

3.2.4.3 Overview of the Permit / Site-Specific Permits / Facility Description / Average and Design Flows

Applicability:

Average and Design flows are applicable to all National Pollutant discharge Elimination System / State Operating Permits.

Content:

10 CSR 20-6.010(2)(A) states that an application for, or for renewal of, a construction or operating permit shall be made on forms provided by the department.

Operating Permits include two flow parameters in the Facility Description: design flow and actual flow. No-discharge permits also include average design flow (see 3.5.4.3 Average and Design Flows). For site-specific operating permits:

- Design flow is expressed in units of gallons per day, and commonly in the terms of million gallons per day (mgd). Design flow is the total flow, including dry weather flow, process wastewater or industrial contribution, and all wet weather flow (e.g. I&I), expected to be received in the design year divided by 365 days; and
- Actual flow is expressed in terms of gallons per day, and commonly as mgd. For a permit renewal at an existing facility, actual flow should be based on flow measurements from discharge monitoring. For an initial permit for a new facility, actual flow is an estimate of expected flows during the initial operating period.
- Permit Applications for the various types of facilities treating domestic wastes or industrial wastes include nine flow parameters:
- Total design flow (design flow) for all outfalls with units not being specified but applied in terms of gallons per day (see new Form B Section 7.35);
- Actual flow presumably for all outfalls with units not specified (see new Form B Section 7.35);
- An estimate of the average flow in gallons per day attributed to inflow and infiltration (I&I) (see new Form B, Part B, Section 12.00; corresponds to Form B2, Part B, Section 11.00 soon to be replaced);
- Average daily flow rate in million gallons per day on an outfall by outfall basis (see new Form B, Part B Section 12.40 E; Corresponds to old Form B, Part B, Section 11.40 E.);
- Average Flow per Discharge in million gallons per day per outfall if the outfall has an intermittent or periodic discharge (see new Form B, Part B, Section 12.40 F; corresponds to old Form B, Part B, Section 11.40 F);
- Average flow contributed by each operation for industrial facilities (see Form C, Section 2.40 B0);
- Flows from intermittent or seasonal discharges in mgd for the long-term average flow rate and the maximum daily flow rate (see Form C, Section 2.40 C);

- For each outfall at an industrial facility, flow measurements expressed as maximum daily value, maximum 30-day value and long-term average value (see Form C, Section 3.00 A & B, Table 1); and
- On an optional basis, the measurement of long-term intake flows for each outfall at an industrial facility (see Form C, Section 3.00 A & B, Table 1).

Neither the Missouri Clean Water Law nor any of the regulations provide definitions for the various flow parameters required on the permit applications or contained in the Facility Descriptions on the permits. The terms are not defined in the instructions for completing the permit applications. Therefore, staff needs to seek other sources to describe the terms when assisting permit applicants, reviewing applications and drafting permits. Several sources of information follow.

Domestic dry weather design flows have been established in 10 CSR 20-8. The majority of the design flows per capita are listed in 10 CSR 20-8.020(11)(B) 3, Table I for small sewage works, and in 10 CSR 20-8.140(5)(C) for large sewage works.

The design flow for facilities having critical seasonal high hydraulic loading periods should be based on daily average flow during the seasonal period. This flow description reflects guidance for determining permit fees and the definitions in the “10-States Standards”. The design flow is used as the basis for determining construction and operating permit fees.

The average design flow (or average annual design flow) for dry weather periods is the flow expected during the last year, or during a continuous 12 month maximum dry weather flow period, in the typical 20-year design life of a treatment facility. However, the average design flow for facilities having critical seasonal high hydraulic loading periods should be based on daily average flow during the seasonal period. The “off-season” dry weather flow needs to be based on daily average flows during the off-season period, or the other method of determination needs to be specified. This flow description reflects guidance for determining permit fees and the definitions in the “10-States Standards”.

The actual flow should be interpreted as total dry weather and wet weather flow for a continuous 12-month period divided by 365 days. However, in the absence of sufficient or reliable flow data, the actual flow may be based on estimation methods, which should be specified. This flow description reflects the design concept specified in 10 CSR 20-6.015(1)(B) 7.A.

Legal References:

Code of State Regulations:

[10 CSR 20-6.010](#) Construction and Operating Permits

[10 CSR 20-6.015](#) Effluent Regulations

[10 CSR 20-8](#) Design Guides

Other Links:

“Recommended Standards for Wastewater Facilities”, A Report of the Wastewater Committee of the Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 1997 Edition (i.e. “10_States Standards”)

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