

Micron Area Plan

Sewer

Micron Sewer

Design Criteria:

Minimum Pipe Size:	8"
Minimum Slope:	0.334%
Design Flow:	
Residential	100 gallons per person per day (above water table) (UT R317-3-2.2.B.1) 3.8 capita / Dwelling Unit
Office	333 sq.ft. of building space / capita 15 gallons per person per day
Technical/Manufacturing	1,000 sq.ft. of building space / capita 20 gallons per person per day
Retail	333 sq.ft. of building space / capita 15 gallons per person per day
Restaurant	30 sq.ft. of building space / capita 25 gallons per person per day
Public	350 sq.ft. of building space / capita 15 gallons per person per day
School	1,200 capita / Jr. High, 900 capita / Elementary 20 gallons per person per day (Elementary) 25 gallons per person per day (Jr. High)
Peak Factor	Varies (3.0-4.0)

Summary of Results (Project Sizes):

Design Flow (West Side):	Flow:	Pipe Size Req'd
Pipe 1	1,159 gpm (peak)	10" @ 1.40% or 12" @ 0.53 % min.
Pipe 2	516 gpm (peak)	8" @ 0.91% or 10" @ 0.28% min.
Pipe 3	643 gpm (peak)	10" @ 0.43% or 12" @ 0.20% min.
Pipe 4	592 gpm (peak)	10" @ 0.37% or 12" @ 0.20% min.
Pipe 5	76 gpm (peak)	8" @ 0.34% or 10" @ 0.25% min.
Pipe 6	516 gpm (peak)	8" @ 0.91% or 10" @ 0.28% min.
Pipe 7	342 gpm (peak)	8" @ 0.40% min.
Pipe 8	174 gpm (peak)	8" @ 0.34% min.
Total Flow West Side	1,159 gpm (peak)	
Design Flow (East Side):		
Outfall	394 gpm (peak)	8" @ 0.53% min.
All others (interior roads)		8" @ 0.34% min.
Total Flow from East Side:	394 gpm (peak)	
Design Flow (600 E. Outfall)		
Outfall	39 gpm (peak)	8" @ 0.34% min.

Note: Future area plan areas as shown on L14 and current Draper property is included in Sewer calculations.

R317-3-2. Sewers.

2.1. General. Construction of a new sewer system project may not begin unless the applicant has submitted an engineering report detailing the design, and construction plans to the executive secretary for review and approval evidenced by a construction permit. The executive secretary will not normally review construction plans for extensions of the existing sewer systems to new areas or replacement of sanitary sewers in the existing sewer systems unless requested or required by state or federal funding programs. Rain water from roofs, streets, and other areas, and ground water from foundation drains must not be allowed to enter the sewer system through planning, design and construction quality assurance and control measures.

2.2. Basis of Design

A. Planning Period. Sewers should be designed for the estimated ultimate tributary population or the 50-year planning period, whichever requires a larger capacity. The executive secretary may approve the design for reduced capacities provided the capacity of the system can be readily increased when required. The maximum anticipated capacity required by institutions, industrial parks, etc. must be considered in the design.

B. Sewer Capacity. The required sewer capacity shall be determined on the basis of maximum hourly domestic sewage flow; additional maximum flow from industrial plants; inflow; ground water infiltration; potential for sulfide generation; topography of area; location of sewage treatment plant; depth of excavation; and pumping requirements.

1. Per Capita Flow. New sewer systems shall be designed on the basis of an annual average daily rate of flow of 100 gallons per capita per day (0.38 cubic meter per capita per day) unless there are data to indicate otherwise. The per capita rate of flow includes an allowance for infiltration/inflow. The per capita rate of flow may be higher than 100 gallons per day (0.38 cubic meter per day) if there is a probability of large amounts of infiltration/inflow entering the system.

2. Design Flow

a. Laterals and collector sewers shall be designed for 400 gallons per capita per day (1.51 cubic meters per capita per day).

b. Interceptors and outfall sewers shall be designed for 250 gallons per capita per day (0.95 cubic meter per capita per day), or rates of flow established from an approved infiltration/inflow study.

c. The executive secretary will consider other rates of flow for the design if such basis is justified on the basis of supporting documentation.

C. Design Calculations. Detailed computations, such as the basis of design and hydraulic calculations showing depth of flow, velocity, water surface profiles, and gradients shall be submitted with plans.

MICRON AREA PLAN

Sewer Flows - West Side (Area within Lehi City)

Land Use	Building Footprint Area (Sq.Ft.)	Total Building Area (Sq.Ft.)	Residential Density (Units/Acre)	Residential Units (Units)	# Capita / Sq.Ft. or Unit (capita/unit)	Capita (capita)	Flow / Capita (gpd/cap)	Average Flow (gpd)	Peak Factor*	Peak Hourly Flow (gpd)
Office	906,109	2,718,327	0	0	1/333	8,163	15	122,445	3.0	367,335
Technical / Manufacturing	742,400	742,400	0	0	1/1000	743	20	14,860	3.0	44,580
Retail / Mixed Use (Office)	154,955	464,864	0	0	1/333	1,396	15	20,940	3.0	62,820
Retail / Mixed Use (Retail)	74,498	223,493	0	0	1/333	671	15	10,065	3.0	30,195
Retail / Mixed Use (Restaurant)	20,859	62,578	0	0	1/30	2,086	25	52,150	3.0	156,450
Retail / Mixed Use (Residential)	47,678	143,035	0	115	3.8	115	100	43,700	3.0	131,100
Public	71,200	213,600	0	0	1/350	610	15	9,150	3.0	27,450
Multi-Family Townhomes	-	-	6	147	3.8	563	100	56,300	3.0	168,900
Multi-Family Condo / Apartment	-	-	12	323	3.8	1,235	100	123,500	3.0	370,500
School / Park (Jr. High)	-	-	0	0	-	1,200	25	30,000	3.0	90,000
Total West Side (Lehi City)				585		16,782		483,110		1,449,330

Sewer Flows - West Side (Area currently within Draper City)

Office	300,795	902,385	0	0	1/333	2,710	15	40,650	3.0	121,950
Technical / Manufacturing	234,825	234,825	0	0	1/1000	235	20	4,700	3.0	14,100
Multi-Family Condo / Apartment	-	-	12	60	3.8	228	100	22,800	3.0	68,400
Single Family	-	-	1.5	306	3.8	1,163	100	116,300	3.0	348,900
Total West Side (Draper)				366		4,336		184,450		553,350
Total West Side (Lehi and Draper)				951		21,118		667,560		2,002,680

Sewer Flows - East Side (Area within Lehi City)

Land Use	Building Footprint Area (Sq.Ft.)	Total Building Area (Sq.Ft.)	Residential Density (Units/Acre)	Residential Units (Units)	# Capita / Sq.Ft. or Unit (capita/unit)	Capita (capita)	Flow / Capita (gpd/cap)	Average Flow (gpd)	Peak Factor*	Peak Hourly Flow (gpd)
Office	580,520	1,741,560	0	0	1/333	5,230	15	78,450	3.0	235,350
Single Family	-	-	2	195	3.8	741	100	74,100	3.0	222,300
School / Park (Elementary)	-	-	0	0	-	900	20	18,000	3.0	54,000
Total East Side (Lehi)		1,741,560		195		6,871		170,550		511,650

Sewer Flows - East Side (Area currently within Draper City)

Single Family	-	-	1.5	148	3.8	562	100	56,200	3.0	168,600
Total East Side (Draper)				148		562		56,200		168,600
Totals East Side (Lehi and Draper)				343		7,433		226,750		680,250

* Peak factors shown are based on outfall lines. See sheet S-5 for additional peaking factors.

MICRON AREA PLAN

Sewer Flows - 600 East Outfall

Land Use	Building Footprint Area (Sq.Ft.)	Total Building Area (Sq.Ft.)	Residential Density (Units/Acre)	Residential Units (Units)	# Capita / Sq.Ft. or Unit (capita/unit)	Capita (capita)	Flow / Capita (gpd/cap)	Average Flow (gpd)	Peak Factor*	Peak Hourly Flow (gpd)
Office	18	495,000	0	0	1/333	1,486	15	22,290	4.0	89,160
Total 600 East Outfall		495,000		0		1,486		22,290		89,160

* Peak factors shown are based on outfall lines. See sheet S-5 for additional peaking factors.

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Sewer Pipe Sizing

Pipe ID.	Contributing Area	Average Flow (gpm)	Peak Factor	Peak Hourly Flow (gpm)	Peak Hourly Flow (cfs)	Pipe Dia. (inches)	Slope (%)	Q _{pipe} (cfs)	Velocity (fps)	
1	A+B+C+D+E	463.6	3	1,391	3.10	18	0.11	3.48	1.97	OK
2	A	206.6	3.2	661	1.47	8	1.50	1.48	4.24	OK
3	B+C+D+E	257.0	3.2	822	1.83	10	0.75	1.90	3.48	OK
4	C+D+E	236.8	3.3	781	1.74	10	0.65	1.77	3.24	OK
5	E	30.4	4	122	0.27	8	0.34	0.70	2.02	OK
6	C+D	206.4	3.5	722	1.61	10	0.55	1.62	2.98	OK
7	C	136.8	3.5	479	1.07	8	0.80	1.08	3.09	OK
8	D	69.5	3.5	243	0.54	8	0.34	0.70	2.02	OK
9	East Side	157.5	3	472	1.05	8	0.80	1.08	3.09	OK
10	600 East Outfall	15.5	4	62	0.14	8	0.34	0.70	2.02	OK