K-02

June 30, 2006

TO: John M. Lamerato, Acting City Manager

FROM: Brian Murphy, Assistant City Manager/Services
Steve Vandette, City Engineer

SUBJECT: **Agenda Item** – Troy City Code Chapter 18 (Water Utility)

This item was a referral item requested by Council Member David Lambert and discussed at the City Council meeting of June 19, 2006. After receiving some discussion and some public comments concerning the watering restrictions and their impacts, further discussion was postponed until staff could prepare a presentation and return to address this matter at the regular City Council meeting of July 10, 2006.

City staff will make a brief presentation on understanding DWSD water rates and how water conservation can reduce future rate increases. Steve Vandette, City Engineer, will make this presentation.

Prepared by: Steven J. Vandette, City Engineer
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City of Troy

UNDERSTANDING DWSD WATER RATES

CAN WATER CONSERVATION LOWER WATER RATES?

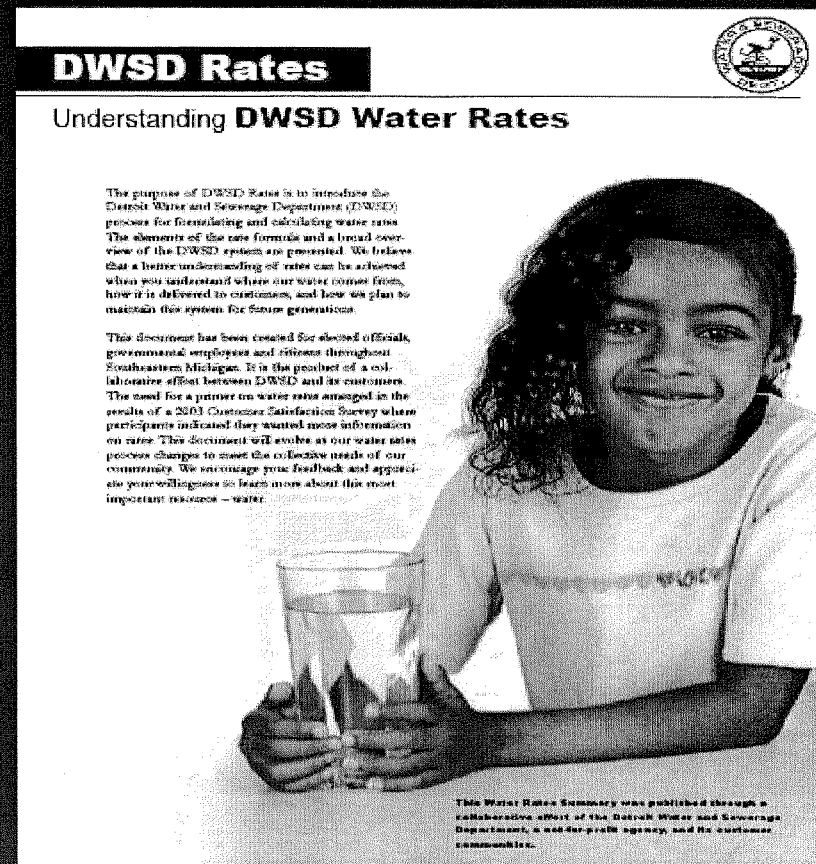
NO…

BUT CONSERVING WATER IN THE SUMMER CAN REDUCE THE ANNUAL RATE OF INREASE, PROJECTED BY DWSD TO BE AN AVEAGE OF 6% EACH YEAR

PRESENTATION INFORMATION RESOURCE:

Detroit Water and Sewerage Department

- WWW.DWSD.ORG
- www.dwsd.org/cust/understanding_rates_101_03-06.pdf



DWSD Rates

Understanding **DWSD Water Rates**

The purpose of DWSD Rates is to introduce the Detroit Water and Sewerage Department (DWSD) process for formulating and calculating water rates. The elements of the rate formula and a broad overview of the DWSD system are presented. We believe that a better understanding of rates can be achieved when you understand where our water comes from, how it is delivered to customers, and how we plan to maintain this system for future generations.

This document has been created for elected officials, governmental employees and citizens throughout Southeastern Michigan. It is the product of a collaborative effort between DWSD and its customers. The need for a primer on water rates emerged in the results of a 2003 Customer Satisfaction Survey where participants indicated they wanted more information on rates. This document will evolve as our water rates process changes to meet the collective needs of our community. We encourage your feedback and appreciate your willingness to learn more about this most important resource – water.

This Water Rates Summary was published through a collaborative effort of the Detroit Water and Sewerage Department, a not-for-profit agency, and its customer communities.

FREQUENTLY ASKED QUESTION ABOUT WATER RATES

3. Why do rates vary so much year to year?
Seasonal usage of water has a dramatic impact on the overall cost of service. Increases or decreases in maximum day or peak hour increments due to changes in lawn watering contribute costs to six different Units of Service: Maximum Day Increment, Peak Hour Increment, Maximum Day Distance, Peak Hour Distance, Maximum Day Distance-Elevation, and Peak Hour Distance – Elevation. In the Allen Park example, these six different Units of Service affect 46% of the total charge.

Source: DWSD

IN TROY 66% OF TOTAL CHARGE IS AFFECTED BY MAX DAY AND MAX HOUR FACTORS

DWSD USES MAX DAY AND MAX HOUR FACTORS TO DETERIMINE:

- Max Day Cost Allocation
- Max Hour Cost Allocation
- Max Day Distance Cost Allocation
- Peak Hour Distance Cost Allocation
- Max Day Distance-Elevation Cost Allocation
- Peak Hour Distance-Elevation Cost Allocation

Items #2, 3, 5, 6, 7, 8 and 9 on next slide.

2005/2006 RATE CALCULATION

COMMUNITY: TROY

	SERVICE CATEGORY	A Peaking Factors	B Units of Service	C Applied Units	D Unit Cost	E Allocated Costs
1	BASE (Mcf / Day) (a)		1,751.8	1,931.2	$871.99	$1,683,986
2	MAX DAY	2.5	4,379.5	2,627.7	474.56	1,246,990
3	PEAK HOUR	3.1	5,430.6	1,051.1	265.27	278,825
4	BASE DISTANCE		24.3	46,928.2	11.67	547,655
5	MAX DAY DISTANCE			63,853.1	9.70	619,412
6	PEAK HOUR DISTANCE			25,541.7	9.70	247,769
7	BASE DISTANCE-ELEVATION (b)		38.0	73,385.6	11.72	860,133
8	MAX DAY DISTANCE-ELEVATION			99,852.6	27.73	2,768,686
9	PEAK HOUR DISTANCE-ELEVATION			39,941.8	27.73	1,107,495
10	CUSTOMER A (COMMERCIAL)		132		9.26	1,222
11	CUSTOMER B (METERS)		2,694		36.87	99,327
12	TOTAL FY 2006 REVENUE REQUIREMENT					$9,461,500
13	FY 2006 VOLUME					639,400 Mcf
14	FY 2006 RATE	*$9,461,500 / 639,400*				$14.80 per Mcf

(a) Calculation of Base Water Units					
	Annual Volume	639,400	/ 365	1,751.8	Mcf/Day
	Allocated Transmission Losses *		10.2%	179.4	Mcf/Day
	Total Base Usage			1,931.2	Mcf/Day

** Based on Distance Factor relative to all other customers*

(b) Elevation Factor = 755 - 610 = 145 / 10.56 = 13.7 + 24.3 = 38.0

WHY DOES DWSD USE THESE FACTORS?

BECAUSE THE DWSD RATE MODEL USES:

- BASE-EXTRA CAPACITY APPROACH
  - Provide base water service during average conditions
  - Provide extra capacity to meet customer demands during peak usage periods

WHAT DOES THAT MEAN?

- DWSD allocates charges to customers for providing base (average day) service, and THEN
- EXTRA charges are allocated to provide extra (peak demand) service.

"Because customers vary in their needs for base and peak demand services, customers can and do have different rates, even when they are neighbors"

Source: DWSD

WHAT OTHER FACTORS MAKE RATES DIFFERENT FROM OTHER CITIES?

- Distance Relative to Detroit
- Elevation Relative to Detroit
- Base (Average Day) Flow
  - Total metered flow divided by 365
- Peak (Maximum Day) Flow
  - Total metered flow on peak day divided by average day flow
- Peak (Maximum Hour) Flow
  - Total metered peak hour flow divided by average day flow

BUT WHO'S PEAK DAY IS USED IN THE RATE CALCULATION?

ANSWER

THE ENTIRE DWSD SYSTEM

NOT THE CITY OF TROY'S

THE 2005 PEAK IS USED TO SET THE 2006-07 WATER RATE

- Peak Occurs Sometime in Summer
- Peak Day and Hour is Determined by DWSD from meter records
- Peak Day for 2005 was June 27th
- Peak Hour for 2005 was 8am to 9am
- 2006 Peak? UNKNOWN

METHODOLOGY AND RESULTS

The results presented above are the best achieved since the master meter replacement program was completed by DWSD.

2005 RESULTS

Based on the demand factor methodology described in Section 2.0, the 2005 demand factor results for each wholesale community were calculated and are presented in Appendix A. The individual flysheets for each community, displaying max day and peak hour pumping information for each wholesale customer's master meters as well as corresponding wholesale customer pumping charts, are presented in Appendix B.

The overall DWSD system maximum day occurred on June 27' 2005, with approximately 1.05 billion gallons of water pumped. The system peak hour on June 27th occurred between 8:00pm and 9:00pm EDT, with approximately 56 million gallons of water pumped. Both pumping totals represent plant pumping totals adjusted for in-system reservoir storage effects. The corresponding system max day and peak hour demand factors for all verifiable meters were calculated to be 1.8 and 2.3, respectively. The pumping chart inclusive of all suburban meters is presented in Appendix C. Note that the peak hour for the wholesale customers occurred at a different hour than did the peak hour for the system in total (system peak hour is blue).

WHAT WERE THE FLOWS IN THE CITY OF TROY ON DWSD's PEAK DAY IN 2005 ?

Best shown by the 24 hour flow profile prepared by DWSD

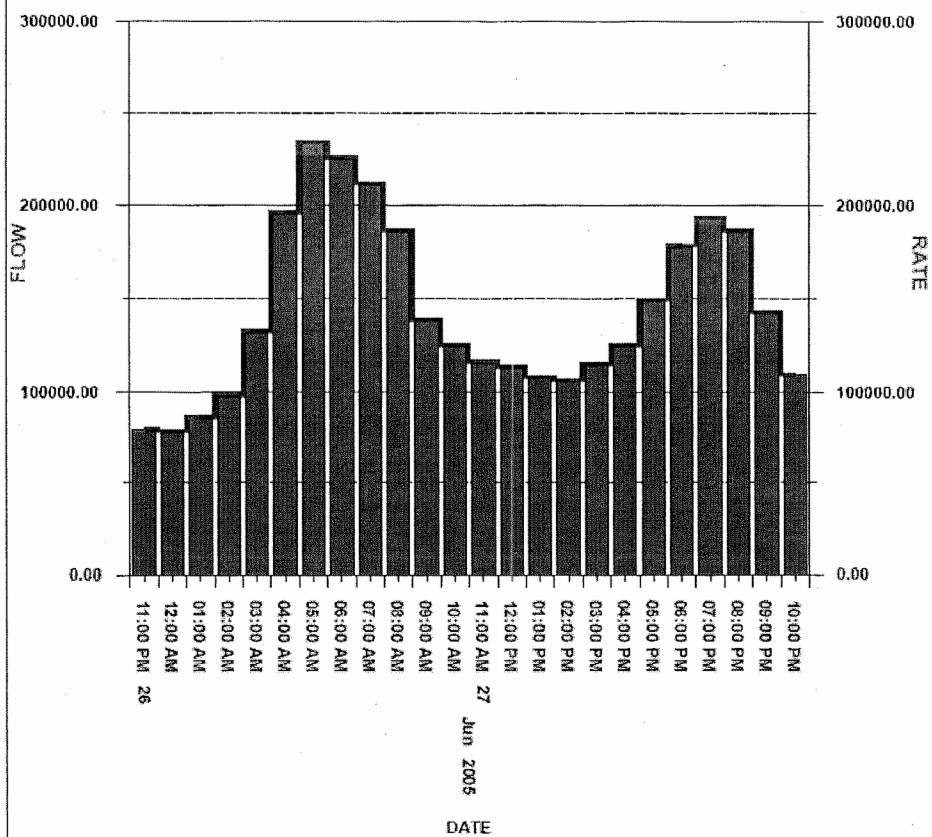
Customer Flow and Rate Per Hour

Report generated: July 21, 2005 8:09 AM

Name: Troy
Location: 4963 Rochester Rd.
Date: 06/27/2005

Total Flow: 3,436,430.15
Flow Units: Cubic Feet
Average Rate: 143,184.59
Rate Units: Cu. Feet/Hr

HOURLY CUSTOMER FLOW



WHAT IF 50% FEWER PEOPLE WATER, (UNDER ODD/EVEN RESTRICTIONS) BUT THEY WATER TWICE AS LONG?

The peak flows would still go down and the flow would flatten and spread out over a longer time.

FLAT STEADY FLOWS – NO PEAKS WOULD LOWER MAX HOUR FACTOR

EXAMPLE: SOUTHEAST OAKLAND COUNTY WATER AUTHORITY – PUMPS/STORES WATER FOR REDISTRIBUTION

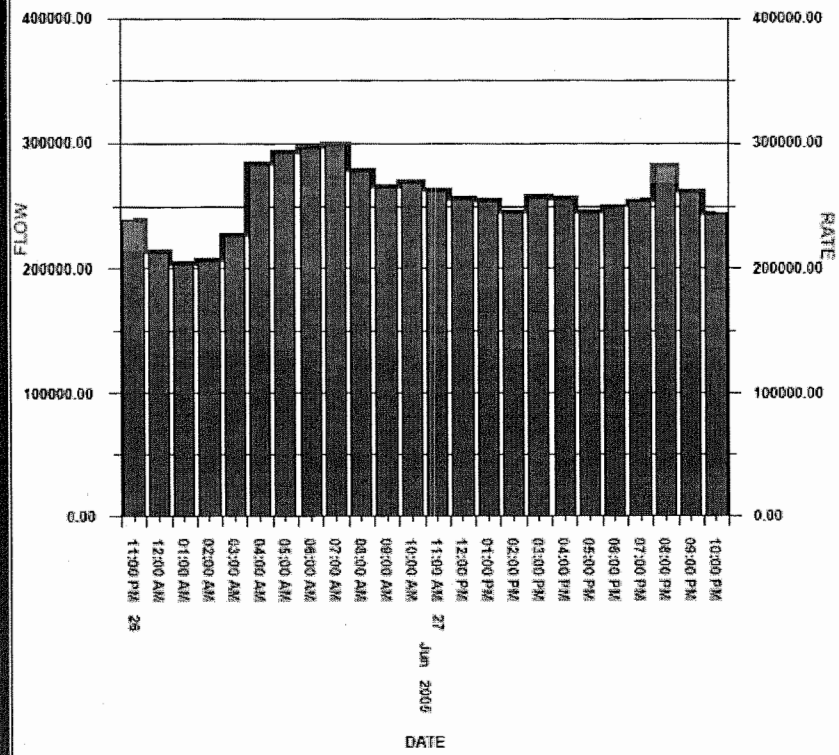
Customer Flow and Rate Per Hour

Report generated: July 21, 2005 8:04 AM

Name: Oakland County Water (SEOCWA)
Location: 3910 W. Webster Rd.
Date: 06/27/2005

Total Flow: 6,144,638.16
Flow Units: Cubic Feet
Average Rate: 256,026.59
Rate Units: Cu. Feet/Hr

HOURLY CUSTOMER FLOW



SEOCWA

Category	1
Avg. Day (cf)	3,653,533

Calculated Factor Development

Meter	Type	Max. Day (cf)	Peak Hour (cf)	Peaking Factor Max. Day	Peaking Factor Peak Hour
SE05	Inflow	1,276,025	52,195		
SE06	Inflow	885,727	46,863		
SE08	Inflow	1,830,394	64,520		
SE09	Inflow	1,958,975	80,094		
SE10	Inflow	193,517	10,446		
Total		6,144,638	254,118	1.70	1.70

BUT WOULDN'T THE MAX DAY FACTOR STAY THE SAME?

Yes, theoretically, it might if EVERYONE watered twice as long, but a slight reduction in the max hour factor has far more impact on water rates than the max day factor.

COMPARISON OF FACTOR REDUCTIONS:

EXAMPLE USING '04-05 DWSD RATE CALCULATIONS:

- 5% MAX DAY FACTOR REDUCTION (-0.125)
  - REDUCES DWSD WATER RATE BY 0.66%
- 5% MAX HOUR FACTOR REDUCTION (-0.155)
  - REDUCES DWSD WATER RATE BY 4%

WHAT CAN COMMUNITIES DO TO CONTROL ITS RATES?

ACCORDING TO DWSD's UNDERSTANDING WATER RATES 101

Communities should focus on eliminating waste within their system and on educating citizens and businesses on environmentally sound watering practices. In the long run, these initiatives will reduce peak demands and will result in lower costs assigned to them.

Source: DWSD

SUMMARY

- CONSERVING WATER IN THE SUMMER CAN RESULT IN LOWER RATE INCREASES FROM DWSD
- CONSERVING WATER CAN KEEP TROY'S INCREASES AT OR BELOW DWSD's PROJECTED AVERAGE INCREASE OF 6% A YEAR

QUESTIONS?

6-23-06

Dear City Council Members:

Please take into consideration when making your decision regarding the restrictions on watering, people who have sprinkler systems. Our system works on 7 day program, so to follow a watering system to maintain even or odd days would mean re-progamming the sprinklers every week. I water 3 days a week, (Monday, Wednesday + Saturday), and do not need every other day.

I am asking you to consider other options instead of even + odd days according to addresses

Thank You
Sandy Salvia
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Troy, MI 48098