

GRAND JUNCTION SEWER SYSTEM ANALYSIS

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This analysis quantifies total system flow and flow in various collection basins of the Persigo 201 service area. A major goal of the study is to identify total non-waste water or extraneous flow quantities, since these quantities occupy system capacity which would otherwise be available for transmission and treatment. Specifically, the report focused on infiltration (water entering through cracks, primarily from irrigation and high ground water) and inflow (storm water or drainage water entering through storm sewers). A current discharge permit requirement for the Persigo plant and applicable to the County is a phased separation of storm and sanitary sewers, and a reduction of inflow, so that the waste water treatment plant may be more efficiently utilized and expansion of the plant can be deferred until necessary.

The report concludes that the collection system operates fairly well. It establishes that the average daily flow at the Persigo plant for 1983 was 6.626 million gallons per day (mgd). The Persigo plant is currently designed to handle up to 12.5 mgd. Provision has been made for doubling the plant capacity in the event of expansion. Projected future flows assuming current build out under present zoning are conservatively estimated to reach 24.536 mgd. Most interceptors are considered to have adequate capacity to handle present and projected flows. However, capacity of several lines is currently exceeded.

Currently, extraneous flow constitutes 2.422 mgd (although it is not entirely accurate to rely on a per day figure). Infiltration constitutes 94% of the extraneous flow; inflow constitutes 6% according to yearly averages. The total amount of extraneous flow creates a treatment cost, since all such flow must pass through the treatment plant. It is estimated that 37% of the total treatment costs charged to Grand Valley residents is attributable to extraneous flow. The total yearly treatment cost of this amount is approximately \$495,000. These costs were used to compare possible extraneous flow reduction projects in a cost benefit analysis.

The report concludes with several recommendations for further studies, as well as setting forth prioritized extraneous flow reduction projects. Orchard Mesa, Central Grand Valley, and Fruitvale have not been analyzed in sufficient detail. Confirmation of the study data is recommended. A worksheet should be set up for each interceptor so that additional use as estimated through building permit data can be kept current in order to inform decisions on zoning changes, subdivision approval, and 201 boundary area changes.

An important policy question is whether the sewer fund as a whole should pay for reduction of infiltration and inflow, or whether these costs should be allocated according to the areas in which the most inflow or infiltration occurs. Most of the "county lines" contribute very little to this problem. Some of the work may possibly be considered as "maintenance", particularly in old City areas where weekly work is required. However, separation of combined sewers which results in capital costs should

36.5%
of present
daily intake
is due to I+I.
Daily cost of
treatment ~
\$1356 or
\$495,000 annually

this is
very important
Add to list
of questions/
needs

possibly be borne by the City or particular districts, rather than by users as a whole.

Over the entire system, the City of Grand Junction contributes 29% of the extraneous flow. This costs users \$98,560 per year. These costs provide the basis for comparison of the cost effectiveness of improvement work in the City. It will not be cost effective to ultimately reduce or eliminate all infiltration and inflow throughout the system. While it is important to deal with the issue of who should pay for which projects are initiated, ultimately, a point of diminishing returns will be reached after which no additional work should be undertaken. Negotiations with the State Department of Health to determine when this point is reached will be an ongoing process.

I believe this is a very short-range view of limited use. The cost of doubling plant size and the timing of that effort should form ^{outer} parameter of this analysis, type. Note, too, that ~ 71% of the I+I problem can be attributed to special districts (three of whom had an insufficient level of analysis) in the Nichol's study). This will be a difficult political + economic problem that should be approached soon.