

**Operating & Maintenance Cost Summary
Munster Hamlet Wastewater Treatment Facility
Northern Watertek Treatment Technology**

Year	Operating Labour (1) \$/yr	Environmental Requirements (1) \$/yr	Elect. Power (2,3) \$/yr	Utilities Water (3) \$/yr	Alum + polymer(3) \$/yr	Solids Treatment (3) \$/yr	O&M Munster Pumping Station (1) \$/yr	Maintenance Labour/Material Allowance (1) \$/yr	Site Maintenance (1) \$/yr	Total Annual O&M \$/yr	Total PW Annual O&M (4) \$/yr
1	18,000	14,700	39,200	1,000	nil	nil	20,000.00	36,400	5,000	134,300	134,300
2	18,270	14,921	39,396	1,005			20,300	36,946	5,075	135,913	127,021
3	18,544	15,144	39,593	1,010			20,605	37,500	5,151	137,547	120,139
4	18,822	15,371	39,791	1,015			20,914	38,063	5,228	139,204	113,632
5	19,105	15,602	39,990	1,020			21,227	38,634	5,307	140,884	107,480
6	19,391	15,836	40,190	1,025			21,546	39,213	5,386	142,588	101,663
7	19,682	16,074	40,391	1,030			21,869	39,801	5,467	144,314	96,163
8	19,977	16,315	40,593	1,036			22,197	40,398	5,549	146,065	90,962
9	20,277	16,559	40,796	1,041			22,530	41,004	5,632	147,839	86,044
10	20,581	16,808	41,000	1,046			22,868	41,619	5,717	149,639	81,393
11	20,890	17,060	41,205	1,051			23,211	42,244	5,803	151,463	76,996
12	21,203	17,316	41,411	1,056			23,559	42,877	5,890	153,312	72,837
13	21,521	17,576	41,618	1,062			23,912	43,521	5,978	155,187	68,905
14	21,844	17,839	41,826	1,067			24,271	44,173	6,068	157,088	65,186
15	22,172	18,107	42,035	1,072			24,635	44,836	6,159	159,016	61,669
16	22,504	18,378	42,245	1,078			25,005	45,508	6,251	160,970	58,343
17	22,842	18,654	42,456	1,083			25,380	46,191	6,345	162,951	55,197
18	23,184	18,934	42,669	1,088			25,760	46,884	6,440	164,960	52,222
19	23,532	19,218	42,882	1,094			26,147	47,587	6,537	166,997	49,408
20	23,885	19,506	43,096	1,099			26,539	48,301	6,635	169,062	46,747
21	24,243	19,799	43,312	1,105			26,937	49,026	6,734	171,156	44,230
22	24,607	20,096	43,528	1,110			27,341	49,761	6,835	173,279	41,849
23	24,976	20,397	43,746	1,116			27,751	50,507	6,938	175,432	39,597
24	25,351	20,703	43,965	1,122			28,168	51,265	7,042	177,615	37,467
25	25,731	21,014	44,185	1,127			28,590	52,034	7,148	179,828	35,452
26	26,117	21,329	44,406	1,133			29,019	52,814	7,255	182,072	33,547
27	26,509	21,649	44,628	1,138			29,454	53,607	7,364	184,348	31,744
28	26,906	21,974	44,851	1,144			29,896	54,411	7,474	186,656	30,039
29	27,310	22,303	45,075	1,150			30,344	55,227	7,586	188,995	28,425
30	27,720	22,638	45,300	1,156			30,800	56,055	7,700	191,368	26,899
31	28,135	22,977	45,527	1,161			31,262	56,896	7,815	193,774	25,456
32	28,557	23,322	45,755	1,167			31,731	57,750	7,933	196,214	24,090
33	28,986	23,672	45,983	1,173			32,206	58,616	8,052	198,688	22,798
34	29,421	24,027	46,213	1,179			32,690	59,495	8,172	201,197	21,575
35	29,862	24,387	46,444	1,185			33,180	60,387	8,295	203,741	20,419

36	30,310	24,753	46,676	1,191			33,678	61,293	8,419	206,320	19,325
37	30,765	25,124	46,910	1,197			34,183	62,213	8,546	208,937	18,289
38	31,226	25,501	47,144	1,203			34,696	63,146	8,674	211,590	17,310
39	31,694	25,884	47,380	1,209			35,216	64,093	8,804	214,280	16,383
40	32,170	26,272	47,617	1,215			35,744	65,054	8,936	217,008	15,506
41	32,652	26,666	47,855	1,221			36,280	66,030	9,070	219,775	14,677
42	33,142	27,066	48,094	1,227			36,825	67,021	9,206	222,581	13,892
43	33,639	27,472	48,335	1,233			37,377	68,026	9,344	225,426	13,149
44	34,144	27,884	48,577	1,239			37,938	69,046	9,484	228,312	12,446
45	34,656	28,302	48,819	1,245			38,507	70,082	9,627	231,239	11,781
46	35,176	28,727	49,064	1,252			39,084	71,133	9,771	234,207	11,151
47	35,703	29,158	49,309	1,258			39,671	72,200	9,918	237,217	10,556
48	36,239	29,595	49,555	1,264			40,266	73,283	10,066	240,269	9,992
49	36,783	30,039	49,803	1,270			40,870	74,383	10,217	243,365	9,459
50	37,334	30,490	50,052	1,277			41,483	75,498	10,371	246,505	8,954
51	37,894	30,947	50,302	1,283			42,105	76,631	10,526	249,689	8,476
52	38,463	31,411	50,554	1,290			42,736	77,780	10,684	252,918	8,024
53	39,040	31,882	50,807	1,296			43,377	78,947	10,844	256,194	7,596
54	39,625	32,361	51,061	1,303			44,028	80,131	11,007	259,516	7,192
55	40,220	32,846	51,316	1,309			44,689	81,333	11,172	262,885	6,808
56	40,823	33,339	51,573	1,316			45,359	82,553	11,340	266,302	6,446
57	41,435	33,839	51,831	1,322			46,039	83,791	11,510	269,767	6,102
58	42,057	34,346	52,090	1,329			46,730	85,048	11,682	273,282	5,777
59	42,688	34,862	52,350	1,335			47,431	86,324	11,858	276,847	5,470
60	43,328	35,385	52,612	1,342			48,142	87,619	12,036	280,463	5,179
61	43,978	35,915	52,875	1,349			48,864	88,933	12,216	284,131	4,903
62	44,638	36,454	53,139	1,356			49,597	90,267	12,399	287,850	4,643
63	45,307	37,001	53,405	1,362			50,341	91,621	12,585	291,623	4,396
64	45,987	37,556	53,672	1,369			51,096	92,996	12,774	295,450	4,162
65	46,677	38,119	53,940	1,376			51,863	94,390	12,966	299,331	3,941
66	47,377	38,691	54,210	1,383			52,641	95,806	13,160	303,268	3,731
67	48,087	39,271	54,481	1,390			53,430	97,243	13,358	307,261	3,533
68	48,809	39,860	54,754	1,397			54,232	98,702	13,558	311,311	3,346
69	49,541	40,458	55,027	1,404			55,045	100,183	13,761	315,420	3,168
70	50,284	41,065	55,302	1,411			55,871	101,685	13,968	319,587	3,000
71	51,038	41,681	55,579	1,418			56,709	103,211	14,177	323,813	2,841
72	51,804	42,306	55,857	1,425			57,560	104,759	14,390	328,100	2,690
73	52,581	42,941	56,136	1,432			58,423	106,330	14,606	332,449	2,547
74	53,370	43,585	56,417	1,439			59,300	107,925	14,825	336,860	2,412
75	54,170	44,239	56,699	1,446			60,189	109,544	15,047	341,335	2,284
76	54,983	44,902	56,982	1,454			61,092	111,187	15,273	345,873	2,163
77	55,807	45,576	57,267	1,461			62,008	112,855	15,502	350,477	2,049
78	56,645	46,260	57,554	1,468			62,938	114,548	15,735	355,147	1,940
79	57,494	46,954	57,841	1,476			63,882	116,266	15,971	359,884	1,838
80	58,357	47,658	58,131	1,483			64,841	118,010	16,210	364,689	1,740

81	59,232	48,373	58,421	1,490			65,813	119,780	16,453	369,563	1,648
82	60,120	49,098	58,713	1,498			66,800	121,577	16,700	374,507	1,561
83	61,022	49,835	59,007	1,505			67,802	123,400	16,951	379,523	1,478
84	61,938	50,582	59,302	1,513			68,819	125,251	17,205	384,611	1,400
85	62,867	51,341	59,598	1,520			69,852	127,130	17,463	389,772	1,326
86	63,810	52,111	59,896	1,528			70,900	129,037	17,725	395,007	1,256
87	64,767	52,893	60,196	1,536			71,963	130,973	17,991	400,318	1,190
88	65,738	53,686	60,497	1,543			73,043	132,937	18,261	405,705	1,127
89	66,724	54,492	60,799	1,551			74,138	134,931	18,535	411,170	1,067
90	67,725	55,309	61,103	1,559			75,250	136,955	18,813	416,714	1,011

841,701	Total 30 year Present Worth:	2,015,557
	Total 60 year Present Worth:	2,399,835
	Total 90 year Present Worth:	2,474,227

Notes:

- 1 Inflation costs assumed at 1.5%
- 2 Electrical Power cost was estimated to be \$0.0844 per kWh
- 3 Inflation costs assumed at 0.5%
- 4 Present worth calculation used 7% interest rate