

# APPENDIX F

Flow Tables

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## Appendix F

1. The individual on-site sewage disposal system shall be designed and constructed to adequately treat and dispose of the expected maximum flow of sewage.
2. The disposal system must be designed to receive all sewage from the building or structure except cooling water, roof, foundation or surface drains or backwash from water treatment devices, unless otherwise approved by Nova Scotia Environment. Backwash from water treatment devices add an extra hydraulic load and may create additional concerns depending on the specific treatment technology. Discharge of this backwash to an on-site sewage disposal system is only recommended if the system has been specifically designed by a professional engineer to accept the specific discharge.
3. The minimum design sewage flow from any residential structure or dwelling shall be 1000 L/day. When it is anticipated that the sewage flows from the dwelling or structure will exceed the 1000 L/day minimum, it is recommended that the sewage flows as indicated in the following Table F1 be utilized:

<b>Table F1 Residential Flows</b>	
<b>Number of Bedrooms</b>	<b>Average Daily Flow (L/Day)</b>
3 bedroom unit or less	1000
3 bedroom with high water use fixtures	1200
4 bedroom unit	1350
4 bedroom unit with high water use fixtures	1500
each additional bedroom	350
each additional bedroom unit with high water use fixtures	500

When the occupancy of a dwelling unit exceeds two persons per bedroom, it is recommended that the sewage flow be determined by adding 175 L/day of sewage flow for each additional person.

4. The minimum design sewage flow from any multi unit residential structure or dwelling such as, apartments, condominiums, cottages, hotels, etc., shall be 1000 L/day. When it is anticipated that the sewage flows from the dwelling or structure will exceed the 1000 L/day minimum, it is recommended that the sewage flows as indicated in the following Table F2 be utilized:

<b>Table F2 Multi Unit Residential Flows</b>	
<b>Unit Type</b>	<b>Average Daily Flow (L/Day)</b>
For the first 3 bedroom unit or less	1000
For each addition unit the following flow rates shall be utilized:	
- 1 bedroom unit	500
- 2 bedroom unit	750
- 3 bedroom unit	1000
- 4 bedroom unit	1500
- each additional bedroom	500

5. Industrial wastewater shall not be discharged into on-site sewage disposal systems designed for sanitary sewage disposal unless prior approval is obtained from Nova Scotia Environment. Special designs or pretreatment may be required for industrial waste-water.
6. All restaurants or other establishments involved in food preparation activities shall install external grease traps when required by Nova Scotia Environment.
7. The design sewage flows from other residential, commercial, industrial and institutional buildings or structures should be based on the design wastewater flows prescribed in Table F3 of this appendix. The minimum design flow from other residential, commercial, industrial and institutional buildings or structures shall be 500 L/day. In the case where a minimum design flow of 500L/day is utilized; the minimum system length must be at least 12.5 meters.
8. Where actual metered flow data indicating maximum daily flows are available, such flow data may be substituted for the sewage flows listed in this appendix, under the following conditions:
- The minimum design flow for a residential structure is 1000 L/day and from commercial, industrial and institutional buildings or structures is 500 L/day.

- They should cover the most recent 6-12 month period of continuous operation (or 3 full seasons).
  - They must be from the same or a similar facility. (Size, activity, geographical location, open hours, production or occupancy volume, usage pattern, etc.)
  - A 20 to 50 percent increase factor should be used in the design flow to accommodate potential future flow increases, occasional peaks, etc.
  - If less than 6-12 months of flow data is available, or only average flows for entire measured period exists (*i.e no daily readings only average for the entire period*), they should be increased by up to 100 percent in the design (or seasonal activity)
  - Flow meter data should also include information regarding actual occupancy or production volume when unit flows are calculated.
9. A reduction in the design flows may be allowed by Nova Scotia Environment when permanent low-volume devices are to be installed in the proposed building or structure. However, in no case shall the design flow from a residential building be less than indicated in Table F1 or F2 unless it is related to a malfunctioning system and the lot size cannot accommodate the installation of a system to handle the flows as required by Table F1 or F2. Manufacturer's data sheets should be presented on all water saving plumbing devices proposed for use with on-site sewage disposal systems. Consideration will include contribution of water saving devices to total flow, safety factor.
10. When the total length of sewer between building and disposal bed exceeds 200 meters the design flow should include allowance for infiltration.
11. Design flows in this appendix are recommended minimal design flows and if evidence of larger flows exist or are expected, the larger flows should be used.
12. In many cases the tables provide several flow rates for the same/similar activity (examples: church halls, restaurants, etc) and the qualified person must decide which of the flows provided in the tables is most representative for the specific design. If there is a question related to which flow rate is most appropriate, Nova Scotia Environment will have the final decision.

<b>TABLE F3 DESIGN WASTEWATER FLOWS</b>			
<b>Facility</b>	<b>Unit of measure</b>	<b>Minimum design flow</b>	<b>Comments</b>
		<b>Litres</b>	
<b>Institutional</b>			
Assembly Halls: No kitchen or meals	person	8	
Assembly Halls: With varying facilities	person	9	
Churches With kitchen	seat	26	
Churches No kitchen	seat	9	
Churches Kitchen & paper service	meal	4.5	
Churches Kitchen & normal service	meal	13.5	
Churches Suppers	person	45	
Fire station Without full time employee, floor drains or food	person	19	
Town Hall	seat	19	
<b>Medical/personal care</b>			
Hospital	bed	409	
Hospital Including laundry	bed	750	

<b>TABLE F3 DESIGN WASTEWATER FLOWS</b>			
<b>Facility</b>	<b>Unit of measure</b>	<b>Minimum design flow</b>	<b>Comments</b>
		<b>Litres</b>	
Hospital mental	bed	340	
Hospital mental Add per employee	employee	23	
Special care home	resident	136	
Special care home Add per employee	employee	45	
Medical Office Doctors nurses medical staff	person	273	
Medical Office Office staff Add	person	73	
Medical Office Patient Add	person	23	
Dental Office	chair	757	
Dental Office Staff Add	person	132	
<b>Schools</b>			
School Cafeteria & gym & shower	student	60	Add to base flow for school
School Cafeteria only	student	30	Add to base flow for school
School Gym with showers only	student	30	Add to base flow for school
School Elementary - washrooms only	student	26	
School High - washrooms only	student	45	

<b>TABLE F3 DESIGN WASTEWATER FLOWS</b>			
<b>Facility</b>	<b>Unit of measure</b>	<b>Minimum design flow</b>	<b>Comments</b>
		<b>Litres</b>	
School Junior high - washrooms only	student	34	
School Boarding Resident student	student	136	
School Boarding Non-resident staff	person	50	
<b>Prison</b>			
Prison	inmate	136	
Prison Add for personnel	employee	23	
<b>Food Service</b>			
Bakery - Sanitary Only	employee	68	
Bar/Lounge	customer	8	
Bar/lounge	seat	125	
Restaurant Not 24 hr	meal	9	
Restaurant Not 24 hr	seat	31	
Restaurant (Not 24 hr.) Auto dishwasher - Add	seat	12	
Restaurant (Not 24 hr.) dishwasher and/or food waste disposer	seat	43	
Restaurant 24 hr.	seat	189	



<b>TABLE F3 DESIGN WASTEWATER FLOWS</b>			
<b>Facility</b>	<b>Unit of measure</b>	<b>Minimum design flow</b>	<b>Comments</b>
		<b>Litres</b>	
Restaurant 24 hr. highway	seat	265	
Restaurant 24 hr. highway & showers	seat	400	
Restaurant Highway (not 24 hr.) Kitchen & toilet waste only	seat	113	
Restaurant Highway (not 24 hr.) Kitchen & toilet waste only	patron	30	
Restaurant Highway (not 24 hr.) Kitchen waste only	meal	11	
Restaurant Banquet rooms-each banquet	seat	30	
Restaurant Drive in	seat	125	
Restaurant Drive in, all paper	car space	57	
Restaurant Drive in, all paper inside seat	seat	57	
Taverns/Bars/Lounges with minimal food service	seat	76	
Night Club/Restaurant	seat	113	
Restaurant/Dining rooms/Dining lounges	square foot of dinning area	9	
Take-Out	square foot (total area)	2	

<b>TABLE F3 DESIGN WASTEWATER FLOWS</b>			
<b>Facility</b>	<b>Unit of measure</b>	<b>Minimum design flow</b>	<b>Comments</b>
		<b>Litres</b>	
Banquet and Dining rooms	Meal	18	
Caterers	patron	45	
Cafeteria	customer	4.5	
Coffee Shop	customer	19	
Coffee Shop Add per employee	employee	36	
Dining Halls	meal	18	
<b>Commercial</b>			
Airport	passenger	9	
Airport Add for each employee	employee	41	
Beauty salon	station	400	
Beauty salon Add for personnel	person	38	
Veterinary clinic (3 doctors or less) - No boarding	total	2900	
Veterinary clinic (3 doctors or less) - Boarding	total	5700	
Dog kennel	enclosure	73	
Laundromat Self serve	machine	1514	
Laundromat Per wash	wash	168	

<b>TABLE F3 DESIGN WASTEWATER FLOWS</b>			
<b>Facility</b>	<b>Unit of measure</b>	<b>Minimum design flow</b>	<b>Comments</b>
		<b>Litres</b>	
Laundromat In apartment building	machine	1135	
<b>Commercial/Shopping</b>			
Department store	toilet room	1513	
Department store	employee	36	
Shopping center No food, laundry	parking space	4	
Shopping center	employee	40	
Shopping center Washrooms only	square metre of store space	5	
Shopping center Toilet rooms	each	1665	
Shopping center Excluding café and laundry	l/square metre	7	
Shopping center Large dry goods	l/square metre	2	
Shopping center Large supermarket & meat department, no garbage grinder	l/square metre	3	
Shopping center Large supermarket & meat department, no garbage grinder	l/square metre	5	
Shopping center Small dry goods store	each	379	
Convenience Store Only (No Food Preparation)	each	500	

<b>TABLE F3 DESIGN WASTEWATER FLOWS</b>			
<b>Facility</b>	<b>Unit of measure</b>	<b>Minimum design flow</b>	<b>Comments</b>
		<b>Litres</b>	
<b>Commercial/Automobile</b>			
Automobile gas station Single hose pump	unit	568	Does not include restaurant
Automobile gas station Double hose pump	unit	1136	Does not include restaurant
Automobile gas station Island	island	1893	Does not include restaurant
Automobile gas station Vehicle served	vehicle	38	
Car wash	car	189	
Car wash	truck	378	
<b>Commercial/Hospitality</b>			
Motel Bath & toilet only	person	118	
Motel Full housekeeping	person	180	
Motel Central bath	person	150	
Motel	unit	318	
Motel	housekeeping unit	454	
Motel Dining room add	seat	122	
Motel Bar & lounge add	seat	68	

<b>TABLE F3 DESIGN WASTEWATER FLOWS</b>			
<b>Facility</b>	<b>Unit of measure</b>	<b>Minimum design flow</b>	<b>Comments</b>
		<b>Litres</b>	
Motel Non residential staff add	employee	40	
Motel Bed & breakfast	person	227	
Hotel	guest	136	
Hotel Add for employees	employee	36	
Boarding house	resident	150	
Dormitory Bunkhouse	person	91	
Senior citizen home	resident	227	
Day Care Centers Staff & children	person	73	
<b>Industrial/Office</b>			
Industrial buildings Excluding industrial waste, cafeteria and showers	employee	45	
Industrial buildings (NO cafeteria) Excluding industrial waste, Including showers	employee	75	
Industrial buildings Excluding industrial waste, Including cafeteria & shower	employee	132	
Warehouse	employee	132	
Industrial Park	acre	63,644	
Industrial Park	employee	68	

**TABLE F3  
DESIGN WASTEWATER FLOWS**

Facility	Unit of measure	Minimum design flow	Comments
		Litres	
Office No cafeteria	employee	50	
Office Including cafeteria	employee	76	
Town offices Office employees	employee	57	
Town Offices Transients	person	19	
Unspecified office space	square metre	6	
<b>Recreation/Camping</b>			
Campgrounds Tents only	site	181	
Campgrounds Trailers water& electrical	site	227	
Campgrounds Trailers water & sewer & electrical	site	284	
Campgrounds with central comfort stations	add for dump station per space	20	
Cabin resort	person	159	
Day camps No meal	person	38	
Day camps Meals	person	68	
Day camps Primitive camps	person	40	

<b>TABLE F3 DESIGN WASTEWATER FLOWS</b>			
<b>Facility</b>	<b>Unit of measure</b>	<b>Minimum design flow</b>	<b>Comments</b>
		<b>Litres</b>	
Construction camps Flush toilets	person	189	
Construction camps No flush toilets	person	123	
Construction camps Migrant workers-central bathroom	person	123	
Summer camps	person	189	
Luxury camps	person	378	
Work camps	bed	227	
Cottages & small seasonal dwellings	bedroom	189	No washroom, structure is serviced by a central comfort station. Does not include laundry or kitchen
<b>Parks &amp; Beaches and Picnic Grounds</b>			
Picnic & fairgrounds with bath houses showers toilets	person	38	
Picnic & fairgrounds with toilets only	person	18	
Beaches with showers & toilets	person	40	
Visitor Center	person	23	
<b>Country Clubs</b>			
Country club Resident present	person	372	
Country club Non resident	person	95	

<b>TABLE F3 DESIGN WASTEWATER FLOWS</b>			
<b>Facility</b>	<b>Unit of measure</b>	<b>Minimum design flow</b>	<b>Comments</b>
		<b>Litres</b>	
Country club Showers in use	fixture	1800	
Country club Water closet	fixture	550	
Country club Lavatory	fixture	350	
Country clubs Urinals - hand flush	fixture	350	
Country clubs Showers	person	40	
Country clubs Day staff - Add	employee	50	
<b>Recreation General</b>			
Halls Washrooms only per day in use	square metre	11	
Halls Restaurants	seat	15	
Halls Bar	seat	10	
Halls Including bar & restaurant	patron	76	
Theatre	seat	14	
Theatre Drive in - no food	space	11	



<b>TABLE F3 DESIGN WASTEWATER FLOWS</b>			
<b>Facility</b>	<b>Unit of measure</b>	<b>Minimum design flow</b>	<b>Comments</b>
		<b>Litres</b>	
Theatre Drive in - food	space	23	
<b>Recreation/Sport</b>			
Bowling Alleys Without bar & restaurant	alley	105	
Bowling Alleys With bar or restaurant	alley	800	
Ice rink	seat	11	
Ice rink Participant Add	person	38	
Stadium	seat	14	
Swimming pool	customer	14	
Swimming pool Area	square metre	50	
Water Slide Park	visitor	15	
Gym Participant	person	38	
Gym Spectator	person	11	
Tennis/Racquetball Excluding food	court	946	
Ski areas Without cafeteria	person	38	
Ski areas With cafeteria	person	57	

<b>TABLE F3 DESIGN WASTEWATER FLOWS</b>			
<b>Facility</b>	<b>Unit of measure</b>	<b>Minimum design flow</b>	<b>Comments</b>
		<b>Litres</b>	
Outdoor sport facilities Toilet waste only	person	19	
<b>Miscellaneous</b>			
Floor drains	unit	189	
Catch basins Garages, service stations etc	unit	375	
<b>Approximate Flushing Frequencies</b>			
Residential	5 flushes per resident per day		
Schools	2 flushes per student per day		
Hotel/Motel room	4-6 flushes per guest per night		
Restaurant	0.5 flushes per meal per day		
General commercial	2-4 flushes per employee per 8 hr.		
Industrial	3 flushes per employee per 8 hr		
Ski Areas	1 flush per skier per day		
Campgrounds with facilities	3 flushes per person per night		
Public Restrooms Stay under ½ hr.	0.4 flushes per visitor per hr		
Public Restrooms Stay from ½ hr. To 1 hr.	0.6 flushes per visitor per hr		
Public Restrooms Stay from 1 to 2 hr.	0.8 flushes per visitor per hr		
Public Restrooms Stay over 2 hr.	1.0 flushes per visitor per hr		