



**Hydraulic Flow Modeling/Capacity Management/
Flow Monitoring Section**

Instructions: Read the footnotes on the bottom of this side, and the Guidelines for Requesting Flow Metering on the reverse side of this form before requesting a temporary flow meter be set.

Date of Request _____ ^{1,2} **Requestor's Name** _____

Requestors Phone Number _____ **Requestors e-mail Address** _____

Desired Metering Start Date _____ ^{1,2} **Date Data Needed By** _____ ^{1,2}

Intended Use of Data:

- Capacity analysis or other planning need
- Bypass pumping
- Calibration of Hydraulic Flow Model
- Other (special study, developer request, etc.) _____
- CMOM Compliance
- Inflow and infiltration study

Location of Meter (Usually IMS Manhole Number)

Preferred metering site: _____	Pipe Size: _____ ²
1 st upstream alternate site: _____	Pipe Size: _____ ²
2 nd upstream alternate site: _____	Pipe Size: _____ ²
1 st downstream alternate site; _____	Pipe Size: _____ ²
2 nd downstream alternate site; _____	Pipe Size: _____ ²

Data Parameters to be Measured and Reported

- Depth only
- Depth, velocity & flow rate
- Other: _____

Duration of Metering Period:

- 14 Days³
- 21 Days
- 28 Days (typical)
- Other: _____³

Data Measurement Interval:

- 1 Minute
- 5 Minutes (typical)
- 15 Minutes
- Other: _____

Data Reporting Interval:

- 5 Minutes
- 15 Min. Avgs. (typ.)
- 1 Minute
- Other: _____

Special Instructions: (i.e. target dry weather flow, target rain events, document surcharge, special reports needed, etc.) _____

Footnotes:

1. When requesting flow meter data, allow a minimum of two weeks for the meter to be set, and two weeks for data editing and processing after data collection is complete. For 3 weeks of data, please submit this request 7 weeks before the data is needed.
2. Requests for metering in 18" and larger sewer lines require manhole entries, which may delay setting the meter until 3-4 weeks after the request is received.
3. Metering for less than 21 days is strongly discouraged. 21 to 28 days is typical.

Please e-mail this form to Tim Rowe (tim.rowe@pima.gov) and Edward Jandali (edward.jandali@pima.gov) with a copy to Jon Simms (jon.simms@pima.gov)

Guidelines for Requesting Flow Metering

All persons requesting flow meter data should first discuss their flow-meter data needs with the PCRWRD Flow Metering Group (FMG), before requesting a flow meter be set. Contact information for the FMG is shown on the bottom of this page.

The Requestor must request the flow metering sufficiently ahead of the time the data is needed. The FMG must have sufficient time to evaluate the proposed and alternate metering sites, calibrate and install the flow-meter, verify proper meter operation, collect the desired number of days of data, QA/QC the data, and reduce the data into the desired final form. The Requestor is responsible for requesting the data that he or she needs sufficiently ahead of the time the data will be needed.

Flow metering sites are almost always manholes. The flow meter is set inside the inlet pipe of the manhole and does not operate in the invert of the manhole. For this reason, manholes with multiple inlet pipes should not be considered as possible metering sites, if a nearby downstream manhole with only one inlet pipe and the necessary hydraulic conditions is available.

The flow metering process is very time-consuming, and the flow metering site selection process should be a collaborative process between the Requestor and the FMG. Very specific hydraulic conditions must exist at a metering site for the flow meter to collect accurate data. Those hydraulic conditions include:

1. At least 2½ inches of flow in the pipe at all times, including during low flow conditions, and a depth of no more than 60% d/D during high flow conditions.
2. Flow velocities of no less than 2 fps and no more than 6 fps during all flow conditions.
3. Relatively steady state flows (i.e. not immediately downstream from where a pump station discharges into the collection system)
4. At least 60 pipe diameters of straight pipe ahead of the metering site, and 40 pipe diameters behind it.
5. No change in pipe size, very little change in slope, and very little change in horizontal direction at the manhole where the meter is to be set.
6. A manhole invert that is uniform in shape and which closes matches the bottom half of the pipe in size and shape.
7. No significant amounts of flow coming into the metering manhole from second or third inlet pipes.
8. Very little, or no, grit, grease and/or silt in the line.
9. No uneven flows, i.e. flows that are higher than one side of the pipe than the other.
10. Little or no turbulence in the flow where the flow exits the pipe.

In addition, the metering manhole must be no more than 25' deep, and be free from heavy traffic, overhead electrical lines and other safety hazards. Manholes which are less than 20' deep are preferred.

For the above reasons, the hydraulic conditions and hazards at the site must be evaluated by FMG staff prior to installation of the flow meter. If the proposed site is unacceptable, the FMG will suggest one or more alternate sites to the Requestor.

Flow meter data can be collected at sites, which do not meet all of the above requirements, but the quality of the data will be less. For some uses, the reduction in quality is acceptable, and for others it is not. Flow meters will not be set in locations where the hydraulic conditions are such that the flow meter is unlikely to collect data of acceptable quality for the intended use.

To ensure that the Department's resources are not wasted by flow meters being set at inappropriate sites, the PCRWRD Flow Metering Group will be the final authority on where flow meters will be set.

Contacts:

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