

September 24, 2010

California Code of Regulations
Title 23. Waters
Division 2. Department of Water Resources
Chapter 5.2. Process Water Use Reporting for SBX7-7

§596650. Applicability:

(a) This regulation applies to urban retail water suppliers (suppliers) when calculating their Gross Water Use in meeting the targets and compliance of SBX7-7 subsection 10608.2 (a) (1). Section 10608.24 (e) states that *“When developing the urban water use target pursuant to Section 10608.20, an urban retail water supplier that has a substantial percentage of industrial water use in its service area it may exclude process water from the calculation of gross water use to avoid a disproportionate burden on another customer sector.”*

An urban retail water supplier is eligible to exclude process water from the calculation of Gross Water Use if:

- (1) An urban retail water supplier is eligible to exclude process water from the calculation of Gross Water Use if (1) The water used by the industrial customer sector comprises a substantial percentage of the supplier’s total water use supplied through the distribution system, and:-
- (2) The exclusion of process water from the calculation of Gross Water Use avoids a disproportionate burden for water conservation on another customer sector, and:-
- (3) The industries are existing water customers.

§596.1651. Definitions.

The terms used in this regulation have the meaning set forth below:

(a) “commercial water user” (as used in Subdivision (d) of Section 10608.12 of SBx7 7) means a water user that provides or distributes a product or service. Examples include commercial businesses and retail stores, office buildings, restaurants, hotels and motels, laundries, food stores, and car washes. Water is used mainly for sanitation, food preparation, cooling, heating, cleaning, and landscape irrigation. Water used by multi-family residences, institutional water users, and dedicated irrigation accounts should be excluded from the tally of commercial water uses.

(c) “distribution system” means a water conveyance system that delivers water to a residential, commercial, industrial customer and for public uses such as fire safety and the source of water is either raw or potable water.

(d) “drought emergency” means a water shortage emergency condition exists as when there would be “insufficient water for human consumption, sanitation, and fire protection”. See Urban Drought Guidebook 2008 Updated Edition, Page 17, “Table 1 Outline of California Water Code, Chapter 3”

(e) “gross water use” means *the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier*. Excluding all of the following:

- (1) Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier
- (2) The net volume of water that the urban retail water supplier places into long storage
- (3) The volume of water the urban retail water supplier conveys for use by another urban water supplier
- (4) The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of Section 10608.24

(f) “incidental water use” is water that is used by industry for landscapes, bathrooms, kitchens, or other uses not related to manufacturing or research and development. This includes incidental cooling. That is, not related to the manufacturing of a product such as; but not limited to, offices, lavatories and kitchens.

(g) “industrial water user” means a manufacturer or processor of materials as defined by the North American Industry Classification System (NAICS) code sectors 31 to 33, inclusive, or an entity that is a water user primarily engaged in research and development. An industrial water user is primarily involved in product manufacturing and processing activities and research and development of products, such as those related to chemicals, food, beverage bottling, paper and allied products, steel, electronics and computers, metal finishing, petroleum refining, and transportation equipment. Data centers that provide a service, as in commercial, versus data centers ~~involved-dedicated in to~~ a manufacturing or research and development process, are an example of what is not considered an industrial water user.

(h) “local agency” means any municipality, such as a city or county government.

(i) “process water” means water used by industrial water users for producing a product or product content, or water used for research and development. Process water includes, but is not limited to; the continuous manufacturing processes, water used for testing, cleaning and maintaining equipment, water used to cool machinery or buildings used in the manufacturing process or necessary to maintain product quality or chemical characteristics for product manufacturing or control rooms, data centers, laboratories, clean rooms and other industrial facility units that are integral to the manufacturing or research and development process. Process water does not include incidental, commercial or institutional water uses.

(j) "suppliers" means urban retail water suppliers

§596.2. Determination for Excluding Industrial Process Water from the gross water use calculation.

(A) When calculating Gross Water Use up to 100 percent of process water may be deducted if ÷ Industrial water use is equal to or greater than 15 percent of Gross Water Use;

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(B) If Industrial water is greater than 5% and less than 15% of gross water use the supplier may deduct process water as follows:

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- a. Less than 5% doesn't qualify to deduct.
 - b. Between 5 and 7.49% deduct up to 25% of process water
 - c. Between 7.5 and 9.9 % deduct 50% of process water
 - d. Between 10 and 12.49% deduct 75% of process water
 - e. Between 12.5 and 14.9% deduct 95% of process water;
- And,

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(ii) To qualify the water supplier shall also meet one or more of the conditions below and can verify and certify the sufficiency of its water conservation program under the provisions of AB 1420:

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(1) One or more of the non-industrial sectors (residential, commercial, or institutional) have effectively reduced their gpcd through conservation to the point where no further savings are possible and therefore not deducting process water puts a disproportionate burden on the remaining sector(s). Or;

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(2) It serves a disadvantaged community, as defined by SBx7 7, and by not deducting process water it will put a disproportionate burden on the community.

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(C) below and certify the sufficiency of its water conservation program under the provisions of AB 1420 Or, as defined by SBx7 7, that it Or; The water suppliers' avoided cost of water as calculated with the CUWCC Avoided Cost Model (incorporating both short and long run costs) is less than \$100 per acre foot, (suggesting limited opportunities for expanding cost effective investments on water efficiency.

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(C) If the percentage of total industrial water use to the gross water use is less than 15 percent, calculate gpcd of industrial water use (gpcd-ind).

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(3) If your gpcd-ind is less than the threshold value of 20, you cannot deduct process water.

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(4) If your gpcd-ind is greater than the threshold value of 20, The following deductions apply:

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- a. less than 145, deduct 50% of your process water
- b. 145-195, deduct 25% of your process water
- c. 196-275, deduct 10% of your process water
- d. 276 to 400, deduct 5% of process water
- e. Greater than 400, no deduction allowed

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§596.2.652-1 Quantification and Verification.

(a) The volume of industrial water use shall be based on the suppliers' billing records or the facilities metering records.

(b) Process water use must be separated out from incidental water use and the incidental water use can be verified. Verification can be accomplished by metering, sub metering or other means determined suitable and verifiable by the urban water purveyor such as audits, historic manufacturing output or suppliers billing records. To establish a baseline for determining incidental water use there must be an average over a five year period. If, however, the incidental water use is determined to be less than 5 percent of total industrial water use that 5 percent does not require verification.

(c) In cases where the urban retail water supplier provides only a portion of an industrial water user's water supply, the average share of the facilities' industrial water use supplied by urban retail water supplier for the previous five years should be used to pro rate the volume of process water use deducted from Gross Water Use. The verification of the proportion of water supplier provided process water shall be accomplished through metering, sub metering or other means determined suitable and verifiable by the urban water purveyor such as audits, historic manufacturing output or suppliers billing records.

(1) Example. If over the previous five years the industrial water user's own sources of supply accounted, on average, for 40 percent of its annual use and supply from the urban retail water supplier accounted for the other 60 percent, only 60 percent of the industrial water use should be used to determine if process water may be excluded from the gross water calculations and only that 60 percent of supplied water can be applied to the process water deduction.

| **§596.3652.2. Existing Industries**

(a) Any ordinance or resolution adopted by an urban retail water supplier after the effective date of this section shall not require existing customers as of the effective date of this section, to undertake changes in product formulation, operations, or equipment that would reduce process water use.

(b) A local agency or water purveyor may encourage existing industries to utilize water efficiency technologies, methodologies, or practices through the use of financial and technical assistance.

| **§596.4652.3 New and Retrofitted Industries**

(a) Local agencies and suppliers shall encourage the adoption of industry specific water conservation practices and technologies where such standards and technologies exist.

| **§596.5653. Appendices**

None at this time (could put in graphs and calculation methods detailing section 652 of the regulation)

Supporting Document A:

Defining “Substantial” Percentage of Industrial Water Use

SBx 7-7 “would require the state to achieve a 20% reduction in urban per capita water use in California by December 31, 2020. The state would be required to make incremental progress towards this goal by reducing per capita water use by at least 10% on or before December 31, 2015. The bill would require each urban retail water supplier to develop urban water use targets and an interim urban water use target, in accordance with specified requirements. The bill would require agricultural water suppliers to implement efficient water management practices. The bill would require the department, in consultation with other state agencies, to develop a single standardized water use reporting form. The bill, with certain exceptions, would provide that urban retail water suppliers, on and after July 1, 2016, and agricultural water suppliers, on and after July 1, 2013, are not eligible for state water grants or loans

unless they comply with the water conservation requirements established by the bill. The bill would repeal, on July 1, 2016, an existing requirement that conditions eligibility for certain

The bill authorizes the department, through a public process and in consultation with the California Urban Water Conservation Council, to develop methodologies and criteria for calculating base daily per capita water use, interim daily per capita water use, and compliance daily per capita water use. Calculating the base, interim, and compliance per capita water uses would require estimating gross water use. Gross water is defined in the statute as (Section 10608.12 (l)) *“the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier”*. The bill provides credits to existing water conservation measures by subtracting them from the estimated gross water use. Section 10608.24 (e) states that *“When developing the urban water use target pursuant to Section 10608.20, an urban retail water supplier that has a substantial percentage of industrial water use in its service area, may exclude process water from the calculation of gross water use to avoid a disproportionate burden on another customer sector.”*

Process water is defined in the statute as (Section 10608.12 (l)) *“water used for producing a product or product content or water used for research and development, including, but not limited to, continuous manufacturing processes, water used for testing and maintaining equipment used in producing a product or product content, and water used in combined heat and power facilities used in producing a product or product content. Process water does not mean incidental water uses not related to the production of a product or product content, including, but not limited to, water used for restrooms, landscaping, air conditioning, heating, kitchens, and laundry.”*

Analysis one of the CUWCC data:

This draft document is prepared to present an initial attempt by the department at defining what constitutes a “substantial” percentage of industrial water use. The water use data for years 2005 through 2008 were obtained from the California Urban Water Conservation Council (CUWCC) to assess the extent of industrial water use throughout the state.

Table 1 shows the total number of water suppliers that have complete data sets for calculating the percentage of industrial water use for each year.

Table 1. Total number of water suppliers with complete data sets to estimate percentage of industrial water use.

Year	Number of Suppliers
2005	146
2006	147
2007	149

Data Analysis

The first step in this analysis was to calculate the ratio of industrial water use to the total water use. This ratio was placed in a new data column and sorted from lower to higher values. Figure 1 shows histogram of these ratios for the year 2005. Histograms of ratios for years 2006 through 2008 are very similar to the year 2005 and therefore are not shown here. What is clear from the histograms is that most of retail suppliers have a very small fraction of their total water use as an industrial water use. The cumulative percent of a ratio, say x , was calculated as the number of data points (retail suppliers) with ratios less than or equal to x to the total number of data points (retail suppliers). This is done to obtain quantile plots of the data from which “substantial” percentage of industrial water use is to be determined. It has to be understood that the cut off point for what is to be “substantial” can only be determined based on scientific knowledge or regulatory decisions. Since none of these were available here, an arbitrary cut of point of 80 percent was selected.

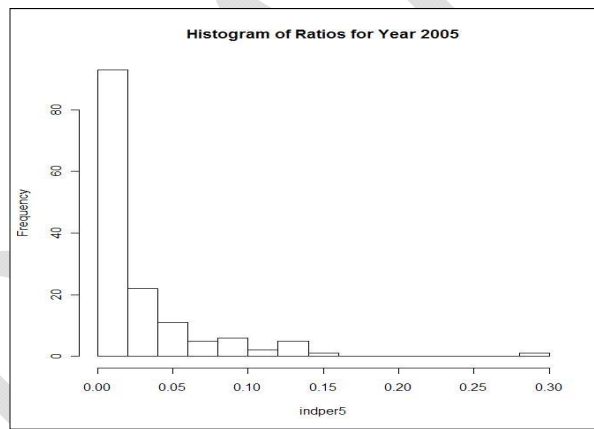


Figure 1. Histogram of ratios of industrial water use to total water use for the year 2005.

Results

Figure 2 shows the cumulative percentage of retail water suppliers versus the ratio of industrial water use to total water use for years 2005 through 2008. It is clear from this figure that there are slight differences across the years. Therefore, average values were calculated at a given cumulative percentage value. Table 2 shows results of such calculations for cumulative percentage values 60 through 95 in increments of 5.

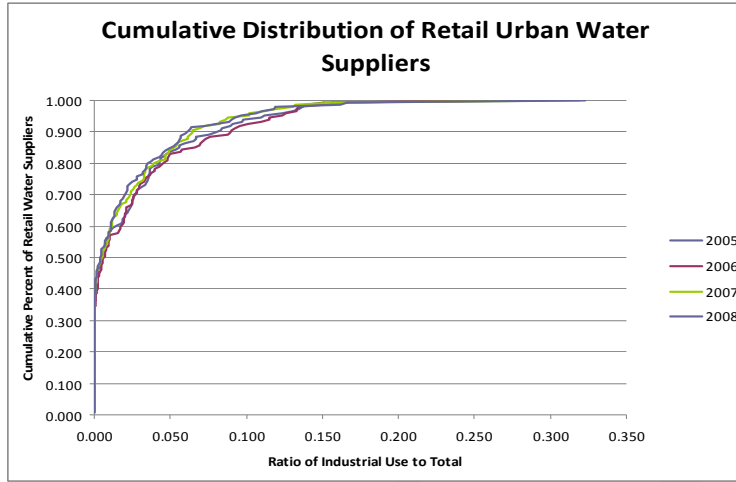


Figure 2. Cumulative distribution of retail urban water suppliers for years 2005 through 2008.

Using Figures (1 & 2) and Table 2, it was decided that cumulative percentage of 80 percent would include significant numbers of retail water suppliers, resulting in 4 percent of industrial water use ratio as a substantial industrial water use. In other words, if a water supplier has greater than or equal to 4 percent of its total water use as industrial water use, it can subtract the industrial water use from the gross water use.

Table 2. Percentage industrial water use by years for cumulative percentiles of 60-95.

Percentile	Percentage Industrial Water Use				
	2005	2006	2007	2008	Average
60	1.5	1.8	1.2	1.1	1.0
65	2.3	2.1	1.5	1.4	1.8
70	2.7	2.7	2.4	2.0	2.0
75	3.6	3.4	3.2	2.8	3.0
80	4.3	4.6	4.0	3.5	4.0
85	5.6	6.6	5.3	5.1	5.7
90	8.1	9.0	6.4	6.2	7.0
95	11.2	12.3	10.1	9.4	10.8

Disproportionate Burden

The statute states an urban retail water supplier that has substantial percentage of industrial water use in its service area may exclude process water from the calculation of gross water use to avoid a disproportionate burden on another customer service. After selecting an arbitrary cumulative percentage of 80 percent as a cut-off point, resulting in 4 percent or more of industrial water use, compared to the total water use, as substantial water use, we then assessed the effect of the industrial water use on gpcd of the service area. Figure 3 shows the cumulative percentage of retail water suppliers versus the gpcd from the industrial water use alone for years 2005-2008. From this it is estimated that using the 80 percent range would result in an average increase of gpcd of 7.5 gallons. It should be noted that there are a couple of outliers that had values over 300 gpcd. The outliers were not shown on the graph so that the chart clearly shows the trend where the 80 percent intersects the curve. Dropping the outliers from the curve does not affect the analysis.

If we were to raise the cutoff point from the 4 percent range (this includes 20 percent of the water agencies) of total water use to 10 percent (or approximately 6 percent of the water agencies) the net increase to gpcd is approximately 15 gallons (figure 3).

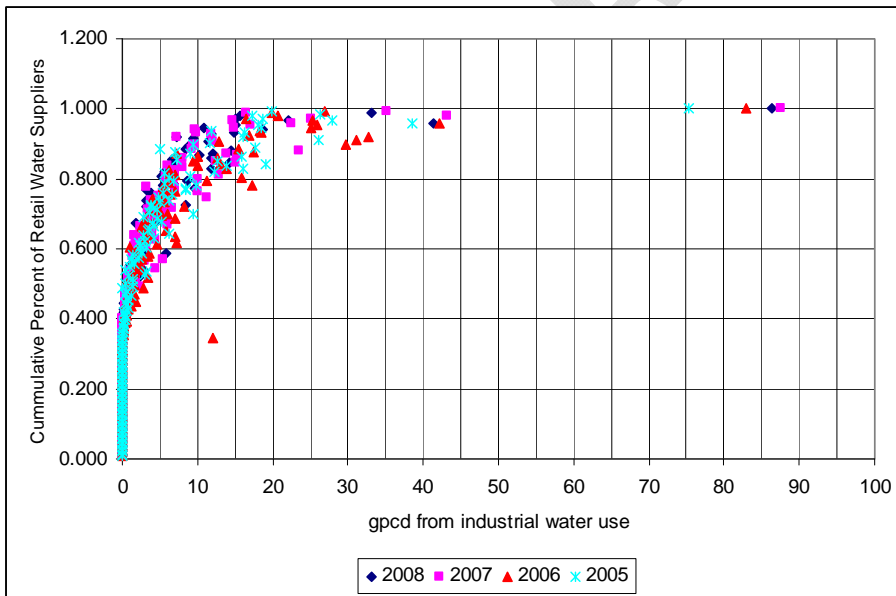


Figure 3. Cumulative distribution of retail urban water suppliers versus gpcd from industrial water use alone.

Analysis two of the CUWCC data:

Assumptions:

1. Data obtained from CUWCC is representative of all California water suppliers.
2. Incidental water use is small to affect the statistics to be used in this analysis.
3. Customers with lower gpcd a have greater burden from process water.
4. Customers with lower gpcd are using water more efficiently.

Procedures

With the assumptions listed above, gpcd values of all water uses, less industrial water use (gpcd-ni), were calculated from the CUWCC data for years 2005 through 2008. This is meant as a measure of water use efficiency of the other sectors (i.e., excluding the industrial sector) and the extent of a disproportionate burden from process water use on the other sectors. Since the data is not normally distributed, a resistant measure of location, quartile is used. This is meant to avoid the influence of a few data outliers. Table 1 shows minimum gpcd, first, second, and third quartiles, maximum gpcd, and the corresponding averages for years 2005 through 2008.

Table 3. Quartiles of gpcd of total water use minus industrial water use for years 2005 through 2008.

year	min	1st	2nd	3rd	max
2005	15.08	138.13	185.69	262.81	3092.53
2006	55.46	144.33	190.09	268.13	23401.07

2007	49.84	148.62	203.03	280.28	3801.23
2008	71.34	142.24	202.91	282.48	58494.59
Average	47.93	143.33	195.43	273.425	22197.36

Using the average quartiles from Table 3, it can be stated that about 25% of the suppliers have less than or equal to 143 gpcd, about 50% have less than or equal 195 gpcd, and about 75% have less than or equal to 273 gpcd of non-industrial water use.

Analysis three of the CUWCC data:

The Figure 4 below shows a plot of the ratio of industrial water use to total water use versus the GPCD from the industrial water only. A polynomial was fitted with with an R^2 of 0.89 (very good fit). This polynomial equation can be used to calculate the GPCD added to the other sectors at a given ratio of industrial to total water use. For example, for the 5,10,15,20, and 25 percent values that we suggested in the document, the corresponding GPCDs from industrial water are 8.86, 18.96, 31.03, 45.08, and 61.11, respectively.

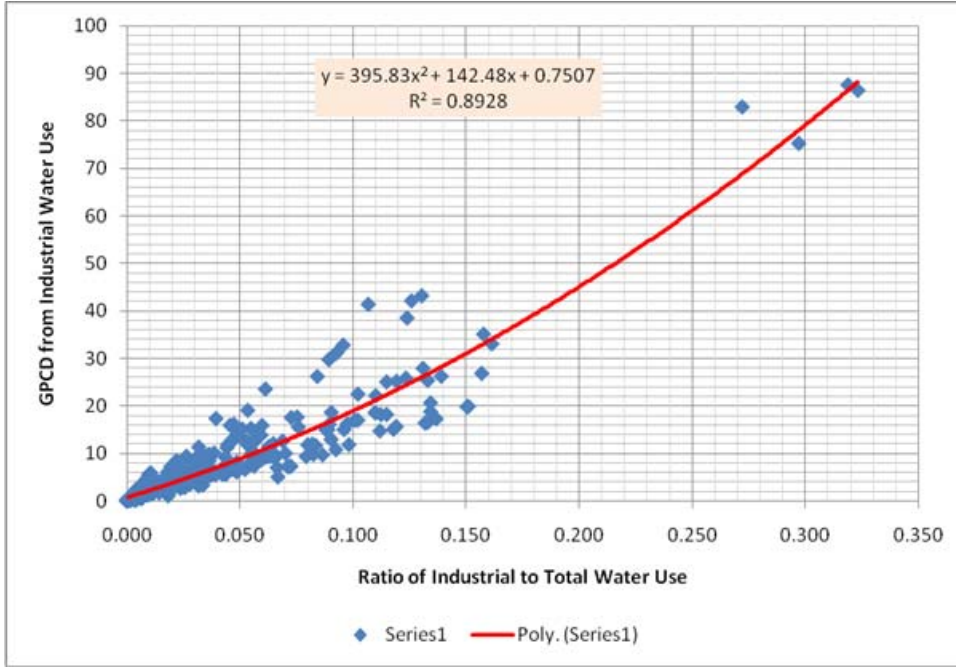
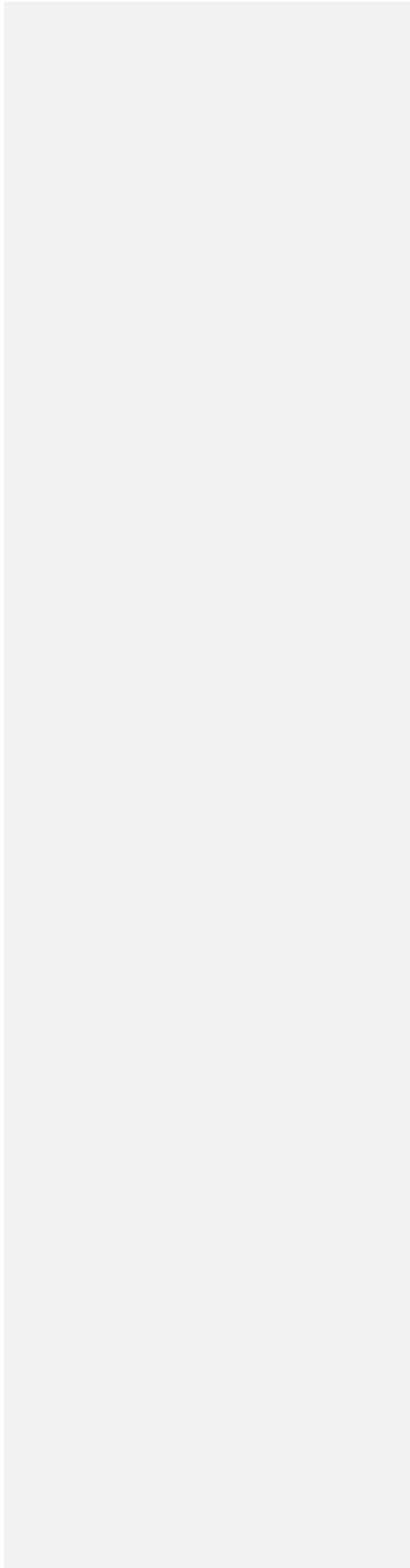


Figure 4; Shows the ratio of industrial water use to total water use versus the GPCD from the industrial water only.

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