTOBER 1996 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
Day												
1	148	1,740	120	1,411			112		1.41	34	55	
2	195	2,521	132	1,706			112		1.55	15	41	
3	122	1,414	100	1,159			72	17.0	1.39	3	35	
4	138	1,784	132	1,706			104		1.55	10	20	
5	137	1,657	128	1,548	5.00	60	104		1.45	14	30	-22
6	149	1,777	116	1,383			96	15.1	1.43	30	55	
7	167	2,103	108	1,360			96		1.51	24	49	
8	152	1,851	120	1,461	3.80	46	100		1.46	3	32	7
9	125	1,512	64	774			60		1.45	29	60	
10	224	2,746	112	1,373			108	14.3	1.47	9	45	
11	149	1,852	98	1,218			92		1.49	14	47	
12	133	1,542	88	1,020			80		1.39	42	62	
13	173	1,905	108	1,189			108		1.32	53	66	
14	116	1,403	100	1,209			80		1.45	47	62	
15	119	1,538	76	982			64	14.9	1.55	-3	54	
16	143	1,801	76	957			72		1.51	25	57	
17	189	2,349	88	1,094	4.10	51	88	14.9	1.49	21	62	22
18	140	1,600	88	1,005			72		1.37	20	58	
19	126	1,587	80	1,007			64		1.51	29	51	
20	145	1,681	88	1,020			80		1.39	29	51	
21			64	747			64	16.0	1.40		63	
22	154	1,760	100	1,143			88		1.37	39	63	
23	183	2,320	92	1,166			84		1.52	18	43	
24	193	2,414	112	1,401	4.40	55	104		1.50	8	44	0
25	145	1,741	88	1,057			76		1.44	15	63	
26	129	1,237	108	1,036			108		1.15	7	33	
27	113	1,121	84	834			80		1.19	31	54	
28	109	1,309	84	1,009			80	15.8	1.44	24	46	
29	158	1,924	80	974			80		1.46	18	56	
30	125	1,491	72	859			52		1.43	-6	45	
31	101	1,120	68	754			52		1.33	55	75	
Total	4,400	52,799	2,974	35,565	17.30	213	2,632	108.0	44.37	657	1,577	7
Max.	224	2,746	132	1,706	5.00	60	112	17.0	1.55	55	75	22
Min.	101	1,120	64	747	3.80	46	52	14.3	1.15	-6	20	-22
Avg.	147	1,760	96	1,147	4.33	53	85	15.4	1.43	22	51	2
Count	30	30	31	31	4.00	4	31	7.0	31.00	30	31	4

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

OCTOBER 1996 - ACTIVATED SLUDGE SHEET

Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	6.1	5.1	0.32	2,386	1,810	37.0	0.64	2.6	183	0.38	0.29	79	50.8	1.41	148	120
2		5.6	4.0	0.49	2,296	1,731	35.0	0.66	1.4	187	0.39	0.30	73	50.1	1.55	195	132
3		6.2	6.2	0.26	2,386	1,831	39.0	0.61	2.1	193	0.31	0.22	81	54.5	1.39	122	100
4		5.6	4.3	0.31	2,471	1,904	40.0	0.62	3.0	191	0.38	0.29	72	56.9	1.55	138	132
5		5.9								188			77	58.9	1.45	137	128
6		6.0								183			79	57.9	1.43	149	116
7		5.7	5.5	0.35	2,485	1,980	40.0	0.62	2.2	184	0.38	0.30	71	62.8	1.51	167	108
8		5.9	4.9	0.32	2,394	1,913	35.0	0.68	2.0	187	0.37	0.30	76	52.5	1.46	152	120
9		5.9	9.3	0.24	2,407	2,098	39.0	0.62		188	0.38	0.28	76	49.9	1.45	125	64
10		5.9	5.1	0.51	2,343	1,809	40.0	0.59	3.3	190	0.37	0.30	75	50.1	1.47	224	112
11		5.8	6.1	0.30	2,501	2,051	42.0	0.60	2.0	192	0.38	0.31	74	50.3	1.49	149	98
12		6.2								185			80	49.7	1.39	133	88
13		6.5								183			81	50.3	1.32	173	108
14		5.9	6.3	0.23	2,535	2,074	44.0	0.58	1.8	189	0.34	0.28	76	48.9	1.45	116	100
15		5.6	7.5	0.25	2,452	2,029	45.0	0.54	2.5	184	0.38	0.31	71	50.5	1.55	119	76
16		5.7	7.6	0.30	2,431	2,015	43.0	0.57	3.0	183	0.40	0.32	73	51.8	1.51	143	76
17		5.8	6.7	0.38	2,456	2,046	45.0	0.55	2.0	181	0.41	0.34	73	52.6	1.49	189	88
18		6.3	7.8	0.25	2,607	2,141	50.0	0.52	0.8	187	0.40	0.33	80	53.2	1.37	140	88
19		5.7								190			74	51.2	1.51	126	80
20		6.2								186			77	50.0	1.39	145	88
21		6.2	9.9	0.28	2,481	2,078	45.0	0.55	1.9	185	0.36	0.30	76	60.5	1.40	147	64
22		6.3	6.3	0.29	2,423	2,018	43.0	0.56	0.2	184	0.41	0.35	81	53.9	1.37	154	100
23		5.7	6.3	0.38	2,445	2,057	43.0	0.57	1.0	194	0.37	0.31	71	64.7	1.52	183	92
24		5.7	5.3	0.39	2,463	2,093	42.0	0.59	1.7	188	0.41	0.35	74	65.6	1.50	193	112
25		6.0	7.1	0.28	2,495	2,102	40.0	0.62	1.6	185	0.39	0.33	75	66.1	1.44	145	88
26		7.5								183			93	63.0	1.15	129	108
27		7.2								182			89	59.5	1.19	113	84
28		6.0	6.3	0.24	2,115	1,828	34.0	0.62	6.0	189	0.37	0.29	74	58.9	1.44	109	84
29		5.9	6.4	0.37	2,095	1,754	36.0	0.58	5.4	185	0.31	0.26	72	64.1	1.46	158	80
30		6.0	7.4	0.28	2,130	1,789	35.0	0.61	3.6	188	0.38	0.32	75	62.7	1.43	125	72
31		6.5	8.0	0.22	2,021	1,683	35.0	0.58	6.2	192	0.30	0.24	81	60.0	1.33	101	68
Total	48	187.5	149.4	7.23	54,818	44,834	927.0	13.67	56.3	5,789	8.57	6.92	2,379	1731.9	44.37	4,547	2,974
Max.	48	7.5	9.9	0.51	2,607	2,141	50.0	0.68	6.2	194	0.41	0.35	93	66.1	1.55	224	132
Min.	48	5.6	4.0	0.22	2,021	1,683	34.0	0.52	0.2	181	0.30	0.22	71	48.9	1.15	101	64
Avg.	48	6.0	6.5	0.31	2,383	1,949	40.3	0.59	2.6	187	0.37	0.30	77	55.9	1.43	147	96
Count	1	31.0	23.0	23.00	23	23	23.0	23.00	22.0	31	23.00	23.00	31	31.0	31.00	31	31

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

OCTOBER 1996 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Amenable Cyanide mg/l
1	6.9	7.5	5	59		1.41	0.000	3	35			30	98	99		
2	6.7	7.6	8	103	0.86	1.55	0.000	3	39			21	96	99	79	
3	6.9	7.3	9	104		1.39	0.000	4	46	9.2	107	37	94	97		
4	7.2	7.5	19	246		1.55	0.000	5	65			65	88	97		
5	7.1	7.6	17	206		1.45	0.000	5	60			40	91	97		
6	6.7	7.5	18	215		1.43	0.000	5	60	9.9	118	55	93	98		<0.01
7	7.0	7.5	11	139		1.51	0.000	5	63			26	95	98		
8	6.8	7.3	16	195	0.96	1.46	0.000	4	49			76	91	97	77	
9	7.2	7.3	8	97		1.45	0.000	4	48			44	95	98		
10	7.2	7.4	12	147		1.47	0.000	5	61	10.5	129	55	94	98		
11	7.0	7.1	8	99		1.49	0.000	5	62			80	96	97		
12	7.1	7.4	16	185		1.39	0.000	4	46			48	93	98		
13	7.1	7.4	9	99		1.32	0.000	4	44				97	99		
14	6.8	7.5	16	193		1.45	0.000	5	60			37	94	98		<0.01
15	7.1	7.6	13	168		1.55	0.000	4	52	12.1	156	72	92	97		
16	7.0	7.6	14	176		1.51	0.000	3	38			44	92	98		
17	6.8	7.7	9	112	0.61	1.49	0.000	4	50	12.3	153	113	96	98	88	<0.01
18	6.8	7.5	17	194		1.37	0.000	7	80			121	92	96		
19	7.0	7.6	16	201		1.51	0.000	6	76			61	90	97		
20	6.5	7.5	15	174		1.39	0.000	5	58			60	92	98		
21	7.1	7.5	17	198		1.40	0.000			14.5	169	142	90			
22	6.9	7.5	17	194		1.37	0.000	12	137			99	94	95		<0.01
23	7.1	7.4	17	216		1.52	0.000	11	139			52	89	95		
24	7.4	7.5	23	288	0.54	1.50	0.000	14	175			100	89	93	88	
25	7.4	7.5	19	228		1.44	0.000	11	132			28	92	94		
26	6.4	7.5	11	106		1.15	0.000	6	58			47	93	96		
27	7.2	7.6	10	99		1.19	0.000	3	30			20	95	98		
28	7.6	7.3	12	144		1.44	0.001	3	36	14.4	173	30	92	98		
29	7.4	7.4	13	158		1.46	0.001	5	61			30	93	97		
30	7.3	7.3	11	131		1.43	0.000	5	60	13.1	156	40	92	96		
31	7.6	7.4	13	144		1.33	0.000	4	44			33	95	98		
Total	218.3	231.3	419	5,020	2.97	44.37	0.002	164	1,964	96.0	1,161	1,706	2,883	2,914	332	<0.01
Max.	7.6	7.7	23	288	0.96	1.55	0.001	14	175	14.5	173	142	98	99	88	<0.01
Min.	6.4	7.1	5	59	0.54	1.15	0.000	3	30	9.2	107	20	88	93	77	<0.01
Avg.	7.0	7.5	14	162	0.74	1.43	0.000	5	65	12.0	145	G 50	93	97	83	<0.01
Count	31.0	31.0	31	31	4.00	31.00	31.000	30	30	8.0	8	30	31	30	4	4

G = Geometric Mean

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

OCTOBER 1996 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	S02 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hours	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1	0	2,760	2,050	16	161	10	478	9,000	3.3	72	6.2	12.25	12.20	53.11
2	0	2,880	2,020	22	161	25	449	7,500	2.8	72	6.1	12.39	12.40	59.87
3	0	2,880	2,200	16	161	13	449	8,500	2.8	72	6.3	12.37	12.40	52.82
4	0	3,000	2,160	16	161	11	419	7,500	2.6	72	6.2	12.34	12.54	55.87
5	0	2,880	2,010	16	161	11	449	7,500	2.6	71	6.2	12.48	12.38	59.87
6	0	2,760	2,020	16	242	11	478	8,000	2.7	72	6.1	12.44	12.48	59.75
7	0	2,880	1,640	15	0	14	449	16,100	2.9	73	6.1		12.36	27.89
8	0	2,880	2,480	14	322	11	449	8,500	2.8	73	6.2	12.49	12.45	52.82
9	0	2,880	2,400	14	322	14	299	6,500	2.7	74	6.2		12.33	46.00
10	0	3,120	2,310	16	322	10	389	6,000	2.7	73	6.3	12.43	12.39	64.83
11	200	2,880	2,470	15	322	10	449	12,700	2.7	74	6.2	12.30	12.15	35.35
12	0	2,880	2,410	8	322	8	359	8,500	2.9	70	6.9	12.38	12.23	42.24
13	100	2,760	2,320	19	322	8	419	9,500	3.0	73	6.0		12.63	44.11
14	100	2,880	2,520	15	322	28	389	10,400	3.0	75	6.0	12.58	12.49	37.40
15	0	2,760	3,160	15	322	10	359	6,500	2.8	74	6.0	12.38		55.23
16	0	2,880	2,440	17	322	8	269	10,000	2.8	68	6.0	12.04	11.80	26.90
17	0	2,760	2,300	17	322	9	538	11,000	2.4	74	6.0	12.37	12.23	48.91
18	100	2,880	2,560	18	322	12	449	10,000	2.5	75	6.1	12.44	12.48	44.90
19	200	2,880	2,320	17	322	11	389	8,000	2.6	74	6.1	12.53	12.49	48.63
20	100	2,880	2,600	18	242	11	419	10,000	2.7	74	6.1	12.47	12.45	41.90
21	200	2,760	2,830	18	322	10	449	8,000	2.4	72	6.4	12.43	12.43	56.13
22	100	3,000	2,460	22	242	14	449	9,000	3.3	74	6.4	12.47	12.49	49.89
23	300	3,000	2,520	32	322	11	299	7,500	2.8	76	6.1	12.52	12.49	39.87
24	200	3,000	2,290	20	322	12	419	8,500	2.6	76	6.1	12.53	12.43	49.29
25	0	2,880	2,420	23	322	13	538	9,400	2.8	74	6.1	12.44	12.44	57.23
26	0	3,000	2,520	20	322	26	269	6,000	2.7	76	6.2	12.37	12.33	44.83
27	400	2,880	2,370	19	322	9	179	6,000	2.6	76	6.2	12.37	12.22	29.83
28	200	2,880	2,960	21	322	13	419	8,000	2.6	76	6.2	12.33	12.26	52.38
29	300	3,000	2,860	23	322	9	389	8,000	2.8	75	6.2	12.36	12.36	48.63
30	500	2,880	2,340	19	644	13	359	6,000	3.1	74	6.2		12.26	59.83
31	800	3,120	2,270	12	483	11	389	6,000	2.7	74	6.2	12.30	12.23	64.83
Total	3,800	89,760	74,230	549	9,098	386	12,505	264,100	85.7	2,278	191.6	334.80	370.82	1511.14
Max.	800	3,120	3,160	32	644	28	538	16,100	3.3	76	6.9	12.58	12.63	64.83
Min.	0	2,760	1,640	8	0	8	179	6,000	2.4	68	6.0	12.04	11.80	26.90
Avg.	123	2,895	2,395	18	293	12	403	8,519	2.8	73	6.2	12.40	12.36	48.75

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

NOVEMBER 1996 - PLANT INFLUENT SHEET

Day	Weather Type	Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	Remarks or Other Parameters
1			1.42	64	7.5	142	1,682	156	1,847			132		
2			1.18	64	7.8	147	1,447	156	1,535			120		
3			1.23	62	7.6	129	1,323	134	1,375			118		
4	Rain	0.03	1.48	62	7.5	183	2,259	150	1,851			130		
5			1.42	63	7.5	166	1,966	144	1,705	3.80	45	130		
6	Rain	0.95	1.46	63	7.4	251	3,056	146	1,778			134		
7	Rain	0.94	1.49	63	7.7	154	1,914	180	2,237			162	15.2	
8	Rain	0.03	1.50	62	7.5	170	2,127	174	2,177			162		
9			1.40	62	7.6	128	1,495	150	1,751			142		
10	Snow	0.21	1.28	63	7.7	156	1,665	150	1,601	4.05	43	134	16.1	
11	Snow	0.03	1.50	63	7.6	105	1,314	144	1,801			122		
12	Snow	0.01	1.44	62	7.5	370	4,444	174	2,090			150		
13			1.32	61	7.6	117	1,288	158	1,739			140		
14			1.38	61	7.6	157	1,807	178	2,049			166		
15			1.50	62	7.3	178	2,227	128	1,601			122		
16			1.52	62	7.5	139	1,762	140	1,775			130		
17	Rain	0.11	1.21	64	7.6	121	1,221	156	1,574			138	15.6	
18			1.42	64	7.6	213	2,523	220	2,605			200		
19			1.54	64	7.6	152	1,952	120	1,541	3.40	44	112		
20			1.56	63	7.5	177	2,303	148	1,926			140		
21			1.59	61	7.3									
22			1.55	61	7.3	170	2,198	178	2,301			168		
23	Rain	0.02	1.55	63	7.5	138	1,784	158	2,042			136		
24	Snow	0.19	1.39	61	7.6	187	2,168	220	2,550			204		
25			1.48	61	7.4	193	2,382	218	2,691			196		
26			1.55	61	7.5	182	2,353	194	2,508	3.90	50	186	13.7	
27	Snow	0.07	1.48	61	7.6	208	2,567	220	2,716			192		
28			1.17	57	7.5	172	1,678	152	1,483			138	16.1	
29	Rain	0.23	1.20	58	7.7	174	1,741	166	1,661			162		
30	Rain	0.22	1.21	61	7.6	207	2,089	186	1,877			170		
31														
Total	0	3.04	42.42	1,859	226.2	4,986	58,733	4,798	56,389	15.15	182	4,336	76.7	
Max.	0	0.95	1.59	64	7.8	370	4,444	220	2,716	4.05	50	204	16.1	
Min.	0	0.01	1.17	57	7.3	105	1,221	120	1,375	3.40	43	112	13.7	
Avg.	0	0.23	1.41	62	7.5	172	2,025	165	1,944	3.79	46	150	15.3	
Count	13	13.00	30.00	30	30.0	29	29	29	29	4.00	4	29	5.0	

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

NOVEMBER 1996 - PRIMARY EFFLUENT SHEET

Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	83	983	88	1,042			72		1.42	42	44	
2	109	1,073	60	590			52		1.18	26	62	
3	85	872	72	739			62		1.23	34	46	
4	126	1,555	72	889			60		1.48	31	52	
5	125	1,480	80	947	3.00	36	80		1.42	25	44	21
6	187	2,277	100	1,218			100		1.46	25	32	
7	101	1,255	98	1,218			88	14.6	1.49	34	46	
8	127	1,589	98	1,226			90		1.50	25	44	
9	120	1,401	102	1,191			90		1.40	6	32	
10	102	1,089	84	897	2.60	28	84	15.8	1.28	35	44	36
11	94	1,176	100	1,251			80		1.50	10	31	
12	98	1,177	84	1,009			68		1.44	74	52	
13	81	892	80	881			68		1.32	31	49	
14	81	932	84	967			72		1.38	48	53	
15	195	2,439	126	1,576			120		1.50	-10	2	
16	134	1,699	96	1,217			80		1.52	4	31	
17	152	1,534	120	1,211			112	16.1	1.21	-26	23	
18	116	1,374	96	1,137			84		1.42	46	56	
19	134	1,721	96	1,233	3.55	46	84		1.54	12	20	-4
20	132	1,717	148	1,926			132		1.56	25	0	
21									1.59			
22	175	2,262	316	4,085			268		1.55	-3	-78	
23	138	1,784	248	3,206			212		1.55	0	-57	
24	137	1,588	300	3,478			248		1.39	27	-36	
25	146	1,802	320	3,950			264		1.48	24	-47	
26	114	1,474	232	2,999	3.90	50	200	14.5	1.55	37	-20	0
27	134	1,654	164	2,024			124		1.48	36	25	
28	116	1,132	124	1,210			116	15.4	1.17	33	18	
29	68	681	112	1,121			100		1.20	61	33	
30	133	1,342	148	1,494			140		1.21	36	20	
31												
Total	3,543	41,954	3,848	45,930	13.05	159	3,350	76.4	42.42	748	621	53
Max.	195	2,439	320	4,085	3.90	50	268	16.1	1.59	74	62	36
Min.	68	681	60	590	2.60	28	52	14.5	1.17	-26	-78	-4
Avg.	122	1,447	133	1,584	3.26	40	116	15.3	1.41	26	21	13
Count	29	29	29	29	4.00	4	29	5.0	30.00	29	29	4

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

NOVEMBER 1996 - ACTIVATED SLUDGE SHEET

Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	6.1	5.5	0.21	1,922	1,571	35.0	0.55	5.5	191	0.29	0.24	77	57.2	1.42	83	88
2		7.3								192			93	58.0	1.18	109	60
3		7.0								192			89	55.3	1.23	85	72
4		5.8	5.8	0.37	1,719	1,395	35.0	0.49	5.6	190	0.30	0.23	74	46.7	1.48	126	72
5		6.1	5.8	0.33	1,837	1,504	31.0	0.59	4.5	186	0.28	0.23	76	44.3	1.42	125	80
6		5.9	4.8	0.47	1,950	1,606	34.0	0.57	4.1	183	0.35	0.29	74	43.6	1.46	187	100
7		5.8	5.2	0.24	2,100	1,722	35.0	0.60	2.5	187	0.37	0.30	73	43.4	1.49	101	98
8		5.7	5.3	0.30	2,173	1,768	36.0	0.60	4.1	189	0.36	0.29	72	44.7	1.50	127	98
9		6.2								190			78	45.1	1.40	120	102
10		6.7								192			85	44.9	1.28	102	84
11		5.7	5.3	0.22	2,224	1,796	40.0	0.56	5.0	195	0.37	0.30	72	44.7	1.50	94	100
12		6.0	6.7	0.22	2,246	1,807	42.0	0.53	3.9	197	0.36	0.29	77	44.1	1.44	98	84
13		6.5	7.8	0.16	2,291	1,851	43.0	0.53	4.3	197	0.36	0.29	84	43.5	1.32	81	80
14		6.2	6.9	0.18	2,218	1,747	44.0	0.50	4.5	198	0.36	0.28	81	41.6	1.38	81	84
15		5.7	4.1	0.49	2,135	1,677	42.0	0.51	3.9	195	0.36	0.29	74	44.4	1.50	195	126
16		5.7								189			72	45.0	1.52	134	96
17		7.1								187			91	43.5	1.21	152	120
18		6.1	6.5	0.23	2,462	1,963	45.0	0.55	3.3	190	0.41	0.31	77	43.2	1.42	116	96
19		5.6	5.9	0.29	2,431	1,965	48.0	0.51	2.9	192	0.41	0.33	71	42.8	1.54	134	96
20		5.5	3.9	0.29	2,479	1,982	47.0	0.53	3.0	192	0.43	0.34	71	45.3	1.56	132	148
21		5.4	4.5	0.26	2,636	2,102	52.0	0.51	1.1	192	0.43	0.34	69	58.5	1.59	122	133
22		5.6	2.1	0.33	2,810	2,295	53.0	0.53	2.0	192	0.43	0.34	69	69.2	1.55	175	316
23		5.6								189			68	74.9	1.55	138	248
24		6.2								189			68	77.4	1.39	137	300
25		5.8	2.7	0.21	3,595	2,810	75.0	0.48	1.5	190	0.53	0.42	76	68.2	1.48	146	320
26		5.6	3.7	0.17	3,714	2,947	75.0	0.50	2.0	194	0.54	0.42	73	72.7	1.55	114	232
27		5.8	5.1	0.20	3,464	2,734	71.0	0.49	2.8	197	0.59	0.46	68	74.8	1.48	134	164
28		7.4								193			79	75.8	1.17	116	124
29		7.2								139			103	76.0	1.20	68	112
30		7.1								170			99	74.7	1.21	133	148
31																	
Total	48	184.4	97.4	5.17	46,406	37,242	883.0	10.13	66.5	5,669	7.53	5.99	2,333	1643.5	42.42	3,665	3,981
Max.	48	7.4	7.8	0.49	3,714	2,947	75.0	0.60	5.6	198	0.59	0.46	103	77.4	1.59	195	320
Min.	48	5.4	2.1	0.16	1,719	1,395	31.0	0.48	1.1	139	0.28	0.23	68	41.6	1.17	68	60
Avg.	48	6.1	5.1	0.27	2,442	1,960	46.5	0.53	3.5	189	0.40	0.32	78	54.8	1.41	122	133
Count	1	30.0	19.0	19.00	19	19	19.0	19.00	19.0	30	19.00	19.00	30	30.0	30.00	30	30

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

NOVEMBERR 1996 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Amenable Cyanide mg/l
1	7.5	7.5	16	189		1.42	0.000	6	71			93	90	96		
2	7.4	7.6	6	59		1.18	0.000	5	49			19	96	97		
3	7.7	7.6	10	103		1.23	0.000	5	51			22	93	96		
4	7.5	7.5	10	123		1.48	0.000	8	99			49	93	96		
5	7.4	7.6	10	118	0.38	1.42	0.000	5	59			206	93	97	91	
6	7.3	7.4	9	110		1.46	0.000	6	73			64	94	98		
7	7.0	7.5	16	199		1.49	0.000	5	62	10.6	132	75	91	97		
8	7.8	7.5	12	150		1.50	0.000	5	63			104	93	97		
9	7.1	7.5	9	105		1.40	0.000	5	58			156	94	96		<0.01
10	7.1	7.5	9	96	0.32	1.28	0.000	5	53	8.1	86	52	94	97	92	
11	7.6	7.7	11	138		1.50	0.000	5	63			180	92	95		
12	7.0	7.5	12	144		1.44	0.000	7	84			72	93	98		<0.01
13	7.5	7.4	10	110		1.32	0.000	6	66			86	94	95		
14	7.5	7.4	14	161		1.38	0.000	9	104			340	92	94		
15	7.3	7.4	15	188		1.50	0.000	8	100			244	88	96		
16	7.3	7.4	16	203		1.52	0.000	7	89			31	89	95		
17	7.3	7.4	11	111		1.21	0.000	4	40	3.2	32	146	93	97	89	
18	7.5	7.5	11	130		1.42	0.000	6	71			320	95	97		
19	7.7	7.4	11	141	0.38	1.54	0.000	5	64			49	91	97		<0.01
20	7.6	7.4	10	130		1.56	0.000	6	78			61	93	97		
21	7.1	7.4				1.59	0.000					48				
22	7.6	7.4	27	349		1.55	0.001	11	142			83	85	94		
23	7.4	7.3	24	310		1.55	0.000	12	155			272	85	91		
24	7.8	7.4	3	35		1.39	0.000	8	93			106	99	96		<0.01
25	7.6	7.2	10	123		1.48	0.006	6	74			190	95	97		
26	7.1	7.2	7	90	0.23	1.55	0.001	8	103	10.9	141	23	96	96	94	
27	7.5	7.4	8	99		1.48	0.001	3	37			37	96	99		
28	8.0	7.4	5	49		1.17	0.000	2	20			47	97	99		
29	7.6	7.5	4	40		1.20	0.002	3	30			51	98	98		
30	7.3	7.5	5	50		1.21	0.000	5	50			162	97	98		
31																
Total	223.1	223.4	321	3,855	1.31	42.42	0.011	176	2,102	32.8	391	3,388	2,699	2,796	366	<0.01
Max.	8.0	7.7	27	349	0.38	1.59	0.006	12	155	10.9	141	340	99	99	94	<0.01
Min.	7.0	7.2	3	35	0.23	1.17	0.000	2	20	3.2	32	19	85	91	89	<0.01
Avg.	7.4	7.4	11	133	0.33	1.41	0.000	6	72	8.2	98	G 84	93	96	92	<0.01
Count	30.0	30.0	29	29	4.00	30.00	30.000	29	29	4.0	4	30	29	29	4	4

G = Geometric Mean

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

NOVEMBER 1996 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hours	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1	1,200	3,120	2,320	18	322	18	447	7,500	2.8	75	6.3	12.56	12.48	59.60
2	2,000	2,880	2,260	17	322	12	224	6,500	2.8	75	6.2	12.55	12.47	34.46
3	1,500	3,120	2,240	18	644	12	280	6,000	2.5	74	6.2		12.00	46.67
4	1,100	3,000	3,040	19	483	14	335	8,000	2.7	77	6.3	12.00	11.50	41.88
5	500	2,880	2,260	18	322	10	335	6,500	2.8	73	6.3	12.36	12.10	51.54
6	300	3,000	2,270	16	403	11	363	9,000	2.7	73	6.2	12.31	12.11	40.33
7	900	2,880	2,310	36	403	21	280	6,500	2.6	74	6.2		11.75	43.08
8	1,600	3,120	2,430	20	403	14	307	7,000	3.0	73	6.2	12.03	11.70	43.86
9	1,700	3,000	2,240	19	483	11	252	6,000	2.6	74	6.2	12.40	12.34	42.00
10	1,300	3,000	2,320	20	483	11	196	6,500	2.8	71	6.2		12.57	30.15
11	1,300	3,120	2,190	22	403	12	307	7,300	2.7	73	6.2	12.13	11.61	42.05
12	2,600	3,120	2,160	24	483	10	280	7,250	2.6	73	6.3	12.10	11.27	38.62
13	2,300	3,240	2,210	18	403	12	307	8,600	2.9	73	6.3	12.11	11.62	35.70
14	2,400	3,120	2,210	21	403	18	335	7,000	2.5	73	6.3	12.20	11.90	47.86
15	2,200	3,240	2,350	21	403	19	307	8,000	3.0	72	6.3	12.10	11.37	38.38
16	1,400	3,000	2,350	23	564	19	280	6,500	2.8	71	6.3		12.51	43.08
17	1,100	2,880	2,210	22	322	24	252	6,500	2.7	71	6.3	12.33	12.06	38.77
18	1,600	3,120	2,540	26	403	16	335	7,200	3.0	70	6.3	12.48	12.42	46.53
19	2,100	3,120	2,200	25	403	18	307	6,500	2.8	71	6.3	12.25	11.92	47.23
20	2,100	3,120	2,240	41	483	19	280	8,500	2.9	76	6.2	12.43	12.24	32.94
21	2,000	3,120	2,230	26	403	19	307	6,500	2.6	69	6.3	12.57	12.43	47.23
22	1,600	3,240	2,300	27	483	19	280	7,000	2.5	68	6.3		12.49	40.00
23	1,800	3,000	2,190	27	564	21	419	17,000	2.6	69	6.2	12.60	12.52	24.65
24	2,200	3,120	2,200	28	564	15	447	16,000	3.1	69	6.2		12.42	27.94
25	2,500	3,120	2,290	28	564	24	559	25,000	2.6	70	6.2		12.25	22.36
26	2,600	3,120	2,210	16	564	17	224	6,500	2.7	70	6.2		12.00	34.46
27	2,900	3,240	2,380	19	564	18	252	8,000	2.8	69	6.2	12.22	11.84	31.50
28	2,700	3,360	2,300	24	483	17	252	6,000	2.7	68	6.2	12.58	12.31	42.00
29	2,800	2,760	2,340	28	483	19	335	6,000	3.3	66	6.3	12.37	12.51	55.83
30	1,000	2,640	2,360	18	483	13	335	6,000	2.7	70	6.3		11.69	55.83
31														
Total	53,300	91,800	69,150	685	13,693	483	9,419	246,850	82.8	2,150	187.5	258.68	362.40	1226.52
Max.	2,900	3,360	3,040	41	644	24	559	25,000	3.3	77	6.3	12.60	12.57	59.60
Min.	300	2,640	2,160	16	322	10	196	6,000	2.5	66	6.2	12.00	11.27	22.36
Avg.	1,777	3,060	2,305	23	456	16	314	8,228	2.8	72	6.3	12.32	12.08	40.88

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

DECEMBER 1996 - PLANT INFLUENT SHEET

Day	-----Weather---- Type	Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
1	Snow	0.08	1.69	61	7.0	242	3,411	232	3,270			206		
2			1.49	59	7.5	220	2,734	194	2,411			180		
3	Snow	0.03	1.46	59	7.6	360	4,384	308	3,750			154		
4			1.49	60	7.2	253	3,144	196	2,436			176	14.3	
5	Snow	0.22	1.60	61	7.5	217	2,896	278	3,710	4.35	58	240	13.2	
6	Snow	0.02	1.49	61	7.5	205	2,547	172	2,137			148		
7			1.20	58	7.7	204	2,042	100	1,001			92		
8	Snow	0.03	1.21	59	7.7	189	1,907	180	1,816			160	16.7	
9			1.55	59	7.4	182	2,353	166	2,146			158		
10	Rain	0.11	1.53	61	7.6	236	3,011	222	2,833			201		
11	Rain	0.17	1.58	61	7.4	244	3,215	280	3,690			250		
12	Rain	0.36	1.61	61	7.2	249	3,343	174	2,336	5.10	68	162		
13			1.54	61	7.4	191	2,453	138	1,772			130		
14			1.49	61	7.4	244	3,032	182	2,262			166		
15	Rain	0.13	1.24	59	7.6	208	2,151	184	1,903			174		
16	Snow	0.23	1.45	59	7.7	197	2,382	180	2,177			168		
17	Snow	0.05	1.41	59	7.7	182	2,140	216	2,540			210	13.6	
18	Snow	0.01	1.39	57	7.5	221	2,562	182	2,110	5.10	59	158	15.6	
19	Snow	0.03	1.57	59	7.8	250	3,273	194	2,540			162		
20			1.43	59	7.8	208	2,481	122	1,455			106		
21			1.47	57	7.7	234	2,869	182	2,231			154		
22	Rain	0.15	1.20	57	7.8	181	1,811	146	1,461	4.18	42	138		
23	Snow	0.06	1.52	57	7.6	188	2,383	170	2,155			160	13.5	
24			1.27	57	7.6	188	1,991	142	1,504			130		
25			1.15	57	7.7	167	1,602	140	1,343			126		
26	Snow	0.19	1.56	57	7.6	190	2,472	120	1,561			102		
27			1.58	57	7.6	236	3,110	140	1,845			126	12.6	
28	Rain	0.01	1.49	57	7.4	251	3,119	126	1,566			118		
29			1.21	54	7.6	166	1,675	140	1,413			134		
30			1.39	55	7.6	167	1,936	148	1,716			138		
31			1.33	55	7.5	166	1,841	146	1,619			128		
Total	0	1.88	44.59	1,814	233.9	6,636	80,272	5,500	66,708	18.73	227	4,855	99.5	
Max.	0	0.36	1.69	61	7.8	360	4,384	308	3,750	5.10	68	250	16.7	
Min.	0	0.01	1.15	54	7.0	166	1,602	100	1,001	4.18	42	92	12.6	
Avg.	0	0.11	1.44	59	7.5	214	2,589	177	2,152	4.68	57	157	14.2	
Count	17	17.00	31.00	31	31.0	31	31	31	31	4.00	4	31	7.0	

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

DECEMBER 1996 - PRIMARY EFFLUENT SHEET

Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	134	1,889	112	1,579			96		1.69	45	52	
2	106	1,317	64	795			64		1.49	52	67	
3	131	1,595	68	828			68		1.46	64	78	
4	178	2,212	100	1,243			84	14.8	1.49	30	49	
5	140	1,868	56	747	1.95	26	56	13.8	1.60	35	80	55
6	146	1,814	84	1,044			76		1.49	29	51	
7	125	1,251	68	681			68		1.20	39	32	
8	104	1,050	60	605			56	16.8	1.21	45	67	
9	121	1,564	58	750			48		1.55	34	65	
10	135	1,723	56	715			46		1.53	43	75	
11	140	1,845	54	712			48		1.58	43	81	
12	206	2,766	74	994	1.40	19	58		1.61	20	57	73
13	163	2,094	64	822			54		1.54	15	54	
14	109	1,354	72	895			60		1.49	55	60	
15	127	1,313	66	683			56		1.24	39	64	
16	73	883	40	484			36		1.45	63	78	
17	118	1,388	64	753			60	13.4	1.41	35	70	
18	118	1,368	68	788	1.55	18	48	15.5	1.39	47	63	70
19	129	1,689	80	1,048			58		1.57	48	59	
20	133	1,586	68	811			64		1.43	36	44	
21	123	1,508	72	883			60		1.47	47	60	
22	102	1,021	64	641	1.30	13	54		1.20	44	56	69
23	100	1,268	60	761			60	13.1	1.52	47	65	
24	105	1,112	64	678			54		1.27	44	55	
25	83	796	70	671			54		1.15	50	50	
26	128	1,665	70	911			52		1.56	33	42	
27	144	1,898	74	975			68	13.7	1.58	39	47	
28	199	2,473	74	920			58		1.49	21	41	
29	104	1,050	60	605			42		1.21	37	57	
30	86	997	54	626			48		1.39	49	64	
31	119	1,320	72	799			64		1.33	28	51	
Total	3,929	47,675	2,110	25,442	6.20	76	1,818	101.1	44.59	1,256	1,834	267
Max.	206	2,766	112	1,579	1.95	26	96	16.8	1.69	64	81	73
Min.	73	796	40	484	1.30	13	36	13.1	1.15	15	32	55
Avg.	127	1,538	68	821	1.55	19	59	14.4	1.44	41	59	67
Count	31	31	31	31	4.00	4	31	7.0	31.00	31	31	4

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

DECEMBER 1996 - ACTIVATED SLUDGE SHEET

Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	5.1								187			66	71.6	1.69	134	112
2		5.8	9.9	0.21	2,627	2,093	40.0	0.66	4.9	192	0.42	0.34	77	46.3	1.49	106	64
3		5.9	9.1	0.27	2,506	1,987	39.0	0.64	4.7	192	0.38	0.30	74	45.4	1.46	131	68
4		5.8	5.8	0.39	2,409	1,907	38.0	0.63	2.1	193	0.36	0.28	73	44.8	1.49	178	100
5		5.4	10.4	0.30	2,596	2,069	40.0	0.65	2.1	190	0.47	0.38	68	44.8	1.60	140	56
6		5.8	7.3	0.30	2,546	2,038	38.0	0.67	2.5	187	0.43	0.35	56	42.9	1.49	146	84
7		7.2								188			65	58.1	1.20	125	68
8		7.1								188			64	58.4	1.21	104	60
9		5.6	8.2	0.31	2,058	1,677	34.0	0.61	5.0	189	0.42	0.34	40	31.6	1.55	121	58
10		5.6	8.2	0.36	1,952	1,597	29.0	0.67	3.9	187	0.52	0.42	39	37.8	1.53	135	56
11		5.5	7.9	0.40	1,878	1,541	27.0	0.70	3.7	186	0.51	0.42	65	18.5	1.58	140	54
12		5.4	5.8	0.58	1,920	1,581	30.0	0.64	3.4	188	0.59	0.48	59	19.3	1.61	206	74
13		5.6	8.1	0.38	2,237	1,818	30.0	0.75	1.9	189	0.63	0.51	62	24.2	1.54	163	64
14		5.8								188			63	29.0	1.49	109	72
15		6.9								188			76	30.4	1.24	127	66
16		5.9	14.1	0.16	2,279	1,870	30.0	0.76	4.2	188	0.65	0.53	64	38.2	1.45	73	40
17		6.1	8.2	0.27	2,073	1,731	32.0	0.65	4.1	187	0.60	0.52	65	33.5	1.41	118	64
18		6.2	7.4	0.34	1,960	1,344	29.0	0.68	4.5	195	0.55	0.45	66	32.4	1.39	118	68
19		5.5	5.6	0.38	1,954	1,474	27.0	0.72	4.9	194	0.60	0.52	60	23.7	1.57	129	80
20		6.0	7.2	0.34	1,950	1,562	27.0	0.72	3.8	195	0.52	0.42	65	27.8	1.43	133	68
21		5.9								186			61	20.2	1.47	123	72
22		7.2								183			75	25.4	1.20	102	64
23		5.7	7.4	0.27	1,888	1,540	23.0	0.82	3.7	181	0.55	0.44	76	31.8	1.52	100	60
24		6.8	9.8	0.21	2,214	1,782	27.0	0.82	3.2	186	0.41	0.33	69	32.6	1.27	105	64
25		7.5	7.1	0.21	1,595	1,294				190	0.64	0.52	69	30.3	1.15	83	70
26		5.5	4.8	0.47	1,459	1,180	18.0	0.81	6.7	188	0.59	0.48	50	21.3	1.56	128	70
27		5.5	3.6	0.65	1,182	971	14.0	0.84	5.5	184	0.39	0.32	47	7.6	1.58	144	74
28		5.8								181			51	6.5	1.49	199	74
29		7.1								184			58	8.0	1.21	104	60
30		6.2								184			80	3.6	1.39	86	54
31		6.5	10.5	0.19	2,805	2,293	34.0	0.83	2.6	188	0.42	0.35	89	18.1	1.33	119	72
Total	48	187.7	166.5	7.00	44,088	35,349	606.0	14.26	77.4	5,826	10.65	8.70	1,992	964.1	44.59	3,929	2,110
Max.	48	7.5	14.1	0.65	2,805	2,293	40.0	0.84	6.7	195	0.65	0.53	89	71.6	1.69	206	112
Min.	48	5.1	3.6	0.16	1,182	971	14.0	0.00	1.9	181	0.36	0.28	39	3.6	1.15	73	40
Avg.	48	6.1	7.9	0.33	2,099	1,683	30.3	0.68	3.9	188	0.51	0.41	64	31.1	1.44	127	68
Count	1	31.0	21.0	21.00	21	21	20.0	21.00	20.0	31	21.00	21.00	31	31.0	31.00	31	31

Robert J. Swalwell
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

DECEMBER 1996 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Amenable Cyanide mg/l
1	7.4	7.4	8	113		1.69	0.000	6	85			76	97	98		
2	6.5	6.8	6	75		1.49	0.010	5	62			42	97	98		
3	7.8	7.6	10	122		1.46	0.001	5	61			63	97	99		
4	7.0	7.2	10	124		1.49	0.000	4	50	8.8	109	26	95	98		<0.01
5	7.0	7.1	12	160	0.16	1.60	0.000	6	80	7.3	97	38	96	97	96	
6	7.3	7.3	5	62		1.49	0.000	3	37			34	97	99		
7	7.1	7.4	3	30		1.20	0.000	4	40			20	97	98		
8	7.5	7.4	5	50		1.21	0.000	4	40			44	97	98		<0.01
9	7.7	7.4	2	26		1.55	0.000	3	39	6.2	80	37	99	98		
10	7.0	7.4	8	102		1.53	0.000	7	89			23	96	97		
11	6.7	7.4	5	66		1.58	0.000	6	79			66	98	98		<0.01
12	7.0	7.2	2	27	0.13	1.61	0.000	7	94			20	99	97	97	
13	7.4	7.2	6	77		1.54	0.000	11	141			20	96	94		
14	6.7	7.2	9	112		1.49	0.000	8	99			16	95	97		
15	6.7	7.3	3	31		1.24	0.000	5	52			106	98	98		
16	7.4	7.6	6	73		1.45	0.000	5	60			22	97	97		<0.01
17	7.1	7.4	4	47		1.41	0.000	6	71	7.4	87	5	98	97		
18	7.6	7.4	9	104	0.14	1.39	0.000	6	70	8.4	97	4	95	97	97	
19	7.7	7.5	13	170		1.57	0.000	7	92			11	93	97		
20	7.4	7.4	6	72		1.43	0.000	5	60			13	95	98		
21	7.5	7.5	7	86		1.47	0.000	6	74			25	96	97		
22	7.0	7.4	3	30	0.14	1.20	0.000	5	50			23	98	97	97	
23	7.1	7.2	7	89		1.52	0.000	8	101	4.4	56	174	96	96		
24	7.5	7.2	6	64		1.27	0.000	6	64			105	96	97		
25	8.5	7.5	6	58		1.15	0.000	6	58			29	96	96		
26	8.5	7.3	3	39		1.56	0.000	6	78			84	98	97		
27	7.6	7.5	4	53		1.58	0.000	5	66	5.5	72	75	97	98		
28	7.1	7.3	6	75		1.49	0.001	7	87			80	95	97		
29	6.8	7.5	10	101		1.21	0.000	7	71			13	93	96		
30	6.5	7.5	8	93		1.39	0.000	9	104			9	95	95		
31	7.2	7.2	9	100		1.33	0.000	5	55			51	94	97		
Total	225.3	227.7	201	2,428	0.57	44.59	0.012	183	2,208	48.0	600	1,354	2,986	3,013	387	<0.01
Max.	8.5	7.6	13	170	0.16	1.69	0.010	11	141	8.8	109	174	99	99	97	<0.01
Min.	6.5	6.8	2	26	0.13	1.15	0.000	3	37	4.4	56	4	93	94	96	<0.01
Avg.	7.3	7.3	6	78	0.14	1.44	0.000	6	71	6.9	86	G 31	96	97	97	<0.01
Count	31.0	31.0	31	31	4.00	31.00	31.000	31	31	7.0	7	31	31	31	4	4

G = Geometric Mean

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

DECEMBER 1996 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hours	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1	1,800	3,000	2,200	13	483	14	143	6,000	3.4	67	6.4	12.45	12.16	23.83
2	2,500	3,120	2,280	19	483	14	89	6,000	3.5	66	6.4	12.19	8.17	14.83
3	2,000	3,360	2,220	20	483	24	178	7,000	3.8	68	6.5	12.56	12.27	25.43
4	2,000	3,000	2,370	19	483	22	161	7,500	3.4	68	6.4		11.94	21.47
5	1,300	3,120	2,200	20	483	10	268	11,000	2.9	71	6.3	11.91	11.06	24.36
6	2,100	3,120	2,320	20	483	15	428	17,860	3.1	65	6.6	12.36	12.01	23.96
7	1,900	3,480	2,350	20	483	12	285	10,000	3.0	68	6.7	12.66	12.61	28.50
8	3,500	3,000	2,280	20	483	14	143	8,000	3.0	70	6.3	12.63	12.40	17.88
9	2,400	3,120	2,210	19	483	15	357	21,000	3.0	70	6.2	12.58	12.30	17.00
10	1,900	3,000	2,140	22	644	14	178	8,400	3.7	70	6.1	12.37	12.25	21.19
11	1,500	3,000	690	15	483	14	392	17,500	3.3	69	6.3	12.49	12.35	22.40
12	3,200	3,000	940	14	483	15	232	8,500	3.7	68	6.3	12.60	12.50	27.29
13	1,900	3,120	625	19	483	15	357	14,500	3.9	71	6.3	12.47	12.34	24.62
14	1,500	2,880	625	17	322	8	178	6,500	3.3	70	6.2		12.04	27.38
15	1,400	2,880	760	17	322	23	250	21,000	3.3	69		11.69	9.95	11.90
16	2,700	3,000	720	14	322	11	250	9,000	3.2	72	6.2	12.51	12.42	27.78
17	2,600	3,000	680	21	322	12	357	16,500	3.2	68	6.2	12.63	12.40	21.64
18	2,900	3,120	590	33	322	9	196	8,000	3.0	70	6.2	12.15	11.92	24.50
19	4,600	3,240	1,420	17	322	13	410	19,500	3.2	69	6.4	12.36	12.23	21.03
20	4,400	3,120	1,750	20	483	13	268	8,500	3.3	70	6.2	12.39	12.11	31.53
21	2,900	3,120	800	20	483	13	196	7,200	3.6	69	6.2		11.79	27.22
22	2,200	2,880	610	20	322	13	214	8,000	3.2	70	6.2	12.38	12.15	26.75
23	2,600	3,000	640	20	403	15	178	6,600	3.1	71	6.3		10.88	26.97
24	3,200	3,120	780	21	403	16	232	8,000	3.1	70	6.3	12.29	12.02	29.00
25	4,000	3,120	580	19	322	14	161	6,000	3.3	71	6.5	11.76	10.33	26.83
26	3,500	3,120	520	8	403	23	214	8,000	3.0	72	6.3	11.85	10.39	26.75
27	3,000	3,000	620	9	403	2	214	8,000	2.4	70	6.4	12.00	11.07	26.75
28	2,100	3,000	600	15	322	10	214	8,000	4.2	73	6.4	11.68	10.43	26.75
29	2,100	3,000	690	17	322	13	214	8,000	3.7	63	6.2	12.22	11.63	26.75
30	2,500	3,000	920	18	403	14	232	8,000	4.0	76	6.3			29.00
31	2,800	3,000	950	18	81	20	268	8,000	2.6	64	6.4	12.35	11.94	33.50
Total	79,000	95,040	39,080	564	12,722	440	7,457	316,060	102.4	2,148	189.7	319.53	350.06	764.80
Max.	4,600	3,480	2,370	33	644	24	428	21,000	4.2	76	6.7	12.66	12.61	33.50
Min.	1,300	2,880	520	8	81	2	89	6,000	2.4	63	6.1	11.68	8.17	11.90
Avg.	2,548	3,066	1,261	18	410	14	241	10,195	3.3	69	6.3	12.29	11.67	24.67

Robert J. Swalwell
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JANUARY 1998 - PLANT INFLUENT SHEET

Day	-----Weather---- Type	Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
1			1.28	52	7.8	152	1,623	136	1,452			122	13.5	
2			1.64	52	7.3	233	3,187	186	2,544			156		
3	RAIN	0.47	1.50	54	7.5	299	3,740	340	4,253			310		
4	RAIN	0.19	1.76	56	7.9	251	3,684	218	3,200			192		
5	RAIN	0.95	1.79	56	7.7	191	2,851	234	3,493			202		
6	RAIN	0.28	1.86	55	7.5	209	3,242	198	3,071	3.29	51	172		
7	RAIN	0.92	2.01	56	7.8	171	2,867	226	3,789			186	10.8	
8	RAIN	0.42	1.99	54	7.6	160	2,655	134	2,224			116		
9	SNOW	0.03	2.21	56	7.6	186	3,428	210	3,871			146		
10			2.17	54	7.6	166	3,004	198	3,583			172		
11			2.00	54	7.4	279	4,654	188	3,136			170	9.5	
12	SNOW	0.05	1.96	54	7.5	177	2,893	184	3,008	3.29	54	164		
13			2.03	55	7.5	152	2,573	128	2,167			116		
14			1.88	54	7.9	189	2,963	150	2,352			132	11.9	
15	SNOW	0.17	1.86	56	7.6	210	3,258	106	1,644			92		
16			1.81	53	7.5	176	2,657	180	2,717			164		
17			1.65	52	7.8	245	3,371	224	3,082			204		
18	SNOW	0.03	1.74	54	7.7	230	3,338	178	2,583			152	11.5	
19	SNOW	0.01	1.72	54	7.6	184	2,641	172	2,469	3.28	47	168	12.2	
20			1.74	53	7.6	168	2,438	166	2,409			152		
21	SNOW	0.12	1.81	53	7.7	175	2,642	178	2,687			166		
22	SNOW	0.42	1.82	53	7.6	180	2,732	164	2,489			156	11.8	
23			1.77	53	7.8	226	3,336	156	2,303			136		
24			1.47	52	7.8	166	2,035	132	1,618			118		
25	SNOW	0.03	1.54	51	7.7	176	2,260	166	2,132			144	12.1	
26	RAIN	0.02	1.75	53	7.6	162	2,364	198	2,890	3.84	56	180		
27			1.72	53	7.6	182	2,611	145	2,080			137	12.5	
28	RAIN	0.03	1.54	52	7.7	154	1,978	154	1,978			130		
29	SNOW	0.06	2.09	52	7.7	195	3,399	142	2,475			122		
30			2.23	54	7.6	133	2,474	138	2,567			120		
31			2.19	52	7.5	187	3,415	150	2,740			134		
Total	0	4.20	56.53	1,662	236.7	5,964	90,315	5,479	83,006	13.70	208	4,831	105.8	
Max.	0	0.95	2.23	56	7.9	299	4,654	340	4,253	3.84	56	310	13.5	
Min.	0	0.01	1.28	51	7.3	133	1,623	106	1,452	3.28	47	92	9.5	
Avg.	0	0.25	1.82	54	7.6	192	2,913	177	2,678	3.43	52	156	11.8	
Count	17	17.00	31.00	31	31.0	31	31	31	31	4.00	4	31	9.0	

17916, NH5

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JANUARY 1998 - PRIMARY EFFLUENT SHEET

Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	108	1,153	68	726			66	15.6	1.28	29	50	
2	156	2,134	96	1,313			76		1.64	33	48	
3	111	1,389	84	1,051			76		1.50	63	75	
4	149	2,187	60	881			56		1.76	41	72	
5	111	1,657	46	687			44		1.79	42	80	
6	153	2,373	78	1,210	2.27	35	66		1.86	27	61	
7	138	2,313	64	1,073			56	13.2	2.01	19	72	30
8	105	1,743	64	1,062			56		1.99	34	52	
9	108	1,991	70	1,290			64		2.21	42	67	
10	105	1,900	72	1,303			68		2.17	37	64	
11	156	2,602	74	1,234			66	13.5	2.00	32	61	
12	133	2,174	92	1,504	1.90	31	86		1.96	25	50	42
13	137	2,319	76	1,287			70		2.03	10	41	
14	120	1,882	96	1,505			72		1.88	37	36	
15	152	2,358	92	1,427			76		1.86	28	13	
16	125	1,887	96	1,449	1.95	29	90		1.81	29	47	
17	125	1,720	98	1,349			90		1.65	49	56	
18	138	2,003	74	1,074			62	13.3	1.74	40	58	
19	135	1,937	60	861			60	13.6	1.72	27	65	41
20	98	1,422	88	1,277			88		1.74	42	47	
21	109	1,645	92	1,389			84	13.2	1.81	38	48	
22	136	2,064	74	1,123			68		1.82	24	55	
23	158	2,332	76	1,122			72		1.77	30	51	
24	115	1,410	100	1,226			90		1.47	31	24	
25	98	1,259	80	1,027			68	13.7	1.54	44	52	
26	112	1,635	80	1,168	1.92	28	80		1.75	31	60	50
27	143	2,051	74	1,062			74	13.4	1.72	21	49	
28	113	1,451	60	771			54		1.54	27	61	
29	80	1,394	34	593			26		2.09	59	76	
30	114	2,120	80	1,488			72		2.23	14	42	
31	139	2,539	98	1,790			90		2.19	26	35	
Total	3,880	59,044	2,396	36,320	8.04	124	2,166	109.5	56.53	1,031	1,668	163
Max.	158	2,602	100	1,790	2.27	35	90	15.6	2.23	63	80	50
Min.	80	1,153	34	593	1.90	28	26	13.2	1.28	10	13	30
Avg.	125	1,905	77	1,172	2.01	31	70	13.7	1.82	33	54	41
Count	31	31	31	31	4.00	4	31	8.0	31.00	31	31	4

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JANUARY 1998 - ACTIVATED SLUDGE SHEET

Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	6.7								140			61	23.4	1.28	108	68
2		5.3	4.6	0.42	2,004	1,700	34.0	0.59	5.9	135	0.43	0.36	49	23.2	1.64	156	96
3		5.7								135			54	24.6	1.50	111	84
4		4.9								137			46	22.9	1.76	149	60
5		4.8	10.2	0.27	2,334	2,020	42.0	0.56	1.7	134	0.46	0.39	49	35.3	1.79	111	46
6		4.6	5.6	0.41	2,277	1,943	39.0	0.58	5.7	134	0.52	0.45	50	38.1	1.86	153	78
7		4.3	5.8	0.44	2,091	1,776	37.0	0.57	4.6	139	0.40	0.34	47	31.2	2.01	138	64
8		4.3	5.9	0.33	2,093	1,785	35.0	0.60	5.8	137	0.40	0.34	44	27.4	1.99	105	64
9		3.9	4.7	0.39	2,006	1,702	30.0	0.67	6.5	141	0.49	0.42	42	31.4	2.21	108	70
10		4.0								143			44	30.4	2.17	105	72
11		4.3								142			49	29.8	2.00	156	74
12		4.4	4.4	0.38	2,200	1,894	38.0	0.58	4.6	141	0.40	0.34	49	36.4	1.96	133	92
13		4.2	4.9	0.43	2,103	1,809	30.0	0.70	6.3	138	0.39	0.33	47	35.7	2.03	137	76
14		4.6	4.2	0.35	2,092	1,790	32.0	0.65	6.8	139	0.37	0.32	51	36.5	1.88	120	96
15		4.6	4.3	0.45	2,036	1,762	32.0	0.64	6.4	138	0.38	0.33	51	34.1	1.86	152	92
16		4.8	4.4	0.35	2,119	1,826	35.0	0.61	5.3	138	0.37	0.32	53	35.8	1.81	125	96
17		5.2								137			58	38.5	1.65	125	98
18		5.0								141			55	32.7	1.74	138	74
19		5.0	7.3	0.35	2,107	1,827	35.0	0.60	5.3	140	0.38	0.33	57	35.1	1.72	135	60
20		5.0	4.7	0.28	2,013	1,713	35.0	0.58	6.0	125	0.37	0.32	54	33.1	1.74	98	88
21		4.8	4.1	0.34	1,897	1,633	30.0	0.63	6.7	124	0.34	0.30	53	29.9	1.81	109	92
22		4.7	5.1	0.42	1,898	1,633	25.0	0.76	5.9	124	0.33	0.28	55	24.8	1.82	136	74
23		4.9	5.3	0.46	1,970	1,687	28.0	0.70	5.2	124	0.34	0.28	54	23.2	1.77	158	76
24		5.9								123			65	27.2	1.47	115	100
25		5.6								126			61	26.7	1.54	98	80
26		4.9	5.1	0.32	2,003	1,713	35.0	0.57	6.0	125	0.37	0.32	55	25.2	1.75	112	80
27		5.0	5.7	0.39	2,027	1,736	35.0	0.58	5.7	123	0.33	0.28	56	19.4	1.72	143	74
28		5.6	8.1	0.27	2,086	1,773	39.0	0.53	5.2	123	0.35	0.29	62	15.3	1.54	113	60
29		4.1	10.9	0.26	2,148	1,817	39.0	0.55	5.8	123	0.35	0.29	47	15.3	2.09	80	34
30		3.9	4.4	0.38	2,171	1,846	41.0	0.53	3.8	124	0.41	0.35	43	29.0	2.23	114	80
31		3.9								124			45	34.0	2.19	139	98
Total	48	148.9	119.5	7.69	43,675	37,385	726.0	12.77	115.2	4,117	8.18	6.98	1,606	905.6	56.53	3,880	2,396
Max.	48	6.7	10.9	0.46	2,334	2,020	42.0	0.76	6.8	143	0.52	0.45	65	38.5	2.23	158	100
Min.	48	3.9	4.1	0.26	1,897	1,633	25.0	0.53	1.7	123	0.33	0.28	42	15.3	1.28	80	34
Avg.	48	4.8	5.7	0.37	2,080	1,780	34.6	0.61	5.5	133	0.39	0.33	52	29.2	1.82	125	77
Count	1	31.0	21.0	21.00	21	21	21.0	21.00	21.0	31	21.00	21.00	31	31.0	31.00	31	31

Steven D. Washburn
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

JANUARY 1998 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Amenable Cyanide mg/l
1	8.0	7.6	7	75		1.28	0.000	7	75	10.8	115	16	95	95		<0.02
2	8.3	7.6	13	178		1.64	0.000	9	123			13	93	96		
3	7.0	7.5	11	138		1.50	0.000	4	50			20	97	99		
4	6.0	7.5	11	161		1.76	0.000	6	88			32	95	98		
5	6.2	7.4	10	149		1.79	0.000	5	75			17	96	97		<0.02
6	7.9	7.5	12	186	0.20	1.86	0.000	6	93			23	94	97	94	
7	7.5	7.6	10	168	3.10	2.01	0.000	8	134	13.4	225	96	96	95		
8	7.8	7.6	15	249		1.99	0.000	8	133			35	89	95		
9	8.2	7.6	13	240	233	2.21	0.000	8	147			22	94	96		
10	8.4	7.6	16	290		2.17	0.000	10	181			45	92	94		
11	8.2	7.6	10	167		2.00	0.000	8	133	7.8	130	61	95	97		
12	7.0	7.5	14	229	0.24	1.96	0.000	8	131			46	92	95	93	<0.02
13	8.5	7.5	12	203	3.92	2.03	0.000	8	135			31	91	95		
14	8.2	7.6	16	251		1.88	0.000	8	125	12.6	198	34	89	96		
15	8.2	7.6	15	233	857	1.86	0.000	9	140			52	86	96		
16	7.4	7.4	16	242		1.81	0.000	8	121			29	91	95		
17	8.1	7.7	14	193	15	1.65	0.000	7	96			18	94	97		
18	7.6	7.6	14	203		1.74	0.000	11	160	11.3	164	22	92	95		
19	8.1	7.5	13	186	0.25	1.72	0.000	9	129	10.7	153	31	92	95	92	<0.02
20	8.2	7.6	15	218	3.59	1.74	0.000	10	145			4	91	94		
21	8.3	7.6	15	226		1.81	0.000	10	151	11.3	171	11	92	94		
22	7.8	7.5	11	167		1.82	0.000	12	182			17	93	93		
23	7.9	7.6	15	221		1.77	0.000	12	177			80	90	95		
24	7.4	7.6	11	135		1.47	0.000	14	172			14	92	92		
25	8.2	7.6	11	141		1.54	0.000	10	128	11.5	148	14	93	94		
26	7.9	7.7	14	204	0.25	1.75	0.000	11	161			14	93	93	94	
27	7.7	7.5	11	158	3.65	1.72	0.000	7	100	10.6	152	93	92	96		
28	7.7	7.6	10	128		1.54	0.000	7	90			15	94	95		
29	7.5	7.6	12	209		2.09	0.000	8	139			33	92	96		
30	7.4	7.5	14	260		2.23	0.000	9	167			28	90	93		
31	7.2	7.6	14	256		2.19	0.000	10	183			28	91	95		
Total	239.8	234.5	395	6,063	0.94	56.53	0.000	267	4,065	100.0	1,455	994	2,866	2,953	373	0
Max.	8.5	7.7	16	290	0.25	2.23	0.000	14	183	13.4	225	96	97	99	94	0
Min.	6.0	7.4	7	75	0.20	1.28	0.000	4	50	7.8	115	4	86	92	92	0
Avg.	7.7	7.6	13	196	0.24	1.82	0.000	9	131	11.1	162	G = 26	92	95	93	0
Count	31.0	31.0	31	31	4.00	31.00	31.000	31	31	9.0	9	31	31	31	4	4

G = Geometric Mean

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JANUARY 1998 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hrs @ 25C	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1	2,000	3,120	480	16	242	20	532	7,550	4.1	66	6.1	12.07	11.80	70.46
2	1,400	2,880	380	18	242	11	608	7,500	4.2	64	6.2	12.18	12.18	81.07
3	900	3,000	470	20	403	13	608	7,500	4.0	70	6.2	12.16	12.10	81.07
4	1,200	3,000	340	20	403	12	608	7,500	3.8	71	6.2	12.25	12.23	81.07
5	700	2,880	390	20	322	14	722	7,600	4.0	71	6.1	12.23	12.22	95.00
6	500	2,880	360	21	322	12	646	7,600	4.6	63	6.1	12.15	12.21	85.00
7	2,100	3,000	310	26	242	12	646	7,550	4.1	66	6.1	12.26	12.26	85.56
8	2,600	3,120	480	19	322	13	646	7,500	3.3	67	6.3	12.30	12.31	86.13
9	2,200	2,880	360	18	322	11	646	7,500	4.2	63	6.2	12.28	12.29	86.13
10	3,100	3,240	440	20	403	15	608	7,600	5.0	55	6.2	12.26	12.25	80.00
11	3,100	3,000	340	22	322	13	646	7,650	4.9	58	6.2	12.18	12.20	84.44
12	3,000	3,120	290	22	322	10	646	7,600	4.5	61	6.2	12.16	12.25	85.00
13	4,800	3,240	360	21	322	18	608	7,600	4.3	62	6.1	12.23	12.27	80.00
14	2,700	3,120	310	18	403	12	532	7,500	4.5	62	6.2	12.16	12.01	70.93
15	3,000	3,120	260	13	322	8	456	7,550	4.2	63	6.2	12.07	11.92	60.40
16	2,800	3,000	380	18	322	8	532	7,600	4.0	66	6.1	12.24	11.73	70.00
17	2,400	3,120	440	18	322	9	608	7,600	3.7	68	6.4	12.00	12.04	80.00
18	2,400	3,120	330	19	322	7	608	8,500	3.7	70	6.3	12.24	12.26	71.53
19	2,500	3,000	300	21	322	7	608	7,500	4.0	70	6.3	12.12	12.17	81.07
20	2,300	3,120	440	22	322	8	684	7,600	3.7	70	6.2	12.19	12.22	90.00
21	1,800	3,120	510	20	322	16	608	7,600	3.7	68	6.3	12.08	11.98	80.00
22	2,600	3,120	590	10	322	7	608	8,500	3.6	66	6.3	12.28	12.28	71.53
23	4,500	3,000	590	11	322	6	608	7,500	3.0	66	6.3	12.07	12.15	81.07
24	2,400	3,000	740	19	403	12	570	7,550	3.5	68	6.4	12.24	12.16	75.50
25	3,400	3,000	540	20	322	19	608	7,650	3.5	68	6.3	12.29	12.26	79.48
26	3,100	3,120	500	20	322	11	608	7,500	3.6	71	6.3	12.00	11.88	81.07
27	1,600	3,000	620	23	322	13	684	7,600	3.7	68	6.2	12.13	11.97	90.00
28	1,500	3,120	560	21	322	13	684	7,600	3.5	70	6.3	12.29	12.28	90.00
29	1,500	3,000	1,890	10	242	11	684	7,600	3.9	65	6.4	12.24	12.23	90.00
30	1,700	3,120	610	20	322	12	532	7,600	5.4	52	6.3	12.08	11.89	70.00
31	1,400	3,380	770	21	242	15	570	9,300	4.5	58	6.4	12.14	12.00	61.29
Total	71,200	94,940	15,380	587	9,987	368	18,962	238,100	124.7	2,026	193.4	377.57	376.00	2474.79
Max.	4,800	3,380	1,890	26	403	20	722	9,300	5.4	71	6.4	12.30	12.31	95.00
Min.	500	2,880	260	10	242	6	456	7,500	3.0	52	6.1	12.00	11.73	60.40
Avg.	2,297	3,063	496	19	322	12	612	7,681	4.0	65	6.2	12.18	12.13	79.83

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

FEBRUARY 1998 - PLANT INFLUENT SHEET

Day	Weather Type	Weather Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
1			1.82	52	7.6	198	3,005	146	2,216			128	9.9	
2			1.60	53	7.7	189	2,522	160	2,135			132		
3			1.74	52	8.0	192	2,786	182	2,641	3.19	46	160		
4			1.86	53	7.8	138	2,141	142	2,203			118	11.7	
5			1.87	54	7.7	142	2,215	116	1,809			96		
6			1.90	52	7.7	164	2,599	120	1,902			100		
7			1.46	54	7.8	158	1,924	154	1,875			130		
8			1.62	52	7.7	173	2,337	138	1,864			116	12.3	
9			1.80	54	7.8	185	2,777	122	1,831			110		
10	RAIN	0.01	1.73	55	7.6	166	2,395	122	1,760	2.79	40	117		
11	RAIN	0.63	1.84	54	7.7	174	2,670	152	2,333			132	11.1	
12			1.67	52	7.7	189	2,632	180	2,507			154		
13			1.64	52	7.7	266	3,638	154	2,106			136		
14			1.45	52	8.0	226	2,733	164	1,983			128		
15			1.50	50	7.7	143	1,789	112	1,401			98		
16	RAIN	0.23	1.68	52	8.0	181	2,536	130	1,821			116		
17	RAIN	0.70	1.83	55	7.7	191	2,915	190	2,900	3.21	49	170	12.1	
18	RAIN	0.03	1.90	52	8.0	225	3,565	140	2,218			134		
19	RAIN	0.12	2.01	54	7.5	199	3,336	106	1,777			94		
20	RAIN	0.02	1.76	54	7.7	185	2,716	142	2,084			132	13.3	
21			1.64	52	7.9	184	2,517	132	1,805			124		
22	RAIN	0.02	1.67	51	7.9	168	2,340	140	1,950			138	11.4	
23	SNOW	0.03	1.94	54	7.5	201	3,252	194	3,139			146		
24			2.05	52	7.6	183	3,129	190	3,248			168		
25			1.95	54	7.6	141	2,293	234	3,806			201		
26	RAIN	0.20	2.08	55	7.7	175	3,036	209	3,626			224	8.5	
27			1.94	54	8.0	175	2,831	127	2,055	4.39	71	107	10.4	
28	RAIN	0.08	1.60	50	7.7	156	2,082	116	1,548			108		
29														
30														
31														
Total	0	2.07	49.55	1,480	217.0	5,067	74,711	4,214	62,545	13.58	207	3,717	100.7	
Max.	0	0.70	2.08	55	8.0	266	3,638	234	3,806	4.39	71	224	13.3	
Min.	0	0.01	1.45	50	7.5	138	1,789	106	1,401	2.79	40	94	8.5	
Avg.	0	0.19	1.77	53	7.8	181	2,668	151	2,234	3.40	52	133	11.2	
Count	11	11.00	28.00	28	28.0	28	28	28	28	4.00	4	28	9.0	

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

February 1998- - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
Day												
1	121	1,837	94	1,427			84	10.2	1.82	39	36	
2	159	2,122	88	1,174			74		1.60	16	45	
3	146	2,119	90	1,306	2.27	33	78		1.74	24	51	29
4	113	1,753	98	1,520			84	13.5	1.86	18	31	
5	154	2,402	106	1,653			94		1.87	8	9	
6	140	2,218	80	1,268			64		1.90	15	33	
7	113	1,376	96	1,169			78		1.46	28	38	
8	133	1,797	86	1,162			68	14.8	1.62	23	38	
9	201	3,017	86	1,291			76		1.80	9	30	
10	160	2,309	66	952	1.77	26	64		1.73	4	46	37
11	126	1,934	86	1,320			74	12.2	1.84	28	43	
12	118	1,643	66	919			58		1.67	38	63	
13	163	2,229	88	1,204			70		1.64	39	43	
14	134	1,620	90	1,088			80		1.45	41	45	
15	103	1,289	92	1,151			80		1.50	28	18	
16	123	1,723	76	1,065			70		1.68	32	42	
17	140	2,137	76	1,160	1.88	29	68	14.0	1.83	27	60	41
18	150	2,377	76	1,204			68		1.90	33	46	
19	141	2,364	80	1,341			72		2.01	29	25	
20	187	2,745	90	1,321			72	15.4	1.76	1	37	
21	142	1,942	68	930			58		1.64	23	48	
22	155	2,159	62	864			56		1.67	8	56	
23	141	2,281	78	1,262			72		1.94	30	60	
24	140	2,394	68	1,163			56		2.05	23	64	
25	124	2,017	88	1,431			68		1.95	83	62	
26	207	3,591	70	1,214			60	10.8	2.08	18	67	
27	160	2,589	108	1,747	2.21	36	76	12.2	1.94	9	15	50
28	93	1,241	62	827			58		1.60	40	47	
29												
30												
31												
Total	3,987	59,223	2,314	34,134	8.13	123	1,980	103.1	49.55	714	1,198	157
Max.	207	3,591	108	1,747	2.27	36	94	15.4	2.08	83	67	50
Min.	93	1,241	62	827	1.77	26	56	10.2	1.45	1	9	29
Avg.	142	2,115	83	1,219	2.03	31	71	12.9	1.77	26	43	39
Count	28	28	28	28	4.00	4	28	8.0	28.00	28	28	4

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

FEBRUARY 1998- ACTIVATED SLUDGE SHEET

Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading fIm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	4.7							1.2	122			54	30.0	1.82	121	94
2		5.4	5.5	0.38	2,170	1,863	42.0	0.52	4.4	125	0.38	0.32	62	35.0	1.60	159	88
3		5.0	5.0	0.38	2,168	1,859	40.0	0.54	5.2	126	0.38	0.33	56	37.0	1.74	146	90
4		4.6	4.0	0.34	2,037	1,744	38.0	0.54	5.8	124	0.37	0.32	47	37.0	1.86	113	98
5		4.6	3.6	0.48	1,971	1,678	37.0	0.53	6.0	125	0.37	0.31	51	25.0	1.87	154	106
6		4.5	4.7	0.44	1,995	1,702	36.0	0.55	5.8	125	0.35	0.30	52	24.0	1.90	140	80
7		5.9							3.6	125			68	23.0	1.46	113	96
8		5.3							6.3	125			60	24.0	1.62	133	86
9		4.8	4.5	0.61	1,960	1,640	36.0	0.54	5.9	124	0.36	0.30	54	24.0	1.80	201	86
10		5.0	6.5	0.44	2,063	1,757	37.0	0.56	5.3	121	0.40	0.34	59	23.0	1.73	160	66
11		4.7	4.8	0.36	2,106	1,802	39.0	0.54	4.8	120	0.39	0.33	53	24.0	1.84	126	86
12		5.2	7.1	0.29	2,187	1,876	39.0	0.56	4.8	123	0.38	0.32	59	23.0	1.67	118	66
13		5.3	5.3	0.41	2,132	1,828	40.0	0.53	5.9	124	0.39	0.33	60	40.0	1.64	163	88
14		5.9							4.2	122			67	44.0	1.45	134	90
15		5.7							6.0	123			62	38.0	1.50	103	92
16		5.1	5.3	0.36	1,876	1,594	42.0	0.45	6.9	122	0.51	0.43	56	32.0	1.68	123	76
17		4.7	4.9	0.44	1,913	1,626	38.0	0.50	5.6	119	0.51	0.44	52	29.0	1.83	140	76
18		4.5	4.6	0.50	1,860	1,587	37.0	0.50	4.6	120	0.56	0.47	48	24.0	1.90	150	76
19		4.3	4.3	0.47	1,937	1,674	34.0	0.57	4.8	120	0.58	0.49	49	12.0	2.01	141	80
20		4.9	4.8	0.50	2,137	1,834	47.0	0.45	4.5	121	0.62	0.53	56	28.0	1.76	187	90
21		5.3							3.3	122			58	26.0	1.64	142	68
22		5.2							4.5	122			58	31.0	1.67	155	62
23		4.4	4.7	0.45	1,972	1,695	45.0	0.44	5.0	122	0.57	0.24	52	33.0	1.94	141	78
24		4.2	5.1	0.47	1,965	1,684	43.0	0.46	5.3	121	0.54	0.46	51	42.0	2.05	140	68
25		4.4	4.3	0.38	2,073	1,770	55.0	0.38	1.2	121	0.50	0.42	54	44.0	1.95	124	88
26		4.1	4.6	0.74	1,883	1,613	42.0	0.45	4.9	119	0.47	0.40	56	48.0	2.08	207	70
27		4.4	0.4	0.59	1,702	1,456	40.0	0.43	4.4	118	0.44	0.38	52	40.0	1.94	160	708
28		5.4	5.9	0.30	1,627	1,393	35.0	0.46	5.4	120	0.45	0.38	58	22.0	1.60	93	62
29																	
30																	
31																	
Total	48	137.6	100.1	9.33	41,734	35,675	842.0	10.51	135.6	3,421	9.52	7.84	1,564	862.0	49.55	3,987	2,914
Max.	48	5.9	7.1	0.74	2,187	1,876	55.0	0.57	6.9	126	0.62	0.53	68	48.0	2.08	207	708
Min.	48	4.1	0.4	0.29	1,627	1,393	34.0	0.38	1.2	118	0.35	0.24	47	12.0	1.45	93	62
Avg.	48	4.9	4.8	0.44	1,987	1,699	40.1	0.50	4.8	122	0.45	0.37	56	30.8	1.77	142	104
Count	1	28.0	21.0	21.00	21	21	21.0	21.00	28.0	28	21.00	21.00	28	28.0	28.00	28	28

Steven D. Washburn
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

FEBRUARY 1998- DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Amenable Cyanide mg/l
1	6.7	7.5	5	76		1.82	0.000	6	91	4.7	71	42	97	97		
2	7.6	7.5	11	147		1.60	0.000	8	107			7	93	96		
3	7.7	7.6	15	218	0.27	1.74	0.000	8	116			9	92	96	92	
4	7.8	7.6	12	186	392	1.86	0.000	7	109	11.2	174	19	92	95		
5	8.2	7.7	12	187		1.87	0.000	7	109			15	90	95		<0.02
6	7.9	7.6	16	254		1.90	0.000	7	111			22	87	96		
7	7.2	7.6	14	170		1.46	0.000	6	73			7	91	96		
8	8.2	7.6	9	122		1.62	0.000	8	108	9.8	132	4	93	95		
9	8.1	7.5	13	195		1.80	0.000	10	150			6	89	95		
10	7.8	7.6	8	115	0.22	1.73	0.000	9	130			9	93	95	92	<0.02
11	7.6	7.6	8	123	347	1.84	0.000	8	123	6.8	104	3	95	95		
12	7.8	7.6	7	97		1.67	0.000	7	97			12	96	96		
13	7.8	7.6	6	82		1.64	0.000	8	109			6	96	97		
14	8.5	7.6	13	157		1.45	0.000	9	109			17	92	96		
15	8.6	7.6	8	100		1.50	0.000	8	100			10	93	94		
16	7.7	7.6	11	154		1.68	0.000	9	126			3	92	95		
17	7.4	7.7	12	183	0.31	1.83	0.001	10	153	8.4	128	5	94	95	90	
18	7.5	7.5	11	174	4.73	1.90	0.000	10	158			14	92	96		
19	7.3	7.5	10	168		2.01	0.000	7	117			65	91	96		<0.02
20	7.4	7.5	7	103		1.76	0.000	7	103	7.6	112	104	95	96		
21	7.4	7.6	8	109		1.64	0.000	8	109			12	94	96		
22	7.4	7.5	8	111		1.67	0.000	10	139	14.9	208	15	94	94		
23	7.1	7.5	24	388		1.94	0.000	14	227			12	88	93		
24	7.6	7.5	28	479	(360)	2.05	0.000	19	325			128	85	90		<0.02
25	6.0	7.5	33	537		1.95	0.000	17	276			670	86	88		
26	7.2	7.5	32	555		2.08	0.000	11	191	7.7	134	8	85	94		
27	6.5	7.5	8	129	0.16	1.94	0.000	7	113	10.9	176	600	94	96	96	
28	7.7	7.6	2	27	259	1.60	0.000	6	80			5	98	96		
29																
30																
31																
Total	211.7	211.8	351	5,347	0.96	49.55	0.001	251	3,760	82.0	1,239	1,829	2,577	2,659	370	0
Max.	8.6	7.7	33	555	0.31	2.08	0.001	19	325	14.9	208	670	98	97	96	0
Min.	6.0	7.5	2	27	0.16	1.45	0.000	6	73	4.7	71	3	85	88	90	0
Avg.	7.6	7.6	13	191	0.24	1.77	0.000	9	134	9.1	138	G = 13	92	95	93	0
Count	28.0	28.0	28	28	4.00	28.00	28.000	28	28	9.0	9	28	28	28	4	4

G = Geometric Mean

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

FEBRUARY 1998 - MISCELLANEOUS SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hrs @ 25C	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1	13	2,880	570	18	242	14	493	7,550	4.0	60	6.3	12.24	12.27	65.30
2	19	3,120	570	17	322	14	522	7,600	4.0	62	6.3	12.27	12.28	68.68
3	21	3,120	450	18	322	13	522	7,550	3.6	65	6.4	12.23	12.24	69.14
4	30	3,000	520	20	322	10	522	7,500	3.8	67	6.3	12.23	12.29	69.60
5	26	3,240	1,930	19	322	5	493	8,800	3.7	66	6.4	12.34	12.29	56.02
6	25	2,880	2,020	19	322	20	377	7,600	3.7	66	6.2	12.12	12.29	49.61
7	24	3,120	2,110	25	322	12	435	7,600	3.3	68	6.3	12.29	12.03	57.24
8	19	3,000	1,790	20	322	10	493	7,600	3.4	68	6.3	12.24	12.31	64.87
9	18	3,000	1,880	19	322	8	493	7,600	3.4	68	6.2	12.26	12.19	64.87
10	12	3,240	1,960	22	322	15	435	7,600	3.3	68	6.2	12.25	12.30	57.24
11	17	2,880	1,880	18	322	12	406	7,600	3.1	69	6.4	12.27	12.28	53.42
12	20	3,240	2,010	23	322	13	464	7,500	2.6	66	6.3	12.16	12.21	61.87
13	19	2,880	2,050	23	242	10	580	7,600	3.4	71	6.3	12.27	12.27	76.32
14	19	3,120	1,900	20	242	12	406	7,600	3.1	70	6.3	12.22	12.32	53.42
15	16	3,000	1,510	17	322	10	435	7,500	3.2	70	6.3	12.24	12.23	58.00
16	19	2,880	2,980	18	322	17	464	7,600	3.1	72	6.3	12.22	12.24	61.05
17	20	3,000	2,730	16	242	24	435	7,600	3.1	71	6.4	12.41	12.25	57.24
18	19	3,000	2,730	18	322	9	667	7,500	3.2	72	6.3	12.23	12.27	88.93
19	16	3,000	2,910	18	322	10	522	9,200	2.8	71	6.3	12.29	12.25	56.74
20	16	3,000	2,840	19	161	11	464	7,550	3.1	70	6.5	12.24	12.30	61.46
21	17	3,000	2,830	22	322	14	464	7,550	2.9	72	6.3	12.28	12.26	61.46
22	15	2,880	2,760	19	322	13	464	7,500	2.9	71	6.2	12.21	12.29	61.87
23	17	3,000	2,650	24	242	12	435	7,500	3.1	72	6.3	12.23	12.28	58.00
24	14	3,120	3,560	24	322	16	667	9,250	3.4	72	6.2	12.24	12.23	72.11
25	13	3,120	3,130	25	322	19	522	7,550	3.6	70	6.2	12.27	12.26	69.14
26	93	3,120	2,860	20	322	23	464	8,500	3.5	71	6.1	12.26	12.33	54.59
27	13	2,880	2,710	24	322	18	406	7,600	3.6	73	6.0	12.23	12.30	53.42
28	8	3,120	2,890	23	242	15	406	7,800	3.2	72	6.0	12.29	12.27	52.05
29														
30														
31														
Total	578	84,840	60,730	568	8,375	379	13,456	217,500	93.1	1,933	175.6	343.03	343.33	1733.63
Max.	93	3,240	3,560	25	322	24	667	9,250	4.0	73	6.5	12.41	12.33	88.93
Min.	8	2,880	450	16	161	5	377	7,500	2.6	60	6.0	12.12	12.03	49.61
Avg.	21	3,030	2,169	20	299	14	481	7,768	3.3	69	6.3	12.25	12.26	61.92

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

MARCH 1998 - PLANT INFLUENT SHEET

Day	Weather Type	Weather Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
1			1.61	52	7.7	161	2,162	159	2,135			146		
2	Snow	0.02	1.71	54	7.6	196	2,795	168	2,396			156	12.4	
3			1.77	54	7.6	216	3,189	154	2,273			142		
4	Snow	0.02	1.82	52	7.9	210	3,188	180	2,732			162		
5	Snow	0.03	1.75	53	7.7	165	2,408	128	1,868			118	11.4	
6	Snow	0.03	1.71	54	7.7	180	2,567	154	2,196	2.92	42	144		
7			1.57	51	7.9	187	2,449	164	2,147			154		
8	Rain	1.88	1.76	51	7.6	157	2,305	150	2,202			150	11.3	
9	Snow	0.08	2.05	51	7.6	130	2,223	146	2,496			126		
10			2.18	52	7.5	181	3,291	130	2,364			114		
11			2.16	54	7.7	182	3,279	140	2,522			118		
12			2.12	54	7.2	152	2,687	120	2,122	2.39	42	104	7.9	
13	Snow	0.19	2.21	54	7.5	170	3,133	112	2,064			112		
14			1.84	50	8.2	148	2,271	106	1,627			100		
15			1.81	50	7.8	150	2,264	118	1,781			112	10.6	
16			2.05	52	7.7	149	2,547	116	1,983			104		
17	Rain	0.42	2.07	52	7.6	171	2,952	159	2,745	2.34	40	152		
18			2.00	56	7.9	160	2,669	150	2,502			136	10.4	
19			2.03	53	7.5	178	3,014	158	2,675			148		
20	Snow	0.15	2.01	52	7.6	166	2,783	146	2,447			140		
21			1.98	50	8.0	119	1,965	102	1,684			100		
22			2.03	50	7.7	109	1,845	128	2,167			128	9.8	
23			2.18	52	7.5	150	2,727	138	2,509	2.63	48	126		
24			2.13	51	7.5	163	2,896	125	2,221			128	9.3	
25			2.13	52	7.5	131	2,327	132	2,345			122		
26			2.16	55	7.6	162	2,918	160	2,882			144		
27	Rain	0.09	2.16	54	7.8	162	2,918	100	1,801			87		
28	Rain	0.42	1.84	52	8.0	134	2,056	120	1,841			106		
29			1.94	51	7.7	114	1,844	120	1,942			112		
30			2.06	53	7.6	152	2,611	96	1,649			96		
31	Rain	0.59	2.11	54	7.6	204	3,590	106	1,865			106	9.2	
Total	0	3.92	60.95	1,625	238.0	5,009	81,873	4,185	68,185	10.28	172	3,893	92.3	
Max.	0	1.88	2.21	56	8.2	216	3,590	180	2,882	2.92	48	162	12.4	
Min.	0	0.02	1.57	50	7.2	109	1,844	96	1,627	2.34	40	87	7.9	
Avg.	0	0.33	1.97	52	7.7	162	2,641	135	2,200	2.57	43	126	10.3	
Count	12	12.00	31.00	31	31.0	31	31	31	31	4.00	4	31	9.0	

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

MARCH 1998 - PRIMARY EFFLUENT SHEET

Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	97	1,302	74	994			70		1.61	40	53	
2	119	1,697	82	1,169			70	12.5	1.71	39	51	
3	136	2,008	74	1,092			68		1.77	37	52	
4	161	2,444	68	1,032			58		1.82	23	62	
5	130	1,897	70	1,022			62	12.2	1.75	21	45	
6	124	1,768	74	1,055	1.38	20	64		1.71	31	52	53
7	114	1,493	66	864			66		1.57	39	60	
8	87	1,277	62	910			62	11.2	1.76	45	59	
9	70	1,197	74	1,265			60		2.05	46	49	
10	116	2,109	78	1,418			64		2.18	36	40	
11	160	2,882	78	1,405			72		2.16	12	44	
12	145	2,564	80	1,414	1.43	25	76	10.8	2.12	5	33	40
13	128	2,359	92	1,696			86		2.21	25	18	
14	109	1,673	76	1,166			76		1.84	26	28	
15	78	1,177	60	906			60	10.7	1.81	48	49	
16	102	1,744	64	1,094			64		2.05	32	45	
17	147	2,538	90	1,554	1.15	20	80		2.07	14	43	51
18	143	2,385	88	1,468			76	13.0	2.00	11	41	
19	113	1,913	86	1,456			78		2.03	37	46	
20	126	2,112	106	1,777			100		2.01	24	27	
21	100	1,651	98	1,618			98		1.98	16	4	
22	79	1,337	90	1,524			86	10.4	2.03	28	30	
23	136	2,473	52	945	1.68	31	46		2.18	9	62	36
24	128	2,274	76	1,350			72	11.7	2.13	21	39	
25	38	675	96	1,705			90		2.13	71	27	
26	128	2,306	66	1,189			66		2.16	21	59	
27	182	3,279	96	1,729			82		2.16	12	4	
28	100	1,535	102	1,565			64		1.84	25	15	
29	92	1,489	92	1,489			82		1.94	19	23	
30	116	1,993	40	687			40		2.06	24	58	
31	163	2,868	92	1,619			92	12.2	2.11	20	4	
Total	3,667	60,419	2,442	40,179	5.64	95	2,230	104.7	60.95	857	1,222	180
Max.	182	3,279	106	1,777	1.68	31	100	13.0	2.21	71	62	53
Min.	38	675	40	687	1.15	20	40	10.4	1.57	5	4	36
Avg.	118	1,949	79	1,296	1.41	24	72	11.6	1.97	28	39	45
Count	31	31	31	31	4.00	4	31	9.0	31.00	31	31	4

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

MARCH 1998 - ACTIVATED SLUDGE SHEET

Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading f/m	Mix Liq SS mg/L	Mix Liq VSS mg/L	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mg/L	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mg/l	PE SS mg/L
1	48	5.4							5.8	121			60	18.0	1.61	97	74
2		5.0	5.1	0.34	1,990	1,684	45.0	0.44	6.3	121	0.46	0.39	55	16.0	1.71	119	82
3		4.9	5.5	0.39	2,014	1,712	45.0	0.45	5.7	119	0.50	0.42	54	15.0	1.77	136	74
4		4.7	5.6	0.49	1,939	1,652	47.0	0.41	5.4	124	0.49	0.42	53	13.0	1.82	161	68
5		4.9	5.8	0.38	1,975	1,684	43.0	0.46	5.9	124	0.49	0.42	57	15.0	1.75	130	70
6		5.0	6.1	0.32	2,167	1,839	50.0	0.43	5.3	123	0.47	0.40	60	15.0	1.71	124	74
7		5.5							4.5	122			64	17.0	1.57	114	66
8		4.9							5.3	122			57	14.0	1.76	87	62
9		4.2	4.6	0.25	1,927	1,626	50.0	0.39	6.7	123	0.50	0.42	49	61.0	2.05	70	74
10		4.0	3.9	0.46	1,845	1,541	47.0	0.39	7.8	133	0.44	0.37	45	49.0	2.18	116	78
11		4.0	3.7	0.65	1,755	1,485	39.0	0.45	6.1	138	0.48	0.40	45	46.0	2.16	160	78
12		4.1	3.7	0.58	1,734	1,481	36.0	0.48	5.7	127	0.45	0.39	46	45.0	2.12	145	80
13		3.9	3.2	0.52	1,792	1,529	39.0	0.46	4.4	124	0.47	0.40	44	45.0	2.21	128	92
14		4.7							4.5	126			53	47.0	1.84	109	76
15		4.8							6.8	130			55	44.0	1.81	78	60
16		4.2	4.9	0.38	1,799	1,542	40.0	0.45	6.8	127	0.41	0.35	48	44.0	2.05	102	64
17		4.2	3.5	0.55	1,793	1,536	39.0	0.46	6.0	124	0.46	0.39	47	38.0	2.07	147	90
18		4.3	3.8	0.50	1,862	1,601	36.0	0.52	5.4	121	0.48	0.41	49	38.0	2.00	143	88
19		4.2	3.9	0.40	1,881	1,612	35.0	0.54	5.8	122	0.48	0.41	48	37.0	2.03	113	86
20		4.3	3.1	0.45	1,849	1,580	35.0	0.53	6.6	123	0.49	0.42	51	38.0	2.01	126	106
21		4.4							5.6	125			48	37.0	1.98	100	98
22		4.2							6.5	125			47	38.0	2.03	79	90
23		4.0	5.7	0.54	1,807	1,526	32.0	0.56	6.4	124	0.48	0.40	44	38.0	2.18	136	52
24		4.0	4.2	0.48	1,884	1,581	30.0	0.63	5.5	124	0.55	0.46	46	38.0	2.13	128	76
25		4.0	3.4	0.14	1,942	1,640	32.0	0.61	5.8	120	0.51	0.43	46	37.0	2.13	38	96
26		4.0	5.3	0.44	2,086	1,760	31.0	0.67	4.8	115	0.51	0.43	46	38.0	2.16	128	66
27		4.0	3.6	0.62	2,075	1,755	29.0	0.72	2.9	115	0.50	0.42	46	37.0	2.16	182	96
28		4.7							2.1	117			55	38.0	1.84	100	102
29		4.4							5.2	117			51	38.0	1.94	92	92
30		4.2	9.4	0.37	2,162	1,810	27.0	0.80	4.9	115	0.57	0.47	48	38.0	2.06	116	40
31		4.1	3.5	0.54	2,104	1,758	24.0	0.88	3.1	118	0.52	0.43	47	38.0	2.11	163	102
Total	48	137.1	101.4	9.77	42,382	35,934	831.0	11.72	169.6	3,809	10.71	9.05	1,564	1070.0	60.95	3,667	2,452
Max.	48	5.5	9.4	0.65	2,167	1,839	50.0	0.88	7.8	138	0.57	0.47	64	61.0	2.21	182	106
Min.	48	3.9	3.1	0.14	1,734	1,481	24.0	0.39	2.1	115	0.41	0.35	44	13.0	1.57	38	40
Avg.	48	4.4	4.6	0.44	1,926	1,633	37.8	0.53	5.5	123	0.49	0.41	50	34.5	1.97	118	79
Count	1	31.0	22.0	22.00	22	22	22.0	22.00	31.0	31	22.00	22.00	31	31.0	31.00	31	31

Steven D. Washburn
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

MARCH 1998 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Amenable Cyanide mg/l
1	7.9	7.6	2	27		1.61	0.000	5	67			4	99	97		
2	8.1	7.6	3	43		1.71	0.000	5	71	9.1	130	20	98	97		
3	8.1	7.6	3	44		1.77	0.000	6	89			18	98	97		
4	7.6	7.6	12	182		1.82	0.000	12	182			24	93	94		<0.02
5	7.6	7.6	4	58		1.75	0.000	7	102	9.1	133	12	97	96		
6	7.6	7.6	17	242	0.08	1.71	0.000	15	214			2	89	92	97	
7	7.5	7.6	11	144	1.14	1.57	0.000	10	131			34	93	95		
8	7.7	7.5	17	250		1.76	0.000	11	161	8.3	122	8	89	93		
9	7.4	7.5	12	205		2.05	0.000	9	154			109	92	93		
10	8.5	7.6	6	109		2.18	0.000	7	127			3	95	96		<0.02
11	8.3	7.6	7	126		2.16	0.000	8	144			4	95	96		
12	7.9	7.5	7	124	0.11	2.12	0.000	6	106	8.9	157	66	94	96	95	
13	7.9	7.6	9	166	1.94	2.21	0.000	6	111			2	92	96		
14	8.3	7.7	2	31		1.84	0.000	5	77			2	98	97		
15	8.8	7.7	3	45		1.81	0.000	5	75	9.2	139	3	97	97		
16	8.4	7.6	2	34		2.05	0.000	4	68			3	98	97		
17	8.4	7.5	10	173	0.14	2.07	0.000	6	104			9	94	96	94	
18	7.5	7.6	9	150	2.41	2.00	0.000	6	100	10.3	172	6	96	96		<0.02
19	8.0	7.6	7	119		2.03	0.000	6	102			18	92	97		
20	8.2	7.6	11	184		2.01	0.000	7	117			7	86	96		
21	8.6	7.7	14	231	1.67	1.98	0.000	10	165			15	92	92		
22	8.4	7.5	9	152		2.03	0.000	7	119	6.7	113	12	86	94		
23	8.0	7.5	16	291	0.21	2.18	0.000	9	164			67	93	94	92	
24	7.9	7.5	8	142	3.81	2.13	0.000	7	124	8.6	153	60	88	96		<0.02
25	8.1	7.5	11	195		2.13	0.000	6	107			3	94	95		
26	7.1	7.4	4	72	9.30	2.16	0.000	5	90			125	92	97		
27	7.0	7.5	12	216		2.16	0.000	7	126			101	98	96		
28	7.2	7.5	8	123		1.84	0.000	6	92			8	88	96		
29	8.0	7.6	5	81		1.94	0.000	5	81			14	93	96		
30	8.0	7.6	4	69		2.06	0.000	6	103			6	96	96		
31	7.0	7.4	11	194		2.11	0.000	9	158	11.0	194	13	96	96		
Total	245.0	234.5	256	4,222	0.54	60.95	0.000	223	3,632	81.2	1,312	778	2,901	2,962	378	0
Max.	8.8	7.7	17	291	0.21	2.21	0.000	15	214	11.0	194	125	99	97	97	0
Min.	7.0	7.4	2	27	0.08	1.57	0.000	4	67	6.7	113	2	86	92	92	0
Avg.	7.9	7.6	8	136	0.14	1.97	0.000	7	117	9.0	146	G = 12	94	96	95	0
Count	31.0	31.0	31	31	4.00	31.00	31.000	31	31	9.0	9	31	31	31	4	4

G = Geometric Mean

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

MARCH 1998 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hrs @ 25C	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1	12	3,000	2,630	13	322	11	561	7,600	3.0	72	6.0	12.25	12.26	73.82
2	16	3,120	2,880	17	242	10	561	7,500	2.8	72	6.1	12.26	12.28	74.80
3	16	3,000	2,710	13	322	8	693	7,550	3.1	74	6.1	12.31	12.35	91.79
4	35	3,120	3,020	12	322	9	594	7,600	3.5	73	6.0	12.25	12.26	78.16
5	11	3,120	2,000	15	322	8	495	7,550	3.6	74	5.9	12.31	12.28	65.56
6	14	2,880	2,800	13	483	8	528	7,550	3.5	74	5.9	12.32	12.14	69.93
7	14	3,240	2,900	20	403	12	528	7,500	3.3	75	5.8	12.21	12.19	70.40
8	18	2,880	2,700	20	403	14	594	7,500	3.0	74	5.8	12.30	12.34	79.20
9	31	3,240	2,650	12	403	14	726	9,400	3.2	73	5.9	12.23	12.24	77.23
10	34	3,240	2,760	20	403	11	693	9,800	3.0	73	6.0	12.29	12.27	70.71
11	32	3,360	2,720	26	403	15	528	7,600	3.0	71	6.2	12.14	12.12	69.47
12	27	3,240	2,670	28	322	20	396	8,500	2.8	73	6.1	12.28	12.29	46.59
13	27	3,120	3,060	24	403	27	693	10,000	2.9	71	6.4	12.29	12.31	69.30
14	27	3,240	2,530	30	403	30	726	10,600	2.9	72	6.2	12.17	12.06	68.49
15	24	3,120	2,660	22	403	28	462	9,600	2.7	73	6.3	12.23	12.18	48.13
16	24	3,240	2,700	18	403	22	726	10,500	3.0	75	6.2	12.28	12.30	69.14
17	9	3,240	2,630	17	322	11	660	10,500	2.9	75	6.2	12.29	12.29	62.86
18	25	2,880	2,530	8	322	13	660	9,000	3.2	72	6.5			73.33
19	23	3,120	2,910	13	322	11	396	5,500	3.2	75	6.3	12.21	12.16	72.00
20	29	3,000	2,810	19	322	11	528	7,650	3.2	72	6.1	12.17	12.20	69.02
21	24	3,240	2,660	21	403	14	462	7,700	3.3	75	6.2	12.25	12.19	60.00
22	18	3,120	2,630	19	322	12	528	7,500	3.2	73	5.9	12.05	11.96	70.40
23	18	3,240	2,510	20	322	13	990	7,500	3.3	74	5.9	12.24	12.22	132.00
24	14	3,120	2,610	22	242	14	825	7,600	3.3	73	6.0	12.14	12.08	108.55
25	11	2,880	2,470	17	322	13	858	7,550	3.1	74	6.1	12.20	12.22	113.64
26	3	3,000	2,750	21	322	14	495	7,400	3.0	75	6.1	12.14	12.04	66.89
27	1	2,760	1,780	23	322	12	561	7,600	3.1	74	6.1	12.24	12.28	73.82
28	0	2,880	1,340	27	403	15	528	7,400	3.1	73	6.2	12.30	11.89	71.35
29	0	2,640	1,360	26	403	22	561	7,500	3.0	74	6.2	12.16	12.29	74.80
30	0	2,760	1,410	27	322	19	528	7,500	3.0	72	6.3	12.27	12.18	70.40
31	4	2,760	1,290	8	322	13	561	7,500	3.0	73	6.3	12.24	12.19	74.80
Total	541	94,800	77,080	591	10,955	454	18,645	251,750	96.2	2,273	189.3	367.02	366.06	2316.59
Max.	35	3,360	3,060	30	483	30	990	10,600	3.6	75	6.5	12.32	12.35	132.00
Min.	0	2,640	1,290	8	242	8	396	5,500	2.7	71	5.8	12.05	11.89	46.59
Avg.	17	3,058	2,486	19	353	15	601	8,121	3.1	73	6.1	12.23	12.20	74.73

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

APRIL 1998 PLANT INFLUENT SHEET

Day	Weather Type	Weather Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
1	RAIN	0.25	2.13	52	7.7	138	2,451	130	2,309			124		
2			2.20	55	7.8	146	2,679	128	2,349			124		
3			2.04	56	7.7	185	3,148	144	2,450			128		
4			1.89	52	7.6	127	2,002	102	1,608			102		
5			1.86	51	7.6	153	2,373	152	2,358			140	9.4	
6			1.87	54	7.6	82	1,279	166	2,589	2.24	35	148	9.4	
7	RAIN	0.31	1.96	54	7.6	171	2,795	148	2,419			132		
8	RAIN	0.61	1.97	56	7.6	172	2,826	156	2,563			156		
9	RAIN	0.56	2.13	55	7.7	138	2,451	170	3,020			166		
10			1.99	53	7.5	132	2,191	114	1,892			104		
11			2.05	52	7.8	135	2,308	104	1,778			92		
12			2.09	53	7.5	115	2,005	106	1,848			96	9.6	
13	RAIN	0.10	2.30	55	7.5	127	2,436	118	2,263			118	10.7	
14	RAIN	0.16	2.27	60	7.5	148	2,802	109	2,064			94		
15	RAIN	0.02	2.20	56	7.5	178	3,266	114	2,092	2.46	45	104		
16	RAIN	0.06	2.14	55	7.5	164	2,927	130	2,320			114		
17			1.99	54	7.7	145	2,407	110	1,826			110		
18			1.90	53	7.6	143	2,266	136	2,155			130		
19			1.99	54	7.6	150	2,489	158	2,622			144	10.6	
20			2.14	57	7.4	158	2,820	154	2,749	2.82	50	146		
21			2.05	56	7.5	172	2,941	151	2,582			130	10.7	
22			2.07	60	7.7	147	2,538	136	2,348			126		
23			2.01	57	7.6	217	3,638	136	2,280			124		
24			1.90	56	7.5	194	3,074	242	3,835			232		
25	RAIN	1.20	1.80	54	7.7	141	2,117	120	1,801			120		
26	RAIN	0.41	2.06	54	7.6	137	2,354	118	2,027			110		
27			2.11	55	7.5	177	3,115	240	4,223			224		
28	RAIN	0.07	2.13	56	7.6	153	2,718	148	2,629			134	9.7	
29			2.13	56	7.6	184	3,269	218	3,873	2.79	50	202		
30	RAIN	0.34	2.17	57	7.7	163	2,950	156	2,823			148	9.6	
31														
Total	0	4.09	61.54	1,648	228.0	4,592	78,633	4,314	73,694	10.31	180	4,022	79.7	
Max.	0	1.20	2.30	60	7.8	217	3,638	242	4,223	2.82	50	232	10.7	
Min.	0	0.02	1.80	51	7.4	82	1,279	102	1,608	2.24	35	92	9.4	
Avg.	0	0.34	2.05	55	7.6	153	2,621	144	2,456	2.58	45	134	10.0	
Count	12	12.00	30.00	30	30.0	30	30	30	30	4.00	4	30	8.0	

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

APRIL 1998 PRIMARY EFFLUENT SHEET

Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	116	2,061	102	1,812			102		2.13	16	22	
2	102	1,871	82	1,505			82		2.20	30	36	
3	147	2,501	98	1,667			88		2.04	21	32	
4	84	1,324	86	1,356			86		1.89	34	16	
5	76	1,179	86	1,334			82	10.4	1.86	50	43	
6	93	1,450	90	1,404	1.21	19	76	12.0	1.87	13	46	42
7	116	1,896	94	1,537			78		1.96	32	36	
8	109	1,791	88	1,446			88		1.97	37	44	
9	88	1,563	74	1,315			72		2.13	36	56	
10	98	1,626	90	1,494			76		1.99	26	21	
11	93	1,590	88	1,505			70		2.05	31	15	
12	75	1,307	88	1,534			84	10.2	2.09	35	17	
13	63	1,208	82	1,573			82		2.30	50	31	
14	120	2,272	74	1,401			74	10.6	2.27	19	32	
15	145	2,660	96	1,761	2.08	38	86		2.20	19	16	16
16	167	2,981	94	1,678			76		2.14	2	28	
17	149	2,473	84	1,394			84		1.99	3	24	
18	83	1,315	92	1,458			78		1.90	42	32	
19	84	1,394	76	1,261			66	10.7	1.99	44	52	
20	94	1,678	80	1,428	1.42	25	80		2.14	41	48	32
21	131	2,240	62	1,060			62	12.3	2.05	24	59	
22	99	1,709	78	1,347			74		2.07	33	43	
23	128	2,146	50	838			40		2.01	41	63	
24	118	1,870	86	1,363			86		1.90	39	64	
25	100	1,501	82	1,231			82		1.80	29	32	
26	77	1,323	78	1,340			68		2.06	44	34	
27	110	1,936	82	1,443			72	11.2	2.11	38	66	
28	108	1,919	64	1,137			60		2.13	29	57	
29	128	2,274	64	1,137	1.14	20	76	10.2	2.13	30	71	57
30	120	2,172	80	1,448			72		2.17	26	49	
31												
Total	3,221	55,230	2,470	42,203	5.85	103	2,302	87.6	61.54	914	1,185	147
Max.	167	2,981	102	1,812	2.08	38	102	12.3	2.30	50	71	57
Min.	63	1,179	50	838	1.14	19	40	10.2	1.80	2	15	16
Avg.	107	1,841	82	1,407	1.46	26	77	11.0	2.05	30	40	37
Count	30	30	30	30	4.00	4	30	8.0	30.00	30	30	4

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

APRIL 1998 - ACTIVATED SLUDGE SHEET

Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	4.0	3.8	0.36	2,286	1,923	26.0	0.88	3.2	122	0.57	0.48	47	38.0	2.13	116	102
2		3.9	4.6	0.32	2,302	1,940	27.0	0.85	4.2	124	0.64	0.54	45	38.0	2.20	102	82
3		4.2	4.2	0.42	2,337	1,969	28.0	0.83	4.2	125	0.60	0.51	47	37.0	2.04	147	98
4		4.6							3.8	125			52	37.0	1.89	84	86
5		4.6							5.6	125			52	37.0	1.86	76	86
6		4.6	4.4	0.28	2,055	1,745	20.0	1.03	6.0	125	0.54	0.46	53	38.0	1.87	93	90
7		4.4	4.1	0.35	2,106	1,790	23.0	0.92	5.3	125	0.50	0.42	50	36.0	1.96	116	94
8		4.4	4.4	0.33	2,114	1,810	21.0	1.01	5.0	124	0.59	0.51	49	37.0	1.97	109	88
9		4.0	4.8	0.29	2,087	1,784	19.0	1.10	5.2	124	0.55	0.47	50	37.0	2.13	88	74
10		4.3	4.1	0.32	2,026	1,711	20.0	1.01	6.2	125	0.48	0.40	45	34.0	1.99	98	90
11		4.2							5.1	127			47	30.0	2.05	93	88
12		4.1							5.2	126			47	29.0	2.09	75	88
13		3.7	3.4	0.25	1,898	1,601	19.0	1.00	5.3	124	0.53	0.44	42	27.0	2.30	63	87
14		3.8	4.4	0.44	2,043	1,713	21.0	0.97	4.4	122	0.51	0.43	42	30.0	2.27	120	74
15		3.9	3.6	0.50	2,133	1,791	23.0	0.93	3.9	123	0.60	0.51	44	30.0	2.20	145	96
16		4.0	4.2	0.50	2,369	1,996	25.0	0.95	2.4	127	0.66	0.56	44	26.0	2.14	167	94
17		4.3	5.1	0.42	2,366	1,986	27.0	0.88	2.2	125	0.60	0.50	44	29.0	1.99	149	84
18		4.5							2.2	125			40	30.0	1.90	83	92
19		4.3							5.1	125			39	30.0	1.99	84	76
20		4.0	4.4	0.32	2,088	1,747	22.0	0.95	5.4	125	0.59	0.51	39	30.0	2.14	94	80
21		4.2	6.0	0.42	2,130	1,783	23.0	0.93	3.1	126	0.55	0.46	39	30.0	2.05	131	62
22		4.2	4.3	0.35	1,946	1,632	20.0	0.97	3.7	126	0.61	0.51	40	30.0	2.07	99	78
23		4.3	7.5	0.40	2,100	1,786	24.0	0.88	4.9	126	0.60	0.53	43	30.0	2.01	128	50
24		4.5	4.7	0.35	2,121	1,806	25.0	0.85	4.7	129	0.57	0.49	45	29.0	1.90	118	86
25		4.8							2.5	129			37	30.0	1.80	100	82
26		4.2							5.0	130			37	27.0	2.06	77	78
27		4.1	3.8	0.42	1,822	1,548	20.0	0.91	5.8	128	0.56	0.47	37	27.0	2.11	110	82
28		4.0	5.0	0.40	1,904	1,621	21.0	0.91	6.1	128	0.53	0.44	39	24.0	2.13	108	64
29		4.0	5.0	0.48	1,901	1,602	22.0	0.86	4.6	125	0.54	0.45	39	19.0	2.13	130	64
30		4.0	4.4	0.41	2,106	1,758	20.0	1.05	4.5	124	0.59	0.49	35	22.0	2.17	120	80
31																	
Total	48	126.5	100.0	8.33	46,240	39,042	496.0	20.66	134.8	3,764	12.51	10.58	1,309	928.0	61.54	3,223	2,475
Max.	48	4.8	7.5	0.50	2,369	1,996	28.0	1.10	6.2	130	0.66	0.56	53	38.0	2.30	167	102
Min.	48	3.7	3.4	0.25	1,822	1,548	19.0	0.83	2.2	122	0.48	0.40	35	19.0	1.80	63	50
Avg.	48	4.2	4.5	0.38	2,102	1,775	22.5	0.94	4.5	125	0.57	0.48	44	30.9	2.05	107	83
Count	1	30.0	22.0	22.00	22	22	22.0	22.00	30.0	30	22.00	22.00	30	30.0	30.00	30	30

Steven D. Washburn
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

APRIL 1998 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Amenable Cyanide mg/l
1	7.1	7.5	11	195		2.13	0.000	8	142			53	92	94		<0.02
2	7.6	7.5	12	220		2.20	0.000	9	165			19	91	94		
3	7.6	7.5	20	340		2.04	0.000	11	187			11	86	94		
4	8.0	7.6	10	158		1.89	0.000	9	142			6	90	93		
5	8.3	7.5	10	155		1.86	0.000	7	109	7.0	109	5	93	95		
6	8.1	7.5	18	281	0.20	1.87	0.000	8	125	7.8	122	17	89	90	91	
7	7.9	7.6	14	229	3.12	1.96	0.009	9	147			6	91	95		<0.02
8	7.6	7.6	15	246		1.97	0.000	8	131			19	90	95		
9	7.9	7.6	11	195		2.13	0.000	10	178			17	94	93		
10	8.4	7.5	17	282		1.99	0.000	10	166			108	85	93		<0.02
11	8.2	7.6	12	205		2.05	0.000	10	171			24	88	93		
12	7.8	7.5	9	157		2.09	0.032	8	139	5.8	101	26	92	93		
13	7.5	7.5	13	249		2.30	0.000	9	173			45	89	93		
14	7.2	7.5	14	265		2.27	0.000	10	189	5.7	108	90	87	93		<0.02
15	6.8	7.5	14	257	0.23	2.20	0.000	10	183			136	88	94	91	
16	6.6	7.4	11	196	4.22	2.14	0.000	10	178			53	92	94		
17	7.8	7.4	15	249		1.99	0.000	11	183			40	86	92		
18	8.2	7.5	14	222		1.90	0.000	9	143			12	90	94		
19	8.0	7.5	14	232		1.99	0.000	10	166	7.2	119	13	91	93		
20	7.6	7.5	13	232	0.28	2.14	0.000	7	125			18	92	96		
21	7.3	7.5	9	154	5.00	2.05	0.000	7	120	8.2	140	89	94	96	90	
22	7.8	7.5	14	242		2.07	0.000	8	138			17	90	95		
23	7.5	7.5	10	168		2.01	0.000	5	84			8	93	98		
24	7.5	7.5	11	174		1.90	0.000	11	174			30	95	94		
25	7.8	7.5	9	135	4.11	1.80	0.000	8	120			146	93	94		
26	7.9	7.6	10	172		2.06	0.000	8	137			16	92	94		
27	7.8	7.5	12	211		2.11	0.000	6	106	9.8	172	11	95	97		
28	7.8	7.6	11	195		2.13	0.000	7	124			24	93	95		
29	7.2	7.5	14	249	0.23	2.13	0.000	6		9.5	169	22	94		92	
30	6.8	7.6	15	271	4.09	2.17	0.000	6				32	90			
31																
Total	229.6	225.6	382	6,538	0.94	61.54	0.041	243	4,146	61.0	1,040	1,113	2,725	2,634	364	0
Max.	8.4	7.6	20	340	0.28	2.30	0.032	11	189	9.8	172	146	95	98	92	0
Min.	6.6	7.4	9	135	0.20	1.80	0.000	5	84	5.7	101	5	85	90	90	0
Avg.	7.7	7.5	13	218	0.24	2.05	0.001	9	148	7.8	130	G = 24	91	94	91	0
Count	30.0	30.0	30	30	4.00	30.00	30.000	28	28	8.0	8	30	30	28	4	4

G = Geometric Mean

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

APRIL 1998 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hrs @ 25C	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1	2	3,120	1,270	19	322	19	512	7,400	3.1	72	6.3	12.24	12.23	69.19
2	4	3,000	1,380	19	322	17	512	7,500	3.2	73	6.3	12.21	12.09	68.27
3	10	3,000	1,380	22	322	18	480	7,600	3.1	73	6.3	12.04	11.94	63.16
4	8	3,000	1,440	24	242	17	480	7,600	3.2	73	6.3	12.05	11.92	63.16
5	6	2,880	1,420	23	322	10	512	7,500	3.1	74	6.4	12.17	11.27	68.27
6	4	3,000	1,260	24	242	14	512	7,600	3.5	77	6.4	12.18	12.23	67.37
7	1	2,880	1,290	25	322	18	544	7,600	3.4	76	6.4	12.21	12.30	71.58
8	13	3,000	1,460	18	322	10	512	7,600	3.4	76	6.4	12.24	12.20	67.37
9	15	3,000	1,320	19	242	13	448	7,500	3.6	77	6.3	12.26	12.24	59.73
10	10	3,000	1,360	17	242	9	512	7,700	3.2	74	6.2	12.19	12.21	66.49
11	3	2,880	1,420	22	322	12	448	7,700	3.1	75	6.2	12.04	11.95	58.18
12	2	2,880	1,260	20	242	14	512	7,600	3.0	74	6.3	12.04	11.93	67.37
13	1	2,880	1,200	22	322	14	480	7,500	3.0	74	6.3	12.17	12.18	64.00
14	1	3,120	1,330	22	322	16	672	9,600	3.0	75	6.3	12.13	12.23	70.00
15	3	2,880	1,400	14	322	16	1,152	18,000	3.0	74	6.3	12.10	12.00	64.00
16	2	3,000	1,340	24	242	27	1,152	20,000	2.9	73	6.4	12.17	8.85	57.60
17	3	2,880	1,470	25	322	20	1,216	20,500	3.4	69	7.2	12.17	12.11	59.32
18	3	2,880	1,290	29	242	20	640	10,000	3.0	75	6.4	12.23	12.20	64.00
19	1	2,880	1,360	25	242	17	928	16,600	3.1	74	6.4	12.22	12.18	55.90
20	1	2,880	1,260	18	161	18	960	15,000	3.3	76	6.3	12.28	12.23	64.00
21	2	2,760	1,260	36	242	21	640	10,500	3.2	75	6.4	12.19	12.22	60.95
22	0	2,760	1,230	30	242	23	640	10,600	3.2	75	6.4	12.21	12.17	60.38
23	0	2,760	1,550	31	242	23	640	10,500	3.9	61	6.4	12.17	12.17	60.95
24	2	2,640	1,240	28	403	13	672	10,600	3.4	74	6.4	12.22	12.17	63.40
25	1	3,000	1,420	30	403	18	640	10,500	3.4	75	6.4	12.26	12.16	60.95
26	2	2,760	1,330	17	483	16	672	10,500	3.3	74	6.3	12.19	12.09	64.00
27	4	3,000	1,250	24	322	17	640	10,400	3.2	73	6.3	12.12	11.99	61.54
28	2	2,760	1,210	22	403	17	480	7,500	3.4	75	6.2	12.08	11.88	64.00
29	2	2,880	1,490	25	403	16	672	10,500	3.9	70	6.9	12.14	12.10	64.00
30	1	2,760	1,610	29	403	13	640	10,600	3.9	77	5.9	12.21	11.63	60.38
31														
Total	109	87,120	40,500	703	9,185	496	19,520	310,300	98.4	2,213	191.0	365.13	359.07	1909.50
Max.	15	3,120	1,610	36	483	27	1,216	20,500	3.9	77	7.2	12.28	12.30	71.58
Min.	0	2,640	1,200	14	161	9	448	7,400	2.9	61	5.9	12.04	8.85	55.90
Avg.	4	2,904	1,350	23	306	17	651	10,343	3.3	74	6.4	12.17	11.97	63.65

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

MAY 1998 - PLANT INFLUENT SHEET

Day	Weather: Type	Weather: Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	Remarks or Other Parameters
1	RAIN	0.23	2.19	57	7.6	154	2,813	150	2,740			134	10.3	
2	RAIN	0.06	1.95	58	7.6	178	2,895	122	1,984			114	9.6	
3	RAIN	0.07	2.14	55	7.5	129	2,302	112	1,999			112	9.4	
4	RAIN	0.06	2.44	56	7.6	122	2,483	146	2,971			132	8.6	
5			2.28	59	7.5	161	3,061	146	2,776	2.55	48	136	8.4	
6	RAIN	0.04	2.19	58	7.6	144	2,630	120	2,192			114	8.6	
7	RAIN	0.06	1.99	58	7.7	136	2,257	130	2,158			112	11.2	
8			1.96	58	7.7	140	2,288	140	2,288			122	11.7	
9			1.84	55	7.7	138	2,118	144	2,210			124	9.8	
10			1.86	56	7.6	135	2,094	106	1,644			92	10.5	
11			1.99	58	7.7	173	2,871	182	3,021	2.97	49	158	10.7	
12	RAIN	0.05	1.96	58	7.6	183	2,991	180	2,942			158	10.2	
13			2.12	58	7.6	157	2,776	174	3,076			164	9.7	
14			2.15	59	7.8	166	2,977	150	2,690			134	9.8	
15			1.99	60	7.6	165	2,738	110	1,826			99	10.0	
16			1.76	58	7.6	376	5,519	166	2,437			146	9.8	
17			1.94	57	7.6	181	2,929	134	2,168			118	9.9	
18			2.13	57	7.7	200	3,553	144	2,558			124	10.0	
19			2.12	58	7.7	152	2,687	150	2,652			132	9.1	
20			2.07	58	7.5	190	3,280	136	2,348			126	9.0	
21			2.18	58	7.5	200	3,636	182	3,309	3.00	55	158	9.4	
22			2.19	62	7.6	185	3,379	148	2,703			138	9.9	
23	RAIN	0.04	1.70	60	7.6	132	1,871	130	1,843			126	10.6	
24	RAIN	0.09	1.67	57	7.6	155	2,159	118	1,643			118	10.8	
25			1.86	59	7.5	175	2,715	110	1,706			102	10.5	
26			2.02	60	7.2	228	3,841	156	2,628			134	10.2	
27			1.96	61	7.6	222	3,629	172	2,812			160	10.5	
28			1.98	61	7.6	216	3,567	186	3,071	3.31	55	166	11.2	
29			1.93	62	7.4	190	3,058	154	2,479			142	11.1	
30	RAIN	0.80	1.76	59	7.8	186	2,730	170	2,495			154	13.0	
31			1.90	59	7.5	167	2,646	148	2,345			148	10.6	
Total	0	1.50	62.22	1,809	235.4	5,436	90,495	4,516	75,715	11.83	207	4,097	314.1	
Max.	0	0.80	2.44	62	7.8	376	5,519	186	3,309	3.31	55	166	13.0	
Min.	0	0.04	1.67	55	7.2	122	1,871	106	1,643	2.55	48	92	8.4	
Avg.	0	0.15	2.01	58	7.6	175	2,919	146	2,442	2.96	52	132	10.1	
Count	10	10.00	31.00	31	31.0	31	31	31	31	4.00	4	31	31.0	

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

MAY 1998 - PRIMARY EFFLUENT SHEET

Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	130	2,374	88	1,607			76	11.2	2.19	16	41	
2	98	1,594	84	1,366			74	10.6	1.95	45	31	
3	88	1,571	68	1,214			56	10.3	2.14	32	39	
4	123	2,503	68	1,384			58	8.4	2.44	1	53	
5	108	2,054	70	1,331	1.71	33	60	10.1	2.28	33	52	33
6	108	1,973	66	1,205			66	12.4	2.19	25	45	
7	68	1,129	60	996			54	13.9	1.99	50	54	
8	110	1,798	88	1,438			68	10.5	1.96	21	37	
9	93	1,427	68	1,044			52	11.4	1.84	33	53	
10	77	1,194	66	1,024			54	12.5	1.86	43	38	
11	98	1,626	76	1,261	1.90	32	64	11.5	1.99	43	58	36
12	116	1,896	78	1,275			70	10.7	1.96	37	57	
13	101	1,786	72	1,273			68	10.9	2.12	36	59	
14	137	2,457	74	1,327			64	10.9	2.15	17	51	
15	113	1,875	20	332			58	10.9	1.99	32	36	
16	116	1,703	72	1,057			62	10.9	1.76	69	57	
17	103	1,666	66	1,068			56	11.9	1.94	43	51	
18	125	2,221	68	1,208			52	10.7	2.13	38	53	
19	107	1,892	56	990			44	10.1	2.12	30	63	
20	121	2,089	60	1,036			52	11.0	2.07	36	56	
21	161	2,927	74	1,345	1.85	34	70	12.1	2.18	20	59	38
22	158	2,886	72	1,315			72	12.6	2.19	15	51	
23	101	1,432	88	1,248			66	11.4	1.70	23	32	
24	165	2,298	60	836			60	11.4	1.67	60	49	
25	87	1,350	66	1,024			58	10.7	1.86	50	40	
26	180	3,032	86	1,449			74	12.3	2.02	21	45	
27	147	2,403	78	1,275			76	12.6	1.96	34	55	
28	181	2,989	86	1,420	2.37	39	76	12.4	1.98	16	54	28
29	145	2,334	116	1,867			108	12.4	1.93	24	25	
30	120	1,761	112	1,644			104	13.4	1.76	35	34	
31	102	1,616	88	1,394			88	12.3	1.90	39	41	
Total	3,687	61,856	2,294	38,253	7.83	137	2,060	354.4	62.22	1,017	1,469	135
Max.	181	3,032	116	1,867	2.37	39	108	13.9	2.44	69	63	38
Min.	68	1,129	20	332	1.71	32	44	8.4	1.67	1	25	28
Avg.	119	1,995	74	1,234	1.96	34	66	11.4	2.01	33	47	34
Count	31	31	31	31	4.00	4	31	31.0	31.00	31	31	4

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

MAY 1998 - ACTIVATED SLUDGE SHEET

Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	3.9	3.6	0.49	1,928	1,621	23.0	0.84	4.0	122	0.51	0.43	37	23.0	2.19	130	88
2		4.4							2.4	123			42	24.0	1.95	98	84
3		4.0							3.5	123			37	21.0	2.14	88	68
4		3.5	4.0	0.49	1,833	1,691	22.0	0.83	4.6	124	0.69	0.58	33	21.0	2.44	123	68
5		3.8	4.6	0.41	2,048	1,691	22.0	0.93	4.0	124	0.62	0.51	37	31.0	2.28	108	70
6		3.9	5.3	0.37	2,117	1,759	28.0	0.76	3.8	111	0.60	0.50	38	30.0	2.19	108	66
7		4.3	6.2	0.22	2,069	1,716	30.0	0.69	3.8	106	0.57	0.47	43	31.0	1.99	68	60
8		4.4	4.2	0.36	2,028	1,684	30.0	0.68	4.1	110	0.60	0.49	43	30.0	1.96	110	88
9		4.7							3.2	111			45	31.0	1.84	93	68
10		4.6							4.4	98			41	30.0	1.86	77	66
11		4.3	4.5	0.35	1,884	1,572	29.0	0.65	5.3	97	0.55	0.46	40	30.0	1.99	98	76
12		4.4	4.4	0.40	1,872	1,565	31.0	0.60	4.9	100	0.49	0.41	40	29.0	1.96	116	78
13		4.7	5.4	0.31	1,987	1,669	32.0	0.62	4.5	111	0.58	0.48	38	29.0	1.84	101	72
14		4.6	4.9	0.45	1,876	1,568	30.0	0.63	4.1	109	0.43	0.36	36	31.0	1.86	137	74
15		4.3	4.9	0.39	1,909	1,590	28.0	0.68	3.6	112	0.55	0.46	43	25.0	1.99	113	70
16		4.9							1.8	112			46	30.0	1.76	116	72
17		4.4							3.8	110			38	26.0	1.94	103	66
18		4.0	4.7	0.51	1,890	1,455	47.0	0.40	4.3	110	0.56	0.49	40	22.0	2.13	125	68
19		4.1	6.4	0.35	2,116	1,787	38.0	0.56	2.2	111	0.55	0.46	44	20.0	2.12	107	56
20		4.2	6.4	0.37	2,210	1,868	39.0	0.57	2.2	114	0.62	0.53	45	28.0	2.07	121	60
21		4.0	5.1	0.51	2,280	1,928	40.0	0.57	2.6	114	0.63	0.53	44	35.0	2.18	161	74
22		3.9	5.3	0.49	2,308	1,955	40.0	0.58	1.5	115	0.59	0.50	43	37.0	2.19	158	72
23		5.1							0.0	114			51	38.0	1.70	101	88
24		5.2							4.4	114			49	36.0	1.67	165	60
25		4.6	6.6	0.23	2,258	1,931	34.0	0.66	5.4	112	0.51	0.44	43	37.0	1.86	87	66
26		4.3	4.1	0.60	1,993	1,695	33.0	0.60	5.1	111	0.54	0.45	39	37.0	2.02	180	86
27		4.4	5.3	0.42	2,251	1,932	34.0	0.66	2.1	108	0.57	0.49	41	37.0	1.96	147	78
28		4.4	4.9	0.50	2,315	1,995	34.0	0.68	1.9	110	0.65	0.56	41	38.0	1.98	181	86
29		4.5	3.8	0.00	2,390	2,050	32.0	0.75	0.7	108	0.59	0.51	43	36.0	1.93		116
30		4.9							0.3	108			47	39.0	1.76		112
31		4.5							2.2	111			42	37.0	1.90		88
Total	48	135.3	104.5	8.23	43,562	36,722	676.0	13.94	100.7	3,463	12.00	10.11	1,289	949.0	61.65	3,320	2,344
Max.	48	5.2	6.6	0.60	2,390	2,050	47.0	0.93	5.4	124	0.69	0.58	51	39.0	2.44	181	116
Min.	48	3.5	3.6	0.00	1,833	1,455	22.0	0.40	0.0	97	0.43	0.36	33	20.0	1.67	68	56
Avg.	48	4.4	5.0	0.39	2,074	1,749	32.2	0.66	3.2	112	0.57	0.48	42	30.6	1.99	119	76
Count	1	31.0	21.0	21.00	21	21	21.0	21.00	31.0	31	21.00	21.00	31	31.0	31.00	28	31

Steven D. Washburn
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

MAY 1998 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Amenable Cyanide mg/l
1	7.0	7.5	16	292		2.19	0.002	6	110	7.3	133	37	89	96		
2	7.1	7.5	11	179		1.95	0.018	7	114	7.0	114	8	91	96		
3	7.6	7.5	10	178		2.14	0.011	7	125	6.8	121	4	91	95		
4	7.2	7.5	15	305		2.44	0.002	7	142	5.1	104	92	90	94		
5	6.0	7.4	10	190	0.22	2.28	0.000	5	95	5.3	101	11	93	97	91	
6	7.3	7.6	12	219		2.19	0.000	6	110	8.8	161	9	90	96		<0.02
7	7.2	7.5	6	100		1.99	0.000	5	83	9.1	151	6	95	96		
8	7.5	7.6	18	294		1.96	0.000	6	98	9.4	154	10	87	96		
9	7.8	7.6	7	107		1.84	0.000	6	92	8.8	135	18	95	96		
10	7.6	7.6	9	140		1.86	0.000	5	78	7.6	118	11	92	96		
11	7.6	7.5	8	133	0.22	1.99	0.000	5	83	8.6	143	17	96	97	93	
12	7.3	7.6	9	147		1.96	0.000	4	65	8.1	132	10	95	98		<0.02
13	7.1	7.5	8	141		2.12	0.000	4	71	7.8	138	17	95	97		
14	7.2	7.5	14	251		2.15	0.000	6	108	8.3	149	24	91	96		
15	7.1	7.5	9	149		1.99	0.000	5	83	7.1	118	25	92	97		
16	7.6	7.5	4	59		1.76	0.000	4	59	6.2	91	9	98	99		
17	7.5	7.5	6	97		1.94	0.000	4	65	7.5	121	6	96	98		
18	6.6	7.6	9	160		2.13	0.000	5	89	9.7	172	26	94	98		
19	6.5	7.5	7	124		2.12	0.000	5	88	7.2	127	15	95	98		
20	6.6	7.5	5	86		2.07	0.000	4	69	6.7	116	21	96	97		
21	6.7	7.5	11	200	0.23	2.18	0.000	6	109	6.6	120	20	94	98	92	<0.02
22	6.3	7.5	12	219		2.19	0.000	8	146	9.6	175	82	92	97		
23	6.6	7.4	11	156		1.70	0.000	8	113	8.0	113	23	92	94		
24	7.3	7.6	4	56		1.67	0.000	6	84	8.6	120	17	97	96		
25	7.6	7.6	4	62		1.86	0.000	6	93	9.0	140	31	96	97		
26	7.2	7.5	3	51		2.02	0.000	6	101	8.3	140	57	98	97		
27	6.5	7.5	10	163		1.96	0.000	8	131	8.6	141	152	94	96		<0.02
28	6.2	7.4	6	99	0.29	1.98	0.000	9	149	9.3	154	76	97	96	91	
29	6.3	7.4	12	193		1.93	0.000	9	145	9.0	145	68	92	95		
30	6.4	7.5	13	191		1.76	0.000	7	103	10.2	150	33	92	96		
31	6.8	7.5	4	63		1.90	0.000	5	79	10.8	171	73	97	97		
Total	217.3	232.9	283	4,806	0.96	62.22	0.033	184	3,078	250.4	4,167	1,008	2,902	2,992	367	0
Max.	7.8	7.6	18	305	0.29	2.44	0.018	9	149	10.8	175	152	98	99	93	0
Min.	6.0	7.4	3	51	0.22	1.67	0.000	4	59	5.1	91	4	87	94	91	0
Avg.	7.0	7.5	9	155	0.24	2.01	0.001	6	99	8.1	134	G = 22	94	97	92	0
Count	31.0	31.0	31	31	4.00	31.00	31.000	31	31	31.0	31	31	31	31	4	4

G = Geometric Mean

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

MAY 1998 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hrs @ 25C	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1		2,880	1,340	23	322	18	681	10,550	3.3	76	5.7	12.00	11.79	64.55
2		2,760	1,370	34	483	21	593	9,600	3.1	77	5.7	12.34	12.20	61.77
3		2,760	1,300	26	322	14	593	9,500	2.9	75	5.9	12.14	12.16	62.42
4		3,000	1,280	26	322	30	622	9,600	2.8	74	6.1	12.23	12.26	64.79
5		2,760	1,200	30	322	22	504	9,550	2.7	75	6.0	12.07	11.88	52.77
6		2,760	1,260	31	322	22	533	9,600	2.9	75	6.1	12.02	11.91	55.52
7		2,760	1,250	19	322	19	593	9,550	3.0	74	6.1	12.17	12.08	62.09
8		2,640	1,320	32	322	16	622	9,500	3.1	75	6.0	12.20	12.24	65.47
9		2,760	1,500	22	322	16	622	9,600	3.0	75	6.0	12.23	12.20	64.79
10		2,880	4,380	23	322	12	207	9,600	2.8	74	6.1	11.91	11.76	21.56
11		2,760	1,320	25	322	11	593	9,500	2.9	74	6.2	12.32	12.34	62.42
12		2,640	1,450	24	322	10	741	6,600	3.2	75	6.2	12.24	12.24	112.27
13		2,880	1,530	22	322	16	474	9,550	3.1	76	6.1	12.23	12.19	49.63
14		2,760	1,330	32	322	18	593	9,600	3.0	74	5.9	12.04	11.78	61.77
15		2,760	1,230	21	242	10	652	9,600	3.2	75	6.0	12.08	12.05	67.92
16		2,880	1,400	26	242	11	652	9,650	2.7	74	6.0	12.16	12.26	67.56
17		2,640	1,160	26	322	18	681	9,500	2.5	74	5.9	12.18	12.03	71.68
18		2,760	1,180	26	322	20	711	9,500	2.7	75	6.0	12.22	12.06	74.84
19		2,760	1,310	29	322	20	652	9,500	3.3	76	5.9	12.17	12.26	68.63
20		2,880	1,250	17	322	19	563	9,500	3.5	74	6.0	12.22	12.28	59.26
21		2,880	1,170	19	322	17	504	8,550	2.9	74	6.0	12.12	11.97	58.95
22		2,760	2,440	19	322	16	504	8,600	2.9	75	6.0	12.22	12.28	58.60
23		2,760	2,420	24	322	13	533	8,550	2.9	74	6.0	12.20	12.27	62.34
24		2,640	2,320	23	322	25	563	8,600	2.9	75	6.0	12.24	12.31	65.47
25		2,640	1,230	24	242	27	563	8,550	2.9	75	6.2	12.24	12.10	65.85
26		2,760	2,240	31	242	16	474	8,550	3.3	76	6.2	12.19	12.04	55.44
27		2,520	3,200	20	322	18	296	6,000	3.2	75	6.3		12.21	49.33
28		2,880	1,310	25	322	13	326	4,800	3.1	75	6.1	12.18	12.26	67.92
29		2,640	1,930	23	242	14	533	7,400	3.7	75	6.1	12.17	12.10	72.03
30		2,760	2,190	28	242	14	444	8,600	3.2	75	6.1	12.12	12.06	51.63
31		2,640	1,290	25	322	12	533	8,500	3.1	71	6.2	12.15	12.25	62.71
Total		85,560	51,100	775	9,663	528	17,155	275,850	93.8	2,317	187.1	365.00	375.82	1942.01
Max.		3,000	4,380	34	483	30	741	10,550	3.7	77	6.3	12.34	12.34	112.27
Min.		2,520	1,160	17	242	10	207	4,800	2.5	71	5.7	11.91	11.76	21.56
Avg.		2,760	1,648	25	312	17	553	8,898	3.0	75	6.0	12.17	12.12	62.65

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JUNE 1998 - PLANT INFLUENT SHEET

Day	-----Weather---- Type	Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
1	RAIN	0.03	2.07	61	7.2	215	3,712	132	2,279	2.90	50	122	11.9	
2			2.01	64	7.5	216	3,621	143	2,397			128	11.3	
3			2.01	62	7.6	187	3,135	136	2,280			128	10.9	
4			2.17	64	7.4	163	2,950	140	2,534			124	9.4	
5	RAIN	0.05	1.98	62	7.4	219	3,616	140	2,312			118	11.4	
6			1.65	58	7.7	192	2,642	160	2,202			140	13.0	
7			1.79	58	7.5	159	2,374	140	2,090			142	10.4	
8	RAIN	0.02	2.01	58	7.3	177	2,967	160	2,682			142	10.4	
9	RAIN	1.34	1.82	61	7.5	202	3,066	211	3,203			178	11.1	
10			2.19	60	7.4	206	3,763	186	3,397	3.33	61	164	9.6	
11	RAIN	0.37	2.18	62	7.2	216	3,927	182	3,309			160	10.0	
12	RAIN	0.76	2.09	60	7.0	225	3,922	164	2,859			140	10.5	
13	RAIN	0.02	1.75	59	7.6	134	1,956	170	2,481			164	11.1	
14			1.89	59	7.5	159	2,506	152	2,396			142	9.5	
15			2.08	65	7.4	191	3,313	160	2,776			144	8.7	
16	RAIN	0.06	1.97	61	7.7	191	3,138	204	3,352			142	10.9	
17			2.05	61	7.5	187	3,197	170	2,906			122	9.3	
18	RAIN	0.26	2.05	64	7.5	194	3,317	148	2,530	2.71	46	110	7.5	
19			2.02	62	7.5	178	2,999	152	2,561			132	10.2	
20			1.90	59	7.6	126	1,997	114	1,806			108	10.1	
21	RAIN	0.04	1.79	61	7.5	133	1,986	134	2,000			128	9.4	
22			2.08	67	7.4	203	3,521	144	2,498			132	8.4	
23			2.09	62	7.2	224	3,904	131	2,283			124	9.4	
24			2.07	61	7.4	174	3,004	164	2,831			146	9.8	
25	RAIN	2.48	2.10	62	7.5	195	3,415	192	3,363	2.94	51	152	9.0	
26			2.21	63	7.5	164	3,023	182	3,355			148	9.9	
27	RAIN	0.04	1.94	60	7.7	121	1,958	124	2,006			112	10.1	
28	RAIN	0.10	1.95	61	7.4	229	3,724	120	1,952			118	10.0	
29	RAIN	0.07	2.09	64	7.4	143	2,493	140	2,440			122	9.1	
30	RAIN	0.04	2.02	64	7.5	207	3,487	163	2,746			146	9.3	
31														
Total	0	5.68	60.02	1,845	223.5	5,530	92,632	4,658	77,826	11.88	209	4,078	301.6	
Max.	0	2.48	2.21	67	7.7	229	3,927	211	3,397	3.33	61	178	13.0	
Min.	0	0.02	1.65	58	7.0	121	1,956	114	1,806	2.71	46	108	7.5	
Avg.	0	0.38	2.00	62	7.5	184	3,088	155	2,594	2.97	52	136	10.1	
Count	15	15.00	30.00	30	30.0	30	30	30	30	4.00	4	30	30.0	

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JUNE 1998 - PRIMARY EFFLUENT SHEET

Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	159	2,745	98	1,692	2.38	41	94	12.6	2.07	26	26	18
2	152	2,548	100	1,676			88	12.7	2.01	30	30	
3	137	2,297	126	2,112			108	14.8	2.01	27	7	
4	111	2,009	98	1,774			90	11.2	2.17	32	30	
5	128	2,114	108	1,783			98	12.5	1.98	42	23	
6	109	1,500	120	1,651			106	13.9	1.65	43	25	
7	95	1,418	92	1,373			80	13.4	1.79	40	34	
8	116	1,945	92	1,542			80	11.9	2.01	34	43	
9	127	1,928	80	1,214			70	13.8	1.82	37	62	
10	134	2,447	84	1,534	1.97	36	76	12.1	2.19	35	55	41
11	156	2,836	98	1,782			92	11.4	2.18	28	46	
12	174	3,033	92	1,604			88	12.9	2.09	23	44	
13	95	1,387	102	1,489			94	12.3	1.75	29	40	
14	83	1,308	84	1,324			76	10.6	1.89	48	45	
15	129	2,238	84	1,457			66	9.7	2.08	32	48	
16	148	2,432	160	2,629			152	12.8	1.97	23	22	
17	153	2,616	144	2,462			140	12.5	2.05	18	15	
18	155	2,650	120	2,052	2.06	35	120	10.9	2.05	20	19	24
19	160	2,695	112	1,887			100	11.0	2.02	10	26	
20	95	1,505	96	1,521			96	11.7	1.90	25	16	
21	76	1,135	76	1,135			76	11.3	1.79	43	43	
22	125	2,168	88	1,527			8	10.2	2.08	38	39	
23	157	2,737	108	1,883			100	10.6	2.09	30	18	
24	130	2,244	96	1,657			84	10.0	2.07	25	41	
25	146	2,557	104	1,821	1.68	29	88	10.1	2.10	25	46	43
26	120	2,212	114	2,101			100	11.3	2.21	27	37	
27	84	1,359	116	1,877			108	11.2	1.94	31	6	
28	75	1,220	96	1,561			96	10.7	1.95	67	20	
29	88	1,534	96	1,673			82	10.6	2.09	38	31	
30	130	2,190	120	2,022			100	10.6	2.02	37	26	
31												
Total	3,747	63,006	3,104	51,815	8.09	142	2,756	351.3	60.02	963	963	126
Max.	174	3,033	160	2,629	2.38	41	152	14.8	2.21	67	62	43
Min.	75	1,135	76	1,135	1.68	29	8	9.7	1.65	10	6	18
Avg.	125	2,100	103	1,727	2.02	35	92	11.7	2.00	32	32	32
Count	30	30	30	30	4.00	4	30	30.0	30.00	30	30	4

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JUNE 1998 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading fIm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
Day																	
1	48	4.2	3.7	0.51	2,083	1,788	29.0	0.72	5.1	112	0.66	0.56	39	37.0	2.07	159	98
2		4.3	4.2	0.42	2,343	2,018	33.0	0.71	1.4	112	0.56	0.48	41	36.0	2.01	152	100
3		4.3	3.5	0.36	2,461	2,138	33.0	0.75	0.9	115	0.63	0.55	39	33.0	2.01	137	126
4		4.0	4.1	0.32	2,402	2,078	25.0	0.96	4.0	114	0.66	0.57	37	37.0	2.17	111	98
5		4.4	3.6	0.38	2,123	1,843	29.0	0.73	4.5	116	0.45	0.39	42	33.0	1.98	128	108
6		5.2							3.7	116			50	37.0	1.65	109	120
7		4.8							4.7	116			44	38.0	1.79	95	92
8		4.3	4.1	0.36	2,093	1,812	24.0	0.87	5.2	114	0.53	0.46	41	36.0	2.01	116	92
9		4.7	5.6	0.33	2,284	1,980	26.0	0.88	4.1	114	0.52	0.45	45	36.0	1.82	127	80
10		3.9	4.4	0.42	2,258	1,956	30.0	0.75	4.5	112	0.60	0.52	36	37.0	2.19	134	84
11		4.0	3.7	0.49	2,228	1,921	29.0	0.77	3.4	109	0.65	0.56	37	32.0	2.18	156	98
12		4.1	4.4	0.49	2,376	2,071	30.0	0.79	0.0	109	0.59	0.51	39	28.0	2.09	174	92
13		4.9							0.0	111			45	36.0	1.75	95	102
14		4.6							5.0	108			43	36.0	1.89	83	84
15		4.1	2.1	0.84	1,022	893	13.0	0.79	6.1	85	0.35	0.30	41	9.0	2.08	129	84
16		4.4	0.9	1.14	808	712	11.0	0.73	5.9	107	0.14	0.12	34	46.0	1.97	148	160
17		4.2	1.7	0.70	1,420	1,254	14.0	1.01	4.3	128	0.30	0.27	33	0.0	2.05	153	144
18		4.2	3.0	0.48	2,087	1,836	20.0	1.04	2.1	120	0.38	0.33	29	10.0	2.05	155	120
19		4.3	3.8	0.43	2,424	2,100	20.0	1.21	0.7	122	0.74	0.65	41	19.0	2.02	160	112
20		4.5							0.0	108			40	22.0	1.90	95	96
21		4.8							3.7	109			44	13.0	1.79	76	76
22		4.1	4.7	0.35	2,377	2,041	26.0	0.91	5.2	108	0.85	0.73	38	23.0	2.08	125	88
23		4.1	3.9	0.43	2,462	2,113	28.0	0.88	1.3	108	0.76	0.66	38	28.0	2.09	157	108
24		4.2	4.8	0.64	2,633	1,168	29.0	0.91	0.0	107	0.82	0.71	39	28.0	2.07	130	96
25		4.1	4.4	0.37	2,680	2,292	28.0	0.96	0.0	106	0.78	0.67	39	34.0	2.10	146	104
26		3.9	3.4	0.36	2,404	2,067	29.0	0.83	0.0	107	0.93	0.80	36	39.0	2.21	120	114
27		4.4							1.5	107			36	39.0	1.94	84	116
28		4.4							4.3	108			41	39.0	1.95	75	96
29		4.1	3.4	0.32	1,892	1,618	22.0	0.86	5.7	107	0.68	0.58	38	31.0	2.09	88	96
30		4.3	3.1	0.41	2,061	1,763	21.0	0.98	4.1	109	0.63	0.54	40	31.0	2.02	130	120
31																	
Total	48	129.8	80.5	10.56	46,921	39,462	549.0	19.05	91.4	3,324	13.21	11.41	1,185	903.0	60.02	3,747	3,104
Max.	48	5.2	5.6	1.14	2,680	2,292	33.0	1.21	6.1	128	0.93	0.80	50	46.0	2.21	174	160
Min.	48	3.9	0.9	0.32	808	712	11.0	0.71	0.0	85	0.14	0.12	29	0.0	1.65	75	76
Avg.	48	4.3	3.7	0.48	2,133	1,794	25.0	0.87	3.0	111	0.60	0.52	40	30.1	2.00	125	103
Count	1	30.0	22.0	22.00	22	22	22.0	22.00	30.0	30	22.00	22.00	30	30.0	30.00	30	30

Steven D. Washburn
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

JUNE 1998 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Amenable Cyanide mg/l
1	7.0	7.5	10	173	0.22	2.07	0.000	5	86	10.5	181	46	92	98	92	<0.02
2	6.1	7.5	20	335		2.01	0.000	11	184	9.8	164	120	86	95		
3	6.1	7.5	10	168	3.80	2.01	0.000	8	134	9.7	163	120	93	96		
4	6.9	7.5	10	181		2.17	0.000	6	109	8.2	148	136	93	96		
5	7.0	7.5	13	215		1.98	0.000	6	99	8.7	144	122	91	97		
6	7.1	7.6	7	96		1.65	0.000	6	83	10.9	150	32	96	97		
7	7.4	7.6	10	149		1.79	0.000	5	75	13.2	197	46	93	97		
8	7.2	7.5	9	151		2.01	0.000	5	84	9.8	164	102	94	97		
9	7.0	7.5	8	121		1.82	0.000	6	91	12.2	185	38	96	97		
10	6.4	7.5	10	183	0.22	2.19	0.000	6	110	12.1	221	148	95	97	93	
11	6.4	7.5	11	200	4.02	2.18	0.000	7	127	8.5	155	88	94	97		<0.02
12	6.0	7.5	22	383		2.09	0.000	14	244	11.8	206	500	87	94		<0.02
13	6.3	7.5	13	190		1.75	0.000	9	131	8.6	126	800	92	93		
14	7.3	7.6	11	173		1.89	0.000	5	79	8.8	139	24	93	97		
15	7.1	7.5	17	295		2.08	0.000	8	139	8.0	139	8	89	96		
16	6.9	7.6	23	378		1.97	0.000	13	214	9.8	161	42	89	93		<0.02
17	5.7	7.6	26	445		2.05	0.000	15	256	10.2	174	160	85	92		
18	5.7	7.4	21	359	0.37	2.05	0.000	16	274	9.1	156	144	86	92	86	
19	6.0	7.4	23	387	6.33	2.02	0.000	15	253	8.2	138	320	85	92		
20	6.0	7.5	9	143		1.90	0.000	12	190	9.3	147	116	92	90		
21	7.1	7.5	10	149		1.79	0.000	9	134	10.8	161	80	93	93		
22	6.8	7.5	12	208		2.08	0.000	8	139	9.7	168	62	92	96		
23	6.1	7.5	18	314		2.09	0.000	11	192	10.0	174	40	86	95		
24	5.9	7.4	15	259		2.07	0.000	12	207	7.8	135	208	91	93		
25	5.8	7.4	18	315	0.30	2.10	0.000	14	245	7.3	128	218	91	93	90	
26	5.7	7.4	17	313	5.25	2.21	0.000	13	240	9.4	173	96	91	92		
27	6.4	7.5	12	194		1.94	0.000	8	129	10.2	165	23	90	93		
28	7.3	7.6	9	146	19.40	1.95	0.000	6	98	9.2	150	33	93	97		
29	7.1	7.6	11	192	4.85 AVG	2.09	0.003	6	105	10.6	185	45	92	96		
30	6.7	7.6	8	135		2.02	0.007	6	101	9.3	157	80	95	97		
31																
Total	196.5	225.3	413	6,951	1.11	60.02	0.010	271	4,550	291.7	4,853	4,073	2,735	2,848	361	0
Max.	7.4	7.6	26	445	0.37	2.21	0.007	16	274	13.2	221	800	96	98	93	0
Min.	5.7	7.4	7	96	0.22	1.65	0.000	5	75	7.3	126	23	85	90	86	0
Avg.	6.6	7.5	14	232	0.28	2.00	0.000	9	152	9.7	167	G = 91	91	95	90	0
Count	30.0	30.0	30	30	4.00	30.00	30.000	30	30	30.0	30	30	30	30	4	4

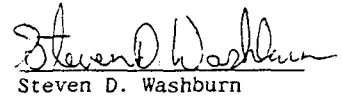
G = Geometric Mean

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JUNE 1998 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hrs @ 25C	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1		2,760	1,180	18	322	30	621	8,500	3.3	75	6.1	12.22	12.24	73.06
2		2,880	1,160	23	242	29	621	8,500	3.6	76	6.2	12.14	12.20	73.06
3		2,760	1,390	21	242	17	621	8,500	3.2	75	6.3	12.13	12.15	73.06
4		2,880	1,200	20	322	20	621	8,500	3.2	75	6.2	12.19	12.21	73.06
5		2,640	1,150	22	161	18	522	8,600	3.1	75	6.2		12.08	60.70
6		3,000	1,510	26	322	21	621	8,700	3.1	76	6.2	12.25	12.29	71.38
7		2,640	2,490	22	242	15	725	8,400	3.1	77	6.3	12.20	12.34	86.31
8		2,880	1,130	32	242	16	656	8,500	3.2	75	6.3	12.22	12.31	77.18
9		2,760	1,300	24	322	26	621	8,600	3.2	76	6.2	12.08	11.96	72.21
10		2,760	1,230	29	242	18	621	8,500	3.5	74	6.3	12.23	12.33	73.06
11		2,880	1,120	30	242	19	587	8,600	3.3	73	6.3	12.26	12.31	68.26
12		2,760	1,310	35	242	20	656	8,500	3.4	75	6.2	12.24	12.27	77.18
13		2,640	1,420	37	322	21	587	8,600	3.2	76	6.3	12.32	12.28	68.26
14		2,760	1,120	32	242	16	621	8,500	3.2	74	6.6	12.23	12.24	73.06
15		2,760	580	37	322	15	621	8,500	3.4	76	6.2	12.23	12.30	73.06
16		2,640	760	36	322	31	621	8,700	3.2	76	6.2	12.24	12.29	71.38
17		2,640	1,150	42	161	26	621	8,600	3.1	77	6.1	12.24	12.24	72.21
18		2,760	1,090	38	322	27	518	8,600	3.0	76	6.2	12.19	12.16	60.23
19		2,760	440	38	483	29	587	8,500	3.7	75	6.0	12.18	12.18	69.06
20		2,760	1,470	40	322	20	621	8,700	3.3	74	6.1	12.25	12.24	71.38
21		2,640	480	33	322	37	621	8,500	3.2	75	6.3	12.12	12.13	73.06
22		2,640	420	33	483	22	587	8,600	3.5	74	6.2	12.13	12.21	68.26
23		2,760	420	35	322	27	522	8,500	3.4	74	6.2	12.14	12.17	61.41
24		2,760	1,380	38	322	24	621	8,600	3.6	74	6.2	12.24	12.19	72.21
25		2,640	1,960	42	403	27	690	8,600	3.9	73	6.1	12.19	12.23	80.23
26		2,760	520	37	403	22	449	7,000	4.0	73	6.2	12.04	12.11	64.14
27		2,760	510	38	322	39	483	8,700	3.7	74	6.2	12.20	12.19	55.52
28		2,760	460	35	322	17	621	8,500	3.6	72	6.2	12.10	12.21	73.06
29		2,640	470	14	322	17	621	8,500	3.6	73	6.3	12.17	12.24	73.06
30		2,880	590	35	322	35	656	8,800	3.6	73	6.3	12.20	12.19	74.55
31														
Total		82,560	31,410	942	9,182	701	18,161	255,400	101.4	2,241	186.7	353.57	366.49	2132.62
Max.		3,000	2,490	42	483	39	725	8,800	4.0	77	6.6	12.32	12.34	86.31
Min.		2,640	420	14	161	15	449	7,000	3.0	72	6.0	12.04	11.96	55.52
Avg.		2,752	1,047	31	306	23	605	8,513	3.4	75	6.2	12.19	12.22	71.09



Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JULY 1998 - PLANT INFLUENT SHEET

Day	-----Weather---- Type	Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
1			2.06	62	7.3	165	2,835	110	1,890	2.76	47	104	9.0	
2			2.03	63	7.5	162	2,743	154	2,607			146	10.1	
3	RAIN	0.41	1.81	61	7.6	141	2,128	120	1,811			106	11.1	
4	RAIN	0.02	1.79	61	7.6	130	1,941	144	2,150			126	14.4	
5			1.87	62	7.5	158	2,464	136	2,121			136	9.4	
6	RAIN	0.64	2.10	62	7.5	95	1,664	240	4,203			160	9.4	
7	RAIN	1.22	2.40	64	7.6	180	3,603	196	3,923	2.76	55	162	7.9	
8			2.37	66	7.5	171	3,380	138	2,728			136	8.4	
9			2.27	65	7.5	175	3,313	132	2,499			112	8.4	
10			2.22	61	7.4	169	3,129	120	2,222			108	9.8	
11			1.86	63	7.5	130	2,017	112	1,737			110	9.8	
12			1.96	61	7.4	124	2,027	122	1,994			110	9.4	
13			2.06	66	7.3	164	2,818	182	3,127	2.99	51	172	9.5	
14			1.89	62	7.6	186	2,932	194	3,058			188	9.6	
15	RAIN	0.06	1.86	62	7.5	190	2,947	194	3,009			180	9.5	
16			1.95	61	7.6	185	3,009	186	3,025			150	10.5	
17			1.84	62	7.5	255	3,913	310	4,757			294	11.5	
18			1.85	61	7.5	145	2,237	122	1,882			108	9.4	
19	RAIN	0.32	1.77	62	7.6	123	1,816	104	1,535			80	10.5	
20	RAIN	1.03	1.93	62	7.5	164	2,640	148	2,382			142	10.1	
21	RAIN	0.93	2.22	68	7.7	299	5,536	377	6,980			346	9.9	
22	RAIN	0.02	2.36	66	7.5	124	2,441	106	2,086			100	8.1	
23			2.34	71	7.7	110	2,147	110	2,147			94	8.3	
24			2.34	64	7.5	115	2,244	114	2,225			94	7.6	
25	RAIN	0.06	1.81	62	7.6	129	1,947	156	2,355			142	9.2	
26			1.92	64	7.4	133	2,130	140	2,242			128	10.5	
27			2.25	67	7.4	227	4,260	214	4,016			190	9.3	
28			2.81	65	7.8	198	4,640	184	4,312			176	11.1	
29			1.93	64	7.4	166	2,672	184	2,962	3.31	53	172	10.8	
30			1.79	64	7.6	150	2,239	136	2,030			116	10.6	
31			1.77	64	7.5	146	2,155	128	1,890			116	12.1	
Total	0	4.71	63.43	1,968	233.1	5,009	85,965	5,013	85,906	11.82	207	4,504	305.2	
Max.	0	1.22	2.81	71	7.8	299	5,536	377	6,980	3.31	55	346	14.4	
Min.	0	0.02	1.77	61	7.3	95	1,664	104	1,535	2.76	47	80	7.6	
Avg.	0	0.47	2.05	63	7.5	162	2,773	162	2,771	2.96	52	145	9.8	
Count	10	10.00	31.00	31	31.0	31	31	31	31	4.00	4	31	31.0	

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JULY 1998 - PRIMARY EFFLUENT SHEET

Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	129	2,216	96	1,649	1.85	32	92	11.0	2.06	22	13	33
2	110	1,862	100	1,693			100	11.6	2.03	32	35	
3	102	1,540	98	1,479			88	12.2	1.81	28	18	
4	63	941	80	1,194			70	14.0	1.79	52	44	
5	88	1,372	70	1,092			70	11.1	1.87	44	49	
6	65	1,138	72	1,261			62	10.6	2.10	32	70	
7	89	1,781	70	1,401	1.36	27	60	9.2	2.40	51	64	51
8	91	1,799	68	1,344			68	8.3	2.37	47	51	
9	103	1,950	74	1,401			60	8.8	2.27	41	44	
10	101	1,870	66	1,222			60	8.9	2.22	40	45	
11	74	1,148	60	931			60	11.0	1.86	43	46	
12	57	932	44	719			44	10.4	1.96	54	64	
13	118	2,027	70	1,203	1.33	23	68	10.3	2.06	28	62	56
14	110	1,734	64	1,009			64	10.8	1.89	41	67	
15	124	1,924	70	1,086			56	10.8	1.86	35	64	
16	131	2,130	68	1,106			50	12.1	1.95	29	63	
17	137	2,102	72	1,105			62	12.8	1.84	46	77	
18	86	1,327	78	1,203			68	10.4	1.85	41	36	
19	81	1,196	66	974			56	10.5	1.77	34	37	
20	85	1,368	62	998			62	10.6	1.93	48	58	
21	103	1,907	76	1,407			76	10.2	2.22	66	80	
22	89	1,752	64	1,260			56	9.8	2.36	28	40	
23	95	1,854	80	1,561			64	9.2	2.34	14	27	
24	96	1,873	84	1,639			58	91.3	2.34	17	26	
25	75	1,132	80	1,208			72	11.3	1.81	42	49	
26	60	961	58	929			58	10.3	1.92	55	59	
27	124	2,327	80	1,501			78	9.7	2.25	45	63	
28	125	2,929	72	1,687			68	12.5	2.81	37	61	
29	102	1,642	88	1,416	2.81	45	76	11.6	1.93	39	52	16
30	82	1,224	74	1,105			60	12.0	1.79	45	46	
31	71	1,048	80	1,181			72	13.3	1.77	51	38	
Total	2,966	51,007	2,284	38,965	7.35	127	2,058	416.6	63.43	1,227	1,548	156
Max.	137	2,929	100	1,693	2.81	45	100	91.3	2.81	66	80	56
Min.	57	932	44	719	1.33	23	44	8.3	1.77	14	13	16
Avg.	96	1,645	74	1,257	1.84	32	66	13.4	2.05	40	50	39
Count	31	31	31	31	4.00	4	31	31.0	31.00	31	31	4

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JULY 1998 ACTIVATED SLUDGE SHEET

Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	4.2	3.8	0.41	2,108	1,793	27.0	0.78	2.7	111	0.70	0.60	39	36.0	2.06	129	96
2		4.2	3.7	0.34	2,114	1,814	26.0	0.81	3.2	110	0.60	0.52	39	37.0	2.03	110	100
3		4.8	4.4	0.28	2,158	1,857	25.0	0.86	4.5	109	0.55	0.47	44	34.0	1.81	102	98
4		4.8							4.4	111			43	30.0	1.79	63	80
5		4.6							6.0	111			43	26.0	1.87	88	70
6		4.1	4.1	0.26	1,735	1,467	20.0	0.87	5.8	105	0.56	0.47	39	17.0	2.10	65	72
7		3.6	4.1	0.37	1,912	1,617	27.0	0.71	4.5	103	0.61	0.51	33	15.0	2.40	89	70
8		3.6	4.2	0.38	1,870	1,581	25.0	0.75	5.3	102	0.60	0.50	34	14.0	2.37	91	68
9		3.8	4.2	0.39	1,974	1,665	28.0	0.71	4.5	103	0.58	0.49	36	23.0	2.27	103	74
10		3.9	4.9	0.37	2,016	1,694	29.0	0.70	4.1	105	0.66	0.56	36	22.0	2.22	101	66
11		4.6							3.7	105			44	24.0	1.86	74	60
12		4.4							5.2	104			42	25.0	1.96	57	44
13		4.2	4.7	0.41	1,891	1,653	29.0	0.65	5.9	102	0.63	0.53	39	20.0	2.06	118	70
14		4.6	6.1	0.34	2,072	1,720	31.0	0.67	4.4	103	0.57	0.47	44	19.0	1.89	110	64
15		4.6	5.6	0.37	2,075	1,735	31.0	0.67	4.3	102	0.54	0.46	46	22.0	1.86	124	72
16		4.4	5.6	0.41	2,083	1,745	31.0	0.67	3.5	103	0.47	0.40	41	23.0	1.95	131	68
17		4.7	5.2	0.44	1,927	1,605	32.0	0.60	3.5	104	0.68	0.58	45	23.0	1.84	137	72
18		4.7							3.2	103			43	26.0	1.85	86	78
19		4.9							4.2	103			45	24.0	1.77	81	66
20		4.5	6.0	0.28	1,990	1,653	31.0	0.64	5.4	109	0.54	0.45	44	23.0	1.93	85	62
21		3.9	4.2	0.39	1,973	1,652	31.0	0.64	4.7	105	0.59	0.49	38	24.0	2.22	103	76
22		3.7	4.8	0.35	2,024	1,682	33.0	0.61	3.5	104	0.63	0.52	33	26.0	2.36	89	64
23		3.7	4.0	0.36	2,110	1,741	35.0	0.60	3.2	105	0.57	0.45	38	30.0	2.34	95	80
24		3.7	3.5	0.40	1,901	1,553	30.0	0.63	4.2	107	0.56	0.46	37	35.0	2.34	96	84
25		4.8							3.7	108			46	37.0	1.81	75	80
26		4.5							4.6	108			43	39.0	1.92	60	58
27		3.8	3.5	0.53	1,774	1,457	30.0	0.59	5.0	105	0.50	0.41	37	27.0	2.25	124	80
28		4.3	5.1	0.41	2,030	1,695	34.0	0.60	1.1	104	0.56	0.47	42	25.0	2.00	125	72
29		4.5	4.2	0.33	1,983	1,658	33.0	0.60	2.6	106	0.53	0.44	43	24.0	1.93	102	88
30		4.8	5.4	0.25	1,979	1,643	33.0	0.60	4.5	105	0.60	0.50	46	30.0	1.79	82	74
31		4.9	4.9	0.22	1,923	1,585	35.0	0.55	4.5	108	0.53	0.44	47	30.0	1.77	71	80
Total	48	133.5	106.3	8.27	45,622	38,265	686.0	15.51	129.9	3,273	13.36	11.19	1,269	810.0	62.62	2,966	2,286
Max.	48	4.9	6.1	0.53	2,158	1,857	35.0	0.87	6.0	111	0.70	0.60	47	39.0	2.40	137	100
Min.	48	3.6	3.5	0.22	1,735	1,457	20.0	0.55	1.1	102	0.47	0.40	33	14.0	1.77	57	44
Avg.	48	4.3	4.6	0.36	1,984	1,664	29.8	0.67	4.2	106	0.58	0.49	41	26.1	2.02	96	74
Count	1	31.0	23.0	23.00	23	23	23.0	23.00	31.0	31	23.00	23.00	31	31.0	31.00	31	31

Steven D. Washburn

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Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

JULY 1998 - MISCELLANEOUS & SLUDGE SHEET

	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hrs @ 25C	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
Day														
1		2,640	400	26	322	10	558	8,400	3.5	73	6.3	12.09	12.25	66.43
2		2,760	1,670	23	322	14	558	8,650	3.4	74	6.2	12.16	12.27	64.51
3		2,760	540	27	322	16	527	8,700	4.2	74	6.2	12.25	12.32	60.57
4		2,640	530	26	322	17	527	8,700	3.5	74	6.2	12.16	12.18	60.57
5		2,760	500	22	322	17	527	8,500	3.3	74	6.1	12.09	12.24	62.00
6		2,880	460	32	322	15	527	8,500	3.3	74	6.3	12.17	12.25	62.00
7		2,760	5,420	29	242	16	527	8,000	4.5	61	6.2	12.19	12.25	65.88
8		2,880	390	31	242	16	527	8,000	3.9	69	6.1	12.19	12.16	65.88
9		2,880	530	33	322	17	372	6,500	3.6	70	5.9	12.25	12.37	57.23
10		2,760	460	20	322	21	558	8,550	3.5	70	5.8	12.16	12.26	65.26
11		2,760	550	29	242	17	558	8,650	3.2	71	5.9	12.18	12.18	64.51
12		2,640	520	24	322	14	558	8,600	3.0	71	6.0	12.13	12.27	64.88
13		2,880	380	24	322	26	527	8,500	3.0	72	6.0	12.21	12.28	62.00
14		2,640	340	27	242	23	310	8,400	2.9	72	6.0	12.18	12.18	36.90
15		2,520	410	21	322	13	434	8,750	3.3	73	6.0	12.19	12.23	49.60
16		2,760	550	40	322	18	558	8,600	4.1	77	5.7	12.18	12.22	64.88
17		2,640	450	29	322	24	651	8,500	3.6	75	5.3	12.16	12.29	76.59
18		2,640	470	31	322	21	558	8,700	4.0	72	5.2	12.17	12.30	64.14
19		2,640	460	29	322	23	527	8,600	3.1	76	5.5	11.95	11.75	61.28
20		2,640	400	33	322	19	372	7,000	3.0	73	5.8	12.00	11.76	53.14
21		2,760	420	27	161	31	558	8,500	3.1	73	5.8	12.22	12.31	65.65
22		2,880	460	19	322	15	558	8,500	4.6	75	5.5	12.23	12.16	65.65
23		2,880	390	22	322	18	558	8,600	4.1	76	5.2	12.19	12.29	64.88
24		2,760	400	24	161	21	496	8,800	3.3	75	5.4	12.21	12.25	56.36
25		2,760	480	30	322	18	589	8,650	2.9	76	5.6	12.22	12.30	68.09
26		2,760	510	30	242	18	558	8,600	2.6	76	5.7	12.17	12.26	64.88
27		2,880	390	34	242	17	558	8,550	2.9	73	6.0	12.15	12.29	65.26
28		2,640	380	27	322	30	558	8,600	2.9	76	5.6	12.18	12.22	64.88
29		2,760	530	31	242	28	620	8,600	3.4	77	5.6	12.07	11.77	72.09
30		2,760	420	31	242	13	620	8,500	3.3	76	5.3	12.07	12.12	72.94
31		2,520	340	31	161	12	558	8,600	3.2	76	5.3	12.14	12.26	64.88
Total		84,840	20,150	862	8,859	578	16,492	261,300	106.2	2,274	179.7	376.91	378.24	1953.84
Max.		2,880	5,420	40	322	31	651	8,800	4.6	77	6.3	12.25	12.37	76.59
Min.		2,520	340	19	161	10	310	6,500	2.6	61	5.2	11.95	11.75	36.90
Avg.		2,737	650	28	286	19	532	8,429	3.4	73	5.8	12.16	12.20	63.03

Steven D. Washburn

Steven D. Washburn
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

JULY 1998 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Amenable Cyanide mg/l
1	6.5	7.5	10	172	0.17	2.06	0.000	5	86	9.6	165	15	91	97	94	
2	6.7	7.5	11	186	2.92	2.03	0.000	5	85	10.2	173	43	93	97		
3	7.0	7.6	9	136		1.81	0.009	4	60	11.0	166	35	93	97		<0.02
4	7.1	7.6	6	90		1.79	0.000	5	75	13.9	208	16	96	96		
5	7.5	7.6	9	140		1.87	0.007	6	94	13.0	203	32	93	96		
6	7.2	7.7	9	158		2.10	0.013	5	88	10.8	189	38	96	95		
7	6.5	7.5	11	220	0.23	2.40	0.000	6	120	9.5	190	33	94	97	92	<0.02
8	7.1	7.6	3	59	4.60	2.37	0.000	3	59	6.9	136	42	98	98		
9	6.7	7.6	5	95		2.27	0.000	4	76	6.8	129	33	96	98		
10	6.7	7.5	8	148		2.22	0.010	3	56	6.4	118	9	93	98		
11	7.1	7.5	6	93		1.86	0.009	4	62	9.1	141	29	95	97		
12	7.0	7.6	9	147		1.96	0.000	4	65	10.5	172	44	93	97		
13	6.8	7.6	5	86	0.21	2.06	0.000	4	69	9.3	160	39	97	98	93	
14	6.6	7.6	10	158	3.60	1.89	0.000	4	63	8.9	140	68	95	98		
15	6.5	7.6	8	124		1.86	0.000	5	78	9.2	143	29	96	97		<0.02
16	6.4	7.5	10	163		1.95	0.000	4	65	10.7	174	35	95	98		
17	6.2	7.5	13	199	10	1.84	0.000	6	92	13.2	203	14	96	98		
18	6.8	7.5	10	154		1.85	0.000	4	62	8.5	131	31	92	97		
19	6.9	7.6	6	89		1.77	0.000	4	59	8.2	121	36	94	97		
20	7.0	7.6	12	193		1.93	0.000	4	64	7.9	127	51	92	98		
21	6.5	7.6	11	204	175	2.22	0.000	5	93	8.4	156	84	97	98		<0.02
22	6.1	7.5	9	177		2.36	0.000	5	98	7.9	155	63	92	96		
23	6.1	7.5	8	156		2.34	0.000	5	98	5.6	109	164	93	95		
24	6.3	7.6	13	254		2.34	0.000	5	98	6.1	119	86	89	96		
25	6.5	7.6	7	106	3.70	1.81	0.000	6	91	6.3	95	86	96	95		
26	7.0	7.6	2	32		1.92	0.005	6	96	7.0	112	128	99	95		
27	6.5	7.5	12	225		2.25	0.000	7	131	10.4	195	95	94	97		
28	5.9	7.5	9	150		2.00	0.000	9	150	8.3	138	52	95	95		
29	6.4	7.5	9	145	0.23	1.93	0.000	7	113	6.0	97	38	95	96	93	
30	6.7	7.5	13	194	3.70	1.79	0.000	7	105	6.0	90	42	90	95		
31	6.7	7.5	8	118		1.77	0.000	6	89	7.1	105	44	94	96		
Total	207.0	234.2	271	4,570	0.84	62.62	0.053	157	2,636	272.7	4,559	1,554	2,922	2,998	372	0
Max.	7.5	7.7	13	254	0.23	2.40	0.013	9	150	13.9	208	164	99	98	94	0
Min.	5.9	7.5	2	32	0.17	1.77	0.000	3	56	5.6	90	9	89	95	92	0
Avg.	6.7	7.6	9	147	0.21	2.02	0.002	5	85	8.8	147	G = 41	94	97	93	0
Count	31.0	31.0	31	31	4.00	31.00	31.000	31	31	31.0	31	31	31	31	4	4

G = Geometric Mean

Steven D Washburn

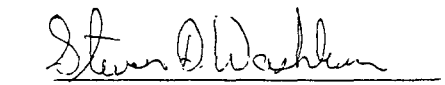
Steven D. Washburn
Superintendent

Zinc 0.02

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

AUGUST 1998 - PLANT INFLUENT SHEET

	-----Weather----		Inf. Flow	Inf. Temp	Inf. pH	Inf. BOD	Inf. BOD	Inf. SS	Inf. SS	Inf. Phos.	Inf. Phos.	Inf. VSS	Inf. NH3-N	--Remarks or Other Parameters--
	Type	Precip.	MGD	F	SU	mgIL	Lbs.	mgIL	Lbs.	mgIL	Lbs.	mgIL	mgIL	
Day														
1			1.71	62	7.7	134	1,911	132	1,883			122	10.1	
2			1.81	62	7.4	106	1,600	136	2,053			130	9.7	
3	RAIN	0.44	2.12	74	7.4	121	2,139	160	2,829			130	7.9	
4	RAIN	0.09	2.45	71	7.4	140	2,861	188	3,841			150	8.3	
5	RAIN	0.93	2.47	75	7.4	182	3,749	172	3,543	2.92	60	136	8.4	
6	RAIN	0.24	2.10	66	7.6	207	3,625	148	2,592			128	9.5	
7	RAIN	0.10	2.02	65	7.6	197	3,319	138	2,325			116	10.4	
8	RAIN	0.79	1.82	64	7.5	156	2,368	198	3,005			166	9.6	
9	RAIN	1.05	2.00	63	7.4	139	2,319	130	2,168			108	8.7	
10	RAIN	0.01	2.24	64	7.3	161	3,008	140	2,615			130	9.4	
11			2.21	65	7.7	150	2,765	118	2,175			106	10.4	
12			2.17	66	7.5	166	3,004	164	2,968	2.20	40	138	7.3	
13			2.19	66	7.5	150	2,740	120	2,192			98	9.4	
14			2.05	67	7.5	152	2,599	112	1,915			88	10.5	
15	RAIN	0.22	1.82	64	7.5	141	2,140	124	1,882			106	10.8	
16			1.87	63	7.6	126	1,965	118	1,840			110	10.2	
17	RAIN	0.04	2.16	68	7.4	135	2,432	132	2,378	3.17	57	106	10.0	
18			2.06	68	7.5	151	2,594	138	2,371			136	11.1	
19			2.18	65	7.6	146	2,654	140	2,545			128	10.4	
20			2.02	68	7.3	170	2,864	168	2,830			162	11.7	
21	RAIN	0.05	1.87	66	7.5	206	3,213	222	3,462			200	12.6	
22			1.79	63	7.7	140	2,090	122	1,821			122	10.9	
23			1.78	63	7.5	164	2,435	146	2,167			122	10.9	
24	RAIN	0.52	2.02	64	7.5	136	2,291	136	2,291	2.46	41	132	9.4	
25			2.04	66	7.6	160	2,722	120	2,042			106	10.1	
26			1.94	68	7.7	177	2,864	120	1,942			110	10.9	
27			2.03	66	7.4	176	2,980	176	2,980			156	10.1	
28	RAIN	0.04	1.86	67	7.6	179	2,777	152	2,358			128	11.1	
29			1.85	64	7.9	142	2,191	108	1,666			108	10.1	
30			1.75	63	7.5	124	1,810	120	1,751			110	10.0	
31			1.92	66	7.5	161	2,578	128	2,050			112	10.2	
Total	0	4.52	62.32	2,042	233.2	4,795	80,606	4,426	74,482	10.75	199	3,900	310.1	
Max.	0	1.05	2.47	75	7.9	207	3,749	222	3,841	3.17	60	200	12.6	
Min.	0	0.01	1.71	62	7.3	106	1,600	108	1,666	2.20	40	88	7.3	
Avg.	0	0.35	2.01	66	7.5	155	2,600	143	2,403	2.69	50	126	10.0	
Count	13	13.00	31.00	31	31.0	31	31	31	31	4.00	4	31	31.0	



Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

AUGUST 1998 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
Day												
1	86	1,226	76	1.084			66	12.4	1.71	36	42	
2	59	891	60	906			60	10.0	1.81	44	56	
3	89	1.574	58	1,025			50	8.9	2.12	26	64	
4	91	1,859	68	1,389			58	9.6	2.45	35	64	
5	90	1,854	64	1,318	1.77	36	52	9.4	2.47	51	63	39
6	145	2,540	74	1,296			56	10.1	2.10	30	50	
7	134	2.257	90	1,516			60	10.2	2.02	32	35	
8	78	1,184	76	1,154			62	10.4	1.82	50	62	
9	66	1.101	52	867			42	9.1	2.00	53	60	
10	145	2,709	64	1,196			60	9.9	2.24	10	54	
11	108	1,991	58	1,069			50	11.7	2.21	28	51	
12	82	1,484	60	1,086	1.49	27	48	10.7	2.17	51	63	32
13	110	2,009	64	1,169			48	11.8	2.19	27	47	
14	126	2,154	60	1,026			50	10.5	2.05	17	46	
15	71	1,078	66	1,002			54	11.3	1.82	50	47	
16	70	1,092	58	905			44	11.5	1.87	44	51	
17	106	1,910	62	1,117			54	12.6	2.16	21	53	
18	99	1.701	58	996	1.33	23	54	12.4	2.06	34	58	58
19	71	1,291	60	1,091			58	11.6	2.18	51	57	
20	83	1,398	60	1,011			56	12.2	2.02	51	64	
21	131	2.043	70	1,092			56	13.0	1.87	36	68	
22	84	1,254	68	1,015			68	11.4	1.79	40	44	
23	87	1,292	50	742			44	11.5	1.78	47	66	
24	83	1,398	62	1,045	1.20	20	62	11.4	2.02	39	54	51
25	115	1,957	58	987			58	11.6	2.04	28	52	
26	132	2,136	78	1,262			68	11.9	1.94	25	35	
27	130	2.201	62	1,050			52	10.1	2.03	26	65	
28	131	2.032	86	1,334			80	12.0	1.86	27	43	
29	105	1,620	78	1.203			78	12.6	1.85	26	28	
30	75	1,095	72	1.051			68	10.9	1.75	40	40	
31	120	1,922	84	1,345			74	10.8	1.92	25	34	
Total	3,102	52,250	2.056	34.348	5.79	106	1.790	343.5	62.32	1.100	1.616	180
Max.	145	2.709	90	1,516	1.77	36	80	13.0	2.47	53	68	58
Min.	59	891	50	742	1.20	20	42	8.9	1.71	10	28	32
Avg.	100	1.685	66	1,108	1.45	27	58	11.1	2.01	35	52	45
Count	31	31	31	31	4.00	4	31	31.0	31.00	31	31	4

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

AUGUST 1998 - ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading f1m	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
Day																	
1	48	5.0							2.6	109			48	28.0	1.71	86	76
2		4.8							3.1	108			46	23.0	1.81	59	60
3		4.1	5.1	0.36	1,744	1,440	28.0	0.62	4.4	105	0.57	0.47	39	18.0	2.12	89	58
4		3.5	4.1	0.39	1,902	1,583	28.0	0.68	3.1	105	0.52	0.43	34	22.0	2.45	91	68
5		3.5	4.3	0.40	1,874	1,553	34.0	0.55	2.9	105	0.56	0.46	34	21.0	2.47	90	64
6		4.1	4.3	0.55	1,864	1,534	34.0	0.55	2.3	104	0.58	0.48	42	22.0	2.10	145	74
7		4.3	4.0	0.44	2,050	1,711	30.0	0.68	2.0	104	0.57	0.47	43	28.0	2.02	134	90
8		4.7							0.3	49			46	35.0	1.82	78	76
9		4.3							0.0	98			41	37.0	2.00	66	52
10		3.8	4.3	0.62	1,735	1,462	34.0	0.51	3.9	102	0.56	0.47	37	31.0	2.24	145	64
11		3.9	4.8	0.45	1,728	1,467	30.0	0.58	4.2	103	0.54	0.46	36	32.0	2.21	108	58
12		4.0	4.7	0.34	1,694	1,445	30.0	0.56	4.2	104	0.54	0.46	36	30.0	2.17	82	60
13		3.9	4.6	0.44	1,808	1,520	30.0	0.60	2.9	106	0.57	0.50	37	30.0	2.19	110	64
14		4.2	5.1	0.48	1,757	1,510	30.0	0.59	2.5	105	0.51	0.44	40	25.0	2.05	126	60
15		4.7							1.6	103			45	29.0	1.82	71	66
16		4.6							3.3	103			44	25.0	1.87	70	58
17		4.0	4.6	0.43	1,720	1,475	26.0	0.66	2.5	102	0.52	0.45	38	17.0	2.16	106	62
18		4.2	5.3	0.38	1,752	1,489	33.0	0.53	2.4	105	0.50	0.42	38	15.0	2.06	99	58
19		4.0	4.8	0.29	1,738	1,466	31.0	0.56	3.5	105	0.50	0.42	37	15.0	2.18	71	60
20		4.3	5.3	0.31	1,805	1,520	29.0	0.62	2.5	103	0.51	0.44	41	16.0	2.02	83	60
21		4.6	5.2	0.42	1,898	1,614	28.0	0.68	2.4	103	0.43	0.36	30	16.0	1.87	131	70
22		4.8							0.0	102			47	16.0	1.79	84	68
23		4.8							0.0	102			47	16.0	1.78	87	50
24		4.3	6.0	0.26	2,103	1,771	36.0	0.58	1.6	103	0.54	0.46	41	22.0	2.02	83	62
25		4.2	6.0	0.40	1,970	1,643	32.0	0.62	2.5	104	0.56	0.48	41	40.0	2.04	115	58
26		4.4	4.9	0.41	2,050	1,728	31.0	0.66	1.7	109	0.57	0.48	42	29.0	1.94	132	78
27		4.2	6.1	0.40	2,146	1,832	30.0	0.72	2.7	108	0.54	0.45	39	29.0	2.03	130	62
28		4.6	4.4	0.41	1,967	1,672	31.0	0.63	2.4	110	0.49	0.50	43	25.0	1.86	131	86
29		4.7							0.0	108			42	37.0	1.85	105	78
30		4.9							2.0	110			46	41.0	1.75	75	72
31		4.5	4.4	0.38	1,970	1,672	27.0	0.73	4.4	111	0.53	0.45	43	35.0	1.92	120	84
Total	48	134.0	102.4	8.59	39,275	33,107	642.0	12.92	73.9	3,198	11.21	9.55	1,263	805.0	62.32	3,102	2,056
Max.	48	5.0	6.1	0.62	2,146	1,832	36.0	0.73	4.4	111	0.58	0.50	48	41.0	2.47	145	90
Min.	48	3.5	4.0	0.26	1,694	1,440	26.0	0.51	0.0	49	0.43	0.36	30	15.0	1.71	59	50
Avg.	48	4.3	4.9	0.41	1,870	1,577	30.6	0.62	2.4	103	0.53	0.45	41	26.0	2.01	100	66
Count	1	31.0	21.0	21.00	21	21	21.0	21.00	31.0	31	21.00	21.00	31	31.0	31.00	31	31

Steven D. Washburn
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

AUGUST 1998 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Amenable Cyanide mg/l
1	6.3	7.4	7	100		1.71	0.000	6	86	7.1	101	36	95	96		
2	6.5	7.5	7	106		1.81	0.005	7	106	3.4	51	58	95	93		
3	6.2	7.5	8	141		2.12	0.005	8	141	3.6	64	136	95	93		
4	6.2	7.4	10	204		2.45	0.000	7	143	2.9	59	228	95	95	89	
5	5.8	7.5	8	165	0.33	2.47	0.000	7	144	3.9	80	370	95	96	33	
6	5.9	7.5	8	140	6.79	2.10	0.000	7	123	6.4	112	115	95	97		<0.02
7	6.1	7.5	12	202		2.02	0.000	7	118	3.9	66	203	91	96		
8	6.4	7.4	21	319		1.82	0.000	14	213	4.9	74	183	89	91		
9	6.0	7.3	7	117		2.00	0.000	6	100	3.6	60	45	95	96		
10	6.4	7.5	7	131		2.24	0.000	7	131	4.0	75	98	95	96		
11	6.5	7.5	9	166		2.21	0.000	7	129	5.8	107	14	92	95	92	<0.02
12	6.6	7.5	10	181	0.18	2.17	0.000	7	127	3.5	63	27	94	96	~~18~~	
13	6.2	7.4	11	201	3.26	2.19	0.000	6	110	4.3	79	45	91	96		
14	6.0	7.3	16	274		2.05	0.000	8	137	3.2	55	35	86	95		
15	6.5	7.4	13	197		1.82	0.000	9	137	1.5	23	62	90	94		
16	6.6	7.4	9	140		1.87	0.000	6	94	4.0	62	120	92	95		
17	6.0	7.4	12	216		2.16	0.000	7	126	6.8	122	19	91	95	95	
18	6.1	7.5	6	103	0.17	2.06	0.000	7	120	4.6	79	46	96	95	17	
19	6.3	7.4	11	200	2.92	2.18	0.000	7	127	3.7	67	42	92	95		
20	6.0	7.5	10	168		2.02	0.000	7	118	5.9	99	16	94	96		
21	6.2	7.4	9	140		1.87	0.000	6	94	5.7	89	32	96	97		<0.02
22	6.0	7.5	6	90		1.79	0.000	7	105	4.2	63	14	95	95		
23	6.0	7.4	10	148		1.78	0.000	7	104	5.6	83	60	93	96		
24	6.0	7.4	13	219	0.22	2.02	0.000	7	118	9.0	152	7	90	96	91	
25	5.9	7.4	9	153	3.71	2.04	0.000	6	102	5.8	99	9	93	97		<0.02
26	6.0	7.4	14	227		1.94	0.000	7	113	9.7	157	12	88	96		
27	6.3	7.4	19	322		2.03	0.000	6	102	6.6	112	9	89	97		
28	6.1	7.4	15	233		1.86	0.000	7	109	5.5	85	9	90	96		
29	5.9	7.5	10	154		1.85	0.000	7	108	10.1	156	5	91	95		
30	6.4	7.4	4	58		1.75	0.000	5	73	6.1	89	15	97	96		
31	6.6	7.5	7	112		1.92	0.000	5	80	4.2	67	12	95	97		
Total	192.0	230.5	318	5,328	0.90	62.32	0.010	217	3,634	159.5	2,651	2,082	2,875	2,959	159	0
Max.	6.6	7.5	21	322	0.33	2.47	0.005	14	213	10.1	157	370	97	97	91	0
Min.	5.8	7.3	4	58	0.17	1.71	0.000	5	73	1.5	23	5	86	91	17	0
Avg.	6.2	7.4	10	172	0.23	2.01	0.000	7	117	5.1	86	G = 36	93	95	~~40~~ 92	0
Count	31.0	31.0	31	31	4.00	31.00	31.000	31	31	31.0	31	31	31	31	4	4

G = Geometric Mean

Steven D Washburn

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

AUGUST 1998 - MISCELLANEOUS & SULDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hrs @ 25C	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1		2,880	560	24	242	17	670	8,500	3.0	77	5.6	12.17	12.30	78.82
2		2,760	370	24	242	14	637	8,650	2.9	76	5.7	12.15	12.32	73.64
3		2,760	460	24	322	21	637	8,600	3.0	75	5.7	12.18	12.25	74.07
4		2,880	450	31	242	19	637	8,650	3.2	75	5.6	12.19	12.27	73.64
5		2,880	400	31	242	19	670	8,500	3.5	75	5.6	12.21	12.28	78.82
6		2,760	390	39	242	19	670	8,750	3.5	71	5.9	12.15	12.26	76.57
7		2,760	480	36	242	24	603	8,000	3.1	73	5.7	12.26	12.23	75.38
8		1,680	440	40	242	29	637	8,800	2.9	74	5.7	12.14	12.23	72.39
9		2,640	500	42	242	24	637	8,550	2.8	74	5.8	12.31	12.24	74.50
10		2,880	560	33	242	18	637	8,600	2.9	75	5.8	12.22	12.25	74.07
11		2,640	470	29	242	14	637	8,650	3.3	74	5.8	12.25	12.25	73.64
12		2,760	820	38	322	35	603	7,000	3.0	73	5.8	12.20	12.29	86.14
13		2,880	430	40	322	40	503	9,500	3.4	71	6.2	12.17	12.18	52.95
14		2,760	670	60	483	28	536	8,500	3.4	73	5.8	12.11	12.23	63.06
15		2,760	500	46	483	18	570	8,600	3.4	74	5.9	12.16	12.24	66.28
16		2,760	420	47	483	39	603	8,500	3.0	73	6.1	12.16	12.26	70.94
17		2,640	660	43	322	33	603	8,600	3.0	73	6.1	12.21	12.30	70.12
18		2,760	660	31	322	40	603	8,500	3.3	73	6.0	12.22	12.30	70.94
19		2,880	590	38	403	28	637	8,550	3.0	73	5.9	12.21	12.33	74.50
20		2,640	640	43	403	31	637	8,600	3.8	74	5.8	12.17	12.27	74.07
21		2,520	700	54	322	20	670	8,900	3.8	74	5.8	12.05	12.05	75.28
22		2,880	700	48	483	40	670	9,550	3.8	76	5.3	12.16	12.21	70.16
23		2,640	670	45	322	27	603	9,500	3.9	74	5.6	12.14	11.91	63.47
24		2,760	550	38	322	29	536	9,400	3.0	73	5.8	12.05	12.29	57.02
25		2,640	570	39	403	31	670	9,550	3.0	75	5.8	12.25	112.12	70.16
26		2,760	890	42	403	30	637	9,400	3.8	73	5.7	12.25	12.28	67.77
27		2,760	670	44	403	32	536	9,550	3.1	72	5.8	12.15	11.97	56.13
28		2,520	620	41	242	32	536	9,500	3.5	74	5.7	12.05	12.05	56.42
29		2,760	660	39	322	23	570	9,500	3.2	73	5.9	12.09	12.17	60.00
30		2,640	650	42	403	23	570	9,000	3.2	74	6.0	12.08	12.17	63.33
31		2,640	590	44	242	18	603	9,500	3.6	73	6.0	12.16	12.32	63.47
Total		83,880	17,740	1,215	10,152	815	18,968	273,950	101.3	2,287	179.9	377.27	478.82	2157.76
Max.		2,880	890	60	483	40	670	9,550	3.9	77	6.2	12.31	112.12	86.14
Min.		1,680	370	24	242	14	503	7,000	2.8	71	5.3	12.05	11.91	52.95
Avg.		2,706	572	39	327	26	612	8,837	3.3	74	5.8	12.17	15.45	69.61

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

SEPTEMBER 1998 - PLANT INFLUENT SHEET

Day	Weather Type	Weather Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
1	RAIN	0.47	1.87	66	7.4	193	3,010	156	2,433			140	10.1	
2			1.89	66	7.6	191	3,011	136	2,144			124	11.0	
3			1.94	67	7.6	278	4,498	126	2,039			108	11.7	
4			1.80	72	7.4	230	3,453	162	2,432			130	10.8	
5			1.53	63	7.5	161	2,054	150	1,914			136	12.1	
6	RAIN	0.84	1.59	63	7.5	89	1,180	132	1,750			134	9.5	
7			1.78	64	7.5	189	2,806	166	2,464			154	10.4	
8			1.87	65	7.5	201	3,135	191	2,979	3.30	51	160	11.7	
9			1.92	67	7.5	154	2,466	134	2,146			134	10.2	
10			1.85	68	7.5	177	2,731	148	2,283			134	11.1	
11			1.82	68	7.6	194	2,945	182	2,763			162	11.6	
12			1.62	64	7.5	191	2,581	200	2,702			184	12.7	
13			1.78	64	7.4	199	2,954	256	3,800			240	10.7	
14			1.88	68	7.4	270	4,233	318	4,986	3.32	52	294	10.7	
15	RAIN	0.14	1.72	67	7.5	314	4,504	254	3,644			234	14.9	
16			1.71	67	7.5	212	3,023	280	3,993			262	12.2	
17			1.95	68	7.4	292	4,749	228	3,708			194	11.1	
18			1.94	65	7.5	202	3,268	156	2,524			136	10.6	
19			1.74	64	7.4	168	2,438	142	2,061			138	9.4	
20	RAIN	0.50	1.88	64	7.4	137	2,148	124	1,944			124	10.6	
21			1.94	68	7.4	187	3,026	146	2,362			138	10.5	
22			1.94	68	7.5	223	3,608	158	2,556			148	10.1	
23			1.96	67	7.5	146	2,387	116	1,896	2.56	42	92	9.2	
24			1.83	68	7.5	152	2,320	112	1,709			98	10.3	
25	RAIN	0.09	1.87	68	7.4	158	2,464	130	2,027	2.79	44	122	11.5	
26			1.74	64	7.6	173	2,511	164	2,380			164	10.2	
27			1.56	64	7.6	126	1,639	124	1,613			124	13.2	
28			1.82	66	7.7	135	2,049	124	1,882			102	10.9	
29			1.73	65	7.6	145	2,092	130	1,876			124	11.8	
30	RAIN	0.13	1.77	65	7.6	146	2,155	158	2,332			150	13.0	
31														
Total	0	2.17	54.24	1,983	225.0	5,633	85,437	5,003	75,344	11.97	189	4,584	333.8	16816
Max.	0	0.84	1.96	72	7.7	314	4,749	318	4,986	3.32	52	294	14.9	
Min.	0	0.09	1.53	63	7.4	89	1,180	112	1,613	2.56	42	92	9.2	
Avg.	0	0.36	1.81	66	7.5	188	2,848	167	2,511	2.99	47	153	11.1	
Count	6	6.00	30.00	30	30.0	30	30	30	30	4.00	4	30	30.0	

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

SEPTEMBER 1998 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
Day												
1	101	1,575	86	1,341			78	10.4	1.87	48	45	
2	141	2,223	80	1,261			72	12.1	1.89	26	41	
3	217	3,511	94	1,521			90	14.2	1.94	22	25	
4	121	1,816	102	1,531			88	11.4	1.80	47	37	
5	89	1.136	112	1,429			102	12.7	1.53	45	25	
6	68	902	88	1,167			74	11.0	1.59	24	33	
7	120	1,781	82	1,217			80	11.7	1.78	37	51	
8	129	2.012	92	1,435	1.78	28	74	14.0	1.87	36	52	42
9	105	1,681	82	1,313			82	12.5	1.92	32	39	
10	92	1,419	68	1.049			68	11.9	1.85	48	54	
11	140	2,125	108	1,639			68	12.7	1.82	28	41	
12	96	1,297	86	1,162			78	13.3	1.62	50	57	
13	84	1,247	64	950			64	12.1	1.78	58	75	
14	112	1,756	92	1,442	1.93	30	88	12.3	1.88	59	71	42
15	165	2,367	70	1.004			66	15.7	1.72	47	72	
16	148	2,111	100	1,426			82	13.3	1.71	30	64	
17	201	3,269	96	1,561			82	11.5	1.95	31	58	
18	166	2,686	108	1,747			108	10.7	1.94	18	31	
19	127	1.843	64	929			64	10.5	1.74	24	55	
20	98	1,537	26	408			26	12.3	1.88	28	79	
21	147	2,378	108	1,747			104	12.6	1.94	21	26	
22	162	2,621	76	1,230			70	12.3	1.94	27	52	
23	156	2,550	112	1,831	2.52	41	90	11.1	1.96	7	3	2
24	147	2,244	104	1,587			88	12.8	1.83	3	7	
25	146	2,277	124	1,934	2.60	41	110	13.8	1.87	8	5	7
26	140	2,032	116	1,683			116	12.4	1.74	19	29	
27	99	1,288	88	1,145			88	16.3	1.56	21	29	
28	125	1,897	90	1,366			84	13.2	1.82	71	27	
29	125	1,804	88	1,270			88	14.5	1.73	14	32	
30	92	1,358	88	1,299			86	14.3	1.77	37	44	
31												
Total	3,859	58,742	2,694	40,626	8.83	140	2,458	379.6	54.24	966	1,259	93
Max.	217	3,511	124	1,934	2.60	41	116	16.3	1.96	71	79	42
Min.	68	902	26	408	1.78	28	26	10.4	1.53	3	3	2
Avg.	129	1,958	90	1,354	2.21	35	82	12.7	1.81	32	42	23
Count	30	30	30	30	4.00	4	30	30.0	30.00	30	30	4

Steven D. Washburn
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

SEPTEMBER 98 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Amenable Cyanide mg/l
1	6.2	7.4	8	125		1.87	0.000	7	109	3.8	59	24	95	96		
2	6.1	7.6	9	142		1.89	0.000	7	110	5.0	79	19	93	96		
3	6.0	7.6	13	210		1.94	0.000	14	227	15.1	244	284	90	95		
4	6.2	7.4	20	300		1.80	0.000	12	180	10.0	150	42	88	95		
5	6.1	7.5	16	204		1.53	0.000	11	140	5.8	74	95	89	93		
6	6.6	7.5	17	225		1.59	0.000	7	93	5.1	68	35	87	92		
7	6.8	7.5	17	252		1.78	0.000	8	119	5.8	86	23	90	96		
8	6.7	7.5	25	390	0.29	1.87	0.000	11	172	11.7	182	12	87	95	91	
9	6.8	7.5	17	272	4.52	1.92	0.000	8	128	8.5	136	19	87	95		
10	6.8	7.5	12	185		1.85	0.000	7	108	5.1	79	25	92	96		
11	6.6	7.6	11	167		1.82	0.000	8	121	6.2	94	28	94	96		
12	6.3	7.5	11	149		1.62	0.000	10	135	5.2	70	38	95	95		
13	6.2	7.4	8	119		1.78	0.000	8	119	4.4	65	101	97	96		
14	6.1	7.4	13	204	0.24	1.88	0.000	9	141	4.9	77	42	96	97	93	
15	6.0	7.5	14	201	3.76	1.72	0.000	11	158	15.4	221	30	94	96		
16	6.0	7.5	14	200		1.71	0.000	7	100	9.4	134	72	95	97		
17	6.1	7.4	13	211		1.95	0.000	7	114	7.1	115	51	94	98		
18	5.9	7.5	24	388		1.94	0.000	12	194	6.5	105	120	85	94		
19	5.8	7.4	11	160		1.74	0.000	11	160	5.8	84	230	92	93		
20	5.9	7.4	17	267	2.93 4.39	1.88	0.000	9	141	5.3	83	56	86	93		
21	6.2	7.4	8	129		1.94	0.000	7	113	7.4	120	59	95	96		
22	6.0	7.5	33	534		1.94	0.000	13	210	11.0	178	143	79	94		
23	5.9	7.5	21	343	0.32	1.96	0.000	11	180	6.2	101	175	82	92	88	
24	6.6	7.5	15	229	5.23	1.83	0.000	9	137	6.2	95	74	87	94		
25	6.0	7.4	18	281	0.26	1.87	0.000	9	140	7.8	122	69	86	94	91	
26	6.3	7.6	13	189	4.01	1.74	0.000	9	131	10.1	147	86	92	95		
27	6.1	7.6	7	91		1.56	0.000	5	65	10.8	141	10	94	96		
28	6.1	7.7	10	152		1.82	0.012	5	76	9.0	137	75	92	96		
29	6.1	7.6	9	130		1.73	0.000	6	87	8.9	128	80	93	96		
30	6.3	7.6	7	103		1.77	0.003	3	44	8.9	131	41	96	98		
31																
Total	186.8	225.0	431	6,552	1.11	54.24	0.015	261	3,952	232.4	3,506	2,158	2,722	2,855	363	
Max.	6.8	7.7	33	534	0.32	1.96	0.012	14	227	15.4	244	284	97	98	93	
Min.	5.8	7.4	7	91	0.24	1.53	0.000	3	44	3.8	59	10	79	92	88	
Avg.	6.2	7.5	14	218	0.28	1.81	0.001	9	132	7.7	117	G = 52	91	95	91	
Count	30.0	30.0	30	30	4.00	30.00	30.000	30	30	30.0	30	30	30	30	4	

G = Geometric Mean

Steven D. Washburn

Steven D. Washburn
Superintendent

City of Marshall
Robert J. Swalwell
Wastewater Treatment Facility

Phone (616) 781-3289 - Fax (616) 781-9980

Date; October 8, 1998

To; DEQ

From; Steve Washburn, Supt.
City of Marshall, WWTP

Subject; September 1998 Miscellaneous & Sludge Sheet

This month we collected all of are Raw Sludge and held it to the end of the month, for a piolet study on a Rotary Drum Thickener (RTD). We hired Ayres, Lewis, Norris & May (ALNM) Engineering Firm from Ann Arbor, to do the Study. They had Waterlinks, Hycor RDT portable unit set up for 3 days to thicken the Sludge to 8-10%. At this time we added Lime to stabilize the Sludge. The study was a sucess

We have hired ALNM to design a Sludge Thickening for the Plant and start Construction next summer.

** This is to explain the following on September's Miscellaneous & Sludge Sheet

- Pounds of Lime used
- 2 Hour pH @ 25C
- 16 Hour ph
- Pounds of Lime per 1000 Gallons Sludge

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

SEPTEMBER 1998 - MISCELLANEOUS SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hrs @ 25C	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1		2,760	550	19	322	21		8,000	3.5	69	6.6			0.00
2		2,640	640	40	322	18		8,000	3.6	74	6.2			0.00
3		2,400	700	38	322	33		8,500	3.8	73	6.1			0.00
4		2,880	560	47	322	27		7,600	3.2	74	6.1			0.00
5		2,640	630	53	322	17		7,600	3.3	75	6.0			0.00
6		2,640	560	47	322	34		7,600	3.3	76	6.0			0.00
7		2,640	570	49	322	28		7,600	3.6	75	6.1			0.00
8		2,640	480	28	242	36		7,500	3.4	75	5.9			0.00
9		2,760	650	31	242	26		7,500	3.5	75	6.0			0.00
10		2,760	540	37	322	22		7,550	3.3	74	6.0			0.00
11		2,640	530	40	322	18		7,550	3.3	75	5.8			0.00
12		2,640	640	44	242	12		7,750	3.0	74	6.0			0.00
13		2,640	520	36	322	34		7,650	2.8	75	5.9			0.00
14		2,640	460	40	322	22		10,600	3.0	78	5.9			0.00
15		2,640	530	45	322	24		10,700	3.0	77	5.7			0.00
16		2,760	440	32	242	27		10,500	3.3	79	5.4			0.00
17		2,640	480	30	242	28		10,800	3.0	76	5.3			0.00
18		2,640	480	35	242	24		10,500	2.5	78	5.3			0.00
19		2,760	660	40	322	37		11,000	2.8	76	5.8			0.00
20		2,640	530	41	242	26		11,000	2.6	77	5.7			0.00
21		2,760	540	37	242	24		10,800	2.7	77	5.6			0.00
22		2,640	530	37	322	16		10,700	2.6	76	5.8			0.00
23		3,000	520	40	322	13		10,700	2.9	76	5.6			0.00
24		2,640	480	31	161	23		10,700	3.0	76	5.7			0.00
25		2,520	570	27	161	37		10,300	3.1	76	5.8			0.00
26		2,880	730	31	322	15		10,700	3.4	76	5.9			0.00
27		2,640	480	28	322	14		10,700	3.1	76	5.9			0.00
28		2,880	490	33	322	15		9,000	3.2	82	6.1			0.00
29		2,640	700	32	242	15	**	6,000	3.3	74	5.9			0.00
30		3,120	800	34	161	15	12,533	6,000	3.0	74	6.0	**12.45	**12.39	** 2088.83
31														
Total		81,120	16,990	1,102	8,457	701	12,533	271,600	99.1	2,268	176.1	12.45	12.39	2088.83
Max.		3,120	800	53	322	37	12,533	11,000	8.0	82	6.6	12.45	12.39	2088.83
Min.		2,400	440	19	161	12	12,533	6,000	2.5	69	5.3	12.45	12.39	0.00
Avg.		2,704	566	37	282	23	12,533	9,053	3.3	76	5.9	12.45	12.39	69.63

** See Attach Sheet

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

OCTOBER 1998 - PLANT INFLUENT SHEET

Day	-----Weather----- Type	Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
1			1.88	69	7.7	166	2,603	128	2,007			116	11.8	
2	RAIN	0.14	1.78	63	8.1	226	3,355	158	2,346			158	13.6	
3	RAIN	0.02	1.69	62	7.7	188	2,650	146	2,058			146	11.6	
4			1.58	65	7.6	144	1,898	160	2,108			160		
5	RAIN	0.40	1.63	68	7.9	167	2,270	230	3,127	3.10	42	216		
6	RAIN	1.33	1.79	65	7.6	243	3,628	254	3,792			236	11.4	
7			1.85	65	7.3	307	4,737	422	6,511			410		
8			1.85	64	7.7	250	3,857	306	4,721			288	12.7	
9			1.63	62	7.7	157	2,134	170	2,311			138		
10			1.61	64	7.7	177	2,377	266	3,572			150	13.2	
11			1.69	66	7.7	254	3,580	218	3,073	3.34	47	206		
12			1.88	65	7.8	221	3,465	152	2,383			152	11.8	
13			1.83	64	7.8	206	3,144	120	1,831			120		
14			1.88	64	7.2	215	3,371	140	2,195			122	11.0	
15			1.86	64	7.5	246	3,816	360	5,584			342		
16			1.85	62	7.3	212	3,271	136	2,098			126		
17	RAIN	0.14	1.75	64	8.0	174	2,540	116	1,693			112		
18	RAIN	0.02	1.80	64	7.6	156	2,342	126	1,892			116		
19			1.89	65	7.6	179	2,822	196	3,089			166	10.8	
20			2.13	64	7.7	151	2,682	122	2,167	2.34	42	100		
21	RAIN	0.46	1.82	67	8.0	206	3,127	176	2,671			166		
22			1.68	64	7.7	177	2,480	178	2,494			160		
23			1.58	65	7.7	178	2,346	232	3,057			216		
24			1.53	61	7.7	213	2,718	218	2,782			198		
25			1.62	64	7.9	139	1,878	101	1,365			92	13.4	
26			1.64	65	7.4	168	2,298	144	1,970	3.16	43	144		
27	RAIN	0.04	1.90	63	7.6	246	3,898	176	2,789			146		
28			1.84	65	7.7	252	3,867	136	2,087			136		
29	RAIN	0.70	1.82	60	7.8	188	2,854	134	2,034			114		
30			1.75	58	7.6	236	3,444	164	2,394			158		
31			1.52	61	8.0	183	2,320	164	2,079			164		
Total	0	3.25	54.55	1,982	238.3	6,225	91,770	5,749	84,280	11.94	174	5,274	121.3	
Max.	0	1.33	2.13	69	8.1	307	4,737	422	6,511	3.34	47	410	13.6	
Min.	0	0.02	1.52	58	7.2	139	1,878	101	1,365	2.34	42	92	10.8	
Avg.	0	0.36	1.76	64	7.7	201	2,960	185	2,719	2.99	44	170	12.1	
Count	9	9.00	31.00	31	31.0	31	31	31	31	4.00	4	31	10.0	

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Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

SEPTEMBER 1998 - ACTIVATED SLUDGE SHEET

Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	4.6	4.4	0.31	1,967	1,700	24.0	0.82	2.8	110	0.50	0.43	44	36.0	1.87	101	86
2		4.6	5.0	0.41	2,117	1,822	26.0	0.81	2.4	113	0.52	0.44	44	38.0	1.89	141	80
3		4.4	3.9	0.69	1,996	1,708	25.0	0.80	1.9	110	0.55	0.47	41	38.0	1.94	217	94
4		4.8	4.5	0.31	2,296	1.969	24.0	0.96	0.9	113	0.55	0.47	44	48.0	1.80	121	102
5		5.6							0.0	111			51	41.0	1.53	89	112
6		5.4							3.2	114			48	38.0	1.59	68	88
7		4.8	4.9	0.34	1.982	1,732	22.0	0.90	4.4	114	0.42	0.36	45	22.0	1.78	120	82
8		4.6	3.8	0.43	1,823	1,580	24.0	0.76	4.5	118	0.46	0.40	43	30.0	1.87	129	92
9		4.5	4.3	0.34	1,893	1,634	24.0	0.79	4.2	119	0.49	0.42	42	30.0	1.92	105	82
10		4.7	5.4	0.29	1,897	1,646	23.0	0.82	4.4	117	0.53	0.46	43	29.0	1.85	92	68
11		4.7	3.4	0.44	1,885	1,618	23.0	0.82	3.9	114	0.44	0.37	44	29.0	1.82	140	108
12		5.3							1.3	112			45	29.0	1.62	96	86
13		4.8							2.2	112			44	31.0	1.78	84	64
14		4.6	3.7	0.39	1,767	1,490	26.0	0.68	2.5	112	0.50	0.42	42	30.0	1.88	112	92
15		5.0	5.4	0.50	1.817	1,571	24.0	0.76	1.6	114	0.47	0.40	45	30.0	1.72	165	70
16		5.0	4.1	0.42	1,950	1,663	28.0	0.70	1.7	116	0.48	0.41	49	29.0	1.71	148	100
17		4.4	3.8	0.64	1.992	1,694	32.0	0.62	2.2	116	0.52	0.44	41	30.0	1.95	201	96
18		4.4	3.8	0.48	2,215	1,868	28.0	0.79	0.3	117	0.56	0.47	44	30.0	1.94	166	108
19		5.0							0.0	117			42	37.0	1.74	127	64
20		4.6							0.1	113			47	46.0	1.88	98	26
21		4.4	3.6	0.44	2.123	1,808	26.0	0.82	3.3	117	0.63	0.53	42	45.0	1.94	147	108
22		4.4	5.2	0.48	2,133	1.808	24.0	0.89	1.4	122	0.54	0.46	42	51.0	1.94	162	76
23		4.4	3.5	0.45	2,154	1,901	28.0	0.77	3.5	123	0.57	0.49	41	52.0	1.96	156	112
24		4.7	4.1	0.40	2.185	1,862	23.0	0.95	2.8	127	0.52	0.44	41	58.0	1.83	147	104
25		4.6	3.3	0.41	2,124	1,841	20.0	1.06	2.9	116	0.55	0.48	43	60.0	1.87	146	124
26		5.0							1.5	111			48	33.0	1.74	140	116
27		5.5							1.6	115			53	42.0	1.56	99	88
28		4.7	4.3	0.39	1.969	1.619	21.0	0.94	4.2	116	0.50	0.43	44	39.0	1.82	125	90
29		5.0	4.4	0.37	1.883	1,625	21.0	0.90	3.5	112	0.48	0.41	46	37.0	1.73	125	88
30		4.9	4.4	0.28	1.892	1.623	20.0	0.95	3.5	113	0.47	0.40	46	38.0	1.77	92	88
31																	
Total	48	143.6	93.4	9.22	44.060	37,782	536.0	18.30	72.7	3.454	11.25	9.60	1.334	1126.0	54.24	3,859	2,694
Max.	48	5.6	5.4	0.69	2,296	1,969	32.0	1.06	4.5	127	0.63	0.53	53	60.0	1.96	217	124
Min.	48	4.4	3.3	0.28	1.767	1,490	20.0	0.62	0.0	110	0.42	0.36	41	22.0	1.53	68	26
Avg.	48	4.8	4.2	0.42	2.003	1,717	24.4	0.83	2.4	115	0.51	0.44	44	37.5	1.81	129	90
Count	1	30.0	22.0	22.00	22	22	22.0	22.00	30.0	30	22.00	22.00	30	30.0	30.00	30	30

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

OCTOBER 1998 - PRIMARY EFFLUENT SHEET

Day	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
1	185	2,901	90	1,411			78	24.0	1.88	-11	30	
2	186	2,761	100	1,485			100	17.8	1.78	18	37	
3	132	1,860	100	1,409			100	15.2	1.69	30	32	
4	155	2,042	86	1,133			86		1.58	-8	46	
5	116	1,577	98	1,332	2.70	37	98		1.63	31	57	13
6	138	2,060	104	1,553			96	15.0	1.79	43	59	
7	157	2,422	112	1,728			112		1.85	49	73	
8	175	2,700	120	1,851			112	14.8	1.85	30	61	
9	170	2,311	96	1,305			56		1.63	-8	44	
10	237	3,182	248	3,330			208	12.9	1.61	-34	7	
11	142	2,001	84	1,184	5.70	80	76		1.69	44	61	-70
12	215	3,371	128	2,007			128	13.2	1.88	3	16	
13	199	3,037	172	2,625			138		1.83	3	-43	
14	174	2,728	120	1,882			104	12.2	1.88	19	14	
15	115	1,784	104	1,613			96		1.86	53	71	
16	206	3,178	112	1,728			108		1.85	3	18	
17	153	2,233	88	1,284			88		1.75	12	24	
18	136	2,042	102	1,531			100		1.80	13	19	
19	169	2,664	120	1,892			102	12.5	1.89	6	39	
20	119	2,114	88	1,563	1.43	25	72		2.13	21	28	39
21	145	2,201	96	1,457			90		1.82	30	45	
22	142	1,990	98	1,373			78		1.68	20	45	
23	130	1,713	84	1,107			68		1.58	27	64	
24	141	1,799	96	1,225			86		1.53	34	56	
25	146	1,973	80	1,081			68	15.3	1.62	-5	21	
26	150	2,052	86	1,176	1.87	26	86		1.64	11	40	41
27	179	2,836	92	1,458			64		1.90	27	48	
28	181	2,778	78	1,197			78		1.84	28	43	
29	179	2,717	76	1,154			62		1.82	5	43	
30	207	3,021	70	1,022			70		1.75	14	57	
31	121	1,534	68	862			68		1.52	34	59	
Total	5,000	73,583	3,196	46,958	11.70	168	2,876	152.9	54.55	542	1,214	23
Max.	237	3,371	248	3,330	5.70	80	208	24.0	2.13	53	73	41
Min.	115	1,534	68	862	1.43	25	56	12.2	1.52	-34	-43	-70
Avg.	161	2,374	103	1,515	2.93	42	93	15.3	1.76	17	39	6
Count	31	31	31	31	4.00	4	31	10.0	31.00	31	31	4

Steven D. Washburn

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

OCTOBER 1998 - ACTIVATED SLUDGE SHEET

Day	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
1	48	4.6	3.8	0.64	1,776	1,504	19.0	0.93	4.1	151	0.48	0.41	43	32.0	1.88	185	90
2		4.8	4.2	0.52	2,065	1,761	19.0	1.09	3.7	172	0.55	0.55	44	30.0	1.78	186	100
3		5.1							2.8	153			47	37.0	1.69	132	100
4		5.5							3.1	121			50	43.0	1.58	155	86
5		5.3	4.4	0.32	1,943	1,650	23.0	0.84	3.1	115	0.46	0.39	49	45.0	1.63	116	98
6		4.8	3.6	0.44	1.851	1,580	23.0	0.80	2.5	112	0.47	0.40	46	44.0	1.79	138	104
7		4.7	3.2	0.51	1,846	1,571	21.0	0.88	2.7	107	0.44	0.37	43	31.0	1.85	157	112
8		4.7	3.2	0.54	1,986	1,678	23.0	0.86	2.0	119	0.48	0.40	44	32.0	1.85	175	120
9		5.3	4.7	0.44	2,059	1,738	25.0	0.82	2.4	119	0.50	0.42	49	29.0	1.63	170	96
10		5.4							1.1	118			49	29.0	1.61	237	248
11		5.1							0.0	151			46	40.0	1.69	142	84
12		4.6	4.0	0.50	2,649	2,240	32.0	0.83	4.0	170	0.62	0.52	41	48.0	1.88	215	128
13		4.7	2.9	0.46	2,586	2,191	26.0	0.99	4.4	125	0.60	0.51	33	51.0	1.83	199	172
14		4.6	3.9	0.44	2,454	2,090	31.0	0.79	2.2	120	0.67	0.57	44	52.0	1.88	174	120
15		4.6	4.8	0.27	2,590	2,215	28.0	0.93	1.1	118	0.58	0.50	43	57.0	1.86	115	104
16		4.7	4.0	0.52	2,334	2,044	27.0	0.86	2.2	114	0.57	0.49	41	58.0	1.85	206	112
17		4.9							0.3	112			45	60.0	1.75	153	88
18		4.8							1.9	117			44	58.0	1.80	136	102
19		4.6	3.4	0.48	2,123	1,857	18.0	1.18	4.3	119	0.49	0.43	42	54.0	1.89	169	120
20		4.0	3.8	0.40	1,997	1,744	17.0	1.17	5.1	122	0.51	0.45	37	48.0	2.13	119	88
21		4.7	3.7	0.47	1,794	1,558	16.0	1.12	4.7	124	0.46	0.40	44	39.0	1.82	145	96
22		5.1	4.3	0.39	1,955	1,709	19.0	1.03	5.0	124	0.47	0.40	47	37.0	1.68	142	98
23		5.5	5.4	0.33	2,000	1,723	16.0	1.25	5.4	121	0.47	0.41	49	37.0	1.58	130	84
24		5.6							3.6	120			50	37.0	1.53	141	96
25		5.3							2.4	119			48	38.0	1.62	146	80
26		5.3	5.2	0.39	2,050	1,757	21.0	0.98	3.1	118	0.50	0.43	47	39.0	1.64	150	86
27		4.5	4.5	0.51	2,177	1,860	23.0	0.95	3.1	116	0.47	0.40	42	37.0	1.90	179	92
28		4.7	5.7	0.48	2,278	1,944	22.0	1.04	1.9	118	0.55	0.47	44	37.0	1.84	181	78
29		4.7	6.2	0.45	2,385	2,039	24.0	0.99	1.4	118	0.55	0.47	44	36.0	1.82	179	76
30		4.9	6.8	0.51	2,319	1,995	26.0	0.89	2.3	118	0.58	0.50	46	36.0	1.75	207	70
31		5.7							1.7	118			53	46.0	1.52	121	68
Total	48	152.7	95.6	10.01	47,217	40,448	499.0	21.24	87.6	3,869	11.47	9.89	1,394	1297.0	54.55	5,000	3,196
Max.	48	5.7	6.8	0.64	2,649	2,240	32.0	1.25	5.4	172	0.67	0.57	53	60.0	2.13	237	248
Min.	48	4.0	2.9	0.27	1,776	1,504	16.0	0.79	0.0	107	0.44	0.37	33	29.0	1.52	115	68
Avg.	48	4.9	4.3	0.46	2,146	1,839	22.7	0.97	2.8	125	0.52	0.45	45	41.8	1.76	161	103
Count	1	31.0	22.0	22.00	22	22	22.0	22.00	31.0	31	22.00	22.00	31	31.0	31.00	31	31

Steven D. Washburn
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

OCTOBER 1998 - DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Amenable Cyanide mg/l
1	6.4	7.6	10	157		1.88	0.000	7	110	10.5	165	50	92	96		
2	6.5	7.6	12	178		1.78	0.000	8	119	12.4	184	50	92	96		
3	6.3	7.5	10	141		1.69	0.027	9	127	8.4	118	59	93	95		
4	6.2	7.4	7	92		1.58	0.000	7	92			60	96	95		
5	6.0	7.4	17	231	0.45	1.63	0.000	7	95			42	93	96	86	
6	6.1	7.5	9	134	6.12	1.79	0.000	8	119	9.4	140	57	96	97		<0.02
7	5.9	7.5	13	201		1.85	0.000	7	108			16	97	98		
8	6.2	7.5	14	216	2.17	1.85	0.003	7	108	7.2	111	68	95	97		
9	6.0	7.5	12	163		1.63	0.000	8	109			80	93	95		<0.02
10	6.2	7.5	24	322		1.61	0.000	13	175	8.6	115	115	87	93		
11	5.8	7.4	16	226	1.40	1.69	0.000	12	169			114	93	95	58	
12	6.2	7.5	11	172		1.88	0.000	8	125	7.4	116	46	93	96		<0.02
13	6.2	7.5	10	153	19.70	1.83	0.000	7	~~107~~			97	92	97		<0.023
14	5.9	7.4	15	235		1.88	0.000	5	78	6.1	96	49	89	98		
15	5.8	7.4	9	140		1.86	0.000	4	62			40	98	98		
16	6.3	7.4	11	170		1.85	0.000	7	108			66	92	97		
17	6.4	7.6	10	146		1.75	0.000	8	117			42	91	95		
18	6.7	7.6	10	150		1.80	0.000	5	75			28	92	97		
19	6.3	7.5	16	252		1.89	0.000	6	95	9.0	142	120	92	97		
20	6.7	7.6	9	160	0.20	2.13	0.000	6	107			36	93	96	92	
21	6.3	7.5	3	46	3.55	1.82	0.000	6	91			17	98	97		
22	6.7	7.6	14	196	7.89	1.68	0.000	7	98			8	92	97		
23	6.6	7.5	10	132		1.58	0.000	5	66			4	96	97		
24	6.6	7.6	8	102		1.53	0.000	6	77			2	96	97		
25	6.2	7.6	9	122		1.62	0.000	6	81			9	91	96		
26	6.1	7.6	11	150	0.16	1.64	0.000	6	82	12.3	168	26	92	96	95	
27	6.5	7.5	11	174	2.19	1.90	0.000	7	111			9	94	97		
28	6.1	7.6	13	199		1.84	0.001	6	92			21	90	98		
29	6.4	7.5	16	243		1.82	0.000	8	121			13	88	96		
30	6.2	7.5	7	102		1.75	0.000	10	146			11	96	95		
31	6.6	7.6	20	254		1.52	0.000	8	101			14	88	96		
Total	194.4	233.0	367	5,359	2.21	54.55	0.031	224	3,271	91.3	1,356	1,369	2,880	2.986	331	0
Max.	6.7	7.6	24	322	1.40	2.13	0.027	13	175	12.4	184	120	98	98	95	0
Min.	5.8	7.4	3	46	0.16	1.52	0.000	4	62	6.1	96	2	87	93	58	0
Avg.	6.3	7.5	12	173	0.55	1.76	0.001	7	106	9.1	136	G = 36	93	96	83	0
Count	31.0	31.0	31	31	4.00	31.00	31.000	31	31	10.0	10	31	31	31	4	4

G = Geometric Mean

Steven D. Washburn

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

OCTOBER 1998 - MISCELLANEOUS SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hrs @ 25C	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1		3,720	910	30	242	13								
2		3,360	700	31	161	7	2,278	9,000	2.9	75	5.9	12.17	12.35	253.11
3		4,080	630	34	322	13	641	8,800	2.9	75	6.0	12.24	12.30	72.84
4		2,640	490	22	322	22	641	8,900	2.7	75	6.0	12.18	12.30	72.02
5		2,760	520	24	242	13	712	8,600	2.8	75	6.1	12.24	12.29	82.79
6		2,640	720	27	322	14	783	8,500	2.9	76	6.0	12.21	12.21	92.12
7		2,880	470	23	322	13	819	8,600	3.1	78	5.6	12.13	12.32	95.23
8		2,640	550	25	242	20	712	8,600	3.2	79	5.3	12.10	12.27	82.79
9		2,880	470	17	161	13	570	8,600	3.5	81	5.1	12.12	12.21	66.28
10		3,240	630	32	322	14	356	6,000	2.2	79	5.2	12.17	12.06	59.33
11		3,480	430	28	242	7	1,175	16,600	2.7	80	5.5	12.24	12.27	70.78
12		2,880	610	31	322	13	2,955	27,800	2.9	76	5.4	12.21	12.33	106.29
13		2,880	940	30	242	27	1,144	16,000	3.3	75	5.5	12.20	12.37	71.50
14		2,760	470	22	483	26	1,032	8,600	3.3	75	5.8	12.19	12.33	120.00
15		2,520	750	17	483	16	676	10,200	3.6	74	6.0	12.17	12.34	66.27
16		2,760	500	19	322	14	854	10,000	3.7	74	5.9	12.19	12.27	85.40
17		2,760	570	22	483	18	819	10,200	3.3	76	5.9	12.28	12.18	80.29
18		2,880	590	32	403	16	854	10,100	3.6	75	5.9	12.17	12.19	84.55
19		2,880	490	21	403	15	819	9,300	3.8	77	5.8	12.12	12.27	88.06
20		2,880	570	23	322	22	641	9,800	4.3	77	5.4	12.06	12.20	65.41
21		2,880	870	26	322	34	890	8,600	4.7	79	5.3	12.08	12.20	103.49
22		2,880	560	31	403	17	748	8,600	4.6	79	5.1	12.03	12.23	86.98
23		2,760	520	32	403	18	748	8,600	3.6	78	5.3	12.22	12.20	86.98
24		2,880	560	31	322	18	676	8,600	4.1	60	5.3	12.10	12.33	78.60
25		2,760	510	29	322	14	890	9,600	2.9	78	5.2	12.06	12.20	92.71
26		2,880	600	25	403	10	748	8,000	2.9	76	5.3	12.05	12.12	93.50
27		2,760	690	25	322	9	819	9,000	2.8	76	5.4	12.16	12.19	91.00
28		2,760	460	21	403	29	783	8,800	2.7	77	5.3	12.20	12.18	88.98
29		2,880	450	22	322	13	819	10,200	2.8	75	5.5	12.13	12.07	80.29
30		2,640	580	17	322	12	854	9,000	2.7	77	5.2	12.25	12.24	94.89
31		2,760	530	21	322	16	819	8,800	3.1	75	5.9	12.20	12.21	93.07
Total		90,360	18,340	790	10,229	506	27,275	302,000	97.6	2,282	167.1	364.87	367.23	2705.58
Max.		4,080	940	34	483	34	2,955	27,800	4.7	81	6.1	12.28	12.37	253.11
Min.		2,520	430	17	161	7	356	6,000	2.2	60	5.1	12.03	12.06	59.33
Avg.		2,915	592	25	330	16	909	10,067	3.3	76	5.6	12.16	12.24	90.19

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

NOVEMBER 1998 - PLANT INFLUENT SHEET

Day	Weather Type	Weather Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
1	RAIN	0.03	1.60	65	7.6	122	1,628	198	2,642			190	11.8	
2			1.87	62	7.5	167	2,604	142	2,215			128		
3			1.83	62	7.7	197	3,007	159	2,427			122		
4			1.73	62	7.9	201	2,900	156	2,251			134	12.6	
5			1.77	62	7.8	215	3,174	168	2,480	3.46	51	150		
6			1.78	62	7.6	206	3,058	144	2,138			126		
7	RAIN	0.02	1.74	62	7.7	202	2,931	158	2,293			150		
8			1.71	64	7.7	284	4,050	364	5,191			364		
9	RAIN	0.48	1.86	66	7.5	242	3,754	270	4,188			252	10.9	
10	RAIN	0.78	1.89	67	7.6	186	2,932	182	2,869			158		
11			1.78	63	7.6	196	2,910	174	2,583			142		
12			1.81	64	7.7	171	2,581	204	3,079			180		
13			1.79	60	7.6	179	2,672	158	2,359	3.27	49	140	11.4	
14			1.73	59	7.6	170	2,453	148	2,135			136		
15			1.64	61	7.5	141	1,929	132	1,805			128	11.0	
16			1.73	66	7.7	190	2,741	146	2,107			122		
17			1.76	63	7.7	184	2,701	204	2,994	3.33	49	190		
18			1.77	63	7.7	212	3,130	180	2,657			170		
19			1.77	62	7.6	209	3,085	140	2,067			140	12.2	
20	RAIN	0.02	1.79	62	7.4	232	3,463	166	2,478			146		
21			1.59	59	7.6	214	2,838	178	2,360			152		
22			1.58	62	8.3	192	2,530	126	1,660			122		
23			1.83	62	7.6	213	3,251	170	2,595	4.24	65	156	11.9	
24			1.60	62	7.6	166	2,215	169	2,255			134		
25	RAIN	0.13	1.60	58	7.6	189	2,522	178	2,375			162		
26			1.39	57	7.6	204	2,365	162	1,878			142		
27			1.46	58	7.7	152	1,851	174	2,119			150	13.7	
28			1.42	57	7.6	140	1,658	162	1,919			138		
29			1.53	63	7.6	147	1,876	152	1,940			136		
30	RAIN	0.30	1.73	63	7.5	172	2,482	186	2,684			162		
31														
Total	0	1.76	51.08	1,858	229.4	5,695	81,290	5,250	74,742	14.30	213	4,722	95.5	
Max.	0	0.78	1.89	67	8.3	284	4,050	364	5,191	4.24	65	364	13.7	
Min.	0	0.02	1.39	57	7.4	122	1,628	126	1,660	3.27	49	122	10.9	
Avg.	0	0.25	1.70	62	7.6	190	2,710	175	2,491	3.58	53	157	11.9	
Count	-	7.00	30.00	30	30.0	30	30	30	30	4.00	4	30	8.0	

168.7

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

NOVEMBER 1998- ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading f/m	Mix Liq SS mg/L	Mix Liq VSS mg/L	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mg/L	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mg/l	PE SS mg/L
Day																	
1	48	5.4							4.6	120			51	46.0	1.60	67	64
2		4.6	4.3	0.34	1,974	1.697	20.0	0.99	5.7	123	0.49	0.42	43	39.0	1.87	110	88
3		4.7	4.7	0.54	1,930	1,653	20.0	0.97	5.6	125	0.52	0.45	44	36.0	1.83	175	80
4		5.0	4.4	0.50	1,968	1,686	22.0	0.89	4.4	125	0.43	0.37	47	36.0	1.73	176	92
5		4.9	5.6	0.49	2,150	1,850	21.0	1.02	4.2	124	0.52	0.45	45	37.0	1.77	185	78
6		4.8	4.4	0.49	2,157	1,867	25.0	0.86	3.9	124	0.56	0.49	45	37.0	1.78	184	98
7		5.0							3.0	123			46	44.0	1.74	171	90
8		5.0							1.9	125			47	44.0	1.71	127	78
9		4.6	4.1	0.38	2,168	1,864	24.0	0.90	4.0	122	0.52	0.45	45	43.0	1.86	136	102
10		4.6	4.0	0.56	2,194	1,901	23.0	0.95	4.0	118	0.52	0.44	42	43.0	1.89	201	104
11		4.8	4.2	0.45	2,142	1,921	26.0	0.82	3.8	124	0.50	0.42	45	44.0	1.78	174	104
12		4.8	4.2	0.39	2,181	1,860	24.0	0.91	5.6	124	0.46	0.39	44	45.0	1.81	143	102
13		4.8	3.4	0.54	1,962	1,666	23.0	0.85	6.1	123	0.51	0.52	44	44.0	1.79	181	116
14		5.0							5.0	119			42	46.0	1.73	166	108
15		5.3							2.7	121			51	44.0	1.64	115	82
16		5.0	5.3	0.49	2,044	1,742	21.0	0.97	5.7	122	0.48	0.41	48	44.0	1.73	176	80
17		4.9	4.3	0.51	1,945	1,631	20.0	0.97	4.3	120	0.49	0.41	48	43.0	1.76	169	92
18		4.9	4.1	0.47	1,978	1,684	20.0	0.99	4.0	120	0.47	0.40	45	45.0	1.77	162	98
19		4.9	5.3	0.49	2,102	1,785	21.0	1.00	5.0	121	0.57	0.48	39	45.0	1.77	178	80
20		4.8	4.1	0.50	2,039	1,755	21.0	0.97	4.8	125	0.45	0.39	44	45.0	1.79	176	100
21		5.4							3.3	126			50	45.0	1.59	175	98
22		5.5							3.6	122			50	44.0	1.58	158	78
23		4.7	4.3	0.51	2,064	1,806	21.0	0.98	2.0	121	0.53	0.46	43	45.0	1.83	182	94
24		5.4	4.8	0.41	2,258	1,966	20.0	1.13	2.3	124	0.49	0.43	49	44.0	1.60	181	106
25		5.4	3.7	0.32	2,096	1,811	23.0	0.91	4.5	123	0.41	0.35	48	45.0	1.60	129	126
26		6.2							5.1	125			56	44.0	1.39	135	112
27		5.9							6.2	124			54	44.0	1.46	120	116
28		6.1							6.0	116			55	44.0	1.42	101	100
29		5.6							5.4	114			51	44.0	1.53	102	112
30		5.0	3.5	0.41	1,800	1,552	19.0	0.95	5.3	117	0.41	0.36	44	44.0	1.73	133	108
31																	
Total	48	152.8	82.8	8.79	39,152	33,697	414.0	18.05	132.0	3,660	9.33	8.09	1,405	1293.0	51.08	4,588	2,886
Max.	48	6.2	5.6	0.56	2,258	1,966	26.0	1.13	6.2	126	0.57	0.52	56	46.0	1.89	201	126
Min.	48	4.6	3.4	0.32	1,800	1,552	19.0	0.82	1.9	114	0.41	0.35	39	36.0	1.39	67	64
Avg.	48	5.1	4.4	0.46	2,061	1,774	21.8	0.95	4.4	122	0.49	0.43	47	43.1	1.70	153	96
Count	1	30.0	19.0	19.00	19	19	19.0	19.00	30.0	30	19.00	19.00	30	30.0	30.00	30	30

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

NOVEMBER 1998 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mgIL	P Eff. BOD Lbs.	P Eff. SS mgIL	P. Eff. SS Lbs.	P Eff. Phos. mgIL	P Eff. Phos. Lbs.	P Eff. VSS mgIL	P Eff. NH3-N mgIL	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
Day												
1	67	894	64	854			64	13.6	1.60	45	68	
2	110	1,716	88	1,372			80		1.87	34	38	
3	175	2,671	80	1,221			62		1.83	11	50	
4	176	2,539	92	1,327			86	14.3	1.73	12	41	
5	185	2,731	78	1,151	2.24	33	72		1.77	14	54	35
6	184	2,732	98	1,455			84		1.78	11	32	
7	171	2,481	90	1,306			90		1.74	15	43	
8	127	1,811	78	1,112			78		1.71	55	79	
9	136	2,110	102	1,582			96	13.4	1.86	44	62	
10	201	3,168	104	1,639			88		1.89	-8	43	
11	174	2,583	104	1,544			88		1.78	11	40	
12	143	2,159	102	1,540			96		1.81	16	50	
13	181	2,702	116	1,732	2.74	41	96	12.8	1.79	-1	27	16
14	166	2,395	108	1,558			96		1.73	2	27	
15	115	1,573	82	1,122			74	11.7	1.64	18	38	
16	176	2,539	80	1,154			72		1.73	7	45	
17	169	2,481	92	1,350	2.37	35	76		1.76	8	55	29
18	162	2,391	98	1,447			96		1.77	24	46	
19	178	2,628	80	1,181			80	12.0	1.77	15	43	
20	176	2,627	100	1,493			90		1.79	24	40	
21	175	2,321	98	1,300			80		1.59	18	45	
22	158	2,082	78	1,028			78		1.58	18	38	
23	182	2,778	94	1,435	2.83	43	94	14.0	1.83	15	45	33
24	181	2,415	106	1,414			90		1.60	-9	37	
25	129	1,721	126	1,681			118		1.60	32	29	
26	135	1,565	112	1,298			84		1.39	34	31	
27	120	1,461	116	1,412			92	15.7	1.46	21	33	
28	101	1,196	100	1,184			84		1.42	28	38	
29	102	1,302	112	1,429			92		1.53	31	26	
30	133	1,919	108	1,558			84		1.73	23	42	
31												
Total	4,588	65,691	2,886	40,382	10.18	152	2,560	107.5	51.08	568	1,285	113
Max.	201	3,168	126	1,732	2.83	43	118	15.7	1.89	55	79	35
Min.	67	894	64	854	2.24	33	62	11.7	1.39	-9	26	16
Avg.	153	2,190	96	1,363	2.55	38	85	13.4	1.70	19	43	28
Count	30	30	30	30	4.00	4	30	8.0	30.00	30	30	4

Steven D. Washburn
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

NOVEMBER 1998- DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mgIL	F.Eff. pH SU	F.Eff. SS mgIL	F.Eff. SS Lbs.	F.Eff. Total-P mgIL	Flow MGD	F.Eff. Chlorine mgIL	F.Eff. CBOD mgIL	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mgIL	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Amenable Cyanide mg/l
1	7.0	7.6	6	80		1.60	0.000	4	53	11.3	151	5	97	97		
2	7.3	7.6	13	203		1.87	0.000	7	109			14	91	96		
3	7.1	7.6	9	137		1.83	0.000	7	107			8	94	96		
4	6.9	7.6	12	173		1.73	0.000	7	101	11.1	160	7	92	97		<0.02
5	6.7	7.6	11	162	0.20	1.77	0.000	7	103			54	93	97	94	
6	6.8	7.5	11	163	2.95	1.78	0.000	6	89			11	92	97		
7	7.0	7.6	10	145		1.74	0.007	6	87			15	94	97		
8	6.4	7.5	7	100		1.71	0.002	6	86			6	98	98		
9	6.7	7.6	13	202	3.74	1.86	0.000	6	93	10.2	158	21	95	98		
10	6.2	7.6	9	142		1.89	0.004	6	95			23	95	97		<0.02
11	6.9	7.6	17	252		1.78	0.000	6	89			35	90	97		
12	6.7	7.6	12	181		1.81	0.000	6	91			4	94	96		<0.02
13	6.7	7.6	9	134	0.26	1.79	0.000	5	75	9.7	145	10	94	97	92	
14	6.8	7.6	7	101	3.74	1.73	0.000	5	72			10	95	97		
15	6.6	7.6	6	82		1.64	0.000	5	68	7.4	101	11	95	96		
16	6.5	7.6	3	43		1.73	0.000	6	87			18	98	97		
17	6.7	7.6	11	161		1.76	0.003	6	88			32	95	97		<0.02
18	6.7	7.6	17	251	0.25	1.77	0.000	5	74			14	91	98	93	
19	6.7	7.6	6	89	3.64	1.77	0.000	8	118	8.1	120	8	96	96		
20	6.7	7.5	12	179		1.79	0.000	8	119			35	93	97		
21	6.7	7.6	12	159		1.59	0.000	7	93			16	93	97		
22	6.5	7.5	8	105	4.43	1.58	0.000	8	105			19	94	96		
23	6.7	7.4	10	153	0.29	1.83	0.000	8	122	12.5	191	34	94	96	93	
24	6.7	7.6	9	120		1.60	0.000	7	93			52	95	96		
25	6.9	7.6	16	214		1.60	0.001	6	80			22	91	97		
26	7.1	7.6	14	162	1.69	1.39	0.000	6	70			9	91	97		
27	7.5	7.6	19	231		1.46	0.000	7	85	13.7	167	41	89	95		
28	7.6	7.7	11	130		1.42	0.001	6	71			16	93	96		
29	7.3	7.7	11	140		1.53	0.000	6	77			25	93	96		
30	6.7	7.6	9	130		1.73	0.000	6	87			31	95	97		
31																
Total	204.8	227.6	320	4.527	1.00	51.08	0.018	189	2.687	84.0	1.192	606	2.810	2.901	372	0
Max.	7.6	7.7	19	252	0.29	1.89	0.007	8	122	13.7	191	54	98	98	94	0
Min.	6.2	7.4	3	43	0.20	1.39	0.000	4	53	7.4	101	4	89	95	92	0
Avg.	6.8	7.6	11	151	0.25	1.70	0.001	6	90	10.5	149	G = 16	94	97	93	0
Count	30.0	30.0	30	30	4.00	30.00	30.000	30	30	8.0	8	30	30	30	4	4

G = Geometric Mean

Steven D. Washburn

NOVEMBER 1998 - MISCELLANEOUS SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hrs @ 25C	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1	0	2,880	450	26	322	12	664	8,650	2.9	76	5.9	12.10	12.21	76.76
2	600	2,880	540	26	322	11	635	8,700	2.8	76	5.6	12.13	12.21	72.99
3	700	3,000	610	20	322	12	635	8,650	3.2	75	6.3	12.15	12.23	73.41
4	1,000	2,880	420	20	242	12	577	8,600	3.4	76	5.9	12.14	12.19	67.09
5	1,000	3,000	580	22	242	11	519	7,700	3.4	77	5.7	12.15	12.22	67.40
6	700	2,760	600	25	322	12	577	8,600	3.2	75	5.9	12.15	12.21	67.09
7	600	3,000	540	22	322	10	577	9,700	3.3	77	5.9	12.30	12.15	59.48
8	700	2,880	570	20	322	20	577	8,700	3.1	76	6.0	12.14	12.22	66.32
9	900	2,880	480	18	322	21	606	8,900	3.5	73	5.8	12.11	12.17	68.09
10	800	2,880	460	13	322	16	577	8,600	3.5	79	5.6	12.16	12.15	67.09
11	1,000	2,880	540	19	322	16	577	9,000	3.2	77	5.4	12.11	12.17	64.11
12	1,000	2,400	470	17	322	12	577	9,000	2.9	77	5.5	12.20	12.21	64.11
13	800	3,120	480	19	242	12	577	9,950	2.8	78	5.4	12.19	12.23	57.99
14	800	2,880	660	17	242	10	519	10,250	2.6	77	5.7	12.23	12.22	50.63
15	1,000	2,760	410	15	322	10	606	9,200	2.6	77	5.8	12.16	12.23	65.87
16	1,000	2,880	460	15	242	8	577	9,000	2.8	76	5.7	12.21	12.23	64.11
17	1,200	2,880	570	32	242	9	289	5,500	3.0	77	5.8	12.19	12.12	52.55
18	800	2,880	520	24	242	17	519	9,000	2.9	77	5.9	12.09	12.16	57.67
19	900	2,880	440	24	322	12	577	9,000	3.0	77	5.8	12.25	12.19	64.11
20	1,200	2,760	560	19	242	10	577	8,950	3.3	76	5.8	12.26	12.22	64.47
21	1,100	3,000	680	23	242	13	577	8,700	3.4	76	6.2	12.29	12.34	66.32
22	700	2,880	530	24	242	11	577	8,700	2.9	76	5.9	12.20	11.99	66.32
23	500	2,880	470	22	242	12	606	8,700	3.0	75	6.1	12.20	12.12	69.66
24	500	2,880	490	19	322	13	577	8,550	3.2	76	5.8	12.22	12.16	67.49
25	700	2,880	570	21	242	13	606	8,525	3.3	76	6.0	12.26	12.27	71.09
26	800	2,640	420	17	161	13	606	8,600	3.1	77	6.0	12.22	12.20	70.47
27	800	2,880	470	19	322	12	577	7,600	3.2	79	6.0	12.20	12.21	75.92
28	200	2,880	700	23	242	15	519	8,500	3.3	77	6.0	12.28	12.36	61.06
29	200	2,880	410	18	322	19	577	8,500	3.0	77	6.1	12.21	12.29	67.88
30	300	2,760	430	17	242	14	577	8,500	3.1	76	6.0	12.20	12.23	67.88
31														
Total	22,500	85,920	15,530	616	8,379	388	17,138	260,525	92.9	2,294	175.5	365.70	366.11	1975.44
Max.	1,200	3,120	700	32	322	21	664	10,250	3.5	79	6.3	12.30	12.36	76.76
Min.	0	2,400	410	13	161	8	289	5,500	2.6	73	5.4	12.09	11.99	50.63
Avg.	750	2,864	518	21	279	13	571	8,684	3.1	76	5.9	12.19	12.20	65.85

Steven D. Washburn
Superintendent

DECEMBER 1998 - PLANT INFLUENT SHEET

Day	Weather Type	Weather Precip.	Inf. Flow MGD	Inf. Temp F	Inf. pH SU	Inf. BOD mgIL	Inf. BOD Lbs.	Inf. SS mgIL	Inf. SS Lbs.	Inf. Phos. mgIL	Inf. Phos. Lbs.	Inf. VSS mgIL	Inf. NH3-N mgIL	--Remarks or Other Parameters--
1			1.77	63	7.9	275	4,059	206	3,041	4.22	62	190	12.1	
2			1.66	64	7.2	284	3,932	178	2,464			162		
3			1.73	64	7.5	233	3,362	164	2,366			154		
4			1.64	64	7.6	217	2,968	166	2,270			166		
5			1.40	59	7.6	165	1,927	166	1,938			152		
6	RAIN	1.12	1.57	58	7.7	161	2,108	164	2,147			148	11.6	
7			1.73	61	7.5	199	2,871	190	2,741			164		
8			1.69	59	7.7	219	3,087	164	2,312			142	12.8	
9			1.69	63	7.7	217	3,059	136	1,917	3.93	55	124		
10			1.61	60	7.7	176	2,363	140	1,880			122		
11			1.59	65	7.8	206	2,732	156	2,069			142		
12			1.41	57	7.8	191	2,246	162	1,905			142		
13			1.42	57	7.7	154	1,824	128	1,516			124	13.7	
14			1.59	59	7.6	208	2,758	216	2,864			200		
15			1.67	60	7.2	281	3,914	178	2,479			162		
16			1.78	60	7.9	203	3,014	140	2,078	3.24	48	128		
17	SNOW	0.01	1.75	61	7.8	194	2,831	146	2,131			140	12.3	
18	RAIN	0.02	1.72	58	7.5	194	2,783	160	2,295			148		
19			1.41	57	7.7	159	1,870	138	1,623			114		
20	RAIN	0.11	1.45	56	7.6	133	1,608	126	1,524			118		
21	SNOW	0.06	1.79	59	7.6	154	2,299	150	2,239	3.21	48	134	11.6	
22			1.72	57	7.6	156	2,238	127	1,822			110		
23			1.62	58	7.7	131	1,770	162	2,189			150	13.7	
24			1.41	56	7.6	197	2,317	226	2,658			226		
25			1.29	55	7.7	142	1,528	162	1,743			142		
26			1.48	54	7.8	141	1,740	148	1,827			128		
27			1.54	56	7.7	133	1,708	116	1,490			104		
28			1.81	61	7.5	166	2,506	146	2,204			134	11.6	
29			1.75	61	7.7	202	2,948	137	2,000			112		
30	SNOW	0.02	1.63	60	7.6	176	2,393	164	2,229			158		
31	SNOW	0.04	1.41	55	7.8	193	2,270	148	1,740			136		
Total	0	1.38	49.73	1,837	237.0	5,860	79,031	4,910	65,701	14.60	214	4,476	99.4	
Max.	0	1.12	1.81	65	7.9	284	4,059	226	3,041	4.22	62	226	13.7	
Min.	0	0.01	1.29	54	7.2	131	1,528	116	1,490	3.21	48	104	11.6	
Avg.	0	0.20	1.60	59	7.6	189	2,549	158	2,119	3.65	53	144	12.4	
Count	7	7.00	31.00	31	31.0	31	31	31	31	4.00	4	31	8.0	

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

DECEMBER 1998- ACTIVATED SLUDGE SHEET

	Aerat Volume KCF	Deten. Time Hrs.	Sludge Age Days	Organic Loading flm	Mix Liq SS mgIL	Mix Liq VSS mgIL	Mix Liq Settl. %	Mix Liq SDI %	Mix Liq DO mgIL	Air Cu Ft. X 10000	Return SS %	Return VSS %	Return %	Waste Sludge KGal	Daily Flow MGD	PE BOD mgIl	PE SS mgIL
Day																	
1	48	4.9	3.5	0.59	1,846	1,593	18.0	1.03	6.0	121	0.48	0.42	41	45.0	1.77	192	108
2		5.2	3.4	0.61	1,942	1,677	19.0	1.02	4.2	117	0.54	0.46	47	44.0	1.66	223	124
3		5.0	4.1	0.50	2,300	2,004	20.0	1.15	1.8	115	0.47	0.41	46	44.0	1.73	209	116
4		5.3	3.9	0.45	2,364	2,081	20.0	1.18	2.0	115	0.60	0.53	49	49.0	1.64	204	132
5		6.2							2.0	115			57	56.0	1.40	145	132
6		5.5							4.2	116			49	52.0	1.57	125	108
7		5.0	3.5	0.49	2,014	1,806	16.0	1.26	6.1	124	0.54	0.48	45	45.0	1.73	184	120
8		5.1	6.0	0.40	2,155	1,883	16.0	1.35	4.9	125	0.48	0.42	47	41.0	1.69	160	76
9		5.1	4.0	0.42	2,249	2,001	20.0	1.12	4.6	125	0.63	0.56	47	46.0	1.69	177	120
10		5.4	5.0	0.34	2,333	2,074	17.0	1.37	5.0	126	0.51	0.45	50	55.0	1.61	157	104
11		5.4	3.2	0.39	2,128	1,874	16.0	1.33	6.6	123	0.54	0.48	51	57.0	1.59	167	148
12		6.1							5.6	125			58	53.0	1.41	138	136
13		6.1							5.7	127			54	50.0	1.42	121	90
14		5.4	3.7	0.33	1,968	1,746	16.0	1.23	7.0	123	0.45	0.39	33	51.0	1.59	130	120
15		5.2	3.1	0.56	1,942	1,718	16.0	1.21	6.5	125	0.42	0.37	34	50.0	1.67	205	136
16		4.8	4.6	0.56	2,194	1,934	16.0	1.37	4.5	127	0.46	0.40	33	47.0	1.78	218	96
17		4.9	5.3	0.47	2,275	2,007	13.0	1.75	3.3	123	0.43	0.38	39	45.0	1.75	194	88
18		5.0	3.9	0.45	2,220	1,992	16.0	1.39	4.0	126	0.67	0.59	47	39.0	1.72	186	120
19		6.1							2.4	128			56	50.0	1.41	139	116
20		5.9							7.0	128			55	50.0	1.45	133	80
21		4.8	3.3	0.40	1,955	1,700	12.0	1.63	5.3	128	0.57	0.49	45	46.0	1.79	135	120
22		5.0	3.8	0.38	2,025	1,779	16.0	1.27	6.5	136	0.53	0.47	47	44.0	1.72	141	110
23		5.3	4.5	0.29	1,945	1,701	13.0	1.50	6.0	133	0.47	0.41	48	44.0	1.62	111	96
24		6.1	4.3	0.30	1,939	1,748	14.0	1.39	7.4	133	0.45	0.40	57	42.0	1.41	132	116
25		6.7							7.4	130			62	36.0	1.29	104	98
26		5.8							8.0	94			54	37.0	1.48	116	98
27		5.6							2.0	108			51	38.0	1.54	104	76
28		4.8	4.8	0.53	1,701	1,448	11.0	1.55	6.0	123	0.43	0.37	45	38.0	1.81	153	70
29		4.9	5.7	0.65	1,890	1,624	12.0	1.58	2.0	125	0.47	0.41	46	30.0	1.75	218	68
30		5.3	6.1	0.48	1,988	1,719	14.0	1.42	2.3	128	0.49	0.42	48	25.0	1.63	182	72
31		6.1	7.1	0.31	2,171	1,878	17.0	1.28	3.8	128	0.50	0.43	56	35.0	1.41	146	78
Total	48	167.9	96.7	9.90	45,544	39,987	348.0	29.36	150.1	3,820	11.13	9.74	1,497	1384.0	49.73	4,949	3,272
Max.	48	6.7	7.1	0.65	2,364	2,081	20.0	1.75	8.0	136	0.67	0.59	62	57.0	1.81	223	148
Min.	48	4.8	3.1	0.29	1,701	1,448	11.0	1.02	1.8	94	0.42	0.37	33	25.0	1.29	104	68
Avg.	48	5.4	4.4	0.45	2,070	1,818	15.8	1.33	4.8	123	0.51	0.44	48	44.6	1.60	160	106
Count	1	31.0	22.0	22.00	22	22	22.0	22.00	31.0	31	22.00	22.00	31	31.0	31.00	31	31

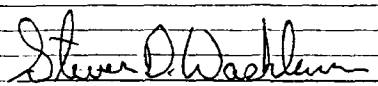
Steven D. Washburn

Steven D. Washburn
Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

DECEMBER 1998 - PRIMARY EFFLUENT SHEET

	P Eff. BOD mg/L	P Eff. BOD Lbs.	P Eff. SS mg/L	P. Eff. SS Lbs.	P Eff. Phos. mg/L	P Eff. Phos. Lbs.	P Eff. VSS mg/L	P Eff. NH3-N mg/L	Flow MGD	BOD Pri. Removal %	SS Pri. Removal %	P Pri. Removal %
Day												
1	192	2,834	108	1,594	2.80	41	96	13.9	1.77	30	48	34
2	223	3,087	124	1,717			112		1.66	21	30	
3	209	3,015	116	1,674			116		1.73	10	29	
4	204	2,790	132	1,805			132		1.64	6	20	
5	145	1,693	132	1,541			132		1.40	12	20	
6	125	1,637	108	1,414			108	13.8	1.57	22	34	
7	184	2,655	120	1,731			120		1.73	8	37	
8	160	2,255	76	1,071			76	16.3	1.69	27	54	
9	177	2,495	120	1,691	3.80	54	120		1.69	18	12	3
10	157	2,108	104	1,396			92		1.61	11	26	
11	167	2,215	148	1,963			128		1.59	19	5	
12	138	1,623	136	1,599			124		1.41	28	16	
13	121	1,433	90	1,066			88	16.8	1.42	21	30	
14	130	1,724	120	1,591			116		1.59	38	44	
15	205	2,855	136	1,894			136		1.67	27	24	
16	218	3,236	96	1,425	2.31	34	96		1.78	-7	31	29
17	194	2,831	88	1,284			84	14.1	1.75	0	40	
18	186	2,668	120	1,721			108		1.72	4	25	
19	139	1,635	116	1,364			92		1.41	13	16	
20	133	1,608	80	967			72		1.45	0	37	
21	135	2,015	120	1,791	2.05	31	106		1.79	12	20	36
22	141	2,023	110	1,578			102		1.72	10	123	
23	111	1,500	96	1,297			80	15.0	1.62	15	41	
24	132	1,552	116	1,364			116		1.41	33	49	
25	104	1,119	98	1,054			82		1.29	27	40	
26	116	1,432	98	1,210			78		1.48	18	34	
27	104	1,336	76	976			66		1.54	22	34	
28	153	2,310	70	1,057			68	13.2	1.81	8	52	
29	218	3,182	68	992			56		1.75	-8	50	
30	182	2,474	77	1,047			70		1.63	-3	56	
31	146	1,717	78	917			66		1.41	24	47	
Total	4,949	67,057	3,277	43,795	10.96	160	3,038	103.1	49.73	466	1,124	102
Max.	223	3,236	148	1,963	3.80	54	136	16.8	1.81	38	123	36
Min.	104	1,119	68	917	2.05	31	56	13.2	1.29	-8	5	3
Avg.	160	2,163	106	1,413	2.74	40	98	14.7	1.60	15	36	26
Count	31	31	31	31	4.00	4	31	7.0	31.00	31	31	4



Steven D. Washburn
Superintendent

MARSHALL WWTP 801 INDUSTRIAL RD. MARSHALL MI 49068 - PERMIT MI0023540

DECEMBER 1998- DISCHARGE MONITORING REPORT - DISCHARGE NO. 001A

Day	F.Eff. D.O. mg/L	F.Eff. pH SU	F.Eff. SS mg/L	F.Eff. SS Lbs.	F.Eff. Total-P mg/L	Flow MGD	F.Eff. Chlorine mg/L	F.Eff. CBOD mg/L	F.Eff. CBOD Lbs.	F.Eff. NH3 as N mg/L	F.Eff. NH3-N Lbs.	F.Eff. F Coli per 100 ml	SS Rem. %	BOD Rem. %	Total-P Rem. %	Amenable Cyanide mg/l
1	6.9	7.6	9	133	0.32	1.77	0.000	7	103	12.0	177	57	96	97	92	<0.02
2	6.7	7.5	14	194	4.72	1.66	0.000	9	125			14	92	97		
3	6.0	7.5	24	346		1.73	0.000	15	216			218	85	94		
4	5.8	7.5	28	383		1.64	0.000	15	205			252	83	93		
5	5.9	7.5	18	210		1.40	0.000	12	140			68	89	93		
6	6.5	7.5	14	183		1.57	0.000	9	118	12.0	157	15	91	94		
7	7.1	7.6	15	216		1.73	0.000	9	130			117	92	95		
8	6.8	7.5	9	127		1.69	0.000	11	155	13.5	190	80	95	95		<0.02
9	6.5	7.5	14	197	0.36	1.69	0.000	11	155			45	90	95	91	
10	6.7	7.5	15	201	5.07	1.61	0.000	10	134			27	89	94		
11	7.5	7.7	24	318		1.59	0.000	11	146			264	85	95		<0.02
12	7.3	7.6	25	294		1.41	0.000	13	153			65	85	93		
13	7.3	7.6	22	261		1.42	0.000	16	189	14.4	171	38	83	90		<0.02
14	8.0	7.7	28	371=349		1.59	0.000	15	199			77	87	93		
15	7.6	7.5	24	334		1.67	0.000	13	181			38	87	95		
16	6.1	7.5	30	445	0.53	1.78	0.000	22	327			80	79	89	84	
17	6.3	7.6	21	306	7.76	1.75	0.000	18	263	11.6	169	79	86	91		
18	6.3	7.5	30	430		1.72	0.000	14	201			39	81	93		
19	6.8	7.5	16	188		1.41	0.000	11	129			28	88	93		
20	7.9	7.6	10	121		1.45	0.000	9	109			14	92	93		
21	7.5	7.6	17	254	3.26	1.79	0.000	9	134	12.6	188	41	89	94	92	
22	7.5	7.6	10	143		1.72	0.000	9	129			62	92	94		
23	7.6	7.6	12	162	5.37	1.62	0.000	7	95	13.9	188	40	93	95		
24	7.9	7.7	10	118		1.41	0.000	6	71			29	96	97		
25	8.3	7.7	10	108		1.29	0.000	6	65			30	94	96		
26	8.6	7.7	10	123		1.48	0.000	10	123			15	93	93		
27	6.5	7.6	3	39		1.54	0.000	6	77			27	97	95		
28	7.5	7.7	6	91		1.81	0.000	8	121	12.2	184	23	96	95		
29	7.7	7.5	16	234		1.75	0.000	12	175			59	88	94		
30	6.8	7.5	14	190		1.63	0.002	10	136			43	91	94		
31	7.1	7.6	10	118		1.41	0.000	8	94			25	93	96		
Total	219.0	234.8	508	6,840	1.47	49.73	0.002	341	4,598	102.2	1,424	2,009	2,777	2,915	359	0
Max.	8.6	7.7	30	445	0.53	1.81	0.002	22	327	14.4	190	264	97	97	92	0
Min.	5.8	7.5	3	39	0.26	1.29	0.000	6	65	11.6	157	14	79	89	84	0
Avg.	7.1	7.6	16	221	0.37	1.60	0.000	11	148.	12.8	178	G = 47	90	94	90	0
Count	31.0	31.0	31	31	4.00	31.00	31.000	31	31	8.0	8	31	31	31	4	4

G = Geometric Mean

Steven D. Washburn

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Superintendent

MARSHALL MICHIGAN WASTEWATER TREATMENT PLANT

DECEMBER 1998 - MISCELLANEOUS & SLUDGE SHEET

Day	Fuel Gas Cu Ft	Elect. Power KWH	Water Cu Ft	Chlorine Lbs.	Ferric Chloride Lbs.	SO2 Lbs.	Lime Lbs.	Raw Sludge Gals.	Total Solids Percent	Vol. Solids Percent	Raw Sludge pH	Sludge pH 2 Hrs @ 25C	Sludge pH 16 Hrs.	Lbs. of Lime per 1000 Gals. Sludge
1	300	2,880	510	41	322	14	736	8,500	3.5	77	5.9	12.26	12.09	86.59
2	300	2,760	470	22	322	13	704	8,500	3.1	76	5.8	12.25	12.14	82.82
3	300	2,760	420	24	242	13	672	8,500	3.2	76	5.9	12.21	11.93	79.06
4	100	2,520	530	29	242	19	640	8,500	3.4	77	5.7	12.20	12.27	75.29
5	100	2,760	620	33	242	24	576	8,600	3.2	76	5.9	12.11	12.18	66.98
6	200	2,760	430	20	322	13	640	8,500	3.1	77	5.9	12.13	12.21	75.29
7	300	2,760	400	25	242	16	544	8,500	3.4	77	5.8	12.18	12.16	64.00
8	900	2,880	670	18	322	26	544	8,750	3.7	78	5.7	12.03	11.67	62.17
9	1,400	3,000	740	16	322	11	480	8,600	3.5	78	5.8	12.19	12.28	55.81
10	1,400	3,000	560	18	322	12	704	8,700	3.6	76	5.9	12.20	12.25	80.92
11	1,100	2,880	440	17	242	9	640	8,500	3.6	76	5.9	12.25	12.26	75.29
12	1,200	3,000	490	20	403	14	640	8,500	3.8	76	5.9	12.28	12.26	75.29
13	1,000	3,000	390	15	403	11	640	8,500	3.4	75	6.1	12.20	12.18	75.29
14	1,500	3,000	450	38	322	16	640	8,500	3.5	76	6.0	12.12	12.06	75.29
15	800	3,000	370	25	403	12	576	8,500	4.0	77	5.9	11.98	11.94	67.76
16	1,000	2,880	410	26	403	11	640	9,200	3.3	75	6.0	11.98	11.96	69.57
17	800	3,120	770	28	322	28	416	8,500	4.1	78	5.7	11.81	11.23	48.94
18	2,300	2,880	480	28	322	16	736	9,000	3.6	76	5.8	12.25	12.25	81.78
19	1,200	3,000	490	28	403	21	672	8,700	3.5	76	5.9	12.22	12.26	77.24
20	1,700	3,000	480	12	322	13	608	8,600	3.4	75	6.2	12.24	12.27	70.70
21	1,900	3,120	360	18	322	14	640	8,500	3.6	76	6.2	12.30	12.35	75.29
22	4,200	3,360	400	17	322	14	512	8,600	4.2	78	6.1	12.03	11.81	59.53
23	2,000	3,000	420	16	322	13	640	8,300	3.7	76	6.1	12.22	12.21	77.11
24	2,700	3,120	370	24	403	14	672	8,400	3.7	75	6.1	12.25	12.26	80.00
25	2,600	3,000	390	18	322	12	640	8,500	3.8	74	6.0	12.31	12.25	75.29
26	3,300	2,880	500	17	322	8	640	8,300	3.7	75	6.1	12.29	12.18	77.11
27	800	2,880	360	17	322	15	640	8,000	3.6	74	6.2	12.19	12.28	80.00
28	1,600	3,000	430	17	322	10	640	8,400	3.9	76	6.3	12.33	12.18	76.19
29	2,300	3,120	600	15	322	12	640	8,000	3.7	75	6.2	12.19	12.19	80.00
30	3,000	3,120	570	25	322	10	640	8,000	3.7	74	6.1	12.33	12.23	80.00
31	3,100	3,000	400	26	322	11	576	8,000	3.7	75	6.1	12.30	12.27	72.00
Total	45,400	91,440	14,920	693	10,068	445	19,328	263,150	111.2	2,356	185.2	377.83	376.06	2278.64
Max.	4,200	3,360	770	41	403	28	736	9,200	4.2	78	6.3	12.33	12.35	86.59
Min.	100	2,520	360	12	242	8	416	8,000	3.1	74	5.7	11.81	11.23	48.94
Avg.	1,465	2,950	481	22	325	14	623	8,489	3.6	76	6.0	12.19	12.13	73.50

Steven D. Washburn
Superintendent

Weather Code	
1. Clear	6. Warm
2. Partly Cloudy	7. Cold
3. Cloudy	8. Windy
4. Rain	9. Melting Snow
5. Snow	

PLANT INFLUENT SHEET

January 2000

Marshall

STATE OF MICHIGAN

MI 002 3540

SUPERINTENDENT

DEPT OF ENVIRONMENTAL QUALITY

Steven D. Washburn

D	WEATHER		FLOW		RAW SEWAGE QUALITY									
A	TYPE	PRECIP	TOTAL	MAX	TEMP	pH	BOD_5		SS		TOTAL-P		VSS	NH3-N
Y	CODE	Inches	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l
1	1		1.190		51	7.80	204	2025	152	1509			138	
2	4	0.02	1.160		55	7.80	174	1683	170	1645			162	16.8
3	4	0.25	1.310		52	7.80	212	2316	182	1988	3.95	43	176	
4	5	0.02	1.540		52	7.80	172	2209	151	1939			135	
5	1		1.710		54	7.90	156	2225	102	1455			92	
6	5	0.03	1.590		54	7.60	182	2413	148	1963			132	
7	5	0.01	1.610		52	7.90	196	2632	142	1907			124	
8	4	0.03	1.430		51	7.60	211	2516	206	2457			188	
9	4	0.15	1.210		50	7.90	185	1867	126	1272			121	14.8
10	4	0.17	1.520		54	8.20	211	2675	136	1724			130	
11	5	0.02	1.680		56	7.90	177	2480	108	1513			103	
12	5	0.11	1.650		57	7.70	157	2160	124	1706	3.33	46	118	
13	5	0.02	1.630		51	7.70	193	2624	126	1713			100	
14	1		1.680		56	7.70	188	2634	140	1962			118	15.1
15	1		1.420		50	7.90	167	1978	138	1634			128	
16	1		1.200		50	8.10	109	1091	152	1521			140	15.9
17	5	0.04	1.470		52	7.50	171	2096	134	1643	3.65	45	128	
18	5	0.17	1.690		52	7.60	185	2608	118	1663			115	
19	5	0.03	1.630		52	7.70	182	2474	142	1930			132	14.0
20	5	0.02	1.600		52	7.60	250	3336	142	1895			128	
21	1		1.590		54	7.50	238	3156	174	2307			152	
22	5	0.06	1.550		54	8.30	228	2947	162	2094			148	
23	5	0.02	1.510		60	8.20	179	2254	118	1486			106	
24	1		1.610		55	7.70	144	1934	136	1826			120	13.5
25	1		1.640		52	7.80	191	2612	139	1901			125	
26	1		1.680		51	7.70	144	2018	116	1625	3.59	50	110	
27	1		1.710		50	7.90	191	2724	138	1968			118	12.4
28	1		1.770		49	7.70	219	3233	124	1830			118	
29	5	0.10	1.510		53	7.90	176	2216	156	1965			142	
30	5	0.03	1.160		48	8.00	177	1712	137	1325			128	15.4
31	1		1.570		48	7.60	161	2108	134	1755			134	
TL		1.30	47.220					72957		55121		184		
ME			1.523				185	2353	141	1778	3.63	46	129	14.7

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

PRIMARY EFFLUENT SHEET

January 2000

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

	PRIMARY EFFLUENT QUALITY												
DAY	BOD-5			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS		AMMONIA NITROGEN	
	mg/l	LBS	Removal	mg/l	LBS	% Removal	mg/l	LBS	% Removal	mg/l	%	mg/l	LBS
1	121	1201	40.7	76	754	50.0				72.0	94.7		
2	121	1171	30.5	74	808	56.5				70.0	94.6	18.3	200
3	191	2087	9.9	80	1027	56.0	2.5	31.9	37.2	80.0	100.0		
4	122	1567	29.1	50	713	66.9				50.0	100.0		
5	124	1768	20.5	76	1008	25.5				68.0	89.5		
6	137	1817	24.7	80	1074	45.9				80.0	100.0		
7	128	1719	34.7	76	906	46.5				68.0	89.5		
8	124	1479	41.2	62	626	69.9				56.0	90.3		
9	122	1231	34.1	50	634	60.3				50.0	100.0	17.9	227
10	152	1927	28.0	74	1037	45.6				74.0	100.0		
11	192	2690	-8.5	54	743	50.0				54.0	100.0		
12	177	2436	-12.7	60	816	51.6	2.2	30.5	32.7	60.0	100.0		
13	171	2325	11.4	62	869	50.8				56.0	90.3		
14	194	2718	-3.2	72	853	48.6				60.0	83.3	17.2	204
15	106	1255	36.5	58	580	58.0				58.0	100.0		
16	80	801	26.6	58	711	61.8				52.0	89.7	17.9	219
17	100	1226	41.5	66	930	50.7	2.4	33.3	35.3	64.0	97.0		
18	138	1945	25.4	58	788	50.8				52.0	89.7		
19	124	1686	31.9	56	747	60.6				52.0	92.9	17.6	235
20	140	1868	44.0	58	769	59.2				56.0	96.6		
21	123	1631	48.3	72	931	58.6				64.0	88.9		
22	148	1913	35.1	56	705	65.4				48.0	85.7		
23	110	1385	38.5	46	618	61.0				40.0	87.0		
24	107	1437	25.7	72	985	47.1				54.0	75.0	15.8	216
25	130	1778	31.9	54	757	61.2				46.0	85.2		
26	108	1513	25.0	56	799	51.7	2.8	39.9	22.0	54.0	96.4	14.0	200
27	123	1754	35.6	56	827	59.4				50.0	89.3		
28	151	2229	31.1	78	982	37.1				74.0	94.9		
29	120	1511	31.8	80	774	48.7				78.0	97.5		
30	100	967	43.5	58	759	57.7				56.0	96.6	16.9	221
31	98	1283	39.1	72	943	46.3				72.0	100.0		
TL		52318			25474			135.5					1722
ME	132	1688	28.1	65	822	53.5	2.5	33.9	31.8	467.0	93.4	17.0	215

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION

DEQ

Discharge Number	Permit Number
001 A	MI 002 3540

DAILY DISCHARGE MONITORING REPORT

Monitoring Period: January 2000

DAY	$CBOD_5$			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS	NH3-N		PH	D.O.	F.COLI #/100ml	CL RESID	CN Amenable
	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	mg/l	LBS	SU	mg/l	MF	mg/l	mg/L
1	4.4	43	97.9	8.0	79	94.7				8.0			7.50	7.0	3	0.012	
2	4.3	42	97.5	3.0	29	98.2				3.0	11.50	111.26	7.60	7.0	1	0.000	
3	4.6	50	97.8	7.0	76	96.2	0.52	5.7	86.8	7.0			7.60	7.1	5	0.000	<0.005
4	5.6	72	96.7	2.0	26	98.7				2.0			7.60	7.5	12	0.000	
5	5.1	73	96.7	9.0	128	91.2				7.0			7.60	7.1	10	0.000	
6	4.5	60	97.5	9.0	119	93.9				9.0			7.50	7.1	6	0.007	
7	5.1	68	97.4	5.0	67	96.5				5.0			7.60	6.9	6	0.000	
8	5.2	62	97.5	3.0	36	98.5				3.0			7.50	6.6	3	0.000	
9	6.1	62	96.7	1.0	10	99.2				1.0	13.30	134.22	7.50	6.7	2	0.000	
10	6.6	84	96.9	7.0	89	94.9				7.0			7.60	6.8	22	0.000	
11	6.1	85	96.6	4.0	56	96.3				4.0			7.50	6.5	4	0.000	<0.005
12	5.3	73	96.6	8.0	110	93.5	0.33	4.5	90.1	8.0			7.50	6.6	4	0.000	
13	5.0	68	97.4	3.0	41	97.6				3.0			7.50	6.8	7	0.000	
14	5.9	83	96.9	11.0	154	92.1				7.0	12.20	170.94	7.50	6.5	8	0.000	
15	4.9	58	97.1	1.0	12	99.3				1.0			7.50	6.7	8	0.000	<0.005
16	3.8	38	96.5	2.0	20	98.7				2.0	13.20	132.11	7.60	6.7	8	0.000	
17	5.5	67	96.8	8.0	98	94.0	0.45	5.5	87.7	8.0			7.60	7.2	21	0.000	
18	5.9	83	96.8	4.0	56	96.6				4.0			7.60	6.3	6	0.000	
19	5.4	73	97.0	5.0	68	96.5				5.0	12.00	163.13	7.60	6.7	8	0.000	
20	4.8	64	98.1	5.0	67	96.5				5.0			7.60	6.8	4	0.000	
21	5.5	73	97.7	8.0	106	95.4				8.0			7.40	7.2	17	0.000	
22	7.1	92	96.9	4.0	52	97.5				4.0			7.60	7.2	58	0.000	
23	5.9	74	96.7	3.0	38	97.5				3.0			7.70	6.6	51	0.000	<0.005
24	5.3	71	96.3	12.0	161	91.2				8.0	9.80	131.59	7.60	6.8	38	0.000	
25	5.1	70	97.3	1.0	14	99.3				1.0			7.60	6.9	33	0.000	
26	4.7	66	96.7	7.0	98	94.0	0.38	5.3	89.4	7.0	6.60	92.47	7.60	6.6	30	0.000	
27	4.9	70	97.4	4.0	57	97.1				3.0			7.60	7.1	48	0.001	
28	4.8	71	97.8	5.0	74	96.0				5.0			7.60	7.0	120	0.000	
29	3.9	49	97.8	7.0	88	95.5				7.0			7.50	6.2	#####	0.000	
30	3.6	35	98.0	1.0	10	99.3				1.0	8.20	79.33	7.60	7.1	23	0.000	
31	4.3	56	97.3	4.0	52	97.0				4.0			7.60	7.8	124	0.000	
TL		2035			2092			21.1									
ME	5.1	66	97.2	5.2	67	96.2	0.42	5.3	88.5	150.0	10.85	126.88		6.9	12	0.001	<0.005
WA	5.7	76		6.1	78										52		
MX											13.30	170.94	7.70			0.012	<0.005
MN													7.40	6.2			

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 Years)

PRINTED NAME AND TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTORIZED AGENT	DATE
Steven D. Washburn, Superintendent		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

ACTIVATED SLUDGE SHEET

January 2000

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	AERATION SYSTEM				MIXED LIQUOR								SECONDARY SLUDGE				
	AERTN VOL	DETEN TIME	CRT	F:M RATIO	MLSS		MLVSS		SETTL.	SDI	D.O.	AIR	SS	VSS	RAS FLOW	WAS	
	KCF	HRS	DAYS		mg/L	Lbs.	mg/L	Lbs.	%	%	mg/L	CF	%	%	%	Gallons	Lbs.
SF	3											4				3	
1	48	7.2			2594	7767					5.50	126			78	37	
2	48	7.4			2633	7884					4.00	121			79	39	
3	48	6.6	4.1	0.33	2361	7070	2118	6342	43	0.55	6.00	124	0.47	0.39	70	44	1725
4	48	5.6	5.0	0.27	2230	6677	1923	5758	34	0.66	7.10	125	0.40	0.35	70	40	1334
5	48	5.0	5.3	0.31	2204	6600	1896	5677	32	0.69	6.60	129	0.45	0.39	55	33	1238
6	48	5.4	5.3	0.31	2296	6875	1977	5920	34	0.68	6.50	129	0.42	0.36	51	37	1296
7	48	5.4	5.8	0.29	2277	6818	1958	5863	35	0.65	5.70	129	0.43	0.36	52	33	1183
8	48	6.0			2402	7193					1.60	126			59	34	
9	48	7.1			2410	7216					3.00	125			81	33	
10	48	5.7	4.9	0.34	2222	6654	1901	5692	35	0.63	6.30	122	0.49	0.42	64	33	1349
11	48	5.1	5.7	0.46	2308	6911	1962	5875	38	0.61	4.00	124	0.47	0.39	58	31	1215
12	48	5.2	5.0	0.42	2261	6770	1916	5737	39	0.58	5.00	129	0.51	0.43	58	32	1361
13	48	5.3	5.8	0.41	2237	6698	1886	5647	42	0.53	6.10	130	0.41	0.34	59	34	1163
14	48	5.1	5.5	0.50	2159	6465	1824	5462	44	0.49	5.60	129	0.43	0.36	58	33	1183
15	48	6.1			2279	6824					1.90	130			69	32	
16	48	7.2			2231	6680					4.00	129			81	30	
17	48	5.9	6.6	0.24	2093	6267	1742	5216	40	0.52	7.70	131	0.39	0.33	69	29	943
18	48	5.1	6.1	0.36	2183	6537	1820	5450	45	0.49	6.20	126	0.46	0.38	59	28	1074
19	48	5.3	6.7	0.30	2255	6752	1885	5644	45	0.50	5.90	127	0.43	0.36	59	28	1004
20	48	5.4	6.5	0.32	2320	6947	1963	5878	47	0.49	4.90	128	0.46	0.39	62	28	1074
21	48	5.4	5.0	0.28	2346	7025	1974	5911	45	0.52	5.40	126	0.50	0.42	62	34	1418
22	48	5.6			2309	6914					5.20	126			64	31	
23	48	5.7			2384	7139					2.20	125			65	30	
24	48	5.4	6.2	0.25	2286	6845	1921	5752	46	0.50	3.60	130	0.44	0.37	61	30	1101
25	48	5.3	5.5	0.30	2310	6917	1947	5830	44	0.53	4.00	134	0.49	0.41	60	31	1267
26	48	5.1	5.7	0.27	2249	6734	1882	5635	46	0.49	4.00	135	0.46	0.38	59	31	1189
27	48	5.0	4.9	0.30	2302	6893	1923	5758	47	0.49	6.20	136	0.53	0.44	57	32	1414
28	48	4.9	6.1	0.36	2463	7375	2065	6183	48	0.51	4.80	136	0.45	0.38	56	32	1201
29	48	5.7			2622	7851					0.70	131			65	33	
30	48	7.4			2533	7585					4.60	131			65	36	
31	48	5.5	5.3	0.22	2381	7130	1981	5932	48	0.50	5.90	130	0.45	0.38	63	36	1351
TL												3979				1024	26085
ME	48	5.7	5.6	0.33	2327	6968	1927	5770	42	0.6	4.8	128	0.45	0.38	63	33	1242

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SLUDGE SHEET

Marshall

MI 002 3540

January 2000

SUPERINTENDENT
Steven D. Washburn

	RAW SLUDGE				LIME STABILIZED SLUDGE					
DAY	GALLONS	TOTAL SOLIDS %	VOLATILE SOLIDS %	pH SU	LIME POUNDS	pH 2 hrs @ 25 C SU	pH 16 hrs SU	Lbs. Lime per 1000 gallons sludge		
1	8500	3.3	73.0	6.4	657	12.3	12.4	77		
2	9000	3.2	76.0	6.0	626	12.4	12.1	70		
3	9000	3.2	76.0	6.0	814	12.3	12.2	90		
4	9400	3.4	76.0	5.9	814	12.3	12.3	87		
5	9500	3.3	75.0	6.0	626	12.2	12.3	66		
6	9400	3.3	76.0	5.8	626	12.3	12.1	67		
7	9450	3.1	75.0	6.1	783	12.4	12.4	83		
8	9400	3.1	76.0	6.0	626	12.2	12.3	67		
9	9000	3.1	75.0	6.0	626	12.3	12.3	70		
10	9700	3.1	75.0	6.0	689	12.3	12.3	71		
11	9400	3.1	76.0	5.9	908	12.2	12.2	97		
12	9400	3.0	73.0	5.7	563	12.3	12.1	60		
13	9400	3.0	75.0	6.0	626	12.3	12.2	67		
14	9500	3.1	73.0	5.9	626	12.3	12.3	66		
15	9750	3.2	73.0	5.9	626	12.3	12.3	64		
16	9000	3.0	74.0	6.0	689	12.3	12.3	77		
17	8750	3.0	76.0	6.0	626	12.2	12.3	72		
18	9500	3.0	75.0	5.9	626	12.3	12.0	66		
19	9500	3.2	75.0	5.9	689	12.3	12.3	73		
20	9000	3.1	75.0	5.9	626	12.2	12.4	70		
21	9500	3.1	74.0	5.9	720	12.3	12.4	76		
22	9400	3.1	74.0	5.8	626	12.4	12.4	67		
23	9000	3.1	75.0	5.8	626	12.4	12.4	70		
24	9800	3.2	76.0	6.0	689	12.4	12.3	70		
25	9500	3.2	75.0	5.9	563	12.4	12.3	59		
26	9300	3.4	73.0	5.8	563	12.4	12.3	61		
27	9300	3.2	74.0	5.8	626	12.3	12.3	67		
28	9300	3.3	76.0	5.7	657	12.3	12.3	71		
29	9200	3.4	75.0	5.7	657	12.3	12.4	71		
30	9500	3.4	76.0	5.8	626	12.3	12.3	66		
31	9400	3.4	75.0	6.0	720	12.3	12.3	77		
TOTAL	288750				20565					
MEAN	9315	3.2	74.9	5.9	663	12.3	12.3	71		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MISCELLANEOUS SHEET

January 2000

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	WATER	ELECTRICAL USAGE		FUEL GAS		CHEMICALS APPLIED								
			X 120		X 100	$FECL_3$					Cl_2		SO_2	
	CF	METER	KWH	METER	CF	GALS	SP. GR.	% SOLN	LBS	mg/L	LBS	mg/L	LBS	mg/L
1	560	25	3000	10	1000	100.0	37.4600	30	1.1	0.1	14.0	1.4	13.0	1.3
2	460	24	2880	8	800	100	37.4600	30	1.1	0.1	18	1.9	13.0	1.3
3	650	25	3000	14	1400	50	37.4600	30	0.5	0.0	16	1.5	12.0	1.1
4	580	26	3120	14	1400	100	37.4600	30	1.1	0.1	18	1.4	15.0	1.2
5	710	26	3120	19	1900	50	37.4600	30	0.5	0.0	24	1.7	13.0	0.9
6	660	25	3000	22	2200	100	37.4600	30	1.1	0.1	20	1.5	5.0	0.4
7	570	24	2880	8	800	100	37.4600	30	1.1	0.1	18	1.3	18.0	1.3
8	640	24	2880	12	1200	75	37.4600	30	0.8	0.1	16	1.3	19.0	1.6
9	560	25	3000	12	1200	75	37.4600	30	0.8	0.1	22	2.2	11.0	1.1
10	520	24	2880	10	1000	100	37.4600	30	1.1	0.1	17	1.3	13.0	1.0
11	540	24	2880	14	1400	100	37.4600	30	1.1	0.1	17	1.2	11.0	0.8
12	600	24	2880	18	1800	100	37.4600	30	1.1	0.1	19	1.4	10.0	0.7
13	560	26	3120	23	2300	50	37.4600	30	0.5	0.0	19	1.4	13.0	1.0
14	480	26	3120	25	2500	100	37.4600	30	1.1	0.1	16	1.1	11.0	0.8
15	720	23	2760	17	1700	75	37.4600	30	0.8	0.1	16	1.4	12.0	1.0
16	430	25	3000	24	2400	75	37.4600	30	0.8	0.1	16	1.6	13.0	1.3
17	530	26	3120	29	2900	75	37.4600	30	0.8	0.1	18	1.5	12.0	1.0
18	610	26	3120	24	2400	75	37.4600	30	0.8	0.1	14	1.0	13.0	0.9
19	570	25	3000	25	2500	75	37.4600	30	0.8	0.1	15	1.1	15.0	1.1
20	560	25	3000	24	2400	75	37.4600	30	0.8	0.1	15	1.1	20.0	1.5
21	580	25	3000	28	2800	100	37.4600	30	1.1	0.1	13	1.0	10.0	0.8
22	570	25	3000	32	3200	50	37.4600	30	0.5	0.0	13	1.0	8.0	0.6
23	450	25	3000	27	2700	75	37.4600	30	0.8	0.1	14	1.1	7.0	0.6
24	560	25	3000	20	2000	75	37.4600	30	0.8	0.1	14	1.0	8.0	0.6
25	680	26	3120	26	2600	100	37.4600	30	1.1	0.1	14	1.0	8.0	0.6
26	560	27	3240	26	2600	100	37.4600	30	1.1	0.1	15	1.1	8.0	0.6
27	580	26	3120	59	5900	50	37.4600	30	0.5	0.0	13	0.9	7.0	0.5
28	660	26	3120	30	3000	50	37.4600	30	0.5	0.0	19	1.3	7.0	0.5
29	570	25	3000	30	3000	100	37.4600	30	1.1	0.1	13	1.0	5.0	0.4
30	590	25	3000	23	2300	50	37.4600	30	0.5	0.1	15	1.6	5.0	0.5
31	710	27	3240	22	2200	50	37.4600	30	0.5	0.0	14	1.1	5.0	0.4
TL	18020	780	93600	675	67500	2450			26.1		505		340.0	
ME	581	25	3019	22	2177	79	37.4600	30.0	0.8	0.1	16.3	1.3	11.0	0.9

MANPOWER

POSITION TITLE	NUMBER FULL TIME
SUPERINTENDANT	1
ASST. SUPT.	1
OPERATOR	3
MECHANIC	
CHEMIST	
LAB TECH	
IPP COORDINATOR	1
OTHER	

GIVE THE HOURS PER DAY THAT PLANT PERSONNEL ARE NORMALLY AT THE PLANT.

WEEKDAYS	8	HRS
SATURDAYS	8	HRS
SUNDAYS	8	HRS
HOLIDAYS	8	HRS

Weather Code
1. Clear
2. Partly Cloudy
3. Cloudy
4. Rain
5. Snow
6. Warm
7. Cold
8. Windy
9. Melting Snow

PLANT INFLUENT SHEET

February 2000

Marshall

STATE OF MICHIGAN

MI 002 3540

SUPERINTENDENT

DEPT OF ENVIRONMENTAL QUALITY

Steven D. Washburn

D	WEATHER		FLOW		RAW SEWAGE QUALITY									
A	TYPE	PRECIP	TOTAL	MAX	TEMP	pH	BOD_5		SS		TOTAL-P		VSS	NH3-N
Y	CODE	Inches	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l
1	2		1.900		54	7.70	194	3074	159	2520			151	11.7
2	5	0.06	1.890		50	7.70	182	2869	118	1860	3.52	55	114	
3	5	0.14	1.630		50	7.80	200	2719	126	1713			112	
4	2		1.450		50	7.90	191	2310	198	2394			188	
5	1		1.270		51	8.00	198	2097	160	1695			152	
6	1		1.170		48	7.80	175	1708	120	1171			120	16.1
7	1		1.390		49	7.70	220	2550	142	1646			124	
8	1		1.440		47	7.90	347	4167	368	4420			355	
9	1		1.420		50	7.90	276	3269	186	2203	4.57	54	182	
10	1		1.570		50	7.50	246	3221	148	1938			140	13.3
11	1		1.850		50	7.40	150	2314	118	1821			110	
12	1		1.410		51	7.70	164	1929	190	2234			170	
13	5	0.03	1.160		52	8.10	195	1887	136	1316			124	
14	1		1.500		47	7.40	121	1514	160	2002	3.73	47	148	13.7
15	1		1.590		49	7.80	135	1790	153	2029			132	
16	1		1.450		47	7.80	152	1838	154	1862			134	
17	1		1.460		48	7.70	123	1498	142	1729			118	
18	5	0.25	1.480		49	8.20	92	1136	128	1580			114	15.2
19	1		1.260		49	7.90	178	1870	192	2018			174	
20	1		1.130		50	7.20	172	1621	190	1791			170	
21	1		1.390		47	7.70	212	2458	150	1739			134	15.1
22	1		1.540		50	7.60	187	2402	109	1400			103	
23	4	0.04	1.490		51	7.90	212	2634	158	1963	4.03	50	136	
24	4	0.07	1.440		53	7.80	218	2618	162	1946			148	16.7
25	1		1.320		50	7.90	174	1916	98	1079			88	
26	4	0.58	1.220		51	7.90	220	2238	178	1811			166	
27	1		1.260		48	8.10	164	1723	130	1366			114	15.0
28	1		1.430		50	7.70	158	1884	116	1383			98	
29	1		1.520		50	7.70	188	2383	144	1825			132	
30														
31														
TL		1.17	42.030					65637		54452		206		
ME			1.449		50	8	188	2263	156	1878	3.96	52	143	14.6

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

PRIMARY EFFLUENT SHEET

Marshall
MI 002 3540

February, 2000

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

	PRIMARY EFFLUENT QUALITY												
DAY	BOD-5			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS		AMMONIA NITROGEN	
	mg/l	LBS	Removal	mg/l	LBS	% Removal	mg/l	LBS	% Removal	mg/l	%	mg/l	LBS
1	117	1854	39.7	60	951	62.3				60.0	100.0	14.0	222
2	140	2207	23.1	78	1060	33.9	2.5	33.6	29.8	74.0	94.9		
3	141	1917	29.5	88	1064	30.2				74.0	84.1		
4	162	1959	15.2	96	1017	51.5				80.0	83.3		
5	159	1684	19.7	92	898	42.5				88.0	95.7		
6	132	1288	24.6	78	904	35.0				78.0	100.0	18.8	218
7	161	1866	26.8	92	1105	35.2				84.0	91.3		
8	223	2678	35.7	102	1208	72.3				96.0	94.1		
9	210	2487	23.9	94	1231	49.5	2.7	35.9	40.0	94.0	100.0		
10	173	2265	29.7	104	1605	29.7				104.0	100.0	14.6	225
11	125	1929	16.7	72	847	39.0				72.0	100.0		
12	72	847	56.1	106	1025	44.2				98.0	92.5		
13	169	1635	13.3	96	1201	29.4				90.0	93.8		
14	104	1301	14.0	114	1512	28.8	3.3	43.5	12.1	102.0	89.5	17.3	229
15	100	1326	25.9	104	1258	32.0				100.0	96.2		
16	130	1572	14.5	104	1266	32.5				88.0	84.6		
17	56	682	54.5	112	1382	21.1				100.0	89.3		
18	146	1802	-58.7	84	883	34.4				76.0	90.5	18.9	199
19	173	1818	2.8	104	980	45.8				88.0	84.6		
20	135	1272	21.5	104	1206	45.3				84.0	80.8		
21	161	1866	24.1	116	1490	22.7				112.0	96.6	16.3	209
22	172	2209	8.0	72	895	33.9				68.0	94.4		
23	180	2237	15.1	106	1273	32.9	2.8	33.3	31.3	96.0	90.6		
24	199	2390	8.7	92	1013	43.2				76.0	82.6	18.6	205
25	165	1816	5.2	120	1221	-22.4				112.0	93.3		
26	162	1648	26.4	104	1093	41.6				104.0	100.0		
27	164	1723	0.0	84	1002	35.4				84.0	100.0	19.7	235
28	130	1550	17.7	104	1318	10.3				88.0	84.6		
29	137	1737	27.1	72	913	50.0				72.0	100.0		
30													
31													
TL		51567			32819.5	1042.1	11.3	146.2					1742
ME	148	1778	19.3	95	1132	35.9	2.8	36.6	28.3	2542.0	92.7	17.3	218

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION

DEQ

Discharge Number	Permit Number
001 A	MI 002 3540

DAILY DISCHARGE MONITORING REPORT

Monitoring Period
February, 2000

DAY	$CBOD_5$			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS	NH3-N		PH	D.O.	F.COLI	CL	CN
	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	mg/l	LBS	SU	mg/l	#/100ml MF	RESID mg/l	Amenable mg/L
1	4.4	70	97.7	2.0	32	98.7				2.0	7.50	118.85	7.60	6.9	99	0.000	<0.005
2	4.3	68	97.6	6.0	95	94.9	0.23	3.6	93.5	5.0			7.60	6.7	85	0.000	
3	3.3	45	98.4	2.0	27	98.4				2.0			7.60	6.6	21	0.000	
4	3.4	41	98.2	2.0	24	99.0				2.0			7.60	7.5	33	0.014	
5	3.9	41	98.0	3.0	32	98.1				3.0			7.60	7.4	27	0.002	<0.005
6	3.4	33	98.1	1.0	10	99.2				1.0	12.50	121.97	7.60	7.4	20	0.003	
7	3.3	38	98.5	4.0	46	97.2				4.0			7.60	7.3	33	0.000	
8	3.5	42	99.0	7.0	84	98.1				6.0			7.60	7.2	34	0.001	
9	6.1	72	97.8	6.0	71	96.8	0.23	2.7	95.0	6.0			7.50	7.2	44	0.000	
10	7.7	101	96.9	3.0	39	98.0				3.0	10.50	137.48	7.40	6.8	91	0.000	
11	4.5	69	97.0	13.0	201	89.0				13.0			7.40	6.4	36	0.000	
12	2.0	24	98.8	5.0	59	97.4				5.0			7.50	6.5	7	0.000	
13	4.4	43	97.7	2.0	19	98.5				2.0			7.70	7.8	37	0.000	<0.005
14	5.2	65	95.7	6.0	75	96.3	0.25	3.1	93.3	6.0	14.60	182.65	7.60	7.3	47	0.000	
15	2.0	27	98.5	3.0	40	98.0				3.0			7.40	6.5	35	0.000	
16	3.3	40	97.8	5.0	60	96.8				5.0			7.60	7.5	15	0.000	
17	2.1	26	98.3	3.0	37	97.9				3.0			7.50	7.6	43	0.000	
18	3.6	44	96.1	6.0	74	95.3				6.0	16.70	206.13	7.60	7.1	17	0.000	
19	5.3	56	97.0	7.0	74	96.4				6.0			7.60	7.0	15	0.000	
20	2.5	24	98.5	5.0	47	97.4				5.0			7.60	7.7	10	0.000	
21	4.4	51	97.9	6.0	70	96.0				4.0	14.40	166.93	7.50	7.9	7	0.001	<0.005
22	3.9	50	97.9	2.0	26	98.2				2.0			7.40	7.4	6	0.003	
23	5.6	70	97.4	6.0	75	96.2	0.15	1.9	96.3	6.0			7.30	6.7	7	0.000	
24	4.5	54	97.9	6.0	72	96.3				6.0	16.20	194.56	7.40	6.9	8	0.000	
25	4.5	50	97.4	10.0	110	89.8				9.0			7.40	7.0	7	0.000	
26	4.7	48	97.9	3.0	31	98.3				3.0			7.40	7.4	15	0.000	
27	4.0	42	97.6	2.0	21	98.5				2.0	16.20	170.24	7.40	7.2	13	0.000	
28	4.5	54	97.2	5.0	60	95.7				5.0			7.40	7.9	7	0.000	
29	4.9	62	97.4	1.0	13	99.3				1.0			7.40	7.3	7	0.000	
30																	
31																	
TL		1447			1621			11.3									
ME	4.1	50	97.7	4.6	56	96.9	0.22	2.8	94.5	126.0	13.58	162.35		7.2	20	0.001	<0.005
WA	4.8	59		6.0	78										37		
MX											16.70	206.13	7.70			0.014	<0.005
MN													7.30	6.4			

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 Years)

PRINTED NAME AND TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTORIZED AGENT	DATE
Steven D. Washburn, Superintendent		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

ACTIVATED SLUDGE SHEET

February 2000

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	AERATION SYSTEM				MIXED LIQUOR								SECONDARY SLUDGE				
	AERTN VOL	DETEN TIME	CRT	F:M RATIO	MLSS		MLVSS		SETTL.	SDI	D.O.	AIR	SS	VSS	RAS FLOW	WAS	
	KCF	HRS	DAYS		mg/L	Lbs.	mg/L	Lbs.	%	%	mg/L	CF	%	%	%	Gallons	Lbs.
SF	3											4				3	
1	48	4.5	4.2	0.30	2411	7219	2038	6103	44	0.55	5.30	129	0.53	0.45	51	39	1724
2	48	4.6	4.2	0.37	2343	7016	1973	5908	47	0.50	4.50	130	0.48	0.40	52	42	1681
3	48	5.3	3.9	0.32	2360	7067	1994	5971	44	0.54	5.70	127	0.52	0.44	59	42	1821
4	48	5.9	4.4	0.32	2368	7091	2014	6031	42	0.56	6.10	127	0.47	0.39	67	41	1607
5	48	6.8			2379	7124					5.40	128			76	41	
6	48	7.4			2316	6935					5.50	129			77	42	
7	48	6.2	4.4	0.32	2277	6818	1962	5875	36	0.63	7.10	128	0.44	0.44	67	42	1541
8	48	6.0	5.0	0.43	2399	7184	2064	6180	39	0.62	6.10	130	0.42	0.42	67	41	1436
9	48	6.1	5.0	0.40	2396	7175	2081	6231	35	0.68	6.00	124	0.42	0.42	67	41	1436
10	48	5.5	4.6	0.32	2652	7941	2329	6974	38	0.70	3.40	122	0.50	0.50	61	41	1710
11	48	4.7	4.1	0.28	2575	7711	2263	6776	38	0.68	4.20	126	0.54	0.54	53	42	1892
12	48	6.1			2615	7830					3.60	129			70	48	
13	48	7.4			2426	7264					7.00	128			84	48	
14	48	5.7	3.7	0.22	2304	6899	2013	6028	34	0.68	6.70	128	0.48	0.48	65	47	1882
15	48	5.4	3.5	0.20	2476	7414	2163	6477	33	0.75	3.80	129	0.54	0.54	62	47	2117
16	48	5.9	4.9	0.24	2507	7507	2187	6549	35	0.72	5.00	125	0.39	0.39	67	47	1529
17	48	5.9	4.0	0.11	2474	7408	2164	6480	30	0.82	5.50	130	0.49	0.49	68	45	1839
18	48	5.8	3.8	0.29	2414	7228	2111	6321	34	0.71	5.20	129	0.49	0.49	65	47	1921
19	48	6.8			2584	7738					4.60	129			73	48	
20	48	7.6			2464	7378					6.20	129			81	50	
21	48	6.2		0.32	2236	6695	1969	5896			7.30	127			66	49	
22	48	5.6	3.8	0.35	2359	7064	2079	6225	22	1.07	5.40	122	0.49	0.49	59	45	1839
23	48	5.8	4.1	0.37	2270	6797	1995	5974	26	0.87	5.60	121	0.45	0.45	63	44	1651
24	48	6.0	3.6	0.38	2407	7208	2121	6351	24	1.00	5.10	120	0.55	0.55	68	44	2018
25	48	6.5	4.0	0.29	2397	7178	2109	6315	25	0.96	5.80	119	0.49	0.49	75	44	1798
26	48	7.1			2324	6959					4.70	116			80	45	
27	48	6.8			2325	6962					4.00	120			77	45	
28	48	6.0	4.0	0.27	2209	6615	1933	5788	35	0.63	5.70	125	0.46	0.46	67	43	1650
29	48	5.7	4.1	0.30	2222	6654	1927	5770	25	0.89	5.90	124	0.49	0.49	63	40	1635
30	48																
31	48																
TL												3650				1280	34726
ME	48	6.0	4.2	0.31	2396	7175	2071	6201	34	0.7	5.4	126	0.48	0.47	67	44	1736

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SLUDGE SHEET

Marshall

MI 002 3540

February 2000

SUPERINTENDENT
Steven D. Washburn

	RAW SLUDGE				LIME STABILIZED SLUDGE					
DAY	GALLONS	TOTAL SOLIDS %	VOLATILE SOLIDS %	pH SU	LIME POUNDS	pH 2 hrs @ 25 C SU	pH 16 hrs SU	Lbs. Lime per 1000 gallons sludge		
1	9400	3.4	76.0	5.9	512	12.3	12.2	54		
2	9375	3.5	75.0	5.8	512	12.3	12.3	55		
3	9400	3.8	74.0	5.8	512	12.3	12.2	54		
4	9500	3.4	74.0	5.8	640	12.3	12.2	67		
5	9400	3.4	74.0	6.2	563	12.2	11.3	60		
6	9400	3.3	76.0	6.1	435	12.3	12.2	46		
7	9650	3.3	77.0	5.8	512	12.3	12.2	53		
8	9600	3.5	78.0	6.1	486	12.4	12.2	51		
9	9350	4.2	81.0	5.9	589	12.3	12.2	63		
10	9550	4.0	79.0	5.8	512	12.3	12.1	54		
11	9400	4.1	78.0	5.7	589	12.3	12.1	63		
12	9400	3.8	75.0	5.7	512	12.2	12.1	54		
13	9650	3.8	75.0	5.7	486	12.1	12.0	50		
14	9500	3.5	76.0	5.8	538	12.2	12.2	57		
15	9800	3.3	76.0	5.8	640	12.3	12.2	65		
16	9500	3.4	77.0	5.9	589	12.3	12.2	62		
17	9575	4.2	77.0	5.9	640	12.3	12.2	67		
18	9400	3.3	77.0	6.0	512	12.3	12.2	54		
19	9400	3.3	76.0	6.2	512	12.3	12.3	54		
20	9400	3.3	76.0	6.2	512	12.3	12.3	54		
21	9400	3.2	75.0	6.0	512	12.3	12.2	54		
22	9350	3.5	75.0	5.9	589	12.3	12.2	63		
23	9650	3.4	77.0	5.8	486	12.3	12.2	50		
24	9500	3.4	77.0	5.9	614	12.2	12.2	65		
25	9500	3.4	77.0	5.9	538	12.2	12.3	57		
26	9500	3.6	76.0	5.9	512	12.3	12.3	54		
27	9650	3.3	77.0	6.1	512	12.2	12.2	53		
28	9450	3.5	77.0	5.9	614	12.2	12.1	65		
29	9570	3.4	77.0	6.0	486	12.2	12.1	51		
30										
31										
TOTAL	275220				15666					
MEAN	9490	3.5	76.4	5.9	540	12.3	12.2	57		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MISCELLANEOUS SHEET

February 2000

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	WATER	ELECTRICAL USAGE		FUEL GAS		CHEMICALS APPLIED								
			X 120		X 100	$FECL_3$					Cl_2		SO_2	
	CF	METER	KWH	METER	CF	GALS	SP. GR.	% SOLN	LBS	mg/L	LBS	mg/L	LBS	mg/L
1	530	26	3120	33	3300	100.0	1.3860	30	28.8	1.8	13.0	0.8	5.0	0.3
2	540	25	3000	43	4300	100	1.3860	30	28.8	1.8	16	1.0	4.0	0.3
3	630	24	2880	25	2500	100	1.3860	30	28.8	2.1	16	1.2	4.0	0.3
4	500	23	2760	30	3000	100	1.3860	30	28.8	2.4	15	1.2	5.0	0.4
5	620	25	3000	30	3000	25	1.3860	30	7.2	0.7	13	1.2	4.0	0.4
6	570	25	3000	30	3000	100	1.3860	30	28.8	3.0	14	1.4	27.0	2.8
7	820	25	3000	30	3000	75	1.3860	30	21.6	1.9	13	1.1	17.0	1.5
8	580	25	3000	24	2400	100	1.3860	30	28.8	2.4	12	1.0	6.0	0.5
9	710	24	2880	20	2000	100	1.3860	30	28.8	2.4	13	1.1	6.0	0.5
10	590	24	2880	24	2400	100	1.3860	30	28.8	2.2	14	1.1	10.0	0.8
11	520	24	2880	24	2400	100	1.3860	30	28.8	1.9	17	1.1	8.0	0.5
12	670	24	2880	29	2900	150	1.3860	30	43.3	3.7	21	1.8	10.0	0.9
13	550	25	3000	35	3500	125	1.3860	30	36.0	3.7	17	1.8	10.0	1.0
14	520	25	3000	28	2800	75	1.3860	30	21.6	1.7	17	1.4	8.0	0.6
15	750	22	2640	21	2100	100	1.3860	30	28.8	2.2	14	1.1	7.0	0.5
16	500	28	3360	23	2300	100	1.3860	30	28.8	2.4	24	2.0	7.0	0.6
17	600	20	2400	35	3500	100	1.3860	30	28.8	2.4	19	1.6	8.0	0.7
18	700	24	2880	36	3600	100	1.3860	30	28.8	2.3	18	1.5	6.0	0.5
19	480	24	2880	28	2800	100	1.3860	30	28.8	2.7	15	1.4	7.0	0.7
20	530	23	2760	34	3400	100	1.3860	30	28.8	3.1	21	2.2	9.0	1.0
21	520	24	2880	26	2600	100	1.3860	30	28.8	2.5	18	1.6	28.0	2.4
22	640	23	2760	11	1100	100	1.3860	30	28.8	2.2	18	1.4	28.0	2.2
23	790	23	2760	20	2000	50	1.3860	30	14.4	1.2	19	1.5	9.0	0.7
24	680	23	2760	8	800	100	1.3860	30	28.8	2.4	18	1.5	10.0	0.8
25	510	22	2640	13	1300	50	1.3860	30	14.4	1.3	5	0.5	9.0	0.8
26	520	24	2880	4	400	125	1.3860	30	36.0	3.5	17	1.7	11.0	1.1
27	600	24	2880	10	1000	100	1.3860	30	28.8	2.7	15	1.4	11.0	1.0
28	550	24	2880	6	600	75	1.3860	30	21.6	1.8	14	1.2	10.0	0.8
29	550	23	2760	10	1000	100	1.3860	30	28.8	2.3	16	1.3	8.0	0.6
30														
31														
TL	17270	695	83400	690	69000	2750			793.0		462		292.0	
ME	596	24	2876	24	2379	95	1.3860	30.0	27.3	2.3	15.9	1.3	10.1	0.9

MANPOWER	
POSITION TITLE	NUMBER FULL TIME
SUPERINTENDANT	1
ASST. SUPT.	1
OPERATOR	3
MECHANIC	
CHEMIST	
LAB TECH	
IPP COORDINATOR	1
OTHER	

GIVE THE HOURS PER DAY THAT PLANT PERSONNEL ARE NORMALLY AT THE PLANT.

WEEKDAYS	8	HRS
SATURDAYS	8	HRS
SUNDAYS	8	HRS
HOLIDAYS	8	HRS

Weather Code
1. Clear
2. Partly Cloudy
3. Cloudy
4. Rain
5. Snow
6. Warm
7. Cold
8. Windy
9. Melting Snow

PLANT INFLUENT SHEET

March 2000

Marshall

STATE OF MICHIGAN

MI 002 3540

SUPERINTENDENT

DEPT OF ENVIRONMENTAL QUALITY

Steven D. Washburn

D	WEATHER		FLOW		RAW SEWAGE QUALITY									
A	TYPE	PRECIP	TOTAL	MAX	TEMP	pH	BOD_5		SS		TOTAL-P		VSS	NH3-N
Y	CODE	Inches	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l
1	2		1.500		51	7.90	218	2727	184	2302	3.99	50	170	15.1
2	2		1.490		52	7.70	250	3107	162	2013			146	
3	1		1.410		51	7.70	170	1999	212	2493			200	
4	1		1.280		50	7.70	191	2039	162	1729			154	
5	1		1.220		47	7.90	185	1882	248	2523			234	
6	1		1.460		52	7.90	183	2228	126	1534	3.72	45	106	
7	1		1.510		52	7.80	182	2292	175	2204			166	13.4
8	1		1.440		50	7.50	231	2774	158	1898			150	14.8
9	4	0.03	1.480		52	7.60	271	3345	210	2592			180	
10	1		1.300		50	7.90	189	2049	160	1735			144	
11	2		1.200		50	7.80	174	1741	166	1661			154	17.3
12	5	0.01	1.240		48	8.00	176	1820	170	1758			156	
13	4	0.04	1.260		50	8.00	206	2165	158	1660			138	
14	4	0.12	1.380		49	7.70	178	2049	142	1634	4.60	53	130	15.1
15	4	0.50	1.470		51	7.80	227	2783	212	2599			184	
16	1		1.490		50	7.80	185	2299	184	2286			174	
17	1		1.440		45	7.80	203	2438	162	1946			152	
18	4	0.01	1.300		47	7.80	281	3047	280	3036			262	
19	4	0.34	1.160		48	7.80	198	1916	172	1664			168	
20	4	0.26	1.410		48	8.00	192	2258	146	1717			136	14.8
21	2		1.430		50	7.90	194	2314	137	1634	4.17	50	126	
22	2		1.370		50	8.10	247	2822	194	2217			176	
23	2		1.470		47	7.50	333	4083	140	1716			130	
24	2		1.330		52	7.70	214	2374	202	2241			180	
25	1		1.210		53	7.80	251	2533	234	2361			204	
26	4	0.10	1.200		48	8.00	237	2372	224	2242			202	14.5
27	4	0.02	1.380		47	7.80	176	2026	134	1542			126	
28	4	0.09	1.560		52	7.90	168	2186	134	1743			124	13.9
29	2		1.580		51	7.40	201	2649	172	2266			162	
30	2		1.600		52	7.70	225	3002	160	2135			142	
31	2		1.380		51	7.90	172	1980	228	2624			198	
TL		1.52	42.950					75296		63707		198		
ME			1.385		50		210	2429	179	2055	4.12	49	164	13.2

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

PRIMARY EFFLUENT SHEET

March 2000

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

	PRIMARY EFFLUENT QUALITY												
DAY	BOD-5			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS		AMMONIA NITROGEN	
	mg/l	LBS	Removal	mg/l	LBS	% Removal	mg/l	LBS	% Removal	mg/l	%	mg/l	LBS
1	181	2264	17.0	98	1226	46.7	2.8	35.4	29.1	92.0	93.9	19.2	240
2	221	2746	11.6	80	941	50.6				80.0	100.0		
3	140	1646	17.6	72	769	66.0				72.0	100.0		
4	127	1356	33.5	82	834	49.4				82.0	100.0		
5	131	1333	29.2	76	925	69.4				76.0	100.0		
6	143	1741	21.9	94	1184	25.4	2.3	29.3	37.4	82.0	87.2		
7	149	1876	18.1	98	1177	44.0				86.0	87.8	16.6	199
8	188	2258	18.6	88	1086	44.3				84.0	95.5	17.1	211
9	245	3024	9.6	100	1084	52.4				92.0	92.0		
10	149	1615	21.2	96	961	40.0				96.0	100.0		
11	145	1451	16.7	84	869	49.4				84.0	100.0	20.6	213
12	144	1489	18.2	78	820	54.1				74.0	94.9		
13	153	1608	25.7	86	990	45.6				78.0	90.7		
14	135	1554	24.2	148	1814	-4.2	3.6	44.3	21.5	138.0	93.2	18.7	229
15	157	1925	30.8	106	1317	50.0				94.0	88.7		
16	139	1727	24.9	76	913	58.7				72.0	94.7		
17	132	1585	35.0	70	759	56.8				66.0	94.3		
18	106	1149	62.3	60	580	78.6				60.0	100.0		
19	125	1209	36.9	58	682	66.3				58.0	100.0		
20	158	1858	17.7	54	644	63.0				54.0	100.0	18.9	225
21	148	1765	23.7	46	526	66.4	2.7	30.6	35.7	46.0	100.0		
22	164	1874	33.6	64	785	67.0				58.0	90.6		
23	231	2832	30.6	92	1020	34.3				84.0	91.3		
24	125	1387	41.6	68	686	66.3				60.0	88.2		
25	140	1413	44.2	74	741	68.4				66.0	89.2		
26	141	1411	40.5	58	668	74.1				56.0	96.6	18.7	215
27	135	1554	23.3	80	1041	40.3				74.0	92.5		
28	129	1678	23.2	90	1186	32.8				84.0	93.3	17.3	228
29	126	1660	37.3	76	1014	55.8				74.0	97.4		
30	135	1801	40.0	84	967	47.5				74.0	88.1		
31	110	1266	36.0	74	26507	67.5				64.0	86.5		
TL		54058			54715			139.6					1762
ME	150	1744	27.9	81	1765	52.5	2.9	34.9	30.9	2360.0	94.4	18.4	220

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION

DEQ

Discharge Number	Permit Number
001 A	MI 002 3540

DAILY DISCHARGE MONITORING REPORT

Monitoring Period: March 2000

DAY	$CBOD_5$			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS	NH3-N		PH	D.O.	F.COLI #/100ml	CL RESID	CN Amenable
	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	mg/l	LBS	SU	mg/l	MF	mg/l	mg/L
1	4.3	54	98.0	4.0	50	97.8	0.16	2.0	96.0	4.0	14.70	183.90	7.70	7.3	11	0.000	<0.005
2	5.9	73	97.6	6.0	75	96.3				6.0			7.60	7.3	15	0.000	
3	4.3	51	97.5	3.0	35	98.6				3.0			7.60	7.1	8	0.000	
4	3.7	39	98.1	6.0	64	96.3				6.0			7.60	7.8	8	0.000	
5	3.4	35	98.2	1.0	10	99.6				1.0			7.60	7.6	12	0.000	
6	4.3	52	97.7	15.0	183	88.1	0.13	1.6	96.5	11.0			7.70	7.2	16	0.000	
7	4.0	50	97.8	3.0	38	98.3				3.0	14.80	186.38	7.60	6.8	20	0.000	<0.005
8	3.9	47	98.3	8.0	96	94.9				8.0	14.80	177.74	7.60	6.4	11	0.000	
9	5.5	68	98.0	10.0	123	95.2				8.0			7.60	7.0	25	0.000	
10	4.0	43	97.9	7.0	76	95.6				7.0			7.60	6.8	14	0.000	
11	4.4	44	97.5	5.0	50	97.0				5.0	18.50	185.15	7.60	6.4	9	0.000	
12	4.1	42	97.7	5.0	52	97.1				5.0			7.70	7.0	15	0.000	<0.005
13	4.4	46	97.9	5.0	53	96.8				5.0			7.70	6.8	8	0.000	
14	4.5	52	97.5	5.0	58	96.5	0.81	9.3	82.4	5.0	20.00	230.18	7.60	7.7	9	0.000	
15	6.1	75	97.3	12.0	147	94.3				12.0			7.60	7.6	9	0.000	
16	5.5	68	97.0	3.0	37	98.4				4.0			7.60	7.2	7	0.000	
17	4.5	54	97.8	6.0	72	96.3				6.0			7.60	7.7	8	0.000	
18	3.3	36	98.8	2.0	22	99.3				2.0			7.60	7.0	7	0.000	
19	3.6	35	98.2	1.0	10	99.4				1.0			7.70	7.2	4	0.000	
20	3.9	46	98.0	4.0	47	97.3				4.0	20.20	237.54	7.60	7.6	13	0.000	<0.005
21	3.7	44	98.1	2.0	24	98.5	0.27	3.2	93.5	2.0			7.60	7.3	28	0.000	
22	3.1	35	98.7	5.0	57	97.4				5.0			7.60	7.2	6	0.000	
23	7.6	93	97.7	3.0	37	97.9				3.0			7.50	7.1	26	0.000	
24	3.5	39	98.4	5.0	55	97.5				4.0			7.50	6.9	9	0.000	
25	3.8	38	98.5	4.0	40	98.3				3.0			7.50	6.8	6	0.000	
26	3.6	36	98.5	1.0	10	99.6				1.0	16.20	162.13	7.60	7.2	4	0.000	
27	3.5	40	98.0	5.0	58	96.3				5.0			7.60	7.2	18	0.000	
28	3.4	44	98.0	6.0	78	95.5				6.0	13.70	178.24	7.60	7.3	120	0.000	
29	3.0	40	98.5	7.0	92	95.9				7.0			7.70	7.4	15.000	0.000	
30	4.5	60	98.0	11.0	147	93.1				10.0			7.60	7.4	126	0.000	
31	2.9	33	98.3	3.0	35	98.7				1.0			7.70	7.0	6	0.000	
TL		1514			1929			16.1									
ME	4.2	49	98.0	5.3	62	96.8	0.34	4.0	92.1	153.0	16.61	192.66		7.2	12	0.000	<0.005
WA	4.8	55		7.6	88										19		
MX											20.20	237.54	7.70				<0.005
MN													7.50	6.4			

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information. I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 Years)

PRINTED NAME AND TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTORIZED AGENT	DATE
Steven D. Washburn, Superintendent		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

ACTIVATED SLUDGE SHEET

March 2000

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

D	AERATION SYSTEM				MIXED LIQUOR								SECONDARY SLUDGE				
A Y	AERTN VOL	DETEN TIME	CRT	F:M RATIO	MLSS		MLVSS		SETTL.	SDI	D.O.	AIR	SS	VSS	RAS FLOW	WAS	
	KCF	HRS	DAYS		mg/L	Lbs.	mg/L	Lbs.	%	%	mg/L	CF	%	%	%	Gallons	Lbs.
SF	3											4				3	
1	48	5.7	4.4	0.37	2315	6932	2021	6052	23	1.01	4.80	120	0.50	0.44	63	38	1585
2	48	5.8	5.5	0.44	2409	7213	2090	6258	27	0.89	4.90	125	0.56	0.49	65	28	1308
3	48	6.1	5.9	0.26	2453	7345	2121	6351	26	0.94	5.80	127	0.50	0.43	70	30	1251
4	48	6.7			2418	7240					4.50	125			76	30	
5	48	7.1			2520	7546					5.50	123			80	31	
6	48	5.9	5.3	0.29	2350	7037	2030	6079	25	0.94	5.80	121	0.47	0.41	67	34	1333
7	48	5.7	5.6	0.29	2502	7492	2165	6483	26	0.96	4.30	118	0.53	0.46	66	30	1326
8	48	6.0	5.0	0.36	2441	7309	2111	6321	24	1.02	4.70	115	0.50	0.43	67	35	1460
9	48	5.8	4.9	0.45	2621	7848	2260	6767	30	0.87	0.80	116	0.55	0.47	61	35	1605
10	48	6.6	4.5	0.23	2697	8076	2322	6953	32	0.84	4.40	128	0.52	0.45	78	41	1778
11	48	7.2			2559	7663					5.80	130			84	46	
12	48	6.9			2375	7112					5.00	128			80	46	
13	48	6.8	4.4	0.29	2149	6435	1861	5573	26	0.83	6.80	127	0.40	0.35	79	44	1468
14	48	6.2	5.0	0.28	2170	6498	1864	5582	23	0.94	5.50	124	0.39	0.33	72	40	1301
15	48	5.9	5.1	0.36	2112	6324	1804	5402	28	0.75	2.80	121	0.44	0.38	68	34	1248
16	48	5.8	6.1	0.31	2178	6522	1865	5585	30	0.73	4.90	125	0.46	0.40	68	28	1074
17	48	6.0	6.1	0.29	2172	6504	1837	5501	35	0.62	6.50	130	0.47	0.40	70	27	1058
18	48	6.6			2283	6836					4.70	130			79	28	
19	48	7.4			2143	6417					5.00	127			88	27	
20	48	6.1	7.8	0.35	2127	6369	1797	5381	47	0.45	6.10	123	0.41	0.35	73	24	821
21	48	6.0	7.5	0.30	2301	6890	1938	5803	49	0.47	4.50	122	0.48	0.40	72	23	921
22	48	6.3	7.8	0.30	2437	7297	2090	6258	62	0.39	5.70	122	0.45	0.38	74	25	938
23	48	5.9	6.7	0.43	2541	7609	2175	6513	40	0.64	4.90	117	0.44	0.38	64	31	1138
24	48	6.5	5.7	0.22	2436	7294	2061	6171	66	0.37	4.90	120	0.44	0.38	74	35	1284
25	48	7.1			2583	7735					4.40	117			81	35	
26	48	7.2			2481	7429					4.70	120			80	35	
27	48	6.2	5.2	0.26	2335	6992	2012	6025	65	0.36	5.20	118	0.45	0.38	70	36	1351
28	48	5.5	5.0	0.27	2443	7315	2088	6252	72	0.34	5.60	122	0.47	0.40	62	37	1450
29	48	5.5	5.0	0.27	2354	7049	2029	6076	42	0.56	5.80	123	0.43	0.37	61	39	1399
30	48	5.4	4.4	0.31	2284	6839	1965	5884	40	0.57	4.10	125	0.48	0.41	60	39	1561
31	48	6.2	4.9	0.21	2393	7166	2062	6174	56	0.43	5.20	124	0.46	0.38	70	38	1458
TL												3813				1049	30115
ME	48	6.3	5.6	0.31	2374	7108	2025	6063	39	0.7	5.0	123	0.47	0.40	72	34	1309

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SLUDGE SHEET

Marshall
MI 002 3540

March 2000

SUPERINTENDENT
Steven D. Washburn

	RAW SLUDGE				LIME STABILIZED SLUDGE					
DAY	GALLONS	TOTAL SOLIDS %	VOLATILE SOLIDS %	pH SU	LIME POUNDS	pH 2 hrs @ 25 C SU	pH 16 hrs SU	Lbs. Lime per 1000 gallons sludge		
1	9350	3.5	78.0	6.0	594	12.3	12.0	64		
2	9550	3.5	78.0	5.8	540	12.2	12.2	57		
3	9670	3.5	76.0	5.9	540	12.2	12.2	56		
4	9500	3.6	73.0	6.6	540	12.2	12.3	57		
5	9700	3.4	77.0	5.9	540	12.3	12.2	56		
6	9500	3.5	76.0	6.0	540	12.2	12.4	57		
7	9600	3.5	77.0	6.0	540	12.3	12.3	56		
8	9600	3.3	75.0	6.0	567	12.3	12.2	59		
9	9440	3.4	76.0	5.9	540	12.3	12.4	57		
10	9400	3.5	76.0	5.8	675	12.3	12.3	72		
11	9400	3.6	74.0	6.6	567	12.1	12.3	60		
12	9450	3.4	77.0	6.1	540	12.3	12.3	57		
13	9350	3.4	77.0	6.1	594	12.2	12.3	64		
14	9300	3.3	77.0	6.0	540	12.2	12.3	58		
15	9550	3.5	74.0	6.4	594	12.2	12.2	62		
16	9400	3.3	74.0	6.6	621	12.2	12.3	66		
17	9300	3.3	76.0	5.9	567	12.2	12.2	61		
18	9300	3.2	75.0	6.1	540	12.2	12.3	58		
19	9300	3.2	76.0	6.0	540	12.3	12.2	58		
20	9450	3.1	66.0	5.9	567	12.3	12.3	60		
21	9600	3.4	87.0	5.9	540	12.2	12.3	56		
22	9500	3.3	76.0	6.0	675	12.3	12.2	71		
23	9500	3.7	78.0	6.0	540	12.2	12.2	57		
24	9500	3.4	77.0	5.8	540	12.3	12.3	57		
25	9450	3.6	68.0	5.8	540	12.3	12.3	57		
26	9500	3.2	76.0	6.0	594	12.3	12.3	63		
27	9500	3.5	76.0	6.1	729	12.3	12.2	77		
28	9400	3.5	74.0	6.1	513	12.3	12.3	55		
29	9500	3.4	74.0	6.6	540	12.3	12.3	57		
30	9500	3.3	79.0	6.6	540	12.3	12.3	57		
31	9500	3.5	79.0	5.9	621	12.3	12.3	65		
TOTAL	293560				17658					
MEAN	9470	3.4	75.9	6.1	570	12.3	12.3	60		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MISCELLANEOUS SHEET

March 2000

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	WATER	ELECTRICAL USAGE		FUEL GAS		CHEMICALS APPLIED									MANPOWER	
			X 120		X 100	$FECL_3$					Cl_2		SO_2		POSITION TITLE	NUMBER FULL TIME
	CF	METER	KWH	METER	CF	GALS	SP. GR.	% SOLN	LBS	mg/L	LBS	mg/L	LBS	mg/L	SUPERINTENDANT	1
1	670	25	3000	27	2700	100.0	1.3860	30	28.8	2.3	15.0	1.2	10.0	0.8	ASST. SUPT.	1
2	630	24	2880	26	2600	50	1.3860	30	14.4	1.2	13	1.0	8.0	0.6	OPERATOR	3
3	530	24	2880	25	2500	100	1.3860	30	28.8	2.5	16	1.4	9.0	0.8	MECHANIC	
4	760	24	2880	26	2600	100	1.3860	30	28.8	2.7	15	1.4	9.0	0.8	CHEMIST	
5	430	25	3000	6	600	100	1.3860	30	28.8	2.8	16	1.6	4.0	0.4	LAB TECH	
6	540	23	2760	3	300	100	1.3860	30	28.8	2.4	11	0.9	3.0	0.2	IPP COORDINATOR	1
7	610	24	2880	7	700	50	1.3860	30	14.4	1.1	11	0.9	15.0	1.2	OTHER	
8	550	23	2760	11	1100	50	1.3860	30	14.4	1.2	14	1.2	19.0	1.6		
9	560	23	2760	9	900	100	1.3860	30	28.8	2.3	14	1.1	10.0	0.8	GIVE THE HOURS PER DAY THAT	
10	630	23	2760	27	2700	100	1.3860	30	28.8	2.7	18	1.7	6.0	0.6	PLANT PERSONNEL ARE NORMALLY	
11	520	24	2880	21	2100	75	1.3860	30	21.6	2.2	14	1.4	11.0	1.1	AT THE PLANT.	
12	510	24	2880	13	1300	100	1.3860	30	28.8	2.8	16	1.5	8.0	0.8	WEEKDAYS	8 HRS
13	530	21	2520	10	1000	75	1.3860	30	21.6	2.1	15	1.4	6.0	0.6	SATURDAYS	8 HRS
14	620	25	3000	12	1200	100	1.3860	30	28.8	2.5	19	1.7	12.0	1.0	SUNDAYS	8 HRS
15	540	23	2760	7	700	50	1.3860	30	14.4	1.2	18	1.5	10.0	0.8	HOLIDAYS	8 HRS
16	650	24	2880	24	2400	100	1.3860	30	28.8	2.3	11	0.9	10.0	0.8		
17	480	23	2760	22	2200	100	1.3860	30	28.8	2.4	16	1.3	7.0	0.6		
18	550	25	3000	15	1500	100	1.3860	30	28.8	2.7	14	1.3	9.0	0.8		
19	560	24	2880	15	1500	75	1.3860	30	21.6	2.2	13	1.3	18.0	1.9		
20	510	24	2880	9	900	75	1.3860	30	21.6	1.8	14	1.2	14.0	1.2		
21	530	23	2760	4	400	100	1.3860	30	28.8	2.4	13	1.1	13.0	1.1		
22	580	24	2880	3	300	50	1.3860	30	14.4	1.3	14	1.2	14.0	1.2		
23	740	23	2760	3	300	100	1.3860	30	28.8	2.4	15	1.2	14.0	1.1		
24	580	21	2520	2	200	75	1.3860	30	21.6	1.9	13	1.2	16.0	1.4		
25	590	23	2760	1	100	75	1.3860	30	21.6	2.1	13	1.3	14.0	1.4		
26	500	24	2880	2	200	75	1.3860	30	21.6	2.2	14	1.4	15.0	1.5		
27	500	23	2760	1	100	100	1.3860	30	28.8	2.5	11	1.0	9.0	0.8		
28	660	24	2880	6	600	100	1.3860	30	28.8	2.2	18	1.4	4.0	0.3		
29	510	24	2880	19	1900	75	1.3860	30	21.6	1.6	11	0.8	16.0	1.2		
30	510	24	2880	7	700	75	1.3860	30	21.6	1.6	12	0.9	12.0	0.9		
31	570	21	2520	2	200	50	1.3860	30	14.4	1.3	10	0.9	12.0	1.0		
TL	17650	729	87480	365	36500	2575			742.6		437		337.0			
ME	569	24	2822	12	1177	83	1.3860	30.0	24.0	2.1	14.1	1.2	10.9	0.9		

Weather Code	
1. Clear	6. Warm
2. Partly Cloudy	7. Cold
3. Cloudy	8. Windy
4. Rain	9. Melting Snow
5. Snow	

PLANT INFLUENT SHEET

April 2000

Marshall

STATE OF MICHIGAN

MI 002 3540

SUPERINTENDENT

DEPT OF ENVIRONMENTAL QUALITY

Steven D. Washburn

D	WEATHER		FLOW		RAW SEWAGE QUALITY									
A	TYPE	PRECIP	TOTAL	MAX	TEMP	pH	BOD_5		SS		TOTAL-P		VSS	NH3-N
Y	CODE	Inches	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l
1	2		1.170		52	7.80	414	4040	604	5894			554	
2	4	0.03	1.130		49	8.00	233	2196	156	1470			144	16.9
3	2		1.420		53	7.80	166	1966	124	1469	3.63	43	114	
4	5	0.01	1.510		47	7.70	187	2355	145	1826			134	
5	2		1.530		56	7.70	168	2144	132	1684			128	
6	2		1.490		58	8.10	182	2262	152	1889			144	14.6
7	4	0.64	1.220		55	7.90	203	2065	174	1770			160	
8	1		1.190		51	7.80	172	1707	194	1925			164	
9	5	0.01	1.170		54	7.80	190	1854	216	2108			208	
10	4	0.25	1.400		57	7.80	173	2020	106	1238			96	15.7
11	4	0.10	1.440		56	7.80	181	2174	106	1273	4.01	48	96	
12	1		1.420		56	8.00	208	2463	166	1966			154	15.7
13	1		1.450		58	7.90	191	2310	186	2249			172	
14	1		1.260		56	7.90	258	2711	320	3363			304	
15	1		1.200		57	7.90	167	1671	178	1781			168	
16	1		1.170		55	8.00	227	2215	210	2049	3.92	38	198	17.1
17	2		1.230		56	7.90	161	1652	152	1559			148	
18	1		0.920		57	8.00	188	1442	166	1274			162	18.8
19	4	0.73	1.190		56	7.90	207	2054	234	2322			234	
20	4	1.68	1.400		56	7.80	194	2265	146	1705			144	
21	4	0.03	1.470		55	7.90	149	1827	126	1545			112	13.1
22	1		1.410		54	7.70	166	1952	166	1952			148	
23	1		1.330		56	7.80	132	1464	150	1664			124	
24	1		1.440		56	7.80	163	1958	140	1681	3.35	40	136	
25	1		1.480		56	8.00	150	1851	116	1432			104	
26	1		1.540		56	7.60	118	1516	162	2081			142	
27	1		1.510		56	7.80	146	1839	152	1914			142	14.5
28	1		1.480		57	7.80	153	1889	126	1555			120	
29	1		1.350		57	8.10	166	1869	128	1441			120	
30	1		1.270		55	7.80	148	1568	138	1462			120	
31														
TL		3.48	40.190					61297		57541		170		
ME			1.340		55.100		185	2043	176	1918	3.73	42	163	15.8

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

PRIMARY EFFLUENT SHEET

April 2000

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

PRIMARY EFFLUENT QUALITY

DAY	BOD-5			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS		AMMONIA NITROGEN	
	mg/l	LBS	Removal	mg/l	LBS	% Removal	mg/l	LBS	% Removal	mg/l	%	mg/l	LBS
1	121	1181	70.8	76	742	87.4				66.0	86.8		
2	123	1159	47.2	60	711	61.5				56.0	93.3	20.9	248
3	122	1445	26.5	62	781	50.0	2.1	26.6	41.9	58.0	93.5		
4	104	1310	44.4	64	817	55.9				56.0	87.5		
5	120	1531	28.6	58	721	56.1				52.0	89.7		
6	122	1516	33.0	50	509	67.1				48.0	96.0	16.6	169
7	120	1221	40.9	48	476	72.4				44.0	91.7		
8	95	943	44.8	48	468	75.3				44.0	91.7		
9	92	898	51.6	50	584	76.9				50.0	100.0		
10	107	1249	38.2	34	408	67.9				30.0	88.2	15.6	187
11	105	1261	42.0	44	521	58.5	1.8	21.4	54.9	30.0	68.2		
12	124	1469	40.4	50	605	69.9				50.0	100.0	17.9	216
13	103	1246	46.1	44	462	76.3				44.0	100.0		
14	88	925	65.9	52	520	83.8				50.0	96.2		
15	102	1021	38.9	54	527	69.7				52.0	96.3		
16	134	1308	41.0	54	554	74.3	3.4	34.4	14.5	50.0	92.6	17.9	184
17	131	1344	18.6	56	430	63.2				56.0	100.0		
18	101	775	46.3	44	437	73.5				44.0	100.0	18.5	184
19	78	774	62.3	52	607	77.8				52.0	100.0		
20	96	1121	50.5	34	417	76.7				34.0	100.0		
21	87	1067	41.6	32	376	74.6				28.0	87.5	16.1	189
22	80	941	51.8	36	399	78.3				30.0	83.3		
23	67	743	49.2	54	649	64.0				46.0	85.2		
24	83	997	49.1	44	543	68.6	1.8	22.5	45.7	44.0	100.0		
25	106	1308	29.3	42	539	63.8				38.0	90.5		
26	107	1374	9.3	54	680	66.7				46.0	85.2		
27	80	1007	45.2	50	617	67.1				46.0	92.0	14.8	183
28	102	1259	33.3	48	540	61.9				46.0	95.8		
29	113	1272	31.9	42	445	67.2				42.0	100.0		
30	82	869	44.6	44	446	68.1				38.0	86.4		
31													
TL		34532			16531			104.8					1559
ME	103	1151	42.1	49	551	69.1	2.3	26.2	39.2	1370.0	92.6	17.3	195

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION

DEQ

Discharge Number	Permit Number
001 A	MI 002 3540

DAILY DISCHARGE MONITORING REPORT

Monitoring Period: April 2000

DAY	$CBOD_5$			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS	NH3-N		PH	D.O.	F.COLI	CL	CN
	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	mg/l	LBS	SU	mg/l	#/100ml MF	RESID mg/l	Amenable mg/L
1	3.6	35	99.1	2.0	20	99.7				2.0			7.60	7.6	3	0.000	<0.005
2	3.2	30	98.6	1.0	9	99.4				1.0	17.90	168.69	7.70	7.2	6	0.000	
3	4.4	52	97.3	2.0	24	98.4	0.17	2.0	95.3	2.0			7.60	7.2	114	0.000	
4	3.2	40	98.3	3.0	38	97.9				3.0			7.70	7.4	20	0.000	
5	5.6	71	96.7	2.0	26	98.5				2.0			7.60	7.6	8	0.000	
6	12.0	149	93.4	2.0	25	98.7				2.0	10.20	126.75	7.60	7.1	3	0.000	
7	4.0	41	98.0	4.0	41	97.7				4.0			7.60	6.7	8	0.000	
8	3.9	39	97.7	2.0	20	99.0				2.0			7.60	7.8	9	0.000	
9	3.2	31	98.3	5.0	49	97.7				5.0			7.60	7.3	7	0.000	<0.005
10	3.6	42	97.9	1.0	12	99.1				1.0	11.10	129.60	7.60	7.3	4	0.000	
11	2.8	34	98.5	8.0	96	92.5	0.22	2.6	94.5	8.0			7.50	7.0	10	0.000	
12	4.3	51	97.9	7.0	83	95.8				7.0	12.40	146.85	7.50	7.2	5	0.000	
13	3.0	36	98.4	2.0	24	98.9				2.0			7.50	7.2	11	0.000	
14	3.5	37	98.6	5.0	53	98.4				5.0			7.50	6.8	6	0.000	
15	3.9	39	97.7	1.0	10	99.4				1.0			7.50	6.7	21	0.000	
16	4.3	42	98.1	3.0	29	98.6	1.10	10.7	71.9	3.0	10.70	104.41	7.60	6.7	138	0.000	
17	3.4	35	97.9	2.0	21	98.7				2.0			7.60	6.4	141	0.000	<0.005
18	3.5	27	98.1	1.0	8	99.4				1.0	8.40	64.45	7.40	6.8	1	0.000	
19	3.0	30	98.6	5.0	50	97.9				5.0			7.50	6.8	8	0.000	
20	3.8	44	98.0	2.0	23	98.6				2.0			7.50	6.8	8	0.000	
21	3.5	43	97.7	1.0	12	99.2				1.0	10.60	129.95	7.50	6.8	17	0.000	
22	4.0	47	97.6	1.0	12	99.4				1.0			7.40	7.1	43	0.000	
23	3.1	34	97.7	6.0	67	96.0				6.0			7.40	7.0	120	0.000	
24	3.6	43	97.8	2.0	24	98.6	0.27	3.2	91.9	2.0			7.50	7.3	236	0.000	
25	3.3	41	97.8	5.0	62	95.7				4.0			7.50	7.0	12	0.000	
26	3.1	40	97.4	9.0	116	94.4				8.0			7.40	7.2	6	0.000	<0.005
27	5.2	65	96.4	5.0	63	96.7				5.0	4.00	50.37	7.50	7.1	15	0.000	
28	4.0	49	97.4	5.0	62	96.0				5.0			7.40	6.7	46	0.000	
29	3.5	39	97.9	4.0	45	96.9				4.0			7.40	6.6	22.000	0.000	
30	3.3	35	97.8	5.0	53	96.4				5.0			7.40	6.3	15	0.000	
31																	
TL		1343			1173			18.6									
ME	4.0	45	97.8	3.4	39	97.8	0.44	4.7	88.4	101.0	10.66	115.14		7.0	14	0.000	<0.005
WA	5.2	61		5.5	67										35		
MX											17.90	168.69	7.70			0	<0.005
MN													7.40	6.3			

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 Years)

PRINTED NAME AND TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTORIZED AGENT	DATE
Steven D. Washburn, Superintendent		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

ACTIVATED SLUDGE SHEET

April 2000

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	AERATION SYSTEM				MIXED LIQUOR								SECONDARY SLUDGE				
	AERTN VOL	DETEN TIME	CRT	F:M RATIO	MLSS		MLVSS		SETTL.	SDI	D.O.	AIR	SS	VSS	RAS FLOW	WAS	
	KCF	HRS	DAYS		mg/L	Lbs.	mg/L	Lbs.	%	%	mg/L	CF	%	%	%	Gallons	Lbs.
SF	3											4				3	
1	48	7.4			2270	6797					6.10	122			84	40	
2	48	7.6			2190	6558					5.30	120			88	37	
3	48	6.1	5.7	0.27	2088	6252	1803	5399	57	0.37	6.30	119	0.44	0.38	70	30	1101
4	48	5.7	5.4	0.24	2136	6396	1837	5501	34	0.63	4.60	122	0.46	0.39	64	31	1189
5	48	5.6	7.4	0.29	2055	6153	1752	5246	33	0.62	4.30	124	0.37	0.30	59	27	833
6	48	5.8	8.8	0.27	2211	6621	1892	5665	36	0.61	5.30	117	0.45	0.38	60	20	751
7	48	7.1	8.9	0.22	2217	6639	1882	5635	53	0.42	5.10	114	0.39	0.33	74	23	748
8	48	7.2			2179	6525					3.90	117			77	23	
9	48	7.4			2178	6522					4.30	117			77	23	
10	48	6.2	8.1	0.24	2095	6273	1773	5309	48	0.44	4.20	117	0.42	0.36	64	22	771
11	48	6.0	9.1	0.23	2162	6474	1819	5447	48	0.45	5.30	128	0.45	0.38	63	19	713
12	48	6.1	9.8	0.27	2174	6510	1830	5480	41	0.53	4.40	118	0.42	0.35	64	19	666
13	48	5.9	9.6	0.23	2149	6435	1809	5417	46	0.47	4.70	117	0.40	0.34	59	20	667
14	48	6.8	9.9	0.16	2311	6920	1946	5827	76	0.30	4.60	112	0.42	0.35	72	20	701
15	48	7.2			2392	7163					3.40	110			75	26	
16	48	7.4			2260	6767					1.80	113			77	24	
17	48	7.0	7.5	0.24	2232	6683	1883	5638	70	0.32	4.30	113	0.43	0.36	75	25	897
18	48	9.4	7.6	0.14	2247	6728	1866	5588	68	0.33	5.00	112	0.44	0.36	108	24	881
19	48	7.2	7.7	0.14	2268	6791	1837	5501	65	0.35	4.70	111	0.44	0.35	84	24	881
20	48	6.2	6.6	0.20	2342	7013	1908	5713	65	0.36	4.90	110	0.51	0.41	72	25	1063
21	48	5.9			2288	6851					2.80	111			66	27	
22	48	6.1			2224	6660					4.40	112			69	28	
23	48	6.5			2168	6492					2.40	111			73	29	
24	48	6.0	5.9	0.20	2067	6189	1694	5073	55	0.38	2.90	109	0.42	0.42	67	30	1051
25	48	5.8	6.0	0.27	1988	5953	1635	4896	42	0.47	4.10	112	0.41	0.41	67	29	992
26	48	5.6	6.3	0.30	1869	5597	1534	4593	59	0.32	4.70	112	0.41	0.41	63	26	889
27	48	5.7	6.3	0.21	1937	5800	1595	4776	47	0.41	2.20	111	0.44	0.44	63	25	917
28	48	5.8	7.7	0.27	1877	5620	1556	4659	50	0.38	4.60	110	0.38	0.38	64	23	729
29	48	6.4			1880	5629					3.60	121			70	24	
30	48	6.8			1914	5731					1.30	122			74	24	
31	48																
TL												3464				767	16438
ME	48	6.5	7.6	0.23	2146	6425	1782	5335	52	0.4	4.2	115	0.43	0.37	71	26	865

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SLUDGE SHEET

Marshall

MI 002 3540

April 2000

SUPERINTENDENT
Steven D. Washburn

	RAW SLUDGE				LIME STABILIZED SLUDGE					
DAY	GALLONS	TOTAL SOLIDS %	VOLATILE SOLIDS %	pH SU	LIME POUNDS	pH 2 hrs @ 25 C SU	pH 16 hrs SU	Lbs. Lime per 1000 gallons sludge		
1	9000	3.3	74.0	6.6	609	12.3	12.4	68		
2	9550	3.2	78.0	5.9	609	12.3	12.3	64		
3	9400	3.2	77.0	6.0	609	12.3	12.2	65		
4	9450	3.2	77.0	6.0	580	12.3	12.3	61		
5	9500	3.2	77.0	5.9	725	12.2	12.3	76		
6	9500	3.1	76.0	5.9	580	12.3	12.4	61		
7	9500	3.2	75.0	6.2	696	12.3	12.3	73		
8	9500	3.1	76.0	6.2	580	12.4	12.4	61		
9	9500	3.0	77.0	6.1	493	12.3	12.3	52		
10	9400	3.2	77.0	6.0	580	12.3	12.3	62		
11	9350	3.1.	77.0	6.4	580	12.2	12.3	62		
12	9000	3.2	75.0	6.1	493	12.2	12.1	55		
13	9350	3.4	72.0	6.0	667	12.3	12.3	71		
14	9400	3.4	76.0	6.1	725	12.2	12.1	77		
15	9400	3.2	76.0	6.1	580	12.3	12.3	62		
16	9400	3.3	78.0	5.9	580	12.3	12.3	62		
17	8425	3.2	78.0	6.0	551	12.3	12.3	65		
18	7400	3.3	78.0	6.1	551	12.3	12.3	74		
19	6500	3.2	73.0	6.1	551	12.3	12.3	85		
20	6500	3.6	68.0	6.3	580	12.3	12.3	89		
21	6400	3.3	74.0	6.7	464	12.3	12.3	73		
22	6400	3.8	72.0	6.3	464	12.3	12.4	73		
23	8500	3.3	74.0	6.2	522	12.3	12.4	61		
24	6400	3.4	71.0	6.2	551	12.3	12.3	86		
25	7000	3.3	74.0	6.1	580	12.3	12.3	83		
26	8500	3.5	73.0	6.6	609	12.3	12.4	72		
27	6400	3.5	74.0	6.0	580	12.3	12.3	91		
28	8500	3.6	71.0	6.0	580	12.3	12.3	68		
29	8500	3.2	74.0	6.1	580	12.3	12.3	68		
30	8500	3.3	75.0	6.2	580	12.3	12.3	68		
31										
TOTAL	254125				17429					
MEAN	8471	3.3	74.9	6.1	581	12.3	12.3	70		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MISCELLANEOUS SHEET

April 2000

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	WATER	ELECTRICAL USAGE		FUEL GAS		CHEMICALS APPLIED								
			X 120		X 100	$FECL_3$					Cl_2		SO_2	
	CF	METER	KWH	METER	CF	GALS	SP. GR.	% SOLN	LBS	mg/L	LBS	mg/L	LBS	mg/L
1	500	24	2880	2	200	100.0	1.3860	30	28.8	3.0	11.0	1.1	13.0	1.3
2	490	22	2640	1	100	100	1.3860	30	28.8	3.1	11	1.2	13.0	1.4
3	620	24	2880	3	300	75	1.3860	30	21.6	1.8	12	1.0	14.0	1.2
4	530	24	2880	10	1000	75	1.3860	30	21.6	1.7	13	1.0	13.0	1.0
5	1170	23	2760	5	500	100	1.3860	30	28.8	2.3	15	1.2	14.0	1.1
6	580	22	2640	7	700	100	1.3860	30	28.8	2.3	14	1.1	13.0	1.0
7	490	24	2880	22	2200	50	1.3860	30	14.4	1.4	12	1.2	12.0	1.2
8	500	21	2520	24	2400	100	1.3860	30	28.8	2.9	12	1.2	15.0	1.5
9	590	24	2880	22	2200	75	1.3860	30	21.6	2.2	12	1.2	12.0	1.2
10	490	22	2640	28	2800	75	1.3860	30	21.6	1.9	11	0.9	20.0	1.7
11	800	24	2880	11	1100	100	1.3860	30	28.8	2.4	11	0.9	15.0	1.2
12	390	24	2880	11	1100	75	1.3860	30	21.6	1.8	11	0.9	13.0	1.1
13	470	23	2760	7	700	75	1.3860	30	21.6	1.8	9	0.7	14.0	1.2
14	680	23	2760	2	200	100	1.3860	30	28.8	2.7	12	1.1	14.0	1.3
15	460	20	2400	2	200	175	1.3860	30	50.5	5.0	8	0.8	15.0	1.5
16	470	23	2760	1	100	125	1.3860	30	36.0	3.7	10	1.0	14.0	1.4
17	560	23	2760	3	300	150	1.3860	30	43.3	4.2	13	1.3	15.0	1.5
18	570	23	2760	3	300	100	1.3860	30	28.8	3.8	13	1.7	12.0	1.6
19	440	22	2640	1	100	100	1.3860	30	28.8	2.9	16	1.6	5.0	0.5
20	550	21	2520	3	300	100	1.3860	30	28.8	2.5	10	0.9	30.0	2.6
21	440	24	2880	5	500	100	1.3860	30	28.8	2.4	24	2.0	13.0	1.1
22	410	23	2760	2	200	75	1.3860	30	21.6	1.8	14	1.2	16.0	1.4
23	560	23	2760	2	200	75	1.3860	30	21.6	1.9	14	1.3	13.0	1.2
24	450	22	2640	2	200	100	1.3860	30	28.8	2.4	14	1.2	13.0	1.1
25	460	23	2760	1	100	100	1.3860	30	28.8	2.3	16	1.3	15.0	1.2
26	500	22	2640	1	100	75	1.3860	30	21.6	1.7	20	1.6	13.0	1.0
27	590	23	2760	2	200	50	1.3860	30	14.4	1.1	14	1.1	11.0	0.9
28	750	25	3000	1	100	75	1.3860	30	21.6	1.8	26	2.1	13.0	1.1
29	520	20	2400	2	200	50	1.3860	30	14.4	1.3	22	2.0	10.0	0.9
30	460	23	2760	1	100	100	1.3860	30	28.8	2.7	8	0.8	20.0	1.9
31														
TL	16490	684	82080	187	18700	2750			793.0		408		423.0	
ME	550	23	2736	6	623	92	1.3860	30.0	26.4	2.4	13.6	1.2	14.1	1.3

MANPOWER	
POSITION TITLE	NUMBER FULL TIME
SUPERINTENDANT	1
ASST. SUPT.	1
OPERATOR	3
MECHANIC	
CHEMIST	
LAB TECH	
IPP COORDINATOR	1
OTHER	

GIVE THE HOURS PER DAY THAT PLANT PERSONNEL ARE NORMALLY AT THE PLANT.

WEEKDAYS	8	HRS
SATURDAYS	8	HRS
SUNDAYS	8	HRS
HOLIDAYS	8	HRS

Weather Code
1. Clear
2. Partly Cloudy
3. Cloudy
4. Rain
5. Snow
6. Warm
7. Cold
8. Windy
9. Melting Snow

PLANT INFLUENT SHEET

May 2000

Marshall

STATE OF MICHIGAN

MI 002 3540

SUPERINTENDENT

DEPT OF ENVIRONMENTAL QUALITY

Steven D. Washburn

D	WEATHER		FLOW		RAW SEWAGE QUALITY									
A	TYPE	PRECIP	TOTAL	MAX	TEMP	pH	BOD_5		SS		TOTAL-P		VSS	NH3-N
Y	CODE	Inches	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l
1	4	0.68	1.450		57	7.70	128	1548	138	1669			132	13.7
2	1		1.450		56	7.90	121	1463	138	1669			130	14.7
3	1		1.330		57	7.80	143	1586	162	1797			136	15.6
4	1		1.330		58	8.00	192	2130	186	2063			180	18.4
5	1		1.450		57	7.90	171	2068	222	2685			186	15.4
6	1		1.310		58	8.00	254	2775	264	2884			238	16.4
7	1		1.270		56	8.00	222	2351	196	2076			178	18.5
8	4	0.46	1.270		59	7.80	200	2118	176	1864			168	15.2
9	4	1.49	1.580		58	7.80	146	1924	160	2108	3.09	41	149	13.8
10	2		1.550		57	8.00	190	2456	114	1474			106	14.8
11	4	0.36	1.390		59	7.90	162	1878	122	1414			112	16.5
12	4	0.04	1.380		58	7.70	161	1853	166	1911			156	16.4
13	2		1.380		58	7.80	136	1565	138	1588			126	13.4
14	2		1.290		56	7.80	176	1894	152	1635			136	14.9
15	2		1.410		58	7.90	185	2175	160	1882	3.67	43	148	15.9
16	4	0.27	1.320		58	7.70	130	1431	133	1464			130	13.9
17	4	0.03	1.350		58	7.80	157	1768	154	1734			148	13.3
18	4	2.40	1.350		59	7.80	179	2015	156	1756			154	14.4
19	4	0.03	1.870		57	7.90	127	1981	106	1653			106	11.0
20	2		1.620		57	7.70	115	1554	126	1702			120	12.1
21	2		1.580		57	7.60	113	1489	150	1977			140	12.9
22	4	0.24	1.660		58	7.70	142	1966	142	1966	3.64	50	128	12.9
23	1		1.700		58	7.50	236	3346	166	2354			146	12.5
24	1		1.710		57	7.80	138	1968	126	1797			120	12.3
25	1		1.700		59	7.60	162	2297	140	1985			128	10.8
26	1		1.610		59	7.60	130	1746	134	1799			128	10.5
27	4	1.71	1.450		58	7.70	152	1838	160	1935			156	12.0
28	4	0.39	1.590		58	7.70	108	1432	116	1538			116	11.7
29	1		1.680		58	7.90	131	1835	118	1653			108	12.0
30	1		1.820		59	7.70	113	1715	132	2004	4.37	66	123	11.7
31	1		1.840		60	7.70	143	2194	160	2455			154	12.1
TL		8.10	46.690					60360		58491		201		
ME			1.506		57.806		157	1947	152	1887	3.69	50	141	13.9

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

PRIMARY EFFLUENT SHEET

Marshall
MI 002 3540

May 2000

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

	PRIMARY EFFLUENT QUALITY												
DAY	BOD-5			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS		AMMONIA NITROGEN	
	mg/l	LBS	Removal	mg/l	LBS	% Removal	mg/l	LBS	% Removal	mg/l	%	mg/l	LBS
1	83	1004	35.2	56	677	59.4				56.0	100.0	14.8	179
2	72	871	40.5	42	466	69.6				42.0	100.0	15.1	167
3	97	1076	32.2	38	422	76.5				36.0	94.7	16.8	186
4	101	1120	47.4	40	484	78.5				40.0	100.0	17.9	216
5	87	1052	49.1	58	634	73.9				48.0	82.8	16.5	180
6	115	1256	54.7	48	508	81.8				38.0	79.2	17.6	186
7	110	1165	50.5	52	551	73.5				44.0	84.6	17.8	189
8	80	847	60.0	50	659	71.6				48.0	96.0	16.0	211
9	75	988	48.6	50	646	68.8	1.8	23.5	41.1	46.0	92.0	14.4	186
10	97	1254	48.9	34	394	70.2				30.0	88.2	17.4	202
11	113	1310	30.2	44	506	63.9				40.0	90.9	19.6	226
12	80	921	50.3	44	506	73.5				40.0	90.9	17.1	197
13	81	932	40.4	36	387	73.9				34.0	94.4	14.7	158
14	87	936	50.6	36	423	76.3				34.0	94.4	15.6	183
15	89	1047	51.9	58	639	63.8	2.0	22.2	45.0	54.0	93.1	18.2	200
16	84	925	35.4	36	405	72.9				36.0	100.0	17.0	191
17	70	788	55.4	50	563	67.5				48.0	96.0	15.2	171
18	90	1013	49.7	62	967	60.3				58.0	93.5	14.6	228
19	75	1170	40.9	46	621	56.6				46.0	100.0	16.2	219
20	84	1135	27.0	38	501	69.8				38.0	100.0	14.0	184
21	68	896	39.8	34	471	77.3				30.0	88.2	12.9	179
22	76	1052	46.5	46	652	67.6	2.1	29.1	43.7	46.0	100.0	14.1	200
23	122	1730	48.3	50	713	69.9				50.0	100.0	13.4	191
24	101	1440	26.8	48	681	61.9				44.0	91.7	15.1	214
25	93	1319	42.6	48	645	65.7				44.0	91.7	14.1	189
26	79	1061	39.2	42	508	68.7				42.0	100.0	13.7	166
27	82	992	46.1	46	610	71.3				46.0	100.0	13.0	172
28	68	902	37.0	30	420	74.1				30.0	100.0	11.5	161
29	83	1163	36.6	30	455	74.6				24.0	80.0	12.8	194
30	76	1154	32.7	46	706	65.2	2.6	39.7	40.7	44.0	95.7	13.1	201
31	83	1274	42.0	46	17912	71.3				46.0	100.0	11.9	4634
TL		33791			34733			114.6					10362
ME	87	1090	43.1	45	1120	70.0	2.1	28.6	42.6	1302.0	94.1	15.2	334

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION

DEQ

Discharge Number	Permit Number
001 A	MI 002 3540

DAILY DISCHARGE MONITORING REPORT

Monitoring Period: May 2000

DAY	$CBOD_5$			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS	NH3-N		PH	D.O.	F.COLI #/100ml	CL RESID	CN Amenable
	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	mg/l	LBS	SU	mg/l	MF	mg/l	mg/L
1	3.0	36	97.7	4.0	48	97.1				4.0	1.80	21.77	7.40	6.7	102	0.000	
2	3.7	45	96.9	1.0	12	99.3				1.0	0.50	6.05	7.40	7.4	194	0.000	<0.005
3	3.3	37	97.7	2.0	22	98.8				2.0	0.60	6.66	7.50	7.4	81	0.000	
4	3.5	39	98.2	2.0	22	98.9				2.0	3.24	35.94	7.40	7.0	10	0.000	
5	3.1	37	98.2	5.0	60	97.7				4.0	3.48	42.08	7.40	6.6	170	0.000	
6	3.5	38	98.6	4.0	44	98.5				4.0	4.21	46.00	7.40	7.0	252	0.000	
7	3.8	40	98.3	7.0	74	96.4				6.0	6.87	72.77	7.40	6.3	24	0.000	
8	3.6	38	98.2	2.0	21	98.9				2.0	4.25	45.02	7.40	6.7	10	0.000	<0.005
9	3.6	47	97.5	2.0	26	98.8	0.23	3.0	92.6	2.0	2.04	26.88	7.40	6.6	26	0.000	
10	3.0	39	98.4	2.0	26	98.2				2.0	3.00	38.78	7.50	7.5	21	0.000	
11	3.7	43	97.7	3.0	35	97.5				3.0	5.58	64.69	7.40	6.9	11	0.000	
12	3.0	35	98.1	2.0	23	98.8				2.0	4.36	50.18	7.40	6.7	5	0.000	
13	2.2	25	98.4	1.0	12	99.3				1.0	0.48	5.52	7.50	7.1	6	0.000	<0.005
14	2.3	25	98.7	2.0	22	98.7				2.0	0.13	1.40	7.50	7.7	32	0.000	
15	5.9	69	96.8	6.0	71	96.3	0.59	6.9	83.9	6.0	9.38	110.30	7.50	6.7	10	0.000	
16	4.2	46	96.8	2.0	22	98.5				2.0	3.96	43.59	7.40	6.4	11	0.000	
17	3.4	38	97.8	7.0	79	95.5				7.0	3.23	36.37	7.40	6.6	12	0.000	
18	5.4	61	97.0	2.0	23	98.7				2.0	4.34	48.86	7.40	6.5	6	0.000	
19	3.4	53	97.3	3.0	47	97.2				3.0	5.45	85.00	7.40	7.0	14	0.000	
20	4.1	55	96.4	1.0	14	99.2				1.0	3.50	47.29	7.40	6.7	23	0.000	
21	4.0	52	96.5	5.0	66	96.7				5.0	2.35	30.97	7.50	6.6	40	0.000	<0.005
22	4.1	57	97.1	3.0	42	97.9	0.40	5.5	89.0	3.0	3.71	51.36	7.50	6.4	36	0.000	
23	8.5	121	96.4	2.0	28	98.8				2.0	5.78	81.95	7.40	6.7	41	0.000	
24	5.0	71	96.4	3.0	43	97.6				3.0	4.15	59.18	7.50	6.4	10	0.000	
25	3.9	55	97.6	4.0	57	97.1				4.0	1.94	27.51	7.50	7.8	9	0.000	
26	4.1	55	96.8	3.0	40	97.8				3.0	0.60	8.06	7.60	7.8	120	0.003	
27	3.6	44	97.6	2.0	24	98.8				2.0	0.32	3.87	7.50	7.9	120	0.000	
28	2.7	36	97.5	1.0	13	99.1				1.0	0.20	2.65	7.50	8.0	660	0.000	
29	2.8	39	97.9	2.0	28	98.3				2.0	0.41	5.74	7.50	8.2	56	0.000	
30	5.6	85	95.0	3.0	46	97.7	0.56	8.5	87.2	3.0	3.00	45.54	7.50	6.5	120	0.000	
31	4.9	75	96.6	4.0	61	97.5				4.0	0.70	10.74	7.40	6.9	73	0.000	
TL		1537			1150			24.0									
ME	3.9	50	97.4	3.0	37	98.0	0.45	6.0	88.2	90.0	3.02	37.51		7.0	32	0.000	<0.005
WA	4.9	67		3.7	46										88		<0.005
MX											9.38	110.30	7.60			0.003	<0.005
MN													7.40	6.3			

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 Years)

PRINTED NAME AND TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTORIZED AGENT	DATE
Steven D. Washburn, Superintendent		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

ACTIVATED SLUDGE SHEET

May 2000

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	AERATION SYSTEM				MIXED LIQUOR								SECONDARY SLUDGE				
	AERTN VOL	DETEN TIME	CRT	F:M RATIO	MLSS		MLVSS		SETTL.	SDI	D.O.	AIR	SS	VSS	RAS FLOW	WAS	
	KCF	HRS	DAYS		mg/L	Lbs.	mg/L	Lbs.	%	%	mg/L	CF	%	%	%	Gallons	Lbs.
SF	3											4				3	
1	48	5.9	6.7	0.21	1903	5698	1591	4764	56	0.34	5.40	121	0.39	0.32	65	26	846
2	48	5.9	6.2	0.18	1920	5749	1604	4803	55	0.35	5.30	121	0.43	0.36	66	26	932
3	48	6.5	6.2	0.23	1878	5623	1568	4695	58	0.32	5.70	120	0.40	0.34	75	27	901
4	48	6.5	5.8	0.25	1842	5516	1524	4563	55	0.33	5.00	117	0.37	0.31	75	31	957
5	48	5.9	6.0	0.23	1860	5570	1548	4635	38	0.49	1.30	115	0.36	0.30	68	31	931
6	48	6.6			1902	5695					3.00	114			74	30	
7	48	6.8			1777	5321					0.70	114			78	28	
8	48	6.8	7.2	0.17	1932	5785	1636	4899	58	0.33	2.90	113	0.37	0.31	72	26	802
9	48	5.5	4.9	0.21	1837	5501	1536	4599	40	0.46	3.20	113	0.43	0.36	62	31	1112
10	48	5.6	6.9	0.28	1770	5300	1471	4405	50	0.35	4.10	113	0.40	0.33	64	23	767
11	48	6.2	6.9	0.28	1900	5689	1578	4725	60	0.32	4.80	120	0.41	0.34	70	24	821
12	48	6.2	6.0	0.19	1943	5818	1636	4899	60	0.32	4.00	114	0.39	0.32	70	30	976
13	48	6.2			1933	5788					3.80	114			69	30	
14	48	6.7			1897	5680					4.80	117			73	32	
15	48	6.1	10.7	0.23	1850	5540	1545	4626	49	0.38	5.40	61	0.31	0.26	76	20	517
16	48	6.5	3.7	0.17	2179	6525	1828	5474	67	0.33	1.30	101	0.49	0.41	95	43	1757
17	48	6.4	18.8	0.14	3942	11804	1908	5713	70	0.56	2.90	104	0.47	0.39	97	16	627
18	48	6.4	5.2	0.18	2265	6782	1908	5713	63	0.36	0.30	104	0.49	0.41	94	32	1308
19	48	4.6	4.0	0.23	2044	6121	1701	5093	65	0.31	1.60	104	0.53	0.45	67	35	1547
20	48	5.3			2216	6636					1.30	102			67	33	
21	48	5.5			2190	6558					1.00	104			71	37	
22	48	5.2	4.3	0.21	1956	5857	1652	4947	51	0.38	4.50	104	0.42	0.36	72	39	1366
23	48	5.1	3.9	0.37	1837	5501	1545	4626	39	0.47	1.50	102	0.45	0.37	70	38	1426
24	48	5.0	4.0	0.28	2011	6022	1730	5180	37	0.54	2.10	98	0.50	0.43	71	36	1501
25	48	5.1	4.5	0.37	1402	4198	1184	3545	23	0.61	6.30	111	0.32	0.27	69	35	934
26	48	5.4	5.0	0.28	1480	4432	1247	3734	22	0.67	7.80	106	0.34	0.28	73	31	879
27	48	5.9			1540	4611					6.00	96			68	27	
28	48	5.4			1500	4492					5.50	97			61	21	
29	48	5.1			1622	4857					6.70	97			58	17	
30	48	4.7	7.9	0.28	1679	5028	1377	4123	29	0.58	6.10	93	0.40	0.33	54	19	634
31	48	4.7	9.0	0.25	2035	6094	1696	5078	35	0.58	6.50	99	0.45	0.37	54	18	676
TL												3309				892	22216
ME	48	5.8	6.5	0.24	1937	5800	1592	4766	49	0.4	3.9	107	0.41	0.35	71	29	1010

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SLUDGE SHEET

Marshall

MI 002 3540

May 2000

SUPERINTENDENT
Steven D. Washburn

	RAW SLUDGE				LIME STABILIZED SLUDGE					
DAY	GALLONS	TOTAL SOLIDS %	VOLATILE SOLIDS %	pH SU	LIME POUNDS	pH 2 hrs @ 25 C SU	pH 16 hrs SU	Lbs. Lime per 1000 gallons sludge		
1	7700	3.6	76.0	5.9	964	12.4	12.4	125		
2	7450	3.8	69.0	5.8	745	12.3	12.4	100		
3	7500	3.3	73.0	6.1	876	12.4	12.3	117		
4	7820	3.3	76.0	6.2	657	12.2	12.2	84		
5	7500	3.3	75.0	6.1	745	12.0	11.8	99		
6	7800	3.8	74.0	6.1	745	12.3	12.3	96		
7	7600	3.4	75.0	6.1	745	12.3	12.3	98		
8	7600	3.4	74.0	6.0	788	12.3	12.3	104		
9	7600	3.4	75.0	6.1	876	12.2	12.3	115		
10	7550	3.7	75.0	6.0	745	12.3	12.3	99		
11	7500	3.4	76.0	6.0	832	12.3	12.4	111		
12	7450	3.6	75.0	6.0	788	12.3	12.3	106		
13	7400	3.6	75.0	6.6	788	12.3	12.3	106		
14	7500	3.3	75.0	6.0	832	12.3	12.4	111		
15	9100	3.5	74.0	6.0	1095	12.3	12.3	120		
16	9550	3.2	75.0	6.0	876	12.2	12.3	92		
17	9450	3.3	76.0	6.0	964	12.3	12.4	102		
18	9400	3.8	76.0	6.1	745	12.2	12.3	79		
19	7550	3.1	76.0	6.0	788	12.3	12.2	104		
20	8500	3.4	76.0	6.2	876	12.3	12.2	103		
21	8500	3.4	73.0	6.0	964	12.3	12.3	113		
22	9550	3.4	75.0	6.1	1095	12.3	12.2	115		
23	9500	3.3	75.0	6.1	964	12.2	12.3	101		
24	9600	4.8	76.0	5.9	832	12.2	12.3	87		
25	9400	3.5	75.0	5.9	1095	12.3	12.2	116		
26	7500	3.5	75.0	6.1	788	12.2	12.1	105		
27	8500	3.3	76.0	5.9	876	12.3	12.1	103		
28	8000	3.4	75.0	6.0	876	12.3	12.4	110		
29	9000	3.4	76.0	6.0	832	12.3	12.2	92		
30	8400	3.3	74.0	6.0	964	12.2	12.2	115		
31	8500	3.9	58.0	6.2	920	12.3	12.4	108		
TOTAL	255970				26676					
MEAN	8257	3.5	74.3	6.0	861	12.3	12.3	104		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MISCELLANEOUS SHEET

May 2000

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	WATER	ELECTRICAL USAGE		FUEL GAS		CHEMICALS APPLIED									
			X 120		X 100	$FECL_3$					Cl_2		SO_2		
	CF	METER	KWH	METER	CF	GALS	SP. GR.	% SOLN	LBS	mg/L	LBS	mg/L	LBS	mg/L
1	460	23	2760			75.0	1.3860	30	21.6	1.8	15.0	1.2	12.0	1.0
2	540	23	2760			75	1.3860	30	21.6	1.8	16	1.3	13.0	1.1
3	430	23	2760			50	1.3860	30	14.4	1.3	17	1.5	11.0	1.0
4	1670	21	2520			100	1.3860	30	28.8	2.6	13	1.2	17.0	1.5
5	1690	20	2400			100	1.3860	30	28.8	2.4	17	1.4	10.0	0.8
6	1910	22	2640			100	1.3860	30	28.8	2.6	13	1.2	12.0	1.1
7	1910	22	2640			100	1.3860	30	28.8	2.7	17	1.6	8.0	0.8
8	1760	21	2520			50	1.3860	30	14.4	1.4	17	1.6	7.0	0.7
9	1770	23	2760			100	1.3860	30	28.8	2.2	16	1.2	8.0	0.6
10	660	22	2640			100	1.3860	30	28.8	2.2	18	1.4	5.0	0.4
11	430	22	2640			75	1.3860	30	21.6	1.9	14	1.2	3.0	0.3
12	450	20	2400			75	1.3860	30	21.6	1.9	16	1.4	11.0	1.0
13	370	24	2880			75	1.3860	30	21.6	1.9	15	1.3	13.0	1.1
14	390	23	2760			100	1.3860	30	28.8	2.7	18	1.7	14.0	1.3
15	480	22	2640			75	1.3860	30	21.6	1.8	19	1.6	11.0	0.9
16	440	23	2760			75	1.3860	30	21.6	2.0	20	1.8	14.0	1.3
17	450	22	2640			75	1.3860	30	21.6	1.9	19	1.7	12.0	1.1
18	490	23	2760			75	1.3860	30	21.6	1.9	22	2.0	8.0	0.7
19	440	21	2520			75	1.3860	30	21.6	1.4	11	0.7	10.0	0.6
20	560	23	2760			100	1.3860	30	28.8	2.1	19	1.4	10.0	0.7
21	520	22	2640			75	1.3860	30	21.6	1.6	17	1.3	9.0	0.7
22	560	24	2880			75	1.3860	30	21.6	1.6	15	1.1	7.0	0.5
23	550	21	2520			100	1.3860	30	28.8	2.0	18	1.3	22.0	1.6
24	450	22	2640			100	1.3860	30	28.8	2.0	9	0.6	8.0	0.6
25	850	22	2640			100	1.3860	30	28.8	2.0	11	0.8	10.0	0.7
26	520	21	2520			100	1.3860	30	28.8	2.1	16	1.2	8.0	0.6
27	430	21	2520			50	1.3860	30	14.4	1.2	24	2.0	10.0	0.8
28	450	21	2520			100	1.3860	30	28.8	2.2	28	2.1	9.0	0.7
29	530	21	2520			100	1.3860	30	28.8	2.1	18	1.3	10.0	0.7
30	540	21	2520			100	1.3860	30	28.8	1.9	15	1.0	10.0	0.7
31	540	21	2520			100	1.3860	30	28.8	1.9	18	1.2	10.0	0.7
TL	23240	680	81600			2650			764.2		521		322.0	
ME	750	22	2632			85	1.3860	30.0	24.7	2.0	16.8	1.4	10.4	0.8

MANPOWER		
POSITION TITLE	NUMBER FULL TIME	
SUPERINTENDANT	1	
ASST. SUPT.	1	
OPERATOR	3	
MECHANIC		
CHEMIST		
LAB TECH		
IPP COORDINATOR	1	
OTHER		

GIVE THE HOURS PER DAY THAT PLANT PERSONNEL ARE NORMALLY AT THE PLANT.

WEEKDAYS	8	HRS
SATURDAYS	8	HRS
SUNDAYS	8	HRS
HOLIDAYS	8	HRS

Weather Code
1. Clear
2. Partly Cloudy
3. Cloudy
4. Rain
5. Snow
6. Warm
7. Cold
8. Windy
9. Melting Snow

PLANT INFLUENT SHEET

June 2000

Marshall

STATE OF MICHIGAN

MI 002 3540

SUPERINTENDENT

DEPT OF ENVIRONMENTAL QUALITY

Steven D. Washburn

D	WEATHER		FLOW		RAW SEWAGE QUALITY									
A	TYPE	PRECIP	TOTAL	MAX	TEMP	pH	BOD_5		SS		TOTAL-P		VSS	NH3-N
Y	CODE	Inches	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l
1	1		1.870		61	7.70	128	1996	128	1996			126	12.2
2	1		1.900		61	7.70	124	1965	110	1743			102	13.6
3	2		1.550		60	7.90	177	2288	94	1215			90	13.1
4	2		1.480		57	7.80	134	1654	114	1407			106	13.7
5	4	0.05	1.740		60	7.60	131	1901	118	1712			110	12.1
6	1		1.820		60	7.50	112	1700	107	1624			102	10.9
7	4	0.04	1.720		61	7.60	168	2410	134	1922	3.18	46	126	11.1
8	1		1.540		61	7.80	170	2183	166	2132			156	15.0
9	1		1.530		62	7.80	154	1965	144	1837			128	12.0
10	1		1.460		62	7.60	137	1668	204	2484			182	13.1
11	4	0.67	1.400		59	7.60	163	1903	166	1938			254	12.5
12	4	1.80	1.520		61	7.70	164	2079	174	2206			160	14.2
13	4	0.82	1.730		62	7.70	136	1962	126	1818			121	12.3
14	4	0.47	1.790		62	7.60	108	1612	112	1672	2.29	34	106	10.1
15	4	0.02	1.840		61	7.80	109	1673	110	1688			100	10.9
16	1		1.810		62	7.70	136	2053	134	2023			130	11.5
17	4	0.10	1.780		61	7.70	104	1544	148	2197			142	10.8
18	4	0.04	1.630		60	7.70	146	1985	198	2692			192	11.9
19	1		1.660		60	7.70	119	1647	132	1827			110	10.9
20	4	0.55	1.680		60	7.70	141	1976	133	1863			127	11.7
21	1		1.610		61	7.80	134	1799	144	1934			132	13.1
22	1		1.550		62	7.80	118	1525	164	2120	2.67	35	156	11.9
23	4	0.03	1.530		61	7.70	114	1455	92	1174			82	14.0
24	1	1.57	1.500		62	7.70	122	1526	110	1376			94	10.7
25	2		1.810		60	7.70	102	1540	100	1510	2.30	35	88	10.1
26	1		1.810		62	7.60	116	1751	164	2476			156	11.4
27	1		1.720		63	7.50	107	1535	108	1549			100	11.8
28	4	0.22	1.570		62	7.50	114	1493	124	1624			110	12.2
29	1		1.620		64	7.80	180	2432	140	1892			126	13.2
30	1		1.590		63	7.80	142	1883	142	1883			128	14.7
31														
TL		6.38	49.760					55104		55534		149		
ME			1.659		61		134	1837	135	1851	2.61	37	128	12.2

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

PRIMARY EFFLUENT SHEET

June 2000

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

	PRIMARY EFFLUENT QUALITY												
DAY	BOD-5			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS		AMMONIA NITROGEN	
	mg/l	LBS	Removal	mg/l	LBS	% Removal	mg/l	LBS	% Removal	mg/l	%	mg/l	LBS
1	78	1216	39.1	36	561	71.9				36.0	100.0	12.4	193
2	87	1379	29.8	36	465	67.3				34.0	94.4	14.7	190
3	104	1344	41.2	48	592	48.9				46.0	95.8	16.1	199
4	83	1024	38.1	50	726	56.1				46.0	92.0	15.4	223
5	88	1277	32.8	44	668	62.7				42.0	95.5	13.5	205
6	75	1138	33.0	34	488	68.2				32.0	94.1	11.8	169
7	121	1736	28.0	40	514	70.1	2.4	30.6	25.2	38.0	95.0	12.1	155
8	108	1387	36.5	48	612	71.1				44.0	91.7	15.8	202
9	92	1174	40.3	42	511	70.8				32.0	76.2	14.3	174
10	97	1181	29.2	36	420	82.4				26.0	72.2	12.5	146
11	95	1109	41.7	56	710	66.3				48.0	85.7	12.8	162
12	102	1293	37.8	44	635	74.7				44.0	100.0	14.4	208
13	91	1313	33.1	22	328	82.5				22.0	100.0	15.3	228
14	71	1060	34.3	32	491	71.4	1.2	18.9	46.3	28.0	87.5	12.8	196
15	49	752	55.0	28	423	74.5				24.0	85.7	13.7	207
16	74	1117	45.6	30	445	77.6				28.0	93.3	12.1	180
17	67	995	35.6	28	381	81.1				24.0	85.7	11.3	154
18	62	843	57.5	34	471	82.8				30.0	88.2	11.2	155
19	54	748	54.6	28	392	78.8				20.0	71.4	12.6	177
20	69	967	51.1	18	242	86.5				18.0	100.0	14.9	200
21	85	1141	36.6	32	414	77.8	1.3	17.3		28.0	87.5	13.0	168
22	63	814	46.6	30	383	81.7				28.0	93.3	12.9	165
23	54	689	52.6	20	250	78.3				10.0	50.0	12.9	161
24	77	963	36.9	34	513	69.1				26.0	76.5	11.6	175
25	59	891	42.2	40	604	60.0	1.0	15.1	56.5	36.0	90.0	11.5	174
26	60	906	48.3	28	402	82.9				28.0	100.0	11.7	168
27	59	846	44.9	18	236	83.3				16.0	88.9	12.4	162
28	53	694	53.5	40	540	67.7				36.0	90.0	15.2	205
29	93	1257	48.3	32	424	77.1				26.0	81.3	14.9	198
30	74	981	47.9	24	318	83.1				24.0	100.0	13.3	176
31													
TL		32236			14160			81.9					5475
ME	78	1075	41.7	34	472	73.6	1.5	20.5	32.0	920.0	88.7	13.3	183

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION

DEQ

Discharge Number	Permit Number
001 A	MI 002 3540

DAILY DISCHARGE MONITORING REPORT

Monitoring Period: June 2000

DAY	$CBOD_5$			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS	NH3-N		PH	D.O.	F.COLI #/100ml	CL RESID	CN Amenable
	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	mg/l	LBS	SU	mg/l	MF	mg/l	mg/L
1	4.8	75	96.3	1.0	16	99.2				1.0	0.52	8.11	7.50	6.8	240	0.000	
2	4.1	65	96.7	1.0	16	99.1				1.0	0.59	9.35	7.50	7.0	80	0.000	
3	5.4	70	97.0	4.0	52	95.7				4.0	0.65	8.40	7.50	7.5	120	0.000	
4	4.8	59	96.4	6.0	74	94.7				6.0	0.85	10.49	7.50	7.4	349	0.000	<0.005
5	6.0	87	95.4	2.0	29	98.3				2.0	0.83	12.04	7.50	6.8	257	0.000	
6	4.2	63	96.3	5.0	76	95.3				5.0	0.21	3.19	7.50	6.9	24	0.000	
7	3.1	45	98.1	3.0	43	97.8	0.23	3.3	92.8	3.0	0.14	2.01	7.40	7.9	132	0.000	
8	4.1	53	97.6	9.0	116	94.6				9.0	0.35	4.50	7.40	7.9	13	0.000	
9	3.5	44	97.8	3.0	38	97.9				3.0	0.20	2.55	7.30	7.9	54	0.000	
10	3.5	43	97.4	2.0	24	99.0				2.0	0.10	1.22	7.40	7.6	30	0.000	
11	3.5	41	97.8	5.0	58	97.0				5.0	0.14	1.63	7.50	7.5	20	0.000	
12	4.2	54	97.4	5.0	63	97.1				5.0	2.06	26.11	7.30	6.8	21	0.000	
13	4.3	61	96.9	2.0	29	98.4				2.0	0.52	7.50	7.30	7.0	54	0.000	<0.005
14	3.9	57	96.4	5.0	75	95.5	0.35	5.2	84.7	4.0	0.13	1.94	7.30	7.5	120	0.000	
15	2.6	39	97.7	4.0	61	96.4				4.0	0.15	2.30	7.40	7.9	120	0.000	
16	3.2	48	97.7	2.0	30	98.5				2.0	0.09	1.36	7.40	7.5	300	0.000	
17	2.5	37	97.6	1.0	15	99.3				1.0	0.12	1.78	7.40	8.1	214	0.000	
18	2.2	30	98.5	8.0	109	96.0				7.0	0.55	7.48	7.50	8.1	36	0.000	<0.005
19	1.7	23	98.6	2.0	28	98.5				1.0	0.09	1.25	7.40	7.7	73	0.000	
20	4.0	55	97.2	1.0	14	99.2				1.0	0.19	2.66	7.40	7.8	34	0.000	
21	3.5	46	97.4	2.0	27	98.6				2.0	0.10	1.34	7.40	7.6	120	0.000	
22	3.1	40	97.4	3.0	39	98.2	0.21	2.7	92.1	3.0	0.08	1.03	7.40	7.9	133	0.000	
23	2.3	29	98.0	1.0	13	98.9				1.0	0.09	1.15	7.50	8.6	49	0.000	
24	2.2	27	98.2	1.0	13	99.1				1.0	0.08	1.00	7.50	8.0	23	0.000	
25	1.3	19	98.7	2.0	30	98.0	0.12	1.8	94.8	2.0	0.07	1.06	7.40	7.8	120	0.000	
26	2.0	30	98.3	1.0	15	99.4				1.0	0.08	1.21	7.40	7.8	45	0.000	<0.005
27	1.9	27	98.2	1.0	14	99.1				1.0	0.07	1.00	7.40	8.1	14	0.000	
28	1.5	19	98.7	1.0	13	99.2				1.0	0.07	0.92	7.30	8.1	14	0.000	
29	2.3	31	98.7	2.0	27	98.6				2.0	0.16	2.16	7.40	7.7	9	0.000	
30	1.7	22	98.8	1.0	13	99.3				1.0	0.10	1.33	7.40	8.0	14	0.000	
31																	
TL		1339			1169			13.1									
ME	3.2	45	97.6	2.9	39	97.9	0.23	3.3	91.1	83.0	0.31	4.27		7.6	58	0.000	<0.005
WA	4.6	66		4.6	61										131		
MX											2.06	26.11	7.50			0	<0.005
MN													7.30	6.8			

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 Years)

PRINTED NAME AND TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTORIZED AGENT	DATE
Steven D. Washburn, Superintendent		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

ACTIVATED SLUDGE SHEET

June 2000

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

D A Y	AERATION SYSTEM				MIXED LIQUOR								SECONDARY SLUDGE				
	AERTN VOL	DETEN TIME	CRT	F:M RATIO	MLSS		MLVSS		SETTL.	SDI	D.O.	AIR	SS	VSS	RAS FLOW	WAS	
	KCF	HRS	DAYS		mg/L	Lbs.	mg/L	Lbs.	%	%	mg/L	CF	%	%	%	Gallons	Lbs.
SF	3											4				3	
1	48	4.6	5.3	0.24	1995	5974	1664	4983	30	0.67	6.20	191	0.52	0.44	52	26	1128
2	48	4.5	5.5	0.26	2314	6929	1764	5282	34	0.68	6.10	192	0.52	0.43	55	29	1258
3	48	5.6			2125	6363					6.65	197			67	35	
4	48	5.8			2145	6423					6.21	197			70	39	
5	48	5.0	3.8	0.28	1800	5390	1523	4560	28	0.64	5.50	196	0.40	0.34	59	42	1401
6	48	4.7	5.3	0.25	1794	5372	1511	4525	28	0.64	6.22	174	0.43	0.36	59	28	1004
7	48	5.0	4.3	0.50	1396	4180	1168	3497	20	0.70	7.60	97	0.55	0.29	60	21	963
8	48	5.6		0.34	1658	4965	1376	4120	23	0.72	6.09	83	0.36	0.30	69	0	
9	48	5.6	6.6	0.28	1636	4899	1384	4144	23	0.71	5.18	54	0.37	0.31	81	24	741
10	48	5.9			1789	5357					6.12	53			84	24	
11	48	6.2			1766	5288					5.25	53			87	28	
12	48	5.7	5.5	0.31	1686	5049	1388	4156	22	0.77	5.53	52	0.39	0.32	80	28	911
13	48	5.0	6.0	0.32	1652	4947	1355	4057	29	0.57	0.43	49	0.43	0.35	70	23	825
14	48	4.8	8.0	0.21	2048	6133	1704	5102	27	0.76	6.20	50	0.46	0.38	63	20	767
15	48	4.7	5.9	0.18	1704	5102	1388	4156	24	0.71	6.74	49	0.43	0.35	53	24	861
16	48	4.8	7.0	0.28	1615	4836	1316	3941	23	0.70	7.09	49	0.36	0.30	50	23	691
17	48	4.8			1562	4677					6.51	52			49	22	
18	48	5.3			1624	4863					6.79	55			54	20	
19	48	5.2	7.9	0.18	1706	5108	1396	4180	34	0.50	6.80	46	0.39	0.32	52	20	651
20	48	5.1	6.4	0.23	1713	5129	1393	4171	32	0.54	5.95	89	0.42	0.34	54	23	806
21	48	5.4	6.9	0.26	1806	5408	1466	4390	41	0.44	6.52	108	0.36	0.30	62	26	781
22	48	5.6	5.7	0.17	1907	5710	1558	4665	45	0.42	6.65	59	0.43	0.35	61	28	1004
23	48	5.6	5.9	0.16	1825	5465	1476	4420	44	0.41	7.08	57	0.38	0.30	63	29	919
24	48	5.7			1803	5399					5.01	102			65	29	
25	48	4.8			1730	5180					5.27	122			53	25	
26	48	4.8	6.8	0.23	1638	4905	1338	4006	37	0.44	6.43	128	0.36	0.29	54	24	721
27	48	5.0	6.5	0.21	1689	5058	1368	4096	36	0.47	6.33	47	0.39	0.32	56	24	781
28	48	5.5	6.8	0.18	1627	4872	1298	3887	33	0.49	6.52	47	0.36	0.29	64	24	721
29	48	5.3	6.2	0.32	1648	4935	1330	3983	31	0.53	5.59	48	0.40	0.32	61	24	801
30	48	5.4	6.8	0.24	1691	5064	1393	4171	29	0.58	6.14	58	0.37	0.30	61	24	741
31	48																
TL												2754				756	18471
ME	48	5.2	6.2	0.26	1770	5299	1434	4295	31	0.6	6.0	92	0.41	0.33	62	25	880

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SLUDGE SHEET

Marshall

MI 002 3540

June 2000

SUPERINTENDENT
Steven D. Washburn

	RAW SLUDGE				LIME STABILIZED SLUDGE					
DAY	GALLONS	TOTAL SOLIDS %	VOLATILE SOLIDS %	pH SU	LIME POUNDS	pH 2 hrs @ 25 C SU	pH 16 hrs SU	Lbs. Lime per 1000 gallons sludge		
1	8450	4.4	59.0	6.0	928	12.3	12.3	110		
2	8500	4.8	64.0	5.9	928	12.2	12.3	109		
3	6500	4.2	64.0	5.7	707	12.3	12.4	109		
4	8500	4.1	68.0	6.0	840	12.3	12.3	99		
5	9500	3.9	40.0	6.0	928	12.3	12.3	98		
6	9500	3.8	69.0	5.9	884	12.2	12.3	93		
7	9350	3.4	71.0	5.8	884	12.2	12.3	95		
8	8500	3.5	73.0	5.7	884	12.3	12.4	104		
9	7500	3.8	73.0	6.1	884	12.3	12.1	118		
10	6500	3.8	75.0	5.7	796	12.1	12.2	122		
11	8500	3.4	75.0	5.8	884	12.2	12.2	104		
12	8500	3.2	78.0	5.8	972	12.2	12.2	114		
13	8500	3.2	77.0	5.8	1061	12.2	12.3	125		
14	8500	3.2	75.0	5.8	1061	12.1	12.1	125		
15	8300	3.4	74.0	5.9	884	12.2	12.0	107		
16	6500	3.2	73.0	5.9	751	12.3	12.2	116		
17	7500	3.4	70.0	6.7	796	12.3	12.3	106		
18	8500	3.0	72.0	5.9	884	12.2	12.2	104		
19	7500	3.1	72.0	5.9	972	12.3	12.3	130		
20	8500	3.2	74.0	5.9	928	12.2	12.2	109		
21	7500	3.3	73.0	6.0	884	12.2	12.1	118		
22	8000	3.3	72.0	6.0	660	12.2	12.1	83		
23	7000	3.5	74.0	6.0	928	12.2	12.3	133		
24	7500	3.3	70.0	6.8	751	12.2	12.2	100		
25	7500	3.3	74.0	6.1	884	12.2	12.2	118		
26	8500	3.4	72.0	6.1	972	12.2	12.2	114		
27	8500	3.5	73.0	6.1	840	12.2	12.1	99		
28	8000	3.3	75.0	5.9	884	12.2	12.4	111		
29	8500	3.3	75.0	6.0	972	12.2	12.4	114		
30	8500	3.5	74.0	6.1	796	12.2	12.4	94		
31										
TOTAL	243100				26427					
MEAN	8103	3.5	70.9	6.0	881	12.2	12.2	109		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MISCELLANEOUS SHEET

June 2000

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	WATER	ELECTRICAL USAGE		FUEL GAS		CHEMICALS APPLIED									
			X 120		X 100	$FECL_3$					Cl_2		SO_2		
	CF	METER	KWH	METER	CF	GALS	SP. GR.	% SOLN	LBS	mg/L	LBS	mg/L	LBS	mg/L	
1	450	22	2640			75.0	1.4090	30	21.3	1.4	18.0	1.2	11.0	0.7	
2	490	23	2760			75	1.4090	30	21.3	1.3	20	1.3	11.0	0.7	
3	540	23	2760			100	1.4090	30	28.4	2.2	17	1.3	9.0	0.7	
4	390	23	2760			100	1.4090	30	28.4	2.3	20	1.6	4.0	0.3	
5	440	24	2880			100	1.4090	30	28.4	2.0	22	1.5	6.0	0.4	
6	840	23	2760			75	1.4090	30	21.3	1.4	18	1.2	3.0	0.2	
7	590	20	2400			75	1.4090	30	21.3	1.5	21	1.5	16.0	1.1	
8	400	19	2280			50	1.4090	30	14.2	1.1	23	1.8	19.0	1.5	
9	700	19	2280			50	1.4090	30	14.2	1.1	22	1.7	11.0	0.9	
10	440	19	2280			75	1.4090	30	21.3	1.7	24	2.0	10.0	0.8	
11	450	20	2400			25	1.4090	30	7.1	0.6	22	1.9	10.0	0.9	
12	580	17	2040			0	1.4090	30			15	1.2	8.0	0.6	
13	420	19	2280			100	1.4090	30	28.4	2.0	19	1.3	8.0	0.6	
14	430	19	2280			100	1.4090	30	28.4	1.9	16	1.1	9.0	0.6	
15	530	19	2280			100	1.4090	30	28.4	1.8	20	1.3	9.0	0.6	
16	410	16	1920			100	1.4090	30	28.4	1.9	15	1.0	10.0	0.7	
17	370	20	2400			100	1.4090	30	28.4	1.9	23	1.5	10.0	0.7	
18	550	18	2160			100	1.4090	30	28.4	2.1	20	1.5	20.0	1.5	
19	450	17	2040			100	1.4090	30	28.4	2.0	17	1.2	28.0	2.0	
20	380	18	2160			100	1.4090	30	28.4	2.0	29	2.1	10.0	0.7	
21	560	18	2160			100	1.4090	30	28.4	2.1	19	1.4	12.0	0.9	
22	610	19	2280			100	1.4090	30	28.4	2.2	20	1.5	12.0	0.9	
23	320	17	2040			100	1.4090	30	28.4	2.2	18	1.4	11.0	0.9	
24	520	18	2160			100	1.4090	30	28.4	2.3	21	1.7	13.0	1.0	
25	410	17	2040			100	1.4090	30	28.4	1.9	22	1.5	9.0	0.6	
26	460	18	2160			100	1.4090	30	28.4	1.9	21	1.4	8.0	0.5	
27	500	18	2160			100	1.4090	30	28.4	2.0	7	0.5	11.0	0.8	
28	500	18	2160			100	1.4090	30	28.4	2.2	29	2.2	12.0	0.9	
29	510	22	2640			100	1.4090	30	28.4	2.1	23	1.7	11.0	0.8	
30	520	23	2760			100	1.4090	30	28.4	2.1			10.0	0.8	
31															
TL	14760	586	70320			2600			737.5		581		331.0		
ME	492	20	2344			87	1.4090	30.0	25.4	1.8	20.0	1.5	11.0	0.8	

MANPOWER	
POSITION TITLE	NUMBER FULL TIME
SUPERINTENDANT	1
ASST. SUPT.	1
OPERATOR	3
MECHANIC	
CHEMIST	
LAB TECH	
IPP COORDINATOR	1
OTHER	

GIVE THE HOURS PER DAY THAT PLANT PERSONNEL ARE NORMALLY AT THE PLANT.

WEEKDAYS	8	HRS
SATURDAYS	8	HRS
SUNDAYS	8	HRS
HOLIDAYS	8	HRS

Weather Code	
1. Clear	6. Warm
2. Partly Cloudy	7. Cold
3. Cloudy	8. Windy
4. Rain	9. Melting Snow
5. Snow	

PLANT INFLUENT SHEET

July 2000

Marshall

STATE OF MICHIGAN

MI 002 3540

SUPERINTENDENT

DEPT OF ENVIRONMENTAL QUALITY

Steven D. Washburn

D	WEATHER		FLOW		RAW SEWAGE QUALITY									
A	TYPE	PRECIP	TOTAL	MAX	TEMP	pH	BOD_5		SS		TOTAL-P		VSS	NH3-N
Y	CODE	Inches	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l
1	1		1.560		63	7.80	158	2056	126	1639			126	13.1
2	4	0.67	1.500		60	7.70	147	1839	132	1651			126	13.3
3	4	0.17	1.580		62	8.20	193	2543	174	2293			162	12.2
4	1		1.580		56	7.60	113	1489	116	1529			112	9.0
5	4	0.02	1.580		62	7.60	113	1489	117	1542	2.61	34	111	11.3
6	4	0.02	1.590		61	7.70	117	1551	144	1910			128	13.1
7	1		1.540		59	7.70	141	1811	118	1516			114	12.1
8	4	0.11	1.490		60	7.70	181	2249	156	1939			150	13.1
9	4	0.16	1.440		60	7.60	147	1765	136	1633			122	13.2
10	4	0.24	1.600		61	7.80	117	1561	112	1495			102	12.4
11	1		1.550		63	7.60	136	1758	132	1706	2.74	35	123	11.5
12	1		1.540		61	7.80	145	1862	132	1695			116	15.7
13	1		1.480		62	7.70	168	2074	54	667			54	13.1
14	1		1.530		62	7.90	200	2552	106	1353			96	11.9
15	4	0.08	1.470		63	7.90	164	2011	98	1201			88	13.0
16	1		1.420		61	7.70	147	1741	120	1421			110	12.9
17	1		1.500		63	7.70	157	1964	102	1276			90	12.8
18	1		1.550		59	7.50	191	2469	121	1564	2.16	28	112	14.5
19	1		1.510		65	8.40	198	2493	122	1536			114	15.2
20	1		1.570		64	7.80	162	2121	150	1964			140	16.1
21	1		1.490		64	7.60	172	2137	120	1491			114	16.1
22	1		1.520		63	7.70	110	1394	136	1724			128	12.5
23	1		1.400		62	7.60	100	1168	96	1121			94	13.6
24	1		1.540		63	7.60	124	1593	204	2620	4.08	52	204	14.3
25	1		1.450		62	7.70	133	1608	124	1500			120	13.0
26	4	0.11	1.520		63	7.40	217	2751	134	1699			110	13.5
27	4	0.02	1.500		64	7.70	158	1977	90	1126			82	14.0
28	4	0.21	1.610		64	7.60	99	1329	46	618			46	14.3
29	4	0.10	1.530		63	7.70	77	983	124	1582			120	12.1
30	4	0.58	1.540		62	7.60	124	1593	98	1259			92	12.9
31	4	0.14	1.640		62	8.00	152	2079	52	711			52	12.7
TL		2.63	47.320					58011		46979		150		
ME			1.526		62		147	1871	119	1515	2.90	38	112	13.2

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

PRIMARY EFFLUENT SHEET

July 2000

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

	PRIMARY EFFLUENT QUALITY												
DAY	BOD-5			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS		AMMONIA NITROGEN	
	mg/l	LBS	Removal	mg/l	LBS	% Removal	mg/l	LBS	% Removal	mg/l	%	mg/l	LBS
1	69	898	56.3	28	364	77.8				28.0	100.0	13.3	173
2	70	876	52.4	24	316	81.8				24.0	100.0	13.2	174
3	96	1265	50.3	22	290	87.4				22.0	100.0	14.9	196
4	78	1028	31.0	24	316	79.3				24.0	100.0	12.4	163
5	74	975	34.5	38	504	67.5	1.2	15.9	54.0	28.0	73.7	14.4	191
6	77	1021	34.2	24	308	83.3				18.0	75.0	14.1	181
7	81	1040	42.6	22	273	81.4				20.0	90.9	13.7	170
8	66	820	63.5	26	312	83.3				24.0	92.3	13.3	160
9	68	817	53.7	30	400	77.9				26.0	86.7	13.6	181
10	70	934	40.2	30	388	73.2				26.0	86.7	14.7	190
11	78	1008	42.6	24	308	81.8	1.3	16.3	53.6	20.0	83.3	14.4	185
12	91	1169	37.2	34	420	74.2				30.0	88.2	16.2	200
13	96	1185	42.9	28	357	48.1				28.0	100.0	0.8	10
14	121	1544	39.5	26	319	75.5				24.0	92.3	17.4	213
15	107	1312	34.8	28	332	71.4				24.0	85.7	16.0	189
16	77	912	47.6	34	425	71.7				34.0	100.0	13.4	168
17	88	1101	43.9	32	414	68.6				18.0	56.3	13.8	178
18	103	1331	46.1	46	579	62.0	1.2	15.4	43.5	42.0	91.3	14.5	183
19	144	1813	27.3	42	550	65.6				40.0	95.2	22.2	291
20	169	2213	-4.3	44	547	70.7				42.0	95.5	23.8	296
21	143	1777	16.9	36	456	70.0				36.0	100.0	23.0	292
22	128	1623	-16.4	30	350	77.9				30.0	100.0	19.4	227
23	116	1354	-16.0	26	334	72.9				26.0	100.0	18.2	234
24	126	1618	-1.6	48	580	76.5	1.7	20.9	57.6	48.0	100.0	20.3	245
25	158	1911	-18.8	34	431	72.6				34.0	100.0	21.8	276
26	143	1813	34.1	40	500	70.1				32.0	80.0	20.7	259
27	94	1176	40.5	50	671	44.4				44.0	88.0	14.9	200
28	79	1061	20.2	50	638	-8.7				44.0	88.0	14.4	184
29	76	970	1.3	28	360	77.4				28.0	100.0	12.9	166
30	104	1336	16.1	30	410	69.4				30.0	100.0	14.9	204
31	114	1559	25.0	52	711	83.8				52.0	100.0	16.6	6551
TL		39459			13166			68.5					12530
ME	100	1273	29.6	33	425	70.6	1.4	17.1	52.2	946.0	91.9	15.7	404

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION

DEQ

Discharge Number	Permit Number
001 A	MI 002 3540

DAILY DISCHARGE MONITORING REPORT

Monitoring Period
July 2000

DAY	$CBOD_5$			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS	NH3-N		PH	D.O.	F.COLI #/100ml	CL RESID	CN Amenable
	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	mg/l	LBS	SU	mg/l	MF	mg/l	mg/L
1	1.8	23	98.9	1.0	13	99.2				1.0	0.08	1.04	7.50	8.0	240	0.000	
2	1.4	18	99.0	2.0	25	98.5				2.0	0.08	1.00	7.50	8.1	600	0.000	
3	2.1	28	98.9	2.0	26	98.9				2.0	2.15	28.33	7.30	7.2	120	0.000	
4	2.2	29	98.1	4.0	53	96.6				4.0	0.08	1.05	7.40	7.8	15	0.000	<0.005
5	1.8	24	98.4	5.0	66	95.7	0.13	1.7	95.0	5.0	0.11	1.45	7.50	8.2	8	0.000	
6	1.8	24	98.5	2.0	27	98.6				2.0	0.09	1.19	7.40	7.9	10	0.000	
7	1.8	23	98.7	1.0	13	99.2				1.0	0.11	1.41	7.50	8.2	1	0.000	
8	2.0	24	98.9	1.0	12	99.4				1.0	0.13	1.62	7.50	8.0	1	0.000	<0.005
9	1.9	23	98.7	1.0	12	99.3				1.0	0.44	5.28	7.50	7.7	7	0.000	
10	2.3	31	98.0	1.0	13	99.1				1.0	2.34	31.22	7.40	7.5	15	0.000	
11	2.2	28	98.4	1.0	13	99.2	0.25	3.2	90.9	1.0	0.80	10.34	7.40	7.4	14	0.000	
12	3.5	45	97.6	2.0	26	98.5				2.0	2.30	29.54	7.30	7.2	22	0.000	
13	3.3	41	98.0	1.0	12	98.1				1.0	0.80	9.87	7.40	7.3	5	0.000	
14	2.9	37	98.6	1.0	13	99.1				1.0	4.04	51.55	7.30	6.8	19	0.000	<0.005
15	3.2	39	98.0	1.0	12	99.0				1.0	3.18	38.99	7.30	6.3	3	0.000	
16	2.3	27	98.4	1.0	12	99.2				1.0	0.26	3.08	7.40	7.3	3	0.000	<0.005
17	4.0	50	97.5	4.0	50	96.1				4.0	0.28	3.50	7.50	7.8	10	0.000	
18	4.9	63	97.4	3.0	39	97.5	0.34	4.4	84.3	3.0	0.55	7.11	7.30	7.6	120	0.000	
19	4.8	60	97.6	4.0	50	96.7				4.0	5.60	70.52	7.40	8.0	68	0.000	
20	8.3	109	94.9	9.0	118	94.0				9.0	18.30	239.62	7.40	6.2	16	0.000	
21	6.5	81	96.2	1.0	12	99.2				1.0	11.60	144.15	7.40	6.3	14	0.000	
22	5.7	72	94.8	2.0	25	98.5				2.0	5.15	65.29	7.40	6.9	52	0.000	
23	8.0	93	92.0	1.0	12	99.0				1.0	4.83	56.40	7.40	6.0	36	0.000	
24	5.9	76	95.2	13.0	167	93.6	0.25	3.2	93.9	13.0	6.57	84.38	7.40	6.0	120	0.000	
25	5.6	68	95.8	5.0	60	96.0				5.0	10.40	125.77	7.40	6.3	76	0.000	
26	4.5	57	97.9	8.0	101	94.0				8.0	17.80	225.65	7.40	6.0	80	0.000	
27	7.0	88	95.6	1.0	13	98.9				1.0	3.19	39.91	7.30	6.2	12	0.000	
28	3.3	44	96.7	2.0	27	95.7				2.0	0.25	3.36	7.30	7.0	70	0.000	
29	2.8	36	96.4	2.0	26	98.4				2.0	0.10	1.28	7.40	7.4	15	0.000	
30	4.2	54	96.6	1.0	13	99.0				1.0	0.42	5.39	7.40	7.4	25	0.000	
31	4.4	60	97.1	7.0	96	86.5				7.0	5.27	72.08	7.30	6.2	12	0.000	
TL		1475			1157			12.6									
ME	3.8	48	97.3	2.9	37	97.4	0.24	3.1	91.0	90.0	3.46	43.92		7.2	21	0.000	<0.005
WA	6.4	80		5.6	71										53		
MX											18.30	239.62	7.50				<0.005
MN													7.30	6.0			

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 Years)

PRINTED NAME AND TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTORIZED AGENT	DATE
Steven D. Washburn, Superintendent		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

ACTIVATED SLUDGE SHEET

July 2000

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	AERATION SYSTEM				MIXED LIQUOR								SECONDARY SLUDGE				
	AERTN VOL	DETEN TIME	CRT	F:M RATIO	MLSS		MLVSS		SETTL.	SDI	D.O.	AIR	SS	VSS	RAS FLOW	WAS	
	KCF	HRS	DAYS		mg/L	Lbs.	mg/L	Lbs.	%	%	mg/L	CF	%	%	%	Gallons	Lbs.
SF	3											4				3	
1	48	5.5			1646	4929					6.80	474			62	24	
2	48	5.7			1671	5004					6.50	444			65	24	
3	48	5.5	7.3	0.32	1620	4851	1327	3974	26	0.62	5.74	456	0.33	0.27	61	24	661
4	48	5.5			1664	4983					6.32	457			62	22	
5	48	5.5	7.4	0.23	1685	5046	1387	4153	29	0.58	6.18	416	0.37	0.30	62	22	679
6	48	5.4	6.9	0.25	1670	5001	1377	4123	27	0.62	6.67	467	0.38	0.32	62	23	729
7	48	5.6	7.6	0.27	1598	4785	1295	3878	27	0.59	3.84	508	0.36	0.29	64	21	631
8	48	5.8			1695	5075					6.37	517			66	19	
9	48	6.0			1782	5336					6.11	486			69	21	
10	48	5.4	7.1	0.23	1647	4932	1334	3995	26	0.63	5.62	475	0.36	0.29	62	23	691
11	48	5.6	8.5	0.24	1750	5240	1416	4240	27	0.65	6.41	484	0.32	0.26	64	23	614
12	48	5.6	7.6	0.28	1718	5144	1394	4174	26	0.66	4.55	495	0.34	0.28	65	24	681
13	48	5.8	6.3	0.28	1719	5147	1396	4180	27	0.64	5.85	474	0.39	0.31	67	25	813
14	48	5.6	7.8	0.37	1724	5162	1398	4186	26	0.66	6.05	431	0.36	0.29	65	22	661
15	48	5.9			1651	4944					5.38	475			67	23	
16	48	6.1			1716	5138					5.27	471			70	24	
17	48	5.7	3.9	0.32	1409	4219	1138	3408	22	0.64	6.31	469	0.46	0.37	45	28	1074
18	48	5.6	4.3	0.33	1660	4971	1346	4030	25	0.66	6.54	508	0.45	0.36	35	31	1163
19	48	5.7	3.7	0.48	1572	4707	1260	3773	24	0.66	6.58	524	0.48	0.39	35	32	1281
20	48	5.5	4.3	0.63	1412	4228	1169	3500	29	0.49	0.41	534	0.39	0.32	34	30	976
21	48	5.8	6.5	0.46	1550	4641	1292	3869	30	0.52	3.56	579	0.41	0.34	39	21	718
22	48	5.7			1585	4746					2.75	597			49	21	
23	48	6.2			1659	4968					1.72	605			77	15	
24	48	5.6		0.36	1770	5300	1509	4519	43	0.41	0.21	591	0.50	0.42	78	0	
25	48	5.9		0.34	2203	6597	1875	5614	50	0.44	0.16	591	0.43	0.37	78	0	
26	48	5.7	5.1	0.29	2481	7429	2124	6360	59	0.42	2.85	558	0.56	0.48	78	31	1448
27	48	5.7	5.2	0.19	2473	7405	2104	6300	55	0.45	0.15	575	0.49	0.42	70	35	1430
28	48	5.4	10.6	0.18	2313	6926	1946	5827	45	0.51	5.10	625	0.23	0.19	63	34	652
29	48	5.6			2182	6534					5.31	659			78	36	
30	48	5.6			2014	6031					5.25	655			77	36	
31	48	5.3	5.4	0.32	1918	5743	1617	4842	30	0.64	5.89	638	0.40	0.34	68	32	1068
TL												16238				746	15968
ME	48	5.7	6.4	0.32	1779	5328	1485	4447	33	0.6	4.7	524	0.40		62	24	887

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SLUDGE SHEET

Marshall

MI 002 3540

July 2000

SUPERINTENDENT
Steven D. Washburn

	RAW SLUDGE				LIME STABILIZED SLUDGE					
DAY	GALLONS	TOTAL SOLIDS %	VOLATILE SOLIDS %	pH SU	LIME POUNDS	pH 2 hrs @ 25 C SU	pH 16 hrs SU	Lbs. Lime per 1000 gallons sludge		
1	8500	3.5	74.0	6.0	484	12.4	12.4	57		
2	8000	3.3	74.0	6.0	538	12.2	12.4	67		
3	8000	3.3	75.0	6.1	538	12.2	12.3	67		
4	7500	3.2	75.0	6.1	484	12.3	12.3	65		
5	8000	3.1	72.0	6.4	511	12.3	12.2	64		
6	8500	3.4	76.0	6.1	538	12.2	12.2	63		
7	8500	3.6	73.0	7.0	538	12.3	12.4	63		
8	8500	3.2	75.0	6.1	538	12.3	12.4	63		
9	7500	3.1	74.0	6.1	511	12.2	12.4	68		
10	8375	3.4	70.0	6.1	484	12.2	12.3	58		
11	7800	3.4	68.0	6.1	538	12.3	12.2	69		
12	8000	3.4	74.0	6.0	538	12.2	12.4	67		
13	8300	3.3	74.0	6.1	511	12.3	12.2	62		
14	7300	3.6	74.0	6.1	511	12.3	12.3	70		
15	6500	3.2	72.0	6.4	484	12.3	12.4	74		
16	6500	3.2	74.0	6.1	538	12.2	12.3	83		
17	7500	3.2	76.0	6.1	292	12.2	12.4	39		
18	7500	3.2	74.0	6.0	484	12.2	12.3	65		
19	7000	3.4	70.0	6.2	538	12.1	12.2	77		
20	8500	3.3	72.0	6.0	538	12.1	12.3	63		
21	7000	3.6	71.0	5.9	538	12.2	12.2	77		
22	7500	4.2	67.0	6.0	484	12.1	12.3	65		
23	8500	3.6	70.0	6.2	511	12.2	12.1	60		
24	8500	3.2	73.0	5.9	565	12.2	12.2	66		
25	8500	3.5	72.0	6.0	592	12.2	12.3	70		
26	8500	3.6	72.0	5.9	538	12.1	12.3	63		
27	8500	4.3	65.0	5.9	592	12.2	12.2	70		
28	10500	3.0	52.0	6.2	646	12.2	12.2	62		
29	10500	3.0	74.0	6.0	646	12.2	12.3	62		
30	10500	3.1	74.0	6.2	673	12.2	12.3	64		
31	8000	4.1	60.0	6.0	592	12.1	12.3	74		
TOTAL	252775				16513					
MEAN	8154	3.4	71.5	6.1	533	12.2	12.3	66		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MISCELLANEOUS SHEET

July 2000

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	WATER	ELECTRICAL USAGE		FUEL GAS		CHEMICALS APPLIED								
			X 120		X 100	$FECL_3$					Cl_2		SO_2	
	CF	METER	KWH	METER	CF	GALS	SP. GR.	% SOLN	LBS	mg/L	LBS	mg/L	LBS	mg/L
1	470	18	2160			100.0	1.4090	30	28.4	2.2	11.0	0.8	11.0	0.8
2	450	18	2160			100	1.4090	30	28.4	2.3	15	1.2	15.0	1.2
3	460	18	2160			100	1.4090	30	28.4	2.2	20	1.5	7.0	0.5
4	600	18	2160			100	1.4090	30	28.4	2.2	21	1.6	9.0	0.7
5	450	17	2040			50	1.4090	30	14.2	1.1	21	1.6	4.0	0.3
6	590	19	2280			100	1.4090	30	28.4	2.1	18	1.4	8.0	0.6
7	530	17	2040			100	1.4090	30	28.4	2.2	23	1.8	12.0	0.9
8	380	19	2280			100	1.4090	30	28.4	2.3	20	1.6	10.0	0.8
9	580	18	2160			75	1.4090	30	21.3	1.8	18	1.5	6.0	0.5
10	410	18	2160			75	1.4090	30	21.3	1.6	22	1.6	13.0	1.0
11	520	18	2160			100	1.4090	30	28.4	2.2	19	1.5	8.0	0.6
12	550	18	2160			100	1.4090	30	28.4	2.2	20	1.6	8.0	0.6
13	450	18	2160			100	1.4090	30	28.4	2.3	20	1.6	18.0	1.5
14	690	18	2160			100	1.4090	30	28.4	2.2	15	1.2	7.0	0.5
15	520	17	2040			75	1.4090	30	21.3	1.7	15	1.2	11.0	0.9
16	390	18	2160			100	1.4090	30	28.4	2.4	16	1.4	9.0	0.8
17	1110	17	2040			100	1.4090	30	28.4	2.3	17	1.4	8.0	0.6
18	1120	16	1920			75	1.4090	30	21.3	1.6	16	1.2	10.0	0.8
19	1170	17	2040			100	1.4090	30	28.4	2.3	19	1.5	9.0	0.7
20	560	17	2040			100	1.4090	30	28.4	2.2	20	1.5	9.0	0.7
21	560	16	1920			100	1.4090	30	28.4	2.3	19	1.5	11.0	0.9
22	560	17	2040			50	1.4090	30	14.2	1.1	18	1.4	10.0	0.8
23	575	18	2160			100	1.4090	30	28.4	2.4	26	2.2	5.0	0.4
24	575	17	2040			75	1.4090	30	21.3	1.7	17	1.3	5.0	0.4
25	430	18	2160			75	1.4090	30	21.3	1.8	19	1.6	3.0	0.2
26	490	17	2040			100	1.4090	30	28.4	2.2	18	1.4	7.0	0.6
27	560	19	2280			100	1.4090	30	28.4	2.3	23	1.8	1.0	0.1
28	610	18	2160			50	1.4090	30	14.2	1.1	15	1.1	19.0	1.4
29	340	19	2280			100	1.4090	30	28.4	2.2	19	1.5	13.0	1.0
30	440	19	2280			75	1.4090	30	21.3	1.7	15	1.2	20.0	1.6
31	440	19	2280			75	1.4090	30	21.3	1.6	13	1.0	4.0	0.3
TL	17580	551	66120			2750			780.1		568		290.0	
ME	567	18	2133			89	1.4090	30.0	25.2	2.0	18.3	1.4	9.4	0.7

MANPOWER

POSITION TITLE	NUMBER FULL TIME
SUPERINTENDANT	1
ASST. SUPT.	1
OPERATOR	3
MECHANIC	
CHEMIST	
LAB TECH	
IPP COORDINATOR	1
OTHER	

GIVE THE HOURS PER DAY THAT PLANT PERSONNEL ARE NORMALLY AT THE PLANT.

WEEKDAYS	8	HRS
SATURDAYS	8	HRS
SUNDAYS	8	HRS
HOLIDAYS	8	HRS

Weather Code	
1. Clear	6. Warm
2. Partly Cloudy	7. Cold
3. Cloudy	8. Windy
4. Rain	9. Melting Snow
5. Snow	

PLANT INFLUENT SHEET

August 2000

Marshall

STATE OF MICHIGAN

MI 002 3540

SUPERINTENDENT

DEPT OF ENVIRONMENTAL QUALITY

Steven D. Washburn

D	WEATHER		FLOW		RAW SEWAGE QUALITY									
A	TYPE	PRECIP	TOTAL	MAX	TEMP	pH	BOD_5		SS		TOTAL-P		VSS	NH3-N
Y	CODE	Inches	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l
1	4	0.03	1.590		64	7.70	162	2148	144	1910			144	11.7
2	4	1.24	1.590		65	7.50	131	1737	76	1008			76	15.2
3	1		1.590		64	7.60	239	3169	110	1459			110	14.9
4	1		1.550		64	7.50	125	1616	74	957			62	15.4
5	4	1.20	1.460		65	7.60	158	1924	126	1534			114	11.8
6	4	0.19	1.570		63	7.60	161	2108	106	1388			96	13.3
7	1		1.600		64	7.60	140	1868	172	2295			148	13.3
8	1		1.580		64	7.60	218	2873	182	2398	3.24	43	161	12.5
9	1		1.570		64	7.90	101	1322	154	2016			146	15.0
10	1		1.570		65	7.80	91	1192	136	1781			128	13.0
11	1		1.550		65	7.70	107	1383	208	2689			194	15.6
12	1		1.490		65	7.70	166	2063	194	2411			180	11.9
13	4	0.02	1.480		65	7.80	173	2135	80	987			70	13.9
14	4	0.02	1.510		63	7.80	156	1965	128	1612			126	13.5
15	1		1.530		65	7.60	205	2616	146	1863			133	15.9
16	1		1.500		65	7.90	203	2540	156	1952			124	15.8
17	4	0.35	1.590		65	8.10	191	2533	156	2069	4.31	57	142	15.5
18	1		1.460		63	7.70	205	2496	176	2143			162	16.0
19	1		1.400		60	7.70	242	2826	212	2475			196	16.1
20	1		1.370		62	7.80	162	1851	148	1691	3.09	35	140	15.0
21	1		1.660		63	7.50	197	2727	202	2797			194	13.4
22	4	1.22	1.700		64	7.80	171	2424	184	2609			175	12.5
23	1		1.890		67	7.50	190	2995	176	2774			142	10.0
24	1		1.860		65	8.30	123	1908	168	2606			154	11.3
25	1		1.560		64	7.50	95	1236	98	1275			98	14.0
26	4	2.10	1.430		64	7.50	175	2087	176	2099			152	10.9
27	2		1.650		63	7.70	145	1995	130	1789			128	11.4
28	1		1.880		68	7.80	165	2587	130	2038			130	10.9
29	1		1.740		65	7.70	164	2380	163	2365			159	11.8
30	1		1.790		66	7.50	189	2822	120	1791			106	10.0
31			1.780		66	7.50	93	1381	68	1009	2.62	39	64	10.0
TL		6.37	49.490					66906		59790		174		
ME			1.596		64		163	2158	145	1929	3.32	44	134	13.3

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

PRIMARY EFFLUENT SHEET

August 2000

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

	PRIMARY EFFLUENT QUALITY												
DAY	BOD-5			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS		AMMONIA NITROGEN	
	mg/l	LBS	Removal	mg/l	LBS	% Removal	mg/l	LBS	% Removal	mg/l	%	mg/l	LBS
1	87	1154	46.3	38	504	73.6				38.0	100.0	11.8	156
2	103	1366	21.4	40	530	47.4				40.0	100.0	14.8	196
3	140	1856	41.4	36	465	67.3				36.0	100.0	16.1	208
4	118	1525	5.6	40	487	45.9				28.0	70.0	17.3	211
5	95	1157	39.9	36	471	71.4				16.0	44.4	12.3	161
6	86	1126	46.6	24	320	77.4				18.0	75.0	12.6	168
7	79	1054	43.6	44	580	74.4				24.0	54.5	12.4	163
8	97	1278	55.5	32	419	82.4	1.7	22.1	47.8	24.0	75.0	13.3	174
9	113	1480	-11.9	34	445	77.9				32.0	94.1	15.7	206
10	86	1126	5.5	20	259	85.3				16.0	80.0	13.9	180
11	54	698	49.5	28	348	86.5				22.0	78.6	14.8	184
12	67	833	59.6	28	346	85.6				26.0	92.9	12.0	148
13	88	1086	49.1	34	428	57.5				30.0	88.2	13.4	169
14	80	1007	48.7	28	357	78.1				28.0	100.0	13.7	175
15	109	1391	46.8	28	350	80.8				28.0	100.0	16.8	210
16	122	1526	39.9	36	477	76.9				24.0	66.7	18.3	243
17	102	1353	46.6	34	414	78.2	2.3	27.9	46.9	30.0	88.2	15.6	190
18	57	694	72.2	28	327	84.1				22.0	78.6	11.1	130
19	91	1063	62.4	22	251	89.6				14.0	63.6	15.5	177
20	87	994	46.3	28	388	81.1	1.4	18.8	56.0	26.0	92.9	14.0	194
21	103	1426	47.7	28	397	86.1				28.0	100.0	13.6	193
22	122	1730	28.7	22	347	88.0				22.0	100.0	13.7	216
23	119	1876	37.4	40	620	77.3				32.0	80.0	11.7	181
24	99	1536	19.5	38	494	77.4				36.0	94.7	11.3	147
25	68	885	28.4	22	262	77.6				22.0	100.0	13.5	161
26	88	1050	49.7	62	853	64.8				54.0	87.1	11.0	151
27	80	1101	44.8	22	345	83.1				22.0	100.0	11.0	172
28	113	1772	31.5	22	319	83.1				22.0	100.0	12.2	177
29	97	1408	40.9	26	388	84.0				26.0	100.0	13.9	208
30	101	1508	46.6	36	534	70.0				30.0	83.3	12.1	180
31	86	1277	7.5	32	13208	52.9	1.8	751.2	30.5	28.0	87.5	11.1	4581
TL		39333			25936			820.0					10010
ME	95	1269	38.6	32	837	75.7	1.8	205.0	45.3	844.0	86.3	13.6	323

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION

DEQ

Discharge Number	Permit Number
001 A	MI 002 3540

DAILY DISCHARGE MONITORING REPORT

Monitoring Period: August 2000

DAY	$CBOD_5$			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS	NH3-N		PH	D.O.	F.COLI #/100ml	CL RESID	CN Amenable
	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	mg/l	LBS	SU	mg/l	MF	mg/l	mg/L
1	4.3	57	97.3	1.0	13	99.3				1.0	0.37	4.91	7.50	7.4	40	0.000	
2	4.2	56	96.8	4.0	53	94.7				4.0	0.20	2.65	7.50	7.8	12	0.000	<0.005
3	6.1	81	97.4	2.0	27	98.2				2.0	0.23	3.05	7.60	7.9	21	0.000	
4	4.4	57	96.5	3.0	39	95.9				3.0	0.20	2.59	7.50	8.3	120	0.000	
5	4.6	56	97.1	1.0	12	99.2				1.0	0.15	1.83	7.40	7.3	252	0.000	
6	2.9	38	98.2	1.0	13	99.1				1.0	0.12	1.57	7.50	7.4	119	0.000	
7	2.3	31	98.4	8.0	107	95.3				8.0	0.12	1.60	7.40	7.5	77	0.000	
8	3.4	45	98.4	5.0	66	97.3	0.51	6.7	84.3	5.0	0.18	2.37	7.40	7.4	78	0.000	
9	5.0	65	95.0	2.0	26	98.7				2.0	2.87	37.58	7.30	6.3	102	0.000	<0.005
10	3.6	47	96.0	1.0	13	99.3				1.0	0.16	2.10	7.40	7.2	62	0.000	
11	3.0	39	97.2	1.0	13	99.5				1.0	0.15	1.94	7.40	7.5	18	0.000	
12	3.0	37	98.2	5.0	62	97.4				5.0	0.29	3.60	7.40	7.3	39	0.000	
13	3.8	47	97.8	2.0	25	97.5				2.0	0.25	3.09	7.40	6.9	10	0.000	
14	4.0	50	97.4	2.0	25	98.4				2.0	1.00	12.59	7.40	7.1	166	0.000	
15	5.1	65	97.5	6.0	77	95.9				6.0	3.13	39.94	7.40	7.2	32	0.000	
16	5.5	69	97.3	7.0	88	95.5				7.0	6.54	81.82	7.30	6.4	47	0.002	<0.005
17	10.1	134	94.7	11.0	146	92.9	0.74	9.8	82.8	11.0	1.49	19.76	7.30	6.1	120	0.000	
18	3.9	47	98.1	7.0	85	96.0				7.0	0.15	1.83	7.40	7.3	240	0.000	
19	9.2	107	96.2	12.0	140	94.3				12.0	0.15	1.75	7.40	7.2	128	0.000	
20	7.5	86	95.4	6.0	69	95.9	0.67	7.7	78.3	6.0	0.19	2.17	7.50	7.0	108	0.000	
21	10.4	144	94.7	12.0	166	94.1				12.0	0.96	13.29	7.30	6.4	600	0.000	
22	10.0	142	94.2	13.0	184	92.9				13.0	5.06	71.74	7.30	5.9	600	0.000	
23	7.1	112	96.3	10.0	158	94.3				10.0	3.17	49.97	7.30	5.9	600	0.000	<0.005
24	9.3	144	92.4	16.0	248	90.5				16.0	0.68	10.55	7.30	6.2	710	0.000	
25	9.9	129	89.6	16.0	208	83.7				16.0	0.25	3.25	7.30	6.7	30	0.000	
26	7.3	87	95.8	13.0	155	92.6				13.0	0.29	3.46	7.40	6.9	110	0.000	
27	5.6	77	96.1	6.0	83	95.4				6.0	0.16	2.20	7.50	7.4	50	0.000	
28	6.3	99	96.2	10.0	157	92.3				10.0	0.55	8.62	7.30	6.5	56	0.000	
29	5.7	83	96.5	1.0	15	99.4				1.0	0.88	12.77	7.30	6.0	32	0.000	
30	6.3	94	96.7	5.0	75	95.8				5.0	0.19	2.84	7.40	6.5	120	0.000	
31	5.9	88	93.7	1.0	15	98.5	0.37	5.4	86.0	1.0	0.16	2.38	7.40	7.1	240	0.000	
TL		2412			2560			29.6									
ME	5.8	78	96.2	6.1	83	95.8	0.57	7.4	82.9	190.0	0.98	13.22		7.0	87	0.000	<0.005
WA	9.1	123		12.3	172										338		
MX											6.54	81.82	7.60			0.002	<0.005
MN													7.30	5.9			

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 Years)

PRINTED NAME AND TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTORIZED AGENT	DATE
Steven D. Washburn, Superintendent		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

ACTIVATED SLUDGE SHEET

August 2000

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	AERATION SYSTEM				MIXED LIQUOR								SECONDARY SLUDGE				
	AERTN VOL	DETEN TIME	CRT	F:M RATIO	MLSS		MLVSS		SETTL.	SDI	D.O.	AIR	SS	VSS	RAS FLOW	WAS	
	KCF	HRS	DAYS		mg/L	Lbs.	mg/L	Lbs.	%	%	mg/L	CF	%	%	%	Gallons	Lbs.
SF	3											4				3	
1	48	5.4	2.8	0.28	1610	4821	1361	4075	24	0.67	5.43	62	0.44	0.37	57	47	1725
2	48	5.4	4.6	0.36	1484	4444	1258	3767	20	0.74	6.55	62	0.34	0.29	57	34	964
3	48	5.4	6.9	0.50	1356	4060	1242	3719	19	0.71	6.87	67	0.26	0.22	56	27	585
4	48	5.6	7.4	0.44	1381	4135	1163	3482	18	0.77	6.25	68	0.32	0.27	59	21	560
5	48	5.9			1343	4021					4.75	66			67	17	
6	48	5.5			1382	4138					5.94	67			62	14	
7	48	5.4	12.6	0.31	1386	4150	1147	3435	19	0.73	5.66	69	0.33	0.28	63	12	330
8	48	5.5	15.3	0.37	1406	4210	1145	3429	19	0.74	5.08	68	0.33	0.27	62	10	275
9	48	5.5	16.0	0.36	1448	4336	1372	4108	20	0.72	3.61	71	0.36	0.29	62	9	270
10	48	5.5	13.1	0.29	1607	4812	1316	3941	21	0.77	6.15	77	0.40	0.33	64	11	367
11	48	5.6	8.8	0.19	1492	4468	1203	3602	19	0.79	6.10	61	0.29	0.23	60	21	508
12	48	5.8			1549	4638					5.36	56			63	14	
13	48	5.8			1608	4815					6.06	56			65	15	
14	48	5.7	9.3	0.27	1530	4581	1224	3665	16	0.96	5.75	47	0.31	0.25	65	19	491
15	48	5.6	9.6	0.36	1585	4746	1291	3866	15	1.06	5.20	51	0.33	0.27	64	18	495
16	48	5.7	10.2	0.40	1592	4767	1289	3860	15	1.06	0.77	60	0.33	0.27	66	17	468
17	48	5.4	7.1	0.34	1616	4839	1323	3962	17	0.95	0.17	68	0.34	0.28	64	24	681
18	48	5.9	4.6	0.26	1094	3276	886	2653	14	0.78	6.46	70	0.33	0.27	65	26	716
19	48	6.2			1437	4303					6.32	70			66	15	
20	48	6.3			1330	3983					5.38	72			66	14	
21	48	5.2	9.2	0.47	1263	3782	1019	3051	9	1.40	5.57	74	0.33	0.24	56	15	413
22	48	5.1		0.53	1352	4048	1082	3240	10	1.35	5.27	79	0.36	0.29	57	0	
23	48	4.6		0.48	1602	4797	1310	3923	15	1.07	3.50	78	0.41	0.34	53	0	
24	48	4.6		0.36	1766	5288	1437	4303	15	1.18	4.60	78	0.41	0.33	55	0	
25	48	5.5	4.3	0.18	2063	6177	1636	4899	16	1.29	4.80	78	0.34	0.28	65	51	1446
26	48	6.0			1817	5441					5.99	76			66	33	
27	48	5.2			1665	4986					6.34	78			57	33	
28	48	4.6	4.3	0.46	1587	4752	1285	3848	16	0.99	6.84	78	0.43	0.34	51	31	1112
29	48	5.0	6.3	0.36	1593	4770	1304	3905	19	0.84	4.20	81	0.35	0.28	59	26	759
30	48	4.8	4.1	0.39	1559	4668	1278	3827	20	0.78	6.10	80	0.37	0.30	56	37	1142
31	48	4.8	4.1	0.36	1462	4378	1191	3566	20	0.73	2.65	79	0.35	0.28	57	37	1080
TL												2147				648	14387
ME	48	5.4	8.0	0.36	1515	4537	1251	3745	17	0.9	5.2	69	0.35	0.29	61	21	719

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

SLUDGE SHEET

August 2000

Marshall

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

MI 002 3540

SUPERINTENDENT
Steven D. Washburn

	RAW SLUDGE				LIME STABILIZED SLUDGE					
DAY	GALLONS	TOTAL SOLIDS %	VOLATILE SOLIDS %	pH SU	LIME POUNDS	pH 2 hrs @ 25 C SU	pH 16 hrs SU	Lbs. Lime per 1000 gallons sludge		
1	12600	4.7	61.0	5.8	1281	12.2	12.2	102		
2	8500	4.2	67.0	5.7	805	12.2	12.2	95		
3	8800	4.6	67.0	5.8	732	12.1	12.2	83		
4	8600	3.7	69.0	5.8	732	12.1	12.1	85		
5	8500	3.4	70.0	5.8	732	12.1	12.2	86		
6	8500	3.3	71.0	5.8	769	12.1	12.2	90		
7	8500	3.8	67.0	6.4	586	12.2	12.3	69		
8	8500	4.0	69.0	6.2	732	12.3	12.3	86		
9	16000	3.5	73.0	6.2	805	12.3	12.3	50		
10	0	0.0	0.0	0.0	0	**	**			
11	8500	4.0	72.0	6.0	732	12.2	12.3	86		
12	8500	3.7	70.0	6.5	732	12.3	12.4	86		
13	8400	3.9	74.0	6.1	769	12.3	12.4	92		
14	7500	3.6	75.0	6.4	842	12.3	12.4	112		
15	6500	3.3	75.0	6.4	769	12.3	12.4	118		
16	7400	3.7	79.0	6.4	1025	12.3	12.5	139		
17	8000	4.2	71.0	6.4	622	12.3	12.3	78		
18	6500	3.8	73.0	6.4	769	12.3	12.4	118		
19	7300	3.3	73.0	6.6	732	12.3	12.4	100		
20	8400	3.8	74.0	6.3	769	12.4	12.4	92		
21	6500	3.7	75.0	6.5	732	12.4	12.4	113		
22	6500	3.6	74.0	6.3	732	12.3	12.3	113		
23	1450	4.5	73.0	6.2	366	**	**	252		
24	2350	5.4	67.0	6.0	220	**	**	94		
25	2400	4.7	71.0	6.0	183	**	**	76		
26	2500	4.9	75.0	5.8	220	**	**	88		
27	8000	6.3	68.0	5.8	732	12.2	12.3	92		
28	6500	4.7	71.0	5.7	732	12.2	12.2	113		
29	9000	4.3	73.0	5.8	695	12.0	11.9	77		
30	7500	4.4	74.0	5.8	732	12.2	12.0	98		
31	8500	3.9	74.0	6.0	769	12.0	12.1	90		
TOTAL	226700				21048					
MEAN	7313	4.0	69.2	5.9	679	12.2	12.3	99		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MISCELLANEOUS SHEET

August 2000

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	WATER	ELECTRICAL USAGE		FUEL GAS		CHEMICALS APPLIED								
			X 120		X 100	$FECL_3$					Cl_2		SO_2	
	CF	METER	KWH	METER	CF	GALS	SP. GR.	% SOLN	LBS	mg/L	LBS	mg/L	LBS	mg/L
1	640	19	2280			100.0	1.4210	30	28.1	2.1	24.0	1.8	3.0	0.2
2	640	20	2400			75	1.4210	30	21.1	1.6	15	1.1	3.0	0.2
3	560	19	2280			75	1.4210	30	21.1	1.6	13	1.0	7.0	0.5
4	670	20	2400			50	1.4210	30	14.1	1.1	18	1.4	5.0	0.4
5	500	19	2280			100	1.4210	30	28.1	2.3	17	1.4	5.0	0.4
6	460	20	2400			100	1.4210	30	28.1	2.1	19	1.5	8.0	0.6
7	600	20	2400			100	1.4210	30	28.1	2.1	17	1.3	6.0	0.4
8	500	17	2040			100	1.4210	30	28.1	2.1	17	1.3	6.0	0.5
9	880	22	2640			100	1.4210	30	28.1	2.1	22	1.7	6.0	0.5
10	540	19	2280			100	1.4210	30	28.1	2.1	20	1.5	6.0	0.5
11	570	18	2160			100	1.4210	30	28.1	2.2	17	1.3	5.0	0.4
12	440	18	2160			100	1.4210	30	28.1	2.3	15	1.2	5.0	0.4
13	490	18	2160			125	1.4210	30	35.2	2.8	13	1.1	8.0	0.6
14	580	18	2160			125	1.4210	30	35.2	2.8	14	1.1	9.0	0.7
15	720	18	2160			100	1.4210	30	28.1	2.2	15	1.2	8.0	0.6
16	510	18	2160			100	1.4210	30	28.1	2.2	14	1.1	10.0	0.8
17	600	19	2280			100	1.4210	30	28.1	2.1	10	0.8	13.0	1.0
18	610	19	2280			100	1.4210	30	28.1	2.3	22	1.8	8.0	0.7
19	430	19	2280			150	1.4210	30	42.2	3.6	16	1.4	10.0	0.9
20	440	18	2160			75	1.4210	30	21.1	1.8	17	1.5	12.0	1.1
21	450	18	2160			100	1.4210	30	28.1	2.0	20	1.4	11.0	0.8
22	1250	20	2400			100	1.4210	30	28.1	2.0	22	1.6	11.0	0.8
23	450	18	2160			75	1.4210	30	21.1	1.3	20	1.3	4.0	0.3
24	1640	21	2520			100	1.4210	30	28.1	1.8	25	1.6	5.0	0.3
25	1840	19	2280			100	1.4210	30	28.1	2.2	29	2.2	17.0	1.3
26	1690	20	2400			125	1.4210	30	35.2	2.9	24	2.0	12.0	1.0
27	1350	19	2280			100	1.4210	30	28.1	2.0	22	1.6	8.0	0.6
28	810	20	2400			100	1.4210	30	28.1	1.8	24	1.5	9.0	0.6
29	520	20	2400			75	1.4210	30	21.1	1.5	27	1.9	9.0	0.6
30	790	20	2400			100	1.4210	30	28.1	1.9	17	1.1	14.0	0.9
31	820	19	2280			100	1.4210	30	28.1	1.9	4	0.3	8.0	0.5
TL	22990	592	71040			3050			857.9		569		251.0	
ME	742	19	2292			98	1.4210	30.0	27.7	2.1	18.4	1.4	8.1	0.6

MANPOWER		
POSITION TITLE	NUMBER FULL TIME	
SUPERINTENDANT	1	
ASST. SUPT.	1	
OPERATOR	3	
MECHANIC		
CHEMIST		
LAB TECH		
IPP COORDINATOR	1	
OTHER		

GIVE THE HOURS PER DAY THAT PLANT PERSONNEL ARE NORMALLY AT THE PLANT.

WEEKDAYS	8	HRS
SATURDAYS	8	HRS
SUNDAYS	8	HRS
HOLIDAYS	8	HRS

Weather Code
1. Clear
2. Partly Cloudy
3. Cloudy
4. Rain
5. Snow
6. Warm
7. Cold
8. Windy
9. Melting Snow

PLANT INFLUENT SHEET

September 2000

Marshall

STATE OF MICHIGAN

MI 002 3540

SUPERINTENDENT

DEPT OF ENVIRONMENTAL QUALITY

Steven D. Washburn

D	WEATHER		FLOW		RAW SEWAGE QUALITY									
A	TYPE	PRECIP	TOTAL	MAX	TEMP	pH	BOD_5		SS		TOTAL-P		VSS	NH3-N
Y	CODE	Inches	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l
1	1		1.530		65	7.60	117	1493	188	2399			174	17.0
2	2		1.470		65	7.80	210	2575	238	2918			238	13.0
3	2		1.400		63	7.60	170	1985	142	1658			142	11.4
4	1		1.400		63	7.60	178	2078	186	2172	3.43	40	168	14.2
5	1		1.640		67	7.80	187	2558	145	1983			132	14.3
6	1		1.630		65	7.50	100	1359	126	1713			116	13.2
7	1		1.600		64	7.80	187	2495	152	2028			142	15.2
8	1		1.420		65	7.50	121	1433	168	1990			162	14.3
9	4	0.87	1.490		65	7.80	214	2659	166	2063			156	13.2
10	4	0.79	1.580		65	7.60	272	3584	178	2346			158	10.5
11	4	0.52	1.730		69	7.60	209	3015	144	2078			128	13.0
12	4	0.04	1.650		647	7.60	111	1527	163	2243	3.74	51	151	12.5
13	1		1.580		65	7.70	222	2925	326	4296			298	15.3
14	4	0.53	1.630		64	7.60	122	1658	272	3698			260	14.7
15	1		1.490		64	7.70	84	1044	90	1118			78	15.2
16	1		1.440		62	7.70	165	1982	184	2210			174	13.4
17	1		1.420		64	7.80	155	1836	206	2440			190	12.0
18	1		1.740		66	7.50	264	3831	160	2322			148	14.0
19	1		1.600		63	7.30	211	2816	262	3496	5.05	67	184	12.5
20	4	0.32	1.600		63	7.80	155	2068	160	2135			160	13.3
21	1		1.580		63	7.70	180	2372	142	1871			120	15.3
22	4	0.79	1.540		64	7.70	121	1554	182	2338			158	13.4
23	4	0.07	1.520		64	7.80	174	2206	164	2079			154	15.3
24	1		1.450		62	8.00	214	2588	156	1887			150	13.4
25	1		1.600		65	7.80	165	2202	160	2135			148	15.5
26	1		1.590		63	7.70	162	2148	143	1896			133	14.4
27	1		1.560		64	7.90	188	2446	148	1926			142	14.9
28	1		1.580		64	7.80	165	2174	152	2003	3.90	51	146	15.6
29	1		1.580		64	7.80	105	1384	174	2293			166	15.3
30	1		1.390		64	7.80	167	1936	152	1762			148	14.0
31														
TL		3.93	46.430					65932		67493		210		
ME			1.548		84		170	2198	169	2177	4.03	53	161	14.0

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

PRIMARY EFFLUENT SHEET

September 2000

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

	PRIMARY EFFLUENT QUALITY												
DAY	BOD-5			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS		AMMONIA NITROGEN	
	mg/l	LBS	Removal	mg/l	LBS	% Removal	mg/l	LBS	% Removal	mg/l	%	mg/l	LBS
1	78	995	33.3	32	408	83.0				32.0	100.0	13.7	175
2	79	969	62.4	22	257	90.8				22.0	100.0	12.4	145
3	67	782	60.6	16	187	88.7				16.0	100.0	11.4	133
4	89	1039	50.0	36	492	80.6	1.6	21.9	53.4	34.0	94.4	12.8	175
5	124	1696	33.7	28	381	80.7				28.0	100.0	14.7	200
6	16	218	84.0	40	534	68.3				38.0	95.0	14.0	187
7	95	1268	49.2	30	355	80.3				30.0	100.0	12.8	152
8	95	1125	21.5	38	472	77.4				32.0	84.2	16.0	199
9	117	1454	45.3	20	264	88.0				18.0	90.0	15.7	207
10	104	1370	61.8	30	433	83.1				26.0	86.7	13.1	189
11	113	1630	45.9	34	468	76.4				30.0	88.2	11.8	162
12	95	1307	14.4	28	369	82.8	2.1	27.9	43.3	24.0	85.7	12.4	163
13	55	725	75.2	38	517	88.3				32.0	84.2	13.1	178
14	97	1319	20.5	30	373	89.0				30.0	100.0	16.4	204
15	95	1181	-13.1	36	432	60.0				32.0	88.9	18.0	216
16	74	889	55.2	36	426	80.4				34.0	94.4	13.9	165
17	67	793	56.8	26	377	87.4				24.0	92.3	13.1	190
18	117	1698	55.7	24	320	85.0				20.0	83.3	12.5	167
19	125	1668	40.8	24	320	90.8	1.5	20.3	69.9	14.0	58.3	15.0	200
20	101	1348	34.8	28	369	82.5				28.0	100.0	15.1	199
21	94	1239	47.8	32	411	77.5				26.0	81.3	12.6	162
22	87	1117	28.1	28	355	84.6				24.0	85.7	13.7	174
23	87	1103	50.0	22	266	86.6				20.0	90.9	14.6	177
24	114	1379	46.7	22	294	85.9				22.0	100.0	18.1	242
25	88	1174	46.7	30	398	81.3				30.0	100.0	15.7	208
26	89	1180	45.1	24	312	83.2				24.0	100.0	15.1	196
27	107	1392	43.1	40	527	73.0				40.0	100.0	17.3	228
28	97	1278	41.2	44	580	71.1	2.3	29.8	42.1	44.0	100.0	15.5	204
29	94	1239	10.5	42	487	75.9				40.0	95.2	14.0	162
30	86	997	48.5	50	580	67.1				48.0	96.0	14.1	163
31													
TL		35571			11964			99.9					5521
ME	92	1186	43.2	31	399	81.0	1.9	25.0	52.2	862.0	92.5	14.3	184.0

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION

DEQ

Discharge Number	Permit Number
001 A	MI 002 3540

DAILY DISCHARGE MONITORING REPORT

Monitoring Period: September 2000

DAY	$CBOD_5$			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS	NH3-N		PH	D.O.	F.COLI	CL	CN
	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	mg/l	LBS	SU	mg/l	#/100ml MF	RESID mg/l	Amenable mg/L
1	4.2	54	96.4	4.0	51	97.9				4.0	0.18	2.30	7.50	7.3	14	0.000	<0.005
2	2.8	34	98.7	1.0	12	99.6				1.0	0.14	1.72	7.50	7.5	12	0.000	
3	2.0	23	98.8	1.0	12	99.3				1.0	0.10	1.17	7.60	8.0	5	0.000	
4	1.8	21	99.0	2.0	23	98.9	0.30	3.5	91.3	2.0	0.13	1.52	7.70	8.1	4	0.000	
5	4.7	64	97.5	4.0	55	97.2				4.0	3.40	46.50	7.40	6.8	49	0.000	
6	3.2	44	96.8	6.0	82	95.2				6.0	0.81	11.01	7.30	6.4	78	0.000	
7	6.8	91	96.4	1.0	13	99.3				1.0	0.15	2.00	7.50	7.5	120	0.000	
8	2.7	32	97.8	5.0	59	97.0				4.0	0.14	1.66	7.60	7.6	4	0.000	
9	3.4	42	98.4	1.0	12	99.4				1.0	0.21	2.61	7.50	7.5	16	0.000	
10	2.6	34	99.0	3.0	40	98.3				3.0	0.12	1.58	7.50	7.3	31	0.000	<0.005
11	2.5	36	98.8	3.0	43	97.9				3.0	0.10	1.44	7.40	7.2	137	0.000	
12	2.5	34	97.7	1.0	14	99.4	0.29	4.0	92.2	1.0	0.80	11.01	7.50	7.6	58	0.000	
13	5.0	66	97.7	2.0	26	99.4				2.0	0.90	11.86	7.50	7.7	12	0.000	
14	2.7	37	97.8	3.0	41	98.9				2.0	0.12	1.63	7.50	7.2	69	0.000	
15	3.7	46	95.6	2.0	25	97.8				2.0	0.12	1.49	7.50	7.4	17	0.000	
16	3.4	41	97.9	3.0	36	98.4				3.0	0.12	1.44	7.70	7.5	12	0.000	
17	1.7	20	98.9	1.0	12	99.5				1.0	0.08	0.95	7.60	8.1	21	0.000	
18	2.3	33	99.1	1.0	15	99.4				1.0	0.17	2.47	7.50	7.5	240	0.000	<0.005
19	5.4	72	97.4	1.0	13	99.6	0.35	4.7	93.1	1.0	0.10	1.33	7.40	8.1	600	0.000	
20	6.6	88	95.7	2.0	27	98.8				2.0	1.23	16.41	7.50	7.3	600	0.000	
21	9.5	125	94.7	4.0	53	97.2				4.0	2.02	26.62	7.50	6.4	85	0.000	
22	2.4	31	98.0	1.0	13	99.5				1.0	0.10	1.28	7.60	8.0	33	0.000	
23	2.9	37	98.3	1.0	13	99.4				1.0	0.09	1.14	7.60	7.4	19	0.000	
24	2.9	35	98.6	1.0	12	99.4				1.0	0.18	2.18	7.60	7.7	17	0.000	
25	3.8	51	97.7	1.0	13	99.4				1.0	0.40	5.34	7.40	6.8	18	0.000	
26	2.3	30	98.6	1.0	13	99.3				1.0	0.07	0.93	7.60	8.4	29	0.000	<0.005
27	1.6	21	99.1	2.0	26	98.6				2.0	0.13	1.69	7.50	7.6	50	0.000	
28	3.4	45	97.9	3.0	40	98.0	0.42	5.5	89.2	3.0	0.13	1.71	7.50	7.9	64	0.000	
29	1.8	24	98.3	2.0	26	98.9				2.0	0.09	1.19	7.60	8.0	19	0.000	
30	2.0	23	98.8	1.0	12	99.3				1.0	0.16	1.85	7.60	7.7	134	0.000	
31																	
TL		1334			831			17.7									
ME	3.4	44	97.9	2.1	28	98.7	0.34	4.4	91.4	62.0	0.42	5.53		7.5	35	0.000	<0.005
WA	4.8	63		3.3	43										100		
MX											3.40	46.50	7.70			0	<0.005
MN													7.30	6.4			

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 Years)

PRINTED NAME AND TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTORIZED AGENT	DATE
Steven D. Washburn, Superintendent		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

ACTIVATED SLUDGE SHEET

September 2000

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

D	AERATION SYSTEM				MIXED LIQUOR								SECONDARY SLUDGE				
A Y	AERTN VOL	DETEN TIME	CRT	F:M RATIO	MLSS		MLVSS		SETTL.	SDI	D.O.	AIR	SS	VSS	RAS FLOW	WAS	
	KCF	HRS	DAYS		mg/L	Lbs.	mg/L	Lbs.	%	%	mg/L	CF	%	%	%	Gallons	Lbs.
SF	3											4				3	
1	48	5.6	4.5	0.27	1505	4507	1229	3680	20	0.75	6.60	60	0.30	0.25	65	40	1001
2	48	5.9			1328	3977					6.90	60			66	43	
3	48	6.2			1251	3746					6.80	63			69	41	
4	48	6.2			1188	3557					7.02	66			69	35	
5	48	5.3	5.0	0.57	1209	3620	988	2958	19	0.64	5.72	71	0.29	0.24	60	30	726
6	48	5.3	5.8	0.07	1320	3953	1088	3258	23	0.57	4.15	72	0.28	0.23	62	29	677
7	48	5.4	5.4	0.42	1219	3650	1000	2994	23	0.53	6.53	84	0.30	0.25	74	27	676
8	48	6.1	5.1	0.35	1289	3860	1068	3198	23	0.56	6.68	80	0.31	0.26	70	29	750
9	48	5.8			1344	4024					6.61	79			67	29	
10	48	5.5			1321	3956					6.03	81			63	29	
11	48	5.0	4.5	0.53	1241	3716	1026	3072	30	0.41	6.34	80	0.33	0.28	58	30	826
12	48	5.2	3.9	0.40	1303	3902	1093	3273	36	0.36	6.54	84	0.41	0.34	62	29	992
13	48	5.5	4.2	0.22	1324	3965	1108	3318	30	0.44	7.15	86	0.35	0.29	63	32	934
14	48	5.3	3.8	0.40	1325	3968	1100	3294	35	0.38	7.02	87	0.39	0.32	57	32	1041
15	48	5.8	3.6	0.35	1332	3989	1113	3333	29	0.46	5.04	89	0.37	0.31	62	36	1111
16	48	6.0			1302	3899					7.63	91			64	36	
17	48	6.1			1222	3659					7.16	87			65	36	
18	48	5.0	4.4	0.60	1134	3396	948	2839	30	0.38	7.63	85	0.31	0.26	52	30	776
19	48	5.4	6.6	0.54	1241	3716	1026	3072	37	0.34	6.29	80	0.25	0.21	55	27	563
20	48	5.4	6.3	0.40	1322	3959	1113	3333	5	2.64	5.75	81	0.29	0.25	48	26	629
21	48	5.5		3.69	139	416	112	335	51	0.03	7.45	88	0.51	0.43	35	0	
22	48	5.6	18.2	0.26	1731	5183	1418	4246	49	0.35	6.90	90	0.31	0.26	60	11	284
23	48	5.7			1586	4749					6.99	84			56	32	
24	48	5.9			1574	4713					7.07	88			60	33	
25	48	5.4	5.0	0.31	1504	4504	1262	3779	49	0.31	5.83	90	0.31	0.25	55	35	905
26	48	5.4	5.3	0.30	1574	4713	1326	3971	49	0.32	7.57	90	0.37	0.31	58	29	895
27	48	5.5	5.7	0.33	1650	4941	1393	4171	48	0.34	7.28	87	0.36	0.30	57	29	871
28	48	5.5	5.3	0.30	1558	4665	1419	4249	54	0.29	6.85	90	0.33	0.28	58	32	881
29	48	5.5	4.9	0.32	1666	4989	1311	3926	67	0.25	6.50	90	0.35	0.29	57	35	1022
30	48	6.2									7.46	89			65	35	
31	48																
TL												2452				917	15557
ME	48	5.6	5.7	0.53	1335	3996	1107	3315	35	0.5	6.6	82	0.34	0.28	60	31	819

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SLUDGE SHEET

Marshall

MI 002 3540

September 2000

SUPERINTENDENT
Steven D. Washburn

	RAW SLUDGE				LIME STABILIZED SLUDGE					
DAY	GALLONS	TOTAL SOLIDS %	VOLATILE SOLIDS %	pH SU	LIME POUNDS	pH 2 hrs @ 25 C SU	pH 16 hrs SU	Lbs. Lime per 1000 gallons sludge		
1	8500	3.4	75.0	6.0	594	12.2	12.2	70		
2	8500	3.0	76.0	6.0	594	12.2	12.3	70		
3	8700	3.6	75.0	5.9	594	12.4	12.3	68		
4	8400	3.3	76.0	6.0	713	12.3	12.4	85		
5	8500	3.9	75.0	6.0	653	12.2	12.4	77		
6	9500	3.1	76.0	6.0	594	12.2	12.2	63		
7	8500	3.4	75.0	6.1	653	12.1	12.3	77		
8	8500	3.0	75.0	6.0	594	12.3	12.3	70		
9	6500	2.4	76.0	6.6	505	12.3	12.4	78		
10	7200	3.6	76.0	5.9	1010	12.1	12.0	140		
11	7500	3.7	76.0	5.8	594	12.3	12.2	79		
12	8500	3.0	75.0	5.8	594	12.3	12.2	70		
13	8800	3.6	76.0	5.7	535	12.2	12.3	61		
14	8400	2.9	76.0	5.7	594	12.2	12.1	71		
15	8500	3.1	76.0	5.8	446	12.3	12.2	52		
16	8500	2.7	75.0	5.9	446	12.3	12.3	52		
17	8500	2.9	77.0	5.8	446	12.3	12.4	52		
18	8000	2.8	77.0	5.9	446	12.2	12.4	56		
19	8200	2.9	72.0	5.9	446	12.3	12.4	54		
20	8500	3.2	74.0	5.9	446	12.3	12.3	52		
21	8400	3.2	74.0	54.8	446	12.3	12.4	53		
22	8500	3.2	73.0	5.9	446	12.3	12.4	52		
23	8500	2.8	77.0	5.9	297	12.3	12.4	35		
24	8500	3.0	76.0	5.9	297	12.3	12.4	35		
25	6500	3.1	75.0	5.9	327	12.2	12.4	50		
26	6500	2.9	76.0	5.8	297	12.3	12.4	46		
27	6600	2.8	74.0	5.8	297	12.3	12.4	45		
28	6700	2.8	75.0	5.8	297	12.3	12.3	44		
29										
30	12400	2.7	72.0	5.8						
31										
TOTAL	238800				14201					
MEAN	8234	3.1	75.2	7.6	507	12.3	12.3	63		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MISCELLANEOUS SHEET

September 2000

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	WATER	ELECTRICAL USAGE		FUEL GAS		CHEMICALS APPLIED									
			X 120		X 100	$FECL_3$					Cl_2		SO_2		
	CF	METER	KWH	METER	CF	GALS	SP. GR.	% SOLN	LBS	mg/L	LBS	mg/L	LBS	mg/L
1	480	20	2400			100.0	1.4210	30	28.1	2.2	32.0	2.5	19.0	1.5
2	470	19	2280			50	1.4210	30	14.1	1.1	19	1.5	14.0	1.1
3	480	18	2160			100	1.4210	30	28.1	2.4	20	1.7	15.0	1.3
4	440	20	2400			100	1.4210	30	28.1	2.4	21	1.8	13.0	1.1
5	620	20	2400			100	1.4210	30	28.1	2.1	22	1.6	11.0	0.8
6	490	18	2160			50	1.4210	30	14.1	1.0	20	1.5	11.0	0.8
7	490	18	2160			50	1.4210	30	14.1	1.1	22	1.6	10.0	0.7
8	500	18	2160			100	1.4210	30	28.1	2.4	17	1.4	11.0	0.9
9	580	18	2160			100	1.4210	30	28.1	2.3	22	1.8	10.0	0.8
10	490	18	2160			100	1.4210	30	28.1	2.1	20	1.5	10.0	0.8
11	470	18	2160			50	1.4210	30	14.1	1.0	18	1.2	8.0	0.6
12	520	18	2160			100	1.4210	30	28.1	2.0	18	1.3	6.0	0.4
13	590	19	2280			100	1.4210	30	28.1	2.1	30	2.3	6.0	0.5
14	550	18	2160			75	1.4210	30	21.1	1.6	18	1.3	3.0	0.2
15	680	17	2040			75	1.4210	30	21.1	1.7	19	1.5	3.0	0.2
16	410	18	2160			75	1.4210	30	21.1	1.8	20	1.7	4.0	0.3
17	410	18	2160			75	1.4210	30	21.1	1.8	16	1.4	13.0	1.1
18	440	18	2160			100	1.4210	30	28.1	1.9	14	1.0	10.0	0.7
19	530	16	1920			50	1.4210	30	14.1	1.1	19	1.4	9.0	0.7
20	660	17	2040			100	1.4210	30	28.1	2.1	19	1.4	11.0	0.8
21	570	16	1920			100	1.4210	30	28.1	2.1	30	2.3	10.0	0.8
22	520	18	2160			100	1.4210	30	28.1	2.2	30	2.3	16.0	1.2
23	570	16	1920			100	1.4210	30	28.1	2.2	27	2.1	19.0	1.5
24	580	18	2160			50	1.4210	30	14.1	1.2	28	2.3	18.0	1.5
25	600	17	2040			75	1.4210	30	21.1	1.6	26	1.9	19.0	1.4
26	490	17	2040			75	1.4210	30	21.1	1.6	24	1.8	11.0	0.8
27	520	18	2160			75	1.4210	30	21.1	1.6	18	1.4	12.0	0.9
28	550	18	2160			75	1.4210	30	21.1	1.6	27	2.0	14.0	1.1
29	470	18	2160			75	1.4210	30	21.1	1.6	36	2.7	13.0	1.0
30	580	16	1920			50	1.4210	30	14.1	1.2	25	2.2	14.0	1.2
31														
TL	15750	536	64320			2425			682.1		677		343.0	
ME	525	18	2144			81	1.4210	30.0	22.7	1.8	22.6	1.8	11.4	0.9

MANPOWER

POSITION TITLE	NUMBER FULL TIME
SUPERINTENDANT	1
ASST. SUPT.	1
OPERATOR	3
MECHANIC	
CHEMIST	
LAB TECH	
IPP COORDINATOR	1
OTHER	

GIVE THE HOURS PER DAY THAT PLANT PERSONNEL ARE NORMALLY AT THE PLANT.

WEEKDAYS	8	HRS
SATURDAYS	8	HRS
SUNDAYS	8	HRS
HOLIDAYS	8	HRS

Weather Code	
1. Clear	6. Warm
2. Partly Cloudy	7. Cold
3. Cloudy	8. Windy
4. Rain	9. Melting Snow
5. Snow	

PLANT INFLUENT SHEET

October 2000

Marshall

STATE OF MICHIGAN

MI 002 3540

SUPERINTENDENT

DEPT OF ENVIRONMENTAL QUALITY

Steven D. Washburn

D	WEATHER		FLOW		RAW SEWAGE QUALITY									
A	TYPE	PRECIP	TOTAL	MAX	TEMP	pH	BOD_5		SS		TOTAL-P		VSS	NH3-N
Y	CODE	Inches	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l
1	1		1.370		62	7.80	170	1942	136	1554			134	14.3
2	1		1.630		66	7.70	100	1359	138	1876			132	13.2
3	4	1.58	1.710		68	7.90	114	1626	116	1654			98	
4	1		1.780		66	8.30	155	2301	128	1900			106	
5	4	0.28	1.750		65	7.80	97	1416	102	1489			86	12.4
6	1		1.750		64	9.00	80	1168	104	1518			104	
7	4	0.05	1.570		64	7.70	160	2095	134	1755			134	
8	1		1.570		61	7.80	152	1990	142	1859			132	13.5
9	1		1.810		66	7.80	170	2566	138	2083			122	
10	1		1.810		66	7.50	103	1555	63	951	2.92	44	58	
11	1		1.810		62	7.60	125	1887	112	1691			104	12.1
12	1		1.650		62	7.60	170	2339	154	2119			148	
13	4	0.04	1.620		62	7.80	197	2662	186	2513			180	
14	4	0.02	1.420		62	7.70	177	2096	166	1966			160	
15	4	0.04	1.390		62	7.60	147	1704	132	1530			124	14.0
16	1		1.550		65	7.60	186	2404	146	1887	3.08	40	142	
17	1		1.550		63	7.90	192	2482	136	1758			130	
18	1		1.580		65	7.80	142	1871	200	2635			180	
19	1		1.540		64	7.60	119	1528	162	2081			156	
20	1		1.570		64	7.50	118	1545	160	2095	3.18	42	160	15.3
21	1		1.440		65	7.70	173	2078	104	1249			104	
22	1		1.440		65	7.80	118	1417	120	1441			120	
23	4	1.28	1.620		62	7.60	177	2391	162	2189			150	
24	1		1.690		62	7.50	144	2030	126	1776			124	12.3
25	4	0.01	1.620		64	7.40	136	1837	150	2027			138	
26	4	0.28	1.630		64	7.60	102	1387	200	2719			192	14.6
27	1		1.610		63	7.50	94	1262	82	1101			82	
28	1		1.440		63	7.50	157	1886	178	2138			166	
29	1		1.430		60	7.70	180	2147	152	1813	3.55	42	136	
30	1		1.620		61	7.70	98	1324	96	1297			84	
31	1		1.560		62	7.30	204	2654	162	2108			142	13.8
TL		3.58	49.530					58950		56771		168		
ME			1.598		63.548		144	1902	138	1831	3.18	42	130	13.6

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

PRIMARY EFFLUENT SHEET

October 2000

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	PRIMARY EFFLUENT QUALITY												
	BOD-5			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS		AMMONIA NITROGEN	
	mg/l	LBS	Removal	mg/l	LBS	% Removal	mg/l	LBS	% Removal	mg/l	%	mg/l	LBS
1	83	948	51.2	40	457	70.6				40.0	100.0	14.0	160
2	89	1210	11.0	30	428	78.3				30.0	100.0	14.0	200
3	104	1483	8.8	28	416	75.9				26.0	92.9		
4	116	1722	25.2	42	613	67.2				34.0	81.0		
5	88	1284	9.3	8	117	92.2				6.0	75.0	13.1	191
6	91	1328	-13.8	36	471	65.4				36.0	100.0		
7	101	1322	36.9	54	707	59.7				50.0	92.6		
8	93	1218	38.8	24	362	83.1				24.0	100.0	15.3	231
9	105	1585	38.2	48	725	65.2				38.0	79.2		
10	110	1660	-6.8	42	634	33.3	2.3	34.4	21.9	34.0	81.0		
11	99	1494	20.8	32	440	71.4				32.0	100.0	12.8	176
12	146	2009	14.1	42	567	72.7				38.0	90.5		
13	126	1702	36.0	26	308	86.0				26.0	100.0		
14	77	912	56.5	28	325	83.1				26.0	92.9		
15	73	846	50.3	40	517	69.7				38.0	95.0	13.6	176
16	104	1344	44.1	38	491	74.0	1.5	18.9	52.6	38.0	100.0		
17	150	1939	21.9	24	316	82.4				24.0	100.0		
18	100	1318	29.6	32	411	84.0				32.0	100.0		
19	117	1503	1.7	26	340	84.0				26.0	100.0		
20	129	1689	-9.3	40	480	75.0	1.8	21.6	43.4	40.0	100.0	15.7	189
21	134	1609	22.5	24	288	76.9				24.0	100.0		
22	129	1549	-9.3	24	324	80.0				24.0	100.0		
23	116	1567	34.5	50	705	69.1				44.0	88.0		
24	142	2001	1.4	48	649	61.9				46.0	95.8	14.8	200
25	110	1486	19.1	54	734	64.0				52.0	96.3		
26	134	1822	-31.4	42	564	79.0				42.0	100.0	18.4	247
27	114	1531	-21.3	42	504	48.8				42.0	100.0		
28	81	973	48.4	48	572	73.0				46.0	95.8		
29	97	1157	46.1	26	351	82.9	1.7	22.3	53.5	24.0	92.3		
30	145	1959	-48.0	54	703	43.8				48.0	88.9		
31	108	1405	47.1	44	18176	72.8				38.0	86.4	16.4	6775
TL		45578			32696			97.2					8544
ME	110	1470	18.5	37	1055	71.8	1.8	24.3	42.9	1068.0	94.3	14.8	854

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION

DEQ

Discharge Number	Permit Number
001 A	MI 002 3540

DAILY DISCHARGE MONITORING REPORT

Monitoring Period: October 2000

DAY	$CBOD_5$			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS	NH3-N		PH	D.O.	F.COLI #/100ml	CL RESID	CN Amenable
	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	mg/l	LBS	SU	mg/l	MF	mg/l	mg/L
1	2.0	23	98.8	3.0	34	97.8				3.0	0.09	1.03	7.60	7.8	11	0.000	
2	2.5	34	97.5	1.0	14	99.3				1.0	0.17	2.31	7.60	7.8	77	0.000	<0.005
3	2.9	41	97.5	1.0	14	99.1				1.0			7.50	8.1	61	0.000	
4	4.5	67	97.1	5.0	74	96.1				5.0			7.60	7.7	120	0.000	
5	6.8	99	93.0	1.0	15	99.0				1.0	6.73	98.22	7.40	7.3	32	0.000	
6	3.8	55	95.3	5.0	73	95.2				5.0			7.50	7.2	33	0.000	
7	2.7	35	98.3	3.0	39	97.8				3.0			7.60	8.2	50	0.000	
8	2.7	35	98.2	1.0	13	99.3				1.0	0.22	2.88	7.50	8.2	40	0.000	
9	2.5	38	98.5	6.0	91	95.7				6.0			7.30	7.4	111	0.000	<0.005
10	4.7	71	95.4	2.0	30	96.8	0.40	6.0	86.3	2.0			7.40	8.1	324	0.000	
11	10.0	151	92.0	31.0	468	72.3				29.0	0.05	0.75	7.40	7.1	120	0.000	
12	27.6	380	83.8	78.0	1073	49.4				78.0			7.30	6.7	600	0.000	
13	25.9	350	86.8	68.0	919	63.4				68.0			7.40	6.1	106	0.000	
14	2.6	31	98.5	2.0	24	98.8				2.0			7.40	7.2	61	0.000	
15	4.1	48	97.2	1.0	12	99.2				1.0	0.17	1.97	7.50	8.0	21	0.000	
16	3.3	43	98.2	6.0	78	95.9	0.34	4.4	89.0	6.0			7.40	7.6	240	0.000	
17	8.0	104	95.8	1.0	13	99.3				1.0			7.40	7.2	55	0.000	<0.005
18	4.5	59	96.8	3.0	40	98.5				3.0			7.30	6.7	26	0.019	
19	2.3	30	98.1	3.0	39	98.1				3.0			7.40	7.2	240	0.000	
20	1.9	24	98.4	2.0	26	98.8	0.29	3.8	90.9	2.0	0.09	1.18	7.40	7.5	240	0.000	
21	2.6	31	98.5	1.0	12	99.0				1.0			7.50	7.8	15	0.000	
22	1.9	22	98.4	1.0	12	99.2				1.0			7.40	7.7	13	0.000	
23	2.3	31	98.7	5.0	68	96.9				5.0			7.30	7.0	76	0.000	
24	1.8	25	98.8	1.0	14	99.2				1.0	0.11	1.55	7.40	7.1	176	0.000	
25	1.2	16	99.2	5.0	68	96.7				5.0			7.40	7.4	92	0.000	<0.005
26	3.2	44	96.8	1.0	14	99.5				1.0	0.41	5.57	7.30	6.7	100	0.000	
27	3.4	45	96.4	4.0	54	95.1				4.0			7.30	7.0	120	0.000	
28	3.6	43	97.7	2.0	24	98.9				2.0			7.20	8.1	16	0.000	
29	2.1	26	98.8	1.0	12	99.3	0.14	1.7	96.1	1.0			7.50	7.9	49	0.000	
30	1.7	23	98.3	5.0	68	94.8				5.0			7.40	7.2	40	0.000	
31	2.4	31	98.8	2.0	26	98.8				2.0	2.75	35.78	7.20	7.1	44	0.000	
TL		2056			3457			15.9									
ME	4.9	66	96.6	8.1	112	94.4	0.29	4.0	90.5	249.0	1.08	15.13		7.4	67	0.001	<0.005
WA	11.7	158		27.0	376										134		
MX											6.73	98.22	7.60			0.019	<0.005
MN													7.20	6.1			

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 Years)

PRINTED NAME AND TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTORIZED AGENT	DATE
Steven D. Washburn, Superintendent		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

ACTIVATED SLUDGE SHEET

October 2000

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	AERATION SYSTEM				MIXED LIQUOR								SECONDARY SLUDGE				
	AERTN VOL	DETEN TIME	CRT	F:M RATIO	MLSS		MLVSS		SETTL.	SDI	D.O.	AIR	SS	VSS	RAS FLOW	WAS	
	KCF	HRS	DAYS		mg/L	Lbs.	mg/L	Lbs.	%	%	mg/L	CF	%	%	%	Gallons	Lbs.
SF	3											4				3	
1	48	6.3			1595	4776					7.72	85			66	35	
2	48	5.3	5.9	0.33	1469	4399	1236	3701	55	0.27	6.84	85	0.24	0.20	58	37	741
3	48	5.0	3.3		921	2758			50	0.18	7.56	94	0.30	0.26	54	33	826
4	48	4.8	6.6	0.44	1748	5234	1319	3950	42	0.42	7.22	90	0.33	0.27	53	29	798
5	48	4.9	8.6	0.30	1687	5052	1414	4234	62	0.27	6.63	88	0.27	0.22	55	26	585
6	48	4.9	5.6	0.32	1675	5016	1400	4192	70	0.24	6.70	83	0.36	0.30	53	30	901
7	48	5.5			1726	5168					7.49	88			55	32	
8	48	5.5			1689	5058					6.98	78			52	33	
9	48	4.8	6.3	0.40	1569	4698	1319	3950	69	0.23	7.67	68	0.30	0.25	48	30	751
10	48	4.8		0.37	1824	5462	1514	4534	81	0.23	7.18	85	0.37	0.31	57	0	
11	48	4.8	1.9	0.32	1869	5597	1564	4683	84	0.22	7.21	80	0.47	0.39	74	77	3018
12	48	5.2	6.4	0.42	1932	5785	1609	4818	79	0.24	7.75	84	0.30	0.25	84	36	901
13	48	5.3	5.4	0.40	1703	5099	1409	4219	90	0.19	6.10	80	0.30	0.25	83	38	951
14	48	6.1			1771	5303					6.04	75			95	44	
15	48	6.2			1711	5123					6.81	76			93	54	
16	48	5.6	3.9	0.38	1419	4249	1184	3545	83	0.17	6.40	79	0.24	0.20	88	55	1101
17	48	5.6	4.0	0.50	1547	4632	1305	3908	65	0.24	6.36	79	0.27	0.22	91	51	1148
18	48	5.5	4.4	0.36	1454	4354	1232	3689	65	0.22	5.21	81	0.24	0.20	88	49	981
19	48	5.6	3.9	0.40	1474	4414	1247	3734	65	0.23	6.28	81	0.26	0.22	90	52	1128
20	48	5.5	4.9	0.45	1506	4510	1267	3794	78	0.19	6.68	78	0.24	0.20	88	46	921
21	48	6.0			1555	4656					7.37	78			94	46	
22	48	6.0			1483	4441					6.83	82			92	46	
23	48	5.3	3.8	0.42	1471	4405	1256	3761	84	0.18	6.26	80	0.30	0.25	81	46	1151
24	48	5.1	3.4	0.56	1407	4213	1196	3581	84	0.17	5.69	78	0.32	0.27	78	46	1228
25	48	5.3	4.0	0.37	1547	4632	1332	3989	84	0.18	5.00	78	0.30	0.26	81	46	1151
26	48	5.3	4.1	0.44	1589	4758	1372	4108	77	0.21	5.88	76	0.32	0.27	80	43	1148
27	48	5.4	4.6	0.38	1595	4776	1360	4072	76	0.21	7.36	76	0.29	0.25	85	43	1040
28	48	6.0			1652	4947					7.69	83			94	43	
29	48	6.0			1636	4899					6.40	86			95	43	
30	48	5.3	4.5	0.49	1573	4710	1344	4024	84	0.19	6.64	84	0.27	0.23	81	46	1036
31	48	5.5	2.6	0.35	1560	4671	1336	4001	65	0.24	6.64	97	0.36	0.30	62	60	1801
TL												2535				1295	23304
ME	48	5.4	4.7	0.40	1592	4768	1344	4023	72	0.2	6.7	82	0.30	0.25	76	42	1110

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

BIOSOLIDS SHEET

Marshall

MI 002 3540

October 2000

SUPERINTENDENT
Steven D. Washburn

	RAW SLUDGE	RAW BIOSOLIDS			LIME STABILIZED BIOSOLIDS					
DAY	GALLONS	TOTAL SOLIDS %	VOLATILE SOLIDS %	pH SU	LIME POUNDS	pH 2 hrs @ 25 C SU		Lbs. Lime per 1000 gallons biosolids		
1	12600	2.6	78.0	5.8						
2	24000	2.6	76.0	5.8						
3	11300	4.2	73.0	5.8						
4	8500	2.9	72.0	6.0						
5	8500	2.9	71.0	6.2						
6	8500	3.4	72.0	5.8						
7	7500	3.2	71.0	5.7						
8	9200	2.7	73.0	5.7	1374			149		
9	8250	2.8	74.0	5.7	1496			181		
10	8650	2.8	74.0	5.7	1360	12.2		157		
11	8000	2.6	73.0	5.7						
12	8000	3.0	70.0	5.6	1496			187		
13	8400	2.8	69.0	5.6						
14	8400	2.7	70.0	5.8						
15	8000	2.6	74.0	5.9						
16	8000	2.5	75.0	5.9						
17	8400	2.6	76.0	5.9	1224			146		
18	8500	2.6	74.0	5.8		12.2				
19	8500	2.8	73.0	5.9	748	12.1		88		
20	8500	3.2	79.0	5.9						
21	10500	2.5	75.0	5.7						
22	10500	2.6	73.0	5.8						
23					816					
24	10000	2.5	73.0	5.9	1156			116		
25	14000	2.6	74.0	5.8						
26	7700	2.7	75.0	5.8		12.1				
27	10500	2.7	74.0	6.0						
28	10500	2.5	76.0	5.9						
29	10500	2.6	76.0	6.0						
30	20000	2.7	75.0	6.0	952			48		
31	15000	2.0	75.0	6.1	1224			82		
TOTAL	308900				11846					
MEAN	10297	2.8	73.8	5.8	1185	12.1		128		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MISCELLANEOUS SHEET

October 2000

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	WATER	ELECTRICAL USAGE		FUEL GAS		CHEMICALS APPLIED								
			X 120		X 100	$FECL_3$					Cl_2		SO_2	
	CF	METER	KWH	METER	CF	GALS	SP. GR.	% SOLN	LBS	mg/L	LBS	mg/L	LBS	mg/L
1	570	18	2160			100.0	1.4060	30	28.4	2.5	29.0	2.5	15.0	1.3
2	400	18	2160			50	1.4060	30	14.2	1.0	22	1.6	10.0	0.7
3	710	18	2160			100	1.4060	30	28.4	2.0	16	1.1	6.0	0.4
4	490	21	2520			100	1.4060	30	28.4	1.9	36	2.4	6.0	0.4
5	410	18	2160			50	1.4060	30	14.2	1.0	20	1.4	24.0	1.6
6	400	18	2160			100	1.4060	30	28.4	1.9	19	1.3	24.0	1.6
7	460	17	2040			50	1.4060	30	14.2	1.1	22	1.7	20.0	1.5
8	520	18	2160			50	1.4060	30	14.2	1.1	28	2.1	14.0	1.1
9	440	21	2520			50	1.4060	30	14.2	0.9	19	1.3	8.0	0.5
10	450	20	2400			50	1.4060	30	14.2	0.9	33	2.2	8.0	0.5
11	490	20	2400			100	1.4060	30	28.4	1.9	34	2.3	10.0	0.7
12	470	19	2280			100	1.4060	30	28.4	2.1	41	3.0	17.0	1.2
13	460	19	2280			150	1.4060	30	42.6	3.2	45	3.3	18.0	1.3
14	490	19	2280			75	1.4060	30	21.3	1.8	30	2.5	26.0	2.2
15	480	18	2160			75	1.4060	30	21.3	1.8	38	3.3	28.0	2.4
16	470	20	2400			100	1.4060	30	28.4	2.2	29	2.2	21.0	1.6
17	670	20	2400			75	1.4060	30	21.3	1.6	38	2.9	21.0	1.6
18	500	20	2400			100	1.4060	30	28.4	2.2	45	3.4	19.0	1.4
19	500	20	2400			100	1.4060	30	28.4	2.2	35	2.7	15.0	1.2
20	420	16	1920			75	1.4060	30	21.3	1.6	38	2.9	7.0	0.5
21	520	14	1680			75	1.4060	30	21.3	1.8	41	3.4	6.0	0.5
22	440	15	1800			100	1.4060	30	28.4	2.4	34	2.8	23.0	1.9
23	430	28	3360			100	1.4060	30	28.4	2.1	30	2.2	27.0	2.0
24	590	20	2400			75	1.4060	30	21.3	1.5	38	2.7	28.0	2.0
25	550	19	2280			75	1.4060	30	21.3	1.6	38	2.8	18.0	1.3
26	710	18	2160			100	1.4060	30	28.4	2.1	62	4.6	18.0	1.3
27	570	18	2160			100	1.4060	30	28.4	2.1	39	2.9	19.0	1.4
28	570	22	2640			100	1.4060	30	28.4	2.4	40	3.3	21.0	1.7
29	490	21	2520			150	1.4060	30	42.6	3.6	37	3.1	34.0	2.9
30	530	24	2880			100	1.4060	30	28.4	2.1	20	1.5	27.0	2.0
31	520	19	2280			100	1.4060	30	28.4	2.2	35	2.7	19.0	1.5
TL	15720	596	71520			2725			774.6		1031		557.0	
ME	507	19	2307			88	1.4060	30.0	25.0	1.9	33.3	2.5	18.0	1.4

MANPOWER	
POSITION TITLE	NUMBER FULL TIME
SUPERINTENDANT	1
ASST. SUPT.	1
OPERATOR	3
MECHANIC	
CHEMIST	
LAB TECH	
IPP COORDINATOR	1
OTHER	

GIVE THE HOURS PER DAY THAT PLANT PERSONNEL ARE NORMALLY AT THE PLANT.

WEEKDAYS	8	HRS
SATURDAYS	8	HRS
SUNDAYS	8	HRS
HOLIDAYS	8	HRS

Weather Code
1. Clear
2. Partly Cloudy
3. Cloudy
4. Rain
5. Snow
6. Warm
7. Cold
8. Windy
9. Melting Snow

PLANT INFLUENT SHEET

November 2000

Marshall

STATE OF MICHIGAN

MI 002 3540

SUPERINTENDENT

DEPT OF ENVIRONMENTAL QUALITY

Steven D. Washburn

D	WEATHER		FLOW		RAW SEWAGE QUALITY									
A	TYPE	PRECIP	TOTAL	MAX	TEMP	pH	BOD_5		SS		TOTAL-P		VSS	NH3-N
Y	CODE	Inches	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l
1	1		1.560		63	7.40	129	1678	96	1249			94	15.1
2	1		1.560		63	7.50	200	2602	180	2342			172	
3	1		1.530		63	7.60	93	1187	84	1072			76	
4	1		1.500		63	8.10	212	2652	188	2352			188	
5	1		1.370		60	7.40	206	2354	168	1920			162	
6	4	0.08	1.550		61	7.50	106	1370	136	1758			130	15.0
7	2		1.530		62	7.60	181	2310	210	2680			210	
8	2		1.560		64	7.40	97	1262	114	1483			104	
9	4	0.67	1.540		62	7.80	217	2787	140	1798	3.57	46	120	15.0
10	1		1.610		61	7.80	104	1396	146	1960			146	
11	2		1.570		61	7.70	161	2108	128	1676			128	
12	4	0.56	1.440		61	7.60	137	1645	126	1513			118	
13	4	0.25	1.690		64	7.50	152	2142	138	1945	3.36	47	138	
14	5	0.07	1.620		61	7.60	160	2162	147	1986			147	16.4
15	5	0.03	1.600		61	7.80	224	2989	186	2482			176	
16	5	0.21	1.670		63	7.80	128	1783	148	2061			144	
17	5	0.02	1.730		62	7.70	131	1890	232	3347			220	16.3
18	5	0.01	1.490		62	7.70	164	2038	166	2063			156	
19	5		1.470		58	7.80	236	2893	176	2158	3.19	39	162	
20	5	0.62	1.620		61	7.70	175	2364	156	2108			156	
21	5	0.02	1.670		59	7.60	187	2604	168	2340			156	13.9
22	5	0.03	1.680		60	8.20	105	1471	80	1121			68	
23	2		1.490		60	7.70	80	994	112	1392			102	
24	1		1.430		59	7.60	77	918	84	1002			66	16.2
25	4	0.38	1.480		59	7.60	82	1012	98	1210			88	
26	4	0.11	1.560		59	7.50	97	1262	100	1301			96	
27	1		1.740		59	7.30	101	1466	94	1364			84	
28	1		1.700		58	7.60	177	2510	140	1985	3.12	44	124	
29	5	0.39	1.680		57	8.00	204	2858	134	1878			132	14.4
30	1		1.720		58	7.60	83	1191	118	1693			110	
31														
TL		3.45	47.360					57900		55237		177		
ME			1.579				147	1930	140	1841	3.31	44	132	15.3

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

PRIMARY EFFLUENT SHEET

November 2000

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

	PRIMARY EFFLUENT QUALITY												
DAY	BOD-5			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS		AMMONIA NITROGEN	
	mg/l	LBS	Removal	mg/l	LBS	% Removal	mg/l	LBS	% Removal	mg/l	%	mg/l	LBS
1	154	2004	-19.4	42	546	56.3				42.0	100.0	17.5	228
2	120	1561	40.0	32	408	82.2				32.0	100.0		
3	144	1837	-54.8	50	626	40.5				50.0	100.0		
4	117	1464	44.8	60	686	68.1				60.0	100.0		
5	86	983	58.3	54	698	67.9				54.0	100.0		
6	108	1396	-1.9	62	791	54.4				62.0	100.0	15.4	197
7	150	1914	17.1	56	729	73.3				56.0	100.0		
8	143	1860	-47.4	64	822	43.9				54.0	84.4		
9	133	1708	38.7	58	779	58.6	2.0	26.2	45.4	46.0	79.3	17.9	240
10	142	1907	-36.5	72	943	50.7				72.0	100.0		
11	117	1532	27.3	50	600	60.9				50.0	100.0		
12	90	1081	34.3	64	902	49.2				64.0	100.0		
13	125	1762	17.8	56	757	59.4	2.3	31.1	31.5	56.0	100.0		
14	126	1702	21.3	42	560	71.4				42.0	100.0	18.5	247
15	123	1641	45.1	62	864	66.7				58.0	93.5		
16	148	2061	-15.6	48	693	67.6				48.0	100.0		
17	125	1804	4.6	52	646	77.6				50.0	96.2	18.2	226
18	99	1230	39.6	48	588	71.1				48.0	100.0		
19	82	1005	65.3	52	703	70.5	1.5	20.8	51.7	52.0	100.0		
20	103	1392	41.1	54	752	65.4				54.0	100.0		
21	126	1755	32.6	52	729	69.0				52.0	100.0	15.3	214
22	147	2060	-40.0	50	621	37.5				40.0	80.0		
23	104	1292	-30.0	56	668	50.0				38.0	67.9		
24	87	1038	-13.0	50	617	40.5				40.0	80.0	16.7	206
25	88	1086	-7.3	50	651	49.0				42.0	84.0		
26	96	1249	1.0	46	668	54.0				44.0	95.7		
27	124	1799	-22.8	58	822	38.3				50.0	86.2		
28	119	1687	32.8	46	645	67.1	1.9	25.9	40.7	38.0	82.6		
29	166	2326	18.6	50	717	62.7				50.0	100.0	15.7	225
30	151	2166	-81.9	56	803	52.5				42.0	75.0		
31													
TL		48303			21032			104.0					1783
ME	121	1610	7.0	53	701	59.2	1.9	26.0	42.3	1486.0	93.5	16.9	223

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION

DEQ

Discharge Number	Permit Number
001 A	MI 002 3540

DAILY DISCHARGE MONITORING REPORT

Monitoring Period
November 2000

DAY	$CBOD_5$			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS	NH3-N		PH	D.O.	F.COLI #/100ml	CL RESID	CN Amenable
	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	mg/l	LBS	SU	mg/l	MF	mg/l	mg/L
1	3.8	49	97.1	1.0	13	99.0				1.0	3.40	44.24	7.20	7.0	3	0.000	
2	2.2	28	98.9	7.0	91	96.1				7.0			7.30	6.6	2	0.000	
3	6.1	78	93.4	3.0	38	96.4				3.0			7.30	6.1	1	0.000	
4	4.6	57	97.8	3.0	38	98.4				3.0			7.30	6.2	1	0.000	
5	1.8	21	99.1	8.0	91	95.2				7.0			7.30	7.3	2	0.000	<0.005
6	3.3	43	96.9	5.0	65	96.3				5.0	3.69	47.70	7.40	7.0	2	0.000	
7	3.6	46	98.0	1.0	13	99.5				1.0			7.30	6.6	1	0.000	
8	6.3	82	93.5	8.0	104	93.0				8.0			7.30	6.1	5	0.000	
9	4.6	59	97.9	3.0	39	97.9	0.11	1.4	96.9	3.0	12.80	164.40	7.40	6.3	6	0.000	
10	5.1	68	95.1	2.0	27	98.6				2.0			7.40	7.4	2	0.000	
11	3.8	49	97.7	1.0	13	99.2				1.0			7.40	6.3	3	0.000	
12	2.7	32	98.1	3.0	36	97.6				3.0			7.40	6.5	6	0.008	
13	4.2	59	97.2	1.0	14	99.3	0.09	1.3	97.3	1.0			7.40	7.1	8	0.000	<0.005
14	3.3	45	97.9	1.0	14	99.3				1.0	10.70	144.57	7.40	7.3	10	0.000	
15	2.5	33	98.9	6.0	80	96.8				6.0			7.50	7.3	2	0.000	
16	6.7	93	94.8	1.0	14	99.3				1.0			7.40	7.1	1	0.000	
17	3.8	54	97.1	4.0	58	98.3				4.0	10.50	151.50	7.50	7.6	13	0.000	
18	3.5	43	97.9	1.0	12	99.4				1.0			7.50	8.0	8	0.000	
19	2.8	35	98.8	6.0	74	96.6	0.09	1.1	97.2	6.0			7.60	7.9	8	0.002	
20	3.3	44	98.1	3.0	41	98.1				3.0			7.60	8.0	11	0.000	<0.005
21	3.4	47	98.2	6.0	84	96.4				6.0	6.60	91.92	7.40	7.3	7	0.000	
22	9.8	137	90.7	4.0	56	95.0				4.0			7.30	6.4	7	0.000	
23	6.5	80	91.9	5.0	62	95.5				5.0			7.40	6.5	90	0.000	
24	3.2	38	95.8	3.0	36	96.4				2.0	8.71	103.88	7.30	7.2	6	0.000	
25	3.6	44	95.6	4.0	49	95.9				3.0			7.30	7.0	11	0.000	<0.005
26	4.4	57	95.5	3.0	39	97.0				3.0			7.30	6.7	3	0.000	
27	4.3	62	95.7	7.0	102	92.6				7.0			7.20	6.7	15	0.000	
28	4.4	62	97.5	5.0	71	96.4	0.14	1.9	95.6	5.0			7.40	6.4	34	0.000	
29	14.2	199	93.0	7.0	98	94.8				7.0	13.60	190.55	7.40	6.7	40	0.000	
30	14.6	209	82.4	13.0	186	89.0				13.0			7.50	7.0	120	0.000	
31																	
TL		1955			1656			5.7									
ME	4.9	65	96.0	4.2	55	96.8	0.11	1.4	96.8	122.0	8.75	117.34		6.9	6	0.000	<0.005
WA	7.6	106		6.5	91										21		
MX											13.60	190.55	7.60			0.008	<0.005
MN													7.20	6.1			

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 Years)

PRINTED NAME AND TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTORIZED AGENT	DATE
Steven D. Washburn, Superintendent		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

ACTIVATED SLUDGE SHEET

November 2000

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	AERATION SYSTEM				MIXED LIQUOR								SECONDARY SLUDGE				
	AERTN VOL	DETEN TIME	CRT	F:M RATIO	MLSS		MLVSS		SETTL.	SDI	D.O.	AIR	SS	VSS	RAS FLOW	WAS	
	KCF	HRS	DAYS		mg/L	Lbs.	mg/L	Lbs.	%	%	mg/L	CF	%	%	%	Gallons	Lbs.
SF	3											4				3	
1	48	5.5	2.5	0.56	1384	4144	1186	3551	60	0.23	5.60	51	0.36	0.31	60	56	1681
2	48	5.5	3.3	0.46	1332	3989	1144	3426	70	0.19	4.00	48	0.28	0.24	58	51	1191
3	48	5.6	2.4	0.54	1324	3965	1131	3387	52	0.25	5.09	50	0.36	0.31	58	56	1681
4	48	5.7			1275	3818					3.39	54			60	58	
5	48	6.3			1236	3701					3.83	55			67	58	
6	48	5.6	2.6	0.50	1085	3249	935	2800	45	0.24	5.11	53	0.29	0.22	64	51	1233
7	48	5.6	3.5	0.62	1208	3617	1039	3111	45	0.27	3.73	48	0.29	0.25	66	43	1040
8	48	5.5	4.7	0.54	1321	3956	1144	3426	62	0.21	3.68	44	0.23	0.20	65	44	844
9	48	5.6	2.9	0.48	1376	4120	1196	3581	70	0.20	1.49	44	0.35	0.30	64	48	1401
10	48	5.4	4.4	0.52	1420	4252	1223	3662	58	0.24	3.83	46	0.27	0.24	63	43	968
11	48	5.5			1448	4336					3.95	50			64	43	
12	48	6.0			1486	4450					3.22	48			69	44	
13	48	5.1	3.2	0.50	1350	4042	1171	3506	56	0.24	4.10	55	0.32	0.27	58	48	1281
14	48	5.3	3.2	0.48	1365	4087	1178	3527	45	0.30	4.03	55	0.33	0.29	58	47	1294
15	48	5.4	3.3	0.49	1314	3935	1123	3363	61	0.22	5.65	59	0.30	0.26	59	47	1176
16	48	5.2	4.2	0.58	1393	4171	1195	3578	62	0.22	5.42	92	0.31	0.26	57	38	982
17	48	5.0	3.6	0.47	1499	4489	1289	3860	60	0.25	5.20	101	0.33	0.29	57	45	1238
18	48	5.8			1539	4608					7.59	100			64	44	
19	48	5.9			1464	4384					7.26	100			64	54	
20	48	5.3	3.6	0.41	1339	4009	1125	3369	37	0.36	7.38	69	0.33	0.28	58	41	1128
21	48	5.2	3.7	0.45	1544	4623	1296	3881	42	0.37	5.35	50	0.31	0.26	56	48	1241
22	48	5.1	4.8	0.59	1399	4189	1168	3497	33	0.42	1.45	48	0.33	0.28	63	32	881
23	48	5.8			1587	4752					3.15	48			64	46	
24	48	6.0			1474	4414					5.57	45			66	46	
25	48	5.8			1377	4123					4.34	38			64	46	
26	48	5.5			1363	4081					3.70	38			60	34	
27	48	5.0	7.1	0.51	1427	4273	1189	3560	28	0.51	1.72	42	0.40	0.33	54	18	600
28	48	5.1	3.3	0.47	1455	4357	1210	3623	29	0.50	1.43	42	0.37	0.31	58	43	1327
29	48	5.1	4.5	0.65	1451	4345	1203	3602	32	0.45	2.25	43	0.34	0.28	58	34	964
30	48	5.0	3.1	0.56	1520	4551	1286	3851	28	0.54	0.99	42	0.39	0.33	55	45	1464
31	48																
TL												1658				1351	23617
ME	48	5.5	3.7	0.52	1392	4168	1172	3508	49	0.3	4.1	55	0.32		61	45	1181

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

BIOSOLIDS SHEET

Marshall

MI 002 3540

November 2000

SUPERINTENDENT
Steven D. Washburn

	RAW SLUDGE	RAW BIOSOLIDS			LIME STABILIZED BIOSOLIDS					
DAY	GALLONS	TOTAL SOLIDS %	VOLATILE SOLIDS %	pH SU	LIME POUNDS	pH 2 hrs @ 25 C SU		Lbs. Lime per 1000 gallons biosolids		
1	11000	2.1	74.0	6.1	1884	12.2		171		
2	11500	2.4	74.0	6.2						
3	12500	2.2	76.0	6.2						
4	15500	2.3	77.0	6.0						
5	15450	2.4	77.0	6.1						
6	15400	2.4	77.0	6.2	772			50		
7	15500	2.3	76.0	6.1	1594			103		
8	15500	2.3	77.0	6.0	1594			103		
9	15500	2.4	75.0	6.1	1448	12.2		93		
10	12500	2.4	75.0	6.2		12.4				
11	15525	2.4	75.0	6.1						
12	15300	2.4	74.0	6.1						
13	15750	2.3	77.0	6.1	1448			92		
14	15500	2.3	75.0	6.1	1545			100		
15	18900	2.3	73.0	6.2						
16	24000	1.6	77.0	7.1		12.3				
17	15000	2.4	74.0	6.1	1256	12.5		84		
18	15600	2.1	73.0	5.9						
19	15400	2.6	74.0	6.1						
20	15500	2.1	76.0	6.1	1352			87		
21	15000	3.2	75.0	6.3	1448			97		
22	10000	2.0	74.0	6.2	1448	12.3		145		
23	10000	1.9	76.0	6.4						
24	10000	3.1	75.0	5.9						
25	15900	2.9	75.0	6.5						
26	10000	1.5	77.0	6.6						
27	9560	3.4	76.0	5.9	1448			151		
28	9560	3.0	73.0	5.9	580	12.3		61		
29	16500	3.4	76.0	5.8	1545	12.3		94		
30	12750	2.8	76.0	6.0	1642			129		
31										
TOTAL	426095				21004					
MEAN	14203	2.4	75.3	6.2	1400	12.3		104		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MISCELLANEOUS SHEET

November 2000

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	WATER	ELECTRICAL USAGE		FUEL GAS		CHEMICALS APPLIED									
			X 120		X 100	$FECL_3$					Cl_2		SO_2		
	CF	METER	KWH	METER	CF	GALS	SP. GR.	% SOLN	LBS	mg/L	LBS	mg/L	LBS	mg/L
1	530	16	1920	1	100	100.0	1.4060	30	28.4	2.2	32.0	2.5	19.0	1.5
2	660	16	1920	4	400	100	1.4060	30	28.4	2.2	50	3.8	9.0	0.7
3	460	16	1920	2	200	100	1.4060	30	28.4	2.2	33	2.6	6.0	0.5
4	540	16	1920	12	1200	50	1.4060	30	14.2	1.1	35	2.8	4.0	0.3
5	560	17	2040	18	1800	175	1.4060	30	49.7	4.4	30	2.6	11.0	1.0
6	590	18	2160	0		75	1.4060	30	21.3	1.6	25	1.9	18.0	1.4
7	480	17	2040	8	800	150	1.4060	30	42.6	3.3	32	2.5	10.0	0.8
8	880	18	2160	5	500	125	1.4060	30	35.5	2.7	18	1.4	8.0	0.6
9	440	17	2040	11	1100	75	1.4060	30	21.3	1.7	21	1.6	14.0	1.1
10	540	17	2040	15	1500	100	1.4060	30	28.4	2.1	24	1.8	8.0	0.6
11	540	17	2040	17	1700	100	1.4060	30	28.4	2.2	20	1.5	9.0	0.7
12	550	17	2040	16	1600	100	1.4060	30	28.4	2.4	21	1.7	8.0	0.7
13	540	18	2160	20	2000	100	1.4060	30	28.4	2.0	14	1.0	11.0	0.8
14	610	17	2040	37	3700	100	1.4060	30	28.4	2.1	19	1.4	17.0	1.3
15	530	18	2160	35	3500	100	1.4060	30	28.4	2.1	17	1.3	10.0	0.7
16	490	20	2400	35	3500	100	1.4060	30	28.4	2.0	19	1.4	10.0	0.7
17	50	19	2280	34	3400	100	1.4060	30	28.4	2.0	17	1.2	10.0	0.7
18	560	25	3000	30	3000	100	1.4060	30	28.4	2.3	17	1.4	14.0	1.1
19	511	21	2520	32	3200	100	1.4060	30	28.4	2.3	18	1.5	11.0	0.9
20	550	22	2640	38	3800	100	1.4060	30	28.4	2.1	19	1.4	13.0	1.0
21	470	18	2160	37	3700	100	1.4060	30	28.4	2.0	14	1.0	9.0	0.6
22	540	19	2280	41	4100	100	1.4060	30	28.4	2.0	19	1.4	7.0	0.5
23	57	19	2280	39	3900	100	1.4060	30	28.4	2.3	16	1.3	6.0	0.5
24	460	16	1920	36	3600	100	1.4060	30	28.4	2.4	13	1.1	13.0	1.1
25	580	17	2040	33	3300	100	1.4060	30	28.4	2.3	11	0.9	11.0	0.9
26	560	18	2160	29	2900	100	1.4060	30	28.4	2.2	16	1.2	26.0	2.0
27	490	26	3120	30	3000	100	1.4060	30	28.4	2.0	28	1.9	23.0	1.6
28	400	18	2160	30	3000	100	1.4060	30	28.4	2.0	15	1.1	15.0	1.1
29	490	18	2160	30	3000	100	1.4060	30	28.4	2.0	15	1.1	15.0	1.1
30	470	17	2040	37	3700	75	1.4060	30	21.3	1.5	16	1.1	8.0	0.6
31														
TL	15128	548	65760	712	71200	3025			859.9		644		353.0	
ME	504	18	2192	24	2455	101	1.4060	30.0	28.7	2.2	21.5	1.6	11.8	0.9

MANPOWER	
POSITION TITLE	NUMBER FULL TIME
SUPERINTENDANT	1
ASST. SUPT.	1
OPERATOR	3
MECHANIC	
CHEMIST	
LAB TECH	
IPP COORDINATOR	1
OTHER	

GIVE THE HOURS PER DAY THAT PLANT PERSONNEL ARE NORMALLY AT THE PLANT.

WEEKDAYS	8	HRS
SATURDAYS	8	HRS
SUNDAYS	8	HRS
HOLIDAYS	8	HRS

Weather Code	
1. Clear	6. Warm
2. Partly Cloudy	7. Cold
3. Cloudy	8. Windy
4. Rain	9. Melting Snow
5. Snow	

PLANT INFLUENT SHEET

December 2000

Marshall

STATE OF MICHIGAN

MI 002 3540

SUPERINTENDENT

DEPT OF ENVIRONMENTAL QUALITY

Steven D. Washburn

D	WEATHER		FLOW		RAW SEWAGE QUALITY									
A	TYPE	PRECIP	TOTAL	MAX	TEMP	pH	BOD_5		SS		TOTAL-P		VSS	NH3-N
Y	CODE	Inches	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l
1	1		1.730		59	7.70	53	765	104	1501			104	15.7
2	1		1.700		58	7.90	183	2595	196	2779			194	
3	1		1.500		55	7.80	184	2302	186	2327			178	13.1
4	2		1.710		58	7.90	200	2852	146	2082	3.69	53	136	
5	5	0.04	1.670		57	7.60	104	1448	108	1504			97	
6	5	0.03	1.700		57	7.80	178	2524	132	1871			122	
7	5	0.19	1.560		54	7.80	237	3083	150	1952			136	15.1
8	2		1.550		56	7.90	204	2637	174	2249			162	
9	2		1.530		56	7.90	228	2909	188	2399			172	
10	5	0.03	1.460		55	7.90	178	2167	140	1705			126	
11	5	0.83	1.630		55	7.70	157	2134	158	2148			156	
12	5	0.02	1.460		56	7.80	124	1510	123	1498	3.22	39	123	14.5
13	5	0.42	1.620		54	7.70	162	2189	86	1162			86	
14	1		1.610		54	7.70	170	2283	94	1262			94	
15	5	0.12	1.630		54	7.80	169	2297	66	897			66	14.7
16	5	0.47	1.460		54	7.80	176	2143	148	1802			148	
17	5	0.19	1.460		54	7.90	145	1766	120	1461	3.05	37	110	
18	1		1.640		55	7.90	174	2380	142	1942			134	
19	1		1.640		55	7.80	186	2544	169	2312			161	
20	5	0.07	1.610		54	7.70	222	2981	238	3196			226	
21	5	0.05	1.600		54	7.80	209	2789	147	1962			128	14.5
22	2		1.720		55	7.80	163	2338	152	2180			132	
23	5	0.05	1.520		54	7.80	144	1825	160	2028			150	
24	5	0.02	1.480		54	7.70	118	1456	132	1629			132	16.4
25	2		1.430		52	7.90	112	1336	166	1980	2.78	33	158	
26	5	0.02	1.520		53	7.90	227	2878	227	2878			219	16.9
27	2		1.640		53	7.80	167	2284	144	1970			144	
28	2		1.560		53	7.70	178	2316	150	1952			140	
29	5	0.27	1.510		53	7.60	157	1977	210	2645			204	
30	5	0.02	1.470		53	7.80	137	1680	162	1986			158	
31	1		1.450		53	7.70	166	2007	146	1766			140	
TL		2.84	48.770					68396		61023		162		
ME			1.573		#######		168	2206	150	1968	3.19	41	143	15.1

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

PRIMARY EFFLUENT SHEET

Marshall
MI 002 3540

December 2000

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

PRIMARY EFFLUENT QUALITY

DAY	BOD-5			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS		AMMONIA NITROGEN	
	mg/l	LBS	Removal	mg/l	LBS	% Removal	mg/l	LBS	% Removal	mg/l	%	mg/l	LBS
1	118	1703	-122.6	58	837	44.2				56.0	96.6	18.5	267
2	118	1673	35.5	54	676	72.4				52.0	96.3		
3	92	1151	50.0	34	485	81.7				34.0	100.0	13.7	195
4	148	2111	26.0	46	641	68.5				38.0	82.6		
5	123	1713	-18.3	46	652	57.4	2.1	29.1		38.0	82.6		
6	120	1701	32.6	44	572	66.7				38.0	86.4		
7	87	1132	63.3	46	595	69.3				40.0	87.0	14.7	190
8	101	1306	50.5	46	587	73.6				36.0	78.3		
9	137	1748	39.9	38	463	79.8				34.0	89.5		
10	97	1181	45.5	34	462	75.7				24.0	70.6		
11	105	1427	33.1	50	609	68.4				46.0	92.0		
12	72	877	41.9	28	378	77.2	1.7	22.3	48.8	28.0	100.0	14.4	195
13	218	2945	-34.6	68	913	20.9				60.0	88.2		
14	134	1799	21.2	60	816	36.2				60.0	100.0		
15	162	2202	4.1	64	779	3.0				64.0	100.0	17.2	209
16	99	1205	43.8	38	463	74.3				38.0	100.0		
17	80	974	44.8	62	848	48.3	1.2	16.5	60.3	62.0	100.0		
18	103	1409	40.8	38	520	73.2				38.0	100.0		
19	117	1600	37.1	46	618	72.8				36.0	78.3		
20	110	1477	50.5	48	641	79.8				42.0	87.5		
21	125	1668	40.2	26	373	82.3				18.0	69.2	14.1	202
22	162	2324	0.6	70	887	53.9				48.0	68.6		
23	102	1293	29.2	46	568	71.3				44.0	95.7		
24	89	1099	24.6	40	477	69.7				40.0	100.0	14.8	177
25	84	1002	25.0	64	811	61.4	2.5	32.2	8.6	62.0	96.9		
26	111	1407	51.1	50	684	78.0				48.0	96.0	15.2	208
27	119	1628	28.7	44	572	69.4				44.0	100.0		
28	81	1054	54.5	34	428	77.3				32.0	94.1		
29	77	970	51.0	36	441	82.9				36.0	100.0		
30	65	797	52.6	32	387	80.2				32.0	100.0		
31	60	726	63.9	32	387	78.1				26.0	81.3		
TL		45301			18569			100.1					1643
ME	110	1461	29.2	46	599	66.1	1.9	25.0	29.4	1294.0	90.9	15.3	205

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION

DEQ

Discharge Number	Permit Number
001 A	MI 002 3540

DAILY DISCHARGE MONITORING REPORT

Monitoring Period
December 2000

DAY	$CBOD_5$			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS	NH3-N		PH	D.O.	F.COLI #/100ml	CL RESID	CN Amenable
	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	mg/l	LBS	SU	mg/l	MF	mg/l	mg/L
1	8.3	120	84.4	8.0	115	92.3				8.0	11.80	170.25	7.40	6.5	420	0.000	
2	7.1	100	96.1	9.0	128	95.4				9.0			7.40	6.4	122	0.000	
3	4.8	60	97.4	7.0	88	96.2				7.0	6.90	86.32	7.50	6.9	34	0.000	
4	7.1	102	96.4	14.0	200	90.4	0.29	4.1	92.1	13.0			7.50	6.4	180	0.000	
5	16.2	225	84.4	21.0	292	80.6				21.0			7.40	6.7	180	0.000	<0.005
6	10.5	148	94.1	15.0	213	88.6				15.0			7.50	7.6	52	0.000	
7	7.5	98	96.8	15.0	195	90.0				15.0	8.38	109.03	7.60	8.4	15	0.000	
8	7.7	100	96.2	11.0	142	93.7				11.0			7.60	7.9	21	0.009	
9	10.5	133	95.4	10.0	128	94.7				10.0			7.60	7.8	23	0.000	
10	7.4	90	95.9	8.0	97	94.3				8.0			7.50	7.4	36	0.006	
11	7.1	96	95.5	18.0	245	88.6				18.0			7.50	7.6	34	0.000	<0.005
12	8.0	97	93.6	11.0	134	91.1	0.41	5.0	87.3	11.0	6.44	78.42	7.50	8.1	37	0.000	
13	7.4	101	95.4	20.0	270	76.7				20.0			7.60	7.8	30	0.000	
14	10.4	140	93.9	12.0	161	87.2				12.0			7.50	7.5	48	0.000	
15	12.3	167	92.7	23.0	313	65.2				23.0	9.14	124.25	7.50	6.7	32	0.000	
16	14.0	170	92.0	26.0	317	82.4				26.0			7.40	6.3	32	0.000	
17	12.7	155	91.2	14.0	170	88.3	0.54	6.6	82.3	14.0			7.60	7.2	15	0.000	
18	12.9	176	92.6	39.0	533	72.5				39.0			7.70	6.6	420	0.000	<0.005
19	9.1	124	95.1	8.0	109	95.3				8.0			7.40	6.7	420	0.004	
20	21.7	291	90.2	47.0	631	80.3				47.0			7.40	6.3	424	0.000	
21	20.0	267	90.4	55.0	734	62.6				55.0	12.10	161.46	7.50	6.8	50	0.019	
22	18.0	258	89.0	67.0	961	55.9				47.0			7.30	6.5	120	0.000	
23	10.6	134	92.6	8.0	101	95.0				8.0			7.20	6.8	32	0.000	
24	7.5	93	93.6	8.0	99	93.9				8.0	10.60	130.84	7.30	6.9	4	0.000	
25	20.5	244	81.7	56.0	668	66.3	0.99	11.8	64.4	56.0			7.20	7.1	20	0.000	<0.005
26	37.0	469	83.7	8.0	101	96.5				8.0	13.20	167.33	7.30	6.0	60	0.000	
27	44.6	610	73.3	84.0	1149	41.7				54.0			7.40	6.6	60	0.000	
28	28.0	364	84.3	74.0	963	50.7				50.0			7.50	6.9	595	0.002	
29	14.5	183	90.8	50.0	630	76.2				20.0			7.40	7.0	120	0.002	
30	7.0	86	94.9	8.0	98	95.1				8.0			7.60	8.9	64	0.020	
31	5.5	67	96.7	1.0	12	99.3				1.0			7.60	8.2	27	0.000	
TL		5470			9997			27.5									
ME	13.4	176	91.6	24.4	322	83.1	0.56	6.9	81.5	650.0	9.82	128.49		7.1	60	0.002	<0.005
WA	23.7	310		43.6	577										112		
MX											13.20	170.25	7.70			0.02	<0.005
MN													7.20	6.0			

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 Years)

PRINTED NAME AND TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTORIZED AGENT	DATE
Steven D. Washburn, Superintendent		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

ACTIVATED SLUDGE SHEET

December 2000

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	AERATION SYSTEM				MIXED LIQUOR								SECONDARY SLUDGE				
	AERTN VOL	DETEN TIME	CRT	F:M RATIO	MLSS		MLVSS		SETTL.	SDI	D.O.	AIR	SS	VSS	RAS FLOW	WAS	
	KCF	HRS	DAYS		mg/L	Lbs.	mg/L	Lbs.	%	%	mg/L	CF	%	%	%	Gallons	Lbs.
SF	3											4				3	
1	48	5.0	3.9	0.46	1473	4411	1232	3689	36	0.41	0.30	57	0.40	0.33	55	34	1134
2	48	5.1			1636	4899					5.89	82			56	22	
3	48	5.7			1734	5192					6.08	83			64	19	
4	48	5.0	8.0	0.50	1698	5084	1413	4231	78	0.22	5.46	81	0.38	0.31	56	20	634
5	48	5.2	4.9	0.37	1835	5495	1526	4569	80	0.23	5.11	85	0.36	0.30	57	37	1111
6	48	5.1	2.6	0.47	1467	4393	1207	3614	60	0.24	6.55	101	0.30	0.25	51	68	1701
7	48	5.5	2.7	0.34	1325	3968	1106	3312	40	0.33	7.60	100	0.25	0.21	56	71	1480
8	48	5.6	3.4	0.48	1142	3420	916	2743	30	0.38	7.37	98	0.23	0.20	57	52	997
9	48	5.6			1202	3599					7.19	101			57	27	
10	48	5.9			1268	3797					6.20	97			60	24	
11	48	5.3	5.4	0.47	1214	3635	1014	3036	35	0.35	6.71	91	0.23	0.20	54	35	671
12	48	5.9	7.0	0.27	1322	3959	1097	3285	32	0.41	7.76	94	0.27	0.22	67	25	563
13	48	5.3	5.5	1.02	1192	3569	967	2896	40	0.30	7.65	103	0.23	0.19	61	34	652
14	48	5.4	4.6	0.58	1270	3803	1044	3126	40	0.32	7.57	97	0.33	0.27	62	30	826
15	48	5.3	5.2	0.70	1294	3875	1048	3138	53	0.24	6.18	110	0.29	0.23	68	31	750
16	48	5.9			1470	4402					6.14	111			68	43	
17	48	5.9			1257	3764					7.25	96			68	40	
18	48	5.3	4.3	0.51	1118	3348	931	2788	66	0.17	8.12	100	0.24	0.20	56	39	781
19	48	5.3	6.7	0.65	981	2938	825	2470	65	0.15	4.62	66	0.16	0.15	47	33	440
20	48	5.4	5.3	0.56	1062	3180	878	2629	65	0.16	2.06	51	0.23	0.19	63	31	595
21	48	5.4	5.0	0.70	944	2827	792	2372	60	0.16	4.13	46	0.22	0.19	63	31	569
22	48	5.0	7.4	0.98	932	2791	789	2363	79	0.12	2.91	92	0.18	0.15	58	25	375
23	48	5.7			1262	3779					2.82	78			64	29	
24	48	5.8			1294	3875					2.43	52			64	29	
25	48	6.0			1339	4009					5.46	86			66	29	
26	48	5.7	5.1	0.49	1266	3791	960	2875	63	0.20	7.26	79	0.29	0.22	62	31	750
27	48	5.3	4.8	0.67	1054	3156	816	2443	77	0.14	0.27	99	0.22	0.17	73	36	661
28	48	5.5	5.2	0.40	1128	3378	885	2650	48	0.24	6.26	85	0.21	0.16	90	37	648
29	48	5.7	3.4	0.42	997	2985	773	2315	63	0.16	5.79	97	0.19	0.15	90	55	872
30	48	5.9			973	2914					7.98	80			91	55	
31	48	5.9			955	2860					7.73	69			93	59	
TL												2667				1131	16210
ME	48	5.5	5.0	0.55	1261	3777	1011	3027	56	0.2	5.6	86	0.26	0.21	64	36	810

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

BIOSOLIDS SHEET

Marshall

MI 002 3540

December 2000

SUPERINTENDENT
Steven D. Washburn

	RAW SLUDGE	RAW BIOSOLIDS			LIME STABILIZED BIOSOLIDS					
DAY	GALLONS	TOTAL SOLIDS %	VOLATILE SOLIDS %	pH SU	LIME POUNDS	pH 2 hrs @ 25 C SU		Lbs. Lime per 1000 gallons biosolids		
1	15600	2.1	75.0	6.1	1112	12.3		71		
2	12000	3.1	78.0	6.1						
3	16200	2.6	76.0	6.0						
4	16460	3.2	76.0	6.5	1334			81		
5	8000	3.3	74.0	5.9	988	12.4		124		
6	8000	3.5	75.0	5.9						
7	8000	2.8	75.0	6.0						
8	9000	2.7	77.0	6.0						
9	8000	1.4	77.0	6.5						
10	11600	3.2	76.0	6.0						
11	8000	3.5	74.0	5.9	593			74		
12	11500	3.8	75.0	6.0						
13	11000	3.1	71.0	5.6	1136	12.6		103		
14	21500	3.3	74.0	6.1	1112			52		
15	11500	3.6	75.0	5.9	1037			90		
16	8500	3.3	72.0	6.6						
17	8000	3.9	73.0	6.4						
18	8000	2.1	75.0	6.7						
19	9500	3.3	76.0	6.1	716			75		
20	9600	3.4	75.0	6.1						
21	10500	3.1	74.0	6.1						
22	18500	2.1	76.0	6.3	1284	12.4		69		
23	8500	1.0	67.0	6.1						
24	8150	3.2	75.0	6.1						
25	3500	0.5	79.0	7.0						
26	9500	3.9	75.0	5.8						
27	26700	4.4	75.0	5.9	1136	12.2		43		
28	12000	3.4	75.0	6.1	272			23		
29	0									
30	6500	3.8	74.0	6.3						
31	7150	2.9	75.0	6.7						
TOTAL	330960				10720					
MEAN	10676	3.0	74.8	6.2	975	12.4		73		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MISCELLANEOUS SHEET

December 2000

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	WATER	ELECTRICAL USAGE		FUEL GAS		CHEMICALS APPLIED									
			X 120		X 100	$FECL_3$					Cl_2		SO_2		
	CF	METER	KWH	METER	CF	GALS	SP. GR.	% SOLN	LBS	mg/L	LBS	mg/L	LBS	mg/L
1	700	22	2640	63	6300	100.0	1.4020	30	28.5	2.0	14.0	1.0	8.0	0.6
2	530	22	2640	36	3600	75	1.4020	30	21.4	1.5	12	0.8	9.0	0.6
3	490	22	2640	51	5100	75	1.4020	30	21.4	1.7	24	1.9	9.0	0.7
4	480	22	2640	36	3600	100	1.4020	30	28.5	2.0	14	1.0	9.0	0.6
5	630	22	2640	49	4900	75	1.4020	30	21.4	1.5	29	2.1	10.0	0.7
6	500	19	2280	61	6100	75	1.4020	30	21.4	1.5	36	2.5	14.0	1.0
7	630	21	2520	55	5500	100	1.4020	30	28.5	2.2	32	2.5	32.0	2.5
8	570	20	2400	51	5100	100	1.4020	30	28.5	2.2	21	1.6	12.0	0.9
9	530	21	2520	63	6300	75	1.4020	30	21.4	1.7	14	1.1	14.0	1.1
10	670	22	2640	47	4700	75	1.4020	30	21.4	1.8	17	1.4	12.0	1.0
11	1230	22	2640	56	5600	100	1.4020	30	28.5	2.1	16	1.2	12.0	0.9
12	1960	22	2640	57	5700	100	1.4020	30	28.5	2.3	18	1.5	13.0	1.1
13	2570	22	2640	59	5900	100	1.4020	30	28.5	2.1	17	1.3	13.0	1.0
14	1650	23	2760	44	4400	75	1.4020	30	21.4	1.6	20	1.5	17.0	1.3
15	1760	20	2400	53	5300	100	1.4020	30	28.5	2.1	19	1.4	6.0	0.4
16	610	21	2520	43	4300	175	1.4020	30	49.9	4.1	17	1.4	3.0	0.2
17	520	19	2280	56	5600	125	1.4020	30	35.6	2.9	14	1.1	5.0	0.4
18	550	18	2160	62	6200	100	1.4020	30	28.5	2.1	24	1.8	33.0	2.4
19	1780	17	2040	54	5400	100	1.4020	30	28.5	2.1	26	1.9	6.0	0.4
20	770	18	2160	67	6700	100	1.4020	30	28.5	2.1	29	2.2	7.0	0.5
21	970	18	2160	61	6100	125	1.4020	30	35.6	2.7	27	2.0	13.0	1.0
22	2840	20	2400	82	8200	125	1.4020	30	35.6	2.5	24	1.7	9.0	0.6
23	650	17	2040	74	7400	200	1.4020	30	57.0	4.5	12	0.9	10.0	0.8
24	530	21	2520	62	6200	100	1.4020	30	28.5	2.3	20	1.6	8.0	0.6
25	540	23	2760	89	8900	150	1.4020	30	42.8	3.6	24	2.0	12.0	1.0
26	670	7	840	47	4700	150	1.4020	30	42.8	3.4	28	2.2	11.0	0.9
27	1440	22	2640	68	6800	100	1.4020	30	28.5	2.1	34	2.5	14.0	1.0
28	1660	19	2280	74	7400	100	1.4020	30	28.5	2.2	34	2.6	11.0	0.8
29	580	21	2520	65	6500	100	1.4020	30	28.5	2.3	30	2.4	21.0	1.7
30	530	20	2400	57	5700	100	1.4020	30	28.5	2.3	20	1.6	10.0	0.8
31	540	17	2040	57	5700	100	1.4020	30	28.5	2.4	6	0.5	11.0	0.9
TL	30080	620	74400	1799	179900	3275			933.6		672		374.0	
ME	970	20	2400	58	5803	106	1.4020	30.0	30.1	2.3	21.7	1.7	12.1	0.9

MANPOWER

POSITION TITLE	NUMBER FULL TIME
SUPERINTENDANT	1
ASST. SUPT.	1
OPERATOR	3
MECHANIC	
CHEMIST	
LAB TECH	
IPP COORDINATOR	1
OTHER	

GIVE THE HOURS PER DAY THAT PLANT PERSONNEL ARE NORMALLY AT THE PLANT.

WEEKDAYS	8	HRS
SATURDAYS	8	HRS
SUNDAYS	8	HRS
HOLIDAYS	8	HRS

Weather Code
1. Clear
2. Partly Cloudy
3. Cloudy
4. Rain
5. Snow
6. Warm
7. Cold
8. Windy
9. Melting Snow

PLANT INFLUENT SHEET

January 2002

Marshall

STATE OF MICHIGAN

MI 002 3540

SUPERINTENDENT

DEPT OF ENVIRONMENTAL QUALITY

Steven D. Washburn

D	WEATHER		FLOW		RAW SEWAGE QUALITY									
A	TYPE	PRECIP	TOTAL	MAX	TEMP	pH	BOD_5		SS		TOTAL-P		VSS	NH3-N
Y	CODE	Inches	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l
1	1		1.620		48	7.70	158	2135	137	1851			129	
2	1		1.820		49	7.60	157	2383	170	2580			148	13.5
3	1		1.760		50	7.60	179	2627	194	2848			176	
4	1		1.770		53	7.70	194	2864	160	2362			146	
5	5	0.10	1.630		53	7.70	194	2637	140	1903			126	
6	5	0.02	1.620		50	7.70	142	1919	156	2108	2.70	36	152	12.3
7	1		1.750		49	7.60	151	2204	126	1839			116	
8	1		1.730		52	7.60	178	2568	156	2251			134	
9	1		1.710		51	7.40	187	2667	196	2795			170	13.0
10	4	0.01	1.720		49	7.80	154	2209	106	1521			98	
11	1		1.610		49	7.90	176	2363	110	1477			98	
12	5	0.01	1.570		50	7.70	167	2187	130	1702			116	
13	1		1.580		49	7.80	182	2398	150	1977			136	10.9
14	4	0.12	1.720		50	7.50	149	2137	154	2209	3.33	48	150	
15	5	0.05	1.730		49	7.60	148	2135	136	1962			121	
16	5	0.09	1.680		50	7.70	167	2340	110	1541			102	
17	5	0.06	1.700		52	7.70	142	2013	104	1475	3.04	43	96	13.5
18	5	0.02	1.540		51	7.70	125	1605	100	1284			92	
19	1		1.550		48	7.70	157	2030	146	1887			134	
20	4	0.01	1.540		48	7.70	147	1888	132	1695			122	
21	1		1.720		51	7.60	152	2180	116	1664			104	11.8
22	4	0.02	1.700		49	7.80	184	2609	148	2098			135	
23	4	0.04	1.720		52	7.60	172	2467	160	2295	3.63	52	144	14.2
24	1		1.730		52	7.60	144	2078	86	1241			80	
25	1		1.610		49	7.80	127	1705	116	1558			104	
26	1		1.600		49	7.70	144	1922	134	1788			124	
27	1		1.610		48	7.80	156	2095	150	2014			144	
28	1		1.640		49	7.80	166	2270	160	2188			140	
29	5	0.07	1.610		48	7.80	178	2390	174	2336			164	15.6
30	5	1.09	1.570		48	7.70	136	1781	102	1336	3.98	52	94	18.0
31	4	0.25	1.580		48	7.70	142	1871	122	1608			108	
TL		1.96	51.440					68678		59393		232		
ME			1.659		49.8		160	2215	138	1916	3.34	46	126	13.6

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

PRIMARY EFFLUENT SHEET

Marshall
MI 002 3540

January 2002

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

PRIMARY EFFLUENT QUALITY

DAY	BOD-5			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS		AMMONIA NITROGEN	
	mg/l	LBS	Removal	mg/l	LBS	% Removal	mg/l	LBS	% Removal	mg/l	%	mg/l	LBS
1	80	1081	49.4	80	1081	41.6				64.0	80.0		
2	105	1594	33.1	94	1380	44.7				78.0	83.0	12.9	189
3	96	1409	46.4	92	1358	52.6				80.0	87.0		
4	132	1949	32.0	78	1060	51.3				74.0	94.9		
5	12	163	93.8	84	1135	40.0				80.0	95.2		
6	104	1405	26.8	64	934	59.0	2.3	34.2	13.3	62.0	96.9	12.4	181
7	89	1299	41.1	64	923	49.2				58.0	90.6		
8	119	1717	33.1	66	941	57.7				54.0	81.8		
9	105	1497	43.9	78	1119	60.2				66.0	84.6	13.3	191
10	110	1578	28.6	90	1208	15.1				84.0	93.3		
11	87	1168	50.6	76	995	30.9				70.0	92.1		
12	104	1362	37.7	104	1370	20.0				96.0	92.3		
13	92	1212	49.5	96	1377	36.0				92.0	95.8	11.7	168
14	100	1434	32.9	116	1674	24.7	3.3	47.0	2.1	116.0	100.0		
15	144	2078	2.7	132	1849	2.9				132.0	100.0		
16	100	1401	40.1	62	879	43.6				60.0	96.8		
17	91	1290	35.9	80	1027	23.1	1.9	24.7	36.8	76.0	95.0	14.7	189
18	60	771	52.0	68	879	32.0				52.0	76.5		
19	90	1163	42.7	52	668	64.4				40.0	76.9		
20	77	989	47.6	48	689	63.6				36.0	75.0		
21	98	1406	35.5	66	936	43.1				48.0	72.7	13.0	184
22	96	1361	47.8	32	459	78.4				30.0	93.8		
23	124	1779	27.9	60	866	62.5	2.3	32.5	38.0	46.0	76.7	13.0	188
24	104	1501	27.8	42	564	51.2				32.0	76.2		
25	73	980	42.5	52	694	55.2				48.0	92.3		
26	73	974	49.3	46	618	65.7				42.0	91.3		
27	84	1128	46.2	42	574	72.0				40.0	95.2		
28	98	1340	41.0	62	832	61.3				52.0	83.9		
29	96	1289	46.1	62	812	64.4				56.0	90.3	15.8	207
30	67	877	50.7	52	685	49.0	1.4	18.3	65.1	52.0	100.0	15.4	203
31	78	1028	45.1	50	21450	59.0				48.0	96.0		
TL		40223			51038			156.6					1699
ME	93	1298	41.3	71	1646	47.6	2.2	31.3	31.1	1964.0	88.9	13.6	189

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION

DEQ

Discharge Number	Permit Number
001 A	MI 002 3540

DAILY DISCHARGE MONITORING REPORT

Monitoring Period: January 2002

DAY	$CBOD_5$			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS	NH3-N		PH	D.O.	F.COLI #/100ml	CL RESID	
	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	mg/l	LBS	SU	mg/l	MF	mg/l	
1	10.6	143	93.3	18.0	243	86.9				14.0			7.40	6.7	4	0.000	
2	8.1	123	94.8	20.0	304	88.2				16.0	11.10	168.48	7.40	7.6	11	0.000	
3	12.7	186	92.9	10.0	147	94.8				10.0			7.40	7.2	21	0.000	
4	17.3	255	91.1	14.0	207	91.3				12.0			7.40	7.0	60	0.000	
5	18.0	245	90.7	19.0	258	86.4				17.0			7.30	6.5	21	0.000	
6	13.0	176	90.8	20.0	270	87.2	0.39	5.2	85.7	18.0	11.10	149.97	7.40	6.9	29	0.000	
7	16.4	239	89.1	17.0	248	86.5				12.0			7.40	6.8	24	0.000	
8	15.8	228	91.1	24.0	346	84.6				20.0			7.40	7.3	166	0.000	
9	13.9	198	92.6	22.0	314	88.8				20.0	11.40	162.58	7.40	6.5	2	0.000	
10	14.2	204	90.8	16.0	230	84.9				16.0			7.40	6.8	45	0.000	
11	22.0	295	87.5	18.0	242	83.6				18.0			7.40	6.6	12	0.000	
12	17.6	230	89.5	12.0	157	90.8				12.0			7.40	7.0	120	0.000	
13	13.0	171	92.9	9.0	119	94.0				9.0	10.20	134.41	7.40	7.1	37	0.000	
14	13.1	188	91.2	17.0	244	89.0	0.42	6.0	87.4	17.0			7.50	7.6	16	0.000	
15	16.7	241	88.7	26.0	375	80.9				24.0			7.50	7.9	8	0.000	
16	27.5	385	83.5	38.0	532	65.5				36.0			7.50	7.5	6	0.000	
17	29.8	423	79.0	45.0	638	56.7	0.96	13.6	68.4	45.0	14.10	199.91	7.50	7.9	364	0.000	
18	23.2	298	81.4	38.0	488	62.0				30.0			7.50	7.5	4	0.000	
19	24.0	310	84.7	42.0	543	71.2				36.0			7.60	8.1	1	0.000	
20	17.0	218	88.4	30.0	385	77.3				22.0			7.60	7.7	23	0.000	
21	23.6	339	84.5	38.0	545	67.2				28.0	11.80	169.27	7.60	7.7	159	0.000	
22	27.0	383	85.3	30.0	425	79.7				30.0			7.50	7.4	56	0.000	
23	29.1	417	83.1	44.0	631	72.5	0.89	12.8	75.5	40.0	14.60	209.43	7.50	6.8	48	0.000	
24	28.4	410	80.3	37.0	534	57.0				35.0			7.60	6.8	81	0.000	
25	16.0	215	87.4	24.0	322	79.3				24.0			7.50	6.5	44	0.000	
26	11.8	157	91.8	16.0	214	88.1				16.0			7.60	8.6	2	0.000	
27	13.0	175	91.7	14.0	188	90.7				14.0			7.70	8.7	43	0.000	
28	12.6	172	92.4	24.0	328	85.0				18.0			7.70	8.4	19	0.000	
29	12.2	164	93.1	16.0	215	90.8				12.0	16.40	220.21	7.50	7.2	7	0.000	
30	8.6	113	93.7	12.0	157	88.2	0.38	5.0	90.5	12.0	15.60	204.26	7.60	8.4	1	0.000	
31	8.0	105	94.4	10.0	132	91.8				9.0			7.60	8.9	1	0.000	
TL		7408			9981			42.6									
ME	17.2	239	89.1	23.2	322	82.0	0.61	8.5	81.5	642.0	12.92	179.84		7.4	17	0.000	
WA	24.8	341		38.1	522										39		
MX											16.40	220.21	7.70			0	
MN													7.30	6.5			

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 Years)

PRINTED NAME AND TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTORIZED AGENT	DATE
Steven D. Washburn, Superintendent		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

ACTIVATED SLUDGE SHEET

January 2002

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	AERATION SYSTEM				MIXED LIQUOR								SECONDARY SLUDGE				
	AERTN VOL	DETEN TIME	CRT	F:M RATIO	MLSS		MLVSS		SETTL.	SDI	D.O.	AIR	SS	VSS	RAS FLOW	WAS	
	KCF	HRS	DAYS		mg/L	Lbs.	mg/L	Lbs.	%	%	mg/L	CF	%	%	%	Gallons	Lbs.
SF	3											4				3	
1	48	5.3	6.5		2347	7028					2.49	55			58	21	
2	48	4.7	4.6	0.29	2226	6666	1829	5477	35	0.64	4.40	53	0.52	0.42	51	29	1258
3	48	4.9	4.8	0.27	2167	6489	1757	5261	27	0.80	4.17	53	0.61	0.49	52	29	1475
4	48	4.9	5.6	0.38	2153	6447	1730	5180	26	0.83	2.46	52	0.46	0.37	52	24	921
5	48	5.3	6.2		2368	7091					1.63	49			57	18	
6	48	5.3	7.1		2065	6183					0.48	54			57	7	
7	48	4.9	7.1	0.25	2201	6591	1740	5210	29	0.76	2.51	59	0.65	0.51	54	7	379
8	48	5.0	7.2	0.32	2274	6809	1798	5384	32	0.71	3.79	54	0.35	0.28	53	2	58
9	48	5.0	6.3	0.27	2326	6965	1833	5489	28	0.83	0.90	50	0.60	0.47	56	21	1051
10	48	5.0	4.7	0.33	2046	6127	1620	4851	24	0.85	4.18	50	0.66	0.51	56	33	1816
11	48	5.4	7.0	0.21	2381	7130	1879	5626	28	0.85	1.30	53	0.55	0.43	58	42	1927
12	48	5.5	5.2		2369	7094					3.60	53			59	54	
13	48	5.5	5.3		2251	6740					4.22	53			60	54	
14	48	5.0	3.8	0.29	2092	6264	1665	4986	25	0.84	4.66	49	0.67	0.53	58	51	2850
15	48	5.0	3.7	0.37	2380	7127	1889	5656	25	0.95	5.48	53	0.71	0.56	56	62	3671
16	48	5.1	7.3	0.28	2111	6321	1683	5040	21	1.01	5.57	53	0.43	0.34	58	65	2331
17	48	5.1	3.2	0.43	1223	3662	1004	3006	14	0.87	5.60	59	0.21	0.17	59	45	788
18	48	5.6	4.6	0.23	1349	4039	1105	3309	15	0.90	7.60	59	0.42	0.34	65	35	1226
19	48	5.6	4.7		1045	3129					8.74	53			64	31	
20	48	5.6	6.6		1356	4060					5.88	51			65	29	
21	48	5.0	3.8	0.47	1205	3608	991	2967	12	1.00	5.61	51	0.33	0.27	56	30	826
22	48	5.1	9.5	0.38	1444	4324	1194	3575	16	0.90	4.97	45	0.40	0.33	76	0	
23	48	5.0	6.5	0.38	1877	5620	1553	4650	20	0.94	3.33	44	0.33	0.28	80	0	
24	48	5.0	10.0	0.30	2038	6103	1682	5037	22	0.93	1.74	50	0.36	0.30	80	0	
25	48	5.4	10.0	0.17	2337	6998	1913	5728	28	0.83	1.53	78	0.39	0.32	86	0	
26	48	5.4	12.0		2469	7393					7.89	91			86	12	
27	48	5.4	12.8		2414	7228					8.42	90			86	14	
28	48	5.3	8.5	0.23	2404	7199	1940	5809	29	0.83	7.51	45	0.43	0.34	84	17	610
29	48	5.4	9.1	0.21	2520	7546	2044	6121	26	0.97	5.25	43	0.45	0.37	86	15	563
30	48	5.5	11.3	0.14	2570	7696	2098	6282	29	0.89	5.49	48	0.58	0.47	88	12	580
31	48	5.5	11.3	0.17	2486	7444	2020	6049	39	0.64	7.54	46	0.41	0.34	87	16	547
TL												1696				775	22877
ME	48	5.2	7.0	0.29	2080	6230	1680	5032	25	0.9	4.5	55	0.48		66	25	1271

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

BIOSOLIDS SHEET

Marshall
MI 002 3540

January 2002

SUPERINTENDENT
Steven D. Washburn

	RAW SLUDGE	RAW BIOSOLIDS			LIME STABILIZED BIOSOLIDS					
DAY	GALLONS	TOTAL SOLIDS %	VOLATILE SOLIDS %	pH SU	LIME POUNDS	pH 2 hrs @ 25 C SU	RDT Solids %	Lbs. Lime per 1000 gallons biosolids		
1	4000	2.6	76.0	6.3						
2	9800	3.2	78.0	6.3	2371		11.5	242		
3	6500	3.4	77.0	6.5		12.6				
4	6000	3.5	77.0	6.5						
5	6000	3.7	76.0	6.4						
6	8000	5.6	72.0	6.1						
7	4500	4.3	72.0	6.0						
8	4500	6.1	67.0	6.1	2746		10.4	610		
9	3600	7.6	64.0	5.8		12.6				
10	3500	4.1	75.0	6.2						
11	6000	3.6	77.0	6.2						
12	6000	3.6	77.0	6.3						
13	7475	4.5	74.0	6.1						
14	6500	3.9	76.0	6.3						
15	6200	4.6	72.0	6.1	2662		7.0	429		
16	6000	4.2	75.0	6.0		12.5				
17	6550	4.8	72.0	6.0						
18	6000	4.2	74.0	5.8						
19	7500	3.9	75.0	6.0						
20	8500	5.1	69.0	6.0						
21	8500	4.3	73.0	6.1						
22	10000	4.6	67.0	6.1						
23	11500	3.2	72.0	6.2	3370		13.7	293		
24	4000	4.3	73.0	6.4	998	12.6	9.2	250		
25	7500	3.5	76.0	6.4						
26	5000	3.7	76.0	6.7						
27	3500	4.4	70.0	6.2						
28	6000	4.2	76.0	6.6						
29	4500	3.1	75.0	6.7	1914		11.7	425		
30	6000	3.6	74.0	6.7		12.6				
31	6800	3.8	76.0	6.7						
TOTAL	196425				14061					
MEAN	6336	4.2	73.6	6.3	2344	12.6	10.6	375		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MISCELLANEOUS SHEET

January 2002

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	WATER	ELECTRICAL USAGE		FUEL GAS		CHEMICALS APPLIED								
			X 120		X 100	$FECL_3$					Cl_2		SO_2	
	CF	METER	KWH	METER	CF	GALS	SP. GR.	% SOLN	LBS	mg/L	LBS	mg/L	LBS	mg/L
1	500	16	1920	69	6900	150.0	1.3940	30	523.2	38.7	18.0	1.3	22.0	1.6
2	1740	16	1920	72	7200	150	1.3940	30	523.2	34.5	18	1.2	7.0	0.5
3	440	16	1920	41	4100	100	1.3940	30	348.8	23.8	17	1.2	13.0	0.9
4	490	15	1800	37	3700	100	1.3940	30	348.8	23.6	17	1.2	5.0	0.3
5	470	14	1680	36	3600	100	1.3940	30	348.8	25.7	20	1.5	7.0	0.5
6	480	15	1800	41	4100	100	1.3940	30	348.8	25.8	17	1.3	5.0	0.4
7	500	16	1920	37	3700	100	1.3940	30	348.8	23.9	30	2.1	9.0	0.6
8	1820	17	2040	41	4100	100	1.3940	30	348.8	24.2	14	1.0	5.0	0.3
9	640	15	1800	15	1500	100	1.3940	30	348.8	24.5	14	1.0	11.0	0.8
10	440	14	1680	23	2300	100	1.3940	30	348.8	24.3	10	0.7	15.0	1.0
11	440	15	1800	29	2900	50	1.3940	30	174.4	13.0	12	0.9	15.0	1.1
12	520	15	1800	33	3300	50	1.3940	30	174.4	13.3	15	1.1	15.0	1.1
13	480	15	1800	32	3200	50	1.3940	30	174.4	13.2	13	1.0	17.0	1.3
14	480	15	1800	26	2600	100	1.3940	30	348.8	24.3	16	1.1	8.0	0.6
15	1290	17	2040	45	4500	100	1.3940	30	348.8	24.2	28	1.9	6.0	0.4
16	450	16	1920	42	4200	50	1.3940	30	174.4	12.4	16	1.1	16.0	1.1
17	510	15	1800	35	3500	50	1.3940	30	174.4	12.3	20	1.4	14.0	1.0
18	490	16	1920	34	3400	50	1.3940	30	174.4	13.6	20	1.6	12.0	0.9
19	510	15	1800	70	7000	100	1.3940	30	348.8	27.0	21	1.6	24.0	1.9
20	520	14	1680	49	4900	50	1.3940	30	174.4	13.6	21	1.6	19.0	1.5
21	530	16	1920	49	4900	75	1.3940	30	261.6	18.2	14	1.0	12.0	0.8
22	600	15	1800	27	2700	75	1.3940	30	261.6	18.5	36	2.5	17.0	1.2
23	1780	17	2040	20	2000	75	1.3940	30	261.6	18.2	10	0.7	13.0	0.9
24	1370	17	2040	34	3400	75	1.3940	30	261.6	18.1	20	1.4	14.0	1.0
25	500	18	2160	43	4300	50	1.3940	30	174.4	13.0	9	0.7	13.0	1.0
26	460	19	2280	21	2100	75	1.3940	30	261.6	19.6	20	1.5	15.0	1.1
27	510	19	2280	25	2500	75	1.3940	30	261.6	19.5	7	0.5	15.0	1.1
28	410	15	1800	19	1900	50	1.3940	30	174.4	12.8	7	0.5	14.0	1.0
29	1960	17	2040	35	3500	150	1.3940	30	523.2	39.0	17	1.3	14.0	1.0
30	460	15	1800	47	4700	100	1.3940	30	348.8	26.6	10	0.8	15.0	1.1
31	410	15	1800	45	4500	100	1.3940	30	348.8	26.5	27	2.0	15.0	1.1
TL	22200	490	58800	1172	117200	2650			9243		534		402.0	
ME	716	16	1897	38	3781	85	1.3940	30.0	298.1	21.5	17.2	1.2	13.0	0.9

MANPOWER

POSITION TITLE	NUMBER FULL TIME
SUPERINTENDANT	1
ASST. SUPT.	1
OPERATOR	3
MECHANIC	
CHEMIST	
LAB TECH	
IPP COORDINATOR	1
OTHER	

GIVE THE HOURS PER DAY THAT PLANT PERSONNEL ARE NORMALLY AT THE PLANT.

WEEKDAYS	8	HRS
SATURDAYS	8	HRS
SUNDAYS	8	HRS
HOLIDAYS	8	HRS

Weather Code
1. Clear
2. Partly Cloudy
3. Cloudy
4. Rain
5. Snow
6. Warm
7. Cold
8. Windy
9. Melting Snow

PLANT INFLUENT SHEET

February 2002

Marshall

STATE OF MICHIGAN

MI 002 3540

SUPERINTENDENT

DEPT OF ENVIRONMENTAL QUALITY

Steven D. Washburn

D	WEATHER		FLOW		RAW SEWAGE QUALITY									
A	TYPE	PRECIP	TOTAL	MAX	TEMP	pH	BOD_5		SS		TOTAL-P		VSS	NH3-N
Y	CODE	Inches	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l
1	5	0.03	1.630		48	7.70	103	1400	48	653			48	
2	1		1.680		47	7.90	148	2074	98	1373			98	
3	5	0.01	1.650		47	8.00	170	2339	100	1376			96	
4	1		1.630		47	7.80	127	1726	116	1577			96	13.4
5	1		1.770		51	7.80	188	2775	145	2140			127	
6	1		1.700		48	7.80	153	2169	172	2439	3.70	52	162	13.4
7	1		1.670		50	8.30	212	2953	194	2702			172	
8	1		1.710		49	7.80	174	2481	154	2196			134	
9	4	0.01	1.620		48	7.80	136	1837	118	1594			108	
10	1		1.590		50	7.60	124	1644	118	1565			110	
11	1		1.780		47	7.80	157	2331	118	1752			116	11.5
12	1		1.760		48	7.80	150	2202	142	2084			133	
13	5	0.02	1.780		48	7.80	176	2613	138	2049	3.15	47	120	12.1
14	1		1.730		48	7.80	162	2337	146	2107			134	
15	1		1.650		48	7.70	137	1885	138	1899			128	
16	5	0.05	1.630		48	7.70	124	1686	112	1523			104	12.8
17	1		1.660		47	7.80	153	2118	120	1661			108	
18	1		1.820		47	7.80	180	2732	136	2064			126	
19	4	0.48	1.790		52	7.70	184	2747	124	1851			113	
20	4	0.31	1.850		48	7.70	136	2098	130	2006			122	
21	1		1.840		48	7.80	137	2102	128	1964			116	11.4
22	1		1.740		47	7.70	78	1132	120	1741	2.33	34	108	
23	1		1.720		46	7.70	143	2051	100	1434			86	
24	1		1.720		47	7.70	155	2223	128	1836			126	
25	5	0.37	1.840		47	7.70	168	2578	120	1841			114	11.5
26	5	0.11	1.820		47	7.60	147	2231	114	1730			96	
27	1		1.780		47	7.60	196	2910	138	2049			90	
28	1		1.790		47	7.70	151	2254	150	2239	3.07	46	136	10.9
29														
30														
31														
TL		1.39	48.350					61631		51446		179		
ME			1.727		47.9		152	2201	127	1837	3.06	45	115	12.1

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

PRIMARY EFFLUENT SHEET

Marshall
MI 002 3540

February 2002

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

	PRIMARY EFFLUENT QUALITY												
DAY	BOD-5			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS		AMMONIA NITROGEN	
	mg/l	LBS	Removal	mg/l	LBS	% Removal	mg/l	LBS	% Removal	mg/l	%	mg/l	LBS
1	71	965	31.1	44	598	8.3				44.0	100.0		
2	98	1373	33.8	38	523	61.2				38.0	100.0		
3	73	1005	57.1	44	598	56.0				44.0	100.0		
4	76	1033	40.2	52	768	55.2				42.0	80.8	13.8	204
5	101	1491	46.3	64	907	55.9				50.0	78.1		
6	77	1092	49.7	44	613	74.4	1.6	22.4	56.5	38.0	86.4	13.4	187
7	123	1713	42.0	46	656	76.3				42.0	91.3		
8	104	1483	40.2	36	486	76.6				28.0	77.8		
9	77	1040	43.4	40	530	66.1				38.0	95.0		
10	70	928	43.5	52	772	55.9				46.0	88.5		
11	68	1009	56.7	46	675	61.0				46.0	100.0	12.7	186
12	91	1336	39.3	42	623	70.4				40.0	95.2		
13	98	1455	44.3	54	779	60.9	1.8	25.2	44.4	44.0	81.5	14.0	202
14	96	1385	40.7	52	716	64.4				46.0	88.5		
15	89	1225	35.0	60	816	56.5				50.0	83.3		
16	74	1006	40.3	48	665	57.1				40.0	83.3	14.5	201
17	71	983	53.6	52	789	56.7				44.0	84.6		
18	107	1624	40.6	64	955	52.9				52.0	81.3		
19	152	2269	17.4	70	1080	43.5				58.0	82.9		
20	107	1651	21.3	72	1105	44.6				66.0	91.7		
21	94	1442	31.4	58	842	54.7				52.0	89.7	12.7	184
22	47	682	39.7	48	689	60.0	1.5	21.7	35.2	44.0	91.7		
23	73	1047	49.0	60	861	40.0				48.0	80.0		
24	105	1506	32.3	54	829	57.8				54.0	100.0		
25	107	1642	36.3	48	729	60.0				40.0	83.3	12.7	193
26	134	2034	8.8	70	1039	38.6				68.0	97.1		
27	106	1574	45.9	52	776	62.3				42.0	80.8		
28	72	1075	52.3	46	652	69.3	1.4		53.1	40.0	87.0	11.0	
29													
30													
31													
TL		37069			21071			69.3					1357
ME	91	1324	39.7	52	753	57.0	1.6	17.3	47.3	1284.0	88.6	13.1	170

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION

DEQ

Discharge Number	Permit Number
001 A	MI 002 3540

DAILY DISCHARGE MONITORING REPORT

Monitoring Period
February 2002

DAY	$CBOD_5$			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS	NH3-N		PH	D.O.	F.COLI #/100ml	CL RESID	
	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	mg/l	LBS	SU	mg/l	MF	mg/l	
1	5.6	76	94.6	5.0	68	89.6				5.0			7.60	8.8	1	0.000	
2	9.5	133	93.6	3.0	42	96.9				3.0			7.50	8.0	1	0.000	
3	6.8	94	96.0	7.0	96	93.0				7.0			7.50	7.5	15	0.000	
4	6.7	91	94.7	6.0	82	94.8				3.0	13.60	184.88	7.50	8.3	1	0.000	
5	7.2	106	96.2	11.0	162	92.4				8.0			7.50	7.1	15	0.000	
6	5.9	84	96.1	5.0	71	97.1	0.24	3.4	93.5	5.0	12.60	178.64	7.50	7.0	1	0.000	
7	10.5	146	95.0	9.0	125	95.4				9.0			7.60	7.3	1	0.000	
8	12.0	171	93.1	4.0	57	97.4				4.0			7.50	6.6	120	0.000	
9	6.6	89	95.1	2.0	27	98.3				2.0			7.50	7.3	21	0.000	
10	4.2	56	96.6	3.0	40	97.5				2.0			7.50	7.4	4	0.000	
11	3.6	53	97.7	5.0	74	95.8				5.0	12.30	182.60	7.40	7.3	2	0.000	
12	5.4	79	96.4	1.0	15	99.3				1.0			7.50	8.2	1	0.000	
13	6.9	102	96.1	6.0	89	95.7	0.24	3.6	92.4	6.0	14.60	216.74	7.50	8.1	7	0.000	
14	7.2	104	95.6	6.0	87	95.9				6.0			7.50	7.8	4	0.000	
15	5.4	74	96.1	7.0	96	94.9				7.0			7.50	7.5	3	0.000	
16	3.2	44	97.4	2.0	27	98.2				2.0	14.80	201.19	7.50	7.8	12	0.000	
17	3.1	43	98.0	4.0	55	96.7				4.0			7.50	8.1	2	0.000	
18	6.6	100	96.3	6.0	91	95.6				6.0			7.50	8.3	2	0.000	
19	13.5	202	92.7	10.0	149	91.9				7.0			7.40	7.1	150	0.000	
20	10.1	156	92.6	9.0	139	93.1				9.0			7.50	6.3	240	0.000	
21	6.7	103	95.1	5.0	77	96.1				4.0	11.50	176.47	7.50	8.0	2	0.000	
22	2.4	35	96.9	5.0	73	95.8	0.19	2.8	91.8	5.0			7.50	8.3	1	0.000	
23	3.7	53	97.4	5.0	72	95.0				3.0			7.50	7.7	1	0.000	
24	7.4	106	95.2	4.0	57	96.9				3.0			7.50	8.3	3	0.000	
25	7.3	112	95.7	5.0	77	95.8				5.0	14.40	220.98	7.50	7.1	7	0.000	
26	7.5	114	94.9	4.0	61	96.5				4.0			7.50	7.6	48	0.000	
27	6.4	95	96.7	7.0	104	94.9				7.0			7.50	8.3	1	0.000	
28	3.3	49	97.8	6.0	90	96.0	0.15	2.2	95.1	6.0	10.30	153.76	7.50	9.2	2	0.000	
29																	
30																	
31																	
TL		2670			2202			12.0									
ME	6.6	95	95.7	5.4	79	95.6	0.21	3.0	93.2	138.0	13.01	189.41		7.7	5	0.000	
WA	8.4	118		6.6	94										11		
MX											14.80	220.98	7.60				
MN													7.40	6.3			

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 Years)

PRINTED NAME AND TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTORIZED AGENT	DATE
Steven D. Washburn, Superintendent		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

ACTIVATED SLUDGE SHEET

February 2002

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	AERATION SYSTEM				MIXED LIQUOR								SECONDARY SLUDGE				
	AERTN VOL	DETEN TIME	CRT	F:M RATIO	MLSS		MLVSS		SETTL.	SDI	D.O.	AIR	SS	VSS	RAS FLOW	WAS	
	KCF	HRS	DAYS		mg/L	Lbs.	mg/L	Lbs.	%	%	mg/L	CF	%	%	%	Gallons	Lbs.
SF	3											4				3	
1	48	5.3	12.5	0.16	2506	7504	2042	6115	30	0.84	5.76	43	0.48	0.39	85	13	520
2	48	5.1	15.2		2706	8103					6.32	42			82	12	
3	48	5.2	13.4		2697	8076					4.01	41			84	15	
4	48	5.3	13.5	0.15	2757	8256	2241	6710			5.65	50	0.57	0.46	84	16	761
5	48	4.9	12.8	0.15	4020	12037	3260	9762	74	0.54	0.20	50	0.61	0.50	77	12	610
6	48	5.1	13.9	0.16	2912	8720	2352	7043	63	0.46	3.20	43	0.60	0.48	81	12	600
7	48	5.2	13.4	0.24	2872	8600	2336	6995	38	0.76	4.61	43	0.60	0.49	80	10	500
8	48	5.0	16.2	0.22	2800	8384	2272	6803	45	0.62	2.16	41	0.60	0.50	80	11	550
9	48	5.3	17.0		3084	9235					3.84	38			82	16	
10	48	5.4	13.5		3124	9354					3.92	40			84	21	
11	48	4.8	12.6	0.14	2878	8618	2368	7091	58	0.50	5.29	43	0.61	0.49	77	20	1017
12	48	4.9	14.3	0.18	2942	8810	2418	7240	60	0.49	4.87	43	0.64	0.53	79	16	854
13	48	4.8	10.8	0.20	2886	8642	2384	7139	63	0.46	4.10	47	0.64	0.53	79	17	907
14	48	5.0	12.1	0.18	3038	9097	2504	7498	73	0.42	3.55	41	0.59	0.49	81	17	837
15	48	5.2	11.1	0.16	3074	9205	2520	7546	52	0.59	5.04	39	0.60	0.49	84	17	851
16	48	5.3	14.4		3140	9402					5.10	41			85	17	
17	48	5.2	12.7		3047	9124					6.44	45			83	17	
18	48	4.7	8.8		2853	8543					5.47	40			76	17	
19	48	4.8	8.1	0.32	2841	8507	2353	7046	44	0.65	4.24	37	0.63	0.52	77	17	893
20	48	4.7	11.5	0.23	2973	8902	2443	7315	32	0.93	1.62	40	0.63	0.52	75	17	893
21	48	4.7	9.9	0.20	2943	8813	2456	7354	40	0.74	4.12	51	0.65	0.54	75	17	922
22	48	5.0	12.8	0.09	2963	8872	2447	7327	65	0.46	5.55	51	0.58	0.48	77	17	822
23	48	5.0	10.4		2997	8974					5.60	48			78	17	
24	48	5.0	11.5		2985	8938					6.67	40			82	17	
25	48	4.7	11.8	0.23	2897	8675	2388	7151	45	0.64	2.96	42	0.65	0.53	78	17	922
26	48	4.7	8.5	0.27	3030	9073	2523	7555	47	0.64	3.89	42	0.66	0.55	78	17	936
27	48	4.8	12.3	0.20	3143	9411	2579	7723	50	0.63	6.39	51	0.62	0.51	80	16	827
28	48	4.8	13.0	0.15	2980	8923	2441	7309	48	0.62	5.50	52	0.67	0.56	80	17	950
29	48																
30	48																
31	48																
TL												1224				445	15174
ME	48	5.0	12.4	0.19	2967	8886	2438	7301	52	0.6	4.5	44	0.61	0.50	80	16	799

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

BIOSOLIDS SHEET

Marshall

MI 002 3540

February 2002

SUPERINTENDENT
Steven D. Washburn

	RAW SLUDGE	RAW BIOSOLIDS			LIME STABILIZED BIOSOLIDS					
DAY	GALLONS	TOTAL SOLIDS %	VOLATILE SOLIDS %	pH SU	LIME POUNDS	pH 2 hrs @ 25 C SU	RDT Solids %	Lbs. Lime per 1000 gallons biosolids		
1	700	3.9	75.0	6.6						
2	7500	3.5	75.0	6.7						
3	8425	4.5	73.0	6.5						
4	6500	4.1	73.0	6.5						
5	6425	4.0	74.0	6.5	1723		8.8	268		
6	8000	4.4	73.0	6.5	350	12.2		44		
7	8500	3.4	75.0	7.0	1285			151		
8	6000	3.4	72.0	6.6		12.2				
9	8600	5.1	66.0	6.4						
10	6600	4.5	71.0	6.5						
11	8600	3.6	76.0	6.5						
12	8600	3.4	74.0	6.9	1197			139		
13	8000	3.3	75.0	6.5						
14	8500	3.2	75.0	6.5		12.1				
15	6600	2.2	77.0	6.3						
16	7000	3.1	76.0	6.5						
17	6500	3.1	76.0	6.4						
18	8300	3.2	75.0	6.5						
19	8600	3.3	75.0	6.4	1869		9.6	217		
20	8000	3.7	75.0	6.3	1197		8.0	150		
21	8760	4.2	74.0	6.4						
22	7000	3.7	75.0	6.4						
23	8000	3.4	76.0	6.4						
24	8000	3.8	76.0	6.2		12.1				
25	8900	3.6	75.0	6.3						
26	12000	3.4	73.0	6.3	1635		7.9	136		
27	12000	3.4	75.0	6.1	1641		7.8	137		
28	8600	3.3	76.0	6.4						
29										
30										
31										
TOTAL	219210				10897					
MEAN	7829	3.6	74.3	6.5	1362	12.2	8.4	155		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MISCELLANEOUS SHEET

February 2002

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	WATER	ELECTRICAL USAGE		FUEL GAS		CHEMICALS APPLIED									
			X 120		X 100	$FECL_3$					Cl_2		SO_2		
	CF	METER	KWH	METER	CF	GALS	SP. GR.	% SOLN	LBS	mg/L	LBS	mg/L	LBS	mg/L	
1	460	17	2040	47	4700	100.0	1.3940	30	348.8	25.7	13.0	1.0	9.0	0.7	
2	450	16	1920	42	4200	125	1.3940	30	436.0	31.1	14	1.0	8.0	0.6	
3	460	16	1920	37	3700	125	1.3940	30	436.0	31.7	11	0.8	5.0	0.4	
4	520	16	1920	46	4600	100	1.3940	30	348.8	25.7	12	0.9	6.0	0.4	
5	1750	18	2160	47	4700	100	1.3940	30	348.8	23.6	16	1.1	2.0	0.1	
6	550	16	1920	33	3300	100	1.3940	30	348.8	24.6	15	1.1	13.0	0.9	
7	510	18	2160	29	2900	100	1.3940	30	348.8	25.0	13	0.9	8.0	0.6	
8	530	15	1800	25	2500	100	1.3940	30	348.8	24.5	12	0.8	3.0	0.2	
9	500	15	1800	23	2300	100	1.3940	30	348.8	25.8	13	1.0	2.0	0.1	
10	480	16	1920	29	2900	100	1.3940	30	348.8	26.3	23	1.7	2.0	0.2	
11	520	16	1920	39	3900	100	1.3940	30	348.8	23.5	11	0.7	2.0	0.1	
12	430	17	2040	34	3400	100	1.3940	30	348.8	23.8	13	0.9	1.0	0.1	
13	440	18	2160	32	3200	100	1.3940	30	348.8	23.5	11	0.7	2.0	0.1	
14	470	15	1800	24	2400	100	1.3940	30	348.8	24.2	10	0.7	1.0	0.1	
15	460	14	1680	24	2400	100	1.3940	30	348.8	25.3	21	1.5	3.0	0.2	
16	500	14	1680	31	3100	100	1.3940	30	348.8	25.7	12	0.9	1.0	0.1	
17	560	12	1440	37	3700	50	1.3940	30	174.4	12.6	14	1.0	2.0	0.1	
18	510	16	1920	28	2800	100	1.3940	30	348.8	23.0	13	0.9	3.0	0.2	
19	1650	16	1920	29	2900	50	1.3940	30	174.4	11.7	9	0.6	1.0	0.1	
20	1650	17	2040	14	1400	100	1.3940	30	348.8	22.6	6	0.4	1.0	0.1	
21	460	17	2040	27	2700	100	1.3940	30	348.8	22.7	11	0.7	5.0	0.3	
22	550	16	1920	35	3500	100	1.3940	30	348.8	24.0	23	1.6	3.0	0.2	
23	470	18	2160	34	3400	50	1.3940	30	174.4	12.2	13	0.9	4.0	0.3	
24	440	14	1680	17	1700	100	1.3940	30	348.8	24.3	11	0.8	10.0	0.7	
25	500	15	1800	20	2000	100	1.3940	30	348.8	22.7	13	0.8	6.0	0.4	
26	1550	17	2040	33	3300	100	1.3940	30	348.8	23.0	12	0.8	3.0	0.2	
27	1390	18	2160	38	3800	100	1.3940	30	348.8	23.5	12	0.8	5.0	0.3	
28	410	18	2160	54	5400	50	1.3940	30	174.4	11.7	13	0.9	12.0	0.8	
29															
30															
31															
TL	19170	451	54120	908	90800	2650			9243		370		123.0		
ME	685	16	1933	32	3243	95	1.3940	30.0	330.1	23.0	13.2	0.9	4.4	0.3	

MANPOWER

POSITION TITLE	NUMBER FULL TIME
SUPERINTENDANT	1
ASST. SUPT.	1
OPERATOR	3
MECHANIC	
CHEMIST	
LAB TECH	
IPP COORDINATOR	1
OTHER	

GIVE THE HOURS PER DAY THAT PLANT PERSONNEL ARE NORMALLY AT THE PLANT.

WEEKDAYS	8	HRS
SATURDAYS	8	HRS
SUNDAYS	8	HRS
HOLIDAYS	8	HRS

Weather Code
1. Clear
2. Partly Cloudy
3. Cloudy
4. Rain
5. Snow
6. Warm
7. Cold
8. Windy
9. Melting Snow

PLANT INFLUENT SHEET

March 2002

Marshall

STATE OF MICHIGAN

MI 002 3540

SUPERINTENDENT

DEPT OF ENVIRONMENTAL QUALITY

Steven D. Washburn

D	WEATHER		FLOW		RAW SEWAGE QUALITY									
A	TYPE	PRECIP	TOTAL	MAX	TEMP	pH	BOD_5		SS		TOTAL-P		VSS	NH3-N
Y	CODE	Inches	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l
1	5	0.06	1.700		47	7.80	161	2283	108	1531			108	
2	4	0.64	1.780		47	7.90	153	2271	120	1781			114	11.0
3	5	0.08	1.790		46	7.80	120	1791	112	1672			106	
4	5	0.04	1.920		49	7.70	120	1922	126	2018			106	
5	5	0.02	1.910		47	7.60	141	2246	118	1880			102	
6	5	0.03	1.880		48	7.70	177	2775	232	3638	2.90	45	198	11.8
7	1		1.880		47	7.70	148	2321	114	1787			102	
8	4	0.02	1.780		48	7.80	105	1559	38	564			38	13.2
9	4	0.05	1.870		48	7.90	131	2043	98	1528			94	
10	1		1.880		47	7.70	104	1631	82	1286			78	11.1
11	2		2.050		46	7.60	116	1983	98	1676			80	10.6
12	1		2.030		49	7.50	156	2641	70	1185			66	
13	1		2.010		49	7.70	128	2146	138	2313	3.23	54	120	
14	1		1.970		48	7.70	158	2596	115	1889			100	
15	1		1.840		47	7.70	132	2026	170	2609			156	
16	1		1.820		47	7.70	136	2064	126	1913			110	
17	1		1.770		47	7.80	104	1535	100	1476	2.23	33	90	10.5
18	1		1.850		48	7.70	133	2052	110	1697			100	
19	4	0.02	1.860		49	7.70	187	2901	160	2482			143	
20	4	0.01	1.870		47	7.80	207	3228	74	1154			64	11.2
21	5	0.02	1.800		47	7.80	187	2807	156	2342			140	
22	1		1.710		46	7.80	166	2367	176	2510			176	
23	1		1.730		47	77.00	140	2020	102	1472			102	
24	2		1.720		46	7.70	133	1908	126	1807			126	11.4
25	5	0.02	1.730		46	7.70	128	1847	128	1847			116	
26	1		1.800		48	7.90	216	3243	178	2672			152	
27	1		1.760		47	7.30	134	1967	132	1938	3.39	50	116	
28	4	0.32	1.700		47	7.70	164	2325	162	2297			148	
29	1		1.720		47	7.70	123	1764	94	1348			94	
30	1		1.670		47	7.60	149	2075	104	1448			104	
31	1		1.620		46	7.80	152	2054	94	1270			94	
TL		1.33	56.420					68391		57031		182		
ME			1.820		47.3		145	2206	121	1840	2.94	46	111	11.4

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

PRIMARY EFFLUENT SHEET

March 2002

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

	PRIMARY EFFLUENT QUALITY												
DAY	BOD-5			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS		AMMONIA NITROGEN	
	mg/l	LBS	Removal	mg/l	LBS	% Removal	mg/l	LBS	% Removal	mg/l	%	mg/l	LBS
1	89	1262	44.7	28	397	74.1				28.0	100.0		
2	106	1574	30.7	42	627	65.0				42.0	100.0	12.0	179
3	82	1224	31.7	32	512	71.4				32.0	100.0		
4	70	1121	41.7	44	701	65.1				32.0	72.7		
5	96	1529	31.9	56	878	52.5				46.0	82.1		
6	81	1270	54.2	58	909	75.0	1.6	24.8	45.5	40.0	69.0	11.9	187
7	82	1286	44.6	42	623	63.2				36.0	85.7		
8	82	1217	21.9	54	842	-42.1				52.0	96.3	15.7	245
9	77	1201	41.2	42	659	57.1				42.0	100.0		
10	71	1113	31.7	44	752	46.3				42.0	95.5	12.6	215
11	72	1231	37.9	58	982	40.8				42.0	72.4	11.1	188
12	100	1693	35.9	56	939	20.0				50.0	89.3		
13	96	1609	25.0	62	1019	55.1	1.8	29.2	44.9	52.0	83.9	13.0	214
14	104	1709	34.2	46	706	60.0				36.0	78.3		
15	76	1166	42.4	48	729	71.8				38.0	79.2		
16	79	1199	41.9	56	827	55.6				46.0	82.1		
17	69	1019	33.7	58	895	42.0	1.4	21.4	37.7	54.0	93.1	11.7	181
18	70	1080	47.4	50	776	54.5				42.0	84.0		
19	133	2063	28.9	78	1216	51.3				74.0	94.9		
20	116	1809	44.0	54	811	27.0				48.0	88.9	14.1	212
21	95	1426	49.2	70	998	55.1				64.0	91.4		
22	95	1355	42.8	68	981	61.4				68.0	100.0		
23	96	1385	31.4	76	1090	25.5				76.0	100.0		
24	89	1277	33.1	66	952	47.6				66.0	100.0	11.7	169
25	93	1342	27.3	78	1171	39.1				68.0	87.2		
26	145	2177	32.9	88	1292	50.6				80.0	90.9		
27	98	1438	26.9	84	1191	36.4	3.8	53.3	-10.9	74.0	88.1		
28	94	1333	42.7	80	1148	50.6				68.0	85.0		
29	92	1320	25.2	72	1003	23.4				72.0	100.0		
30	99	1379	33.6	70	946	32.7				70.0	100.0		
31	112	1513	26.3	68	31997	27.7				68.0	100.0		
TL		43319			58568			128.8					1789
ME	92	1397	36.0	59	1889	47.0	2.1	32.2	29.3	1648.0	90.0	12.6	199

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION

DEQ

Discharge Number	Permit Number
001 A	MI 002 3540

DAILY DISCHARGE MONITORING REPORT

Monitoring Period
March 2002

DAY	$CBOD_5$			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS	NH3-N		PH	D.O.	F.COLI #/100ml	CL RESID	
	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	mg/l	LBS	SU	mg/l	MF	mg/l	
1	4.9	69	97.0	2.0	28	98.1				2.0			7.50	8.6	4	0.000	
2	7.4	110	95.2	5.0	74	95.8				5.0	14.50	215.26	7.50	7.8	29	0.000	
3	5.8	87	95.2	2.0	30	98.2				2.0			7.50	7.9	62	0.000	
4	2.7	43	97.8	9.0	144	92.9				6.0			7.70	8.5	1	0.003	
5	2.9	46	97.9	3.0	48	97.5				3.0			7.50	8.4	4	0.010	
6	3.3	52	98.1	9.0	141	96.1	0.11	1.7	96.2	3.0	10.50	164.63	7.50	8.4	10	0.002	
7	3.1	49	97.9	2.0	31	98.2				2.0			7.50	8.3	14	0.000	
8	3.1	46	97.0	3.0	45	92.1				3.0	15.80	234.55	7.50	8.0	4	0.000	
9	2.6	41	98.0	16.0	250	83.7				14.0			7.50	7.8	5	0.000	
10	3.3	52	96.8	2.0	31	97.6				2.0	12.70	199.13	7.60	9.0	6	0.010	
11	3.0	51	97.4	4.0	68	95.9				2.0	10.70	182.94	7.60	9.3	9	0.000	
12	3.3	56	97.9	2.0	34	97.1				2.0	11.30	191.31	7.50	8.3	58	0.000	
13	2.8	47	97.8	2.0	34	98.6	0.13	2.2	95.9	2.0			7.50	8.1	15	0.000	
14	4.4	72	97.2	3.0	49	97.4				3.0			7.50	8.0	76	0.000	
15	3.2	49	97.6	3.0	46	98.2				1.0			7.50	7.8	80	0.000	
16	3.5	53	97.4	2.0	30	98.4				1.0			7.50	8.9	20	0.000	
17	2.4	35	97.7	4.0	59	96.0	0.13	1.9	94.2	4.0	10.50	155.00	7.60	8.7	6	0.000	
18	2.6	40	98.0	3.0	46	97.3				3.0			7.50	8.5	23	0.000	
19	5.6	87	97.0	7.0	109	95.6				6.0			7.50	7.9	46	0.000	
20	7.7	120	96.3	5.0	78	93.2				5.0	13.80	215.22	7.50	7.2	120	0.000	
21	3.0	45	98.4	5.0	75	96.8				5.0			7.60	8.3	79	0.000	
22	3.8	54	97.7	4.0	57	97.7				4.0			7.60	8.8	49	0.000	
23	8.1	117	94.2	5.0	72	95.1				8.0			7.60	8.6	107	0.000	
24	3.7	53	97.2	5.0	72	96.0				5.0	9.08	130.25	7.60	8.3	40	0.000	
25	3.9	56	97.0	7.0	101	94.5				5.0			7.60	8.3	35	0.000	
26	6.9	104	96.8	8.0	120	95.5				7.0			7.50	8.0	252	0.000	
27	4.6	68	96.6	5.0	73	96.2	0.20	2.9	94.1	3.0			7.40	7.5	412	0.000	
28	2.8	40	98.3	1.0	14	99.4				1.0			7.50	8.2	10	0.000	
29	3.2	46	97.4	2.0	29	97.9				2.0			7.40	8.2	12	0.000	
30	4.1	57	97.2	3.0	42	97.1				3.0			7.40	8.5	5	0.000	
31	3.7	50	97.6	1.0	14	98.9				1.0			7.50	8.1	7	0.000	
TL		1894			2044			8.8									
ME	4.0	61	97.2	4.3	66	96.2	0.14	2.2	95.1	115.0	12.10	187.59		8.3	21	0.001	
WA	5.3	78		6.3	99										93		
MX											15.80	234.55	7.70			0.01	
MN													7.40	7.2			

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 Years)

PRINTED NAME AND TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTORIZED AGENT	DATE
Steven D. Washburn, Superintendent		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

ACTIVATED SLUDGE SHEET

March 2002

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	AERATION SYSTEM				MIXED LIQUOR								SECONDARY SLUDGE				
	AERTN VOL	DETEN TIME	CRT	F:M RATIO	MLSS		MLVSS		SETTL.	SDI	D.O.	AIR	SS	VSS	RAS FLOW	WAS	
	KCF	HRS	DAYS		mg/L	Lbs.	mg/L	Lbs.	%	%	mg/L	CF	%	%	%	Gallons	Lbs.
SF	3											4				3	
1	48	5.1	14.0	0.16	3186	9540	2633	7884	52	0.61	6.78	49	0.68	0.56	81	12	681
2	48	4.8			3187	9543					6.09	48			80	8	
3	48	4.8			3128	9366					7.18	54			80	12	
4	48	4.5	14.2	0.15	2987	8944	2468	7390	70	0.43	5.74	58	0.63	0.52	75	12	631
5	48	4.5	12.8	0.20	3076	9211	2526	7564	61	0.50	6.77	51	0.72	0.59	76	12	721
6	48	4.6	8.1	0.16	3226	9660	2660	7965	50	0.65	5.09	39	0.75	0.61	79	19	1188
7	48	4.6	7.4	0.16	3209	9609	2641	7908	56	0.57	6.08	46	0.68	0.56	80	23	1304
8	48	4.8	7.6	0.15	3198	9576	2625	7860	70	0.46	4.56	36	0.54	0.44	83	28	1261
9	48	4.6			3270	9792					5.39	42			78	28	
10	48	4.6			2856	8552					6.19	52			78	29	
11	48	4.2	5.6	0.18	2699	8082	2230	6677	69	0.39	6.47	48	0.60	0.49	72	29	1451
12	48	4.2	5.3	0.27	2585	7741	2123	6357	48	0.54	5.95	38	0.60	0.49	73	29	1451
13	48	4.3	5.3	0.23	2755	8250	2287	6848	52	0.53	5.38	34	0.64	0.53	73	29	1548
14	48	4.4	6.4	0.25	2755	8250	2264	6779	53	0.52	4.48	38	0.59	0.49	75	26	1279
15	48	4.7	5.7	0.17	2791	8357	2331	6980	43	0.65	4.11	41	0.76	0.47	80	23	1458
16	48	4.7			2710	8115					6.89	48			81	23	
17	48	4.9			2654	7947					7.00	48			83	23	
18	48	4.7	7.6	0.17	2488	7450	2070	6198	50	0.50	5.86	48	0.51	0.42	79	23	978
19	48	4.6	7.8	0.32	2551	7639	2121	6351	46	0.55	5.42	44	0.51	0.43	79	23	978
20	48	4.6	7.2	0.27	2678	8019	2239	6704	39	0.69	3.60	52	0.58	0.48	79	23	1113
21	48	4.8	6.0	0.24	2445	7321	1997	5980	56	0.44	3.98	52	0.56	0.48	82	26	1214
22	48	5.0	6.2	0.19	2846	8522	2366	7085	44	0.65	6.01	52	0.61	0.50	86	27	1374
23	48	5.0			2927	8765					7.08	46			85	28	
24	48	5.0			2893	8663					5.17	48			85	30	
25	48	5.0	6.0	0.19	2754	8247	2299	6884	62	0.44	5.30	52	0.53	0.44	85	31	1370
26	48	4.8	5.5	0.32	2696	8073	2260	6767	56	0.48	5.30	52	0.55	0.46	81	32	1468
27	48	4.9	4.7	0.21	2820	8444	2340	7007	52	0.54	3.61	44	0.57	0.47	83	38	1806
28	48	5.1	4.6	0.19	2812	8420	2298	6881	56	0.50	6.49	44	0.56	0.45	87	39	1821
29	48	5.0	5.0	0.20	2788	8348	2224	6660	38	0.73	6.48	45	0.50	0.40	86	40	1668
30	48	5.2			2773	8303					6.83	41			86	40	
31	48	5.3			2754	8247					5.16	42			89	40	
TL												1432				805	26764
ME	48	4.8	7.3	0.21	2855	8548	2333	6987	53	0.5	5.7	46	0.60	0.49	81	26	1274

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

BIOSOLIDS SHEET

Marshall
MI 002 3540

March 2002

SUPERINTENDENT
Steven D. Washburn

	RAW SLUDGE	RAW BIOSOLIDS			LIME STABILIZED BIOSOLIDS					
DAY	GALLONS	TOTAL SOLIDS %	VOLATILE SOLIDS %	pH SU	LIME POUNDS	pH 2 hrs @ 25 C SU	RDT Solids %	Lbs. Lime per 1000 gallons biosolids		
1	8300	3.7	76.0	6.4						
2	8000	3.1	77.0	6.4						
3	9000	3.4	76.0	6.4						
4	9000	3.5	77.0	6.0						
5	8000	3.4	77.0	6.3	2282		9.0	285		
6	8000	3.2	75.0	6.4						
7	8300	3.2	76.0	6.4		12.2				
8	8000	3.7	78.0	6.3						
9	8300	2.8	77.0	6.5						
10	8525	4.2	74.0	6.4						
11	8300	3.3	88.0	6.3						
12	8400	3.1	75.0	6.3	1934		8.6	230		
13	9100	3.5	75.0	6.4	1389	12.3	8.4	153		
14	9000	3.7	75.0	6.3		12.2				
15	8600	3.5	75.0	6.4						
16	8500	3.3	77.0	6.4						
17	9500	4.1	72.0	6.3						
18	9500	3.8	77.0	6.2						
19	9650	4.1	75.0	6.2	2232		10.1	231		
20	10800	4.9	70.0	6.1	1389		10.5	129		
21	9000	3.6	76.0	6.2		12.2				
22	8500	3.5	77.0	6.0						
23	8500	3.2	79.0	6.0						
24	8500	4.1	75.0	5.9						
25	9000	3.9	78.0	6.0						
26	9000	3.3	80.0	6.0	2108		6.9	234		
27	9000	3.3	82.0	6.2	1091		8.6	121		
28	8500	2.9	78.0	6.2		12.3				
29	8500	3.1	78.0	6.2						
30	8200	3.4	78.0	6.1						
31	9500	3.8	78.0	6.2						
TOTAL	270975				12425					
MEAN	8741	3.5	76.8	6.2	1775	12.2	8.9	198		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MISCELLANEOUS SHEET

March 2002

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	WATER	ELECTRICAL USAGE		FUEL GAS		CHEMICALS APPLIED								
			X 120		X 100	$FECL_3$					Cl_2		SO_2	
	CF	METER	KWH	METER	CF	GALS	SP. GR.	% SOLN	LBS	mg/L	LBS	mg/L	LBS	mg/L
1	470	14	1680	29	2900	100.0	1.3940	30	348.8	24.6	10.0	0.7	2.0	0.1
2	420	15	1800	47	4700	50	1.3940	30	174.4	11.7	7	0.5	3.0	0.2
3	480	16	1920	54	5400	100	1.3940	30	348.8	23.4	14	0.9	3.0	0.2
4	420	16	1920	56	5600	100	1.3940	30	348.8	21.8	12	0.7	3.0	0.2
5	1670	17	2040	46	4600	100	1.3940	30	348.8	21.9	12	0.8	1.0	0.1
6	360	15	1800	33	3300	100	1.3940	30	348.8	22.2	23	1.5	2.0	0.1
7	420	16	1920	39	3900	100	1.3940	30	348.8	22.2	10	0.6	3.0	0.2
8	330	14	1680	17	1700	100	1.3940	30	348.8	23.5	12	0.8	3.0	0.2
9	380	15	1800	31	3100	75	1.3940	30	261.6	16.8	11	0.7	4.0	0.3
10	390	12	1440	44	4400	75	1.3940	30	261.6	16.7	10	0.6	4.0	0.3
11	360	18	2160	42	4200	100	1.3940	30	348.8	20.4	9	0.5	2.0	0.1
12	640	18	2160	16	1600	100	1.3940	30	348.8	20.6	11	0.6	3.0	0.2
13	480	17	2040	13	1300	100	1.3940	30	348.8	20.8	14	0.8	3.0	0.2
14	370	15	1800	18	1800	100	1.3940	30	348.8	21.2	8	0.5	5.0	0.3
15	380	14	1680	20	2000	50	1.3940	30	174.4	11.4	8	0.5	2.0	0.1
16	410	18	2160	31	3100	75	1.3940	30	261.6	17.2	9	0.6	6.0	0.4
17	380	15	1800	30	3000	75	1.3940	30	261.6	17.7	11	0.7	2.0	0.1
18	380	16	1920	24	2400	100	1.3940	30	348.8	22.6	10	0.6	2.0	0.1
19	1920	18	2160	21	2100	100	1.3940	30	348.8	22.5	26	1.7	2.0	0.1
20	1360	17	2040	26	2600	50	1.3940	30	174.4	11.2	18	1.2	2.0	0.1
21	300	17	2040	46	4600	25	1.3940	30	87.2	5.8	12	0.8	3.0	0.2
22	530	18	2160	42	4200	25	1.3940	30	87.2	6.1	9	0.6	2.0	0.1
23	220	13	1560	35	3500	50	1.3940	30	174.4	12.1	8	0.6	2.0	0.1
24	390	16	1920	37	3700	25	1.3940	30	87.2	6.1	8	0.6	4.0	0.3
25	350	15	1800	46	4600	0	1.3940	30			11	0.8	2.0	0.1
26	1730	18	2160	48	4800	125	1.3940	30	436.0	29.0	10	0.7	2.0	0.1
27	400	17	2040	43	4300	125	1.3940	30	436.0	29.7	10	0.7	1.0	0.1
28	490	15	1800	14	1400	150	1.3940	30	523.2	36.9	14	1.0	6.0	0.4
29	360	16	1920	17	1700	100	1.3940	30	348.8	24.3	10	0.7	6.0	0.4
30	400	15	1800	19	1900	150	1.3940	30	523.2	37.6	10	0.7	6.0	0.4
31	370	16	1920	20	2000	150	1.3940	30	523.2	38.7	12	0.9	2.0	0.1
TL	17560	492	59040	1004	100400	2675			9330		359		93.0	
ME	566	16	1905	32	3239	86	1.3940	30.0	311.0	20.6	11.6	0.8	3.0	0.2

MANPOWER	
POSITION TITLE	NUMBER FULL TIME
SUPERINTENDANT	1
ASST. SUPT.	1
OPERATOR	3
MECHANIC	
CHEMIST	
LAB TECH	
IPP COORDINATOR	1
OTHER	

GIVE THE HOURS PER DAY THAT PLANT PERSONNEL ARE NORMALLY AT THE PLANT.

WEEKDAYS	8	HRS
SATURDAYS	8	HRS
SUNDAYS	8	HRS
HOLIDAYS	8	HRS

Weather Code
1. Clear
2. Partly Cloudy
3. Cloudy
4. Rain
5. Snow
6. Warm
7. Cold
8. Windy
9. Melting Snow

PLANT INFLUENT SHEET

April 2002

Marshall

STATE OF MICHIGAN

MI 002 3540

SUPERINTENDENT

DEPT OF ENVIRONMENTAL QUALITY

Steven D. Washburn

D	WEATHER		FLOW		RAW SEWAGE QUALITY									
A	TYPE	PRECIP	TOTAL	MAX	TEMP	pH	BOD_5		SS		TOTAL-P		VSS	NH3-N
Y	CODE	Inches	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l
1	4	0.33	1.790		47	7.90	146	2180	152	2269			152	11.8
2	4	0.06	1.810		47	7.50	153	2310	136	2053			130	
3	1		1.740		47	7.70	152	2206	150	2177			136	9.1
4	5	0.01	1.740		47	7.60	132	1916	120	1741			110	
5	1		1.650		46	7.70	128	1761	50	688	2.39	33	40	
6	1		1.650		46	7.70	163	2243	138	1899			124	
7	4	0.07	1.660		46	7.70	137	1897	104	1440			98	11.1
8	4	0.87	1.840		47	8.50	156	2394	180	2762	4.26	65	162	
9	4	0.05	1.810		47	7.70	113	1706	156	2355			140	
10	2		1.780		47	7.70	152	2256	134	1989			128	13.4
11	4	0.04	1.980		47	7.60	146	2411	156	2576			144	
12	4	0.68	2.080		48	8.00	182	3157	146	2533			134	
13	2		1.880		48	8.10	172	2697	130	2038			118	
14	1		1.860		47	7.70	135	2094	123	1908			108	
15	1		2.160		46	7.50	130	2342	106	1910			98	9.1
16	1		2.060		49	7.60	102	1752	89	1529			74	
17	1		1.930		49	7.80	170	2736	136	2189	2.90	47	122	
18	1		1.900		49	7.80	167	2646	126	1997			106	
19	4	0.19	1.810		50	7.80	158	2385	136	2053			128	12.2
20	4	0.03	1.690		49	7.80	110	1550	132	1860			112	
21	4	0.15	1.740		47	7.70	144	2090	124	1799			120	
22	1		1.730		48	7.60	148	2135	176	2539			174	12.8
23	1		1.770		44	7.60	176	2598	178	2628	3.18	47	176	
24	4	0.04	1.710		48	7.60	144	2054	142	2025			132	12.4
25	1		1.740		49	7.70	155	2249	144	2090			136	
26	1		1.680		50	8.00	172	2410	264	3699			196	13.9
27	4	0.22	1.670		49	7.90	145	2020	148	2061			140	
28	4	0.07	1.680		48	7.80	141	1976	124	1737			118	
29	4	0.01	1.670		48	7.70	122	1699	140	1950			118	
30	1		1.700		49	7.70	150	2127	202	2864			191	
31														
TL		2.82	53.910					65996		63359		192		
ME			1.797		47.6		147	2200	141	2112	3.18	48	129	11.8

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

PRIMARY EFFLUENT SHEET

April 2002

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

PRIMARY EFFLUENT QUALITY

DAY	BOD-5			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS		AMMONIA NITROGEN	
	mg/l	LBS	Removal	mg/l	LBS	% Removal	mg/l	LBS	% Removal	mg/l	%	mg/l	LBS
1	59	881	59.6	56	836	63.2				56.0	100.0	8.3	124
2	116	1751	24.2	86	1248	36.8				80.0	93.0		
3	96	1393	36.8	78	1132	48.0				68.0	87.2	12.7	184
4	106	1538	19.7	86	1183	28.3				76.0	88.4		
5	105	1445	18.0	70	963	-40.0	2.4	33.0	-0.4	62.0	88.6		
6	90	1238	44.8	68	941	50.7				62.0	91.2		
7	96	1329	29.9	78	1197	25.0				70.0	89.7	12.6	193
8	94	1442	39.7	88	1328	51.1	3.1	46.3	27.9	80.0	90.9		
9	104	1570	8.0	92	1366	41.0				82.0	89.1		
10	88	1306	42.1	72	1189	46.3				68.0	94.4	14.1	233
11	87	1437	40.4	84	1457	46.2				84.0	100.0		
12	97	1683	46.7	58	909	60.3				52.0	89.7		
13	90	1411	47.7	56	869	56.9				50.0	89.3		
14	77	1194	43.0	78	1405	36.6				70.0	89.7		
15	84	1513	35.4	70	1203	34.0				66.0	94.3	10.6	182
16	71	1220	30.4	54	869	39.3				48.0	88.9		
17	101	1626	40.6	64	1014	52.9	1.7	27.1	41.0	50.0	78.1		
18	134	2123	19.8	54	815	57.1				46.0	85.2		
19	73	1102	53.8	42	592	69.1				38.0	90.5	13.4	189
20	66	930	40.0	44	639	66.7				32.0	72.7		
21	79	1146	45.1	40	577	67.7				40.0	100.0		
22	62	895	58.1	36	531	79.5				36.0	100.0	11.9	176
23	105	1550	40.3	54	770	69.7	1.4	20.5	54.7	52.0	96.3		
24	71	1013	50.7	50	726	64.8				44.0	88.0	13.2	192
25	100	1451	35.5	38	532	73.6				32.0	84.2		
26	65	911	62.2	36	501	86.4				30.0	83.3	14.3	199
27	80	1114	44.8	38	532	74.3				38.0	100.0		
28	65	911	53.9	42	585	66.1				40.0	95.2		
29	68	947	44.3	48	681	65.7				36.0	75.0		
30	103	1460	31.3	64	852	68.3				56.0	87.5		
31													
TL		39531			27444			127.0					1672
ME	88	1318	39.6	61	915	52.9	2.2	31.8	30.8	1644.0	90.0	12.3	186

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION

DEQ

Discharge Number	Permit Number
001 A	MI 002 3540

DAILY DISCHARGE MONITORING REPORT

Monitoring Period: April 2002

DAY	$CBOD_5$			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS	NH3-N		PH	D.O.	F.COLI #/100ml	CL RESID	
	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	mg/l	LBS	SU	mg/l	MF	mg/l	
1	4.3	64	97.1	6.0	90	96.1				6.0	13.20	197.06	7.50	8.0	172	0.000	
2	6.0	91	96.1	3.0	45	97.8				3.0			7.40	7.7	203	0.000	
3	3.0	44	98.0	3.0	44	98.0				3.0	9.10	132.06	7.50	8.3	680	0.009	
4	3.5	51	97.3	6.0	87	95.0				6.0			7.50	8.4	4	0.000	
5	3.6	50	97.2	3.0	41	94.0	0.12	1.6	95.1	2.0			7.50	8.1	37	0.000	
6	3.7	51	97.7	1.0	14	99.3				1.0			7.40	8.2	1	0.000	
7	3.2	44	97.7	3.0	42	97.1				2.0	10.00	138.44	7.40	8.1	1	0.000	
8	3.4	52	97.8	11.0	169	93.9	0.13	2.0	96.9	6.0			7.40	7.4	70	0.000	
9	2.8	42	97.5	7.0	106	95.5				7.0			7.30	7.6	19	0.000	
10	3.5	52	97.7	3.0	45	97.8				3.0	11.20	166.27	7.40	8.4	3	0.000	
11	3.0	50	97.9	6.0	99	96.2				5.0			7.40	7.5	20	0.000	
12	6.4	111	96.5	6.0	104	95.9				6.0			7.40	7.1	218	0.000	
13	4.4	69	97.4	4.0	63	96.9				4.0			7.50	7.9	89	0.000	
14	2.5	39	98.1	7.0	109	94.3				7.0			7.60	8.6	6	0.001	
15	4.8	86	96.3	5.0	90	95.3				5.0	9.72	175.10	7.50	7.8	120	0.000	
16	2.8	48	97.3	5.0	86	94.4				3.0			7.50	8.3	66	0.000	
17	3.3	53	98.1	3.0	48	97.8	0.14	2.2	95.3	3.0			7.50	8.0	63	0.000	
18	12.7	201	92.4	11.0	174	91.3				11.0			7.50	7.3	120	0.000	
19	4.7	71	97.0	2.0	30	98.5				1.0	12.40	187.18	7.40	6.4	240	0.000	
20	4.0	56	96.4	1.0	14	99.2				1.0			7.50	8.1	12	0.000	
21	4.0	58	97.2	2.0	29	98.4				2.0			7.60	8.3	15	0.000	
22	2.8	40	98.1	1.0	14	99.4				1.0	11.60	167.37	7.50	8.7	11	0.000	
23	2.7	40	98.5	1.0	15	99.4	0.10	1.4	96.9	1.0			7.50	8.4	11	0.000	
24	1.8	26	98.8	2.0	29	98.6				1.0	11.90	169.71	7.50	8.1	4	0.000	
25	4.6	67	97.0	5.0	73	96.5				5.0			7.50	8.0	2	0.000	
26	2.4	34	98.6	1.0	14	99.6				1.0	15.50	217.17	7.50	7.7	3	0.000	
27	4.1	57	97.2	1.0	14	99.3				1.0			7.50	7.6	6	0.000	
28	2.7	38	98.1	2.0	28	98.4				2.0			7.50	7.5	2	0.004	
29	3.4	47	97.2	8.0	111	94.3				5.0			7.50	7.1	15	0.000	
30	3.1	44	97.9	4.0	57	98.0				4.0			7.50	7.6	7	0.000	
31																	
TL		1775			1882			7.2									
ME	3.9	59	97.3	4.1	63	96.9	0.12	1.8	96.1	108.0	11.62	172.26		7.9	19	0.000	
WA	5.3	87		6.3	99										69		
MX											15.50	217.17	7.60			0.009	
MN													7.30	6.4			

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 Years)

PRINTED NAME AND TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTORIZED AGENT	DATE
Steven D. Washburn, Superintendent		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

ACTIVATED SLUDGE SHEET

April 2002

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	AERATION SYSTEM				MIXED LIQUOR								SECONDARY SLUDGE				
	AERTN VOL	DETEN TIME	CRT	F:M RATIO	MLSS		MLVSS		SETTL.	SDI	D.O.	AIR	SS	VSS	RAS FLOW	WAS	
	KCF	HRS	DAYS		mg/L	Lbs.	mg/L	Lbs.	%	%	mg/L	CF	%	%	%	Gallons	Lbs.
SF	3											4				3	
1	48	4.8	5.0	0.15	2542	7612	1982	5935	32	0.79	5.30	40	0.47	0.37	82	39	1529
2	48	4.8	3.7	0.28	2662	7971	2105	6303	36	0.74	3.17	39	0.65	0.51	81	40	2168
3	48	5.0	4.3	0.23	2594	7767	2042	6115	32	0.81	5.38	41	0.54	0.43	85	40	1801
4	48	5.0	4.0	0.26	2580	7726	2003	5998	34	0.76	5.93	42	0.58	0.45	85	40	1935
5	48	5.2	4.8	0.24	2547	7627	1992	5965	37	0.69	5.26	44	0.48	0.37	89	40	1601
6	48	5.2			2568	7690					6.17	40			89	40	
7	48	5.2			2473	7405					5.12	32			89	40	
8	48	4.7	5.5	0.26	2454	7348	1882	5635	35	0.70	4.22	43	0.39	0.30	78	41	1334
9	48	4.8	4.9	0.27	2516	7534	1922	5755	31	0.81	4.35	38	0.45	0.35	81	41	1539
10	48	4.8	4.5	0.23	2559	7663	1924	5761	30	0.85	5.50	38	0.50	0.37	83	41	1710
11	48	4.4	5.5	0.25	2531	7579	1913	5728	27	0.94	5.60	31	0.40	0.30	74	41	1368
12	48	4.1	4.4	0.29	2504	7498	1914	5731	26	0.96	5.69	37	0.51	0.38	71	40	1701
13	48	4.6			2505	7501					6.27	40			78	40	
14	48	4.6			2393	7166					6.48	40			79	42	
15	48	4.0	4.9	0.28	2259	6764	1800	5390	23	0.98	5.46	36	0.47	0.37	68	35	1372
16	48	4.2	5.0	0.23	2248	6731	1805	5405	22	1.02	6.17	29	0.54	0.44	72	30	1351
17	48	4.5	7.1	0.31	2161	6471	1730	5180	22	0.98	5.22	33	0.50	0.40	76	22	917
18	48	4.5	10.3	0.38	2331	6980	1888	5653	23	1.01	5.15	29	0.48	0.39	77	17	681
19	48	4.8	9.5	0.18	2514	7528	1990	5959	27	0.93	1.32	37	0.56	0.47	81	17	794
20	48	5.1			2545	7621					6.62	49			87	17	
21	48	5.0			2446	7324					6.21	53			85	17	
22	48	5.0	9.6	0.16	2294	6869	1859	5567	26	0.88	5.34	54	0.45	0.36	85	19	713
23	48	4.9	8.6	0.29	2208	6612	1772	5306	25	0.88	6.90	49	0.54	0.43	83	17	766
24	48	5.0	10.1	0.18	2353	7046	1878	5623	27	0.87	6.14	41	0.49	0.39	86	17	695
25	48	5.0	8.7	0.26	2306	6905	1846	5528	27	0.85	6.04	51	0.50	0.39	85	19	792
26	48	5.1	9.5	0.17	2316	6935	1841	5513	29	0.80	4.18	61	0.46	0.37	88	19	729
27	48	5.2			2367	7088					5.85	33			88	17	
28	48	5.1			2329	6974					4.09	33			88	17	
29	48	5.2	9.8	0.17	2266	6785	1835	5495	33	0.69	4.61	30	0.46	0.37	88	18	691
30	48	5.1	10.4	0.27	2276	6815	1840	5510	31	0.73	4.52	34	0.46	0.37	87	17	652
31	48																
TL												1197				880	26838
ME	48	4.8	6.8	0.24	2422	7251	1898	5684	29	0.8	5.3	40	0.49	0.39	82	29	1220

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

BIOSOLIDS SHEET

Marshall

MI 002 3540

April 2002

SUPERINTENDENT
Steven D. Washburn

	RAW SLUDGE	RAW BIOSOLIDS			LIME STABILIZED BIOSOLIDS					
DAY	GALLONS	TOTAL SOLIDS %	VOLATILE SOLIDS %	pH SU	LIME POUNDS	pH 2 hrs @ 25 C SU	RDT Solids %	Lbs. Lime per 1000 gallons biosolids		
1	9000	3.4	78.0	6.3						
2	10000	3.4	78.0	6.2	1822			182		
3	10600	3.1	78.0	6.0	1496			141		
4	9125	3.4	77.0	6.2						
5	6000	3.7	75.0	6.3		12.2				
6	6000	3.5	77.0	6.4						
7	8500	4.0	74.0	6.3						
8	7000	3.7	77.0	6.3						
9	10000	3.7	77.0	6.3	1795	12.1		180		
10	9000	3.6	76.0	6.4		12.1				
11	9000	3.8	75.0	6.4						
12	10000	3.6	76.0	6.3						
13	10500	3.8	73.0	6.4						
14	9650	4.2	73.0	6.4						
15	8300	4.0	74.0	6.3						
16	8700	2.9	75.0	6.3			6.1			
17	8000	3.7	76.0	6.2	1686			211		
18	8000	3.3	75.0	6.2	1850	12.2		231		
19	10000	3.5	75.0	6.2		12.1				
20	8000	3.3	74.0	6.3						
21	10600	4.1	72.0	6.3						
22	10000	3.7	75.0	6.3						
23	9000	3.4	75.0	6.4	2312		7.7	257		
24	9000	3.3	79.0	6.3		12.1				
25	8500	3.5	74.0	6.3						
26	9650	3.2	74.0	6.3						
27	8500	3.4	73.0	6.3						
28	9650	3.5	74.0	6.2						
29	8500	3.4	75.0	6.2			8.5			
30	9650	3.3	75.0	6.3	2013			209		
31										
TOTAL	268425				12974					
MEAN	8948	3.5	75.3	6.3	1853	12.1	7.4	201		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MISCELLANEOUS SHEET

April 2002

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	WATER	ELECTRICAL USAGE		FUEL GAS		CHEMICALS APPLIED								
			X 120		X 100	$FECL_3$					Cl_2		SO_2	
	CF	METER	KWH	METER	CF	GALS	SP. GR.	% SOLN	LBS	mg/L	LBS	mg/L	LBS	mg/L
1	340	15	1800	25	2500	100.0	1.3920	30	348.3	23.3	12.0	0.8	8.0	0.5
2	1690	17	2040	20	2000	100	1.3920	30	348.3	23.1	18	1.2	8.0	0.5
3	1320	16	1920	19	1900	75	1.3920	30	261.2	18.0	11	0.8	8.0	0.6
4	510	16	1920	19	1900	100	1.3920	30	348.3	24.0	12	0.8	8.0	0.6
5	710	16	1920	25	2500	100	1.3920	30	348.3	25.3	7	0.5	8.0	0.6
6	420	15	1800	18	1800	150	1.3920	30	522.4	38.0	12	0.9	8.0	0.6
7	510	16	1920	17	1700	150	1.3920	30	522.4	37.7	5	0.4	8.0	0.6
8	290	16	1920	10	1000	150	1.3920	30	522.4	34.0	7	0.5	8.0	0.5
9	1870	17	2040	13	1300	175	1.3920	30	609.5	40.4	19	1.3	8.0	0.5
10	410	15	1800	9	900	50	1.3920	30	174.1	11.7	5	0.3	8.0	0.5
11	520	14	1680	4	400	100	1.3920	30	348.3	21.1	17	1.0	8.0	0.5
12	430	15	1800	4	400	75	1.3920	30	261.2	15.1	15	0.9	8.0	0.5
13	410	14	1680	3	300	50	1.3920	30	174.1	11.1	1	0.1	8.0	0.5
14	420	16	1920	3	300	50	1.3920	30	174.1	11.2	4	0.3	8.0	0.5
15	460	14	1680	1	100	50	1.3920	30	174.1	9.7	10	0.6	8.0	0.4
16	390	15	1800	1	100	100	1.3920	30	348.3	20.3	19	1.1	8.0	0.5
17	1730	18	2160	1	100	50	1.3920	30	174.1	10.8	10	0.6	8.0	0.5
18	2220	16	1920	1	100	100	1.3920	30	348.3	22.0	7	0.4	8.0	0.5
19	400	15	1800	1	100	100	1.3920	30	348.3	23.1	7	0.5	8.0	0.5
20	390	15	1800	2	200	200	1.3920	30	696.6	49.4	10	0.7	8.0	0.6
21	430	16	1920	8	800	150	1.3920	30	522.4	36.0	9	0.6	8.0	0.6
22	390	16	1920	16	1600	125	1.3920	30	435.3	30.2	8	0.6	8.0	0.6
23	1920	16	1920	7	700	100	1.3920	30	348.3	23.6	10	0.7	8.0	0.5
24	530	16	1920	4	400	100	1.3920	30	348.3	24.4	12	0.8	8.0	0.6
25	450	15	1800	7	700	125	1.3920	30	435.3	30.0	9	0.6	8.0	0.6
26	390	14	1680	8	800	75	1.3920	30	261.2	18.6	10	0.7	8.0	0.6
27	400	14	1680	13	1300	75	1.3920	30	261.2	18.8	11	0.8	8.0	0.6
28	410	13	1560	12	1200	100	1.3920	30	348.3	24.9	9	0.6	8.0	0.6
29	420	12	1440	10	1000	100	1.3920	30	348.3	25.0	11	0.8	8.0	0.6
30	1880	11	1320	7	700	100	1.3920	30	348.3	24.6	10	0.7	8.0	0.6
31														
TL	22660	454	54480	288	28800	3075					307		240.0	
ME	755	15	1816	10	960	103	1.3920	30.0	357.0	24.2	10.2	0.7	8.0	0.5

MANPOWER	
POSITION TITLE	NUMBER FULL TIME
SUPERINTENDANT	1
ASST. SUPT.	1
OPERATOR	3
MECHANIC	
CHEMIST	
LAB TECH	
IPP COORDINATOR	1
OTHER	

GIVE THE HOURS PER DAY THAT PLANT PERSONNEL ARE NORMALLY AT THE PLANT.

WEEKDAYS	8	HRS
SATURDAYS	8	HRS
SUNDAYS	8	HRS
HOLIDAYS	8	HRS

Weather Code	
1. Clear	6. Warm
2. Partly Cloudy	7. Cold
3. Cloudy	8. Windy
4. Rain	9. Melting Snow
5. Snow	

PLANT INFLUENT SHEET

May 2002

Marshall

STATE OF MICHIGAN

MI 002 3540

SUPERINTENDENT

DEPT OF ENVIRONMENTAL QUALITY

Steven D. Washburn

D	WEATHER		FLOW		RAW SEWAGE QUALITY									
A	TYPE	PRECIP	TOTAL	MAX	TEMP	pH	BOD_5		SS		TOTAL-P		VSS	NH3-N
Y	CODE	Inches	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l
1	4	0.46	1.720		49	7.70	210	3012	170	2439	3.57	51	158	14.5
2	1		1.690		49	7.90	267	3763	216	3044			194	14.8
3	1		1.640		49	7.70	152	2079	172	2353			162	14.4
4	1		1.570		49	7.70	135	1768	190	2488			180	12.4
5	1		1.600		50	7.60	148	1975	154	2055			152	12.5
6	4	0.33	1.710		49	7.80	155	2211	192	2738			176	13.0
7	4	0.01	1.690		49	7.70	167	2354	182	2565			172	12.2
8	4	0.38	1.640		51	7.60	187	2558	158	2161	2.33	32	146	13.6
9	4	0.07	1.630		56	7.70	238	3235	196	2664			182	16.1
10	1		1.570		50	7.70	121	1584	114	1493			106	14.9
11	4	1.69	1.700		51	7.80	157	2226	168	2382			154	11.7
12	4	0.16	1.890		50	7.80	132	2081	138	2175			122	10.4
13	1		1.940		49	7.50	173	2799	124	2006			112	13.0
14	1		1.900		49	7.70	200	3169	114	1806			104	12.9
15	4	0.13	1.840		49	7.60	263	4036	302	4634	2.43	37	254	10.2
16	4	0.55	1.980		51	7.50	168	2774	112	1849			102	12.4
17	1		1.800		50	7.70	144	2162	124	1861			124	14.5
18	1		1.760		50	7.60	137	2011	142	2084			142	12.4
19	1		1.770		48	7.60	140	2067	108	1594			94	11.9
20	1		2.010		49	7.80	26	436	212	3554			184	11.3
21	1		1.800		50	7.80	250	3753	179	2687			168	16.5
22	1		1.760		50	7.70	188	2760	148	2172	4.36	64	124	13.9
23	4	0.44	1.750		51	7.60	151	2204	172	2510			158	14.1
24	1		1.680		51	7.60	145	2032	144	2018			130	16.9
25	4	0.10	1.640		51	7.70	146	1997	172	2353			162	14.0
26	1		1.570		49	7.60	130	1702	142	1859			128	13.0
27	1		1.630		49	7.70	142	1930	180	2447			176	12.4
28	4	0.11	1.790		50	7.60	192	2866	154	2299			140	11.6
29	4	0.04	1.770		51	7.60	156	2303	210	3100			190	12.7
30	4	0.16	1.730		51	7.60	229	3304	180	2597			168	12.3
31	1		1.780		52	7.70	197	2925	130	1930			126	12.3
TL		4.63	53.950					76074		73920		184		
ME			1.740		50		169	2454	164	2385	3.17	46	151	13.2

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

PRIMARY EFFLUENT SHEET

May 2002

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

	PRIMARY EFFLUENT QUALITY												
DAY	BOD-5			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS		AMMONIA NITROGEN	
	mg/l	LBS	Removal	mg/l	LBS	% Removal	mg/l	LBS	% Removal	mg/l	%	mg/l	LBS
1	135	1937	35.7	62	889	63.5	1.6	22.4	56.3	56.0	90.3	16.5	237
2	113	1593	57.7	38	520	82.4				34.0	89.5	15.1	207
3	70	957	53.9	44	576	74.4				40.0	90.9	15.6	204
4	71	930	47.4	44	587	76.8				42.0	95.5	13.1	175
5	73	974	50.7	38	542	75.3				38.0	100.0	11.8	168
6	64	913	58.7	50	705	74.0				50.0	100.0	13.2	186
7	103	1452	38.3	72	985	60.4				60.0	83.3	15.6	213
8	86	1176	54.0	60	816	62.0	1.0	13.5	57.5	50.0	83.3	13.2	179
9	105	1427	55.9	64	838	67.3				56.0	87.5	17.2	225
10	71	930	41.3	60	851	47.4				56.0	93.3	16.4	233
11	67	950	57.3	62	977	63.1				58.0	93.5	12.5	197
12	78	1229	40.9	64	1035	53.6				58.0	90.6	10.9	176
13	73	1181	57.8	56	887	54.8				48.0	85.7	11.8	187
14	123	1949	38.5	58	890	49.1				48.0	82.8	14.4	221
15	106	1627	59.7	74	1222	75.5	1.1	18.8	53.1	60.0	81.1	13.4	221
16	109	1800	35.1	78	1171	30.4				74.0	94.9	11.6	174
17	67	1006	53.5	50	734	59.7				50.0	100.0	14.9	219
18	61	895	55.5	46	679	67.6				46.0	100.0	11.8	174
19	54	797	61.4	40	671	63.0				32.0	80.0	10.7	179
20	78	1308	-200.0	56	841	73.6				50.0	89.3	11.5	173
21	160	2402	36.0	52	763	70.9				40.0	76.9	16.5	242
22	108	1585	42.6	50	730	66.2	1.5	21.7	65.8	34.0	68.0	14.9	217
23	84	1226	44.4	52	729	69.8				48.0	92.3	12.4	174
24	66	925	54.5	58	793	59.7				52.0	89.7	14.7	201
25	62	848	57.5	46	602	73.3				48.0	104.3	11.7	153
26	50	655	61.5	42	571	70.4				38.0	90.5	10.8	147
27	55	748	61.3	48	717	73.3				48.0	100.0	11.4	170
28	111	1657	42.2	62	915	59.7				46.0	74.2	14.4	213
29	101	1491	35.3	60	866	71.4				50.0	83.3	13.5	195
30	102	1472	55.5	48	713	73.3				44.0	91.7	13.0	193
31	117	1737	40.6	52	23397	60.0				52.0	100.0	14.5	6524
TL		39775			47211			76.4					12378
ME	88	1283	41.4	54	1523	65.2	1.3	19.1	58.2	1506.0	89.8	13.5	399

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION

DEQ

Discharge Number	Permit Number
001 A	MI 002 3540

DAILY DISCHARGE MONITORING REPORT

Monitoring Period: May 2002

DAY	$CBOD_5$			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS	NH3-N		PH	D.O.	F.COLI #/100ml	CL RESID
	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	mg/l	LBS	SU	mg/l	MF	mg/l
1	4.1	59	98.0	5.0	72	97.1	0.15	2.1	95.8	5.0	14.10	202.26	7.50	7.4	12	0.000
2	5.6	79	97.9	4.0	56	98.1				4.0	16.00	225.51	7.50	6.8	240	0.000
3	2.2	30	98.6	4.0	55	97.7				4.0	13.00	177.81	7.50	7.5	108	0.000
4	3.8	50	97.2	1.0	13	99.5				1.0	10.50	137.48	7.50	8.0	27	0.000
5	3.0	40	98.0	1.0	13	99.4				1.0	9.40	125.43	7.60	8.2	34	0.000
6	2.5	36	98.4	4.0	57	97.9				4.0	10.10	144.04	7.50	8.1	83	0.000
7	2.9	41	98.3	1.0	14	99.5				1.0	10.90	153.63	7.50	7.8	41	0.000
8	2.6	36	98.6	2.0	27	98.7	0.06	0.9	97.3	2.0	9.84	134.59	7.50	8.1	58	0.000
9	3.3	45	98.6	8.0	109	95.9				7.0	13.50	183.52	7.50	7.4	120	0.000
10	3.2	42	97.4	3.0	39	97.4				3.0	11.70	153.20	7.50	7.8	36	0.000
11	1.8	26	98.9	3.0	43	98.2				3.0	8.00	113.42	7.50	7.9	6	0.000
12	3.7	58	97.2	3.0	47	97.8				3.0	7.14	112.54	7.40	7.8	120	0.000
13	2.3	37	98.7	5.0	81	96.0				5.0	7.07	114.39	7.60	7.9	72	0.000
14	3.2	51	98.4	3.0	48	97.4				3.0	11.30	179.06	7.50	7.8	78	0.000
15	4.1	63	98.4	1.0	15	99.7	0.06	0.9	97.5	1.0	9.38	143.94	7.40	8.1	59	0.000
16	2.7	45	98.4	2.0	33	98.2				2.0	6.05	99.90	7.40	7.8	20	0.000
17	2.7	41	98.1	2.0	30	98.4				2.0	5.48	82.27	7.40	7.4	27	0.000
18	3.9	57	97.2	1.0	15	99.3				1.0	4.00	58.71	7.40	7.6	51	0.000
19	2.7	40	98.1	1.0	15	99.1				1.0	2.33	34.39	7.40	7.8	93	0.000
20	2.8	47	89.2	3.0	50	98.6				2.0	2.59	43.42	7.40	8.3	62	0.000
21	4.7	71	98.1	3.0	45	98.3				3.0	11.20	168.13	7.30	7.8	120	0.000
22	3.9	57	97.9	8.0	117	94.6	0.16	2.3	96.3	6.0	9.30	136.51	7.40	7.2	111	0.000
23	3.0	44	98.0	5.0	73	97.1				4.0	3.46	50.50	7.30	6.3	260	0.000
24	2.6	36	98.2	4.0	56	97.2				4.0	2.42	33.91	7.40	7.1	162	0.000
25	3.6	49	97.5	2.0	27	98.8				2.0	0.66	9.08	7.40	7.3	172	0.000
26	2.1	27	98.4	1.0	13	99.3				1.0	0.15	1.94	7.40	7.5	240	0.000
27	2.2	30	98.5	1.0	14	99.4				1.0	0.24	3.26	7.40	8.5	360	0.000
28	4.0	60	97.9	2.0	30	98.7				2.0	5.65	84.35	7.30	8.6	240	0.000
29	4.0	59	97.4	4.0	59	98.1				4.0	3.79	55.95	7.30	7.6	220	0.000
30	4.0	58	98.3	1.0	14	99.4				1.0	3.53	50.93	7.30	6.7	600	0.000
31	7.0	104	96.4	3.0	45	97.7				3.0	10.80	160.33	7.40	7.1	600	0.000
TL		1515			1326			6.3								
ME	3.4	49	97.7	2.9	43	98.1	0.11	1.6	96.7	86.0	7.53	108.85		7.7	87	0.000
WA	3.8	55		3.9	56										311	
MX											16.00	225.51	7.60			
MN													7.30	6.3		

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 Years)

PRINTED NAME AND TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTORIZED AGENT	DATE
Steven D. Washburn, Superintendent		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

ACTIVATED SLUDGE SHEET

May 2002

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	AERATION SYSTEM				MIXED LIQUOR								SECONDARY SLUDGE				
	AERTN VOL	DETEN TIME	CRT	F:M RATIO	MLSS		MLVSS		SETTL.	SDI	D.O.	AIR	SS	VSS	RAS FLOW	WAS	
	KCF	HRS	DAYS		mg/L	Lbs.	mg/L	Lbs.	%	%	mg/L	CF	%	%	%	Gallons	Lbs.
SF	3											4				3	
1	48	5.0	9.6	0.34	2346	7025	1891	5662	33	0.71	5.37	33	0.55	0.44	71	16	734
2	48	5.1	13.2	0.25	2559	7663	2091	6261	36	0.71	1.06	45	0.58	0.48	89	12	580
3	48	5.3	13.5	0.15	2599	7782	2122	6354	38	0.68	4.26	49	0.63	0.51	92	11	578
4	48	5.5			2767	8285					6.77	44			93	12	
5	48	5.4			2719	8142					5.69	38			95	11	
6	48	5.0	11.0	0.13	2746	8223	2267	6788	48	0.57	5.30	44	0.50	0.42	84	18	751
7	48	5.1	6.6	0.21	2711	8118	2256	6755	46	0.59	5.51	40	0.57	0.47	84	26	1236
8	48	5.3	5.9	0.17	2723	8154	2247	6728	40	0.68	5.58	48	0.57	0.47	87	29	1379
9	48	5.3	5.0	0.20	2808	8408	2336	6995	45	0.62	4.53	46	0.56	0.47	87	36	1681
10	48	5.5	5.1	0.15	2581	7729	2127	6369	39	0.66	5.18	49	0.47	0.39	91	39	1529
11	48	5.1			2566	7684					6.74	51			84	39	
12	48	4.6			2375	7112					5.38	48			76	32	
13	48	4.4	7.7	0.21	2248	6731	1883	5638	34	0.66	5.51	49	0.42	0.35	74	25	876
14	48	4.5	7.3	0.34	2293	6866	1907	5710	35	0.66	5.35	45	0.49	0.41	75	23	940
15	48	4.7	7.0	0.28	2370	7097	1919	5746	35	0.68	3.50	40	0.53	0.44	78	23	1017
16	48	4.4	8.2	0.29	2525	7561	2087	6249	42	0.60	4.18	44	0.44	0.37	72	25	917
17	48	4.8	7.2	0.16	2494	7468	2070	6198	36	0.69	3.85	54	0.54	0.45	79	23	1036
18	48	4.9			2528	7570					6.25	54			81	23	
19	48	4.9			2455	7351					5.60	53			81	24	
20	48	4.3	6.9	0.22	2396	7175	1989	5956	41	0.58	5.45	55	0.52	0.44	71	24	1041
21	48	4.8	7.2	0.40	2406	7205	1986	5947	33	0.73	2.97	50	0.52	0.43	79	23	997
22	48	4.9	6.9	0.24	2609	7812	2172	6504	36	0.72	0.97	44	0.59	0.49	81	23	1132
23	48	4.9	7.7	0.17	2779	8321	2349	7034	48	0.58	3.22	36	0.56	0.47	82	23	1074
24	48	5.1	7.8	0.13	2819	8441	2382	7133	37	0.76	2.58	40	0.50	0.43	85	26	1084
25	48	5.3			2744	8217					5.99	49			87	20	
26	48	5.5			2641	7908					7.31	42			91	18	
27	48	5.3			2563	7675					6.95	37			87	17	
28	48	4.8	9.7	0.26	2527	7567	2107	6309	34	0.74	6.38	33	0.55	0.46	80	17	780
29	48	4.9	9.5	0.20	2938	8798	2471	7399	35	0.84	3.10	33	0.53	0.43	80	21	928
30	48	5.0	8.1	0.10	2794	8366	4878	14607	38	0.74	3.86	33	0.59	0.49	78	21	1033
31	48	4.8	5.4	0.25	2329	6974	2311	6920	41	0.57	0.11	36	0.64	0.53	79	24	1281
TL												1362				704	22604
ME	48	5.0	8.0	0.22	2579	7723	2266	6785	39	0.7	4.7	44	0.54	0.45	82	23	1027

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

BIOSOLIDS SHEET

Marshall

MI 002 3540

May 2002

SUPERINTENDENT
Steven D. Washburn

	RAW SLUDGE	RAW BIOSOLIDS			LIME STABILIZED BIOSOLIDS					
DAY	GALLONS	TOTAL SOLIDS %	VOLATILE SOLIDS %	pH SU	LIME POUNDS	pH 2 hrs @ 25 C SU	RDT Solids %	Lbs. Lime per 1000 gallons biosolids		
1	9600	3.4	75.0	6.3	1651		9.5	172		
2	9000	3.3	75.0	6.4		12.4				
3	9500	3.5	75.0	6.3						
4	8500	3.3	75.0	6.2						
5	9500	3.8	74.0	6.2						
6	9000	4.0	75.0	6.3						
7	12000	3.5	75.0	6.3	1778		9.8	148		
8	9000	3.5	76.0	6.3	660		12.1	73		
9	9000	3.9	75.0	6.3		12.4				
10	9000	3.4	76.0	6.3						
11	9000	3.1	77.0	6.3						
12	9600	3.0	77.0	6.2						
13	14000	3.3	76.0	6.1						
14	12000	4.7	77.0	6.3	2083		8.6	174		
15	11000	3.4	74.0	6.1	660		11.1	60		
16	10000	3.1	73.0	6.1						
17	10000	2.9	75.0	6.1		12.3				
18	10000	2.6	74.0	6.1						
19	10750	3.2	75.0	6.1						
20	10700	3.6	72.0	6.1						
21	11750	3.6	75.0	6.2	1397		6.4	119		
22	12850	3.4	76.0	6.1	1397		7.9	109		
23	12000	3.2	74.0	6.1		12.3				
24	12000	3.0	76.0	6.2						
25	11000	3.2	76.0	6.3						
26	10600	3.2	77.0	6.3						
27	10600	3.1	76.0	6.5						
28	10600	3.0	77.0	6.4	1956		11.6	185		
29	10700	3.5	72.0	6.4	1270		10.2	119		
30	10600	3.3	73.0	6.2		12.3				
31	10000	3.1	77.0	6.2						
TOTAL	323850				12852					
MEAN	10447	3.4	75.2	6.2	1428	12.4	9.7	129		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MISCELLANEOUS SHEET

May 2002

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	WATER	ELECTRICAL USAGE		FUEL GAS		CHEMICALS APPLIED								
			X 120		X 100	$FECL_3$					Cl_2		SO_2	
	CF	METER	KWH	METER	CF	GALS	SP. GR.	% SOLN	LBS	mg/L	LBS	mg/L	LBS	mg/L
1	390	15	1800	11	1100	100.0	1.3920	30	348.3	24.3	7.0	0.5	3.0	0.2
2	450	16	1920	20	2000	75	1.3920	30	261.2	18.5	7	0.5	4.0	0.3
3	450	14	1680	9	900	125	1.3920	30	435.3	31.8	8	0.6	3.0	0.2
4	450	15	1800	11	1100	100	1.3920	30	348.3	26.6	9	0.7	2.0	0.2
5	470	15	1800	2	200	125	1.3920	30	435.3	32.6	8	0.6	2.0	0.1
6	380	14	1680	2	200	125	1.3920	30	435.3	30.5	9	0.6	2.0	0.1
7	400	17	2040	3	300	100	1.3920	30	348.3	24.7	10	0.7	1.0	0.1
8	600	17	2040	4	400	100	1.3920	30	348.3	25.5	7	0.5	2.0	0.1
9	770	15	1800	4	400	100	1.3920	30	348.3	25.6	8	0.6	2.0	0.1
10	480	15	1800	4	400	100	1.3920	30	348.3	26.6	8	0.6	2.0	0.2
11	550	15	1800	4	400	75	1.3920	30	261.2	18.4	8	0.6	2.0	0.1
12	470	14	1680	6	600	100	1.3920	30	348.3	22.1	7	0.4	1.0	0.1
13	450	16	1920	6	600	100	1.3920	30	348.3	21.5	5	0.3	7.0	0.4
14	530	17	2040	3	300	100	1.3920	30	348.3	22.0	7	0.4	10.0	0.6
15	500	16	1920	2	200	100	1.3920	30	348.3	22.7	9	0.6	4.0	0.3
16	690	15	1800	2	200	100	1.3920	30	348.3	21.1	3	0.2	2.0	0.1
17	360	16	1920	5	500	100	1.3920	30	348.3	23.2	2	0.1	4.0	0.3
18	420	14	1680	6	600	125	1.3920	30	435.3	29.7	5	0.3	4.0	0.3
19	420	16	1920	5	500	100	1.3920	30	348.3	23.6	5	0.3	4.0	0.3
20	390	15	1800	4	400	100	1.3920	30	348.3	20.8	7	0.4	4.0	0.2
21	390	17	2040	5	500	100	1.3920	30	348.3	23.2	13	0.9	8.0	0.5
22	890	19	2280	2	200	100	1.3920	30	348.3	23.7	10	0.7	3.0	0.2
23	400	14	1680	1	100	100	1.3920	30	348.3	23.9	8	0.5	3.0	0.2
24	340	14	1680	1	100	100	1.3920	30	348.3	24.9	8	0.6	6.0	0.4
25	420	14	1680	3	300	100	1.3920	30	348.3	25.5	7	0.5	6.0	0.4
26	410	14	1680	2	200	100	1.3920	30	348.3	26.6	5	0.4	2.0	0.2
27	420	15	1800	1	100	50	1.3920	30	174.1	12.8	6	0.4	2.0	0.1
28	380	16	1920	2	200	100	1.3920	30	348.3	23.3	6	0.4	2.0	0.1
29	570	16	1920	2	200	100	1.3920	30	348.3	23.6	8	0.5	2.0	0.1
30	370	14	1680	1	100	50	1.3920	30	174.1	12.1	9	0.6	1.0	0.1
31	650	15	1800	0		50	1.3920	30	174.1	11.7	15	1.0	2.0	0.1
TL	14860	475	57000	133	13300	3000			#####		234		102.0	
ME	479	15	1839	4	443	97	1.3920	30.0	337.0	23.3	7.5	0.5	3.3	0.2

MANPOWER		
POSITION TITLE	NUMBER FULL TIME	
SUPERINTENDANT	1	
ASST. SUPT.	1	
OPERATOR	3	
MECHANIC		
CHEMIST		
LAB TECH		
IPP COORDINATOR	1	
OTHER		
GIVE THE HOURS PER DAY THAT PLANT PERSONNEL ARE NORMALLY AT THE PLANT.		
WEEKDAYS	8	HRS
SATURDAYS	8	HRS
SUNDAYS	8	HRS
HOLIDAYS	8	HRS

Weather Code
1. Clear
2. Partly Cloudy
3. Cloudy
4. Rain
5. Snow
6. Warm
7. Cold
8. Windy
9. Melting Snow

PLANT INFLUENT SHEET

June 2002

Marshall

STATE OF MICHIGAN

MI 002 3540

SUPERINTENDENT

DEPT OF ENVIRONMENTAL QUALITY

Steven D. Washburn

D	WEATHER		FLOW		RAW SEWAGE QUALITY									
A	TYPE	PRECIP	TOTAL	MAX	TEMP	pH	BOD_5		SS		TOTAL-P		VSS	NH3-N
Y	CODE	Inches	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l
1	1		1.690		52	7.60	119	1677	108	1522			98	9.8
2	1		1.610		51	7.70	122	1638	122	1638	2.36	32	116	10.5
3	4	0.63	1.720		52	7.60	128	1836	146	2094			132	11.6
4	4	0.05	1.790		53	7.60	154	2299	106	1582			100	11.6
5	4	0.11	1.790		53	7.90	213	3180	178	2657			166	12.9
6	1		1.690		53	7.60	185	2608	194	2734			174	13.5
7	1		1.630		53	7.70	99	1346	80	1088			78	11.2
8	1		1.610		53	7.60	174	2336	146	1960			142	11.0
9	1		1.590		51	7.60	113	1498	156	2069			150	10.3
10	4	0.39	1.760		53	7.60	143	2099	154	2260	2.92	43	138	11.9
11	1		1.740		54	8.10	192	2786	166	2409			150	12.8
12	1		1.730		53	7.80	194	2799	130	1876			114	12.0
13	4	0.12	1.700		53	7.80	184	2609	126	1786			110	12.0
14	4	0.04	1.610		53	7.70	182	2444	116	1558			110	12.8
15	4	0.04	1.530		52	7.60	182	2322	120	1531			110	11.7
16	1		1.550		52	7.70	140	1810	106	1370			94	11.2
17	1		1.630		53	7.90	198	2692	156	2121			136	12.8
18	1		1.680		50	7.70	240	3363	220	3082			201	14.0
19	1		1.630		54	7.70	140	1903	158	2148	3.17	43	146	10.6
20	1		1.580		54	7.50	123	1621	60	791			56	13.8
21	1		1.540		53	7.70	145	1862	134	1721			116	12.2
22	1		1.510		54	7.70	164	2065	204	2569			180	11.4
23	1		1.510		53	7.80	142	1788	128	1612			106	11.4
24	1		1.600		55	7.90	223	2976	194	2589			186	13.9
25	4	0.03	1.670		54	7.60	254	3538	228	3176			222	10.4
26	4	0.21	1.630		56	7.50	207	2814	210	2855	3.82	52	196	12.6
27	1		1.600		55	7.60	270	3603	218	2909			192	12.3
28	1		1.460		55	7.60	189	2301	194	2362			194	15.4
29	1		1.360		54	7.60	188	2132	172	1951			142	13.3
30	1		1.330		54	7.50	169	1875	166	1841			156	12.9
31														
TL		1.62	48.470					69820		61862		170		
ME			1.616				173	2327	153	2062	3.07	42	140	12.1

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

PRIMARY EFFLUENT SHEET

June 2002

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

	PRIMARY EFFLUENT QUALITY												
DAY	BOD-5			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS		AMMONIA NITROGEN	
	mg/l	LBS	Removal	mg/l	LBS	% Removal	mg/l	LBS	% Removal	mg/l	%	mg/l	LBS
1	70	987	41.2	50	705	53.7				44.0	88.0	11.5	162
2	66	886	45.9	60	861	50.8	1.3	18.4	45.8	58.0	96.7	11.4	164
3	68	975	46.9	54	806	63.0				46.0	85.2	12.7	190
4	108	1612	29.9	64	955	39.6				58.0	90.6	14.6	218
5	125	1866	41.3	66	930	62.9				60.0	90.9	15.3	216
6	82	1156	55.7	82	1115	57.7				78.0	95.1	13.5	184
7	72	979	27.3	72	967	10.0				72.0	100.0	14.2	191
8	67	900	61.5	64	849	56.2				64.0	100.0	11.3	150
9	61	809	46.0	68	998	56.4				68.0	100.0	11.1	163
10	67	983	53.1	68	987	55.8	1.6	22.6	46.6	76.0	111.8	11.3	164
11	122	1770	36.5	84	1212	49.4				72.0	85.7	16.1	232
12	131	1890	32.5	68	964	47.7				56.0	82.4	15.6	221
13	110	1560	40.2	82	1101	34.9				78.0	95.1	13.6	183
14	103	1383	43.4	64	817	44.8				64.0	100.0	13.4	171
15	94	1199	48.4	62	801	48.3				54.0	87.1	12.6	163
16	79	1021	43.6	68	924	35.8				64.0	94.1	11.8	160
17	101	1373	49.0	54	757	65.4				44.0	81.5	14.0	196
18	133	1863	44.6	68	924	69.1				58.0	85.3	16.1	219
19	97	1319	30.7	72	949	54.4	1.8	24.2	42.0	64.0	88.9	13.7	181
20	88	1160	28.5	48	616	20.0				46.0	95.8	13.0	167
21	69	886	52.4	54	680	59.7				44.0	81.5	12.8	161
22	70	882	57.3	56	705	72.5				48.0	85.7	11.8	149
23	79	995	44.4	60	801	53.1				50.0	83.3	12.4	165
24	110	1468	50.7	50	696	74.2				50.0	100.0	14.6	203
25	146	2033	42.5	64	870	71.9				64.0	100.0	14.6	198
26	109	1482	47.3	82	1094	61.0	1.9	25.2	50.5	78.0	95.1	13.8	184
27	98	1308	63.7	76	925	65.1				74.0	97.4	12.6	153
28	104	1266	45.0	78	885	59.8				78.0	100.0	15.1	171
29	81	919	56.9	68	754	60.5				54.0	79.4	13.1	145
30	65	721	61.5	66		60.2				56.0	84.8	12.0	
31													
TL		37651			25649			90.5					5224
ME	93	1255	45.6	66	855	53.8	1.6	22.6	46.2	1820.0	92.0	13.3	174

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION

DEQ

Discharge Number	Permit Number
001 A	MI 002 3540

DAILY DISCHARGE MONITORING REPORT

Monitoring Period
June 2002

DAY	$CBOD_5$			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS	NH3-N		PH	D.O.	F.COLI #/100ml	CL RESID
	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	mg/l	LBS	SU	mg/l	MF	mg/l
1	4.9	69	95.9	1.0	14	99.1				1.0	5.25	74.00	7.30	6.7	9	0.001
2	3.7	50	97.0	3.0	40	97.5	0.13	1.7	94.5	2.0	1.41	18.93	7.30	6.9	20	0.006
3	4.5	65	96.5	1.0	14	99.3				1.0	2.65	38.01	7.30	6.8	115	0.016
4	4.8	72	96.9	5.0	75	95.3				5.0	7.97	118.98	7.30	6.8	37	0.017
5	9.4	140	95.6	12.0	179	93.3				10.0	14.00	209.00	7.40	6.4	10	0.000
6	5.5	78	97.0	6.0	85	96.9				6.0	7.83	110.36	7.50	6.4	44	0.005
7	4.0	54	96.0	2.0	27	97.5				2.0	1.57	21.34	7.30	6.9	113	0.005
8	4.2	56	97.6	1.0	13	99.3				1.0	0.36	4.83	7.30	7.6	120	0.001
9	2.8	37	97.5	2.0	27	98.7				2.0	1.00	13.26	7.40	8.1	53	0.010
10	4.0	59	97.2	3.0	44	98.1	0.18	2.6	93.8	3.0	7.27	106.71	7.30	7.2	39	0.010
11	4.2	61	97.8	6.0	87	96.4				6.0	14.10	204.61	7.30	6.7	45	0.010
12	9.0	130	95.4	10.0	144	92.3				7.0	7.05	101.72	7.40	6.7	65	0.009
13	5.4	77	97.1	11.0	156	91.3				11.0	2.33	33.03	7.40	6.3	49	0.000
14	5.4	73	97.0	4.0	54	96.6				4.0	0.69	9.26	7.40	6.9	122	0.010
15	5.0	64	97.3	4.0	51	96.7				3.0	0.31	3.96	7.40	7.5	48	0.000
16	3.4	44	97.6	8.0	103	92.5				8.0	4.94	63.86	7.40	7.8	340	0.000
17	4.3	58	97.8	3.0	41	98.1				0.0	13.80	187.60	7.40	7.6	48	0.000
18	6.0	84	97.5	18.0	252	91.8				16.0	8.64	121.06	7.30	6.5	20	0.000
19	4.7	64	96.6	6.0	82	96.2	0.16	2.1	95.0	6.0	3.30	44.86	7.40	6.2	26	0.010
20	3.2	42	97.4	4.0	53	93.3				4.0	2.12	27.94	7.30	6.5	19	0.000
21	3.4	44	97.7	1.0	13	99.3				1.0	0.74	9.50	7.30	6.5	20	0.000
22	4.2	53	97.4	1.0	13	99.5				1.0	0.62	7.81	7.30	7.2	91	0.000
23	3.1	39	97.8	5.0	63	96.1				5.0	6.86	86.39	7.40	7.6	21	0.001
24	4.5	60	98.0	5.0	67	97.4				5.0	12.60	168.13	7.30	6.6	20	0.000
25	7.9	110	96.9	5.0	70	97.8				5.0	9.78	136.21	7.40	6.1	30	0.009
26	4.8	65	97.7	7.0	95	96.7	0.11	1.5	97.1	7.0	4.50	61.17	7.40	6.3	32	0.002
27	4.4	59	98.4	5.0	67	97.7				5.0	5.98	79.80	7.40	6.9	47	0.000
28	5.0	61	97.4	7.0	85	96.4				7.0	3.57	43.47	7.30	6.2	25	0.009
29	5.4	61	97.1	7.0	79	95.9				4.0	0.66	7.49	7.30	6.4	32	0.000
30	4.5	50	97.3	9.0	100	94.6				9.0	1.23	13.64	7.40	7.0	88	0.000
31																
TL		1977			2192			8.0								
ME	4.9	66	97.1	5.4	73	96.4	0.14	2.0	95.1	147.0	5.10	70.90		6.8	41	0.004
WA	5.5	76		8.3	114										75	
MX											14.10	209.00	7.50			0.017
MN													7.30	6.1		

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 Years)

PRINTED NAME AND TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTORIZED AGENT	DATE
Steven D. Washburn, Superintendent		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

ACTIVATED SLUDGE SHEET

June 2002

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	AERATION SYSTEM				MIXED LIQUOR								SECONDARY SLUDGE				
	AERTN VOL	DETEN TIME	CRT	F:M RATIO	MLSS		MLVSS		SETTL.	SDI	D.O.	AIR	SS	VSS	RAS FLOW	WAS	
	KCF	HRS	DAYS		mg/L	Lbs.	mg/L	Lbs.	%	%	mg/L	CF	%	%	%	Gallons	Lbs.
SF	3											4				3	
1	48	5.1			2924	8756					2.75	28			85	27	
2	48	5.4			2743	8214					2.83	30			89	29	
3	48	5.0	5.7	0.14	2748	8229	2318	6941	48	0.57	3.33	36	0.60	0.50	83	29	1451
4	48	4.8	5.4	0.24	2642	7911	2231	6680	31	0.85	3.43	30	0.61	0.51	80	29	1475
5	48	4.8	5.8	0.27	2763	8274	2320	6947	38	0.73	0.66	32	0.52	0.44	80	33	1431
6	48	5.1	4.9	0.16	2788	8348	2357	7058	40	0.70	1.41	37	0.58	0.49	85	35	1693
7	48	5.3	6.2	0.14	2805	8399	2383	7136	52	0.54	3.30	36	0.38	0.32	88	43	1363
8	48	5.4			2678	8019					5.19	32			89	46	
9	48	5.4			2528	7570					6.14	29			89	46	
10	48	4.9	5.3	0.16	2353	7046	2009	6016	36	0.65	5.40	27	0.42	0.36	84	38	1331
11	48	5.0	5.7	0.31	2272	6803	1936	5797	29	0.78	4.98	27	0.48	0.41	84	30	1201
12	48	5.0	6.4	0.29	2413	7225	2143	6417	33	0.73	1.01	30	0.47	0.42	85	29	1137
13	48	5.1	6.1	0.24	2519	7543	2205	6603	30	0.84	0.95	34	0.45	0.37	86	33	1238
14	48	5.4	5.8	0.21	2563	7675	2183	6537	30	0.85	2.35	36	0.45	0.39	91	35	1314
15	48	5.6			2430	7276					4.46	38			96	35	
16	48	5.6			2348	7031					4.86	38			95	32	
17	48	5.3	13.1	0.24	2216	6636	1883	5638	32	0.69	5.35	36	0.29	0.25	90	21	508
18	48	5.1	10.4	0.32	2304	6899	1949	5836	30	0.77	1.64	32	0.47	0.40	87	17	666
19	48	5.3	10.4	0.21	2507	7507	2126	6366	33	0.76	1.19	29	0.51	0.43	90	17	723
20	48	5.5	9.5	0.17	2673	8004	2282	6833	41	0.65	1.30	27	0.48	0.40	92	21	841
21	48	5.6	9.1	0.13	2673	8004	2235	6692	40	0.67	2.42	29	0.46	0.39	95	23	882
22	48	5.7			2632	7881					4.04	28			97	23	
23	48	5.7			2546	7624					4.93	28			96	23	
24	48	5.4	8.7	0.24	2444	7318	2082	6234	41	0.60	4.10	28	0.42	0.36	88	24	841
25	48	5.2	8.6	0.31	2569	7693	2189	6555	36	0.71	1.07	27	0.51	0.43	88	21	893
26	48	5.3	7.1	0.21	2757	8256	2355	7052	38	0.73	0.49	31	0.52	0.44	90	27	1171
27	48	5.4	5.9	0.19	2772	8300	2357	7058	49	0.57	0.80	31	0.53	0.46	92	32	1414
28	48	5.9	5.9	0.18	2744	8217	2336	6995	56	0.49	0.72	32	0.49	0.42	101	34	1389
29	48	6.3			2758	8259					1.70	29			108	38	
30	48	6.5			2458	7360					4.39	27			111	36	
31	48																
TL												934				906	22963
ME	48	5.4	7.3	0.22	2586	7743	2194	6570	38	0.7	2.9	31	0.48		90	30	1148

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

BIOSOLIDS SHEET

Marshall

MI 002 3540

June 2002

SUPERINTENDENT
Steven D. Washburn

	RAW SLUDGE	RAW BIOSOLIDS			LIME STABILIZED BIOSOLIDS					
DAY	GALLONS	TOTAL SOLIDS %	VOLATILE SOLIDS %	pH SU	LIME POUNDS	pH 2 hrs @ 25 C SU	RDT Solids %	Lbs. Lime per 1000 gallons biosolids		
1	10000	3.1	76.0	6.1						
2	10650	3.3	77.0	6.0						
3	10600	3.2	76.0	6.1						
4	10500	3.6	75.0	6.2	2938		8.0	280		
5	10500	3.8	74.0	6.0	1836		9.5	175		
6	10500	3.6	73.0	6.1		12.1				
7	10000	3.5	76.0	6.0						
8	10500	3.5	78.0	6.2						
9	10000	3.5	75.0	6.3						
10	10000	3.7	75.0	6.3						
11	10000	3.6	74.0	6.3	3101		8.2	310		
12	10000	3.6	77.0	6.3	1591	12.1	8.1	159		
13	10500	3.6	71.0	6.3						
14	10000	3.4	76.0	6.3						
15	10600	3.4	75.0	6.3						
16	10000	3.4	74.0	6.3						
17	10600	3.7	76.0	6.3						
18	10600	3.4	76.0	6.2	3305		9.8	312		
19	10600	3.5	75.0	6.0	1550		13.0	146		
20	9000	3.2	74.0	6.0		12.1				
21	9500	3.4	75.0	6.0						
22	10500	3.3	76.0	6.0						
23	10500	3.4	75.0	6.1						
24	9500	3.2	75.0	6.2						
25	11500	3.3	77.0	6.0	2897			252		
26	9600	3.6	76.0	5.9	2122		9.6	221		
27	10000	3.2	77.0	5.9		12.1				
28	10000	3.5	78.0	5.8						
29	8500	3.6	78.0	6.0						
30	8600	3.4	76.0	6.1						
31										
TOTAL	303350				19340					
MEAN	10112	3.5	75.5	6.1	2418	12.1	9.5	232		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MISCELLANEOUS SHEET

June 2002

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	WATER	ELECTRICAL USAGE		FUEL GAS		CHEMICALS APPLIED								
			X 120		X 100	$FECL_3$					Cl_2		SO_2	
	CF	METER	KWH	METER	CF	GALS	SP. GR.	% SOLN	LBS	mg/L	LBS	mg/L	LBS	mg/L
1	440	15	1800			100.0	1.3890	30	347.5	24.7	17.0	1.2	15.0	1.1
2	750	14	1680			50	1.3890	30	173.8	12.9	19	1.4	14.0	1.0
3	400	16	1920			100	1.3890	30	347.5	24.2	31	2.2	16.0	1.1
4	420	16	1920			100	1.3890	30	347.5	23.3	10	0.7	16.0	1.1
5	550	16	1920			100	1.3890	30	347.5	23.3	19	1.3	16.0	1.1
6	370	15	1800			100	1.3890	30	347.5	24.7	17	1.2	15.0	1.1
7	320	16	1920			100	1.3890	30	347.5	25.6	27	2.0	16.0	1.2
8	410	13	1560			100	1.3890	30	347.5	25.9	16	1.2	13.0	1.0
9	410	15	1800			50	1.3890	30	173.8	13.1	13	1.0	15.0	1.1
10	370	15	1800			100	1.3890	30	347.5	23.7	16	1.1	15.0	1.0
11	420	16	1920			100	1.3890	30	347.5	23.9	20	1.4	16.0	1.1
12	450	17	2040			100	1.3890	30	347.5	24.1	24	1.7	17.0	1.2
13	750	16	1920			100	1.3890	30	347.5	24.5	16	1.1	16.0	1.1
14	380	15	1800			100	1.3890	30	347.5	25.9	16	1.2	15.0	1.1
15	410	15	1800			100	1.3890	30	347.5	27.2	16	1.3	15.0	1.2
16	430	14	1680			100	1.3890	30	347.5	26.9	18	1.4	14.0	1.1
17	330	15	1800			100	1.3890	30	347.5	25.6	17	1.3	15.0	1.1
18	1850	17	2040			100	1.3890	30	347.5	24.8	19	1.4	17.0	1.2
19	1420	16	1920			100	1.3890	30	347.5	25.6	18	1.3	16.0	1.2
20	430	15	1800			100	1.3890	30	347.5	26.4	19	1.4	15.0	1.1
21	350	14	1680			100	1.3890	30	347.5	27.1	30	2.3	14.0	1.1
22	400	14	1680			100	1.3890	30	347.5	27.6	13	1.0	14.0	1.1
23	410	14	1680			100	1.3890	30	347.5	27.6	10	0.8	14.0	1.1
24	320	15	1800			100	1.3890	30	347.5	26.0	19	1.4	15.0	1.1
25	2000	16	1920			100	1.3890	30	347.5	25.0	19	1.4	16.0	1.1
26	1000	15	1800			100	1.3890	30	347.5	25.6	26	1.9	15.0	1.1
27	690	16	1920			25	1.3890	30	86.9	6.5	10	0.7	15.0	1.1
28	310	15	1800			75	1.3890	30	260.6	21.4	19	1.6	14.0	1.1
29	360	15	1800			100	1.3890	30	347.5	30.6	16	1.4	14.0	1.2
30	350	14	1680			100	1.3890	30	347.5	31.3	15	1.4	15.0	1.4
31														
TL	17500	455	54600			2800			9731		545		453.0	
ME	583	15	1820			93	1.3890	30.0	324.4	24.2	18.2	1.3	15.1	1.1

MANPOWER	
POSITION TITLE	NUMBER FULL TIME
SUPERINTENDANT	1
ASST. SUPT.	1
OPERATOR	3
MECHANIC	
CHEMIST	
LAB TECH	
IPP COORDINATOR	1
OTHER	

GIVE THE HOURS PER DAY THAT PLANT PERSONNEL ARE NORMALLY AT THE PLANT.

WEEKDAYS	8	HRS
SATURDAYS	8	HRS
SUNDAYS	8	HRS
HOLIDAYS	8	HRS

Weather Code
1. Clear
2. Partly Cloudy
3. Cloudy
4. Rain
5. Snow
6. Warm
7. Cold
8. Windy
9. Melting Snow

PLANT INFLUENT SHEET

July 2002

Marshall

STATE OF MICHIGAN

MI 002 3540

SUPERINTENDENT

DEPT OF ENVIRONMENTAL QUALITY

Steven D. Washburn

D	WEATHER		FLOW		RAW SEWAGE QUALITY									
A	TYPE	PRECIP	TOTAL	MAX	TEMP	pH	BOD_5		SS		TOTAL-P		VSS	NH3-N
Y	CODE	Inches	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l
1	1		1.660		55	7.60	214	2963	256	3544			230	9.8
2	1		1.620		56	7.40	175	2364	193	2608			180	11.3
3	1		1.410		58	7.40	264	3104	204	2399			204	13.8
4	1		1.320		56	7.90	201	2213	184	2026			182	11.1
5	1		1.390		59	7.60	186	2156	234	2713			212	12.4
6	1		1.370		54	7.70	170	1942	230	2628			204	12.8
7	1		1.370		54	7.60	160	1828	166	1897			154	11.6
8	4	1.17	1.560		54	7.60	241	3136	246	3201			224	10.7
9	4	0.13	1.580		56	7.70	215	2833	271	3571			248	13.4
10	1		1.490		57	7.60	203	2523	166	2063	3.79	47	160	12.5
11	1		1.430		56	7.60	178	2123	186	2218			166	13.1
12	1		1.400		57	7.70	159	1856	136	1588			126	15.6
13	1		1.310		54	7.60	178	1945	162	1770			146	14.5
14	1		1.330		55	7.60	159	1764	148	1642			134	12.3
15	1		1.480		55	7.60	167	2061	194	2395	3.96	49	176	12.2
16	1		1.480		55	7.60	152	1876	153	1889			142	12.3
17	1		1.430		60	7.50	170	2027	206	2457			164	12.9
18	1		1.440		60	7.60	230	2762	244	2930			218	14.2
19	4	0.02	1.420		56	7.80	256	3032	248	2937			220	14.7
20	1		1.360		57	7.70	161	1826	170	1928			152	13.0
21	1		1.330		56	7.60	158	1753	170	1886			150	13.1
22	4		1.480		57	7.80	235	2901	206	2543	4.20	52	186	14.5
23	1		1.440		56	7.60	289	3471	214	2570			192	14.2
24	1		1.350		57	7.60	249	2803	278	3130			248	14.7
25	4	0.04	1.280		57	7.60	247	2637	182	1943	2.49	27	166	15.0
26	4	0.10	1.330		57	7.60	190	2108	240	2662			206	14.4
27	4	1.55	1.540		55	7.60	167	2145	278	3571			172	11.1
28	4	0.13	1.410		55	7.50	150	1764	176	2070	2.70	32	154	11.1
29	4	0.39	1.550		56	7.50	184	2379	184	2379			174	11.2
30	1		1.540		55	7.20	143	1837	135	1734	3.12	40	133	10.7
31	1		1.650		56	7.60	202	2780	198	2725	3.08	42	180	11.9
TL		3.53	44.750					72911		75612		289		
ME			1.444		56		195	2352	202	2439	3.33	41	181	12.8

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

PRIMARY EFFLUENT SHEET

July 2002

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

	PRIMARY EFFLUENT QUALITY												
DAY	BOD-5			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS		AMMONIA NITROGEN	
	mg/l	LBS	Removal	mg/l	LBS	% Removal	mg/l	LBS	% Removal	mg/l	%	mg/l	LBS
1	80	1108	62.6	72	997	71.9				72.0	100.0	11.2	155
2	105	1419	40.0	58	682	69.9				58.0	100.0	11.5	135
3	103	1211	61.0	62	683	69.6				62.0	100.0	15.2	167
4	70	771	65.2	42	487	77.2				42.0	100.0	12.4	144
5	67	777	64.0	50	571	78.6				42.0	84.0	14.1	161
6	68	777	60.0	54	617	76.5				46.0	85.2	14.1	161
7	70	800	56.3	52	677	68.7				38.0	73.1	12.0	156
8	153	1991	36.5	38	501	84.6				38.0	100.0	5.0	66
9	84	1107	60.9	66	820	75.6				50.0	75.8	11.7	145
10	101	1255	50.2	62	739	62.7	2.2	25.9	42.7	58.0	93.5	14.9	178
11	67	799	62.4	52	607	72.0				38.0	73.1	15.3	179
12	65	759	59.1	60	656	55.9				52.0	86.7	13.8	151
13	67	732	62.4	50	555	69.1				46.0	92.0	14.8	164
14	65	721	59.1	66	815	55.4				58.0	87.9	13.7	169
15	66	815	60.5	48	592	75.3	1.6	19.9	59.3	48.0	100.0	14.5	179
16	123	1518	19.1	76	906	50.3				66.0	86.8	13.4	160
17	138	1646	18.8	60	721	70.9				60.0	100.0	14.4	173
18	104	1249	54.8	46	545	81.1				46.0	100.0	14.4	171
19	92	1090	64.1	62	703	75.0				48.0	77.4	14.5	164
20	77	873	52.2	48	532	71.8				38.0	79.2	13.6	151
21	64	710	59.5	42	518	75.3				38.0	90.5	12.8	158
22	107	1321	54.5	44	528	78.6	1.3	16.1	68.1	42.0	95.5	15.3	184
23	177	2126	38.8	60	676	72.0				46.0	76.7	17.5	197
24	129	1452	48.2	68	726	75.5				52.0	76.5	17.9	191
25	112	1196	54.7	42	466	76.9	0.9	10.1	63.5	36.0	85.7	10.3	114
26	77	854	59.5	52	668	78.3				38.0	73.1	15.2	195
27	67	861	59.9	56	659	79.9				40.0	71.4	13.1	154
28	78	917	48.0	46	595	73.9	0.9	11.2	67.8	38.0	82.6	11.7	151
29	65	840	64.7	44	565	76.1				44.0	100.0	12.4	159
30	106	1361	25.9	48	661	64.4	1.1	15.0	65.1	48.0	100.0	13.4	184
31	86	1183	57.4	52	715	73.7	0.8	11.0	73.4	44.0	84.6	13.0	4852
TL		34237			20181			109.2					9669
ME	91	1104	52.9	54	651	72.2	1.3	15.6	62.8	1472.0	88.1	13.5	312

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION

DEQ

Discharge Number	Permit Number
001 A	MI 002 3540

DAILY DISCHARGE MONITORING REPORT

Monitoring Period: July 2002

DAY	$CBOD_5$			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS	NH3-N		PH	D.O.	F.COLI #/100ml	CL RESID
	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	mg/l	LBS	SU	mg/l	MF	mg/l
1	5.6	78	97.4	11.0	152	95.7				11.0	1.39	19.24	7.30	6.7	161	0.000
2	5.4	73	96.9	6.0	81	96.9				6.0	0.71	9.59	7.40	7.3	240	0.000
3	4.1	48	98.4	11.0	129	94.6				11.0	6.09	71.61	7.30	6.3	75	0.000
4	6.1	67	97.0	3.0	33	98.4				3.0	2.14	23.56	7.30	6.4	36	0.000
5	4.8	56	97.4	9.0	104	96.2				8.0	0.18	2.09	7.50	7.8	224	0.000
6	5.8	66	96.6	10.0	114	95.7				9.0	0.12	1.37	7.40	7.4	125	0.000
7	6.4	73	96.0	7.0	80	95.8				6.0	0.14	1.60	7.30	7.2	109	0.000
8	7.5	98	96.9	5.0	65	98.0				5.0	0.52	6.77	7.40	7.1	240	0.000
9	3.8	50	98.2	1.0	13	99.6				1.0	5.88	77.48	7.40	6.7	65	0.000
10	4.1	51	98.0	2.0	25	98.8	0.21	2.6	94.5	2.0	3.69	45.85	7.40	6.5	44	0.000
11	5.3	63	97.0	4.0	48	97.8				3.0	0.18	2.15	7.50	6.6	120	0.000
12	3.3	39	97.9	1.0	12	99.3				1.0	0.75	8.76	7.40	6.7	40	0.000
13	5.3	58	97.0	1.0	11	99.4				1.0	0.11	1.20	7.40	6.9	47	0.000
14	3.3	37	97.9	3.0	33	98.0				3.0	0.13	1.44	7.50	7.3	99	0.000
15	3.7	46	97.8	4.0	49	97.9	0.49	6.0	87.7	4.0	0.89	10.99	7.40	7.3	26	0.000
16	4.4	54	97.1	3.0	37	98.0				3.0	2.99	36.91	7.30	6.4	24	0.000
17	3.6	43	97.9	5.0	60	97.6				5.0	4.64	55.34	7.30	6.3	36	0.000
18	6.8	82	97.0	1.0	12	99.6				1.0	7.44	89.35	7.40	6.1	65	0.000
19	5.3	63	97.9	4.0	47	98.4				4.0	6.46	76.50	7.40	6.0	83	0.000
20	5.7	65	96.5	1.0	11	99.4				1.0	7.44	84.39	7.40	6.3	71	0.000
21	3.8	42	97.6	2.0	22	98.8				2.0	6.46	71.66	7.40	7.0	144	0.000
22	5.0	62	97.9	5.0	62	97.6	0.30	3.7	92.9	5.0	1.19	14.69	7.40	6.7	28	0.000
23	8.0	96	97.2	3.0	36	98.6				3.0	0.14	1.68	7.40	6.4	600	0.000
24	5.3	60	97.9	9.0	101	96.8				8.0	5.68	63.95	7.50	6.3	30	0.000
25	7.8	83	96.8	3.0	32	98.4	0.13	1.4	94.9	3.0	13.10	139.85	7.50	6.3	18	0.000
26	4.9	54	97.4	1.0	11	99.6				1.0	13.20	146.42	7.40	6.7	90	0.000
27	4.5	58	97.3	2.0	26	99.3				1.0	5.79	74.36	7.40	6.7	26	0.000
28	4.4	52	97.1	2.0	24	98.9	0.16	1.9	94.1	2.0	0.40	4.70	7.30	6.9	10	0.000
29	4.8	62	97.4	8.0	103	95.7				8.0	0.83	10.73	7.30	6.9	120	0.000
30	6.6	85	95.4	5.0	64	96.3	0.22	2.8	93.0	5.0	0.33	4.24	7.40	6.8	144	0.000
31	5.1	70	97.5	3.0	41	98.5	0.16	2.2	94.8	3.0	0.26	3.58	7.40	6.7	30	0.000
TL		1932			1640			20.5								
ME	5.2	62	97.3	4.4	53	97.8	0.24	2.9	93.1	129.0	3.20	37.49		6.7	68	0.000
WA	5.8	69		8.1	99										125	
MX											13.20	146.42	7.50			
MN													7.30	6.0		

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 Years)

PRINTED NAME AND TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTORIZED AGENT	DATE
Steven D. Washburn, Superintendent		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

ACTIVATED SLUDGE SHEET

July 2002

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	AERATION SYSTEM				MIXED LIQUOR								SECONDARY SLUDGE				
	AERTN VOL	DETEN TIME	CRT	F:M RATIO	MLSS		MLVSS		SETTL.	SDI	D.O.	AIR	SS	VSS	RAS FLOW	WAS	
	KCF	HRS	DAYS		mg/L	Lbs.	mg/L	Lbs.	%	%	mg/L	CF	%	%	%	Gallons	Lbs.
SF	3											4				3	
1	48	5.2	5.5	0.18	2363	7076	2030	6079	37	0.64	4.00	32	0.48	0.41	85	32	1281
2	48	5.3	6.5	0.24	2272	6803	1946	5827	31	0.73	5.10	35	0.50	0.43	90	25	1043
3	48	6.1	9.5	0.19	2432	7282	2085	6243	41	0.59	3.77	32	0.40	0.34	104	23	767
4	48	6.5			2413	7225					4.60	34			111	23	
5	48	6.2	11.1	0.14	2173	6507	1851	5543	35	0.62	5.60	42	0.37	0.32	106	19	586
6	48	6.3			2189	6555					5.90	40			107	17	
7	48	6.3			2192	6564					5.89	38			108	13	
8	48	5.5	15.4	0.37	2155	6453	1821	5453	37	0.58	4.46	34	0.42	0.35	108	12	420
9	48	5.5	14.3	0.19	2247	6728	1902	5695	37	0.61	4.76	39	0.47	0.39	94	12	470
10	48	5.8	13.2	0.21	2383	7136	1993	5968	38	0.63	3.44	43	0.54	0.45	99	12	540
11	48	6.0	12.2	0.12	2684	8037	2233	6686	52	0.52	4.54	43	0.44	0.36	103	18	661
12	48	6.2	8.3	0.12	2583	7735	2150	6438	49	0.53	4.13	43	0.40	0.33	110	28	934
13	48	6.6			2572	7702					4.64	39			120	29	
14	48	6.5			2474	7408					4.77	38			118	25	
15	48	5.8	7.7	0.14	2382	7133	1966	5887	34	0.70	4.70	36	0.48	0.40	106	23	921
16	48	5.8	7.5	0.26	2320	6947	1931	5782	30	0.77	5.41	35	0.48	0.40	106	23	921
17	48	6.0	8.2	0.27	2414	7228	2020	6049	31	0.78	4.74	27	0.46	0.39	109	23	882
18	48	6.0	12.2	0.20	2480	7426	2076	6216	33	0.75	0.26	26	0.43	0.36	103	17	610
19	48	6.1	13.8	0.18	2412	7222	2035	6094	40	0.60	0.37	37	0.37	0.31	103	17	525
20	48	6.3			2441	7309					1.50	30			99	14	
21	48	6.5									4.57	27			110	12	
22	48	5.8	15.8	0.22	2378	7121	1998	5983	35	0.68	4.53	27	0.45	0.38	99	12	450
23	48	6.0	13.7	0.35	2377	7118	2004	6001	33	0.72	0.90	35	0.52	0.43	104	12	520
24	48	6.4	22.3	0.22	3645	10915	2231	6680	39	0.93	0.14	37	0.49	0.41	109	12	490
25	48	6.7	9.0	0.17	2846	8522	2390	7157	50	0.57	0.22	34	0.54	0.45	115	21	946
26	48	6.5	7.9	0.12	2774	8306	2326	6965	44	0.63	3.89	30	0.45	0.38	111	28	1051
27	48	5.6			2607	7806					4.21	36			95	29	
28	48	6.1			2579	7723					4.75	33			95	28	
29	48	5.6	7.9	0.15	2338	7001	1934	5791	29	0.81	4.78	45	0.38	0.31	104	28	887
30	48	5.6	6.9	0.24	2309	6914	1912	5725	30	0.77	4.76	44	0.48	0.40	95	25	1001
31	48	5.2	8.6	0.20	2364	7079	1947	5830	29	0.82	5.53	36	0.45	0.37	89	22	826
TL												1107				634	16733
ME	48	6.0	10.8	0.20	2460	7366	2036	6095	37	0.7	3.9	36	0.45	0.38	104	20	761

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

BIOSOLIDS SHEET

Marshall

MI 002 3540

July 2002

SUPERINTENDENT
Steven D. Washburn

	RAW SLUDGE	RAW BIOSOLIDS			LIME STABILIZED BIOSOLIDS					
DAY	GALLONS	TOTAL SOLIDS %	VOLATILE SOLIDS %	pH SU	LIME POUNDS	pH 2 hrs @ 25 C SU	RDT Solids %	Lbs. Lime per 1000 gallons biosolids		
1	10700	3.4	78.0	6.2						
2	10650	3.4	78.0	6.1	1363			128		
3	10850	2.9	77.0	6.1	576	12.1		53		
4	11000	2.9	76.0	6.2						
5	10650	3.0	76.0	6.3						
6	10000	2.9	77.0	6.3						
7	8000	2.6	75.0	6.4						
8	11000	2.9	77.0	6.4						
9	8750	3.2	77.0	6.2	1478		7.5	169		
10	13800	3.3	76.0	6.1	1728	12.0	8.9	125		
11	10000	3.0	74.0	6.3		12.1				
12	10000	3.7	75.0	6.4						
13	8000	3.3	77.0	6.3						
14	8500	3.2	76.0	6.3						
15	10500	3.2	76.0	6.0						
16	9000	3.2	76.0	6.3	1325		8.5	147		
17	8000	3.2	75.0	6.3		12.0				
18	11500	3.7	71.0	6.0						
19	9500	3.5	72.0	6.2						
20	8700	3.6	75.0	6.0						
21	12000	3.6	74.0	6.0						
22	11500	3.6	74.0	6.0						
23	12000	3.9	74.0	6.1	1517		10.2	126		
24	11500	4.0	65.0	6.2	1075		11.7	93		
25	12500	4.0	72.0	5.8		12.1				
26	9250	3.4	75.0	6.1						
27	9500	3.5	75.0	6.3						
28	9400	7.3	41.0	6.4						
29	8000	5.4	54.0	6.4						
30	12000	4.2	65.0	6.4	1306		9.5	109		
31	11000	3.7	69.0	6.3	819			74		
TOTAL	317750				11187					
MEAN	10250	3.6	72.6	6.2	1243	12.1	9.4	114		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MISCELLANEOUS SHEET

July 2002

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	WATER	ELECTRICAL USAGE		FUEL GAS		CHEMICALS APPLIED								
			X 120		X 100	$FECL_3$					Cl_2		SO_2	
	CF	METER	KWH	METER	CF	GALS	SP. GR.	% SOLN	LBS	mg/L	LBS	mg/L	LBS	mg/L
1	370	15	1800			50.0	1.3980	30	174.9	12.6	18.5	1.3	11.9	0.9
2	470	16	1920			100	1.3980	30	349.8	25.9	18.5	1.4	11.9	0.9
3	490	15	1800			100	1.3980	30	349.8	29.7	18.5	1.6	11.9	1.0
4	360	15	1800			100	1.3980	30	349.8	31.8	18.5	1.7	11.9	1.1
5	1390	14	1680			100	1.3980	30	349.8	30.2	18.5	1.6	11.9	1.0
6	1000	14	1680			100	1.3980	30	349.8	30.6	18.5	1.6	11.9	1.0
7	1600	14	1680			100	1.3980	30	349.8	30.6	18.5	1.6	11.9	1.0
8	1520	16	1920			100	1.3980	30	349.8	26.9	18.5	1.4	11.9	0.9
9	1770	17	2040			100	1.3980	30	349.8	26.5	18.5	1.4	11.9	0.9
10	1720	17	2040			75	1.3980	30	262.3	21.1	18.5	1.5	11.9	1.0
11	1800	15	1800			75	1.3980	30	262.3	22.0	18.5	1.6	11.9	1.0
12	430	14	1680			100	1.3980	30	349.8	30.0	18.5	1.6	11.9	1.0
13	600	14	1680			100	1.3980	30	349.8	32.0	18.5	1.7	11.9	1.1
14	460	14	1680			75	1.3980	30	262.3	23.7	18.5	1.7	11.9	1.1
15	430	15	1800			75	1.3980	30	262.3	21.3	18.5	1.5	11.9	1.0
16	1750	17	2040			100	1.3980	30	349.8	28.3	18.5	1.5	11.9	1.0
17	360	14	1680			100	1.3980	30	349.8	29.3	18.5	1.6	11.9	1.0
18	570	15	1800			100	1.3980	30	349.8	29.1	18.5	1.5	11.9	1.0
19	400	13	1560			100	1.3980	30	349.8	29.5	18.5	1.6	11.9	1.0
20	1100	14	1680			100	1.3980	30	349.8	30.8	18.5	1.6	11.9	1.0
21	500	14	1680			100	1.3980	30	349.8	31.5	18.5	1.7	11.9	1.1
22	450	15	1800			150	1.3980	30	524.7	42.5	18.5	1.5	11.9	1.0
23	1830	16	1920			125	1.3980	30	437.2	36.4	18.5	1.5	11.9	1.0
24	1550	15	1800			100	1.3980	30	349.8	31.1	18.5	1.6	11.9	1.1
25	590	14	1680			125	1.3980	30	437.2	41.0	18.5	1.7	11.9	1.1
26	450	13	1560			125	1.3980	30	437.2	39.4	18.5	1.7	11.9	1.1
27	520	15	1800			125	1.3980	30	437.2	34.0	18.5	1.4	11.9	0.9
28	490	14	1680			100	1.3980	30	349.8	29.7	18.5	1.6	11.9	1.0
29	410	14	1680			100	1.3980	30	349.8	27.1	18.5	1.4	11.9	0.9
30	1900	16	1920			100	1.3980	30	349.8	27.2	18.5	1.4	11.9	0.9
31	1130	16	1920			150	1.3980	30	524.7	38.1	18.5	1.3	11.9	0.9
TL	28410	460	55200			3150					574		368.9	
ME	916	15	1781			102	1.3980	30.0	355.4	29.7	18.5	1.5	11.9	1.0

MANPOWER	
POSITION TITLE	NUMBER FULL TIME
SUPERINTENDANT	1
ASST. SUPT.	1
OPERATOR	3
MECHANIC	
CHEMIST	
LAB TECH	
IPP COORDINATOR	1
OTHER	

GIVE THE HOURS PER DAY THAT PLANT PERSONNEL ARE NORMALLY AT THE PLANT.

WEEKDAYS	8	HRS
SATURDAYS	8	HRS
SUNDAYS	8	HRS
HOLIDAYS	8	HRS

Weather Code
1. Clear
2. Partly Cloudy
3. Cloudy
4. Rain
5. Snow
6. Warm
7. Cold
8. Windy
9. Melting Snow

PLANT INFLUENT SHEET

August 2002

Marshall

STATE OF MICHIGAN

MI 002 3540

SUPERINTENDENT

DEPT OF ENVIRONMENTAL QUALITY

Steven D. Washburn

D	WEATHER		FLOW		RAW SEWAGE QUALITY									
A	TYPE	PRECIP	TOTAL	MAX	TEMP	pH	BOD_5		SS		TOTAL-P		VSS	NH3-N
Y	CODE	Inches	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l
1	4	0.45	1.630		61	7.70	246	3344	255	3467			236	11.6
2	1		1.470		61	7.60	197	2415	212	2599			196	14.0
3	1		1.350		546	7.70	189	2128	204	2297			188	12.5
4	4	0.23	1.410		57	7.60	246	2893	334	3928			304	12.5
5	1		1.500		57	7.50	179	2239	180	2252			170	13.2
6	1		1.590		59	7.60	411	5450	525	6962			475	16.4
7	1		1.410		58	7.80	270	3175	224	2634	5.04	59	184	15.3
8	1		1.350		58	7.40	195	2196	216	2432			198	14.6
9	1		1.370		55	7.30	205	2342	160	1828			142	15.8
10	1		1.410		56	7.50	176	2070	160	1882			144	13.2
11	1		1.490		58	7.60	138	1715	132	1640			120	11.9
12	1		1.470		57	7.50	300	3678	460	5640			410	17.4
13	4	0.11	1.430		59	7.50	175	2087	191	2278			175	16.4
14	4	0.20	1.490		58	7.50	206	2560	166	2063	3.80	47	150	15.7
15	4	0.32	1.450		57	7.50	227	2745	200	2419			192	16.2
16	4	0.12	1.450		57	7.60	113	1367	62	750			62	16.7
17	1		1.350		56	7.60	200	2252	186	2094			178	14.1
18	4	0.29	1.310		59	7.60	149	1628	160	1748			148	13.4
19	1		1.640		62	7.50	185	2530	240	3283			234	13.5
20	4	0.04	1.650		60	7.50	185	2546	220	3027			210	12.7
21	4	1.00	1.580		59	7.60	215	2833	226	2978	4.13	54	210	13.8
22	4	0.06	1.500		62	7.50	166	2077	164	2052			154	12.7
23	4	1.14	1.610		61	7.50	165	2216	256	3437			202	12.6
24	1		1.530		57	7.60	166	2118	156	1991			142	9.9
25	4	0.03	1.570		59	7.50	181	2370	140	1833			126	10.2
26	1		1.610		59	7.40	148	1987	198	2659			182	11.6
27	1		1.580		62	7.30	174	2293	155	2042			139	12.5
28	1		1.430		60	7.40	189	2254	204	2433	4.99	59	182	14.8
29	1		1.250		59	7.50	192	2002	174	1814			154	16.9
30	1		1.310		58	7.60	200	2185	170	1857			80	16.9
31	1		1.210		58	7.50	203	2049	182	1837			166	14.5
TL		3.99	45.400					75742		80153		220		
ME			1.465		74.4		200	2443	210	2586	4.49	55	189	14.0

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

PRIMARY EFFLUENT SHEET

August 2002

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

PRIMARY EFFLUENT QUALITY

DAY	BOD-5			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS		AMMONIA NITROGEN	
	mg/l	LBS	Removal	mg/l	LBS	% Removal	mg/l	LBS	% Removal	mg/l	%	mg/l	LBS
1	100	1359	59.3	50	680	80.4				42.0	84.0	12.5	170
2	81	993	58.9	46	518	78.3				46.0	100.0	14.2	160
3	80	901	57.7	42	494	79.4				42.0	100.0	12.5	147
4	65	764	73.6	36	450	89.2				36.0	100.0	12.6	158
5	76	951	57.5	44	583	75.6				44.0	100.0	13.5	179
6	115	1525	72.0	66	776	87.4				60.0	90.9	15.4	181
7	132	1552	51.1	66	743	70.5	1.7	18.6	67.3	54.0	81.8	16.6	187
8	100	1126	48.7	40	457	81.5				32.0	80.0	15.9	182
9	99	1131	51.7	30	353	81.3				20.0	66.7	15.3	180
10	78	917	55.7	26	323	83.8				20.0	76.9	12.2	152
11	62	770	55.1	22	270	83.3				16.0	72.7	11.2	137
12	62	760	79.3	36	429	92.2				36.0	100.0	13.8	165
13	102	1216	41.7	50	621	73.8				46.0	92.0	17.1	212
14	101	1255	51.0	46	556	72.3	1.4	17.4	62.1	44.0	95.7	16.5	200
15	85	1028	62.6	32	387	84.0				32.0	100.0	16.3	197
16	88	1064	22.1	46	518	25.8				46.0	100.0	18.1	204
17	83	934	58.5	50	546	73.1				50.0	100.0	14.8	162
18	74	808	50.3	46	629	71.3				44.0	95.7	14.4	197
19	89	1217	51.9	48	661	80.0				48.0	100.0	13.0	179
20	86	1183	53.5	54	712	75.5				50.0	92.6	14.0	184
21	150	1977	30.2	58	726	74.3	1.8	22.6	56.1	52.0	89.7	15.3	191
22	77	963	53.6	44	591	73.2				40.0	90.9	13.6	183
23	68	913	58.8	38	485	85.2				38.0	100.0	13.2	168
24	86	1097	48.2	52	681	66.7				52.0	100.0	10.7	140
25	77	1008	57.5	36	483	74.3				36.0	100.0	9.8	132
26	83	1114	43.9	54	712	72.7				54.0	100.0	12.5	165
27	143	1884	17.8	84	1002	45.8				68.0	81.0	15.4	184
28	112	1336	40.7	92	959	54.9	2.1	21.4	58.9	82.0	89.1	16.7	174
29	76	792	60.4	88	961	49.4				74.0	84.1	16.7	182
30	94	1027	53.0	90	908	47.1				148.0	164.4	17.2	174
31	92	928	54.7	94	35592	48.4				80.0	85.1	14.4	5452
TL		34498			53806			80.0					10676
ME	91	1113	52.6	52	1736	72.0	1.7	20.0	61.1	49.4	94.0	14.4	344

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION

DEQ

Discharge Number	Permit Number
001 A	MI 002 3540

DAILY DISCHARGE MONITORING REPORT

Monitoring Period: August 2002

DAY	$CBOD_5$			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS	NH3-N		PH	D.O.	F.COLI #/100ml	CL RESID	
	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	mg/l	LBS	SU	mg/l	MF	mg/l	
1	5.9	80	97.6	6.0	82	97.6				6.0	3.63	49.35	7.30	6.5	204	0.000	
2	5.0	61	97.5	3.0	37	98.6				3.0	1.15	14.10	7.40	6.5	28	0.000	
3	4.7	53	97.5	1.0	11	99.5				1.0	0.13	1.44	7.40	7.0	22	0.000	
4	3.7	44	98.5	1.0	12	99.7				1.0	0.11	1.32	7.40	7.0	36	0.000	
5	3.7	46	97.9	1.0	13	99.4				1.0	0.15	1.93	7.30	6.8	210	0.000	
6	5.9	78	98.6	3.0	40	99.4				3.0	3.99	52.91	7.40	6.4	119	0.000	
7	8.0	94	97.0	7.0	82	96.9	0.22	2.6	95.6	7.0	6.02	70.79	7.30	6.4	16	0.000	
8	6.8	77	96.5	12.0	135	94.4				9.0	4.45	50.10	7.30	6.3	6	0.000	
9	5.6	64	97.3	7.0	80	95.6				3.0	1.61	18.40	7.30	6.2	36	0.000	
10	4.4	52	97.5	1.0	12	99.4				1.0	0.23	2.70	7.40	6.3	52	0.000	
11	3.3	41	97.6	1.0	12	99.2				1.0	0.07	0.87	7.50	7.1	13	0.000	
12	3.5	43	98.8	3.0	37	99.3				3.0	2.65	32.49	7.40	6.9	38	0.000	
13	5.4	64	96.9	4.0	48	97.9				4.0	8.14	97.08	7.40	6.2	8	0.000	
14	7.0	87	96.6	5.0	62	97.0	0.27	3.4	92.9	5.0	8.18	101.65	7.40	6.1	15	0.000	
15	6.7	81	97.0	1.0	12	99.5				1.0	8.71	105.33	7.40	6.2	30	0.000	
16	4.6	56	95.9	6.0	73	90.3				6.0	3.50	42.33	7.30	6.1	75	0.000	
17	5.0	56	97.5	4.0	45	97.8				4.0	1.20	13.51	7.30	6.3	7	0.000	
18	4.7	51	96.8	2.0	22	98.8				2.0	0.77	8.41	7.40	6.6	22	0.000	
19	4.8	66	97.4	4.0	55	98.3				4.0	5.06	69.21	7.40	6.3	64	0.000	
20	5.7	78	96.9	2.0	28	99.1				2.0	8.02	110.36	7.40	6.3	34	0.000	
21	12.2	161	94.3	7.0	92	96.9	0.37	4.9	91.0	7.0	12.10	159.44	7.50	6.0	21	0.000	
22	7.4	93	95.5	3.0	38	98.2				3.0	11.10	138.86	7.50	5.8	8	0.000	
23	4.0	54	97.6	3.0	40	98.8				3.0	5.80	77.88	7.40	5.3	16	0.000	
24	4.4	56	97.3	3.0	38	98.1				3.0	2.24	28.58	7.30	6.0	1	0.000	
25	4.0	52	97.8	1.0	13	99.3				1.0	1.39	18.20	7.40	6.4	5	0.000	
26	4.6	62	96.9	4.0	54	98.0				4.0	4.77	64.05	7.30	5.9	8	0.000	
27	8.8	116	94.9	8.0	105	94.8				6.0	10.70	141.00	7.40	5.7	83	0.000	
28	7.1	85	96.2	7.0	83	96.6	0.25	3.0	95.0	5.0	11.00	131.19	7.40	5.9	368	0.000	
29	3.9	41	98.0	1.0	10	99.4				1.0	4.22	43.99	7.30	5.9	14	0.000	
30	3.3	36	98.4	4.0	44	97.6				3.0	3.01	32.89	7.40	6.3	11	0.000	
31	3.9	39	98.1	1.0	10	99.5				1.0	1.93	19.48	7.30	6.5	15	0.000	
TL		2067			1424			13.8									
ME	5.4	67	97.2	3.7	46	97.9	0.28	3.4	93.6	104.0	4.39	54.83		6.3	24	0.000	
WA	6.5	85		5.0	58										56		
MX											12.10	159.44	7.50				
MN													7.30	5.3			

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 Years)

PRINTED NAME AND TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTORIZED AGENT	DATE
Steven D. Washburn, Superintendent		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

ACTIVATED SLUDGE SHEET

August 2002

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	AERATION SYSTEM				MIXED LIQUOR								SECONDARY SLUDGE				
	AERTN VOL	DETEN TIME	CRT	F:M RATIO	MLSS		MLVSS		SETTL.	SDI	D.O.	AIR	SS	VSS	RAS FLOW	WAS	
	KCF	HRS	DAYS		mg/L	Lbs.	mg/L	Lbs.	%	%	mg/L	CF	%	%	%	Gallons	Lbs.
SF	3											4				3	
1	48	5.3	8.2	0.23	2355	7052	1940	5809	33	0.71	4.21	28	0.49	0.40	90	21	858
2	48	5.9	9.1	0.17	2379	7124	1949	5836	33	0.72	0.35	78	0.47	0.39	100	20	784
3	48	6.4			2425	7261					5.84	34			109	20	
4	48	6.1			2259	6764					3.77	34			104	19	
5	48	5.7	14.4	0.18	2184	6540	1774	5312	32	0.68	4.57	38	0.39	0.30	71	14	455
6	48	5.4	32.6	0.33	1906	5707	1539	4608	28	0.68	5.28	44	0.42	0.34	50	5	175
7	48	6.1		0.36	1898	5683	1454	4354	31	0.61	3.85	44	0.44	0.36	56	0	
8	48	6.4		0.19	2499	7483	2005	6004	46	0.54	0.24	38	0.55	0.44	76	0	
9	48	6.3		0.16	2850	8534	2290	6857	46	0.62	3.57	37	0.50	0.40	99	0	
10	48	6.1			2722	8151					4.33	35			104	0	
11	48	5.8			2634	7887					4.71	32			89	0	
12	48	5.9	6.4	0.12	2709	8112	2157	6459	53	0.51	4.33	30	0.61	0.48	69	25	1272
13	48	6.0	4.1	0.19	2649	7932	2111	6321	52	0.51	0.87	34	0.53	0.43	65	44	1945
14	48	5.8	4.1	0.27	1968	5893	1572	4707	46	0.43	1.01	31	0.51	0.40	62	34	1446
15	48	5.9	5.9	0.19	2250	6737	1774	5312	56	0.40	0.23	31	0.47	0.38	99	29	1137
16	48	5.9	6.6	0.20	2176	6516	1766	5288	63	0.35	0.69	30	0.42	0.35	101	28	981
17	48	6.4			2264	6779					2.71	36			109	24	
18	48	6.6			2101	6291					3.95	40			112	23	
19	48	5.3	7.3	0.26	1975	5914	1591	4764	37	0.53	1.80	31	0.42	0.34	112	23	806
20	48	5.2	9.0	0.24	2019	6046	1649	4938	41	0.49	2.68	26	0.35	0.28	89	23	671
21	48	5.5	7.1	0.36	2251	6740	1839	5507	60	0.38	0.38	31	0.42	0.34	93	27	946
22	48	5.7	6.7	0.17	2324	6959	1865	5585	70	0.33	0.16	34	0.43	0.34	98	29	1040
23	48	5.4	6.4	0.16	2330	6977	1931	5782	80	0.29	0.17	33	0.45	0.37	91	29	1088
24	48	5.6			2216	6636					4.20	34			96	40	
25	48	5.5			2136	6396					2.81	35			99	30	
26	48	5.4	5.0	0.21	2107	6309	1750	5240	94	0.22	3.21	34	0.38	0.31	98	40	1268
27	48	5.5	4.2	0.39	2013	6028	1625	4866	86	0.23	1.95	35	0.37	0.31	109	46	1419
28	48	6.0	3.4	0.24	2211	6621	1850	5540	88	0.25	0.25	36	0.42	0.35	125	55	1927
29	48	6.9	3.3	0.15	2123	6357	1755	5255	88	0.24	2.63	35	0.38	0.31	119	61	1933
30	48	6.6	3.1	0.21	1982	5935	1663	4980	88	0.23	4.17	36	0.36	0.31	129	63	1892
31	48	7.1			1867	5591					4.09	36				56	
TL												1110				828	22043
ME	48	5.9	7.7	0.23	2251	6740	1811	5424	57	0.5	2.7	36	0.44	0.36	94	27	1160

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

BIOSOLIDS SHEET

Marshall

MI 002 3540

August 2002

SUPERINTENDENT
Steven D. Washburn

	RAW SLUDGE	RAW BIOSOLIDS			LIME STABILIZED BIOSOLIDS					
DAY	GALLONS	TOTAL SOLIDS %	VOLATILE SOLIDS %	pH SU	LIME POUNDS	pH 2 hrs @ 25 C SU	RDT Solids %	Lbs. Lime per 1000 gallons biosolids		
1	10600	3.7	70.0	6.2		12.2				
2	9000	3.0	73.0	6.2						
3	8000	3.6	72.0	6.3						
4	8600	3.3	73.0	6.2						
5	9000	3.8	67.0	6.3						
6	18000	3.8	72.0	6.0	1584		8.8	88		
7	10000	3.3	71.0	6.1	1215		8.0	122		
8	10000	3.1	71.0	6.3		12.0				
9	9000	2.8	72.0	6.0						
10	9000	3.4	73.0	5.8						
11	7000	4.1	71.0	5.8						
12	6000	3.9	72.0	6.1						
13	11500	3.2	71.0	6.2	1693		9.5	147		
14	9250	3.0	72.0	6.3	694		8.8	75		
15	12500	3.1	71.0	6.3		12.1				
16	11500	2.9	72.0	6.1						
17	14500	2.9	74.0	6.1						
18	15600	2.5	73.0	6.1						
19	18750	2.2	72.0	6.2						
20	6800	3.0	71.0	5.9	2083			306		
21	8000	3.4	71.0	5.8	1519		9.8	190		
22	14000	3.5	71.0	5.8		12.1				
23	10500	3.5	72.0	6.2						
24	10600	3.8	67.0	6.2						
25	10500	3.4	68.0	6.2						
26	10350	3.2	72.0	6.3						
27	11500	3.8	71.0	6.0	1693		8.5	147		
28	13000	3.0	71.0	6.1	1519		7.1	117		
29	10500	2.3	71.0	6.3		12.0				
30	10500	2.3	73.0	6.3						
31	11000	2.8	74.0	6.3						
TOTAL	335050				12000					
MEAN	10808	3.2	71.4	6.1	1500	12.1	8.6	149		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MISCELLANEOUS SHEET

August 2002

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	WATER	ELECTRICAL USAGE		FUEL GAS		CHEMICALS APPLIED								
			X 120		X 100	$FECL_3$					Cl_2		SO_2	
	CF	METER	KWH	METER	CF	GALS	SP. GR.	% SOLN	LBS	mg/L	LBS	mg/L	LBS	mg/L
1	520	15	1800			150.0	1.3890	30	521.3	38.3	16.0	1.2	10.0	0.7
2	390	14	1680			125	1.3890	30	434.4	35.4	17	1.4	11.0	0.9
3	810	15	1800			100	1.3890	30	347.5	30.9	18	1.6	10.0	0.9
4	490	15	1800			100	1.3890	30	347.5	29.6	19	1.6	23.0	2.0
5	400	16	1920			150	1.3890	30	521.3	41.7	18	1.4	11.0	0.9
6	1730	16	1920			100	1.3890	30	347.5	26.2	18	1.4	11.0	0.8
7	1380	17	2040			100	1.3890	30	347.5	29.6	19	1.6	10.0	0.9
8	380	16	1920			100	1.3890	30	347.5	30.9	16	1.4	10.0	0.9
9	370	13	1560			100	1.3890	30	347.5	30.4	13	1.1	11.0	1.0
10	510	12	1440			75	1.3890	30	260.6	22.2	16	1.4	11.0	0.9
11	500	15	1800			100	1.3890	30	347.5	28.0	19	1.5	10.0	0.8
12	500	13	1560			100	1.3890	30	347.5	28.3	18	1.5	11.0	0.9
13	1700	16	1920			150	1.3890	30	521.3	43.7	19	1.6	11.0	0.9
14	1050	15	1800			100	1.3890	30	347.5	28.0	18	1.4	10.0	0.8
15	400	16	1920			100	1.3890	30	347.5	28.7	19	1.6	11.0	0.9
16	340	13	1560			100	1.3890	30	347.5	28.7	19	1.6	10.0	0.8
17	530	14	1680			100	1.3890	30	347.5	30.9	19	1.7	19.0	1.7
18	500	15	1800			100	1.3890	30	347.5	31.8	13	1.2	12.0	1.1
19	420	15	1800			75	1.3890	30	260.6	19.1	18	1.3	13.0	1.0
20	1920	16	1920			100	1.3890	30	347.5	25.3	19	1.4	12.0	0.9
21	1530	16	1920			75	1.3890	30	260.6	19.8	18	1.4	11.0	0.8
22	430	15	1800			100	1.3890	30	347.5	27.8	17	1.4	11.0	0.9
23	410	14	1680			100	1.3890	30	347.5	25.9	18	1.3	11.0	0.8
24	350	15	1800			200	1.3890	30	695.1	54.5	18	1.4	12.0	0.9
25	510	14	1680			150	1.3890	30	521.3	39.8	18	1.4	13.0	1.0
26	410	15	1800			100	1.3890	30	347.5	25.9	15	1.1	11.0	0.8
27	1720	16	1920			100	1.3890	30	347.5	26.4	9	0.7	12.0	0.9
28	1470	17	2040			100	1.3890	30	347.5	29.1	18	1.5	11.0	0.9
29	420	16	1920			100	1.3890	30	347.5	33.3	18	1.7	12.0	1.2
30	370	12	1440			100	1.3890	30	347.5	31.8	16	1.5	6.0	0.5
31	610	14	1680			100	1.3890	30	347.5	34.4	19	1.9	6.0	0.6
TL	23070	461	55320			3350					535		353.0	
ME	744	15	1785			108	1.3890	30.0	375.6	30.8	17.3	1.4	11.4	0.9

MANPOWER

POSITION TITLE	NUMBER FULL TIME
SUPERINTENDANT	1
ASST. SUPT.	1
OPERATOR	3
MECHANIC	
CHEMIST	
LAB TECH	
IPP COORDINATOR	1
OTHER	

GIVE THE HOURS PER DAY THAT PLANT PERSONNEL ARE NORMALLY AT THE PLANT.

WEEKDAYS	8	HRS
SATURDAYS	8	HRS
SUNDAYS	8	HRS
HOLIDAYS	8	HRS

Weather Code
1. Clear
2. Partly Cloudy
3. Cloudy
4. Rain
5. Snow
6. Warm
7. Cold
8. Windy
9. Melting Snow

PLANT INFLUENT SHEET

September 2002

Marshall

STATE OF MICHIGAN

MI 002 3540

SUPERINTENDENT

DEPT OF ENVIRONMENTAL QUALITY

Steven D. Washburn

D	WEATHER		FLOW		RAW SEWAGE QUALITY									
A	TYPE	PRECIP	TOTAL	MAX	TEMP	pH	BOD_5		SS		TOTAL-P		VSS	NH3-N
Y	CODE	Inches	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l
1	1		1.220		56	7.40	147	1496	136	1384			120	12.8
2	4	0.03	1.320		55	7.60	156	1717	166	1827			154	12.7
3	1		1.440		60	7.40	172	2066	167	2006			152	13.7
4	1		1.360		60	7.50	254	2881	288	3267			252	16.3
5	1		1.350		58	7.50	288	3243	300	3378	5.04	57	296	17.1
6	1		1.360		59	7.60	232	2631	240	2722			218	15.9
7	1		1.340		59	7.50	224	2503	224	2503			208	15.0
8	1		1.270		57	7.70	203	2150	216	2288			196	14.6
9	1		1.340		60	7.50	191	2135	218	2436			208	14.8
10	1		1.410		60	7.50	209	2458	252	2963			233	13.5
11	1		1.290		60	7.80	256	2754	220	2367	4.53	49	202	16.5
12	1		1.270		59	7.80	258	2733	292	3093			274	15.2
13	1		1.280		59	7.60	252	2690	212	2263			200	12.6
14	4	0.01	1.320		59	7.80	241	2653	220	2422			210	12.6
15	4	0.04	1.270		57	7.70	197	2087	198	2097			186	13.0
16	1		1.350		58	7.60	217	2443	202	2274			174	13.3
17	1		1.310		62	7.80	209	2283	208	2272			192	17.1
18	1		1.260		62	7.70	234	2459	196	2060	4.67	49	178	21.2
19	1		1.260		59	7.60	285	2995	210	2207			194	20.9
20	4	0.18	1.310		59	7.70	292	3190	206	2251			192	14.0
21	1		1.250		63	7.60	259	2700	190	1981			180	17.5
22	4	0.09	1.190		58	7.70	213	2114	186	1846			174	17.9
23	1		1.270		59	7.50	263	2786	230	2436	4.61	49	212	17.4
24	1		1.290		59	7.60	268	2883	412	4433			367	16.9
25	1		1.260		58	7.70	205	2154	210	2207			174	17.7
26	1		1.250		58	8.00	227	2366	174	1814			154	19.2
27	1		1.220		59	7.80	244	2483	210	2137			202	14.9
28	1		1.200		59	7.80	189	1892	196	1962			180	14.2
29	4	0.10	1.160		59	7.70	187	1809	190	1838			190	13.9
30	1		1.340		58	7.70	221	2470	238	2660			222	14.0
31														
TL		0.45	38.760					73224		71392		203		
ME			1.292		59		226	2441	220	2380	4.71	51	203	15.5

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

PRIMARY EFFLUENT SHEET

September 2002

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

	PRIMARY EFFLUENT QUALITY												
DAY	BOD-5			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS		AMMONIA NITROGEN	
	mg/l	LBS	Removal	mg/l	LBS	% Removal	mg/l	LBS	% Removal	mg/l	%	mg/l	LBS
1	64	651	56.5	64	651	52.9				60.0	93.8	10.9	111
2	67	738	57.1	48	576	71.1				48.0	100.0	11.8	142
3	105	1261	39.0	64	726	61.7				52.0	81.3	15.1	171
4	108	1225	57.5	68	766	76.4				58.0	85.3	17.3	195
5	119	1340	58.7	54	612	82.0	1.6	18.0	68.5	46.0	85.2	16.4	186
6	76	862	67.2	48	536	80.0				44.0	91.7	15.2	170
7	86	961	61.6	66	699	70.5				64.0	97.0	14.0	148
8	73	773	64.0	64	715	70.4				64.0	100.0	14.6	163
9	71	793	62.8	54	635	75.2				54.0	100.0	15.1	178
10	119	1399	43.1	72	775	71.4				62.0	86.1	17.2	185
11	119	1280	53.5	84	890	61.8	2.0	21.5	55.2	76.0	90.5	18.5	196
12	82	869	68.2	68	726	76.7				64.0	94.1	16.7	178
13	82	875	67.5	72	793	66.0				72.0	100.0	16.2	178
14	88	969	63.5	58	614	73.6				58.0	100.0	14.2	150
15	77	816	60.9	196	2207	1.0				184.0	93.9	14.2	160
16	75	844	65.4	88	961	56.4				54.0	61.4	14.9	163
17	114	1245	45.5	80	841	61.5				74.0	92.5	15.9	167
18	103	1082	56.0	64	673	67.3	1.6	16.7	66.0	58.0	90.6	17.0	179
19	118	1240	58.6	42	459	80.0				34.0	81.0	19.4	212
20	132	1442	54.8	50	521	75.7				50.0	100.0	20.0	209
21	65	678	74.9	38	377	80.0				38.0	100.0	16.0	159
22	71	705	66.7	38	402	79.6				38.0	100.0	16.7	177
23	79	837	70.0	52	559	77.4	1.5	16.5	66.8	52.0	100.0	16.5	178
24	116	1248	56.7	74	778	82.0				58.0	78.4	18.8	198
25	113	1187	44.9	94	980	55.2				76.0	80.9	18.6	194
26	107	1115	52.9	38	387	78.2				34.0	89.5	17.7	180
27	124	1262	49.2	50	500	76.2				50.0	100.0	20.7	207
28	103	1031	45.5	50	484	74.5				48.0	96.0	17.5	169
29	75	726	59.9	66	738	65.3				66.0	100.0	15.2	170
30	85	950	61.5	62		73.9				52.0	83.9	14.9	
31													
TL		30405			20581			72.7					5072
ME	94	1013	58.1	66	686	69.1	1.7	18.2	64.1	1788.0	91.8	16.2	169

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION

DEQ

Discharge Number	Permit Number
001 A	MI 002 3540

DAILY DISCHARGE MONITORING REPORT

Monitoring Period
September 2002

DAY	$CBOD_5$			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS	NH3-N		PH	D.O.	F.COLI #/100ml	CL RESID	
	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	mg/l	LBS	SU	mg/l	MF	mg/l	
1	2.8	28	98.1	1.0	10	99.3				1.0	0.11	1.12	7.40	7.1	224	0.000	
2	3.1	34	98.0	1.0	11	99.4				1.0	0.11	1.21	7.40	7.2	25	0.000	
3	4.1	49	97.6	1.0	12	99.4				1.0	2.98	35.79	7.40	6.7	119	0.000	
4	3.1	35	98.8	4.0	45	98.6				4.0	2.85	32.33	7.40	6.5	2	0.000	
5	5.1	57	98.2	1.0	11	99.7	0.20	2.3	96.0	1.0	1.30	14.64	7.40	6.5	220	0.000	
6	3.2	36	98.6	2.0	23	99.2				2.0	0.15	1.70	7.50	6.6	120	0.000	
7	4.3	48	98.1	4.0	45	98.2				4.0	0.23	2.57	7.50	7.0	600	0.000	
8	3.8	40	98.1	1.0	11	99.5				1.0	0.42	4.45	7.50	7.0	239	0.000	
9	4.0	45	97.9	4.0	45	98.2				4.0	1.60	17.88	7.40	6.8	71	0.000	
10	5.5	65	97.4	2.0	24	99.2				2.0	4.58	53.86	7.40	6.5	35	0.000	
11	5.4	58	97.9	9.0	97	95.9	0.20	2.2	95.6	8.0	7.02	75.53	7.40	6.3	5	0.004	
12	4.0	42	98.4	3.0	32	99.0				3.0	1.33	14.09	7.40	6.8	6	0.000	
13	3.5	37	98.6	6.0	64	97.2				6.0	1.38	14.73	7.40	6.4	25	0.000	
14	3.9	43	98.4	1.0	11	99.5				1.0	1.63	17.94	7.40	6.3	24	0.000	
15	4.3	46	97.8	1.0	11	99.5				1.0	1.30	13.77	7.50	6.6	14	0.000	
16	3.7	42	98.3	6.0	68	97.0				5.0	2.71	30.51	7.40	6.4	48	0.000	
17	5.6	61	97.3	8.0	87	96.2				8.0	6.02	65.77	7.40	6.4	40	0.000	
18	4.9	51	97.9	4.0	42	98.0	0.25	2.6	94.6	4.0	3.27	34.36	7.40	6.4	27	0.000	
19	6.2	65	97.8	2.0	21	99.0				2.0	7.28	76.50	7.40	6.4	59	0.000	
20	12.0	131	95.9	4.0	44	98.1				4.0	12.80	139.85	7.40	6.4	50	0.000	
21	7.0	73	97.3	1.0	10	99.5				1.0	5.00	52.13	7.40	6.0	28	0.000	
22	4.1	41	98.1	1.0	10	99.5				1.0	0.71	7.05	7.50	6.2	45	0.000	
23	4.2	44	98.4	6.0	64	97.4	0.35	3.7	92.4	6.0	0.94	9.96	7.40	7.3	85	0.000	
24	4.4	47	98.4	1.0	11	99.8				1.0	3.11	33.46	7.40	7.2	77	0.000	
25	3.0	32	98.5	7.0	74	96.7				4.0	1.94	20.39	7.50	6.7	108	0.000	
26	3.6	38	98.4	1.0	10	99.4				1.0	0.23	2.40	7.70	6.9	262	0.000	
27	5.8	59	97.6	2.0	20	99.0				2.0	4.86	49.45	7.40	7.0	102	0.000	
28	5.5	55	97.1	1.0	10	99.5				1.0	4.86	48.64	7.40	6.4	49	0.000	
29	4.0	39	97.9	2.0	19	98.9				2.0	4.10	39.67	7.50	6.2	62	0.000	
30	4.5	50	98.0	3.0	34	98.7				3.0	0.49	5.48	7.40	6.7	182	0.000	
31																	
TL		1493			974			10.7									
ME	4.6	50	98.0	3.0	32	98.6	0.25	2.7	94.7	85.0	2.84	30.57		6.6	53	0.000	
WA	6.3	67		4.9	53										108		
MX											12.80	139.85	7.70			0.004	
MN													7.40	6.0			

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 Years)

PRINTED NAME AND TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTORIZED AGENT	DATE
Steven D. Washburn, Superintendent		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

ACTIVATED SLUDGE SHEET

September 2002

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	AERATION SYSTEM				MIXED LIQUOR								SECONDARY SLUDGE				
	AERTN VOL	DETEN TIME	CRT	F:M RATIO	MLSS		MLVSS		SETTL.	SDI	D.O.	AIR	SS	VSS	RAS FLOW	WAS	
	KCF	HRS	DAYS		mg/L	Lbs.	mg/L	Lbs.	%	%	mg/L	CF	%	%	%	Gallons	Lbs.
SF	3											4				3	
1	48	7.1			1764	5282					5.84	34			128	43	
2	48	6.5			1750	5240					4.75	34			113	35	
3	48	6.0	5.7	0.31	1616	4839	1366	4090	57	0.28	5.50	39	0.34	0.29	102	30	851
4	48	6.3	7.2	0.27	1807	5411	1519	4548	67	0.27	5.63	40	0.31	0.26	105	29	750
5	48	6.4	6.3	0.28	1918	5743	1587	4752	65	0.30	4.65	42	0.33	0.27	107	33	908
6	48	6.3	4.7	0.18	1924	5761	1622	4857	70	0.27	3.94	40	0.34	0.28	110	43	1219
7	48	6.4			1953	5848					5.62	38			116	55	
8	48	6.8			1891	5662					5.04	38			104	61	
9	48	6.4	4.3	0.18	1772	5306	1501	4495	76	0.23	3.80	38	0.24	0.21	104	62	1241
10	48	6.1	3.9	0.33	1665	4986	1416	4240	38	0.44	3.13	46	0.26	0.22	103	59	1279
11	48	6.7	4.0	0.30	1703	5099	1433	4291	35	0.49	2.93	44	0.25	0.21	114	61	1272
12	48	6.8	3.4	0.19	1770	5300	1495	4477	59	0.30	4.46	42	0.29	0.25	116	65	1572
13	48	6.7	3.3	0.20	1703	5099	1450	4342	41	0.42	4.88	39	0.29	0.25	112	63	1524
14	48	6.5			1633	4890					3.80	38			109	62	
15	48	6.8			1571	4704					4.20	45			109	62	
16	48	6.4	4.0	0.23	1448	4336	1247	3734	20	0.72	4.78	42	0.24	0.20	107	54	1081
17	48	6.6	5.2	0.34	1455	4357	1226	3671	17	0.86	4.28	40	0.24	0.20	117	42	841
18	48	6.8	5.6	0.25	1684	5043	1451	4345	20	0.84	4.56	36	0.27	0.24	117	40	901
19	48	6.8	5.1	0.28	1744	5222	1474	4414	22	0.79	2.00	58	0.28	0.24	117	44	1027
20	48	6.6	4.5	0.33	1712	5126	1465	4387	22	0.78	2.86	61	0.30	0.25	107	46	1151
21	48	6.9			1780	5330					2.86	67			116	46	
22	48	7.2			1649	4938					5.11	66			124	46	
23	48	6.8	4.3	0.21	1547	4632	1335	3998	19	0.81	5.00	68	0.26	0.22	115	50	1084
24	48	6.7	4.1	0.33	1487	4453	1281	3836	18	0.83	5.47	65	0.25	0.21	113	52	1084
25	48	6.8	4.3	0.29	1619	4848	1373	4111	21	0.77	6.09	62	0.26	0.22	109	52	1128
26	48	6.9	3.9	0.26	1704	5102	1422	4258	25	0.68	5.61	62	0.30	0.25	110	52	1301
27	48	7.1	4.8	0.30	1675	5016	1414	4234	24	0.70	4.16	63	0.24	0.20	113	52	1041
28	48	7.2			1623	4860					3.98	62			115	52	
29	48	7.4			1612	4827					5.42	62			119	52	
30	48	6.4	4.6	0.24	1545	4626	1332	3989	25	0.62	5.49	56	0.23	0.20	103	52	997
31	48																
TL												1467				1495	22252
ME	48	6.7	4.7	0.26	1691	5063	1420	4253	37	0.6	4.5	49	0.28	0.23	112	50	1113

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

BIOSOLIDS SHEET

Marshall

MI 002 3540

September 2002

SUPERINTENDENT
Steven D. Washburn

	RAW SLUDGE	RAW BIOSOLIDS			LIME STABILIZED BIOSOLIDS					
DAY	GALLONS	TOTAL SOLIDS %	VOLATILE SOLIDS %	pH SU	LIME POUNDS	pH 2 hrs @ 25 C SU	RDT Solids %	Lbs. Lime per 1000 gallons biosolids		
1	11700	2.8	73.0	6.3						
2	11500	2.7	74.0	6.2						
3	14000	2.8	75.0	6.1	2219		7.2	159		
4	11500	2.7	74.0	6.1	2688		9.3	234		
5	11500	2.8	74.0	6.0						
6	10500	3.4	76.0	5.9		12.0				
7	10500	2.8	74.0	5.9						
8	13000	3.2	76.0	5.8						
9	15500	3.6	76.0	5.7						
10	13000	3.0	76.0	5.9	2166		8.2	167		
11	12000	3.0	75.0	5.9	3132		8.0	261		
12	11500	3.3	74.0	5.7		12.1				
13	9000	3.0	75.0	5.7						
14	8600	2.9	75.0	6.1						
15	10500	3.2	76.0	5.9						
16	18000	3.4	74.0	5.9						
17	5000	2.8	70.0	5.9	3158		6.6	632		
18	10000	3.4	73.0	6.0	1514		5.4	151		
19	10000	4.0	72.0	6.1		12.2				
20	10500	4.0	71.0	6.3						
21	10500	3.2	71.0	6.6						
22	10500	3.3	72.0	6.5						
23	10000	3.1	73.0	6.6						
24	15000	2.2	75.0	6.6	2741		8.6	183		
25	10000	3.5	72.0	6.6	2767		8.2	277		
26	10000	3.0	72.0	6.8		12.3				
27	10000	2.5	75.0	6.6						
28	10000	2.4	72.0	6.7						
29	10000	3.0	73.0	6.4						
30	10500	2.5	74.0	6.5						
31										
TOTAL	334300				20385					
MEAN	11143	3.1	73.7	6.2	2548	12.1	7.7	258		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MISCELLANEOUS SHEET

September 2002

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	WATER	ELECTRICAL USAGE		FUEL GAS		CHEMICALS APPLIED								
			X 120		X 100	$FECL_3$					Cl_2		SO_2	
	CF	METER	KWH	METER	CF	GALS	SP. GR.	% SOLN	LBS	mg/L	LBS	mg/L	LBS	mg/L
1	520	14	1680			100.0	1.4020	30	350.8	34.5	16.0	1.6	13.0	1.3
2	450	15	1800			100	1.4020	30	350.8	31.9	17	1.5	10.0	0.9
3	1940	16	1920			100	1.4020	30	350.8	29.2	17	1.4	11.0	0.9
4	1450	17	2040			100	1.4020	30	350.8	30.9	16	1.4	10.0	0.9
5	1140	16	1920			50	1.4020	30	175.4	15.6	5	0.4	11.0	1.0
6	430	15	1800			100	1.4020	30	350.8	30.9	11	1.0	10.0	0.9
7	420	13	1560			100	1.4020	30	350.8	31.4	18	1.6	11.0	1.0
8	410	14	1680			50	1.4020	30	175.4	16.6	19	1.8	11.0	1.0
9	420	15	1800			100	1.4020	30	350.8	31.4	18	1.6	15.0	1.3
10	1730	16	1920			100	1.4020	30	350.8	29.8	15	1.3	5.0	0.4
11	1500	17	2040			100	1.4020	30	350.8	32.6	23	2.1	12.0	1.1
12	380	13	1560			100	1.4020	30	350.8	33.1	18	1.7	10.0	0.9
13	420	15	1800			100	1.4020	30	350.8	32.9	18	1.7	9.0	0.8
14	480	15	1800			100	1.4020	30	350.8	31.9	18	1.6	7.0	0.6
15	510	14	1680			100	1.4020	30	350.8	33.1	18	1.7	11.0	1.0
16	410	16	1920			100	1.4020	30	350.8	31.2	18	1.6	11.0	1.0
17	410	17	2040			100	1.4020	30	350.8	32.1	20	1.8	11.0	1.0
18	2130	15	1800			50	1.4020	30	175.4	16.7	19	1.8	10.0	1.0
19	1470	14	1680			100	1.4020	30	350.8	33.4	19	1.8	11.0	1.0
20	500	14	1680			150	1.4020	30	526.2	48.2	17	1.6	11.0	1.0
21	480	14	1680			150	1.4020	30	526.2	50.5	21	2.0	11.0	1.1
22	440	15	1800			150	1.4020	30	526.2	53.0	9	0.9	12.0	1.2
23	460	16	1920			100	1.4020	30	350.8	33.1	16	1.5	11.0	1.0
24	650	16	1920			50	1.4020	30	175.4	16.3	16	1.5	12.0	1.1
25	1830	14	1680			50	1.4020	30	175.4	16.7	15	1.4	11.0	1.0
26	1750	14	1680			100	1.4020	30	350.8	33.6	16	1.5	10.0	1.0
27	700	14	1680			100	1.4020	30	350.8	34.5	15	1.5	9.0	0.9
28	590	14	1680			100	1.4020	30	350.8	35.1	17	1.7	10.0	1.0
29	570	14	1680			100	1.4020	30	350.8	36.3	15	1.6	10.0	1.0
30	650	15	1800			100	1.4020	30	350.8	31.4	16	1.4	10.0	0.9
31														
TL	25240	447	53640			2900					496		316.0	
ME	841	15	1788			97	1.4020	30.0	339.1	31.6	16.5	1.5	10.5	1.0

MANPOWER

POSITION TITLE	NUMBER FULL TIME
SUPERINTENDANT	1
ASST. SUPT.	1
OPERATOR	3
MECHANIC	
CHEMIST	
LAB TECH	
IPP COORDINATOR	1
OTHER	

GIVE THE HOURS PER DAY THAT PLANT PERSONNEL ARE NORMALLY AT THE PLANT.

WEEKDAYS	8	HRS
SATURDAYS	8	HRS
SUNDAYS	8	HRS
HOLIDAYS	8	HRS

Weather Code
1. Clear
2. Partly Cloudy
3. Cloudy
4. Rain
5. Snow
6. Warm
7. Cold
8. Windy
9. Melting Snow

PLANT INFLUENT SHEET

October 2002

Marshall

STATE OF MICHIGAN

MI 002 3540

SUPERINTENDENT

DEPT OF ENVIRONMENTAL QUALITY

Steven D. Washburn

D	WEATHER		FLOW		RAW SEWAGE QUALITY									
A	TYPE	PRECIP	TOTAL	MAX	TEMP	pH	BOD_5		SS		TOTAL-P		VSS	NH3-N
Y	CODE	Inches	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l
1	4	0.06	1.400		60	7.60	203	2370	176	2055			166	
2	4	0.07	1.510		64	7.60	257	3237	188	2368	4.07	51	166	
3	1		1.440		59	7.70	225	2702	256	3074			230	16.0
4	4	0.59	1.450		58	7.60	217	2624	228	2757			208	
5	1		1.260		56	7.80	165	1734	184	1934			170	
6	4	0.07	1.260		56	7.80	213	2238	262	2753			234	16.3
7	1		1.260		57	7.70	235	2469	246	2585			222	
8	1		1.280		59	7.70	319	3405	289	3085			265	
9	1		1.290		58	7.50	217	2335	270	2905	4.25	46	248	
10	1		1.290		58	7.50	374	4024	486	5229			434	
11	1		1.240		55	7.70	270	2792	224	2317			208	20.5
12	4	0.22	1.160		55	7.60	232	2244	238	2303			210	
13	1		1.180		57	7.60	266	2618	222	2185			198	
14	1		1.270		62	7.50	273	2892	242	2563			218	18.8
15	1		1.260		55	7.40	237	2490	265	2785	5.59	59	237	
16	1		1.280		56	7.70	206	2199	272	2904			248	20.0
17	4	0.09	1.240		56	7.60	223	2306	126	1303			102	
18	4	0.08	1.190		53	7.50	289	2868	292	2898			270	
19	1		1.190		54	7.60	265	2630	292	2898			270	
20	1		1.160		55	7.60	246	2380	278	2689	4.73	46	256	19.2
21	1		1.300		54	7.50	264	2862	230	2494			212	
22	1		1.320		54	7.50	228	2510	286	3149			227	17.0
23	1		1.340		54	7.70	211	2358	168	1878			158	
24	4	0.07	1.300		54	7.80	265	2873	196	2125			178	
25	4	0.24	1.280		54	7.60	298	3181	148	1580			142	
26	4	0.02	1.210		54	7.60	248	2503	276	2785			260	
27	1		1.190		53	7.70	207	2054	260	2580			244	
28	1		1.240		55	7.60	287	2968	280	2896			262	
29	1		1.310		55	7.70	246	2688	190	2076			273	15.5
30	1		1.290		54	8.00	293	3152	286	3077			252	
31	1		1.280		54	7.60	248	2647	206	2199			188	
TL		1.51	39.670					82355		80426		201		
ME			1.280		56.1		249	2657	244	2594	4.66	50	224	17.9

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

PRIMARY EFFLUENT SHEET

October 2002

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

	PRIMARY EFFLUENT QUALITY												
DAY	BOD-5			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS		AMMONIA NITROGEN	
	mg/l	LBS	Removal	mg/l	LBS	% Removal	mg/l	LBS	% Removal	mg/l	%	mg/l	LBS
1	126	1471	37.9	84	981	52.3				74.0	88.1		
2	119	1499	53.7	84	1009	55.3	1.6	19.1	60.9	72.0	85.7		
3	90	1081	60.0	60	726	76.6				56.0	93.3	16.6	201
4	107	1294	50.7	50	525	78.1				50.0	100.0		
5	77	809	53.3	58	609	68.5				52.0	89.7		
6	70	736	67.1	50	525	80.9				46.0	92.0	15.6	164
7	84	883	64.3	52	555	78.9				50.0	96.2		
8	195	2082	38.9	74	796	74.4				60.0	81.1		
9	137	1474	36.9	72	775	73.3	1.6	17.2	62.4	62.0	86.1		
10	93	1001	75.1	52	538	89.3				42.0	80.8		
11	112	1158	58.5	62	600	72.3				54.0	87.1	18.1	175
12	84	813	63.8	42	413	82.4				36.0	85.7		
13	95	935	64.3	48	508	78.4				42.0	87.5		
14	114	1207	58.2	44	462	81.8				44.0	100.0	16.1	169
15	134	1408	43.5	60	641	77.4	1.9	20.4	65.8	52.0	86.7		
16	114	1217	44.7	66	683	75.7				58.0	87.9	18.8	194
17	134	1386	39.9	40	397	68.3				34.0	85.0		
18	101	1002	65.1	52	516	82.2				50.0	96.2		
19	96	953	63.8	44	426	84.9				38.0	86.4		
20	137	1325	44.3	50	542	82.0	1.2	13.3	74.0	46.0	92.0	14.9	162
21	102	1106	61.4	48	528	79.1				42.0	87.5		
22	152	1673	33.3	66	738	76.9				50.0	75.8	18.6	208
23	119	1330	43.6	38	412	77.4				34.0	89.5		
24	149	1615	43.8	26	278	86.7				24.0	92.3		
25	121	1292	59.4	46	464	68.9				46.0	100.0		
26	111	1120	55.2	36	357	87.0				36.0	100.0		
27	93	923	55.1	38	393	85.4				36.0	94.7		
28	85	879	70.4	48	524	82.9				46.0	95.8		
29	104	1136	57.7	44	473	76.8				40.0	90.9	16.4	176
30	184	1980	37.2	50	534	82.5				40.0	80.0		
31	153	1633	38.3	132	43672	35.9				108.0	81.8		
TL		38420			60600			70.0					1449
ME	116	1239	52.9	55	1955	75.9	1.6	17.5	65.8	1520.0	89.5	16.9	181

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION

DEQ

Discharge Number	Permit Number
001 A	MI 002 3540

DAILY DISCHARGE MONITORING REPORT

Monitoring Period: October 2002

DAY	$CBOD_5$			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS	NH3-N		PH	D.O.	F.COLI #/100ml	CL RESID
	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	mg/l	LBS	SU	mg/l	MF	mg/l
1	8.2	96	96.0	8.0	93	95.5				8.0			7.50	6.3	68	0.000
2	10.2	128	96.0	7.0	88	96.3	0.25	3.1	93.9	7.0			7.40	6.0	144	0.000
3	5.2	62	97.7	4.0	48	98.4				4.0	2.91	34.95	7.40	6.1	146	0.000
4	4.6	56	97.9	1.0	12	99.6				1.0			7.30	6.2	53	0.000
5	4.2	44	97.5	5.0	53	97.3				5.0			7.40	7.0	22	0.000
6	3.6	38	98.3	1.0	11	99.6				1.0	0.18	1.89	7.40	7.1	52	0.000
7	4.1	43	98.3	5.0	53	98.0				5.0			7.40	7.0	66	0.000
8	8.0	85	97.5	5.0	53	98.3				5.0			7.40	7.1	52	0.000
9	5.9	63	97.3	5.0	54	98.1	0.14	1.5	96.6	5.0			7.40	6.4	13	0.000
10	4.2	45	98.9	3.0	32	99.4				3.0			7.40	6.5	53	0.000
11	4.9	51	98.2	4.0	41	98.2				4.0	0.15	1.55	7.50	7.2	33	0.000
12	4.8	46	97.9	3.0	29	98.7				3.0			7.40	7.1	45	0.000
13	4.1	40	98.5	6.0	59	97.3				6.0			7.50	6.8	22	0.000
14	8.7	92	96.8	10.0	106	95.9				10.0	2.48	26.27	7.30	6.6	63	0.000
15	6.3	66	97.3	3.0	32	98.9				3.0			7.40	6.2	120	0.000
16	4.8	51	97.7	3.0	32	98.9	0.32	3.4		3.0	3.20	34.16	7.50	6.5	27	0.000
17	4.1	42	98.2	3.0	31	97.6				3.0			7.30	6.4	34	0.000
18	3.4	34	98.8	3.0	30	99.0				3.0			7.30	6.7	19	0.000
19	3.8	38	98.6	2.0	20	99.3				2.0			7.40	7.2	33	0.000
20	3.1	30	98.7	3.0	29	98.9	0.20	1.9	95.8	3.0	0.17	1.60	7.40	7.5	19	0.000
21	3.4	37	98.7	3.0	33	98.7				3.0			7.40	7.6	20	0.000
22	4.9	54	97.9	5.0	55	98.3				5.0	0.82	9.03	7.40	7.5	14	0.000
23	4.4	49	97.9	2.0	22	98.8				2.0			7.40	7.1	19	0.000
24	6.1	66	97.7	1.0	11	99.5				1.0			7.40	6.8	30	0.000
25	6.4	68	97.9	5.0	53	96.6				5.0			7.30	6.7	19	0.000
26	4.3	43	98.3	1.0	10	99.6				1.0			7.40	7.2	120	0.000
27	3.2	32	98.5	1.0	10	99.6				1.0			7.50	7.7	42	0.000
28	2.8	29	99.0	3.0	31	98.9				3.0			7.40	7.5	21	0.000
29	5.1	56	97.9	3.0	33	98.4				3.0	0.16	1.75	7.40	7.5	120	0.000
30	6.0	65	98.0	7.0	75	97.6				7.0			7.40	7.5	24	0.000
31	7.0	75	97.2	7.0	75	96.6				7.0			7.40	7.6	17	0.000
TL		1726			1313			10.0								
ME	5.2	56	97.9	3.9	42	98.2	0.23	2.5	71.6	122.0	1.26	13.90		6.9	38	0.000
WA	5.8	67		5.1	54										66	
MX											3.20	34.95	7.50			0
MN													7.30	6.0		

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 Years)

PRINTED NAME AND TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTORIZED AGENT	DATE
Steven D. Washburn, Superintendent		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

ACTIVATED SLUDGE SHEET

October 2002

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	AERATION SYSTEM				MIXED LIQUOR								SECONDARY SLUDGE				
	AERTN VOL	DETEN TIME	CRT	F:M RATIO	MLSS		MLVSS		SETTL.	SDI	D.O.	AIR	SS	VSS	RAS FLOW	WAS	
	KCF	HRS	DAYS		mg/L	Lbs.	mg/L	Lbs.	%	%	mg/L	CF	%	%	%	Gallons	Lbs.
SF	3											4				3	
1	48	6.2	4.1	0.39	1471	4405	1260	3773	24	0.61	4.55	59	0.26	0.23	101	49	1063
2	48	5.7	4.0	0.26	2228	6672	1900	5689	40	0.56	1.21	66	0.39	0.33	91	51	1659
3	48	6.0	3.5	0.21	2000	5989	1687	5052	34	0.59	2.75	65	0.39	0.33	95	52	1691
4	48	5.9	4.6	0.33	1536	4599	1302	3899	24	0.64	2.32	68	0.23	0.19	92	52	997
5	48	6.8			1642	4917					5.69	72			98	52	
6	48	6.8			1489	4459					5.64	72			98	52	
7	48	6.8	6.1	0.25	1388	4156	1181	3536	23	0.60	5.22	65	0.22	0.19	114	37	679
8	48	6.7	6.5	0.63	1304	3905	1109	3321	21	0.62	5.23	65	0.23	0.19	122	31	600
9	48	6.7	7.0	0.37	1583	4740	1332	3989	25	0.63	0.75	63	0.28	0.24	121	29	677
10	48	6.7	6.0	0.28	1600	4791	1200	3593	30	0.53	3.35	62	0.30	0.25	118	32	801
11	48	6.9	6.1	0.26	1753	5249	1470	4402	30	0.58	5.05	61	0.25	0.21	119	41	855
12	48	7.4			1777	5321					6.26	61			127	46	
13	48	7.3			1657	4962					6.24	68			136	43	
14	48	6.8	4.6	0.33	1485	4447	1235	3698	28	0.53	6.71	61	0.25	0.20	129	46	959
15	48	6.8	5.0	0.27	2054	6150	1717	5141	36	0.57	4.06	58	0.32	0.26	127	46	1228
16	48	6.7	6.0	0.25	1968	5893	1624	4863	42	0.47	2.08	69	0.30	0.25	123	39	976
17	48	6.9	7.7	0.38	1468	4396	1220	3653	27	0.54	3.68	68	0.22	0.18	126	31	569
18	48	7.2	8.8	0.26	1550	4641	1290	3863	37	0.42	5.27	70	0.21	0.18	131	30	525
19	48	7.2			1615	4836					6.59	71			125	29	
20	48	7.4			1591	4764					6.87	70			127	29	
21	48	6.6	8.5	0.28	1588	4755	1322	3959	36	0.44	6.64	68	0.23	0.19	113	29	556
22	48	6.5	7.9	0.43	1588	4755	1305	3908	33	0.48	5.22	69	0.25	0.21	116	29	605
23	48	6.4	7.8	0.34	1697	5081	1299	3890	39	0.44	6.16	69	0.27	0.23	117	29	653
24	48	6.6	7.6	0.37	1770	5300	1450	4342	56	0.32	4.57	68	0.29	0.24	121	29	701
25	48	6.7	8.3	0.29	1810	5420	1510	4522	55	0.33	3.37	69	0.27	0.23	128	29	653
26	48	7.1			1972	5905					5.72	69			137	38	
27	48	7.2			1974	5911					6.44	69			139	43	
28	48	6.9	6.3	0.19	1813	5429	1515	4537	61	0.30	5.50	69	0.24	0.20	127	43	861
29	48	6.6	6.8	0.25	1797	5381	1507	4513	29	0.62	6.42	69	0.23	0.19	119	41	786
30	48	6.7	6.2	0.46	1734	5192	1443	4321	30	0.58	6.26	69	0.25	0.21	121	40	834
31	48	6.7	5.4	0.35	1847	5531	1544	4623	52	0.36	1.75	68	0.26	0.21	123	47	1019
TL												2070				1214	19947
ME	48	6.8	6.3	0.32	1702	5095	1410	4221	35	0.5	4.8	67	0.27	0.22	119	39	867

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

BIOSOLIDS SHEET

Marshall

MI 002 3540

October 2002

SUPERINTENDENT
Steven D. Washburn

	RAW SLUDGE	RAW BIOSOLIDS			LIME STABILIZED BIOSOLIDS					
DAY	GALLONS	TOTAL SOLIDS %	VOLATILE SOLIDS %	pH SU	LIME POUNDS	pH 2 hrs @ 25 C SU	RDT Solids %	Lbs. Lime per 1000 gallons biosolids		
1	12400	2.6	76.0	6.4	3000		7.3	242		
2	12500	2.7	78.0	6.3	2030		8.1	162		
3	10700	3.0	70.0	6.4		12.1				
4	12000	3.4	73.0	6.4						
5	12000	3.5	73.0	6.2						
6	12000	2.9	76.0	6.3						
7	17600	2.8	76.0	6.4						
8	9000	2.6	76.0	6.5	3091		8.5	343		
9	9000	3.0	75.0	6.5	3060		8.8	340		
10	10000	4.0	83.0	6.4						
11	7000	3.5	77.0	6.3		12.1				
12	10000	3.8	76.0	5.9						
13	10300	3.6	77.0	6.0						
14	10000	2.9	75.0	6.1						
15	17000	3.1	75.0	6.1	3151		8.5	185		
16	10600	3.1	75.0	6.2	2303		8.0	217		
17	10000	3.4	75.0	6.0		12.0				
18	10000	3.2	74.0	6.2						
19	10000	2.9	74.0	6.3						
20	10000	3.4	75.0	6.2						
21	10250	3.6	74.0	6.2						
22	10200	3.4	75.0	6.0	3333		8.5	327		
23	10250	3.2	74.0	6.3	788		10.1	77		
24	11500	2.8	72.0	6.5		12.1				
25	10500	2.9	75.0	6.3						
26	10500	2.9	78.0	6.2						
27	10200	3.2	76.0	6.1						
28	10000	4.5	76.0	6.2						
29	10200	2.9	76.0	6.2						
30	10500	2.9	76.0	6.1	3030		8.9	289		
31	10000	2.1	74.0	6.0	3121		8.2	312		
TOTAL	336200				26907					
MEAN	10845	3.2	75.3	6.2	2691	12.1	8.5	249		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MISCELLANEOUS SHEET

October 2002

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	WATER	ELECTRICAL USAGE		FUEL GAS		CHEMICALS APPLIED									MANPOWER	
			X 120		X 100	$FECL_3$					Cl_2		SO_2		POSITION TITLE	NUMBER FULL TIME
	CF	METER	KWH	METER	CF	GALS	SP. GR.	% SOLN	LBS	mg/L	LBS	mg/L	LBS	mg/L	SUPERINTENDANT	1
1	2020	16	1920			100.0	1.3800	30	345.3	29.6	16.0	1.4	9.0	0.8	ASST. SUPT.	1
2	1800	16	1920			100.0	1.3800	30	345.3	27.4	24	1.9	10.0	0.8	OPERATOR	3
3	490	15	1800			100.0	1.3800	30	345.3	28.8	21	1.7	11.0	0.9	MECHANIC	
4	450	13	1560			100.0	1.3800	30	345.3	28.6	19	1.6	10.0	0.8	CHEMIST	
5	640	15	1800			100.0	1.3800	30	345.3	32.9	21	2.0	10.0	1.0	LAB TECH	
6	590	14	1680			100.0	1.3800	30	345.3	32.9	21	2.0	10.0	1.0	IPP COORDINATOR	1
7	580	15	1800			100.0	1.3800	30	345.3	32.9	21	2.0	11.0	1.0	OTHER	
8	2020	17	2040			100.0	1.3800	30	345.3	32.3	21	2.0	9.0	0.8		
9	1870	16	1920			100.0	1.3800	30	345.3	32.1	20	1.9	10.0	0.9	GIVE THE HOURS PER DAY THAT	
10	500	15	1800			100.0	1.3800	30	345.3	32.1	13	1.2	11.0	1.0	PLANT PERSONNEL ARE NORMALLY	
11	470	14	1680			100.0	1.3800	30	345.3	33.4	14	1.4	10.0	1.0	AT THE PLANT.	
12	610	14	1680			100.0	1.3800	30	345.3	35.7	19	2.0	10.0	1.0	WEEKDAYS	8 HRS
13	550	16	1920			100.0	1.3800	30	345.3	35.1	18	1.8	24.0	2.4	SATURDAYS	8 HRS
14	570	14	1680			100.0	1.3800	30	345.3	32.6	20	1.9	12.0	1.1	SUNDAYS	8 HRS
15	2070	17	2040			100.0	1.3800	30	345.3	32.9	18	1.7	12.0	1.1	HOLIDAYS	8 HRS
16	1590	16	1920			100.0	1.3800	30	345.3	32.3	19	1.8	11.0	1.0		
17	480	16	1920	9	900	100.0	1.3800	30	345.3	33.4	19	1.8	11.0	1.1		
18	430	15	1800	6	600	100.0	1.3800	30	345.3	34.8	18	1.8	13.0	1.3		
19	530	15	1800	11	1100	300	1.3800	30	1036	104.4	20	2.0	11.0	1.1		
20	560	15	1800	16	1600	125	1.3800	30	431.6	44.6	19	2.0	11.0	1.1		
21	510	16	1920	6	600	100	1.3800	30	345.3	31.8	20	1.8	13.0	1.2		
22	1950	16	1920	4	400	125	1.3800	30	431.6	39.2	15	1.4	12.0	1.1		
23	2620	18	2160	8	800	100	1.3800	30	345.3	30.9	18	1.6	11.0	1.0		
24	610	15	1800	9	900	100	1.3800	30	345.3	31.8	18	1.7	12.0	1.1		
25	470	16	1920	9	900	100	1.3800	30	345.3	32.3	20	1.9	12.0	1.1		
26	510	15	1800	22	2200	125	1.3800	30	431.6	42.8	26	2.6	11.0	1.1		
27	520	16	1920	30	3000	125	1.3800	30	431.6	43.5	20	2.0	12.0	1.2		
28	510	15	1800	11	1100	100	1.3800	30	345.3	33.4	18	1.7	13.0	1.3		
29	480	15	1800	18	1800	100	1.3800	30	345.3	31.6	18	1.6	10.0	0.9		
30	1930	16	1920	14	1400	50	1.3800	30	172.6	16.0	19	1.8	12.0	1.1		
31	1830	18	2160	15	1500	100	1.3800	30	345.3	32.3	18	1.7	11.0	1.0		
TL	30760	480	57600	188	18800	3350					591		355.0			
ME	992	15	1858	13	1253	108	1.3800	30.0	373.1	35.3	19.1	1.8	11.5	1.1		

Weather Code
1. Clear
2. Partly Cloudy
3. Cloudy
4. Rain
5. Snow
6. Warm
7. Cold
8. Windy
9. Melting Snow

PLANT INFLUENT SHEET

November 2002

Marshall

STATE OF MICHIGAN

MI 002 3540

SUPERINTENDENT

DEPT OF ENVIRONMENTAL QUALITY

Steven D. Washburn

D	WEATHER		FLOW		RAW SEWAGE QUALITY									
A	TYPE	PRECIP	TOTAL	MAX	TEMP	pH	BOD_5		SS		TOTAL-P		VSS	NH3-N
Y	CODE	Inches	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l
1	1		1.290		54	7.70	221	2378	246	2647			226	18.6
2	1		1.200		54	7.60	200	2002	212	2122			192	
3	1		1.170		60	7.70	213	2078	218	2127			200	
4	1		1.270		56	7.60	219	2320	192	2034	3.77	40	176	
5	4	0.18	1.270		55	7.70	182	1928	154	1631			142	17.3
6	4	0.02	1.280		54	8.10	200	2135	136	1452			130	
7	1		1.260		54	8.00	261	2743	218	2291			192	
8	1		1.230		54	7.80	190	1949	82	841			72	
9	4	0.60	1.260		54	7.70	273	2869	216	2270			94	
10	4	0.02	1.230		55	7.60	234	2400	228	2339			214	
11	1		1.310		54	7.80	229	2502	146	1595	3.65	40	140	
12	1		1.280		54	7.70	237	2530	233	2487			215	17.3
13	1		1.280		53	7.80	197	2103	196	2092			180	
14	4	0.32	1.290		53	7.70	221	2378	212	2281			206	
15	1		1.260		59	7.70	196	2060	194	2039			178	17.6
16	1		1.260		55	7.80	204	2144	204	2144			194	
17	1		1.250		52	7.90	205	2137	196	2043			180	
18	4		1.280		52	7.70	227	2423	242	2583	4.49	48	226	
19	1		1.260		52	7.70	278	2921	245	2575			236	
20	4	0.01	1.280		52	7.70	206	2199	194	2071			182	18.1
21	5	0.31	1.240		52	7.80	257	2658	274	2834			252	
22	1		1.240		52	8.00	339	3506	262	2709			242	18.5
23	1		1.220		52	7.70	317	3225	302	3073			284	
24	4	0.03	1.250		50	7.80	247	2575	228	2377			212	
25	1		1.270		50	7.70	227	2404	202	2140	4.89	52	190	
26	1		1.290		57	7.70	263	2830	190	2044			162	18.6
27	1		1.310		50	7.60	263	2873	290	3168			271	
28	1		1.120		51	7.70	228	2130	328	3064			300	17.1
29	5	0.02	1.180		51	7.70	221	2175	168	1653			154	
30	2		1.180		51	7.70	262	2578	184	1811			158	
31														
TL		1.51	37.510					73152		66536		180		
ME			1.250		53.4		234	2438	213	2218	4.20	45	193	17.9

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

PRIMARY EFFLUENT SHEET

November 2002

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

PRIMARY EFFLUENT QUALITY

DAY	BOD-5			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS		AMMONIA NITROGEN	
	mg/l	LBS	Removal	mg/l	LBS	% Removal	mg/l	LBS	% Removal	mg/l	%	mg/l	LBS
1	104	1119	52.9	50	538	79.7				48.0	96.0	19.0	204
2	91	911	54.5	44	429	79.2				44.0	100.0		
3	74	722	65.3	34	360	84.4				34.0	100.0		
4	85	900	61.2	58	614	69.8	1.9	19.6	50.9	54.0	93.1		
5	136	1440	25.3	70	747	54.5				62.0	88.6	20.8	222
6	154	1644	23.0	68	715	50.0				62.0	91.2		
7	106	1114	59.4	56	574	74.3				46.0	82.1		
8	94	964	50.5	26	273	68.3				22.0	84.6		
9	104	1093	61.9	70	718	67.6				60.0	85.7		
10	101	1036	56.8	66	721	71.1				60.0	90.9		
11	122	1333	46.7	50	534	65.8	2.1	21.9	43.8	44.0	88.0		
12	140	1495	40.9	74	790	68.2				62.0	83.8	21.5	230
13	121	1292	38.6	82	882	58.2				74.0	90.2		
14	89	958	59.7	70	736	67.0				64.0	91.4		
15	80	841	59.2	62	652	68.0				58.0	93.5	18.6	195
16	86	904	57.8	64	667	68.6				64.0	100.0		
17	90	938	56.1	56	598	71.4				56.0	100.0		
18	113	1206	50.2	54	567	77.7	1.6	17.2	63.5	54.0	100.0		
19	137	1440	50.7	80	854	67.3				80.0	100.0		
20	54	576	73.8	46	476	76.3				44.0	95.7	8.3	86
21	95	982	63.0	70	724	74.5				60.0	85.7		
22	112	1158	67.0	82	834	68.7				78.0	95.1	20.0	203
23	143	1455	54.9	70	730	76.8				70.0	100.0		
24	108	1126	56.3	72	763	68.4				72.0	100.0		
25	109	1155	52.0	92	990	54.5	1.8	19.2	63.6	92.0	100.0		
26	142	1528	46.0	104	1136	45.3				102.0	98.1	19.5	213
27	158	1726	39.9	90	841	69.0				76.0	84.4		
28	119	1112	47.8	92	905	72.0				76.0	82.6	19.0	187
29	101	994	54.3	76	748	54.8				70.0	92.1		
30	95	935	63.7	62		66.3				56.0	90.3		
31													
TL		34096			20116			77.9					1541
ME	109	1137	53.0	66	671	67.9	1.8	19.5	55.5	1844.0	92.8	18.3	193

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION

DEQ

Discharge Number	Permit Number
001 A	MI 002 3540

DAILY DISCHARGE MONITORING REPORT

Monitoring Period
November 2002

DAY	$CBOD_5$			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS	NH3-N		PH	D.O.	F.COLI #/100ml	CL RESID	
	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	mg/l	LBS	SU	mg/l	MF	mg/l	
1	6.4	69	97.1	3.0	32	98.8				3.0	2.34	25.18	7.40	6.8	12	0.000	
2	4.6	46	97.7	1.0	10	99.5				1.0			7.50	7.7	60	0.000	
3	4.4	43	97.9	1.0	10	99.5				1.0			7.60	7.8	600	0.000	
4	3.5	37	98.4	6.0	64	96.9	0.35	3.7	90.7	6.0			7.40	7.1	29	0.000	
5	6.4	68	96.5	4.0	42	97.4				4.0	9.25	97.97	7.40	6.6	6	0.000	
6	9.5	101	95.3	7.0	75	94.9				7.0			7.50	6.5	14	0.000	
7	8.5	89	96.7	8.0	84	96.3				7.0			7.50	6.6	5	0.000	
8	5.6	57	97.1	6.0	62	92.7				6.0			7.40	6.4	10	0.000	
9	5.7	60	97.9	7.0	74	96.8				7.0			7.40	6.3	8	0.000	
10	3.5	36	98.5	6.0	62	97.4				6.0			7.40	6.5	3	0.000	
11	6.5	71	97.2	2.0	22	98.6	0.32	3.5	91.2	2.0			7.40	6.6	15	0.000	
12	9.7	104	95.9	8.0	85	96.6				6.0	21.30	227.38	7.40	6.5	60	0.000	
13	5.9	63	97.0	8.0	85	95.9				8.0			7.50	6.6	240	0.000	
14	4.0	43	98.2	2.0	22	99.1				2.0			7.40	6.0	21	0.000	
15	2.9	30	98.5	3.0	32	98.5				3.0	10.40	109.29	7.50	7.1	4	0.000	
16	4.9	51	97.6	2.0	21	99.0				2.0			7.40	7.5	6	0.000	
17	5.1	53	97.5	1.0	10	99.5				1.0			7.50	7.3	6	0.000	
18	4.9	52	97.8	2.0	21	99.2				12.0			7.50	7.2	6	0.000	
19	9.5	100	96.6	12.0	126	95.1	0.24	2.5		22.0			7.50	6.9	120	0.000	
20	11.6	124	94.4	29.0	310	85.1				10.0	17.90	191.09	7.50	6.1	600	0.000	
21	7.2	74	97.2	10.0	103	96.4				9.0			7.40	5.6	21	0.000	
22	4.2	43	98.8	9.0	93	96.6				9.0	13.20	136.51	7.50	7.3	12	0.000	
23	7.7	78	97.6	9.0	92	97.0				6.0			7.50	7.0	6	0.000	
24	6.0	63	97.6	6.0	63	97.4				7.0			7.50	6.7	118	0.000	
25	6.3	67	97.2	7.0	74	96.5	0.14	1.5	97.1	12.0			7.50	6.9	14	0.000	
26	10.0	108	96.2	12.0	129	93.7				12.0	14.80	159.23	7.50	7.3	12	0.000	
27	10.4	114	96.0	39.0	426	86.6				30.0			7.50	6.8	120	0.000	
28	11.3	106	95.0	37.0	346	88.7				31.0	19.70	184.01	7.40	6.3	240	0.000	
29	6.4	63	97.1	12.0	118	92.9				12.0			7.50	7.4	21	0.000	
30	5.7	56	97.8	10.0	98	94.6				10.0			7.50	8.1	14	0.000	
31																	
TL		2070			2790			11.3									
ME	6.6	69	97.1	9.0	93	95.9	0.26	2.8	69.8	254.0	13.61	141.33		6.9	23	0.000	
WA	8.4	85		19.5	199										41		
MX											21.30	227.38	7.60				
MN													7.40	5.6			

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 Years)

PRINTED NAME AND TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTORIZED AGENT	DATE
Steven D. Washburn. Superintendent		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

ACTIVATED SLUDGE SHEET

November 2002

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	AERATION SYSTEM				MIXED LIQUOR								SECONDARY SLUDGE				
	AERTN VOL	DETEN TIME	CRT	F:M RATIO	MLSS		MLVSS		SETTL.	SDI	D.O.	AIR	SS	VSS	RAS FLOW	WAS	
	KCF	HRS	DAYS		mg/L	Lbs.	mg/L	Lbs.	%	%	mg/L	CF	%	%	%	Gallons	Lbs.
SF	3											4				3	
1	48	6.7	3.1	0.24	1892	5665	1578	4725	55	0.34	7.16	69	0.39	0.34	117	56	1821
2	48	7.2			1811	5423					6.35	69			123	58	
3	48	7.4			1769	5297					6.53	67			119	60	
4	48	6.8	4.1	0.22	1626	4869	1366	4090	62	0.26	4.34	68	0.23	0.20	116	62	1189
5	48	6.8	3.8	0.37	1589	4758	1315	3938	50	0.32	2.68	61	0.24	0.20	116	63	1261
6	48	6.7	4.2	0.42	1561	4674	1313	3932	65	0.24	0.19	55	0.23	0.19	121	58	1113
7	48	6.8	4.8	0.26	1678	5025	1415	4237	72	0.23	0.96	54	0.23	0.20	125	55	1055
8	48	7.0	4.8	0.23	1677	5022	1420	4252	71	0.24	2.94	49	0.22	0.19	122	57	1046
9	48	6.8			1638	4905					3.92	48			117	58	
10	48	7.0			1619	4848					3.76	48			120	58	
11	48	6.6	4.6	0.34	1537	4602	1321	3956	65	0.24	2.15	51	0.22	0.19	114	54	991
12	48	6.7	5.1	0.37	1560	4671	1338	4006	46	0.34	2.58	54	0.21	0.18	111	52	911
13	48	6.7	4.7	0.30	1659	4968	1423	4261	70	0.24	2.78	52	0.24	0.21	113	53	1061
14	48	6.7	4.2	0.21	1740	5210	1489	4459	70	0.25	2.90	52	0.28	0.24	114	53	1238
15	48	6.8	5.3	0.19	1687	5052	1451	4345	67	0.25	4.14	56	0.22	0.19	116	52	954
16	48	6.8			1670	5001					6.01	59			116	53	
17	48	6.9			1684	5043					4.13	59			114	54	
18	48	6.7	5.1	0.30	1579	4728	1361	4075	48	0.33	3.58	56	0.21	0.18	108	53	928
19	48	6.8	4.2	0.34	1645	4926	1425	4267	56	0.29	2.31	53	0.27	0.24	110	52	1171
20	48	6.7	4.7	0.13	1635	4896	1433	4291	60	0.27	0.11	52	0.24	0.21	108	52	1041
21	48	6.9	3.7	0.21	1779	5327	1555	4656	52	0.34	0.30	54	0.31	0.27	119	56	1448
22	48	6.9	4.0	0.26	1687	5053	1474	4414	43	0.39	4.28	55	0.24	0.21	127	63	1261
23	48	7.1			1746	5228					4.30	55			128	63	
24	48	6.9			1771	5303					1.71	55			126	63	
25	48	6.8	3.7	0.25	1715	5135	1516	4540	32	0.54	3.34	55	0.27	0.23	124	62	1396
26	48	6.7	3.9	0.34	1704	5102	1488	4456	28	0.61	5.34	58	0.26	0.22	127	61	1323
27	48	6.6	3.7	0.38	1767	529	1519	4548	27	0.65	3.94	58	0.27	0.23	126	64	1441
28	48	7.7			1778	5329					1.98	55			145	64	
29	48	7.3			1669	4998					4.61	54			133	64	
30	48	7.3			1614	4833					6.26	56			133	59	
31	48																
TL												1687				1732	22648
ME	48	6.9	4.3	0.28	1683	5039	1432	4287	55	0.3	3.5	56	0.25	0.22	120	58	1192

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

BIOSOLIDS SHEET

Marshall

MI 002 3540

November 2002

SUPERINTENDENT
Steven D. Washburn

	RAW SLUDGE	RAW BIOSOLIDS			LIME STABILIZED BIOSOLIDS					
DAY	GALLONS	TOTAL SOLIDS %	VOLATILE SOLIDS %	pH SU	LIME POUNDS	pH 2 hrs @ 25 C SU	RDT Solids %	Lbs. Lime per 1000 gallons biosolids		
1	10000	3.4	75.0	6.1		12.2				
2	10000	3.1	74.0	6.1						
3	10200	3.3	75.0	6.1						
4	10000	3.0	75.0	6.0						
5	14000	3.3	76.0	6.0	2800		10.8	200		
6	10000	3.2	75.0	6.1	2576		8.3	258		
7	10000	3.1	74.0	6.1		12.2				
8	11000	3.0	76.0	6.2						
9	10000	2.6	76.0	6.1						
10	10000	3.3	76.0	6.0						
11	10500	3.3	76.0	6.2						
12	15000	2.9	75.0	6.2	2576		13.4	172		
13	12500	2.3	75.0	6.3	2464		11.4	197		
14	10000	2.6	74.0	6.3		12.2				
15	10000	2.5	75.0	6.4						
16	10000	2.5	75.0	6.2						
17	12000	3.2	74.0	6.2						
18	14500	3.4	74.0	6.3						
19	12000	3.2	73.0	6.3	1540		10.7	128		
20	14500	2.8	74.0	6.2	2016		12.2	139		
21	10000	3.1	73.0	6.2		12.2				
22	10000	2.9	75.0	6.3						
23	10000	2.5	76.0	6.3						
24	5600	3.2	75.0	6.4						
25	15750	3.1	75.0	6.2						
26	10000	3.7	75.0	6.3	2576		10.0	258		
27	10000	3.3	74.0	6.3	1708		10.0	171		
28	12000	3.2	75.0	6.2		12.2				
29	10000	3.3	74.0	6.3						
30	10000	3.0	76.0	6.5						
31										
TOTAL	329550				18256					
MEAN	10985	3.0	74.8	6.2	2282	12.2	10.9	190		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MISCELLANEOUS SHEET

November 2002

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	WATER	ELECTRICAL USAGE		FUEL GAS		CHEMICALS APPLIED								
			X 120		X 100	$FECL_3$					Cl_2		SO_2	
	CF	METER	KWH	METER	CF	GALS	SP. GR.	% SOLN	LBS	mg/L	LBS	mg/L	LBS	mg/L
1	450	13	1560	15	1500	100.0	1.4060	30	351.8	32.7	18.0	1.7	12.0	1.1
2	510	16	1920	18	1800	125	1.4060	30	439.7	43.9	18	1.8	12.0	1.2
3	810	15	1800	14	1400	100	1.4060	30	351.8	36.1	17	1.7	12.0	1.2
4	540	16	1920	16	1600	100	1.4060	30	351.8	33.2	20	1.9	11.0	1.0
5	1870	16	1920	19	1900	125	1.4060	30	439.7	41.5	19	1.8	12.0	1.1
6	1840	17	2040	18	1800	100	1.4060	30	351.8	33.0	20	1.9	11.0	1.0
7	430	14	1680	10	1000	100	1.4060	30	351.8	33.5	19	1.8	20.0	1.9
8	690	14	1680	8	800	100	1.4060	30	351.8	34.3	16	1.6	9.0	0.9
9	500	14	1680	4	400	100	1.4060	30	351.8	33.5	18	1.7	9.0	0.9
10	500	15	1800	4	400	100	1.4060	30	351.8	34.3	17	1.7	13.0	1.3
11	550	15	1800	9	900	100	1.4060	30	351.8	32.2	5	0.5	4.0	0.4
12	2040	17	2040	12	1200	100	1.4060	30	351.8	33.0	11	1.0	9.0	0.8
13	1700	15	1800	11	1100	100	1.4060	30	351.8	33.0	17	1.6	10.0	0.9
14	440	16	1920	10	1000	100	1.4060	30	351.8	32.7	17	1.6	11.0	1.0
15	480	15	1800	22	2200	100	1.4060	30	351.8	33.5	20	1.9	12.0	1.1
16	490	16	1920	25	2500	75	1.4060	30	263.8	25.1	18	1.7	13.0	1.2
17	480	15	1800	23	2300	125	1.4060	30	439.7	42.2	18	1.7	13.0	1.2
18	420	15	1800	21	2100	100	1.4060	30	351.8	33.0	15	1.4	12.0	1.1
19	1970	16	1920	12	1200	200	1.4060	30	703.6	67.0	13	1.2	12.0	1.1
20	3180	16	1920	15	1500	100	1.4060	30	351.8	33.0	12	1.1	13.0	1.2
21	410	15	1800	15	1500	100	1.4060	30	351.8	34.0	24	2.3	20.0	1.9
22	500	15	1800	24	2400	200	1.4060	30	703.6	68.0	23	2.2	13.0	1.3
23	500	15	1800	19	1900	125	1.4060	30	439.7	43.2	22	2.2	15.0	1.5
24	700	15	1800	19	1900	125	1.4060	30	439.7	42.2	23	2.2	15.0	1.4
25	470	15	1800	22	2200	100	1.4060	30	351.8	33.2	22	2.1	16.0	1.5
26	1890	16	1920	30	3000	100	1.4060	30	351.8	32.7	21	2.0	15.0	1.4
27	1540	17	2040	25	2500	100	1.4060	30	351.8	32.2	19	1.7	15.0	1.4
28	530	16	1920	33	3300	100	1.4060	30	351.8	37.7	24	2.6	20.0	2.1
29	510	15	1800	26	2600	100	1.4060	30	351.8	35.7	21	2.1	18.0	1.8
30	470	14	1680	70	7000	200	1.4060	30	703.6	71.5	22	2.2	21.0	2.1
31														
TL	27410	459	55080	569	56900	3400					549		398.0	
ME	914	15	1836	19	1897	113	1.4060	30.0	398.7	38.4	18.3	1.8	13.3	1.3

MANPOWER	
POSITION TITLE	NUMBER FULL TIME
SUPERINTENDANT	1
ASST. SUPT.	1
OPERATOR	3
MECHANIC	
CHEMIST	
LAB TECH	
IPP COORDINATOR	1
OTHER	

GIVE THE HOURS PER DAY THAT PLANT PERSONNEL ARE NORMALLY AT THE PLANT.

WEEKDAYS	8	HRS
SATURDAYS	8	HRS
SUNDAYS	8	HRS
HOLIDAYS	8	HRS

Weather Code
1. Clear
2. Partly Cloudy
3. Cloudy
4. Rain
5. Snow
6. Warm
7. Cold
8. Windy
9. Melting Snow

PLANT INFLUENT SHEET

December 2002

Marshall

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

MI 002 3540

SUPERINTENDENT
Steven D. Washburn

D	WEATHER		FLOW		RAW SEWAGE QUALITY									
A	TYPE	PRECIP	TOTAL	MAX	TEMP	pH	BOD_5		SS		TOTAL-P		VSS	NH3-N
Y	CODE	Inches	MGD	MGD	°F	SU	mg/l	LBS	mg/l	LBS	mg/l	LBS	mg/l	mg/l
1	2		1.220		49	7.70	240	2442	190	1933			172	16.1
2	5	0.24	1.270		49	7.80	227	2404	370	3919			354	
3	1		1.330		54	7.60	330	3660	142	1575			122	
4	1		1.300		52	7.70	252	2732	282	3057	4.94	54	250	19.1
5	1		1.270		51	8.50	310	3283	210	2224			190	
6	1		1.240		50	7.70	245	2534	218	2254			206	
7	1		1.230		50	7.70	250	2565	292	2995			272	
8	1		1.190		55	7.70	212	2104	212	2104			198	15.8
9	1		1.280		49	7.70	213	2274	274	2925			260	
10	1		1.280		49	7.50	207	2210	189	2018			172	
11	1		1.260		47	7.70	254	2669	238	2501	5.03	53	222	
12	1		1.230		49	7.70	277	2842	278	2852			248	
13	1		1.210		49	7.80	301	3038	186	1877			174	20.5
14	1		1.210		49	7.70	257	2593	274	2765			258	
15	1		1.150		47	7.80	205	1966	200	1918			188	17.2
16	1		1.240		48	7.70	209	2161	226	2337			206	
17	4	0.07	1.270		49	7.70	241	2553	172	1822			162	
18	4	0.14	1.240		48	7.70	257	2658	204	2110	4.92	51	186	18.0
19	4	0.38	1.260		49	8.40	242	2543	140	1471			136	
20	5	0.09	1.230		49	7.70	170	1744	168	1723			162	
21	1		1.210		48	7.80	242	2442	376	3794			356	
22	1		1.150		47	7.80	199	1909	154	1477			140	16.8
23	1		1.340		47	7.90	224	2503	160	1788	4.69	52	142	
24	5	0.41	1.170		47	7.80	198	1932	177	1727			154	
25	1		1.030		47	7.70	157	1349	158	1357			152	
26	1		1.250		47	7.70	226	2356	206	2148	3.86	40	192	17.8
27	1		1.210		47	7.80	222	2240	188	1897			176	
28	1		1.120		47	7.80	264	2466	238	2223			222	
29	1		1.120		47	7.70	215	2008	172	1607			160	16.3
30	4	0.02	1.330		47	7.70	197	2185	172	1908	4.21	47	154	
31	1		1.210		47	7.90	242	2442	184	1857			169	
TL		1.35	38.050					74807		68165		297		
ME			1.227		48.7		235	2413	215	2199	4.61	49	189	17.5

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

PRIMARY EFFLUENT SHEET

December 2002

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

	PRIMARY EFFLUENT QUALITY												
DAY	BOD-5			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS		AMMONIA NITROGEN	
	mg/l	LBS	Removal	mg/l	LBS	% Removal	mg/l	LBS	% Removal	mg/l	%	mg/l	LBS
1	93	946	61.3	56	570	70.5				52.0	92.9	16.8	171
2	88	932	61.2	48	532	87.0				42.0	87.5		
3	202	2241	38.8	94	1019	33.8				72.0	76.6		
4	163	1767	35.3	100	1059	64.5	2.0	21.2	59.5	86.0	86.0	18.8	199
5	167	1769	46.1	60	620	71.4				50.0	83.3		
6	136	1406	44.5	70	718	67.9				70.0	100.0		
7	117	1200	53.2	60	595	79.5				60.0	100.0		
8	105	1042	50.5	66	705	68.9				62.0	93.9	16.1	172
9	94	1003	55.9	72	769	73.7				62.0	86.1		
10	136	1452	34.3	108	1135	42.9				98.0	90.7		
11	136	1429	46.5	94	964	60.5	2.5	25.2	51.1	90.0	95.7		
12	121	1241	56.3	68	686	75.5				62.0	91.2		
13	167	1685	44.5	68	686	63.4				68.0	100.0	21.6	218
14	119	1201	53.7	68	652	75.2				68.0	100.0		
15	104	997	49.3	52	538	74.0				52.0	100.0	17.2	178
16	98	1013	53.1	42	445	81.4				34.0	81.0		
17	151	1599	37.3	62	641	64.0				52.0	83.9		
18	172	1779	33.1	54	567	73.5	2.3	23.7	54.1	46.0	85.2	18.4	193
19	161	1692	33.5	26	267	81.4				22.0	84.6		
20	147	1508	13.5	60	605	64.3				54.0	90.0		
21	225	2271	7.0	52	499	86.2				48.0	92.3		
22	143	1372	28.1	44	492	71.4				28.0	63.6	16.9	189
23	164	1833	26.8	76	742	52.5	3.9	38.4	16.0	62.0	81.6		
24	132	1288	33.3	68	584	61.6				60.0	88.2		
25	95	816	39.5	64	667	59.5				60.0	93.8		
26	124	1293	45.1	84	848	59.2	2.9	29.4	24.6	78.0	92.9	19.8	200
27	129	1302	41.9	90	841	52.1				88.0	97.8		
28	117	1093	55.7	70	654	70.6				70.0	100.0		
29	110	1027	48.8	62	688	64.0				62.0	100.0	17.6	195
30	157	1741	20.3	104	1050	39.5	3.5	35.1	17.3	96.0	92.3		
31	184	1857	24.0	104	33003	43.5				94.0	90.4		
TL		42797			53841			173.1					1715
MF	137	1413	41.0	69	1737	65.6	2.8	28.8	37.1	1948.0	90.4	18.1	191

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION

DEQ

Discharge Number	Permit Number
001 A	MI 002 3540

DAILY DISCHARGE MONITORING REPORT

Monitoring Period: December 2002

DAY	CBOD			SUSPENDED SOLIDS			TOTAL PHOSPHORUS			VSS	NH3-N		PH	D.O.	F.COLI	CL. RESID
	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	LBS	% REM	mg/l	mg/l	LBS	SU	mg/l	#/100ml MF	mg/l
1	4.9	50	98.0	4.0	41	97.9				4.0	14.00	142.45	7.60	9.0	12	0.009
2	4.3	46	98.1	3.0	32	99.2				3.0			7.60	8.4	20	0.000
3	6.3	70	98.1	8.0	89	94.4				6.0			7.50	8.2	38	0.000
4	13.5	146	94.6	29.0	314	89.7	0.33	3.6	93.3	24.0	16.00	173.47	7.40	8.7	146	0.000
5	10.5	111	96.6	33.0	350	84.3				25.0			7.40	6.7	420	0.000
6	11.1	115	95.5	32.0	331	85.3				32.0			7.50	6.1	165	0.000
7	13.3	136	94.7	29.0	297	90.1				28.0			7.50	6.6	42	0.000
8	13.4	133	93.7	22.0	218	89.6				20.0	13.60	134.97	7.40	6.5	124	0.000
9	11.4	122	94.6	13.0	139	95.3				11.0			7.50	7.2	8	0.000
10	13.7	146	93.4	27.0	288	85.7				24.0			7.50	7.0	90	0.000
11	13.2	139	94.8	41.0	431	82.8	0.65	6.8	87.1	38.0			7.50	5.5	90	0.000
12	14.5	149	94.8	34.0	349	87.8				30.0			7.40	5.9	420	0.000
13	13.1	132	95.6	36.0	363	80.6				36.0	24.60	248.25	7.50	5.6	420	0.000
14	16.9	171	93.4	43.0	434	84.3				41.0			7.50	6.2	420	0.000
15	16.3	156	92.0	27.0	259	86.5				27.0	14.80	141.95	7.40	6.4	128	0.000
16	17.3	179	91.7	16.0	165	92.9				8.0			7.50	6.7	5	0.000
17	14.1	149	94.1	24.0	254	86.0				22.0			7.50	6.6	24	0.000
18	23.4	242	90.9	36.0	372	82.4	1.03	10.7	79.1	32.0	15.70	162.36	7.40	6.0	270	0.000
19	20.6	216	91.5	49.0	515	65.0				42.0			7.40	5.6	420	0.000
20	21.3	218	87.5	26.0	267	84.5				22.0			7.30	6.0	420	0.000
21	19.8	200	91.8	24.0	242	93.6				18.0			7.30	6.5	470	0.000
22	19.8	190	90.1	31.0	297	79.9				24.0	14.90	142.91	7.20	7.0	420	0.000
23	20.0	224	91.1	28.0	313	82.5	0.47	5.3	90.0	22.0			7.20	7.1	420	0.000
24	17.2	168	91.3	14.0	137	92.1				12.0			7.20	5.9	68	0.000
25	16.0	137	89.8	16.0	137	89.9				14.0			7.60	8.3	10	0.000
26	13.4	140	94.1	23.0	240	88.8	0.66	6.9	82.9	21.0	15.40	160.55	7.50	8.9	20	0.000
27	9.0	91	95.9	16.0	161	91.5				15.0			7.50	7.7	26	0.000
28	9.7	91	96.3	16.0	149	93.3				16.0			7.50	7.5	29	0.000
29	8.2	77	96.2	12.0	112	93.0				12.0	15.40	143.85	7.50	8.0	11	0.000
30	9.9	110	95.0	20.0	222	88.4	0.56	6.2	86.7	17.0			7.50	7.8	23	0.000
31	6.8	69	97.2	11.0	111	94.0				8.0			7.40	6.7	8	0.000
TL		4321			7630			39.4								
ME	13.6	139	93.9	24.0	246	88.1	0.62	6.6	86.5	654.0	16.04	161.19		7.0	71	0.000
WA	20.3	218		33.0	338										309	
MX											24.60	248.25	7.60			0.009
MN			87.5			65.0							7.2	5.5		

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 Years)

PRINTED NAME AND TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTORIZED AGENT	DATE
Steven D. Washburn, Superintendent		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

ACTIVATED SLUDGE SHEET

December 2002

Marshall

MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	AERATION SYSTEM				MIXED LIQUOR								SECONDARY SLUDGE				
	AERTN VOL	DETEN TIME	CRT	F:M RATIO	MLSS		MLVSS		SETTL.	SDI	D.O.	AIR	SS	VSS	RAS FLOW	WAS	
	KCF	HRS	DAYS		mg/L	Lbs.	mg/L	Lbs.	%	%	mg/L	CF	%	%	%	Gallons	Lbs.
SF	3											4				3	
1	48	7.1			1511	4525					6.27	56			1.29	50	
2	48	6.8	6.5	0.25	1476	4420	1269	3800	28	0.53	4.06	59	0.21	0.18	1.27	39	683
3	48	6.5	7.0	0.58	1508	4516	1289	3860	25	0.60	6.19	87	0.22	0.19	1.24	35	642
4	48	6.6	5.7	0.46	1531	4584	1297	3884	28	0.55	1.59	77	0.30	0.25	1.24	32	801
5	48	6.8	6.9	0.33	2082	6234	1777	5321	30	0.69	0.20	60	0.30	0.25	1.30	36	901
6	48	6.9	5.7	0.27	2043	6118	1769	5297	43	0.48	0.48	59	0.27	0.24	1.31	48	1081
7	48	7.0			2022	6055					0.12	57			1.35	56	
8	48	7.2			1920	5749					2.60	59			1.39	63	
9	48	6.7	3.5	0.23	1699	5087	1477	4423	40	0.42	3.25	61	0.26	0.23	1.25	67	1453
10	48	6.7	2.9	0.34	1631	4884	1421	4255	34	0.48	2.99	55	0.28	0.24	1.27	73	1705
11	48	6.8	3.5	0.33	1649	4938	1426	4270	25	0.66	1.62	56	0.23	0.20	1.32	73	1400
12	48	7.0	3.1	0.29	1629	4878	1413	4231	23	0.71	1.75	54	0.24	0.20	1.35	78	1561
13	48	7.1	5.1	0.42	1518	4545	1330	3983	21	0.72	2.13	51	0.19	0.17	1.37	56	887
14	48	7.1			1525	4566					0.30	52			1.32	38	
15	48	7.5			1603	4800					1.92	51			1.44	25	
16	48	6.9	61.5	0.24	1576	4719	1384	4144	30	0.53	2.84	59	0.23	0.20	1.33	4	77
17	48	6.8		0.35	1766	5288	1543	4620	35	0.50	0.20	59	0.24	0.21	1.31	0	
18	48	6.9		0.33	2050	6139	1780	5330	40	0.51	0.60	51	0.29	0.26	1.31	0	
19	48	6.8		0.28	2305	6902	2017	6040	39	0.59	0.12	53	0.33	0.29	1.32	0	
20	48	7.0		0.24	2365	7082	2075	6213	76	0.31	0.24	59	0.33	0.29	1.35	0	
21	48	7.1			2545	7621					0.23	60			1.37	0	
22	48	7.5			2783	8333					0.40	60			1.44	0	
23	48	6.4	30.6	0.25	2990	8953	2460	7366	85	0.35	4.51	99	0.39	0.33	1.14	9	293
24	48	7.4	12.8	0.16	3384	10133	2756	8253	75	0.45	7.62	124	0.50	0.41	1.26	19	792
25	48	8.4			2722	8151					8.64	124			1.43	23	
26	48	6.9	8.8	0.16	3275	9807	2668	7989	92	0.36	5.74	76	0.43	0.36	1.18	31	1112
27	48	7.1	7.4	0.17	3113	9322	2534	7588	70	0.44	5.74	74	0.43	0.35	1.21	35	1255
28	48	7.7			3073	9202					5.53	59			1.31	35	
29	48	7.7			2869	8591					5.82	56			1.31	31	
30	48	6.5	8.4	0.25	2745	8220	2281	6830	59	0.47	5.56	56	0.45	0.38	1.17	26	976
31	48	7.1	10.7	0.26	2875	8609	2375	7112	53	0.54	0.34	105	0.44	0.37	1.29	22	807
TL												2068				1004	16426
ME	48	7.0	11.2	0.30	2187	6547	1826	5467	45	0.5	2.9	67	0.31	0.27	1.30	32	966

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

BIOSOLIDS SHEET

Marshall

MI 002 3540

December 2002

SUPERINTENDENT
Steven D. Washburn

	RAW SLUDGE	RAW BIOSOLIDS			LIME STABILIZED BIOSOLIDS					
DAY	GALLONS	TOTAL SOLIDS %	VOLATILE SOLIDS %	pH SU	LIME POUNDS	pH 2 hrs @ 25 C SU	RDT Solids %	Lbs. Lime per 1000 gallons biosolids		
1	13300	3.5	75.0	6.3						
2	10000	3.1	76.0	6.4						
3	11200	3.0	76.0	6.4	2520		8.5	225		
4	10000	3.5	86.0	6.0	2275		12.1	228		
5	10000	3.0	74.0	6.3		12.2				
6	12000	3.3	77.0	6.3						
7	10000	2.5	76.0	6.5						
8	10300	3.3	77.0	6.3						
9	10000	3.6	75.0	6.2						
10	10000	3.3	75.0	6.4	2730		8.6	273		
11	16000	3.0	77.0	6.4	2380		9.2	149		
12	9000	2.9	75.0	6.5		12.3				
13	10000	3.0	78.0	6.4						
14	10000	3.3	75.0	6.2						
15	10000	3.9	76.0	6.2						
16	10000	3.4	77.0	6.3						
17	10000	2.6	76.0	6.7	2485		8.8	249		
18	10000	4.3	58.0	6.2	2555		9.0	256		
19	9000	0.6	75.0	6.9		12.2				
20	3000	2.7	77.0	6.6						
21	7500	2.7	73.0	6.3						
22	3000	3.8	74.0	6.3						
23	4300	4.1	79.0	6.0						
24	5000	5.8	78.0	6.2						
25	10000	3.6	78.0	6.3						
26	6000	2.3	78.0	6.4						
27	6000	3.3	78.0	6.3						
28	6000	3.7	78.0	6.3						
29	9375	3.7	76.0	6.3						
30	9000	3.0	76.0	6.4	2730		8.3	303		
31	8000	3.3	76.0	6.2	2660		8.4	333		
TOTAL	277975				20335					
MEAN	8967	3.3	76.0	6.3	2542	12.2	9.1	252		

City of Marshall
801 Industrial Rd.
Marshall, MI 49068

MISCELLANEOUS SHEET

December 2002

Marshall
MI 002 3540

STATE OF MICHIGAN
DEPT OF ENVIRONMENTAL QUALITY

SUPERINTENDENT
Steven D. Washburn

DAY	WATER	ELECTRICAL USAGE		FUEL GAS		CHEMICALS APPLIED									
			X 120		X 100	$FECL_3$					Cl_2		SO_2		
	CF	METER	KWH	METER	CF	GALS	SP. GR.	% SOLN	LBS	mg/L	LBS	mg/L	LBS	mg/L	
1	510	15	1800	30	3000	100.0	1.4060	30	351.8	34.6	17.0	1.7	11.0	1.1	
2	450	16	1920	38	3800	125	1.4060	30	439.7	41.5	20	1.9	13.0	1.2	
3	1860	18	2160	51	5100	100	1.4060	30	351.8	31.7	19	1.7	13.0	1.2	
4	1480	18	2160	39	3900	100	1.4060	30	351.8	32.4	19	1.8	14.0	1.3	
5	520	16	1920	20	2000	100	1.4060	30	351.8	33.2	19	1.8	14.0	1.3	
6	530	16	1920	32	3200	100	1.4060	30	351.8	34.0	19	1.8	16.0	1.5	
7	460	16	1920	31	3100	125	1.4060	30	439.7	42.9	27	2.6	20.0	1.9	
8	510	16	1920	38	3800	125	1.4060	30	439.7	44.3	27	2.7	19.0	1.9	
9	450	16	1920	36	3600	100	1.4060	30	351.8	33.0	26	2.4	19.0	1.8	
10	1910	18	2160	31	3100	100	1.4060	30	351.8	33.0	26	2.4	14.0	1.3	
11	1740	17	2040	35	3500	100	1.4060	30	351.8	33.5	24	2.3	18.0	1.7	
12	540	16	1920	15	1500	100	1.4060	30	351.8	34.3	14	1.4	18.0	1.8	
13	580	15	1800	24	2400	100	1.4060	30	351.8	34.9	1	0.1	18.0	1.8	
14	570	15	1800	42	4200	75	1.4060	30	263.9	26.1	28	2.8	24.0	2.4	
15	600	16	1920	42	4200	100	1.4060	30	351.8	36.7	31	3.2	25.0	2.6	
16	420	16	1920	28	2800	100	1.4060	30	351.8	34.0	27	2.6	20.0	1.9	
17	1740	17	2040	36	3600	100	1.4060	30	351.8	33.2	28	2.6	23.0	2.2	
18	1560	16	1920	28	2800	75	1.4060	30	263.9	26.5	25	2.4	21.0	2.0	
19	670	14	1680	11	1100	100	1.4060	30	351.8	33.5	35	3.3	22.0	2.1	
20	590	15	1800	22	2200	100	1.4060	30	351.8	34.3	31	3.0	23.0	2.2	
21	480	15	1800	31	3100	200	1.4060	30	703.6	69.7	29	2.9	23.0	2.3	
22	550	15	1800	35	3500	125	1.4060	30	439.7	46.8	31	3.2	23.0	2.4	
23	570	20	2400	31	3100	125	1.4060	30	439.7	39.3	33	3.0	23.0	2.1	
24	690	21	2520	48	4800	75	1.4060	30	263.9	27.0	30	3.1	19.0	1.9	
25	500	22	2640	51	5100	50	1.4060	30	175.9	20.5	31	3.6	25.0	2.9	
26	390	15	1800	46	4600	50	1.4060	30	175.9	16.9	30	2.9	23.0	2.2	
27	420	16	1920	48	4800	100	1.4060	30	351.8	34.9	30	3.0	24.0	2.4	
28	470	16	1920	30	3000	50	1.4060	30	175.9	18.8	28	3.0	23.0	2.5	
29	530	15	1800	29	2900	100	1.4060	30	351.8	37.7	33	3.5	23.0	2.5	
30	1820	18	2160	14	1400	50	1.4060	30	175.9	16.9	34	3.1	20.0	1.8	
31	1740	22	2640	35	3500	100	1.4060	30	351.8	34.9	33	3.3	22.0	2.2	
TL	25850	517	62040	1027	102700	3050					805		613.0		
ME	834	17	2001	33	3313	98	1.4060	30.0	346.1	33.8	26.0	2.6	19.8	1.9	

MANPOWER

POSITION TITLE	NUMBER FULL TIME	
SUPERINTENDANT	1	
ASST. SUPT.	1	
OPERATOR	3	
MECHANIC		
CHEMIST		
LAB TECH		
IPP COORDINATOR	1	
OTHER		
GIVE THE HOURS PER DAY THAT PLANT PERSONNEL ARE NORMALLY AT THE PLANT.		
WEEKDAYS	8	HRS
SATURDAYS	8	HRS
SUNDAYS	8	HRS
HOLIDAYS	8	HRS