

APPENDIX B

Life Cycle Analysis Model Results

DRAFT

**Durham/York Thermal Treatment Facility
Energy and Associated Impacts Report
Appendix B - LCA Model Results**

WTE with Electrical Energy Recovery

Parameter	Units	Total	WTE Plant	Offset for Electrical Utility	Ash Transport	Ash Landfill	Recyclables Transport	Metals Recycling Offset	Landfill Long Haul Burdens
Energy Consumption	GJ	-1,113,094	7,319	-965,204	10,125	3,763	150	-137,107	-32,140
Air Emissions									
Total Particulate Matter	kg	-28,323	8,045	-12,016	865	100	13	-22,584	-2,746
Nitrogen Oxides	kg	5,339	85,797	-54,779	6,008	1,093	89	-13,799	-19,070
Sulfur Oxides	kg	-189,059	56,498	-203,423	1,705	186	25	-38,637	-5,412
Carbon Monoxide	kg	-51,374	29,654	-22,213	5,922	371	88	-46,397	-18,798
Carbon Dioxide Biomass	kg	102,420,647	102,004,603	416,387	168	18	2	0	-532
Carbon Dioxide Fossil	kg	8,569,724	25,224,953	-8,725,908	700,244	78,110	10,349	-6,495,224	-2,222,799
Carbon Equivalents	MTCE	2,019	6,903	-2,601	192	21	3	-1,948	-670
Greenhouse Gas Emissions ⁽¹⁾	tonnes eCO2	7,692	25,254	-9,450	703	78	10	-6,674	-2,230
Hydrocarbons (non CH4)	kg	-9,702	49,749	-44,327	2,417	280	36	-10,183	-7,673
Lead	kg	4	3	0	0	0	0	1	0
Ammonia	kg	-265	0	-249	1	0	0	-14	-3
Methane	kg	-41,789	1,392	-34,461	111	14	2	-8,492	-354
Hydrochloric Acid	kg	6,832	7,617	16	1	0	0	-800	-2
Water Emissions									
Dissolved Solids	kg	-256,446	1,367	-254,632	957	105	14	-1,219	-3,038
Suspended Solids	kg	-6,034	54	-5,880	22	4	0	-464	-69
BOD	kg	-254	1	-246	4	1	0	-2	-11
COD	kg	-3,475	20	-3,549	24	554	0	-447	-76
Oil	kg	-3,729	24	-4,457	22	1,107	0	-355	-71
Sulfuric Acid	kg	-35	5	-17	0	0	0	-23	-1
Iron	kg	-1,286	26	-1,191	1	0	0	-121	-2
Ammonia	kg	-200	0	-94	0	3	0	-108	-1
Copper	kg	0	0	0	0	0	0	0	0
Cadmium	kg	-12	0	-12	0	0	0	-1	0
Arsenic	kg	0	0	0	0	0	0	0	0
Mercury	kg	0	0	0	0	0	0	0	0
Phosphate	kg	-12	2	-9	0	0	0	-6	0
Selenium	kg	0	0	0	0	0	0	0	0
Chromium	kg	-12	0	-12	0	0	0	-1	0
Lead	kg	0	0	0	0	0	0	0	0
Zinc	kg	-4	0	-4	0	0	0	0	0

(1) Carbon Dioxide Fossil plus Methane (x21)

WTE with Electrical Energy and Heat/Cooling Energy Recovery

Parameter	Units	Total	WTE Plant	Utility Offset for Electrical	Offset for District Heating	Offset for District Cooling	Ash Transport	Ash Landfill	Recyclables Transport	Metals Recycling Offset	Landfill Long Haul Burdens
Energy Consumption	GJ	-1,298,973	7,319	-843,894	-296,973	-10,216	10,125	3,763	150	-137,107	-32,140
Air Emissions											
Total Particulate Matter	kg	-27,855	8,045	-10,495	-558	-495	865	100	13	-22,584	-2,746
Nitrogen Oxides	kg	-56,558	85,797	-47,695	-63,713	-5,268	6,008	1,093	89	-13,799	-19,070
Sulfur Oxides	kg	-427,934	56,498	-177,734	-246,190	-18,375	1,705	186	25	-38,637	-5,412
Carbon Monoxide	kg	-82,902	29,654	-19,352	-33,106	-1,283	5,922	371	88	-46,397	-18,798
Carbon Dioxide Biomass	kg	102,420,735	102,004,603	420,997	-3,498	-1,024	168	18	2	0	-532
Carbon Dioxide Fossil	kg	-9,122,049	25,224,953	-7,120,708	-17,077,529	-2,219,445	700,244	78,110	10,349	-6,495,224	-2,222,799
Carbon Equivalents	MTCE	-3,214	6,903	-2,135	-4,966	-614	192	21	3	-1,948	-670
Greenhouse Gas Emissions ⁽¹⁾	tonnes eCO2	-10,929	25,254	-7,753	-18,074	-2,243	703	78	10	-6,674	-2,230
Hydrocarbons (non CH4)	kg	-74,979	49,749	-38,756	-66,386	-4,463	2,417	280	36	-10,183	-7,673
Lead	kg	4	3	0	0	0	0	0	0	1	0
Ammonia	kg	-619	0	-218	-376	-9	1	0	0	-14	-3
Methane	kg	-86,064	1,392	-30,130	-47,472	-1,134	111	14	2	-8,492	-354
Hydrochloric Acid	kg	6,832	7,617	32	-12	-4	1	0	0	-800	-2
Water Emissions											
Dissolved Solids	kg	-618,864	1,367	-222,629	-385,650	-8,771	957	105	14	-1,219	-3,038
Suspended Solids	kg	-12,556	54	-4,879	-6,921	-303	22	4	0	-464	-69
BOD	kg	-610	1	-215	-372	-15	4	1	0	-2	-11
COD	kg	-8,548	20	-3,103	-5,372	-147	24	554	0	-447	-76
Oil	kg	-10,082	24	-3,897	-6,746	-167	22	1,107	0	-355	-71
Sulfuric Acid	kg	-56	5	-15	-3	-20	0	0	0	-23	-1
Iron	kg	-1,167	26	-1,041	-9	-21	1	0	0	-121	-2
Ammonia	kg	-198	0	-82	-7	-3	0	3	0	-108	-1
Copper	kg	0	0	0	0	0	0	0	0	0	0
Cadmium	kg	-29	0	-10	-17	0	0	0	0	-1	0
Arsenic	kg	0	0	0	0	0	0	0	0	0	0
Mercury	kg	0	0	0	0	0	0	0	0	0	0
Phosphate	kg	-23	2	-7	-1	-10	0	0	0	-6	0
Selenium	kg	0	0	0	0	0	0	0	0	0	0
Chromium	kg	-29	0	-10	-17	0	0	0	0	-1	0
Lead	kg	0	0	0	0	0	0	0	0	0	0
Zinc	kg	-10	0	-3	-6	0	0	0	0	0	0