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April 19, 2018

Mr. Jerry Hatton
City Engineer
City of Belmont
P.O. Box 431
Belmont, NC 28012

Subject: City of Belmont System Development Fees

Dear Mr. Hatton:

Raftelis has completed an evaluation to develop cost-justified water and wastewater system development fees for consideration by the City of Belmont (City). This letter documents the results of the analysis, which is based on an approach for establishing system development fees set forth in North Carolina General Statute 162A Article 8 – "System Development Fees." As one of the largest and most respected utility financial, rate, management, and operational consulting firms in the U.S., and having prepared system development fee calculations for utilities in North Carolina and across the U.S. since 1993, Raftelis is qualified to perform system development fee calculations for water and wastewater utilities in North Carolina.

Background

System development fees are one-time charges assessed to new water and/or wastewater customers, or developers or builders, to recover a proportional share of capital costs incurred to provide service availability and capacity for new customers. North Carolina General Statute 162A Article 8 (Article 8) provides for the uniform authority to implement system development fees for public water and wastewater systems in North Carolina, and was recently passed by the North Carolina General Assembly and signed into law on July 20, 2017. According to the statute, system development fees must be adopted in accordance with the conditions and limitations of Article 8, and must conform to the requirements set forth in the Article no later than July 1, 2018. In addition, the system development fees must also be prepared by a financial professional or licensed professional engineer, qualified by experience and training or education, who, according to the Article, shall:

- Document in reasonable detail the facts and data used in the analysis and their sufficiency and reliability.
- Employ generally accepted accounting, engineering, and planning methodologies, including the buy-in, incremental cost or marginal cost, and combined cost approaches for each service, setting forth appropriate analysis to the consideration and selection of an approach appropriate to the circumstances and adapted as necessary to satisfy all requirements of the Article.

- Document and demonstrate the reliable application of the methodologies to the facts and data, including all reasoning, analysis, and calculations underlying each identifiable component of the system development fee and the aggregate thereof.
- Identify all assumptions and limiting conditions affecting the analysis and demonstrate that they do not materially undermine the reliability of conclusions reached.
- Calculate a final system development fee per service unit of new development and include an equivalency or conversion table for use in determining the fees applicable for various categories of demand.
- Consider a planning horizon of not less than 10 years, nor more than 20 years.

This letter report documents the results of the calculation of water and wastewater system development fees for the City in accordance with these requirements.

Article 8 references three methodologies that can be used to calculate system development fees. These include the buy-in method, the incremental cost method, and the combined cost method. A description of each of these methods follows:

Capacity Buy-In Approach

The Capacity Buy-In Methodology is most appropriate in cases where the existing system assets provide adequate capacity to provide service to new customers. This approach calculates a fee based upon the proportional cost of each user's share of existing plant capacity. The cost of the facilities is based on fixed assets records and usually includes escalation of the depreciated value of those assets to current dollars.

Incremental Cost Approach

The second method used to calculate water and wastewater system development fees is the Incremental Cost (or Marginal Cost) Methodology. This method focuses on the cost of adding additional facilities to serve new customers. It is most appropriate when existing facilities do not have adequate capacity to provide service to new customers, and the cost for new capacity can be tied to an approved capital improvement plan (CIP) that covers at least a 10-year planning period.

Combined Approach

A combined approach, which is a combination of the Buy-In and Incremental Cost approaches, can be used when the existing assets provide some capacity to accommodate new customers, but where the capital improvement plan also identifies significant capital investment to add additional infrastructure to address future growth and capacity needs.

Summary of Results

To perform the system development fee calculation, Raftelis requested and was provided with the following data from City staff:

- Water and wastewater fixed asset data;
- Capital improvement plan;
- History of revenues from system development fees; and
- Capacity in water and wastewater systems.

The City has existing capacity in their water and wastewater treatment systems. However, the transmission and distribution/collection systems limit the ability to utilize all available treatment capacity. The City's capital improvement plan identifies several projects to expand the capacity of the water transmission/distribution system and the wastewater transmission/collection systems so that more of the treatment capacity can utilized. Therefore, the Combined Approach was chosen as the most appropriate method to calculate the City's system development fees. The following sections discuss the calculations that Raftelis used to determine the new system development fees.

Buy-In Calculation

Using the Buy-In approach, Raftelis calculated the estimated cost, or investment in, the current capacity available to provide utility services to existing and new customers. This analysis was based on a review of fixed asset records and other information as of June 30, 2017. The depreciated value of the assets was first adjusted to reflect an estimated replacement cost, or "replacement cost new less depreciation" (RCNLD).[1] The asset values were escalated using the Handy Whitman Index of Public Utility Construction Costs (for the South Atlantic Region).

The RCNLD value of the water assets includes water supply, treatment, storage, transmission and distribution facilities and land, but excludes non-core assets such as small equipment, vehicles, easements, and computers. The RCNLD value of the wastewater assets includes wastewater treatment, collection system facilities, disposal facilities and land, and like water, excludes non-core assets. Results of the asset escalation by asset category are shown in Exhibit 1. It should be noted the City's treatment plants were donated and are not reflected in the fixed asset information. However, any improvements made to the plants and paid for by the City are reflected in the fixed asset information.

1 The RCNLD value represents the value of the City's assets if the City were to replace the assets exactly as they exist today. The cost of replacing these assets with new assets would therefore be higher than the RCNLD value shown.

Exhibit 1 – Replacement Cost New, Less Depreciation

Asset Category	Water RCNLD Value	Wastewater RCNLD Value
Booster Pump	$238,806	$-
Equipment	$677,955	$603,072
Land	$37,945	$37,945
Lines	$6,995,302	$10,861,284
Pump Station	$-	$1,321,034
Wastewater Plant	$-	$3,896,585
Tank	$1,488,462	$-
Vehicle	$259,769	$587,413
Water Plant	$317,761	$-
AMI and Public Works Design	$1,640,728	$26,847
Building Improvement	$202,390	$39,722
Land Improvement	$23,994	$22,736
Total	**$11,883,112**	**$17,396,639**

Several adjustments were then made to the estimated water and wastewater RCNLD values in accordance with Article 8, which included adjustments for contributed assets and outstanding debt service as described below.

- Contributed Assets - The listing of fixed assets provided was reviewed to identify assets that were contributed or paid for by developers, as these assets should be subtracted from the RCNLD value because they do not represent an investment in system capacity by the City. The City indicated that the original list of assets provided did not include any contributed assets. Therefore, no adjustment is necessary since the fixed asset lists represents assets paid for by the City.
- Non-core Assets - The RCNLD value excludes non-core assets such as equipment, vehicles, and meters. The City has installed advanced meter infrastructure which has been excluded since the costs of these meters and infrastructure is recovered through connection/tap fees. Furthermore, the City is constructing a new public works building. The costs for designing the building were included in the fixed assets but have been removed.
- Outstanding Debt Service Deduction - Utilities often borrow funds to construct assets, and revenues from retail rates and charges can be used to make the payments on these borrowed funds. To ensure that new customers are not being double charged for debt-funded assets, once through retail rates and charges and again through system development fees, the outstanding debt principal that is anticipated to be funded through retail rates was deducted from the system development fee calculation. (The outstanding principal represents debt associated with assets included in the adjusted RCNLD value).

The RCNLD values for water and wastewater assets with the adjustments as described above are shown in Exhibit 2. (Please note, numbers may vary slightly due to rounding).

Exhibit 2 – Deductions from RCNLD for Water and Wastewater System Values

Deduction or Credit	Water	Wastewater
RCNLD	$11,883,112	$17,396,639
Less: Non-core assets		
AMI project and public works design	$(1,640,728)	$(26,847)
Equipment	$(677,955)	$(603,072)
Vehicles	$(259,769)	$(587,413)
Less: Portion of Outstanding Principal Debt	$(424,602)	$(2,643,249)
Net System Value	**$8,880,058**	**$13,536,057**

The net system values for water and wastewater were then converted to a unit cost of capacity by dividing the values by their respective capacity in gallons per day (GPD) (Exhibit 3).

Exhibit 3 – Cost per GPD -Buy-In Approach

	Water	Wastewater
A. Net System Value	$8,880,058	$13,536,057
B. Existing Capacity (GPD)[2]	4,500,000	4,500,000
Cost Per GPD (A/B)	**$1.97**	**$3.01**

Incremental Calculation

Using the Incremental Cost approach, Raftelis identified the cost of capital improvements for the water and wastewater systems relative to the additional capacity provided by these projects. The starting point for the Incremental approach is the total cost of all expansion-related capital projects included in the City's capital improvement plan which covers a planning horizon of 10 years. The City anticipates debt-funding all projects. The total cost of water transmission/distribution system expansions ($4,012,500) and wastewater transmission/collection system expansions ($1,941,000) is projected to be funded through a 20-year loan. The City's expansion projects and their respective costs are listed in Exhibits 4 and 5.

[2] The capacity represents the capacity of the transmission and distribution/collection systems since these assets limit the ability to utilize the total plant capacity, and since minimal treatment plant assets are reflected in the RCLND.

Exhibit 4 – Planned Expansion Project for the Water System

Water Transmission/Distribution System Expansion Projects	Cost of Capital Improvements
Henry Chapel Road Water Main Loop[3]	$930,500
South Belmont 0.5 Million Gallon Elevated Storage Tank	$2,394,000
South Belmont Booster Pump Station	$688,000
Total Costs of Capital Improvements	**$4,012,500**

Exhibit 5 – Planned Expansion Project for the Wastewater System

Wastewater Transmission/Collection System Expansion Projects	Cost of Capital Improvements
West-South-Southwest Outfall Improvements	$388,000
South Point Road Wastewater Booster Pump Station	$1,000,000
Morgans Branch Regional Pump Station Expansion	$553,000
Total Costs of Capital Improvements	**$1,941,000**

The aggregate project costs must be reduced by a revenue credit according to the North Carolina General Statute 126A-207 "Minimum requirements" of Article 8. The credit shall reflect a deduction of either the outstanding principal debt or the present value of projected revenues received by the local governmental unit for the capital improvements. The credit must be no less than 25% of the aggregate cost of these capital improvements. The revenue credit is applied to ensure that new customers are not paying twice for the capacity (once through the system development fee and then again through retail rates which are used to pay debt service issued for the projects that provided capacity). The revenue credit was calculated by taking the net present value of the expected principal debt to be issued for the capital projects funded through debt. It was assumed that all projects would be funded by a loan with a 20-year term with an interest rate of 3%.

The City currently uses revenues from system development fees to pay for expansion related projects. The portion of revenues anticipated to be received from system development fees in relation to the projected annual principal debt was calculated to reduce the debt credit. Since a portion of the principal will be covered with the system development fees, the debt credit only needs to reflect the portion of debt to be paid through retail rates and charges. (Refer to Supporting Schedule 3 and 4 for more details).

[3] The Henry Chapel Road Water Main Loop is 50% funded by developers, so only 50% of the project's total cost is shown in the table above. The project's total cost is $1,861,000.

For water, the resulting net present value of principal ($2.25 million) was subtracted from the aggregate project costs to derive net project costs of approximately $1.76 million (Exhibit 6). For wastewater, the net present value of principal debt ($485,250) was subtracted from the aggregate project costs to derive net project costs of approximately $1.46 million (Exhibit 7).

Exhibit 6 – Revenue Credit Applied to Water Expansion Values

	Water
A. Total Costs of Capital Improvements	$4,012,500
B. Revenue Credit (NPV of Outstanding Principal)	(-$2,255,797)
Net Capital Projects after Revenue Credit (A-B)	**$1,756,703**

Exhibit 7 – Revenue Credit Applied to Wastewater Expansion Values

	Wastewater
A. Total Costs of Capital Improvements	$1,941,000
B. Revenue Credit (25% of Project Costs)	(-$485,250)
Net Capital Projects after Revenue Credit (A-B)	**$1,455,750**

The net cost of capital improvements is divided by the additional capacity to be provided by the capital projects to derive a cost per gallon per day (GPD), as shown in Exhibit 8.

Exhibit 8 – Cost per GPD for Future Expansion Projects (Incremental Approach)

	Water	Wastewater
A. Adjusted Expansion Cost	$1,756,703	$1,455,750
B. New Capacity from Expansion (GPD)	500,000	500,000
Cost Per GPD (A/B)	**$3.51**	**$2.91**

Combined Cost Calculation

The Combined Cost method requires a weighted average of the respective cost per GPD numbers calculated under the Buy-In and Incremental approaches as illustrated in Exhibits 9 and 10.

Exhibit 9 – Weighted Cost/gallon/day for Combined Approach: Water System

	Water System Cost per GPD	
	A. Net Assets / Capital Improvements	B. Capacity
Buy-In	$8,880,058	4,500,000
Incremental	$1,756,703	500,000
Total	**$10,636,761**	**5,000,000**
Weighted Average Cost per Day (A/B)	**$2.13**	

Exhibit 10 – Weighted Cost/gallon/day for Combined Approach: Wastewater System

	Wastewater System Cost per GPD	
	A. Net Assets / Capital Improvements	B. Capacity
Buy-In	$13,536,057	4,000,000
Incremental	$1,455,750	500,000
Total	**$14,991,807**	**5,000,000**
Weighted Average Cost per Day (A/B)	**$3.00**	

The cost per GPD becomes the basic building block or starting point for determining the *maximum cost-justified level* of the water and wastewater capacity development fees.

Equivalent Residential Unit (ERU) Calculation and Assessment of Fee

The next step is to define the level of demand associated with a typical, or average, residential customer, often referred to as an Equivalent Residential Unit, or ERU. For both water and wastewater fees, the City follows the wastewater design flow rates as specified by the North Carolina Administrative Code Title 15A (Department of Environment and Natural Resources) Subchapter 2T (refer to Supporting Schedule 6), which states that the sewage from dwelling units is 120 gallons per day per bedroom. The City assumes one ERU has 3 bedrooms, yielding a gallon per day per ERU of

360. Exhibit 11 exemplifies the system development fee per service unit and a conversion table[4] for a sample of various categories of demand for non-residential customers (Refer to Supporting Schedule 5 for permitted flow rates for all categories of demand). For non-residential customers, the City will use flow guidelines as specified in the North Carolina Administrative Code Title 15A to estimate the customer's water or sewer flow. The estimated flow will then be multiplied by the cost per gallon per day to derive the system development fee.

Exhibit 11 – Maximum Cost Justified System Development Fees for a Sample of Customers (rounded to the nearest dollar)

		Maximum Cost Justified System Development Fee	
	Gallons per Day	Water ($2.13 per gallon per day)	Wastewater ($3.00 per gallon per day)
Residential:			
One-bedroom	120	**$256**	**$360**
Two-bedroom	240	**$511**	**$720**
Three-bedroom	360	**$767**	**$1,080**
Four-bedroom	480	**$1,022**	**$1,440**
Five-bedroom	600	**$1,278**	**$1,800**
Non-Residential:			
General business/office	25 gal/ employee	**$53 per employee**	**$75 per employee**
Restaurant (full service)	40 gal/seat	**$85**	**$120**
Store (without food service)	100 gal/1,000 sq.ft.	**$213 per 1,000 sq.ft.**	**$300 per 1,000 sq.ft.**
Hotel (without in-room cooking)	120 gal/room	**$256 per room**	**$360 per room**

The City may elect to charge a cost per gallon that is less than the maximum cost-justified charge documented in this report. If the City elects to charge a fee that is less, all customers must be treated equally, meaning the same reduced cost per gallon per day must be used for all customers.

[4] It should be noted that the maximum cost justified system development fees for non-residential customers can also be calculated by dividing the estimated flow based on the Administrative Code by the one-bedroom gallons per day (120). This results in the number of ERUs which can then be multiplied by the system development fee for a one-bedroom unit ($256 for water or $360 for wastewater). The resulting value is the same as that shown in Exhibit 11.

We appreciate the opportunity to assist the City of Belmont with this important engagement. Should you have questions, please do not hesitate to contact me at (704) 936-4436.

Sincerely,
RAFTELIS FINANCIAL CONSULTANTS, INC.

Elaine Conti
Senior Manager

Supporting Schedule 1 – Buy-In Approach for Water and Wastewater System

	RCNLD (1)	
	WATER	SEWER
Category		
Booster pump	$ 238,806	$ -
Equipment	677,955	603,072
Land	37,945	37,945
Lines	6,995,302	10,861,284
Pump station	-	1,321,034
Sewer plant	-	3,896,585
Tank	1,488,462	-
Vehicle	259,769	587,413
Water Plant	317,761	-
AMI and public works design	1,640,728	26,847
Building improvement	202,390	39,722
Land improvement	23,994	22,736
Total RCNLD	**$ 11,883,112**	**$ 17,396,639**
Adjustments to Fixed Assets (2)		
Removed AMI project and public work design	(1,640,728)	(26,847)
Remove Equipment	$ (677,955)	$ (603,072)
Removed Vehicles	(259,769)	(587,413)
Donated/Contributed (3)		
Total Adjustments	**$ (2,578,452)**	**$ (1,217,333)**
Net Assets Eligible for Inclusion	**$ 9,304,660**	**$ 16,179,306**
Less Outstanding Principal Debt (4)	$ (424,602)	$ (2,643,249)
Net Value	**$ 8,880,058**	**$ 13,536,057**
Plant Capacity (GPD) (5)	4,500,000	4,500,000
Cost per GPD	**$ 1.97**	**$ 3.01**

(1) Fixed asset data as of June 30, 2017 was used for the analysis. The net book value is escalated to today's dollars.
(2) Assets associated with the AMI project and design work for the public works building is removed from the analysis. Equipment and vehicles are also removed from the analysis.
(3) Typically donated, grant funded, or contributed assets are removed. However, per City staff, no donated contributed, or grant funded assets were ever listed in the fixed asset detail.
(4) Outstanding principal must be removed from the analysis. All outstanding debt, exclusive of the debt issued for the AMI project and the public works building, was deducted from the RCNLD value.
(5) The rated capacity of the water treatment plants is 10 MGD but the functional capacity of the transmsion and distribution system is 4.5 MGD. The treatment capacity of the sewer system is 5.0 MGD but the functional capacity of the transmission and collection system is 4.5 MGD.

Supporting Schedule 2 – Outstanding Principal to be Subtracted (Buy-In Approach)

Outstanding Principal for Included Debt	Total	Water	Sewer	Water	Sewer
RBC Southout Fall	$ 696,953	0%	100%	$ -	$ 696,953
NC DEQ- Clean Water	$ 1,274,875	0%	100%	$ -	$ 1,274,875
West Outfall	$ 671,421	0%	100%	$ -	$ 671,421
Water Revolving Loan	$ 325,053	100%	0%	$ 325,053	$ -
Water revolving Loan	$ 99,549	100%	0%	$ 99,549	$ -
Subtotal: Outstanding Principal	$ 3,067,852			**$ 424,602**	**$ 2,643,249**

Supporting Schedule 3 – Incremental Cost Approach for Water and Wastewater Systems

Calculation of Debt Credit: Water

Term (Years)	20									
Interest Rate	3%									
Period	1	2	3	4	5	6	7	8	9	10
Fiscal Year	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
Principal Payment	$ 200,625	$ 200,625	$ 200,625	$ 200,625	$ 200,625	$ 200,625	$ 200,625	$ 200,625	$ 200,625	$ 200,625

Net Present Value of All Payments (1) $ 2,984,793

(1) Net present value includes all 20 years of the loan. Only the first ten years are shown for brevity.

WATER	Marginal Incremental Approach	
Cost of Water Projects that add capacity (1)	$	4,012,500
Deduction (2)		
25% of project costs	$	(1,003,125)
Net Present Value of Future Debt	$	(2,984,793)
System Development Fee Revenue/Avg. Principal		24%
Remaining debt to cover through retail rates		76%
Debt Service Credit	$	(2,255,797)
Deduction Used (2)	$	(2,255,797)
Net Capital Projects	$	1,756,703
Capacity added by projects (3)		500,000
Cost per gallon per day	**$**	**3.51**

Calculation of Debt Credit: Sewer

Term (Years)	20									
Interest Rate	3%									
Period	1	2	3	4	5	6	7	8	9	10
Fiscal Year	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
Principal Payment	$ 97,050	$ 97,050	$ 97,050	$ 97,050	$ 97,050	$ 97,050	$ 97,050	$ 97,050	$ 97,050	$ 97,050

Net Present Value of All Payments (1) $ 1,443,859

(1) Net present value includes all 20 years of the loan. Only the first ten years are shown for brevity.

SEWER	Marginal Incremental Approach	
Cost of Sewer Projects that add capacity (4)	$	1,941,000
Deduction (2):		
25% of project costs	$	(485,250)
Net Present Value of Future Debt	$	(1,443,859)
System Development Fee Revenue/Avg. Principal		88%
Remaining debt to cover through retail rates		12%
Debt Service Credit	$	(179,274)
Deduction Used (2)	$	(485,250)
Net Capital Projects	$	1,455,750
Capacity added by projects (5)		500,000
Cost per gallon per day	**$**	**2.91**

(1) The projects that add capacity on the water system include the north and south elevated storage tanks.
(2) A credit of no less than 25% of the projects costs must be deducted. The greater of 25% of the project costs, or the net present value of debt service payments to be paid through user rates and charges is used to determine the credit. It is anticipated that revenues from SDF fees will be used to pay a portion of the debt service issued for capacity related projects.
(3) The water projects will add 500,000 gallons per day of capacity.
(4) The projects that add capacity on the sewer system include the southwest outfall improvements and the South Point booster pump station.
(5) The sewer projects will add 500,000 gallons per day of capacity.

Supporting Schedule 4 – Percent of Debt Credit for Marginal Incremental Approach

City of Belmont, NC		Current SDF for 360 ERU
1)	System Development Fees	$ 1,612
	Impact Fees - Carson/Point Crossing Pump Stations	
2)	Carson	$ 959
3)	Point Crossing	$ 1,417
4)	Impact Fees - West Outfall	$ 1,603
5)	Impact Fees - North Outfall	$ 689
6)	Impact Fees - South Point Water and Sewer	
	Oversizing from 8 - 12 inches	$ 4,254
	Elevated storate tank	
	Force main	
7)	Impact Fees - Belmont Abbey Booster Pump Station	$ 1,056

	Water	
Average water impact fee	$	2,655
Water System development fee	$	1,612
Total existing average water SDF	$	4,267
Calculated SDF (water only)	$	766
% of existing fee		18%
4-year history of revenues from water SDFs	$	274,932
Estimate of water revenues from new SDFs	$	49,345
Projected annual principal -Marginal Incremental	$	200,625
System Development Fee Revenue/Avg. Principal		**24%**

	Wastewater	
Average sewer impact fee	$	1,784
Sewer System development fee	$	1,612
Total existing average sewer SDF	$	3,396
Calculated SDF (sewer only)	$	1,079
% of existing fee		32%
4-year history of revenues from sewer SDFs	$	266,897
Estimate of sewer revenues from new SDFs	$	84,823
Projected annual principal -Marginal Incremental	$	97,050
System Development Fee Revenue/Avg. Principal		**88%**

Supporting Schedule 5 – Combined Cost Approach

System	Buy-In Approach	Incremental Approach	Total Costs	Existing Capacity	Additional Capacity	Total Capacity	Cost per gpd	ERU	SDF
Water	$ 8,880,058	$ 1,756,703	$ 10,636,761	4,500,000	500,000	**5,000,000**	**2.13**	360	**$ 766**
Sewer	$ 13,536,057	$ 1,455,750	$ 14,991,807	4,500,000	500,000	**5,000,000**	**3.00**	360	**$ 1,079**

Supporting Schedule 6 – NC Administrative Code 15A

15A NCAC 02T .0114 WASTEWATER DESIGN FLOW RATES

(a) This Rule shall be used to determine wastewater flow rates for all systems covered by this Subchapter unless alternate criteria are provided by a program specific rule and for flow used for the purposes of 15A NCAC 02H .0105. These are minimum design daily flow rates for normal use and occupancy situations. Higher flow rates may be required where usage and occupancy are atypical, including, those in Paragraph (e) of this Rule. Wastewater flow calculations must take hours of operation and anticipated maximum occupancies/usage into account when calculating peak flows for design.

(b) In determining the volume of sewage from dwelling units, the flow rate shall be 120 gallons per day per bedroom. The minimum volume of sewage from each dwelling unit shall be 240 gallons per day and each additional bedroom above two bedrooms shall increase the volume by 120 gallons per day. Each bedroom or any other room or addition that can reasonably be expected to function as a bedroom shall be considered a bedroom for design purposes. When the occupancy of a dwelling unit exceeds two persons per bedroom, the volume of sewage shall be determined by the maximum occupancy at a rate of 60 gallons per person per day.

(c) The following table shall be used to determine the minimum allowable design daily flow of wastewater facilities. Design flow rates for establishments not identified below shall be determined using available flow data, water-using fixtures, occupancy or operation patterns, and other measured data.

Type of Establishments	Daily Flow For Design
Barber and beauty shops	
Barber Shops	50 gal/chair

Beauty Shops	125 gal/booth or bowl
Businesses, offices and factories	
General business and office facilities	25 gal/employee/shift
Factories, excluding industrial waste	25 gal/employee/shift
Factories or businesses with showers or food preparation	35 gal/employee/shift
Warehouse	100 gal/loading bay
Warehouse – self storage (not including caretaker residence)	1 gal/unit
Churches	
Churches without kitchens, day care or camps	3 gal/seat
Churches with kitchen	5 gal/seat
Churches providing day care or camps	25 gal/person (child & employe
Fire, rescue and emergency response facilities	
Fire or rescue stations without on site staff	25 gal/person
Fire or rescue stations with on-site staff	50 gal/person/shift
Food and drink facilities	
Banquet, dining hall	30 gal/seat
Bars, cocktail lounges	20 gal/seat
Caterers	50 gal/100 sq ft floor space
Restaurant, full Service	40 gal/seat
Restaurant, single service articles	20 gal/seat
Restaurant, drive-in	50 gal/car space
Restaurant, carry out only	50 gal/100 sq ft floor space
Institutions, dining halls	5 gal/meal
Deli	40 gal/100 sq ft floor space
Bakery	10 gal/100 sq ft floor space
Meat department, butcher shop or fish market	75 gal/100 sq ft floor space
Specialty food stand or kiosk	50 gal/100 sq ft floor space
Hotels and Motels	
Hotels, motels and bed & breakfast facilities, without in-room cooking facilities	120 gal/room
Hotels and motels, with in-room cooking facilities	175 gal/room
Resort hotels	200 gal/room
Cottages, cabins	200 gal/unit
Self service laundry facilities	500 gal/machine

Medical, dental, veterinary facilities	
Medical or dental offices	250 gal/practitioner/shift
Veterinary offices (not including boarding)	250 gal/practitioner/shift
Veterinary hospitals, kennels, animal boarding facilities	20 gal/pen, cage, kennel or stall
Hospitals, medical	300 gal/bed
Hospitals, mental	150 gal/bed
Convalescent, nursing, rest homes without laundry facilities	60 gal/bed
Convalescent, nursing, rest homes with laundry facilities	120 gal/bed
Residential care facilities	60 gal/person
Parks, recreation, camp grounds, R-V parks and other outdoor activity facilities	
Campgrounds with comfort station, without water or sewer hookups	75 gal/campsite
Campgrounds with water and sewer hookups	100 gal/campsite
Campground dump station facility	50 gal/space
Construction, hunting or work camps with flush toilets	60 gal/person
Construction, hunting or work camps with chemical or portable toilets	40 gal/person
Parks with restroom facilities	250 gal/plumbing fixture
Summer camps without food preparation or laundry facilities	30 gal/person
Summer camps with food preparation and laundry facilities	60 gal/person
Swimming pools, bathhouses and spas	10 gal/person
Public access restrooms	325 gal/plumbing fixture
Schools, preschools and day care	
Day care and preschool facilities	25 gal/person (child & employee)
Schools with cafeteria, gym and showers	15 gal/student
Schools with cafeteria	12 gal/student
Schools without cafeteria, gym or showers	10 gal/student
Boarding schools	60 gal/person (student & employee)
Service stations, car wash facilities	
Service stations, gas stations	250 gal/plumbing fixture
Car wash facilities (if recycling water see Rule .0235)	1200 gal/bay
Sports centers	
Bowling center	50 gal/lane
Fitness, exercise, karate or dance center	50 gal/100 sq ft
Tennis, racquet ball	50 gal/court
Gymnasium	50 gal/100 sq ft
Golf course with only minimal food service	250 gal/plumbing fixture
Country clubs	60 gal/member or patron
Mini golf, putt-putt	250 gal/plumbing fixture
Go-kart, motocross	250 gal/plumbing fixture
Batting cages, driving ranges	250 gal/plumbing fixture
Marinas without bathhouse	10 gal/slip
Marinas with bathhouse	30 gal/slip
Video game arcades, pool halls	250 gal/plumbing fixture
Stadiums, auditoriums, theaters, community centers	5 gal/seat
Stores, shopping centers, malls and flea markets	
Auto, boat, recreational vehicle dealerships/showrooms with restrooms	125 gal/plumbing fixture
Convenience stores, with food preparation	60 gal/100 sq ft
Convenience stores, without food preparation	250 gal/plumbing fixture
Flea markets	30 gal/stall
Shopping centers and malls with food service	130 gal/1000 sq ft
Stores and shopping centers without food service	100 gal/1000 sq ft
Transportation terminals – air, bus, train, ferry, port and dock	5 gal/passenger