

**GREATER HAZLETON JOINT SEWER AUTHORITY
LUZERNE COUNTY, PENNSYLVANIA**

**WASTEWATER TREATMENT PLANT
HIGH STRENGTH WASTEWATER
SURCHARGE REPORT**



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Prepared by:



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1.0 Background

1.1 Introduction

Wastewater discharged from some non-residential (industrial, institutional, or commercial) dischargers can be much higher in strength than domestic wastewater and, as a result, requires additional treatment. These types of facilities can discharge wastewater containing high Biochemical Oxygen Demand (BOD₅), Total Suspended Solids (TSS), Total Phosphorus (TP), or Total Nitrogen (TN). Industrial, institutional, and commercial wastewaters can cost more to treat than residential wastewater because it can have a higher dissolved oxygen demand, create more solids for disposal, or require more chemicals for treatment. A High Strength Wastewater Surcharge Program provides a means to recover the additional treatment costs created by these discharges by charging a surcharge fee (in addition to the quarterly user rate) to dischargers of higher-than-normal strength wastewater. Surcharge rates provide an equitable means of distributing treatment costs among rate payers based on discharge characteristics. They are facility-specific and are calculated based on actual facility operating data. By establishing high strength surcharge rates, wastewater treatment plants (WWTPs) have the ability to distribute treatment costs on the basis of actual discharge strength above an established surcharge “baseline concentration.

The Greater Hazleton Joint Sewer Authority (GHJSA) has developed and implemented a High Strength Surcharge Program. Because high strength surcharges are based on actual operating expenses and treatment efficiencies, these calculations must be updated periodically to better reflect the current operations of the WWTP. GHJSA has decided to update the calculations of their High Strength Surcharge Program.

The surcharge study calculations involve establishing a cost per pound for the pollutants of concern (BOD₅, TSS, TP, and TN) for each of the past three (3) years and then calculating a running 3-year average for each. The calculation tables are set up so that they can be updated periodically to allow the Authority to establish current treatment costs for each pollutant.

1.2 Methodology

This report sets forth the results of a High Strength Wastewater Surcharge Rate Study based on actual operations and maintenance expenses and actual influent loadings to the GHJSA WWTP between August 1, 2012 and July 31, 2015. This report contains explanations of the methods and procedures employed to calculate the High Strength Wastewater Surcharge Rate for the GHJSA. Operations and maintenance costs were allocated among thirteen (13) treatment processes (Preliminary Treatment, Chemical P Removal, Primary Clarification, Primary Pumping Station, Trickling Filters, Bioreactors, Secondary Clarification, Secondary Pumping Station, Nitrification BAF, Denitrification BAF, Disinfection, Hauled Waste Handling, and Sludge Handling). The treatment process O&M costs were allocated to the removal of BOD₅,

TSS, TN, and TP. The annual removal (in pounds) of BOD₅, TSS, TN, and TP were calculated using laboratory data. A treatment cost per pound of pollutant removed was then calculated.

2.0 Allocation Procedures

The tables in the appendices of this report represent the step-by-step allocation procedures for the high strength wastewater surcharge calculations. Each appendix contains the calculations for an annual 12-month period, based on the GHJSA's budget year from August 1 through July 31. The tables for Budget Year 2013 (August 1, 2012 through July 31, 2013) are contained in *Appendix 1*, Budget Year 2014 (August 1, 2013 through July 31, 2014) in *Appendix 2*, and Budget Year 2015 (August 1, 2014 through July 31, 2015) in *Appendix 3*.

2.1 Allocation of Operation and Maintenance Costs

The actual operation and maintenance costs related to the treatment of wastewater at the GHJSA WWTP are identified by account for each Budget Year. Each account was reviewed to determine the nature of the cost and to allocate those costs among the thirteen (13) stages of the treatment process. This review formed the basis for the cost allocation presented in *Table 1* of the respective appendices.

The Electrical expenses were allocated based on the percent of annual kilowatt hours of equipment operated for each treatment process, as summarized in *Table 2* of the respective appendices. Truck expenses were evenly divided between WWTP and Collection Systems budgets to reflect the typical usage of this equipment. Additionally, Administrative costs were prorated to reflect the percentage of the total administrative costs that were directly spent conducting WWTP business (approximately 67%) for each Budget Year.

2.2 Allocation of Cost Functions to Treatment Processes

As previously indicated, thirteen (13) stages of treatment processes were included in this evaluation. In *Table 3* of the respective appendices, the costs to operate each treatment process are allocated among the pollutants of concern (Flow, BOD₅, TSS, TN, and TP) for each Budget Year.

2.3 Calculation of Removal Costs

The total annual costs associated with the removal of each pollutant for each Budget Year is summarized in *Table 4* of the respective appendices. These costs are based on the total operating costs of each treatment process as established in *Table 1* of the respective appendices. The total annual removal costs were divided by the total annual pounds removed of each pollutant in the respective year, as calculated in *Table 4* of the respective appendices, to establish a cost of removal per pound of pollutant.

The results of the High Strength Wastewater Surcharge Evaluation for each pollutant during each Budget Year are summarized in *Table 2-1*. A 3-year average has also been developed based on

the annual treatment costs for each pollutant. This 3-year average should become the basis for the high strength wastewater surcharge calculations.

Table 2-1: Surcharge Rate Summary

Pollutant	Budget Year			3-Year Average
	2013	2014	2015	
BOD ₅	\$0.28	\$0.28	\$0.31	\$0.29
TSS	\$0.34	\$0.39	\$0.36	\$0.36
TN	\$1.89	2.42	\$1.76	\$2.02
TP	\$1.46	\$1.39	\$1.52	\$1.46

The National Association of Clean Water Agencies (NACWA) periodically surveys municipalities and authorities nationwide to track financial trends. As part of the NACWA’s most recent survey in 2010, over 100 municipalities and authorities were surveyed. The 2010 NACWA National Survey of Municipal Wastewater Management and Financing Trends found the average BOD surcharge rate was \$ 0.3112 per lb. and the average TSS surcharge rate was \$0.2588 per lb. The GHJSA’s calculated rates, as presented in *Table 2-1*, appear to generally be consistent with the national averages compiled by the NACWA.

Please note that these removal costs are applicable only to discharges into the GHJSA sewer system that are treated at the GHJSA WWTP. Removal costs for other discharges from different sewer service systems or treated at different wastewater treatment plants cannot be extrapolated from these results.

3.0 Applicability

3.1 High Strength Wastewater Dischargers

The high strength wastewater surcharge should only applied to those sources of wastewaters with average discharge qualities that significantly exceed the typical domestic strength concentrations of the GHJSA’s residential and non-regulated commercial (i.e. domestic) users. The establishment of typical domestic strength wastewater is accomplished by routine sampling of select locations throughout the collection system. For high strength wastewater surcharging purposes, the pollutant concentrations in the domestic strength wastewater in the GHJSA service area can be estimated as presented in *Table 3-1*.

Table 3-1: Typical Domestic Strength Wastewater Concentrations

Pollutant	Average Concentration, mg/L
BOD ₅	200
TSS	200
TN	30
TP	5

Actual historical sampling of domestic strength wastewater within the collection system is slightly lower than the values in *Table 3-1*, however, it is administratively easier to round up the concentrations for compliance monitoring purposes.

Residential and non-industrial commercial background sample locations provide data relating to wastewater of typical residential and commercial composition. A 24-hour composite sample is typically collected and analyzed at each location on a quarterly basis to obtain a representative sample. Two (2) sample locations in the collection system represent a mix of residential and commercial wastewater: Stacie Manor and 22nd and Laurel Street. The Stacie Manor location is sampled at the wet well of the Stacie Manor Pumping Station, which has been monitored since the early 1990s. The 22nd and Laurel Street location is sampled at a manhole at the terminus of the Authority's Black Creek Interceptor at 22nd and Laurel Streets. This location has been monitored since 1999.

Appendix 1

**High Strength Wastewater Surcharge Calculations -
Budget Year 2013**

Table 1
Greater Hazleton Joint Sewer Authority
High Strength Wastewater Surcharge Study

Allocation of Total Operating Costs by Process
August 1, 2012 through July 31, 2013

Account	Account No.	Budget Amount ⁽¹⁾	Preliminary Treatment		Chemical P Removal		Primary Clarification		Primary Pumping Station		Trickling Filters		Bioreactors		Secondary Clarification		Secondary Pumping Station		Nitrification BAF		Denitrification BAF		Disinfection		Hauled Waste Handling		Sludge Handling			
			Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount
Payroll Service Charges	10-5000-4000	\$4,620	5.0%	\$154	1.0%	\$31	7.5%	\$231	7.0%	\$216	5.0%	\$154	10.0%	\$308	7.5%	\$231	7.0%	\$216	10.0%	\$308	10.0%	\$308	10.0%	\$308	10.0%	\$308	10.0%	\$308	10.0%	\$308
Operations Salaries & Wages	10-5000-4110	\$997,727	5.0%	\$49,886	1.0%	\$9,977	7.5%	\$74,830	7.5%	\$74,830	4.0%	\$39,909	10.0%	\$99,773	7.5%	\$74,830	7.5%	\$74,830	10.0%	\$99,773	10.0%	\$99,773	10.0%	\$99,773	10.0%	\$99,773	10.0%	\$99,773	10.0%	\$99,773
Operations Salaries & Wages	10-5000-4120	\$117,760	5.0%	\$5,888	1.0%	\$1,178	7.5%	\$8,832	7.5%	\$8,832	4.0%	\$4,710	10.0%	\$11,776	7.5%	\$8,832	7.5%	\$8,832	10.0%	\$11,776	10.0%	\$11,776	10.0%	\$11,776	10.0%	\$11,776	10.0%	\$11,776	10.0%	\$11,776
Payroll Tax - Operations	10-5000-4130	\$85,483	5.0%	\$4,274	1.0%	\$855	7.5%	\$6,411	7.5%	\$6,411	4.0%	\$3,419	10.0%	\$8,548	7.5%	\$6,411	7.5%	\$6,411	10.0%	\$8,548	10.0%	\$8,548	10.0%	\$8,548	10.0%	\$8,548	10.0%	\$8,548	10.0%	\$8,548
Maintenance Salaries & Wages	10-5000-4210	\$149,250	5.0%	\$7,463	1.0%	\$1,493	7.5%	\$11,194	7.5%	\$11,194	4.0%	\$5,970	10.0%	\$14,925	7.5%	\$11,194	7.5%	\$11,194	10.0%	\$14,925	10.0%	\$14,925	10.0%	\$14,925	10.0%	\$14,925	10.0%	\$14,925	10.0%	\$14,925
Maintenance Salaries & Wages	10-5000-4220	\$54,186	5.0%	\$2,709	1.0%	\$542	7.5%	\$4,064	7.5%	\$4,064	4.0%	\$2,167	10.0%	\$5,419	7.5%	\$4,064	7.5%	\$4,064	10.0%	\$5,419	10.0%	\$5,419	10.0%	\$5,419	10.0%	\$5,419	10.0%	\$5,419	10.0%	\$5,419
Payroll Tax - Maintenance	10-5000-4230	\$15,563	5.0%	\$778	1.0%	\$156	7.5%	\$1,167	7.5%	\$1,167	4.0%	\$623	10.0%	\$1,556	7.5%	\$1,167	7.5%	\$1,167	10.0%	\$1,556	10.0%	\$1,556	10.0%	\$1,556	10.0%	\$1,556	10.0%	\$1,556	10.0%	\$1,556
Clerical Salaries & Wages	10-5000-4310	\$118,859	5.0%	\$3,962	1.0%	\$792	7.5%	\$5,943	7.5%	\$5,943	4.0%	\$3,170	10.0%	\$7,924	7.5%	\$5,943	7.5%	\$5,943	10.0%	\$7,924	10.0%	\$7,924	10.0%	\$7,924	10.0%	\$7,924	10.0%	\$7,924	10.0%	\$7,924
Clerical Salaries & Wages	10-5000-4320	\$17	5.0%	\$1	1.0%	\$0	7.5%	\$1	7.5%	\$1	4.0%	\$0	10.0%	\$1	7.5%	\$1	7.5%	\$1	10.0%	\$1	10.0%	\$1	10.0%	\$1	10.0%	\$1	10.0%	\$1	10.0%	\$1
Payroll Tax - Clerical	10-5000-4330	\$9,094	5.0%	\$303	1.0%	\$61	7.5%	\$455	7.5%	\$455	4.0%	\$243	10.0%	\$606	7.5%	\$455	7.5%	\$455	10.0%	\$606	10.0%	\$606	10.0%	\$606	10.0%	\$606	10.0%	\$606	10.0%	\$606
Unemployment Compensation	10-5000-4216	\$16,401	5.0%	\$547	1.0%	\$109	7.5%	\$820	7.5%	\$820	4.0%	\$437	10.0%	\$1,093	7.5%	\$820	7.5%	\$820	10.0%	\$1,093	10.0%	\$1,093	10.0%	\$1,093	10.0%	\$1,093	10.0%	\$1,093	10.0%	\$1,093
Employee Work Clothes	10-5000-5000	\$7,448	5.0%	\$372	1.0%	\$74	7.5%	\$559	7.5%	\$559	4.0%	\$298	10.0%	\$745	7.5%	\$559	7.5%	\$559	10.0%	\$745	10.0%	\$745	10.0%	\$745	10.0%	\$745	10.0%	\$745	10.0%	\$745
Electrical Expense - Main Cont	10-5000-5040	\$133,223	1.7%	\$2,216	1.8%	\$2,142	1.0%	\$1,379	11.4%	\$15,151	0.0%	\$0	21.3%	\$28,380	0.3%	\$378	9.9%	\$13,123	9.1%	\$12,165	0.6%	\$764	17.9%	\$23,829	0.6%	\$768	24.7%	\$32,927		
Electrical Expense - UV Drop	10-5000-5041	\$99,710	1.7%	\$1,659	1.8%	\$1,603	1.0%	\$1,032	11.4%	\$11,340	0.0%	\$0	21.3%	\$21,241	0.3%	\$283	9.9%	\$9,822	9.1%	\$9,105	0.6%	\$572	17.9%	\$17,835	0.6%	\$575	24.7%	\$24,644		
Electrical Expense - Nitrification	10-5000-5042	\$193,151	1.7%	\$3,213	1.8%	\$3,106	1.0%	\$1,999	11.4%	\$21,967	0.0%	\$0	21.3%	\$41,147	0.3%	\$548	9.9%	\$19,026	9.1%	\$17,637	0.6%	\$1,107	17.9%	\$34,548	0.6%	\$1,114	24.7%	\$47,739		
Electrical Expense - Pump Station	10-5000-5043	\$155,294	1.7%	\$2,583	1.8%	\$2,497	1.0%	\$1,607	11.4%	\$17,661	0.0%	\$0	21.3%	\$33,082	0.3%	\$440	9.9%	\$15,297	9.1%	\$14,180	0.6%	\$890	17.9%	\$27,777	0.6%	\$896	24.7%	\$38,382		
Electrical Expense - Administrative	10-5000-5045	\$5,303	1.7%	\$88	1.6%	\$85	1.0%	\$55	11.4%	\$603	0.0%	\$0	21.3%	\$1,130	0.3%	\$15	9.9%	\$522	9.1%	\$484	0.6%	\$30	17.9%	\$948	0.6%	\$31	24.7%	\$1,311		
Electrical Expense - Miscellaneous	10-5000-5046	\$0	1.7%	\$0	1.6%	\$0	1.0%	\$0	11.4%	\$0	0.0%	\$0	21.3%	\$0	0.3%	\$0	9.9%	\$0	9.1%	\$0	0.6%	\$0	17.9%	\$0	0.6%	\$0	24.7%	\$0		
Natural Gas - Control Building	10-5000-5050	\$12,933	5.0%	\$647	1.0%	\$129	7.5%	\$970	7.5%	\$970	4.0%	\$517	10.0%	\$1,293	7.5%	\$970	7.5%	\$970	10.0%	\$1,293	10.0%	\$1,293	10.0%	\$1,293	10.0%	\$1,293	10.0%	\$1,293	10.0%	\$1,293
Natural Gas - Administration Building	10-5000-5051	\$438	5.0%	\$22	1.0%	\$4	7.5%	\$33	7.5%	\$33	4.0%	\$18	10.0%	\$44	7.5%	\$33	7.5%	\$33	10.0%	\$44	10.0%	\$44	10.0%	\$44	10.0%	\$44	10.0%	\$44	10.0%	\$44
Fuel Oil - Heating	10-5000-5060	\$0	5.0%	\$0	1.0%	\$0	7.5%	\$0	7.5%	\$0	4.0%	\$0	10.0%	\$0	7.5%	\$0	7.5%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0
Fuel Oil - Generators	10-5000-5061	\$33,351	5.0%	\$1,668	1.0%	\$334	7.5%	\$2,501	7.5%	\$2,501	4.0%	\$1,334	10.0%	\$3,335	7.5%	\$2,501	7.5%	\$2,501	10.0%	\$3,335	10.0%	\$3,335	10.0%	\$3,335	10.0%	\$3,335	10.0%	\$3,335	10.0%	\$3,335
Fuel Oil - Equipment	10-5000-5062	\$0	5.0%	\$0	1.0%	\$0	7.5%	\$0	7.5%	\$0	4.0%	\$0	10.0%	\$0	7.5%	\$0	7.5%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0
Potable Water - Treatment Plant	10-5000-5070	\$25,824	5.0%	\$1,291	1.0%	\$258	7.5%	\$1,937	7.5%	\$1,937	4.0%	\$1,033	10.0%	\$2,582	7.5%	\$1,937	7.5%	\$1,937	10.0%	\$2,582	10.0%	\$2,582	10.0%	\$2,582	10.0%	\$2,582	10.0%	\$2,582	10.0%	\$2,582
Wastewater Chemicals - Cationic Polymer	10-5000-5080	\$125,715	0.0%	\$0	0.0%	\$0	5.0%	\$6,286	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	95.0%	\$119,429
Wastewater Chemicals - Anionic Polymer	10-5000-5081	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	100.0%	\$0
Wastewater Chemicals - Magnesium Hydroxide	10-5000-5082	\$167,331	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	25.0%	\$41,833	0.0%	\$0	0.0%	\$0	75.0%	\$125,498	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0
Wastewater Chemicals - Hydrogen Peroxide	10-5000-5084	\$16,431	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	100.0%	\$16,431
Wastewater Chemicals - PAC	10-5000-5085	\$17,550	0.0%	\$0	100.0%	\$17,550	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0
Wastewater Chemicals - Methanol	10-5000-5086	\$189,875	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	100.0%	\$189,875	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0
Wastewater Chemicals - Miscellaneous	10-5000-5089	\$0	5.0%	\$0	1.0%	\$0	7.5%	\$0	7.5%	\$0	4.0%	\$0	10.0%	\$0	7.5%	\$0	7.5%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0
Truck Expense - Gasoline	10-5000-5100	\$23,398	5.0%	\$585	1.0%	\$117	7.5%	\$877	7.5%	\$877	4.0%	\$468	10.0%	\$1,170	7.5%	\$877	7.5%	\$877	10.0%	\$1,170	10.0%	\$1,170	10.0%	\$1,170	10.0%	\$1,170	10.0%	\$1,170	10.0%	\$1,170
Truck Expense - Repairs & Main	10-5000-5101	\$17,381	5.0%	\$435	1.0%	\$87	7.5%	\$652	7.5%	\$652	4.0%	\$348	10.0%	\$869	7.5%	\$652	7.5%	\$652	10.0%	\$869	10.0%	\$869	10.0%	\$869	10.0%	\$869	10.0%	\$869	10.0%	\$869
Truck Expense - Low Sulfur Die	10-5000-5102	\$0	5.0%	\$0	1.0%	\$0	7.5%	\$0	7.5%	\$0	4.0%	\$0	10.0%	\$0	7.5%	\$0	7.5%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0
Truck Expense - Miscellaneous	10-5000-5109	\$179	5.0%	\$4	1.0%	\$1	7.5%	\$7	7.5%	\$7	4.0%	\$4	10.0%	\$9	7.5%	\$7	7.5%	\$7	10.0%	\$9	10.0%	\$9	10.0%	\$9	10.0%	\$9	10.0%	\$9	10.0%	\$9
Maintenance Supplies - Grease	10-5000-5140	\$9,036	5.0%	\$452	1.0%	\$90	7.5%	\$678	7.5%	\$678	4.0%	\$361	10.0%	\$904	7.5%	\$678	7.5%	\$678	10.0%	\$904	10.0%	\$904	10.0%	\$904	10.0%	\$904	10.0%	\$904	10.0%	\$904
Maintenance Supplies - Tools & Maintenance Supplies - Miscellaneous	10-5000-5141	\$23,563	5.0%	\$1,178	1.0%	\$236	7.5%	\$1,767	7.5%	\$1,767	4.0%	\$943	10.0%	\$2,356	7.5%	\$1,767	7.5%	\$1,767	10.0%	\$2,356	10.0%	\$2,356	10.0%	\$2,356	10.0%	\$2,356	10.0%	\$2,356	10.0%	\$2,356
Maintenance Supplies - Miscellaneous	10-5000-5149	\$14,029	5.0%	\$701	1.0%	\$140	7.5%	\$1,052	7.5%	\$1,052	4.0%	\$561	10.0%	\$1,403	7.5%	\$1,052	7.5%	\$1,052	10.0%	\$1,403	10.0%	\$1,403	10.0%	\$1,403	10.0%	\$1,403	10.0%	\$1,403	10.0%	\$1,403
General Supplies - Treatment Plant	10-5000-5160	\$25,015	5.0%	\$1																										

Table 1
 Greater Hazleton Joint Sewer Authority
 High Strength Wastewater Surcharge Study
 Allocation of Total Operating Costs by Process
 August 1, 2012 through July 31, 2013

Account	Account No.	Budget Amount ⁽¹⁾	Preliminary Treatment		Chemical P Removal		Primary Clarification		Primary Pumping Station		Trickling Filters		Bioreactors		Secondary Clarification		Secondary Pumping Station		Nitrification BAF		Denitrification BAF		Disinfection		Hauled Waste Handling		Sludge Handling			
			Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount
Engineering Fees - NPDES Permi	10-7000-7054	\$10,954	5.0%	\$365	1.0%	\$73	7.5%	\$548	7.5%	\$548	4.0%	\$292	10.0%	\$730	7.5%	\$548	7.5%	\$548	10.0%	\$730	10.0%	\$730	10.0%	\$730	10.0%	\$730	10.0%	\$730	10.0%	\$730
Engineering Fees - Miscellaneous	10-7000-7059	\$19,965	5.0%	\$666	1.0%	\$133	7.5%	\$998	7.5%	\$998	4.0%	\$532	10.0%	\$1,331	7.5%	\$998	7.5%	\$998	10.0%	\$1,331	10.0%	\$1,331	10.0%	\$1,331	10.0%	\$1,331	10.0%	\$1,331	10.0%	\$1,331
Permits, Fees, Nutrient Credit	10-7000-7060	\$16,270	5.0%	\$542	1.0%	\$108	7.5%	\$814	7.5%	\$814	4.0%	\$434	10.0%	\$1,085	7.5%	\$814	7.5%	\$814	10.0%	\$1,085	10.0%	\$1,085	10.0%	\$1,085	10.0%	\$1,085	10.0%	\$1,085	10.0%	\$1,085
Group Insurance - Health	10-7000-7100	\$410,610	5.0%	\$13,687	1.0%	\$2,737	7.5%	\$20,530	7.5%	\$20,530	4.0%	\$10,950	10.0%	\$27,374	7.5%	\$20,530	7.5%	\$20,530	10.0%	\$27,374	10.0%	\$27,374	10.0%	\$27,374	10.0%	\$27,374	10.0%	\$27,374	10.0%	\$27,374
Group Insurance - Dental	10-7000-7101	\$20,876	5.0%	\$696	1.0%	\$139	7.5%	\$1,044	7.5%	\$1,044	4.0%	\$557	10.0%	\$1,392	7.5%	\$1,044	7.5%	\$1,044	10.0%	\$1,392	10.0%	\$1,392	10.0%	\$1,392	10.0%	\$1,392	10.0%	\$1,392	10.0%	\$1,392
Group Insurance - Eyeglasses R	10-7000-7102	\$8,158	5.0%	\$272	1.0%	\$54	7.5%	\$408	7.5%	\$408	4.0%	\$218	10.0%	\$544	7.5%	\$408	7.5%	\$408	10.0%	\$544	10.0%	\$544	10.0%	\$544	10.0%	\$544	10.0%	\$544	10.0%	\$544
Group Insurance - Short Term D	10-7000-7103	\$11,667	5.0%	\$389	1.0%	\$78	7.5%	\$583	7.5%	\$583	4.0%	\$311	10.0%	\$778	7.5%	\$583	7.5%	\$583	10.0%	\$778	10.0%	\$778	10.0%	\$778	10.0%	\$778	10.0%	\$778	10.0%	\$778
Group Insurance - Employee Lif	10-7000-7104	\$14,512	5.0%	\$484	1.0%	\$97	7.5%	\$726	7.5%	\$726	4.0%	\$387	10.0%	\$967	7.5%	\$726	7.5%	\$726	10.0%	\$967	10.0%	\$967	10.0%	\$967	10.0%	\$967	10.0%	\$967	10.0%	\$967
OPEB Expense - Health Insuranc	10-7000-7105	\$0	5.0%	\$0	1.0%	\$0	7.5%	\$0	7.5%	\$0	4.0%	\$0	10.0%	\$0	7.5%	\$0	7.5%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0
Group Insurance - Directors Li	10-7000-7106	\$8,699	5.0%	\$290	1.0%	\$58	7.5%	\$435	7.5%	\$435	4.0%	\$232	10.0%	\$580	7.5%	\$435	7.5%	\$435	10.0%	\$580	10.0%	\$580	10.0%	\$580	10.0%	\$580	10.0%	\$580	10.0%	\$580
Insurance - Property & Casualt	10-7000-7110	\$63,334	5.0%	\$2,111	1.0%	\$422	7.5%	\$3,167	7.5%	\$3,167	4.0%	\$1,689	10.0%	\$4,222	7.5%	\$3,167	7.5%	\$3,167	10.0%	\$4,222	10.0%	\$4,222	10.0%	\$4,222	10.0%	\$4,222	10.0%	\$4,222	10.0%	\$4,222
Insurance - Errors & Omissions	10-7000-7115	\$0	5.0%	\$0	1.0%	\$0	7.5%	\$0	7.5%	\$0	4.0%	\$0	10.0%	\$0	7.5%	\$0	7.5%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0
Worker's Compensation Insuran	10-7000-7120	\$57,740	5.0%	\$1,925	1.0%	\$385	7.5%	\$2,887	7.5%	\$2,887	4.0%	\$1,540	10.0%	\$3,849	7.5%	\$2,887	7.5%	\$2,887	10.0%	\$3,849	10.0%	\$3,849	10.0%	\$3,849	10.0%	\$3,849	10.0%	\$3,849	10.0%	\$3,849
Conferences, Education, & Semi	10-7000-7130	\$34,060	5.0%	\$1,135	1.0%	\$227	7.5%	\$1,703	7.5%	\$1,703	4.0%	\$908	10.0%	\$2,271	7.5%	\$1,703	7.5%	\$1,703	10.0%	\$2,271	10.0%	\$2,271	10.0%	\$2,271	10.0%	\$2,271	10.0%	\$2,271	10.0%	\$2,271
Advertising	10-7000-7140	\$7,425	5.0%	\$247	1.0%	\$49	7.5%	\$371	7.5%	\$371	4.0%	\$198	10.0%	\$495	7.5%	\$371	7.5%	\$371	10.0%	\$495	10.0%	\$495	10.0%	\$495	10.0%	\$495	10.0%	\$495	10.0%	\$495
Trustee Fees	10-7000-7150	\$6,000	5.0%	\$200	1.0%	\$40	7.5%	\$300	7.5%	\$300	4.0%	\$160	10.0%	\$400	7.5%	\$300	7.5%	\$300	10.0%	\$400	10.0%	\$400	10.0%	\$400	10.0%	\$400	10.0%	\$400	10.0%	\$400
Surety Bond Premium - Incinera	10-7000-7152	\$4,732	5.0%	\$158	1.0%	\$32	7.5%	\$237	7.5%	\$237	4.0%	\$126	10.0%	\$315	7.5%	\$237	7.5%	\$237	10.0%	\$315	10.0%	\$315	10.0%	\$315	10.0%	\$315	10.0%	\$315	10.0%	\$315
Bank Service Charges	10-7000-7160	\$0	5.0%	\$0	1.0%	\$0	7.5%	\$0	7.5%	\$0	4.0%	\$0	10.0%	\$0	7.5%	\$0	7.5%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0
Postage - Daily	10-7000-7170	\$2,519	5.0%	\$84	1.0%	\$17	7.5%	\$126	7.5%	\$126	4.0%	\$67	10.0%	\$168	7.5%	\$126	7.5%	\$126	10.0%	\$168	10.0%	\$168	10.0%	\$168	10.0%	\$168	10.0%	\$168	10.0%	\$168
Postage - Permit #240	10-7000-7171	\$19,462	5.0%	\$649	1.0%	\$130	7.5%	\$973	7.5%	\$973	4.0%	\$519	10.0%	\$1,297	7.5%	\$973	7.5%	\$973	10.0%	\$1,297	10.0%	\$1,297	10.0%	\$1,297	10.0%	\$1,297	10.0%	\$1,297	10.0%	\$1,297
Postage - Address Service	10-7000-7172	\$1,241	5.0%	\$41	1.0%	\$8	7.5%	\$62	7.5%	\$62	4.0%	\$33	10.0%	\$83	7.5%	\$62	7.5%	\$62	10.0%	\$83	10.0%	\$83	10.0%	\$83	10.0%	\$83	10.0%	\$83	10.0%	\$83
Freight	10-7000-7173	\$790	5.0%	\$26	1.0%	\$5	7.5%	\$39	7.5%	\$39	4.0%	\$21	10.0%	\$53	7.5%	\$39	7.5%	\$39	10.0%	\$53	10.0%	\$53	10.0%	\$53	10.0%	\$53	10.0%	\$53	10.0%	\$53
Telephone Service	10-7000-7180	\$15,017	5.0%	\$501	1.0%	\$100	7.5%	\$751	7.5%	\$751	4.0%	\$400	10.0%	\$1,001	7.5%	\$751	7.5%	\$751	10.0%	\$1,001	10.0%	\$1,001	10.0%	\$1,001	10.0%	\$1,001	10.0%	\$1,001	10.0%	\$1,001
Cost of Billing	10-7000-7190	\$14,548	5.0%	\$485	1.0%	\$97	7.5%	\$727	7.5%	\$727	4.0%	\$388	10.0%	\$970	7.5%	\$727	7.5%	\$727	10.0%	\$970	10.0%	\$970	10.0%	\$970	10.0%	\$970	10.0%	\$970	10.0%	\$970
Bill Collections - Third Party	10-7000-7200	\$414	5.0%	\$14	1.0%	\$3	7.5%	\$21	7.5%	\$21	4.0%	\$11	10.0%	\$28	7.5%	\$21	7.5%	\$21	10.0%	\$28	10.0%	\$28	10.0%	\$28	10.0%	\$28	10.0%	\$28	10.0%	\$28
Delinquent Collections - Water	10-7000-7210	\$4,207	5.0%	\$140	1.0%	\$28	7.5%	\$210	7.5%	\$210	4.0%	\$112	10.0%	\$280	7.5%	\$210	7.5%	\$210	10.0%	\$280	10.0%	\$280	10.0%	\$280	10.0%	\$280	10.0%	\$280	10.0%	\$280
Delinquent Collections - Suppl	10-7000-7215	\$1,461	5.0%	\$49	1.0%	\$10	7.5%	\$73	7.5%	\$73	4.0%	\$39	10.0%	\$97	7.5%	\$73	7.5%	\$73	10.0%	\$97	10.0%	\$97	10.0%	\$97	10.0%	\$97	10.0%	\$97	10.0%	\$97
Delinquent Collections - Const	10-7000-7220	\$16,876	5.0%	\$563	1.0%	\$113	7.5%	\$844	7.5%	\$844	4.0%	\$450	10.0%	\$1,125	7.5%	\$844	7.5%	\$844	10.0%	\$1,125	10.0%	\$1,125	10.0%	\$1,125	10.0%	\$1,125	10.0%	\$1,125	10.0%	\$1,125
Board Member Fees	10-7000-7230	\$24,100	5.0%	\$803	1.0%	\$161	7.5%	\$1,205	7.5%	\$1,205	4.0%	\$643	10.0%	\$1,607	7.5%	\$1,205	7.5%	\$1,205	10.0%	\$1,607	10.0%	\$1,607	10.0%	\$1,607	10.0%	\$1,607	10.0%	\$1,607	10.0%	\$1,607
Pension Plan Contribution	10-7000-7240	\$153,500	5.0%	\$5,117	1.0%	\$1,023	7.5%	\$7,675	7.5%	\$7,675	4.0%	\$4,093	10.0%	\$10,233	7.5%	\$7,675	7.5%	\$7,675	10.0%	\$10,233	10.0%	\$10,233	10.0%	\$10,233	10.0%	\$10,233	10.0%	\$10,233	10.0%	\$10,233
Total		\$5,416,887	---	\$159,235	---	\$56,354	---	\$225,219	---	\$276,889	---	\$109,467	---	\$449,735	---	\$214,525	---	\$267,956	---	\$439,307	---	\$453,477	---	\$378,411	---	\$262,813	---	\$1,657,699		

Notes:

⁽¹⁾ Year End Budget amounts from Fiscal Year beginning August 1, 2012 and ending July 31, 2013.

⁽²⁾ Distribution of electric costs (Account Nos. 10-5000-5040 through 10-5000-5046) are based on allocation established in Table 2.

⁽³⁾ Truck Expenses (Account Nos. 10-5000-5100 through 10-5000-5109) are allocated between WWTP and Collection System budgets. The WWTP component is: 50.0%

⁽⁴⁾ Administrative Costs (7000 Account Series) and some select accounts (10-5000-4000, 10-5000-4310, 10-5000-4320, 10-5000-4330, 10-5000-4216, 10-5000-5165, and 10-5000-5181) have been allocated between WWTP, Collection System, and Administrative Office budgets. The WWTP component is: 66.7%

⁽⁵⁾ Debt service is not considered as part of these surcharge calculations.

Table 2
 Greater Hazleton Joint Sewer Authority
 High Strength Wastewater Surcharge Study

Annual Distribution of Power Costs
 August 1, 2012 through July 31, 2013

Treatment Process	hp	Operating Time			Annual kWh	% of Total
		Hours/Day	Days/Year	Hours/Year		
Preliminary Treatment						
First Screenhouse						
Rake Motor	0.50	24	365	8,760	3,266	---
Sluice Gate to Grit Bldg	7.00	0	0	0	0	---
Sluice Gate to Second Screens	7.00	0	0	0	0	---
Gate to CSO Separator	3.00	0	0	0	0	---
Grit Building						
Grit Pump Motor	10.00	4	365	1,460	10,887	---
Grit Classifier	5.00	4	365	1,460	5,444	---
Grit Screw Motor	1.00	4	365	1,460	1,089	---
Grit Blower	7.50	24	365	8,760	48,992	---
Odor Control System Fan	2.00	24	365	8,760	13,065	---
Second Screenhouse						
Flexrake #1 Motor	0.50	24	365	8,760	3,266	---
Flexrake #2 Motor	0.50	24	365	8,760	3,266	---
Auger Conveyor Motor	0.25	24	365	8,760	1,633	---
Washer/Compactor Motor	0.75	24	365	8,760	4,899	---
<i>Preliminary Treatment Total</i>	---	---	---	---	95,808	1.7%
Chemical P Removal						
PAC Feed Pump No. 1	0.49	24	183	4,392	1,605	---
PAC Feed Pump No. 2	0.49	0	183	0	0	---
Polymer Batch Mix Unit	1.50	1	365	365	408	---
Polymer Transfer Pump	3.00	1	365	365	817	---
Polymer Feed Pump No. 1	0.49	24	183	4,392	1,605	---
Polymer Feed Pump No. 2	0.49	0	183	0	0	---
Rapid Induction Mixer	3.00	24	365	8,760	19,597	---
Flocculation Mixer	3.00	24	365	8,760	19,597	---
Flocculation Compressor/Blower	7.50	24	365	8,760	48,992	---
<i>Chemical P Removal Total</i>	---	---	---	---	92,621	1.6%
Primary Clarification						
Clarifier No. 1 Drive Motor	0.50	24	365	8,760	3,266	---
Clarifier No. 2 Drive Motor	0.50	24	365	8,760	3,266	---
Primary Sludge Pump No. 1	7.50	12	365	4,380	24,496	---
Primary Sludge Pump No. 2	7.50	12	365	4,380	24,496	---
Scum Pump No. 1	7.50	1	365	365	2,041	---
Scum Pump No. 2	7.50	1	365	365	2,041	---
<i>Primary Clarification Total</i>	---	---	---	---	59,608	1.0%
Primary Pumping Station						
Pump No. 1	200.00	24	122	2,928	436,682	---
Pump No. 2	200.00	0	122	0	0	---
Pump No. 3	100.00	24	122	2,928	218,341	---
Pump No. 4	100.00	0	122	0	0	---
Water Booster Pump	5.00	0	122	0	0	---
<i>Primary PS Total</i>	---	---	---	---	655,023	11.4%
Trickling Filter Biotowers						
<i>TF Biotowers Total</i>	---	---	---	---	0	0.0%

Table 2
Greater Hazleton Joint Sewer Authority
High Strength Wastewater Surcharge Study

Annual Distribution of Power Costs
August 1, 2012 through July 31, 2013

Treatment Process	hp	Operating Time			Annual kWh	% of Total
		Hours/Day	Days/Year	Hours/Year		
Bioreactors						
Blower No. 1	100.00	24	365	8,760	653,233	---
Blower No. 2	100.00	18	365	6,570	489,925	---
Blower No. 3	100.00	0	365	0	0	---
RAS Pump No. 1	---	0	183	0	0	---
RAS Pump No. 2	---	0	183	0	0	---
RAS Pump No. 3	25.00	24	183	4,392	81,878	---
WAS Pump No. 1	5.00	1	183	183	682	---
WAS Pump No. 2	5.00	1	183	183	682	---
WAS Pump No. 3	2.00	1	183	183	273	---
WAS Pump No. 4	2.00	1	183	183	273	---
<i>Bioreactors Total</i>	---	---	---	---	1,226,946	21.3%
Secondary Clarification						
Clarifier No. 1 Drive Motor	0.50	24	365	8,760	3,266	---
Clarifier No. 2 Drive Motor	0.50	24	365	8,760	3,266	---
Clarifier No. 3 Drive Motor	0.75	24	365	8,760	4,899	---
Clarifier No. 4 Drive Motor	0.75	24	365	8,760	4,899	---
<i>Secondary Clarification Total</i>	---	---	---	---	16,331	0.3%
Secondary Pumping Station						
Pump No. 1	100.00	24	122	2,928	218,341	---
Pump No. 2	100.00	24	122	2,928	218,341	---
Pump No. 3	100.00	0	122	0	0	---
Pump No. 4	100.00	0	122	0	0	---
Blower No. 1	20.00	24	365	8,760	130,647	---
<i>Secondary PS Total</i>	---	---	---	---	567,328	9.9%
Nitrification BAF						
MgOH Mixer No. 1	2.00	24	365	8,760	13,065	---
MgOH Mixer No. 2	2.00	24	365	8,760	13,065	---
MgOH Feed Pump No. 1	0.10	24	183	4,392	328	---
MgOH Feed Pump No. 2	0.10	0	183	0	0	---
Blower No. 1	75.00	8	183	1,464	81,878	---
Blower No. 2	75.00	8	183	1,464	81,878	---
Blower No. 3	75.00	8	183	1,464	81,878	---
Blower No. 4	75.00	8	183	1,464	81,878	---
Blower No. 5	75.00	8	183	1,464	81,878	---
Blower No. 6	75.00	8	183	1,464	81,878	---
Blower No. 7	75.00	0	183	0	0	---
Backwash Pump No. 1	7.50	2	183	366	2,047	---
Backwash Pump No. 2	7.50	2	183	366	2,047	---
Nite/Denite Air Compressor	7.50	4	183	732	4,094	---
<i>Nitrification BAF Total</i>	---	---	---	---	525,912	9.1%
Denitrification BAF						
Blower No. 1	50.00	2	183	366	13,646	---
Blower No. 2	50.00	2	183	366	13,646	---
Methanol Feed Pump No. 1	0.50	24	183	4,392	1,638	---
Methanol Feed Pump No. 2	0.50	0	183	0	0	---
Backwash Pump No. 1	7.50	2	183	366	2,047	---
Backwash Pump No. 2	7.50	2	183	366	2,047	---
<i>Denitrification BAF Total</i>	---	---	---	---	33,024	0.6%
Disinfection						
UV Lamp Bank No. 1 (kW per lamp)	2.8	12	365	4,380	515,088	---
UV Lamp Bank No. 2 (kW per lamp)	2.8	12	365	4,380	515,088	---
<i>Disinfection Total</i>	---	---	---	---	1,030,176	17.9%

Table 2
 Greater Hazleton Joint Sewer Authority
 High Strength Wastewater Surcharge Study

Annual Distribution of Power Costs
 August 1, 2012 through July 31, 2013

Treatment Process	hp	Operating Time			Annual kWh	% of Total
		Hours/Day	Days/Year	Hours/Year		
Hauled Waste Handling						
Screen Drive Motor No. 1	1.00	8	183	1,464	1,092	---
Horiz Grit Screw Motor No. 1	2.00	8	183	1,464	2,183	---
Grit Dewatering Screw Motor No. 1	2.00	8	183	1,464	2,183	---
Blower Motor No. 1	0.50	8	183	1,464	546	---
Screen Drive Motor No. 2	1.00	8	183	1,464	1,092	---
Horiz Grit Screw Motor No. 2	2.00	8	183	1,464	2,183	---
Grit Dewatering Screw Motor No. 2	2.00	8	183	1,464	2,183	---
Blower Motor No. 2	0.50	8	183	1,464	546	---
Chopper Pump No. 1	5.00	6	91	546	2,036	---
Chopper Pump No. 2	5.00	6	91	546	2,036	---
Chopper Pump No. 3	5.00	6	91	546	2,036	---
Chopper Pump No. 4	5.00	6	91	546	2,036	---
Sound Proof Blower	2.00	24	365	8,760	13,065	---
<i>Hauled Waste Handling Total</i>	----	---	---	---	33,216	0.6%
Sludge Handling						
Plant Water						
Plant Water Pump No. 1	15.00	24	183	4,392	49,127	---
Plant Water Pump No. 2	15.00	24	183	4,392	49,127	---
Plant Water Pump No. 3	15.00	0	183	0	0	---
Thickeners						
Thickener No. 1 Drive Motor	1.00	24	365	8,760	6,532	---
Thickener No. 2 Drive Motor	1.00	24	365	8,760	6,532	---
Thickener No. 3 Drive Motor	0.50	24	365	8,760	3,266	---
Sludge Holding Tank Mixer	7.50	24	365	8,760	48,992	---
Sludge Feed Pump No. 1	7.50	0	365	0	0	---
Sludge Feed Pump No. 2	7.50	0	365	0	0	---
Sludge Feed Pump No. 3	15.00	22	365	8,030	89,820	---
Sludge Feed Pump No. 4	15.00	22	365	8,030	89,820	---
Sludge Feed Pump No. 5	15.00	0	365	0	0	---
Grinder No. 1	3.00	22	365	8,030	17,964	---
Grinder No. 2	3.00	0	365	0	0	---
Odor Control Exhaust Fan	10.00	24	365	8,760	65,323	---
Liquid Polymer Batching System	0.50	18	365	6,570	2,450	---
Polymer Tank No. 1 Mixer	1.50	24	365	8,760	9,798	---
Polymer Tank No. 2 Mixer	1.50	24	365	8,760	9,798	---
Ingersoll Rand Air Compressor	20.00	18	365	6,570	97,985	---
Transfer Screw Conveyor	5.00	22	365	8,030	29,940	---
Diluent Pump No. 1	---	0	0	0	---	---
Diluent Pump No. 2	---	0	0	0	---	---
Rotary Press No. 1						
Drive Motor	20.00	22	365	8,030	119,759	---
Flocculation Motor	1.00	22	365	8,030	5,988	---
Screw Conveyor Motor	5.00	22	365	8,030	29,940	---
Polymer Pump 1	3.00	22	365	8,030	17,964	---
Rotary Press No. 2						
Drive Motor	20.00	22	365	8,030	119,759	---
Flocculation Motor	1.00	22	365	8,030	5,988	---
Screw Conveyor Motor	5.00	22	365	8,030	29,940	---
Polymer Pump 2	3.00	22	365	8,030	17,964	---
Rotary Press No. 3						
Drive Motor	20.00	0	365	0	0	---
Flocculation Motor	1.00	0	365	0	0	---
Screw Conveyor Motor	5.00	0	365	0	0	---
Polymer Pump 3	3.00	0	365	0	0	---
Schwing Cake Pumps						
Main Hydraulic Motor	75.00	24	365	8,760	489,925	---
Secondary Hydraulic Motor	1.50	24	365	8,760	9,798	---
<i>Sludge Handling Total</i>	---	---	---	---	1,423,500	24.7%
Total	---	---	---	---	5,759,492	---

Notes:
 (1) One mechanic or hydraulic horsepower is equal to 0.745699872 kilowatts.

Table 3
Greater Hazleton Joint Sewer Authority
High Strength Wastewater Surcharge Study

Cost of Removal through Processes
August 1, 2012 through July 31, 2013

Treatment Process	Operating Cost ⁽¹⁾	Flow		BOD		TSS		TN		TP	
		Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount
Preliminary Treatment	\$159,235	25%	\$39,809	0%	\$0	75%	\$119,426	0%	\$0	0%	\$0
Chemical P Removal	\$56,354	0%	\$0	0%	\$0	0%	\$0	0%	\$0	100%	\$56,354
Primary Clarification	\$225,219	0%	\$0	40%	\$90,088	50%	\$112,609	0%	\$0	10%	\$22,522
Primary Pumping Station	\$276,889	100%	\$276,889	0%	\$0	0%	\$0	0%	\$0	0%	\$0
Trickling Filters	\$109,467	0%	\$0	100%	\$109,467	0%	\$0	0%	\$0	0%	\$0
Bioreactors	\$449,735	0%	\$0	100%	\$449,735	0%	\$0	0%	\$0	0%	\$0
Secondary Clarification	\$214,525	0%	\$0	100%	\$214,525	0%	\$0	0%	\$0	0%	\$0
Secondary Pumping Station	\$267,956	100%	\$267,956	0%	\$0	0%	\$0	0%	\$0	0%	\$0
Nitrification BAF	\$439,307	0%	\$0	0%	\$0	0%	\$0	100%	\$439,307	0%	\$0
Denitrification BAF	\$453,477	0%	\$0	0%	\$0	0%	\$0	100%	\$453,477	0%	\$0
Disinfection	\$378,411	100%	\$378,411	0%	\$0	0%	\$0	0%	\$0	0%	\$0
Hauled Waste Handling ⁽²⁾	\$0	0%	\$0	40%	\$0	60%	\$0	0%	\$0	0%	\$0
Sludge Handling ⁽³⁾	\$1,077,505	0%	\$0	20%	\$215,501	80%	\$862,004	0%	\$0	0%	\$0
Total	\$4,108,080	---	\$963,065	---	\$1,079,316	---	\$1,094,039	---	\$892,784	---	\$78,876

Notes:

⁽¹⁾ Operating costs from Table 1.

⁽²⁾ Hauled waste handling costs should be applied solely to hauled waste dischargers; Therefore, these costs are incorporated in the hauled waste handling and treatment costs in Table 6.

⁽³⁾ A portion of the sludge handling costs should be applied to hauled waste dischargers:

- a. The estimated hauled waste contribution to the total treatment process solids, based on quarterly hauled waste sampling throughout 2014, is 35.0%
- b. This percentage of the sludge handling costs are, therefore, incorporated in the hauled waste handling and treatment costs in Table 6.

Table 4
 Greater Hazleton Joint Sewer Authority
 High Strength Wastewater Surcharge Study

Annual WWTP Operations Summary
 August 1, 2012 through July 31, 2013

Pollutant of Concern	Raw Influent ^(1a)		Hauled Waste ^(1b)		Total Combined Process Loadings ^(1c)		Biological Assimilation ⁽²⁾	Final Effluent ⁽¹⁾		Removal ⁽³⁾	
	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	lbs/day	mg/L	lbs/day	lbs/day	lbs/year
BOD	148	9,217	1,400	1,401	161	10,618	---	6	399	10,618	3,875,614
TSS	137	8,641	300	300	135	8,941	---	4	251	8,941	3,263,553
TN	24.6	1,438	160	160	24.2	1,598	240	5.1	307	1,291	471,262
TP	3.0	177	25	25	3.1	202	45	0.9	54	148	54,027

Notes:

⁽¹⁾ Raw Influent and Final Effluent average concentrations and loadings as reported between August 1, 2012 and July 31, 2013.

- a. Raw Influent concentrations and loadings do not include hauled waste contributions.
- b. Hauled waste average equivalent concentrations from the hauled septage, hauled sludge, and hauled other wastestreams based on historic sampling. Loadings are estimated using annual average hauled waste volume in 1d.
- c. Total Combined Process Loadings are the sum of the raw wastewater and the hauled waste loadings.
- d. Annual average daily flows utilized to calculate the equivalent process loadings concentrations:

Raw Influent: 7.803 mgd
 Hauled Waste: 0.120 mgd

⁽²⁾ Biological assimilation is estimated based on the following assumptions:

Parameter	Unit	Input	Calculation
WAS (Approximate)	mgd	0.055	---
WAS TSS (Estimated)	mg/L	7,200	---
WAS	lbs/day	---	3,303
MLVSS/MLSS Ratio	%	0.85	---
Estimated WAS VSS	lbs/day	---	2,807
Pure Biomass/WAS VSS Ratio	%	0.70	---
Estimated Pure Biomass	lbs/day	---	1,965
Nitrogen Assimulated	%	12.2%	---
Nitrogen Assimulated	lbs/day	---	240
Phosphorus Assimulated	%	2.3%	---
Phosphorus Assimulated	lbs/day	---	45

⁽³⁾ Removal assumes that all BOD and TSS is removed through the treatment process and the final effluent CBOD and TSS are mostly an artifact of cellular debris.

- a. For TN and TP, the annual pounds removed is the raw influent loading minus the final effluent loading. Nutrient assimilation in the biological treatment process is considered part of the removal process.

Table 5
 Greater Hazleton Joint Sewer Authority
 High Strength Wastewater Surcharge Study

Cost of Removal Summary
 August 1, 2012 through July 31, 2013

Pollutant of Concern	Annual Cost of Removal ⁽¹⁾	Annual Pounds Removed ⁽²⁾	Cost per Pound Removed ⁽³⁾
BOD	\$1,079,316	3,875,614	\$0.28
TSS	\$1,094,039	3,263,553	\$0.34
TN	\$892,784	471,262	\$1.89
TP	\$78,876	54,027	\$1.46

Notes:

- ⁽¹⁾ Annual Cost of Removal from *Table 3*.
- ⁽²⁾ Annual Pounds Removed based from *Table 4*.
- ⁽³⁾ Cost of Removal = Yearly Cost of Pollutant Removed / Yearly Pounds of Pollutant Removed.

Appendix 2

**High Strength Wastewater Surcharge Calculations -
Budget Year 2014**

Table 1
 Greater Hazleton Joint Sewer Authority
 High Strength Wastewater Surcharge Study
 Allocation of Total Operating Costs by Process
 August 1, 2013 through July 31, 2014

Account	Account No.	Budget Amount ⁽¹⁾	Preliminary Treatment		Chemical P Removal		Primary Clarification		Primary Pumping Station		Trickling Filters		Bioreactors		Secondary Clarification		Secondary Pumping Station		Nitrification BAF		Denitrification BAF		Disinfection		Hauled Waste Handling		Sludge Handling			
			Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount
Engineering Fees - NPDES Permi	10-7000-7054	\$479	5.0%	\$16	1.0%	\$3	7.5%	\$24	7.5%	\$24	4.0%	\$13	10.0%	\$32	7.5%	\$24	7.5%	\$24	10.0%	\$32	10.0%	\$32	10.0%	\$32	10.0%	\$32	10.0%	\$32	10.0%	\$32
Engineering Fees - Miscellaneous	10-7000-7059	\$4,235	5.0%	\$141	1.0%	\$28	7.5%	\$212	7.5%	\$212	4.0%	\$113	10.0%	\$282	7.5%	\$212	7.5%	\$212	10.0%	\$282	10.0%	\$282	10.0%	\$282	10.0%	\$282	10.0%	\$282	10.0%	\$282
Permits, Fees, Nutrient Credit	10-7000-7060	\$6,337	5.0%	\$211	1.0%	\$42	7.5%	\$317	7.5%	\$317	4.0%	\$169	10.0%	\$422	7.5%	\$317	7.5%	\$317	10.0%	\$422	10.0%	\$422	10.0%	\$422	10.0%	\$422	10.0%	\$422	10.0%	\$422
Group Insurance - Health	10-7000-7100	\$375,304	5.0%	\$12,510	1.0%	\$2,502	7.5%	\$18,765	7.5%	\$18,765	4.0%	\$10,008	10.0%	\$25,020	7.5%	\$18,765	7.5%	\$18,765	10.0%	\$25,020	10.0%	\$25,020	10.0%	\$25,020	10.0%	\$25,020	10.0%	\$25,020	10.0%	\$25,020
Group Insurance - Dental	10-7000-7101	\$25,134	5.0%	\$838	1.0%	\$168	7.5%	\$1,257	7.5%	\$1,257	4.0%	\$670	10.0%	\$1,676	7.5%	\$1,257	7.5%	\$1,257	10.0%	\$1,676	10.0%	\$1,676	10.0%	\$1,676	10.0%	\$1,676	10.0%	\$1,676	10.0%	\$1,676
Group Insurance - Eyeglasses R	10-7000-7102	\$5,616	5.0%	\$187	1.0%	\$37	7.5%	\$281	7.5%	\$281	4.0%	\$150	10.0%	\$374	7.5%	\$281	7.5%	\$281	10.0%	\$374	10.0%	\$374	10.0%	\$374	10.0%	\$374	10.0%	\$374	10.0%	\$374
Group Insurance - Short Term D	10-7000-7103	\$10,816	5.0%	\$361	1.0%	\$72	7.5%	\$541	7.5%	\$541	4.0%	\$288	10.0%	\$721	7.5%	\$541	7.5%	\$541	10.0%	\$721	10.0%	\$721	10.0%	\$721	10.0%	\$721	10.0%	\$721	10.0%	\$721
Group Insurance - Employee Lif	10-7000-7104	\$12,687	5.0%	\$423	1.0%	\$85	7.5%	\$634	7.5%	\$634	4.0%	\$338	10.0%	\$846	7.5%	\$634	7.5%	\$634	10.0%	\$846	10.0%	\$846	10.0%	\$846	10.0%	\$846	10.0%	\$846	10.0%	\$846
OPEB Expense - Health Insuranc	10-7000-7105	\$0	5.0%	\$0	1.0%	\$0	7.5%	\$0	7.5%	\$0	4.0%	\$0	10.0%	\$0	7.5%	\$0	7.5%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0
Group Insurance - Directors Li	10-7000-7106	\$9,026	5.0%	\$301	1.0%	\$60	7.5%	\$451	7.5%	\$451	4.0%	\$241	10.0%	\$602	7.5%	\$451	7.5%	\$451	10.0%	\$602	10.0%	\$602	10.0%	\$602	10.0%	\$602	10.0%	\$602	10.0%	\$602
Insurance - Property & Casualt	10-7000-7110	\$85,031	5.0%	\$2,834	1.0%	\$567	7.5%	\$4,252	7.5%	\$4,252	4.0%	\$2,267	10.0%	\$5,669	7.5%	\$4,252	7.5%	\$4,252	10.0%	\$5,669	10.0%	\$5,669	10.0%	\$5,669	10.0%	\$5,669	10.0%	\$5,669	10.0%	\$5,669
Insurance - Errors & Omissions	10-7000-7115	\$0	5.0%	\$0	1.0%	\$0	7.5%	\$0	7.5%	\$0	4.0%	\$0	10.0%	\$0	7.5%	\$0	7.5%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0
Worker's Compensation Insuran	10-7000-7120	\$62,851	5.0%	\$2,095	1.0%	\$419	7.5%	\$3,143	7.5%	\$3,143	4.0%	\$1,676	10.0%	\$4,190	7.5%	\$3,143	7.5%	\$3,143	10.0%	\$4,190	10.0%	\$4,190	10.0%	\$4,190	10.0%	\$4,190	10.0%	\$4,190	10.0%	\$4,190
Conferences, Education, & Semi	10-7000-7130	\$30,297	5.0%	\$1,010	1.0%	\$202	7.5%	\$1,515	7.5%	\$1,515	4.0%	\$808	10.0%	\$2,020	7.5%	\$1,515	7.5%	\$1,515	10.0%	\$2,020	10.0%	\$2,020	10.0%	\$2,020	10.0%	\$2,020	10.0%	\$2,020	10.0%	\$2,020
Advertising	10-7000-7140	\$6,907	5.0%	\$230	1.0%	\$46	7.5%	\$345	7.5%	\$345	4.0%	\$184	10.0%	\$460	7.5%	\$345	7.5%	\$345	10.0%	\$460	10.0%	\$460	10.0%	\$460	10.0%	\$460	10.0%	\$460	10.0%	\$460
Trustee Fees	10-7000-7150	\$4,000	5.0%	\$133	1.0%	\$27	7.5%	\$200	7.5%	\$200	4.0%	\$107	10.0%	\$267	7.5%	\$200	7.5%	\$200	10.0%	\$267	10.0%	\$267	10.0%	\$267	10.0%	\$267	10.0%	\$267	10.0%	\$267
Surety Bond Premium - Incinera	10-7000-7152	\$0	5.0%	\$0	1.0%	\$0	7.5%	\$0	7.5%	\$0	4.0%	\$0	10.0%	\$0	7.5%	\$0	7.5%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0
Bank Service Charges	10-7000-7160	\$112	5.0%	\$4	1.0%	\$1	7.5%	\$6	7.5%	\$6	4.0%	\$3	10.0%	\$7	7.5%	\$6	7.5%	\$6	10.0%	\$7	10.0%	\$7	10.0%	\$7	10.0%	\$7	10.0%	\$7	10.0%	\$7
Postage - Daily	10-7000-7170	\$2,907	5.0%	\$97	1.0%	\$19	7.5%	\$145	7.5%	\$145	4.0%	\$78	10.0%	\$194	7.5%	\$145	7.5%	\$145	10.0%	\$194	10.0%	\$194	10.0%	\$194	10.0%	\$194	10.0%	\$194	10.0%	\$194
Postage - Permit #240	10-7000-7171	\$19,843	5.0%	\$661	1.0%	\$132	7.5%	\$992	7.5%	\$992	4.0%	\$529	10.0%	\$1,323	7.5%	\$992	7.5%	\$992	10.0%	\$1,323	10.0%	\$1,323	10.0%	\$1,323	10.0%	\$1,323	10.0%	\$1,323	10.0%	\$1,323
Postage - Address Service	10-7000-7172	\$1,186	5.0%	\$40	1.0%	\$8	7.5%	\$59	7.5%	\$59	4.0%	\$32	10.0%	\$79	7.5%	\$59	7.5%	\$59	10.0%	\$79	10.0%	\$79	10.0%	\$79	10.0%	\$79	10.0%	\$79	10.0%	\$79
Freight	10-7000-7173	\$604	5.0%	\$20	1.0%	\$4	7.5%	\$30	7.5%	\$30	4.0%	\$16	10.0%	\$40	7.5%	\$30	7.5%	\$30	10.0%	\$40	10.0%	\$40	10.0%	\$40	10.0%	\$40	10.0%	\$40	10.0%	\$40
Telephone Service	10-7000-7180	\$15,095	5.0%	\$503	1.0%	\$101	7.5%	\$755	7.5%	\$755	4.0%	\$403	10.0%	\$1,006	7.5%	\$755	7.5%	\$755	10.0%	\$1,006	10.0%	\$1,006	10.0%	\$1,006	10.0%	\$1,006	10.0%	\$1,006	10.0%	\$1,006
Cost of Billing	10-7000-7190	\$14,814	5.0%	\$494	1.0%	\$99	7.5%	\$741	7.5%	\$741	4.0%	\$395	10.0%	\$988	7.5%	\$741	7.5%	\$741	10.0%	\$988	10.0%	\$988	10.0%	\$988	10.0%	\$988	10.0%	\$988	10.0%	\$988
Bill Collections - Third Party	10-7000-7200	\$169	5.0%	\$6	1.0%	\$1	7.5%	\$8	7.5%	\$8	4.0%	\$5	10.0%	\$11	7.5%	\$8	7.5%	\$8	10.0%	\$11	10.0%	\$11	10.0%	\$11	10.0%	\$11	10.0%	\$11	10.0%	\$11
Delinquent Collections - Water	10-7000-7210	\$6,062	5.0%	\$202	1.0%	\$40	7.5%	\$303	7.5%	\$303	4.0%	\$162	10.0%	\$404	7.5%	\$303	7.5%	\$303	10.0%	\$404	10.0%	\$404	10.0%	\$404	10.0%	\$404	10.0%	\$404	10.0%	\$404
Delinquent Collections - Suppl	10-7000-7215	\$0	5.0%	\$0	1.0%	\$0	7.5%	\$0	7.5%	\$0	4.0%	\$0	10.0%	\$0	7.5%	\$0	7.5%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0
Delinquent Collections - Const	10-7000-7220	\$18,054	5.0%	\$602	1.0%	\$120	7.5%	\$903	7.5%	\$903	4.0%	\$481	10.0%	\$1,204	7.5%	\$903	7.5%	\$903	10.0%	\$1,204	10.0%	\$1,204	10.0%	\$1,204	10.0%	\$1,204	10.0%	\$1,204	10.0%	\$1,204
Board Member Fees	10-7000-7230	\$23,800	5.0%	\$793	1.0%	\$159	7.5%	\$1,190	7.5%	\$1,190	4.0%	\$635	10.0%	\$1,587	7.5%	\$1,190	7.5%	\$1,190	10.0%	\$1,587	10.0%	\$1,587	10.0%	\$1,587	10.0%	\$1,587	10.0%	\$1,587	10.0%	\$1,587
Pension Plan Contribution	10-7000-7240	\$169,000	5.0%	\$5,633	1.0%	\$1,127	7.5%	\$8,450	7.5%	\$8,450	4.0%	\$4,507	10.0%	\$11,267	7.5%	\$8,450	7.5%	\$8,450	10.0%	\$11,267	10.0%	\$11,267	10.0%	\$11,267	10.0%	\$11,267	10.0%	\$11,267	10.0%	\$11,267
Total		\$5,907,599	---	\$172,579	---	\$60,844	---	\$244,740	---	\$298,594	---	\$114,215	---	\$488,656	---	\$226,639	---	\$288,076	---	\$462,351	---	\$456,443	---	\$400,191	---	\$275,263	---	\$1,977,197		

Notes:

⁽¹⁾ Year End Budget amounts from Fiscal Year beginning August 1, 2012 and ending July 31, 2013.

⁽²⁾ Distribution of electric costs (Account Nos. 10-5000-5040 through 10-5000-5046) are based on allocation established in Table 2.

⁽³⁾ Truck Expenses (Account Nos. 10-5000-5100 through 10-5000-5109) are allocated between WWTP and Collection System budgets. The WWTP component is: 50.0%

⁽⁴⁾ Administrative Costs (7000 Account Series) and some select accounts (10-5000-4000, 10-5000-4310, 10-5000-4320, 10-5000-4330, 10-5000-4216, 10-5000-5165, and 10-5000-5181) have been allocated between WWTP, Collection System, and Administrative Office budgets. The WWTP component is: 66.7%

⁽⁵⁾ Debt service is not considered as part of these surcharge calculations.

Table 2
 Greater Hazleton Joint Sewer Authority
 High Strength Wastewater Surcharge Study

Annual Distribution of Power Costs
 August 1, 2013 through July 31, 2014

Treatment Process	hp	Operating Time			Annual kWh	% of Total
		Hours/Day	Days/Year	Hours/Year		
Preliminary Treatment						
First Screenhouse						
Rake Motor	0.50	24	365	8,760	3,266	---
Sluice Gate to Grit Bldg	7.00	0	0	0	0	---
Sluice Gate to Second Screens	7.00	0	0	0	0	---
Gate to CSO Separator	3.00	0	0	0	0	---
Grit Building						
Grit Pump Motor	10.00	4	365	1,460	10,887	---
Grit Classifier	5.00	4	365	1,460	5,444	---
Grit Screw Motor	1.00	4	365	1,460	1,089	---
Grit Blower	7.50	24	365	8,760	48,992	---
Odor Control System Fan	2.00	24	365	8,760	13,065	---
Second Screenhouse						
Flexrake #1 Motor	0.50	24	365	8,760	3,266	---
Flexrake #2 Motor	0.50	24	365	8,760	3,266	---
Auger Conveyor Motor	0.25	24	365	8,760	1,633	---
Washer/Compactor Motor	0.75	24	365	8,760	4,899	---
<i>Preliminary Treatment Total</i>	---	---	---	---	95,808	1.7%
Chemical P Removal						
PAC Feed Pump No. 1	0.49	24	183	4,392	1,605	---
PAC Feed Pump No. 2	0.49	0	183	0	0	---
Polymer Batch Mix Unit	1.50	1	365	365	408	---
Polymer Transfer Pump	3.00	1	365	365	817	---
Polymer Feed Pump No. 1	0.49	24	183	4,392	1,605	---
Polymer Feed Pump No. 2	0.49	0	183	0	0	---
Rapid Induction Mixer	3.00	24	365	8,760	19,597	---
Flocculation Mixer	3.00	24	365	8,760	19,597	---
Flocculation Compressor/Blower	7.50	24	365	8,760	48,992	---
<i>Chemical P Removal Total</i>	---	---	---	---	92,621	1.6%
Primary Clarification						
Clarifier No. 1 Drive Motor	0.50	24	365	8,760	3,266	---
Clarifier No. 2 Drive Motor	0.50	24	365	8,760	3,266	---
Primary Sludge Pump No. 1	7.50	12	365	4,380	24,496	---
Primary Sludge Pump No. 2	7.50	12	365	4,380	24,496	---
Scum Pump No. 1	7.50	1	365	365	2,041	---
Scum Pump No. 2	7.50	1	365	365	2,041	---
<i>Primary Clarification Total</i>	---	---	---	---	59,608	1.0%
Primary Pumping Station						
Pump No. 1	200.00	24	122	2,928	436,682	---
Pump No. 2	200.00	0	122	0	0	---
Pump No. 3	100.00	24	122	2,928	218,341	---
Pump No. 4	100.00	0	122	0	0	---
Water Booster Pump	5.00	0	122	0	0	---
<i>Primary PS Total</i>	---	---	---	---	655,023	11.4%
Trickling Filter Biotowers						
<i>TF Biotowers Total</i>	---	---	---	---	0	0.0%

Table 2
Greater Hazleton Joint Sewer Authority
High Strength Wastewater Surcharge Study

Annual Distribution of Power Costs
August 1, 2013 through July 31, 2014

Treatment Process	hp	Operating Time			Annual kWh	% of Total
		Hours/Day	Days/Year	Hours/Year		
Bioreactors						
Blower No. 1	100.00	24	365	8,760	653,233	---
Blower No. 2	100.00	18	365	6,570	489,925	---
Blower No. 3	100.00	0	365	0	0	---
RAS Pump No. 1	---	0	183	0	0	---
RAS Pump No. 2	---	0	183	0	0	---
RAS Pump No. 3	25.00	24	183	4,392	81,878	---
WAS Pump No. 1	5.00	1	183	183	682	---
WAS Pump No. 2	5.00	1	183	183	682	---
WAS Pump No. 3	2.00	1	183	183	273	---
WAS Pump No. 4	2.00	1	183	183	273	---
<i>Bioreactors Total</i>	---	---	---	---	1,226,946	21.3%
Secondary Clarification						
Clarifier No. 1 Drive Motor	0.50	24	365	8,760	3,266	---
Clarifier No. 2 Drive Motor	0.50	24	365	8,760	3,266	---
Clarifier No. 3 Drive Motor	0.75	24	365	8,760	4,899	---
Clarifier No. 4 Drive Motor	0.75	24	365	8,760	4,899	---
<i>Secondary Clarification Total</i>	---	---	---	---	16,331	0.3%
Secondary Pumping Station						
Pump No. 1	100.00	24	122	2,928	218,341	---
Pump No. 2	100.00	24	122	2,928	218,341	---
Pump No. 3	100.00	0	122	0	0	---
Pump No. 4	100.00	0	122	0	0	---
Blower No. 1	20.00	24	365	8,760	130,647	---
<i>Secondary PS Total</i>	---	---	---	---	567,328	9.9%
Nitrification BAF						
MgOH Mixer No. 1	2.00	24	365	8,760	13,065	---
MgOH Mixer No. 2	2.00	24	365	8,760	13,065	---
MgOH Feed Pump No. 1	0.10	24	183	4,392	328	---
MgOH Feed Pump No. 2	0.10	0	183	0	0	---
Blower No. 1	75.00	8	183	1,464	81,878	---
Blower No. 2	75.00	8	183	1,464	81,878	---
Blower No. 3	75.00	8	183	1,464	81,878	---
Blower No. 4	75.00	8	183	1,464	81,878	---
Blower No. 5	75.00	8	183	1,464	81,878	---
Blower No. 6	75.00	8	183	1,464	81,878	---
Blower No. 7	75.00	0	183	0	0	---
Backwash Pump No. 1	7.50	2	183	366	2,047	---
Backwash Pump No. 2	7.50	2	183	366	2,047	---
Nite/Denite Air Compressor	7.50	4	183	732	4,094	---
<i>Nitrification BAF Total</i>	---	---	---	---	525,912	9.1%
Denitrification BAF						
Blower No. 1	50.00	2	183	366	13,646	---
Blower No. 2	50.00	2	183	366	13,646	---
Methanol Feed Pump No. 1	0.50	24	183	4,392	1,638	---
Methanol Feed Pump No. 2	0.50	0	183	0	0	---
Backwash Pump No. 1	7.50	2	183	366	2,047	---
Backwash Pump No. 2	7.50	2	183	366	2,047	---
<i>Denitrification BAF Total</i>	---	---	---	---	33,024	0.6%
Disinfection						
UV Lamp Bank No. 1 (kW per lamp)	2.8	12	365	4,380	515,088	---
UV Lamp Bank No. 2 (kW per lamp)	2.8	12	365	4,380	515,088	---
<i>Disinfection Total</i>	---	---	---	---	1,030,176	17.9%

Table 2
Greater Hazleton Joint Sewer Authority
High Strength Wastewater Surcharge Study

Annual Distribution of Power Costs
August 1, 2013 through July 31, 2014

Treatment Process	hp	Operating Time			Annual kWh	% of Total
		Hours/Day	Days/Year	Hours/Year		
Hauled Waste Handling						
Screen Drive Motor No. 1	1.00	8	183	1,464	1,092	---
Horiz Grit Screw Motor No. 1	2.00	8	183	1,464	2,183	---
Grit Dewatering Screw Motor No. 1	2.00	8	183	1,464	2,183	---
Blower Motor No. 1	0.50	8	183	1,464	546	---
Screen Drive Motor No. 2	1.00	8	183	1,464	1,092	---
Horiz Grit Screw Motor No. 2	2.00	8	183	1,464	2,183	---
Grit Dewatering Screw Motor No. 2	2.00	8	183	1,464	2,183	---
Blower Motor No. 2	0.50	8	183	1,464	546	---
Chopper Pump No. 1	5.00	6	91	546	2,036	---
Chopper Pump No. 2	5.00	6	91	546	2,036	---
Chopper Pump No. 3	5.00	6	91	546	2,036	---
Chopper Pump No. 4	5.00	6	91	546	2,036	---
Sound Proof Blower	2.00	24	365	8,760	13,065	---
<i>Hauled Waste Handling Total</i>	----	---	---	---	33,216	0.6%
Sludge Handling						
Plant Water						
Plant Water Pump No. 1	15.00	24	183	4,392	49,127	---
Plant Water Pump No. 2	15.00	24	183	4,392	49,127	---
Plant Water Pump No. 3	15.00	0	183	0	0	---
Thickeners						
Thickener No. 1 Drive Motor	1.00	24	365	8,760	6,532	---
Thickener No. 2 Drive Motor	1.00	24	365	8,760	6,532	---
Thickener No. 3 Drive Motor	0.50	24	365	8,760	3,266	---
Sludge Holding Tank Mixer	7.50	24	365	8,760	48,992	---
Sludge Feed Pump No. 1	7.50	0	365	0	0	---
Sludge Feed Pump No. 2	7.50	0	365	0	0	---
Sludge Feed Pump No. 3	15.00	22	365	8,030	89,820	---
Sludge Feed Pump No. 4	15.00	22	365	8,030	89,820	---
Sludge Feed Pump No. 5	15.00	0	365	0	0	---
Grinder No. 1	3.00	22	365	8,030	17,964	---
Grinder No. 2	3.00	0	365	0	0	---
Odor Control Exhaust Fan	10.00	24	365	8,760	65,323	---
Liquid Polymer Batching System	0.50	18	365	6,570	2,450	---
Polymer Tank No. 1 Mixer	1.50	24	365	8,760	9,798	---
Polymer Tank No. 2 Mixer	1.50	24	365	8,760	9,798	---
Ingersoll Rand Air Compressor	20.00	18	365	6,570	97,985	---
Transfer Screw Conveyor	5.00	22	365	8,030	29,940	---
Diluent Pump No. 1	---	0	0	0	---	---
Diluent Pump No. 2	---	0	0	0	---	---
Rotary Press No. 1						
Drive Motor	20.00	22	365	8,030	119,759	---
Flocculation Motor	1.00	22	365	8,030	5,988	---
Screw Conveyor Motor	5.00	22	365	8,030	29,940	---
Polymer Pump 1	3.00	22	365	8,030	17,964	---
Rotary Press No. 2						
Drive Motor	20.00	22	365	8,030	119,759	---
Flocculation Motor	1.00	22	365	8,030	5,988	---
Screw Conveyor Motor	5.00	22	365	8,030	29,940	---
Polymer Pump 2	3.00	22	365	8,030	17,964	---
Rotary Press No. 3						
Drive Motor	20.00	0	365	0	0	---
Flocculation Motor	1.00	0	365	0	0	---
Screw Conveyor Motor	5.00	0	365	0	0	---
Polymer Pump 3	3.00	0	365	0	0	---
Schwing Cake Pumps						
Main Hydraulic Motor	75.00	24	365	8,760	489,925	---
Secondary Hydraulic Motor	1.50	24	365	8,760	9,798	---
<i>Sludge Handling Total</i>	---	---	---	---	1,423,500	24.7%
Total	---	---	---	---	5,759,492	---

Notes:

(1) One mechanic or hydraulic horsepower is equal to 0.745699872 kilowatts.

Table 3
 Greater Hazleton Joint Sewer Authority
 High Strength Wastewater Surcharge Study

Cost of Removal through Processes
 August 1, 2013 through July 31, 2014

Treatment Process	Operating Cost ⁽¹⁾	Flow		BOD		TSS		TN		TP	
		Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount
Preliminary Treatment	\$172,579	25%	\$43,145	0%	\$0	75%	\$129,434	0%	\$0	0%	\$0
Chemical P Removal	\$60,844	0%	\$0	0%	\$0	0%	\$0	0%	\$0	100%	\$60,844
Primary Clarification	\$244,740	0%	\$0	40%	\$97,896	50%	\$122,370	0%	\$0	10%	\$24,474
Primary Pumping Station	\$298,594	100%	\$298,594	0%	\$0	0%	\$0	0%	\$0	0%	\$0
Trickling Filters	\$114,215	0%	\$0	100%	\$114,215	0%	\$0	0%	\$0	0%	\$0
Bioreactors	\$488,656	0%	\$0	100%	\$488,656	0%	\$0	0%	\$0	0%	\$0
Secondary Clarification	\$226,639	0%	\$0	100%	\$226,639	0%	\$0	0%	\$0	0%	\$0
Secondary Pumping Station	\$288,076	100%	\$288,076	0%	\$0	0%	\$0	0%	\$0	0%	\$0
Nitrification BAF	\$462,351	0%	\$0	0%	\$0	0%	\$0	100%	\$462,351	0%	\$0
Denitrification BAF	\$456,443	0%	\$0	0%	\$0	0%	\$0	100%	\$456,443	0%	\$0
Disinfection	\$400,191	100%	\$400,191	0%	\$0	0%	\$0	0%	\$0	0%	\$0
Hauled Waste Handling ⁽²⁾	\$0	0%	\$0	40%	\$0	60%	\$0	0%	\$0	0%	\$0
Sludge Handling ⁽³⁾	\$1,285,178	0%	\$0	20%	\$257,036	80%	\$1,028,143	0%	\$0	0%	\$0
Total	\$4,498,507	---	\$1,030,005	---	\$1,184,442	---	\$1,279,947	---	\$918,794	---	\$85,318

Notes:

⁽¹⁾ Operating costs from Table 1.

⁽²⁾ Hauled waste handling costs should be applied solely to hauled waste dischargers; Therefore, these costs are incorporated in the hauled waste handling and treatment costs in Table 6.

⁽³⁾ A portion of the sludge handling costs should be applied to hauled waste dischargers:

- a. The estimated hauled waste contribution to the total treatment process solids, based on quarterly hauled waste sampling throughout 2014, is 35.0%
- b. This percentage of the sludge handling costs are, therefore, incorporated in the hauled waste handling and treatment costs in Table 6.

Table 4
 Greater Hazleton Joint Sewer Authority
 High Strength Wastewater Surcharge Study

Annual WWTP Operations Summary
 August 1, 2013 through July 31, 2014

Pollutant of Concern	Raw Influent ^(1a)		Hauled Waste ^(1b)		Total Combined Process Loadings ^(1c)		Biological Assimilation ⁽²⁾	Final Effluent ⁽¹⁾		Removal ⁽³⁾	
	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	lbs/day	mg/L	lbs/day	lbs/day	lbs/year
BOD	155	9,926	1,400	1,786	169	11,712	---	6	446	11,712	4,275,036
TSS	131	8,592	300	383	130	8,975	---	4	313	8,975	3,275,804
TN	23.0	1,346	160	204	22.4	1,550	240	8.1	510	1,040	379,660
TP	3.3	198	25	32	3.3	230	45	1.0	62	168	61,284

Notes:

⁽¹⁾ Raw Influent and Final Effluent average concentrations and loadings as reported between August 1, 2012 and July 31, 2013.

- a. Raw Influent concentrations and loadings do not include hauled waste contributions.
- b. Hauled waste average equivalent concentrations from the hauled septage, hauled sludge, and hauled other wastestreams based on historic sampling. Loadings are estimated using annual average hauled waste volume in 1d.
- c. Total Combined Process Loadings are the sum of the raw wastewater and the hauled waste loadings.
- d. Annual average daily flows utilized to calculate the equivalent process loadings concentrations:

Raw Influent: 8.149 mgd
 Hauled Waste: 0.153 mgd

⁽²⁾ Biological assimilation is estimated based on the following assumptions:

Parameter	Unit	Input	Calculation
WAS (Approximate)	mgd	0.055	---
WAS TSS (Estimated)	mg/L	7,200	---
WAS	lbs/day	---	3,303
MLVSS/MLSS Ratio	%	0.85	---
Estimated WAS VSS	lbs/day	---	2,807
Pure Biomass/WAS VSS Ratio	%	0.70	---
Estimated Pure Biomass	lbs/day	---	1,965
Nitrogen Assimulated	%	12.2%	---
Nitrogen Assimulated	lbs/day	---	240
Phosphorus Assimulated	%	2.3%	---
Phosphorus Assimulated	lbs/day	---	45

⁽³⁾ Removal assumes that all BOD and TSS is removed through the treatment process and the final effluent CBOD and TSS are mostly an artifact of cellular debris.

- a. For TN and TP, the annual pounds removed is the raw influent loading minus the final effluent loading. Nutrient assimilation in the biological treatment process is considered part of the removal process.

Table 5
 Greater Hazleton Joint Sewer Authority
 High Strength Wastewater Surcharge Study

Cost of Removal Summary
 August 1, 2013 through July 31, 2014

Pollutant of Concern	Annual Cost of Removal ⁽¹⁾	Annual Pounds Removed ⁽²⁾	Cost per Pound Removed ⁽³⁾
BOD	\$1,184,442	4,275,036	\$0.28
TSS	\$1,279,947	3,275,804	\$0.39
TN	\$918,794	379,660	\$2.42
TP	\$85,318	61,284	\$1.39

Notes:

- ⁽¹⁾ Annual Cost of Removal from *Table 3*.
- ⁽²⁾ Annual Pounds Removed based from *Table 4*.
- ⁽³⁾ Cost of Removal = Yearly Cost of Pollutant Removed / Yearly Pounds of Pollutant Removed.

Appendix 3

**High Strength Wastewater Surcharge Calculations -
Budget Year 2015**

Table 1
Greater Hazelton Joint Sewer Authority
High Strength Wastewater Surcharge Study
Allocation of Total Operating Costs by Process
August 1, 2014 through July 31, 2015

Table with columns: Account, Account No., Budget Amount, Preliminary Treatment, Chemical P Removal, Primary Clarification, Primary Pumping Station, Trickling Filters, Bioreactors, Secondary Clarification, Secondary Pumping Station, Nitrification BAF, Denitrification BAF, Disinfection, Hauled Waste Handling, Sludge Handling. Rows include various operational categories like Payroll, Salaries, Maintenance, Chemicals, and Supplies.

Table 1
 Greater Hazleton Joint Sewer Authority
 High Strength Wastewater Surcharge Study
 Allocation of Total Operating Costs by Process
 August 1, 2014 through July 31, 2015

Account	Account No.	Budget Amount ⁽¹⁾	Preliminary Treatment		Chemical P Removal		Primary Clarification		Primary Pumping Station		Trickling Filters		Bioreactors		Secondary Clarification		Secondary Pumping Station		Nitrification BAF		Denitrification BAF		Disinfection		Hauled Waste Handling		Sludge Handling			
			Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount
Engineering Fees - NPDES Permi	10-7000-7054	\$2,035	5.0%	\$68	1.0%	\$14	7.5%	\$102	7.5%	\$102	4.0%	\$54	10.0%	\$136	7.5%	\$102	7.5%	\$102	10.0%	\$136	10.0%	\$136	10.0%	\$136	10.0%	\$136	10.0%	\$136	10.0%	\$136
Engineering Fees - Miscellaneo	10-7000-7059	\$15,176	5.0%	\$506	1.0%	\$101	7.5%	\$759	7.5%	\$759	4.0%	\$405	10.0%	\$1,012	7.5%	\$759	7.5%	\$759	10.0%	\$1,012	10.0%	\$1,012	10.0%	\$1,012	10.0%	\$1,012	10.0%	\$1,012	10.0%	\$1,012
Permits, Fees, Nutrient Credit	10-7000-7060	\$9,191	5.0%	\$306	1.0%	\$61	7.5%	\$460	7.5%	\$460	4.0%	\$245	10.0%	\$613	7.5%	\$460	7.5%	\$460	10.0%	\$613	10.0%	\$613	10.0%	\$613	10.0%	\$613	10.0%	\$613	10.0%	\$613
Group Insurance - Health	10-7000-7100	\$338,379	5.0%	\$11,279	1.0%	\$2,256	7.5%	\$16,919	7.5%	\$16,919	4.0%	\$9,023	10.0%	\$22,559	7.5%	\$16,919	7.5%	\$16,919	10.0%	\$22,559	10.0%	\$22,559	10.0%	\$22,559	10.0%	\$22,559	10.0%	\$22,559	10.0%	\$22,559
Group Insurance - Dental	10-7000-7101	\$28,436	5.0%	\$948	1.0%	\$190	7.5%	\$1,422	7.5%	\$1,422	4.0%	\$758	10.0%	\$1,896	7.5%	\$1,422	7.5%	\$1,422	10.0%	\$1,896	10.0%	\$1,896	10.0%	\$1,896	10.0%	\$1,896	10.0%	\$1,896	10.0%	\$1,896
Group Insurance - Eyeglasses R	10-7000-7102	\$7,271	5.0%	\$242	1.0%	\$48	7.5%	\$364	7.5%	\$364	4.0%	\$194	10.0%	\$485	7.5%	\$364	7.5%	\$364	10.0%	\$485	10.0%	\$485	10.0%	\$485	10.0%	\$485	10.0%	\$485	10.0%	\$485
Group Insurance - Short Term D	10-7000-7103	\$12,341	5.0%	\$411	1.0%	\$82	7.5%	\$617	7.5%	\$617	4.0%	\$329	10.0%	\$823	7.5%	\$617	7.5%	\$617	10.0%	\$823	10.0%	\$823	10.0%	\$823	10.0%	\$823	10.0%	\$823	10.0%	\$823
Group Insurance - Employee Lif	10-7000-7104	\$13,531	5.0%	\$451	1.0%	\$90	7.5%	\$677	7.5%	\$677	4.0%	\$361	10.0%	\$902	7.5%	\$677	7.5%	\$677	10.0%	\$902	10.0%	\$902	10.0%	\$902	10.0%	\$902	10.0%	\$902	10.0%	\$902
OPEB Expense - Health Insuranc	10-7000-7105	\$303,754	5.0%	\$10,125	1.0%	\$2,025	7.5%	\$15,188	7.5%	\$15,188	4.0%	\$8,100	10.0%	\$20,250	7.5%	\$15,188	7.5%	\$15,188	10.0%	\$20,250	10.0%	\$20,250	10.0%	\$20,250	10.0%	\$20,250	10.0%	\$20,250	10.0%	\$20,250
Group Insurance - Directors Li	10-7000-7106	\$9,762	5.0%	\$325	1.0%	\$65	7.5%	\$488	7.5%	\$488	4.0%	\$260	10.0%	\$651	7.5%	\$488	7.5%	\$488	10.0%	\$651	10.0%	\$651	10.0%	\$651	10.0%	\$651	10.0%	\$651	10.0%	\$651
Insurance - Property & Casualt	10-7000-7110	\$85,489	5.0%	\$2,850	1.0%	\$570	7.5%	\$4,274	7.5%	\$4,274	4.0%	\$2,280	10.0%	\$5,699	7.5%	\$4,274	7.5%	\$4,274	10.0%	\$5,699	10.0%	\$5,699	10.0%	\$5,699	10.0%	\$5,699	10.0%	\$5,699	10.0%	\$5,699
Insurance - Errors & Omissions	10-7000-7115	\$0	5.0%	\$0	1.0%	\$0	7.5%	\$0	7.5%	\$0	4.0%	\$0	10.0%	\$0	7.5%	\$0	7.5%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0
Worker's Compensation Insuran	10-7000-7120	\$64,500	5.0%	\$2,150	1.0%	\$430	7.5%	\$3,225	7.5%	\$3,225	4.0%	\$1,720	10.0%	\$4,300	7.5%	\$3,225	7.5%	\$3,225	10.0%	\$4,300	10.0%	\$4,300	10.0%	\$4,300	10.0%	\$4,300	10.0%	\$4,300	10.0%	\$4,300
Conferences, Education, & Semi	10-7000-7130	\$30,855	5.0%	\$1,029	1.0%	\$206	7.5%	\$1,543	7.5%	\$1,543	4.0%	\$823	10.0%	\$2,057	7.5%	\$1,543	7.5%	\$1,543	10.0%	\$2,057	10.0%	\$2,057	10.0%	\$2,057	10.0%	\$2,057	10.0%	\$2,057	10.0%	\$2,057
Advertising	10-7000-7140	\$4,710	5.0%	\$157	1.0%	\$31	7.5%	\$236	7.5%	\$236	4.0%	\$126	10.0%	\$314	7.5%	\$236	7.5%	\$236	10.0%	\$314	10.0%	\$314	10.0%	\$314	10.0%	\$314	10.0%	\$314	10.0%	\$314
Trustee Fees	10-7000-7150	\$4,000	5.0%	\$133	1.0%	\$27	7.5%	\$200	7.5%	\$200	4.0%	\$107	10.0%	\$267	7.5%	\$200	7.5%	\$200	10.0%	\$267	10.0%	\$267	10.0%	\$267	10.0%	\$267	10.0%	\$267	10.0%	\$267
Surety Bond Premium - Incinera	10-7000-7152	\$4,732	5.0%	\$158	1.0%	\$32	7.5%	\$237	7.5%	\$237	4.0%	\$126	10.0%	\$315	7.5%	\$237	7.5%	\$237	10.0%	\$315	10.0%	\$315	10.0%	\$315	10.0%	\$315	10.0%	\$315	10.0%	\$315
Bank Service Charges	10-7000-7160	\$4	5.0%	\$0	1.0%	\$0	7.5%	\$0	7.5%	\$0	4.0%	\$0	10.0%	\$0	7.5%	\$0	7.5%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0	10.0%	\$0
Postage - Daily	10-7000-7170	\$3,372	5.0%	\$112	1.0%	\$22	7.5%	\$169	7.5%	\$169	4.0%	\$90	10.0%	\$225	7.5%	\$169	7.5%	\$169	10.0%	\$225	10.0%	\$225	10.0%	\$225	10.0%	\$225	10.0%	\$225	10.0%	\$225
Postage - Permit #240	10-7000-7171	\$20,125	5.0%	\$671	1.0%	\$134	7.5%	\$1,006	7.5%	\$1,006	4.0%	\$537	10.0%	\$1,342	7.5%	\$1,006	7.5%	\$1,006	10.0%	\$1,342	10.0%	\$1,342	10.0%	\$1,342	10.0%	\$1,342	10.0%	\$1,342	10.0%	\$1,342
Postage - Adress Service	10-7000-7172	\$1,965	5.0%	\$66	1.0%	\$13	7.5%	\$98	7.5%	\$98	4.0%	\$52	10.0%	\$131	7.5%	\$98	7.5%	\$98	10.0%	\$131	10.0%	\$131	10.0%	\$131	10.0%	\$131	10.0%	\$131	10.0%	\$131
Freight	10-7000-7173	\$321	5.0%	\$11	1.0%	\$2	7.5%	\$16	7.5%	\$16	4.0%	\$9	10.0%	\$21	7.5%	\$16	7.5%	\$16	10.0%	\$21	10.0%	\$21	10.0%	\$21	10.0%	\$21	10.0%	\$21	10.0%	\$21
Telephone Service	10-7000-7180	\$11,619	5.0%	\$387	1.0%	\$77	7.5%	\$581	7.5%	\$581	4.0%	\$310	10.0%	\$775	7.5%	\$581	7.5%	\$581	10.0%	\$775	10.0%	\$775	10.0%	\$775	10.0%	\$775	10.0%	\$775	10.0%	\$775
Cost of Billing	10-7000-7190	\$13,262	5.0%	\$442	1.0%	\$88	7.5%	\$663	7.5%	\$663	4.0%	\$354	10.0%	\$884	7.5%	\$663	7.5%	\$663	10.0%	\$884	10.0%	\$884	10.0%	\$884	10.0%	\$884	10.0%	\$884	10.0%	\$884
Bill Collections - Third Party	10-7000-7200	\$146	5.0%	\$5	1.0%	\$1	7.5%	\$7	7.5%	\$7	4.0%	\$4	10.0%	\$10	7.5%	\$7	7.5%	\$7	10.0%	\$10	10.0%	\$10	10.0%	\$10	10.0%	\$10	10.0%	\$10	10.0%	\$10
Delinquent Collections - Water	10-7000-7210	\$2,665	5.0%	\$89	1.0%	\$18	7.5%	\$133	7.5%	\$133	4.0%	\$71	10.0%	\$178	7.5%	\$133	7.5%	\$133	10.0%	\$178	10.0%	\$178	10.0%	\$178	10.0%	\$178	10.0%	\$178	10.0%	\$178
Delinquent Collections - Suppl	10-7000-7215	\$473	5.0%	\$16	1.0%	\$3	7.5%	\$24	7.5%	\$24	4.0%	\$13	10.0%	\$32	7.5%	\$24	7.5%	\$24	10.0%	\$32	10.0%	\$32	10.0%	\$32	10.0%	\$32	10.0%	\$32	10.0%	\$32
Delinquent Collections - Const	10-7000-7220	\$15,025	5.0%	\$501	1.0%	\$100	7.5%	\$751	7.5%	\$751	4.0%	\$401	10.0%	\$1,002	7.5%	\$751	7.5%	\$751	10.0%	\$1,002	10.0%	\$1,002	10.0%	\$1,002	10.0%	\$1,002	10.0%	\$1,002	10.0%	\$1,002
Board Member Fees	10-7000-7230	\$17,200	5.0%	\$573	1.0%	\$115	7.5%	\$860	7.5%	\$860	4.0%	\$459	10.0%	\$1,147	7.5%	\$860	7.5%	\$860	10.0%	\$1,147	10.0%	\$1,147	10.0%	\$1,147	10.0%	\$1,147	10.0%	\$1,147	10.0%	\$1,147
Pension Plan Contribution	10-7000-7240	\$319,987	5.0%	\$10,666	1.0%	\$2,133	7.5%	\$15,999	7.5%	\$15,999	4.0%	\$8,533	10.0%	\$21,332	7.5%	\$15,999	7.5%	\$15,999	10.0%	\$21,332	10.0%	\$21,332	10.0%	\$21,332	10.0%	\$21,332	10.0%	\$21,332	10.0%	\$21,332
Total		\$6,712,992	---	\$188,310	---	\$54,616	---	\$274,942	---	\$314,192	---	\$129,995	---	\$506,795	---	\$254,894	---	\$305,509	---	\$502,152	---	\$440,311	---	\$420,997	---	\$361,771	---	\$2,348,021		

Notes:

⁽¹⁾ Year End Budget amounts from Fiscal Year beginning August 1, 2014 and ending July 31, 2015.

⁽²⁾ Distribution of electric costs (Account Nos. 10-5000-5040 through 10-5000-5046) are based on allocation established iFile 2.

⁽³⁾ Truck Expenses (Account Nos. 10-5000-5100 through 10-5000-5109) are allocated between WWTP and Collection System budgets. The WWTP component is: 50.0%

⁽⁴⁾ Administrative Costs (7000 Account Series) and some select accounts (10-5000-4000, 10-5000-4310, 10-5000-4320, 10-5000-4330, 10-5000-4216, 10-5000-5165, and 10-5000-5181) have been allocated between WWTP, Collection System, and Administrative Office budgets. The WWTP component is: 66.7%

⁽⁵⁾ Debt service is not considered as part of these surcharge calculations.

Table 2
Greater Hazleton Joint Sewer Authority
High Strength Wastewater Surcharge Study

Annual Distribution of Power Costs
 August 1, 2014 through July 31, 2015

Treatment Process	hp	Operating Time			Annual kWh	% of Total
		Hours/Day	Days/Year	Hours/Year		
Preliminary Treatment						
First Screenhouse						
Rake Motor	0.50	24	365	8,760	3,266	---
Sluice Gate to Grit Bldg	7.00	0	0	0	0	---
Sluice Gate to Second Screens	7.00	0	0	0	0	---
Gate to CSO Separator	3.00	0	0	0	0	---
Grit Building						
Grit Pump Motor	10.00	4	365	1,460	10,887	---
Grit Classifier	5.00	4	365	1,460	5,444	---
Grit Screw Motor	1.00	4	365	1,460	1,089	---
Grit Blower	7.50	24	365	8,760	48,992	---
Odor Control System Fan	2.00	24	365	8,760	13,065	---
Second Screenhouse						
Flexrake #1 Motor	0.50	24	365	8,760	3,266	---
Flexrake #2 Motor	0.50	24	365	8,760	3,266	---
Auger Conveyor Motor	0.25	24	365	8,760	1,633	---
Washer/Compactor Motor	0.75	24	365	8,760	4,899	---
<i>Preliminary Treatment Total</i>	---	---	---	---	95,808	1.7%
Chemical P Removal						
PAC Feed Pump No. 1	0.49	24	183	4,392	1,605	---
PAC Feed Pump No. 2	0.49	0	183	0	0	---
Polymer Batch Mix Unit	1.50	1	365	365	408	---
Polymer Transfer Pump	3.00	1	365	365	817	---
Polymer Feed Pump No. 1	0.49	24	183	4,392	1,605	---
Polymer Feed Pump No. 2	0.49	0	183	0	0	---
Rapid Induction Mixer	3.00	24	365	8,760	19,597	---
Flocculation Mixer	3.00	24	365	8,760	19,597	---
Flocculation Compressor/Blower	7.50	24	365	8,760	48,992	---
<i>Chemical P Removal Total</i>	---	---	---	---	92,621	1.6%
Primary Clarification						
Clarifier No. 1 Drive Motor	0.50	24	365	8,760	3,266	---
Clarifier No. 2 Drive Motor	0.50	24	365	8,760	3,266	---
Primary Sludge Pump No. 1	7.50	12	365	4,380	24,496	---
Primary Sludge Pump No. 2	7.50	12	365	4,380	24,496	---
Scum Pump No. 1	7.50	1	365	365	2,041	---
Scum Pump No. 2	7.50	1	365	365	2,041	---
<i>Primary Clarification Total</i>	---	---	---	---	59,608	1.0%
Primary Pumping Station						
Pump No. 1	200.00	24	122	2,928	436,682	---
Pump No. 2	200.00	0	122	0	0	---
Pump No. 3	100.00	24	122	2,928	218,341	---
Pump No. 4	100.00	0	122	0	0	---
Water Booster Pump	5.00	0	122	0	0	---
<i>Primary PS Total</i>	---	---	---	---	655,023	11.4%
Trickling Filter Biotowers						
<i>TF Biotowers Total</i>	---	---	---	---	0	0.0%

Table 2
Greater Hazleton Joint Sewer Authority
High Strength Wastewater Surcharge Study

Annual Distribution of Power Costs
August 1, 2014 through July 31, 2015

Treatment Process	hp	Operating Time			Annual kWh	% of Total
		Hours/Day	Days/Year	Hours/Year		
Bioreactors						
Blower No. 1	100.00	24	365	8,760	653,233	---
Blower No. 2	100.00	18	365	6,570	489,925	---
Blower No. 3	100.00	0	365	0	0	---
RAS Pump No. 1	---	0	183	0	0	---
RAS Pump No. 2	---	0	183	0	0	---
RAS Pump No. 3	25.00	24	183	4,392	81,878	---
WAS Pump No. 1	5.00	1	183	183	682	---
WAS Pump No. 2	5.00	1	183	183	682	---
WAS Pump No. 3	2.00	1	183	183	273	---
WAS Pump No. 4	2.00	1	183	183	273	---
<i>Bioreactors Total</i>	---	---	---	---	1,226,946	21.3%
Secondary Clarification						
Clarifier No. 1 Drive Motor	0.50	24	365	8,760	3,266	---
Clarifier No. 2 Drive Motor	0.50	24	365	8,760	3,266	---
Clarifier No. 3 Drive Motor	0.75	24	365	8,760	4,899	---
Clarifier No. 4 Drive Motor	0.75	24	365	8,760	4,899	---
<i>Secondary Clarification Total</i>	---	---	---	---	16,331	0.3%
Secondary Pumping Station						
Pump No. 1	100.00	24	122	2,928	218,341	---
Pump No. 2	100.00	24	122	2,928	218,341	---
Pump No. 3	100.00	0	122	0	0	---
Pump No. 4	100.00	0	122	0	0	---
Blower No. 1	20.00	24	365	8,760	130,647	---
<i>Secondary PS Total</i>	---	---	---	---	567,328	9.9%
Nitrification BAF						
MgOH Mixer No. 1	2.00	24	365	8,760	13,065	---
MgOH Mixer No. 2	2.00	24	365	8,760	13,065	---
MgOH Feed Pump No. 1	0.10	24	183	4,392	328	---
MgOH Feed Pump No. 2	0.10	0	183	0	0	---
Blower No. 1	75.00	8	183	1,464	81,878	---
Blower No. 2	75.00	8	183	1,464	81,878	---
Blower No. 3	75.00	8	183	1,464	81,878	---
Blower No. 4	75.00	8	183	1,464	81,878	---
Blower No. 5	75.00	8	183	1,464	81,878	---
Blower No. 6	75.00	8	183	1,464	81,878	---
Blower No. 7	75.00	0	183	0	0	---
Backwash Pump No. 1	7.50	2	183	366	2,047	---
Backwash Pump No. 2	7.50	2	183	366	2,047	---
Nite/Denite Air Compressor	7.50	4	183	732	4,094	---
<i>Nitrification BAF Total</i>	---	---	---	---	525,912	9.1%
Denitrification BAF						
Blower No. 1	50.00	2	183	366	13,646	---
Blower No. 2	50.00	2	183	366	13,646	---
Methanol Feed Pump No. 1	0.50	24	183	4,392	1,638	---
Methanol Feed Pump No. 2	0.50	0	183	0	0	---
Backwash Pump No. 1	7.50	2	183	366	2,047	---
Backwash Pump No. 2	7.50	2	183	366	2,047	---
<i>Denitrification BAF Total</i>	---	---	---	---	33,024	0.6%
Disinfection						
UV Lamp Bank No. 1 (kW per lamp)	2.8	12	365	4,380	515,088	---
UV Lamp Bank No. 2 (kW per lamp)	2.8	12	365	4,380	515,088	---
<i>Disinfection Total</i>	---	---	---	---	1,030,176	17.9%

Table 2
Greater Hazleton Joint Sewer Authority
High Strength Wastewater Surcharge Study

Annual Distribution of Power Costs
August 1, 2014 through July 31, 2015

Treatment Process	hp	Operating Time			Annual kWh	% of Total
		Hours/Day	Days/Year	Hours/Year		
Hauled Waste Handling						
Screen Drive Motor No. 1	1.00	8	183	1,464	1,092	---
Horiz Grit Screw Motor No. 1	2.00	8	183	1,464	2,183	---
Grit Dewatering Screw Motor No. 1	2.00	8	183	1,464	2,183	---
Blower Motor No. 1	0.50	8	183	1,464	546	---
Screen Drive Motor No. 2	1.00	8	183	1,464	1,092	---
Horiz Grit Screw Motor No. 2	2.00	8	183	1,464	2,183	---
Grit Dewatering Screw Motor No. 2	2.00	8	183	1,464	2,183	---
Blower Motor No. 2	0.50	8	183	1,464	546	---
Chopper Pump No. 1	5.00	6	91	546	2,036	---
Chopper Pump No. 2	5.00	6	91	546	2,036	---
Chopper Pump No. 3	5.00	6	91	546	2,036	---
Chopper Pump No. 4	5.00	6	91	546	2,036	---
Sound Proof Blower	2.00	24	365	8,760	13,065	---
<i>Hauled Waste Handling Total</i>	----	---	---	---	33,216	0.6%
Sludge Handling						
Plant Water						
Plant Water Pump No. 1	15.00	24	183	4,392	49,127	---
Plant Water Pump No. 2	15.00	24	183	4,392	49,127	---
Plant Water Pump No. 3	15.00	0	183	0	0	---
Thickeners						
Thickener No. 1 Drive Motor	1.00	24	365	8,760	6,532	---
Thickener No. 2 Drive Motor	1.00	24	365	8,760	6,532	---
Thickener No. 3 Drive Motor	0.50	24	365	8,760	3,266	---
Sludge Holding Tank Mixer	7.50	24	365	8,760	48,992	---
Sludge Feed Pump No. 1	7.50	0	365	0	0	---
Sludge Feed Pump No. 2	7.50	0	365	0	0	---
Sludge Feed Pump No. 3	15.00	22	365	8,030	89,820	---
Sludge Feed Pump No. 4	15.00	22	365	8,030	89,820	---
Sludge Feed Pump No. 5	15.00	0	365	0	0	---
Grinder No. 1	3.00	22	365	8,030	17,964	---
Grinder No. 2	3.00	0	365	0	0	---
Odor Control Exhaust Fan	10.00	24	365	8,760	65,323	---
Liquid Polymer Batching System	0.50	18	365	6,570	2,450	---
Polymer Tank No. 1 Mixer	1.50	24	365	8,760	9,798	---
Polymer Tank No. 2 Mixer	1.50	24	365	8,760	9,798	---
Ingersoll Rand Air Compressor	20.00	18	365	6,570	97,985	---
Transfer Screw Conveyor	5.00	22	365	8,030	29,940	---
Diluent Pump No. 1	---	0	0	0	---	---
Diluent Pump No. 2	---	0	0	0	---	---
Rotary Press No. 1						
Drive Motor	20.00	22	365	8,030	119,759	---
Flocculation Motor	1.00	22	365	8,030	5,988	---
Screw Conveyor Motor	5.00	22	365	8,030	29,940	---
Polymer Pump 1	3.00	22	365	8,030	17,964	---
Rotary Press No. 2						
Drive Motor	20.00	22	365	8,030	119,759	---
Flocculation Motor	1.00	22	365	8,030	5,988	---
Screw Conveyor Motor	5.00	22	365	8,030	29,940	---
Polymer Pump 2	3.00	22	365	8,030	17,964	---
Rotary Press No. 3						
Drive Motor	20.00	0	365	0	0	---
Flocculation Motor	1.00	0	365	0	0	---
Screw Conveyor Motor	5.00	0	365	0	0	---
Polymer Pump 3	3.00	0	365	0	0	---
Schwing Cake Pumps						
Main Hydraulic Motor	75.00	24	365	8,760	489,925	---
Secondary Hydraulic Motor	1.50	24	365	8,760	9,798	---
<i>Sludge Handling Total</i>	---	---	---	---	1,423,500	24.7%
Total	---	---	---	---	5,759,492	---

Notes:

(1) One mechanic or hydraulic horsepower is equal to 0.745699872 kilowatts.

Table 3
 Greater Hazleton Joint Sewer Authority
 High Strength Wastewater Surcharge Study

Cost of Removal through Processes
 August 1, 2014 through July 31, 2015

Treatment Process	Operating Cost ⁽¹⁾	Flow		BOD		TSS		TN		TP	
		Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount
Preliminary Treatment	\$188,310	25%	\$47,077	0%	\$0	75%	\$141,232	0%	\$0	0%	\$0
Chemical P Removal	\$54,616	0%	\$0	0%	\$0	0%	\$0	0%	\$0	100%	\$54,616
Primary Clarification	\$274,942	0%	\$0	40%	\$109,977	50%	\$137,471	0%	\$0	10%	\$27,494
Primary Pumping Station	\$314,192	100%	\$314,192	0%	\$0	0%	\$0	0%	\$0	0%	\$0
Trickling Filters	\$129,995	0%	\$0	100%	\$129,995	0%	\$0	0%	\$0	0%	\$0
Bioreactors	\$506,795	0%	\$0	100%	\$506,795	0%	\$0	0%	\$0	0%	\$0
Secondary Clarification	\$254,894	0%	\$0	100%	\$254,894	0%	\$0	0%	\$0	0%	\$0
Secondary Pumping Station	\$305,509	100%	\$305,509	0%	\$0	0%	\$0	0%	\$0	0%	\$0
Nitrification BAF	\$502,152	0%	\$0	5%	\$25,108	5%	\$25,108	90%	\$451,937	0%	\$0
Denitrification BAF	\$440,311	0%	\$0	0%	\$0	0%	\$0	100%	\$440,311	0%	\$0
Disinfection	\$420,997	100%	\$420,997	0%	\$0	0%	\$0	0%	\$0	0%	\$0
Hauled Waste Handling ⁽²⁾	\$0	0%	\$0	40%	\$0	60%	\$0	0%	\$0	0%	\$0
Sludge Handling ⁽³⁾	\$1,176,358	0%	\$0	20%	\$235,272	80%	\$941,087	0%	\$0	0%	\$0
Total	\$4,569,069	---	\$1,087,775	---	\$1,262,039	---	\$1,244,897	---	\$892,247	---	\$82,110

Notes:

⁽¹⁾ Operating costs from Table 1.

⁽²⁾ Hauled waste handling costs should be applied solely to hauled waste dischargers; Therefore, these costs are incorporated in the hauled waste handling and treatment costs in Table 6.

⁽³⁾ A portion of the sludge handling costs should be applied to hauled waste dischargers:

a. The estimated hauled waste contribution to the total treatment process solids is

49.9%

b. This percentage of the sludge handling costs are, therefore, incorporated in the hauled waste handling and treatment costs in Table 6.

Table 4
 Greater Hazleton Joint Sewer Authority
 High Strength Wastewater Surcharge Study

Annual WWTP Operations Summary
 August 1, 2014 through July 31, 2015

Pollutant of Concern	Raw Influent ^(1a)		Hauled Waste ^(1b)		Total Combined Process Loadings ^(1c)		Biological Assimilation ⁽²⁾	Final Effluent ⁽¹⁾		Removal ⁽³⁾	
	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	lbs/day	mg/L	lbs/day	lbs/day	lbs/year
BOD	163	9,838	973	1,144	168	10,982	---	4	282	10,982	4,008,499
TSS	140	8,680	626	736	144	9,416	---	4	231	9,416	3,436,891
TN	27.5	1,614	160	188	27.6	1,802	192	6.2	409	1,393	508,354
TP	3.2	190	25	29	3.4	219	36	1.2	71	148	54,165

Notes:

⁽¹⁾ Raw Influent and Final Effluent average concentrations and loadings as reported between August 1, 2014 and July 31, 2015.

- a. Raw Influent concentrations and loadings do not include hauled waste contributions.
- b. Hauled waste average equivalent concentrations from the hauled septage, hauled sludge, and hauled other wastestreams based on historic sampling. Loadings are estimated using annual average hauled waste volume in 1d.
- c. Total Combined Process Loadings are the sum of the raw wastewater and the hauled waste loadings.
- d. Annual average daily flows utilized to calculate the equivalent process loadings concentrations:

Raw Influent: 7,683 mgd
 Hauled Waste: 0.141 mgd

⁽²⁾ Biological assimilation is estimated based on the following assumptions:

Parameter	Unit	Input	Calculation
WAS Volume	mgd	0.041	---
WAS TSS (Estimated)	mg/L	7,749	---
WAS	lbs/day	---	2,650
MLVSS/MLSS Ratio	%	0.85	---
Estimated WAS VSS	lbs/day	---	2,252
Pure Biomass/WAS VSS Ratio	%	0.70	---
Estimated Pure Biomass	lbs/day	---	1,577
Nitrogen Assimulated	%	12.2%	---
Nitrogen Assimulated	lbs/day	---	192
Phosphorus Assimulated	%	2.3%	---
Phosphorus Assimulated	lbs/day	---	36

⁽³⁾ Removal assumes that all BOD and TSS is removed through the treatment process and the final effluent CBOD and TSS are mostly an artifact of cellular debris.

- a. For TN and TP, the annual pounds removed is the raw influent loading minus the final effluent loading. Nutrient assimilation in the biological treatment process is considered part of the removal process.

Table 5
 Greater Hazleton Joint Sewer Authority
 High Strength Wastewater Surcharge Study

Cost of Removal Summary
 August 1, 2014 through July 31, 2015

Pollutant of Concern	Annual Cost of Removal ⁽¹⁾	Annual Pounds Removed ⁽²⁾	Cost per Pound Removed ⁽³⁾
BOD	\$1,262,039	4,008,499	\$0.31
TSS	\$1,244,897	3,436,891	\$0.36
TN	\$892,247	508,354	\$1.76
TP	\$82,110	54,165	\$1.52

Notes:

- ⁽¹⁾ Annual Cost of Removal from *Table 3*.
- ⁽²⁾ Annual Pounds Removed based from *Table 4*.
- ⁽³⁾ Cost of Removal = Yearly Cost of Pollutant Removed / Yearly Pounds of Pollutant Removed.