

LEHIGH COUNTY AUTHORITY

2018 REPORT ON WASTEWATER USER CHARGES

September 22, 2017

LEHIGH COUNTY AUTHORITY
2018 REPORT ON WASTEWATER USER CHARGES

INDEX

	<u>Page No.</u>
Executive Summary	3
I. Introduction	5
II. Billing Basis Determination	7
III. Capital Recovery Fees	8
IV. Western Lehigh Interceptor User Charge Development	9
Tables: Allentown Estimated Costs	13
Operation & Maintenance Costs	14
O&M Costs Shared by Signatories and Emmaus	15
Total System Costs	16
Cost Allocation Summary	17
Billing Basis O&M	18
Unit Cost Summary	19
V. Relief Interceptor User Charge Development	20
Tables: Phase 1 - Operation & Maintenance Costs	22
Phase 2 - Operation & Maintenance Costs	23
Billing Basis	24
Phase 1 - Cost Allocation	25
Phase 2 - Cost Allocation	26
Appendix A User Charge Sampling and Analysis Procedures	27
Appendix B Estimated Quarterly Bill Procedures	32

EXECUTIVE SUMMARY

This summary provides an overview of the various assumptions included in the Lehigh County Authority (LCA) “2018 Report on Wastewater User Charges.” Further detailed information can be found in the report.

1. Waste Strength

The assumed concentration for all Non-Exceptional Strength users will be 250 ppm for BOD, 275 ppm for TSS, and 35 ppm for TKN. Exceptional Strength Limits will be 300 ppm for BOD, 360 ppm for TSS, and 85 ppm for TKN.

The assumed concentration for discharge to the Kline’s Island Wastewater Treatment Plant is 147 ppm for BOD, 160 ppm for TSS, and 31 ppm for TKN which are net values without Emmaus discharges. These strengths are based on the continuation of the LCA Wastewater Treatment Plant (WTP) in Fogelsville reducing all waste strength that passes through it and with brewing operations at Boston Beer.

2. Payments to the Wastewater Treatment Plant (WTP)

Credits will be given to the WTP, at City unit rates, for pounds of BOD and TSS removed by the operation of the WTP in excess of the required removal of certain industrial strengths. These credits are as mentioned in the 4/17/91 Amendment to the 4/1/83 Agreement between LCA, the LCA Signatories, and the County.

3. User Rates

The following rates are proposed for 2018 as shown in comparison to the budgeted 2017 rates and represent an increase of 3.3% from the 2017 rates for a typical residential customer.

	<u>2017</u>	<u>2018 Proposed</u>
<u>LCA SIGNATORIES</u>		
Western Lehigh Interceptor		
FLOW (per 1,000 gals)	\$1.13	1.00
BOD (per pound)	0.26	0.30
TSS (per pound)	0.24	0.26
TKN (per pound)	0.40	0.40
ALLOCATION (per 1,000 gals per day)	0.20	0.17
Little Lehigh Relief Interceptor		
PHASE 1 (per 1,000 gals)	0.15	0.26
PHASE 2 (per 1,000 gals)	0.02	0.03
<u>EMMAUS</u>		
Western Lehigh Interceptor		
FLOW (per 1,000 gals)	0.33	.25
<u>OTHER USERS</u> – L. Macungie, Salisbury, & S. Whitehall		
Little Lehigh Relief Interceptor – Phase 1		
FLOW (per 1,000 gals)	0.11	0.20

3. User Rates (continued)

NOTES:

Western Lehigh Interceptor: LCA has elected to use a combination of operating funds and Western Lehigh Interceptor fees collected from new connections to pay certain capital projects such as the Central Lehigh County Wastewater Capacity Planning & Expansion, Spring Creek Force Main Air/Vacuum Valve Replacements, and Interceptor Access Easement Acquisitions. Sixty percent of the costs will be recovered through user charges over a 10-20 year period while the capital recovery fees will cover 40% of the costs. Existing operating revenues will only be used to fund unanticipated shortfalls between the budgets.

For 2018, we have estimated the City Division's unit charges using a 2018 estimate for total hydraulic and organic loadings based on actual 1st and 2nd quarter 2017 signatory flows and loads and a projection of total hydraulic flow into the Kline Island Wastewater Treatment Plant (see page 10). The City rates show a 6% increase for a typical residential user. The increase is due to operating expense increases to allow for required maintenance and associated staffing.

Little Lehigh Relief Interceptor – PHASE 1: The rate for 2018 will increase by 82% from the 2017 rate for non-LCA signatory users and 73% for LCA signatory users. The increase reflects the inclusion of a \$400,000 reserve fund allocation earmarked for the Park Pump Station Force Main Rehabilitation project.

Little Lehigh Relief Interceptor – PHASE 2: The rate for 2018 has increased by 50% from the 2017 rate to reflect adequate coverage of 2018 estimated expenses.

4. User Payments

Quarterly Estimated Payments: To improve the WLI operating fund cash flow, Signatories will receive an estimated quarterly bill. Estimating the quarterly bills will provide consistent Signatory payments and will result in having payments arriving prior to LCA's payment to the City (City Division) for treatment and transportation costs. Submission of the Signatory data is still required but the timing of the submission is no longer as critical. The estimated quarterly bill for each Signatory for the year 2018 is attached to this report, "Estimated Quarterly Bill Procedures" as Appendix B.

I. INTRODUCTION

This report is intended to demonstrate how the user rates for 2018 were developed. It also reports comparative historical data. The Lehigh County Authority (LCA) Wastewater facilities – the Western Lehigh Interceptor (WLI), and the Little Lehigh Relief Interceptor, Phases 1 and 2 (LLRI-P1 and LLRI-P2) are legally and financially independent of each other.

Background – WLI

In 1971, LCA constructed the WLI to serve four municipalities – Upper and Lower Macungie Townships and the Boroughs of Alburty and Macungie. Since then, Upper Milford, Lowhill and Weisenberg Townships have been added. Collectively, the municipalities are referred to as the “Signatories” (or “Signatory”). LCA also provides service to a portion of the Borough of Emmaus (“Emmaus”).

LCA, serving as agent for the Signatories, contracts with the City of Allentown (City) for the transportation, treatment and disposal of wastewater from the Signatory area (see “City of Allentown – Concession Lease” on page 6). Discharges to the City are based on constant flow measurements and periodic sampling and analyses to determine discharge strength.

The WLI consists of 20.6 miles of gravity sewer line and several parallel relief lines, including the Western Lehigh Relief Facilities (WLRF – a pump station and 3 miles of force main) that were completed during 1998 and the Spring Creek Force Main Extension (5 miles of force main) completed in 2005. In 2010, the 3 million gallon Flow Equalization Basin was constructed at the WTP to be utilized in storing wet weather flows to reduce the risk of sanitary sewer overflows within the WLI system.

Background – LLRI

Under the provisions of agreements with the City, all municipalities are required to construct relief facilities whenever jointly-used City-owned sewer lines become overloaded. In 1973, the City notified the Signatories, Salisbury Township (Salisbury) and South Whitehall Township (South Whitehall) that the City-owned Little Lehigh Interceptor required relief.

Under an agreement dated February 10, 1981, LCA was authorized to plan and construct the required facilities. The agreement contemplated two financially independent sets of facilities. The first, known as Phase 1, relieves the City’s Little Lehigh Interceptor and serves the Signatories, Salisbury and South Whitehall. It consists of the Park Pump Station and a large diameter force main, extending from the Park Pump Station to the Allentown Interceptor, just upstream of the City treatment plant. The second, known as Phase 2, relieves the City’s Emmaus Interceptor from Keck’s Bridge to the Park Pump Station and serves the Signatories.

Existing Billing Practices – WLI

Costs attributable to the WLI and the use of the City facilities are allocated through user rates among the Signatories based on three criteria: (1) flow, (2) strength, and (3) treatment allocation. Costs attributable to the operation of the WLI (excluding Exceptional Strength Analyses costs), the City interceptors, and a portion of the City treatment plant operational costs are allocated based on flow. The balance of the City treatment plant operational and the Exceptional Strength Analyses costs are allocated based on strength of waste measured as BOD, TSS and TKN. Allocation of the City costs are based on the City’s user charge system, developed in 1979. All City and LCA debt service costs are allocated based on wastewater treatment allocations to the Signatories.

Emmaus, because it deals directly with the City for its treatment and transportation needs and because it has made a capital contribution in lieu of paying future debt service, pays user charges based only on WLI operating costs.

Billing practices used herein were established in the April 1, 1983 Service Agreement. Billable flows and strengths to each Signatory are based on a summation of the individual customer discharges within each Signatory service area. Inflow and infiltration (I/I) attributable to the WLI service area is shared proportionately by all Signatories.

Existing Billing Practices – LLRI

Costs attributable to LLRI-P1 are allocated among the Signatories, Salisbury and South Whitehall in proportion to metered wastewater flows tributary to the City's Little Lehigh Interceptor, except that South Whitehall flows are reduced by 500,000 gallons per day (gpd.) based on a City commitment to transmit that wastewater on South Whitehall's behalf.

Costs attributable to LLRI-P2 are allocated among only the Signatories based on billable wastewater flow. The Authority has established a rate per 1,000 gallons to cover expected expenses. Therefore, a rate of \$0.03 will be applied to the Signatory billing.

City of Allentown – Concession Lease

In August 2013, LCA assumed responsibility for the operation of the City of Allentown water and wastewater systems (City System), now referred to as the LCA Allentown Division. As part of this 50-year lease, LCA is now responsible for calculating annual City wastewater rates and billing City Signatories for wastewater usage. The 2018 rates have been calculated according to Municipal Service Agreements. Signatories will remain responsible for their share of the previously existing City Debt Service plus additional amounts for ongoing capital improvements. The City System is legally and financially independent of the of the LCA systems.

II. BILLING BASIS DETERMINATION

Discharge from each residential, commercial or industrial user is estimated and summed within each Signatory service area.

Flow Determination

Flows are determined based on one of the following methods. Where a sewer meter is available, periodic readings are used. If a sewer meter is not available, periodic readings of the water meter are used for commercial and industrial customers. For residential users receiving water service as of 1 January, the first quarter's metered water usage is used. For residential users connecting after 1 January, or for users not having a water meter, 220 gpd is used.

Strength Determination

Assumed Average Strength and Exceptional Strength Limits proposed for 2018 are:

Discharge Type	Parameter	
	Assumed Average Strength	Exceptional Strength
BOD	250 ppm	300 ppm
TSS	275 ppm	360 ppm
TKN	35 ppm	85 ppm

As in previous years, all industrial and certain commercial users with greater than 25,000 gallons per billing period will be sampled and tested at least once per year in order to determine the strength of their discharge. Any user with BOD, TSS or TKN discharge in excess of the Exceptional Strength Limit will be billed based on those test results. All users with discharge below the Exceptional Strength Limit will be billed at the Average Strength level.

Sampling and testing frequency, duration and other related guidelines are described in the "User Charge Sampling & Analysis Procedures and Billing Computations," attached to this report as Appendix A.

The WTP is required to treat certain industrial discharges to 210 ppm for BOD and 230 ppm for TSS. Through the operation of the WTP, those industrial discharges, together with other customer discharges located upstream of the WTP, will be significantly reduced below those required levels. An agreement between the Signatories, LCA and the County (prior WTP owner) identifies how billings, and credits for those additional removals, will be calculated. Those terms have been used in calculating total system billables and the County credit for this report.

Emmaus Billing Basis

The Emmaus Service Agreement (7/1/86) provides that Emmaus will participate in WLI operating and maintenance costs, including administrative costs, while excluding debt service. Administrative costs are allocated based on the ratio of salaries applicable to WLI operation and maintenance to total WLI salaries. The minimum and maximum limits for allocation of Administrative costs are 32% and 52% respectively.

III. CAPITAL RECOVERY FEES

Background

Since 1985, capital recovery fees have been charged to the Signatories to recover the purchase cost of treatment capacity from the City (Allocation Fee) and the construction cost of the WLI (Interceptor Fee). Since 1986, a Relief Interceptor Fee has been charged to all new connections. The Interceptor Fee is recovering costs of the original interceptor, the various relief facility projects and the flow equalization basin.

A review of all fees is conducted annually with proposed changes made effective in July. All fees are determined in accordance with Pennsylvania Law (Act 57 of 2003.)

Use of Capital Recovery Fees

The Interceptor fees collected through June 1993 were placed in a bond redemption and improvement account. However, those fees, together with other funds, were used to retire the WLI debt on 1 July 1993. A separate reserve account has since been established for deposit of interceptor fees collected after 30 June 1993 to retire additional WLI debt, fund capital projects or pay for unexpected expenses.

Since the bonds that financed the Relief Interceptor were retired, collected fees have been placed in an account and will be funding a portion of the WLI system capital costs.

Concerning treatment capacity, as the service area continues to grow and the need for treatment capacity grows, the fees collected are placed in a reserve fund to either purchase additional capacity or to fund additional capacity options.

IV. WLI USER CHARGE DEVELOPMENT

This section describes the methods used to calculate WLI User Charges. Four general steps are followed:

1. Year 2018 costs have been estimated based on prior years' cost, flow and loading trends.
2. Costs have been allocated to five billing parameters - FLOW, BOD, TSS, TKN and ALLOCATION.
3. A billing basis has been estimated for each billing parameter.
4. Unit costs were determined for each parameter by dividing the total costs by the billing basis.

Two types of costs are incurred - City and LCA. City charges include three types of costs - debt service, interceptor use, and operation and maintenance. LCA charges include two types of costs - debt service and operation and maintenance.

Assumptions

For estimating City costs, the following assumptions have been made for LCA total discharge to the City:

	<u>2017</u>	<u>2018</u>
LCA Total Allocation in City Plant	10.78 MGD	10.78 MGD
Average Daily FLOW	8.53 MGD	8.31 MGD
Average BOD Concentration	141.2 ppm	147.1 ppm
Average TSS Concentration	159.8ppm	160.4 ppm
Average TKN Concentration	32.0 ppm	30.7 ppm

City Debt Service

LCA is required to pay a portion of the debt service on the bonds that were purchased to finance the City Plant based on the LCA share of treatment capacity. LCA's estimated share of these total debt service costs is \$338,832 for 2018. This amount includes additional debt service amounts for the replacement of the belt filter press and motor control center at the Kline Island Wastewater Treatment Plant and roof replacements at both the Kline Island Wastewater Treatment Plant and the Distribution and Collections Building.

City Interceptor Use

In lieu of debt service, LCA pays a fixed rate of \$0.01 per 1,000 gallons for the use of the City interceptors. For 2018, the estimated cost is \$30,345.

City Operation and Maintenance

LCA pays the City for all flow and pounds discharged. In setting rates, annual operation and maintenance costs and loadings for the City Plant are estimated, thus allowing unit rates to be estimated. The following City unit rates, shown in comparison to the previous year's rates, were estimated by LCA:

	2017 Estimated <u>Rates</u>	2018 Estimated <u>Rates</u>
FLOW (per 1,000 gals)	\$0.201	\$0.218
BOD (per pound)	0.255	0.275
TSS (per pound)	0.220	0.228
TKN (per pound)	0.375	0.385

The components of the City costs are summarized in the Table - "Allentown Estimated Costs" (page 13). Operating expense increases included in the 2018 rates resulted in a 6% rate increase over the 2017 estimated rates.

LCA Debt Service

The 2018 Debt Service is estimated at \$322,129. The Debt Service is based on PennVest loans approved to fund the Flow Equalization Basin project.

LCA Operation and Maintenance

Operation and maintenance costs are shown in the Table - "Operation & Maintenance Costs" (page 14). As earlier mentioned, since Emmaus does not participate in all operation and maintenance costs, separate costs that Emmaus and the Signatories share in are shown in the Table - "O&M Costs Shared by Signatories and Emmaus" (page 15).

As in previous User Rate Reports, the costs of Exceptional Strength Analyses are equally divided between BOD, TSS and TKN. These costs are net of any Signatory reimbursements.

Billing Basis

To estimate the 2018 billable discharges, the second half of 2016 and the first half of 2017 billings were reviewed. Projected growth, where applicable, for each Signatory was added. A summary of this information may be found in the Table - "Billing Basis O&M" (page 18).

Rate Design

Although rate calculation options are almost limitless, several legal requirements eliminate many of the options. First, federal law and regulations provide that "each recipient of the waste treatment services within the applicant's service area will pay its proportionate share of the cost of operation (including replacement) "of all waste treatment service provided by the applicant."

Second, Pennsylvania's Municipality Authorities Act requires that rates be "uniform and reasonable."

Finally, the Service Agreements require that a rate methodology substantially identical to that adopted by the City be used and that debt service costs attributable to the City facilities and to the WLI be allocated in proportion to the hydraulic allocation.

Based on the aggregate of these restrictions, unit costs for FLOW, BOD, TSS, TKN, and ALLOCATION are based on the total billables divided into the total cost for each parameter. City debt service and other costs are only allocated to the Signatories and not Emmaus. LCA operation and maintenance costs related to the WLI are allocated to both the Signatories and Emmaus.

User Rate Adequacy

Referring to the Table - "Billing Basis O&M" (page 18), those pounds of BOD and TSS that are removed by the LCA WTP that are credited to LCA at the LCA unit costs are shown as being removed from the billing base. This is done in order to determine the LCA unit cost. To determine total revenues and total expenses for the system, these removals must be added back because, although they are offsetting, they are both billed (a system revenue) to Upper Macungie and credited (a system expense) to the LCA. Because all of the pounds of BOD and TSS that are removed by the LCA WTP at the LCA unit rate are attributable to Kraft, which closed in December of 2016, those pounds have been eliminated from the 2018 billing basis.

Using the proposed unit rates, multiplied by the various customer billing bases, a total expected revenue of \$7,761,707 is estimated. Comparing this revenue to the expense of \$7,761,707 shown on the Table - "Cost Allocation Summary" (page 17) indicates an overall coverage of 0%.

WESTERN LEHIGH INTERCEPTOR

TABLES

ALLENTOWN ESTIMATED COSTS

	<u>2017 Est Budget</u>	<u>2018 Estimate</u>
DEBT SERVICE:		
Summary	\$ 337,475	\$ 338,832
Other Interceptor	<u>31,143</u>	<u>30,345</u>
DEBT SERVICE SUBTOTAL	\$ 368,618	\$ 369,177
 OPERATION AND MAINTENANCE:		
Flow	\$ 625,971	\$ 661,369
BOD	935,022	1,019,875
TSS	913,334	925,834
TKN	<u>311,221</u>	<u>298,272</u>
OPERATION AND MAINTENANCE SUBTOTAL	\$ 2,785,548	\$ 2,905,350
TOTAL ALLENTOWN COSTS	\$ 3,154,166	\$ 3,274,527

OPERATION & MAINTENANCE COSTS

ITEM	2017 BUDGETED LCA COSTS	2018 ESTIMATED LCA COSTS
DEBT SERVICE:		
Financing and Bond Issues	\$ 432,543	\$ 332,129
OPERATING & MAINTENANCE CHARGES:		
Personnel		
Personnel Subtotal	\$ 86,850	\$ 120,317
Purchase of Services		
General Services	77,805	110,157
Employee Benefits	33,079	46,803
Utilities	42,920	38,916
Engineering	85,000	5,000
Exc. Str. Analyses (External)	37,115	43,000
General Analyses (External)	2,720	3,100
Maintenance	381,120	211,600
Misc. Purchase of Services	45,300	63,415
I/I Rehabilitation Program	20,000	-
Rental Charges	18,414	22,672
Purchase of Services Subtotal	\$ 743,473	\$ 544,663
Materials and Supplies		
Fuel	11,000	\$ 11,000
Misc. Materials & Supplies	30,550	25,800
Materials & Supplies Subtotal	\$ 41,550	\$ 36,800
Equipment		
Equipment	38,150	51,650
Amoritized Equipment	46,750	0
Equipment Subtotal	\$ 84,900	\$ 51,650
Capital Funding		
Capital Funding (Sig. + Emmaus)	0	-
Amoritized Planning & Flow Monitoring	154,000	156,635
Capital Funding Subtotal	\$ 154,000	\$ 156,635
TOTAL OPERATING & MAINTENANCE	\$ 1,110,773	\$ 910,065
Reserve Fund/Capital Funding	1,200,000	967,000
TOTAL LCA EXPENSES	\$ 2,743,316	\$ 2,209,194
Less: Miscellaneous Revenue	(100,000)	(100,000)
TOTAL LCA CHARGES	\$ 2,643,316	\$ 2,109,194

O&M COSTS SHARED BY SIGNATORIES AND EMMAUS

<u>ITEM</u>	<u>2018 ESTIMATED LCA COSTS</u>	<u>PERCENT ALLOCABLE TO EMMAUS</u>	<u>PORTION SHARED BY SIGNATORIES AND EMMAUS</u>
DEBT SERVICE:			
1996 Financing & Bond Issue	\$ 332,129	0.0%	\$ -
OPERATING & MAINTENANCE CHARGES:			
Personnel			
Personnel Subtotal	\$ 120,317	52.0%	\$ 62,565
Purchase of Services			
General Services	\$ 110,157	52.0%	\$ 57,282
Employee Benefits	46,803	52.0%	24,337
Utilities	38,916	100.0%	38,916
Engineering	5,000	100.0%	5,000
Exc. Str. Analyses (External)	43,000	0.0%	-
General Analyses (External)	3,100	100.0%	3,100
Maintenance	211,600	100.0%	211,600
Misc. Purchase of Services	63,415	100.0%	63,415
I/I Rehabilitation Program	-	100.0%	-
Rental Charges	22,672	52.0%	11,789
Purchase of Services Subtotal	\$ 544,663		\$ 415,440
Materials and Supplies			
Fuel	\$ 11,000	100.0%	\$ 11,000
Misc. Materials & Supplies	25,800.00	100.0%	25,800.00
Materials & Supplies Subtotal	\$ 36,800		\$ 36,800
Equipment			
Equipment Subtotal	\$ 51,650	100.0%	\$ 51,650
Capital Funding			
Capital Funding Subtotal	\$ 156,635	100.0%	\$ 156,635
TOTAL OPERATING & MAINTENANCE	\$ 910,065		\$ 723,089
Reserve Fund Allocation	967,000	0.0%	-
TOTAL LCA EXPENSES	\$ 2,209,194		\$ 723,089
Less: Miscellaneous Revenue	(100,000)		(100,000)
TOTAL LCA CHARGES	\$ 2,109,194		\$ 623,089

TOTAL SYSTEM COSTS

	2017 Budget	2018 Estimate
DEBT SERVICE:		
Allentown	\$ 368,618	\$ 369,177
LCA	432,543	332,129
	<u>801,161</u>	<u>701,306</u>
DEBT SERVICE SUBTOTAL	\$ 801,161	\$ 701,306
 OPERATION AND MAINTENANCE:		
Allentown	\$ 2,785,548	\$ 2,905,350
LCA	2,210,773	1,777,065
	<u>4,996,321</u>	<u>4,682,415</u>
OPERATION AND MAINTENANCE SUBTOTAL	\$ 4,996,321	\$ 4,682,415
 COUNTY CREDITS		
BOD	\$ 1,251,287	\$ 1,688,835
TSS	652,152	689,151
	<u>1,903,439</u>	<u>2,377,986</u>
TOTAL COUNTY CREDITS SUBTOTAL	\$ 1,903,439	\$ 2,377,986
TOTAL SYSTEM COST	\$ 7,700,922	\$ 7,761,707

COST ALLOCATION SUMMARY

	Total Cost	ALLOCATION PARAMETER				
		Flow	Allocation	BOD	TSS	TKN
<u>O&M</u>						
Allentown O&M	\$ 2,905,350	\$ 661,369	\$ -	\$ 1,019,875	\$ 925,834	\$ 298,272
LCA O&M	<u>1,777,065</u>	<u>1,734,065</u>		<u>14,333</u>	<u>14,333</u>	<u>14,333</u>
Total O&M	\$ 4,682,415	\$ 2,395,434	\$ -	\$ 1,034,208	\$ 940,167	\$ 312,605
<u>LCA WTP CREDITS *</u>	\$ 2,377,986	\$ -	\$ -	\$ 1,688,835	\$ 689,151	\$ -
<u>DEBT SERVICE</u>						
Allentown Interceptor	\$ 30,345	\$ 30,345	\$ -	\$ -	\$ -	\$ -
Summary of Allentown Debt	338,832	-	338,832	-	-	-
LCA	<u>332,129</u>	<u>-</u>	<u>332,129</u>	<u>-</u>	<u>-</u>	<u>-</u>
Total Debt Service	\$ 701,306	\$ 30,345	\$ 670,961	\$ -	\$ -	\$ -
TOTAL COSTS	<u>\$ 7,761,707</u>	<u>\$ 2,425,779</u>	<u>\$ 670,961</u>	<u>\$ 2,723,043</u>	<u>\$ 1,629,318</u>	<u>\$ 312,605</u>

* Credits to the LCA WTP are paid at City unit rates for non-required removals

BILLING BASIS O&M

	<u>Flow gpd</u>	<u>BOD lb/day</u>	<u>TSS lb/day</u>	<u>TKN lb/day</u>
<u>Signatory Area</u>				
Alburtis	146,402	347	377	59
Macungie	179,266	412	423	55
Lower Macungie	1,389,723	3,202	3,273	422
Upper Macungie *	4,468,804	19,784	12,093	1,470
Less: County Removals @ LCA Unit Rate		0	0	
Weisenberg	30,833	64	71	9
Upper Milford	156,401	726	514	69
Lowhill	6,422	13	15	2
Pretreatment Plant & Haulers	<u>175,819</u>	<u>367</u>	<u>403</u>	<u>51</u>
LCA SYSTEM SUBTOTAL	6,553,670	24,915	17,169	2,137
Emmaus	<u>408,831</u>			
TOTAL	<u>6,962,501</u>	<u>24,915</u>	<u>17,169</u>	<u>2,137</u>

* Includes Boston Beer

Billing Basis for Debt Service

10.780 Million Gallons Per Day

UNIT COST SUMMARY

Item	Annual Cost	Billing Basis (gpd or lb/day)	Unit Cost (\$/1000 gal or \$/lb)
FLOW - Allentown Costs	\$ 691,714	6,553,670	\$0.2892
- Interceptor Costs/ Signatories	\$ 1,110,975.39	6,553,670	\$0.4644
- Interceptor Costs/ Signatories & Emmaus	\$ 623,089	6,962,501	\$0.2452
BOD (lb)	\$ 2,723,043	24,915	\$0.2994
TSS (lb)	\$ 1,629,318	17,169	\$0.2600
TKN (lb)	\$ 312,605	2,137	\$0.4008
ALLOCATION	\$ 670,961	10,780,000	\$0.1705

NOTE:

FLOW Unit Cost = Annual Cost/[(Billing Basis/1000) x No. of Days in Year]

Lb Unit Cost = Annual Cost/(Billing Basis x No. of Days in Year)

V. RELIEF INTERCEPTOR USER CHARGE DEVELOPMENT

This section describes the methods used to calculate user rates for the Little Lehigh Relief Interceptor System.

For both Phases, the total costs are divided by the billable flow. Billable flows differ between Phase 1 and Phase 2. Phase 1 provides service to the Signatories, Salisbury, South Whitehall, and Lower Macungie Township - Phase II and the Brookside Diversion. Phase 2 provides service only to the Signatories.

Costs for both Phases are shown in the Tables - "Phase 1-Operation & Maintenance Costs" (page 22) and "Phase 2-Operation & Maintenance Costs" (page 23).

Debt Service - Phase 1

In January 1993, the bonds issued for construction of Phase 1 were retired. No additional projects that required bond issues are ongoing and no debt service is included in the rate tables for this year.

User Rate Adequacy

For Phase 1, using the rate proposed, multiplied by the billing units derived in Table - "Billing Basis (For Phase 1) (page 24)," total revenue of \$754,831 is estimated. Comparing this revenue to the total expense of \$754,831 as shown on Table - "Phase 1-Operations & Maintenance Costs" (page 22), indicates an overall coverage of 0%.

For Phase 2, the debt associated with these facilities was retired in late-2001. In 2018, a unit charge of \$0.03 will be billed to system users.

LITTLE LEHIGH RELIEF INTERCEPTOR

PHASES 1 AND 2

TABLES

PHASE 1 - OPERATION & MAINTENANCE COSTS

ITEM	2017 BUDGETED LCA COSTS	2018 ESTIMATED LCA COSTS
DEBT SERVICE & FINANCING EXPENSES:	\$ -	\$ -
OPERATING AND MAINTENANCE CHARGES:		
Personnel		
Personnel Subtotal	\$ 26,536	\$ 24,485
Purchase of Services		
General Services	\$ 23,848	\$ 22,418
Employee Benefits	\$ 10,139	9,525
Utilities	\$ 123,400	128,520
Maintenance Services	\$ 173,500	110,500
Miscellaneous Services	\$ 3,500	2,420
Engineering	\$ 5,000	5,000
Rental Charges	\$ 5,644	4,614
Purchases of Services Subtotal	\$ 345,031	\$ 282,996
Materials and Supplies		
Fuel	3,000	\$ 3,000
Misc. Materials & Supplies	11,200	11,700
Misc. Equipment	39,650	33,650
Materials and Supplies Subtotal	\$ 53,850	\$ 48,350
TOTAL OPERATING & MAINTENANCE COSTS	\$ 425,417	\$ 355,831
Reserve Fund/Capital Funding	50,000	400,000
TOTAL LCA EXPENSES	\$ 475,417	\$ 755,831
Less: Miscellaneous Revenue	(1,000)	(1,000)
TOTAL LCA CHARGES	\$ 474,417	\$ 754,831

PHASE 2 - OPERATION & MAINTENANCE COSTS

ITEM	2017 BUDGETED LCA COSTS	2018 ESTIMATED LCA COSTS
DEBT SERVICE & FINANCING EXPENSES:	\$ -	\$ -
OPERATING AND MAINTENANCE CHARGES:		
Personnel		
Personnel Subtotal	\$ 18,464	\$ 17,055
Purchase of Services		
General Services	\$ 16,594	\$ 15,615
Employee Benefits	\$ 7,055	\$ 6,634
Maintenance Services	\$ 2,000	\$ 13,000
Utilities	\$ 120	\$ 120.00
Rental Charges	\$ 3,927	\$ 3,214
Purchases of Services Subtotal	\$ 29,696	\$ 38,583
Materials and Supplies		
Fuel	\$ 300	\$ 350
Misc. Materials & Supplies	1,500	1,500.00
Equipment	10,000	6,000
Materials and Supplies Subtotal	\$ 11,800	\$ 7,850
TOTAL OPERATING & MAINTENANCE COSTS	\$ 59,960	\$ 63,489
TOTAL LCA EXPENSES	\$ 59,960	\$ 63,489
Less: Miscellaneous Revenue	(1,000)	(1,000)
TOTAL LCA CHARGES	\$ 58,960	\$ 62,489

BILLING BASIS (For Phase 1)

<u>Municipality</u>	<u>Flow (gpd)</u>	<u>% Share</u>
Salisbury	414,847	3.97
South Whitehall	1,529,174	14.65
Lower Macungie-Phase II & Brookside	183,831	1.76
LCA Signatories	<u>8,313,719</u>	<u>79.62</u>
Total	<u><u>10,441,572</u></u>	100.00

**LCA SIGNATORY BREAKDOWN
BILLING BASIS
(For Phase 1 and Phase 2)**

<u>Signatory</u>	<u>Billable Flow (gpd)</u>	<u>% Share</u>
Alburtis	146,402	2.30
Lower Macungie	1,389,723	21.79
Macungie	179,266	2.81
Upper Macungie	4,468,804	70.07
Upper Milford	156,401	2.45
Weisenberg	30,833	0.48
Lowhill	<u>6,422</u>	<u>0.10</u>
Subtotal	6,377,851	100.00
Infiltration/Inflow	<u>1,935,868</u>	
Total	<u><u>8,313,719</u></u>	

**PHASE 1 - COST ALLOCATION
AMONG ALL USERS**

<u>Municipality</u>	<u>Flow % Share</u>	<u>Costs</u>
Salisbury	3.97	\$ 29,990
South Whitehall	14.65	110,545
Lower Macungie - Phase II & Brookside	1.76	13,289
LCA Signatories	79.62	601,007
Total	100.00	\$ 754,831
	Billing Basis (gpd)	Unit Costs \$/1000 gals.
<u>Annual Cost</u>	<u>10,441,572</u>	<u>\$0.1981</u>
\$754,831		

AMONG LCA SIGNATORIES

<u>Signatory</u>	<u>Flow % Share</u>	<u>Costs</u>
Alburtis	2.30	\$ 13,796
Lower Macungie	21.79	130,958
Macungie	2.81	16,893
Upper Macungie	70.07	421,111
Upper Milford	2.45	14,738
Weisenberg	0.48	2,905
Lowhill	0.10	605
Total	100.00	\$ 601,007
	Billing Basis (gpd)	Unit Costs \$/1000 gals.
<u>Annual Cost</u>	<u>6,377,851</u>	<u>\$ 0.2582</u>
\$ 601,006.66		

Note: To determine unit cost divide annual cost by billing basis times number of days in year divided by 1,000.

PHASE 2 - COST ALLOCATION

<u>Signatory</u>	<u>Flow % Share</u>	<u>Costs</u>
Alburtis	2.30	\$ 1,434
Lower Macungie	21.79	13,616
Macungie	2.81	1,756
Upper Macungie	70.07	43,784
Upper Milford	2.45	1,532
Weisenberg	0.48	302
Lowhill	0.10	63
Total	100.00	\$ 62,489

<u>Annual Cost</u>	<u>Billing Basis (gpd)</u>	<u>Unit Costs \$/1000 gals.</u>
\$62,489	6,377,851	\$ 0.03

Note: To determine unit cost, divide annual cost by billing basis times number of days divided by 1,000.

APPENDIX A (Revised 11/30/16)
USER CHARGE SAMPLING AND ANALYSIS PROCEDURES

The purpose of this document is to assist signatory municipalities using the Western Lehigh Interceptor (WLI) regarding sampling and analysis of non-residential users of their respective wastewater collection system. This document also describes the billing process and how test results are applied to the process.

LCA’S ROLE AS THE AGENT FOR THE MUNICIPALITIES

As the agent of the requesting municipality, Lehigh County Authority (LCA) will provide sampling and coordinate analysis of all designated users. Results reports with calculated averages used for billing (“Monitoring Data”) and if applicable, additional sampling/analysis costs will be sent to the municipalities the month following sample collection. Difficulties encountered with an appropriate sampling site location, customer service or other inquiries will be directed to the municipality. LCA will be available to assist in addressing concerns.

MUNICIPALITIES ROLE

Using Monitoring Data provided by LCA and flow data (provided by LCA or municipality), the municipality will prepare monthly and/or quarterly reports for billing purposes, depending on user flow and monitoring frequency. Prepared reports will be submitted to LCA by the end of the month following the previous quarter. Agreed upon summary figures will be used for final billing to the municipality.

WLI USERS—LIST OF CUSTOMER TYPES

1. Residential Users
2. Non-residential Users
 - a. Non-sampled Users
 - b. Sampled Users
 - i. Sampled-low flow
 - c. Restaurant
 - i. Restaurant-low flow

NON-RESIDENTIAL TYPES TABLE

Non-Residential Type	Abbreviation	Description
Non-Sampled User	N	Industrial/commercial user assumed to have residential (flow) strength, such as banks and office buildings.
Sampled User	S	Industrial/commercial user whose flow strength has the potential to surpass the Extra Strength Limit (ESL) (based on technical literature on type of operation at facility, spot tests, and experience of other wastewater utilities).
Sampled-Low Flow User	S-LF	Used when a typically sampled site has quarterly flow less than 25,000 per annual average.
Restaurant	R	Commercial user whose facility processes food--has direct service connection to the municipal sewer system. Does not include facilities where food is served, but prepared elsewhere.
Restaurant-Low Flow	R-LF	Used when a typically sampled restaurant site has an annual average flow of less than 25,000 gallons per billing period.

WASTEWATER STRENGTH TABLE BY PARAMETER

Parameter	Average Strength Limit (ASL) (ppm)	Extra Strength Limit (ESL) (ppm)
BOD (Biochemical oxygen demand)	250	300
TSS (Total suspended solids)	275	360
TKN (Total Kjeldahl nitrogen)	35	85
FOG (Fats, oils & grease)	N/A	50

INITIAL DESIGNATION DETERMINATION

The initial sample type designation of a non-residential user is based on the probability of high strength discharge, as determined from technical literature, spot tests, experience of other utilities, or from the information provided by the user.

Types of businesses to sample:

Restaurants

Manufacturing

Brewing and distilling operations

Water Bottlers

Food processing

Soft drink/juice processing/bottling

Grocery stores that process meat or other food preparation

The municipality shall have a process in place where-by they identify new users and notify LCA of any new non-residential users and add them to the monthly/quarterly billing report in the appropriate section of the report—Sampled/Restaurants or Non-sampled (non-residential users). LCA may contact the municipality to discuss and arrange initial monitoring of facilities not listed on the billing report or listed as non-sampled when it appears as though they have the potential for producing extra strength waste.

During the municipal review process for a new Sampled User or new Restaurant, a sampling location will be required to be shown on the drawings and approved by the municipality. The municipality will also make the determination if a grease interceptor/grease trap is required. For existing buildings, LCA will review the proposed sampling location and determine if the installation of a sampling manhole and/or a grease interceptor is necessary.

The municipality shall furnish LCA with the following information for all Sampled and Restaurant Users and of the interceptor prior to the selection of the sample site:

1. User designation—Sampled User (S) or Restaurant (R)
2. Name of company
3. Property address
4. Municipal building identification code (if applicable) or account number
5. Business contact information—responsible person and phone number
6. Number of normal working days or days of operation
7. Description of business operations
8. Sampling location

This information will be used for scheduling and reporting. Please promptly provide updates to LCA to ensure proper scheduling and correct information for reports.

ANNUAL DESIGNATION

By December 15 of each year, the municipality shall furnish LCA with an annual average flow report for non-residential users. For this calculation, average the prior year QTR 4, the current year QTRs 1, 2, and 3 flows. This is an example of a basic report design:

SITE ID	BUSINESS NAME	2015 QTR 4	2016 QTR 1	2016 QTR 2	2016 QTR 3	ANNUAL AVG FLOW
4	Company X	200,000	200,000	200,000	200,000	200,000

Notes: Unless the site has flow >1,000,000 in a billing period, the annual average flow calculated in December of the prior monitoring year sets the monitoring frequency for the non-residential user for the next monitoring year. Do not change the monitoring frequency of sites based on the flow of one billing period or at any other time throughout the year.

Low Flow Sites: All industrial/commercial sites that were previously sampled but now have an annual average flow per billing period <25,000 gallons will be excluded from monitoring. These sites will be listed as either S-LF or R-LF indicating low flow. LF sites will be placed back on the schedule for monitoring if the annual average flow per billing period exceeds 25,000 gallons. Low flow sites should be moved to the non-sampled portion of your quarterly billing report with LF added to the site type and ID number to make them easier to track. Use Average Strength billing parameters for LF sites regardless of previously reported test results. Treat LF sites like any other non-sampled site while the flow remains low (less than 25,000 annual average).

SAMPLING FREQUENCY

SAMPLING FREQUENCY BASED ON ANNUAL AVERAGE FLOW

Annual Average Flow per Billing Cycle	Sample Frequency- Sampled User	Sample Frequency- Restaurant
<25,000 gals	Not sampled	Not sampled
25,000 to 99,999 gals	One day per year	3-days per year (Wed, Thurs, Fri or Thurs, Fri, Sat) plus FOG for 1 day
100,000 to 999,999 gals	Work week per year	
> 999,999 gals	Work week per billing period	3-days per billing period (Wed, Thurs, Fri or Thurs, Fri, Sat) plus FOG for 1 day
<p>Notes: Any new Sampled User will initially be sampled for a work week. Scheduling will be required per billing period, if a site has a flow >1,000,000 gallons per billing period and has exceeded one of the extra strength limits.</p>		

The discharge from each Sampled User will be analyzed at least once per year. Each sample will be analyzed for pH, BOD (biochemical oxygen demand), TSS (total suspended solids), and TKN (total Kjeldahl nitrogen). Fats-Oils-Grease (FOG) concentration will be analyzed if food products are produced at the facility or at the request of the municipality.

LCA may sample the non-residential location at any time during the calendar year, but will try to schedule sampling in the same quarter each year.

Initial sampling for any new Sampled User will be for a work week (providing flow is greater than 25,000 gallons per billing period). The Table for sampling frequency by

annual flow does not apply for initial monitoring. This also does not apply to Restaurant Users, which are sampled for 3 consecutive days with quarterly flow >25,000 gallons.

The discharge from each Restaurant will be analyzed at least 3 consecutive days annually, either Wednesday-Thursday-Friday or Thursday-Friday-Saturday. Each daily sample will be analyzed, at a minimum, for pH, BOD, TSS, and TKN. FOG concentration will be analyzed at least one day during the sampling period.

REQUESTED ADDITIONAL SAMPLING AND ANALYSIS

A municipality may request additional sampling and analysis of any Sampled or Restaurant User. Sample collection and analysis costs will be noted on the results reports to the municipality. Billing for additional Monitoring Data will be addressed in the final bill of the year.

The Monitoring Data will be used for billing purposes for that billing period and all successive billing periods until new Monitoring Data become available after the completion of the next monitoring event.

NON-SAMPLED USER SAMPLING AND ANALYSIS

A municipality may request sampling and analysis of any non-residential user not included in the Sampled or Restaurant User definition. Test costs and sample collection costs will be billed to the municipality with the results reports.

While the municipality may use the results of the sampling and analysis for billing, LCA will not use the results for purposes of billing the municipality. However, results greater than the extra strength limits may indicate that the user should be added to the municipality's Sampled list.

BILLING COMPUTATION

With the exception of pH, results for each parameter will be averaged and used for billing purposes. The acceptable pH range is 6.5-10.5 pH units upstream of the LCA Wastewater Pretreatment Plant, or 5.0-12.0 pH units below the plant. The municipality will be notified if any result is out of range so that they can determine the cause and initiate corrective action.

To calculate pounds:

If all average results—other than pH—are less than the ESL (BOD-300ppm, TSS-360ppm, and TKN-85ppm), the ASL (BOD-250ppm, TSS-275ppm, and TKN-35ppm) will be used for billing calculations. If any average result is greater than the ESL, the result will be used for billing that parameter and ASL will be used for any parameter average result less than the ESL. The calculation for pounds is: $\text{flow} \times 8.34 \times \text{ppm}$.

Example: Average results are: BOD-400, TSS-300, and TKN-100. The BOD result is greater than the ESL of 300--calculate using 400. TSS is less than the ESL of 360--calculate using the ASL of 275. The TKN is greater than the ESL of 85--calculate using the result of 100.

SAMPLING AND ANALYSIS CHARGES

If a user in the Sampled User or Restaurant category is sampled and found to discharge flow with strength below the ESL, sampling and analysis charges will be waived.

If a user is found to discharge greater than the ESL (a result greater than any one of the billing parameters not including FOG), sampling and analysis charges will be billed to the municipality for annual sampling, or any repeated sampling found to exceed any extra strength limit.

The limit for FOG (fats-oils-grease) analysis is 50 ppm. If result is greater than this limit, the municipality will be billed for sample collection and analysis.

APPENDIX B
(10/22/15)
ESTIMATED QUATERLY BILL PROCEDURES

Estimated Quarterly Bills

- Four quarterly bills will be estimated.
- The estimated quarterly bill amount will be calculated in October for the following year.
- The estimated quarterly bill will be based on a 4 quarter average and the following year's User Charge Report.
- Signatories will be notified of the following year's quarterly estimated bill amount in September or October of each year.
- Quarterly estimated bills will be issued on or about the first of the following months: April, July, November, and January.
- Quarterly estimated bills will be due 30 days after the billing date.
- LCA will enforce the 5% penalty for late payment. The penalty shall be 5% of the payment due if not paid within 30 days from the billing date and an additional 5% of the payment due if not paid within 60 days, and thereafter an additional 1% per month or fraction thereof.
- Signatories must provide actual quarterly data in a timely manner.
- Actual bills will be calculated during the year but no later than May of the following year.
- Adjustments for reconciliation of the prior year's quarterly estimated bills and reconciliation of the City bill will be issued no later than July of each year.