

Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***RESEARCH AND DEVELOPMENT
DEPARTMENT***

REPORT NO. 06-1

CALCULATION OF 2006

USER CHARGE RATES

January 2006

Metropolitan Water Reclamation District of Greater Chicago
100 East Erie Street Chicago, IL 60611-2803 (312) 751-5600

**CALCULATION OF 2006
USER CHARGE RATES**

**Research and Development Department
Richard Lanyon, Director**

January 2006

TABLE OF CONTENTS

	<u>Page</u>
LIST OF TABLES	ii
CALCULATION OF 2006 USER CHARGE RATES	1
Determination of Total OM&R Costs	1
Determination of Total Revenue to be Generated by UCS in 2006	5
Determination of 2006 User Charge Administration Cost for Each User Charge Class	5
Unit Costs of Treatment	5
Distribution of Equalized Assessed Valuations and Quantities by Source	10
Allocation of Rain, I/I and Recycle	10
Analysis of Dry- and Wet-Weather Flows	14
Distribution of I/I, Rain and Recycle OM&R Costs	16
Calculation of Rates for the Large Commercial- Industrial and Tax-Exempt Classes	16
Administrative Cost Recovery	20

LIST OF TABLES

<u>Table No.</u>		<u>Page</u>
1	Total OM&R Cost for 2005 and 2006	2
1A	Reserve Claim Fund	3
1B	Construction Fund Costs	4
1C	Determination of Total OM&R Cost Construction Fund Portion Adjusted for Revenues from Other Sources	6
1D	2005 Construction Fund Replacement Cost 2005 Budget Awards	7
1E	2005 Construction Fund Replacement Cost 2005 Projects Under Construction	8
2	Determination of Total OM&R Cost for 2004 and 2005 Adjusted for Revenues from Other Sources and for Administrative Cost	9
3	Administration Costs of User Charge and Sewage and Waste Control Ordinances to be Recovered Under User Charge System	11
4	Unit Cost of Treatment	12
5	Distribution of Equalized Assessed Valuations and Quantities by Sources	13
6	Allocation of I/I, Rain and Recycle	15
7	Seven Consecutive Days Dry Weather Flow in MGD	17
8	Cost Per Parameter and Total Cost Per User Class for 2006	19

CALCULATION OF 2006 USER CHARGE RATES

Determination of Total Operations, Maintenance and Replacement (OM&R) Costs

The 2005 Metropolitan Water Reclamation District of Greater Chicago (District) Corporate Fund appropriates \$313,600,000 for the support of operations and maintenance to carry out wastewater treatment and other functions. After subtracting the appropriations of those items disallowed by the United States Environmental Protection Agency (USEPA) in 1979, it was determined that \$307,072,060 of the 2005 budget is OM&R related. A breakdown of this total is shown in Table 1.

The segregation of costs associated with wastewater treatment from costs associated with other functions was based on discussions regarding the District's dedicated ad valorem tax revenues, which were held in September and October 1978 between the District staff and the USEPA staff. In these discussions, non-OM&R budgeted line items were identified and disallowed.

For example, the non-OM&R items disallowed include the following programs:

- 4200 Waterways Control and Stormwater Retention Reservoirs
- 4700 Flood and Pollution Control Design
- 4800 Flood and Pollution Control Construction

These programs relate to corporate expenditures for waterways operation and maintenance and flood control design and construction. The total of these disallowed program 4000 expenditures is \$4,608,077. In addition to this amount, a prorated portion of Program 7000, General Support, was also disallowed because it is the overhead support of the items disallowed under Program 4000. The portion of Program 7000 thus disallowed was \$2,019,863. The total of the disallowed funds considered to be non-OM&R related was \$6,627,940. Three additional funds, portions of the Annuity and Benefit Fund, the Reserve Claim Fund, and the Construction and Working Cash Fund were added to the OM&R costs raising the total OM&R cost from \$307,072,060 to \$343,766,784. These funds were added because they relate to OM&R costs. The Annuity and Benefit Fund provides for the District's pension program for retired employees and employee disability payments. The Reserve Claim Fund is used for the payment of workmen's compensation, liability claims, and other associated costs. This fund is also used to pay for repair costs if a catastrophe were to strike the District's facilities.

Up until the 1960s, the Construction Fund had been used as a repair and replacement funding mechanism. The use of this fund was suspended because the District embarked on a major program to upgrade its infrastructure, consisting primarily of expansion and improvement of water reclamation plants (WRPs), construction of new WRPs and collection systems and implementation of the Tunnel and Reservoir Plan, the District's solution to combined sewer overflows. Funding for these major capital improvement projects in the Capital Improvements Bond Fund included issuance of long-term debt as authorized by the state of Illinois.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 1

TOTAL OM&R COST FOR 2005 & 2006

Budgeted Corporate Fund Programs Directly Related to OM&R Costs		2004 Budget	2005 Budget
1000	Collection	\$ 46,900,000	\$ 47,700,000 ¹
2000	Treatment	61,900,000	65,400,000 ¹
3000	Solids Processing	38,800,000	41,900,000 ¹
4000	Flood and Pollution Control	27,461,895	27,891,923 ^{1, 2}
5000	Solids Utilization	31,500,000	30,600,000 ¹
7000	General Support	<u>87,854,917</u>	<u>93,580,137^{1,3}</u>
Sub-Total		\$294,416,812	\$307,072,060
Annuity and Benefit Fund		27,390,066	29,451,421 ⁴
Reserve Claim Fund		4,972,000	5,829,000 ⁵
Construction & Working Cash Fund		<u>1,287,896</u>	<u>1,414,303⁶</u>
Total OM&R Cost		\$328,066,774	\$343,766,784

¹See Pages 47, 230 and 247 of the District's 2005 Budget.

²Program total in Corporate Fund is \$32,500,000. USEPA disallowed costs (Programs 4200, 4700 and 4800) are \$4,608,077 leaving a net of \$27,891,923.

³Program total in Corporate Fund is \$95,600,000. USEPA disallowed costs are \$2,019,863, leaving a net of \$93,580,137. A prorated portion of Program 7000, General Support, was disallowed as it was determined in the 1979 User Charge Proposal that this portion was related to the overhead support of items disallowed from Program 4000. This prorated portion is the ratio of the disallowed amount (\$4,608,077) to the total for Programs 1000 through 5000 (\$218,100,000) in the 2005 Budget.

⁴The 2005 Budget allocates \$31,201,845 on Page 49 of the 2005 Budget to the Annuity and Pension Fund. Approximately 5.61% of the District's employee salaries are not chargeable to OM&R costs leaving a net of \$29,451,421. The 5.61% number represents the ratio of the salaries budgeted under Programs 4200, 4210, 4300, 4700 and 4800 for the corporate, construction, bond and stormwater management funds against the total salaries budgeted under Programs 1000, 2000, 3000, 4000 and 5000.

⁵From Table 1A on Page 3.

⁶From Table 1C on Page 6.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 1A

RESERVE CLAIM FUND

2005 Budgeted Cost	\$ 35,000,000
Less 2004 Budgeted Cost	(33,000,000)
Plus 2004 Actual Claims	3,829,000
Total	<u>\$ 5,829,000</u>

Note: Included for the User Charge System are actual expenditures in 2004 plus the amount added to the fund which is the difference in the budget appropriations for 2004 (Page 47 of 2004 Budget) and 2005 (Page 49 of 2005 Budget). The total represents the funding required to bring the fund up to the 2005 appropriated amount. The data for actual claims was provided by the Finance Department on April 25, 2005.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 1B

CONSTRUCTION FUND COSTS

Budgeted Programs Directly Related to OM&R Cost	2005 Budget
1000 Collection	\$ 7,976,000.00
2000 Treatment	35,358,000.00
3000 Solids Processing	3,407,000.00
4000 Flood and Pollution Control	6,547,000.00
5000 Solids Utilization	<u>1,024,000.00</u>
Sub-total of Programs 1000 through 5000	\$ 54,312,000.00
Less Ineligible portion of OM&R Cost applicable to Programs 4200, 4210, 4700 and 4800	(6,547,000.00)
Eligible OM&R Cost from Programs 1000 through 5000	<u>47,765,000.00</u>
Ratio of eligible to total program cost $\frac{\$ 47,765,000}{\$ 54,312,000} = 0.8795$	
7000 Plus General Support (eligible portion) = 0.8795 x \$198,000.00	<u>174,132.00</u>
Total Eligible OM&R Cost	\$ 47,939,132.00

Sources: Information from Page 63 of 2005 Budget..

Suspending use of the Construction Fund was appropriate at the time, since funding for capital improvement projects came through the issuance of long-term debt recovered under ad valorem taxes, and replacement costs were recovered by way of the designated fixed asset replacement set aside in the Corporate Fund. The designation for fixed asset replacement funding was negotiated with the USEPA in the original User Charge System (UCS) as a mechanism for identifying and recovering infrastructure replacement costs, etc.

Beginning with 1997, it was determined that the eligible portions of the Construction Fund and the Financing Charges for related working cash funds would be included in the OM&R cost. The eligible portion of the Construction Fund, etc., is now designated for “fixed asset replacement.”

The Engineering Department has determined that the eligible portion of the Construction Fund from the 2005 budget is \$6,308,000, as shown on Table 1E, Page 8. The 2005 Budget did not allocate construction working cash funds. (See Page 79 of the 2005 Budget.) The Construction Fund was adjusted for the Construction Fund revenues and ineligible Program 4000 costs. The eligible portion to be included in the OM&R costs was determined to be \$1,414,303, as shown on Table 1C.

Determination of Total Revenue to be Generated by User Charge System in 2005

As shown in Table 2, revenues contained in the 2005 budget derived from sources other than the UCS total \$75,624,600. The revenue derived from the sale or use of the District's assets, and other sources is itemized in Table 2. Such revenues are used in the District's budget preparation process to offset the overall tax levy and the amount to be generated by the UCS.

Determination of 2006 User Charge Administration Cost for Each User Charge Class

Table 3 presents the costs for administration of the User Charge system, which will be recovered by direct charges to Large Commercial-Industrial Users and by inclusion in the User Charge rates for other classes. The actual administrative cost to be recovered in 2006 is \$6,494,273. By deducting the total of revenue to be generated from other sources and the administrative cost recovery from the total OM&R cost of \$343,766,784 leaves a net OM&R cost of \$261,648,000 which must be collected by the User Charge system.

Unit Costs of Treatment

District operating records indicate that 456,487 million gallons (MG) of flow, 801,787 thousand pounds (Klbs) of biochemical oxygen demand (BOD), and 1,121,278 Klbs of suspended solids (SS) were treated during 2004 (data from 2004 water reclamation plant operating records as compiled by the R&D Department). Operating cost accounting data was used to determine the allocation of OM&R costs by parameter, i.e., flow, BOD and SS. The result is that 28 percent of the cost was attributed to flow, 38 percent to BOD, and 34 percent to SS. This allocation was based on the Finance Department Reports CMSRO2 for 1995 through 1999). Using the foregoing data, the unit costs of treatment were derived, as shown in Table 4.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 1C

DETERMINATION OF TOTAL OM&R COST CONSTRUCTION FUND PORTION
ADJUSTED FOR REVENUES FROM OTHER SOURCES

Revenue/Cost Item	For 2006 from 2005 Budget
Net Assets Appropriable (pp 90, 2005 Budget)	\$ 33,269,500.00
Revenue from Current Services Grants (pp 91, 2005 Budget)	0.00
Revenue from Personal Property Replacement Tax (pp 91, 2005 Budget)	2,781,300.00
Revenue from Money and Property Investment Income, etc. (pp 91, 2005 Budget)	940,000.00
Connection Impact Fees (pp 91, 2005 Budget)	<u>200,000.00</u>
Total Revenues Derived from Other Sources for Construction Fund	\$ 37,190,800.00
Total Costs (from <u>Table 1B</u> on pp 4)	\$ 47,939,132.00
Ratio of Construction Fund Revenue vs. Total Construction Fund Costs (\$37,190,800)/(\$47,939,132) = 0.7758 ¹	
Eligible Construction Fund as Furnished by Engineering Dept. (From <u>Table 1E</u> on pp 8)	\$ 6,308,000.00
Less Proportionate Share for Construction Fund Revenues (0.7758 x 6,308,000) ¹	<u>\$ (4,893,697.00)</u>
Net Eligible Construction Fund	\$ 1,414,303.00
Plus Net Eligible Portion of Construction Working Cash Fund = 0.8795 x 0.00 (pp 79, 2005 Budget) as Explained on pp 4 & 5	\$ 0.00
OM&R Cost to be Recovered for Construction Fund Under the User Charge Ordinance	\$ 1,414,303.00

¹ 77.58% of the Construction Fund is funded by revenue from sources other than the User Charge Ordinance.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 1D

2005 CONSTRUCTION FUND REPLACEMENT COST

Project No.	Project Title/Description	Eligible Appropriation (1,000's)	% Eligible	In-House Cost (1,000's)
<u>2005 Budget Awards</u>				
98-260-2M	*Calumet WRP, 95 th Street Pump Station Replace Coarse Screens & Miscellaneous Work	244	11	12
01-003-2S	*Northshore 8 and Golf Glenview 2 Rehabilitations	0	0	0
02-110-2E	Stickney WRP, Replace Electrical Distribution System and Replace Conduit and Cable at SWRP and Mainstream PS	4,338	100	217
00-184-2M	*Stickney WRP, Rehabilitation of Imhoff Galleries	1,870	100	94
00-809-1E	*Remote Unmanned Sites, Smoke Annunciation	350	50	18
04-131-3D	Stickney WRP, Rehabilitation of the C/D Service Tunnel – Phase I	776	100	39
03-822-2M	*Various Locations, Elevator Improvements	-5	75	0
Total 2005 Awards		<u>\$7,573</u>		<u>\$380</u>

*Difference between the 2005 appropriation and the amount included in the 2004 calculation.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 1E

2005 CONSTRUCTION FUND REPLACEMENT COST (Continued)

Project No.	Project Title/Description	Eligible Appropriation (1,000's)	% Eligible	In-House Cost (1,000's)
<u>2005 Projects Under Construction</u>				
99-169-2M	*Stickney WRP, Improve Sluice Gates and Miscellaneous Work	\$23	100	\$1
02-818-2P	*Stickney and Calumet WRP's Cleaning Repair and Anaerobic Digesters	150	20	7
96-461-IV	*Kirie WRP, Administration and Process & Maintenance Building Expansion	0	0	0
99-270-2E	*Calumet WRP Incoming Service Improvements	747	100	37
01-003-2S	*Northshore 8 & Glenview 2 Rehabilitation	0	0	0
96-246-2P	*Replacement of Piping at Calumet WRP	24	100	1
01-102-2P	*Stickney WRP, RAS Flow Improvements in Battery B	0	0	0
01-107-2M	*Stickney WRP, Replace Fine Screens	0	0	0
97-254-2E	*Calumet TARP, RTU Replacement	84	100	4
95-881-2M	*Calumet and Lemont WRP's, Digester Gas and HVAC	-2,509	100	-125
97-362-1S	*TARP Drop Shaft 5 Rehabilitation	<u>-86</u>	100	<u>-4</u>
	Total Projects Under Construction	<u><u>-\$1,567</u></u>		<u><u>-\$78</u></u>
	Grand Total (Tables 1D and 1E)	\$6,006,000		\$302,000

*Difference between current year's 2005 appropriation and amount included in the 2004 calculation.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 2

DETERMINATION OF TOTAL OM&R COST FOR 2004 AND 2005
ADJUSTED FOR REVENUES FROM OTHER SOURCES
AND FOR ADMINISTRATIVE COST

Revenue/Cost Item	For 2005 From 2004 Budget	For 2006 From 2005 Budget
Total OM&R Cost ¹	\$328,066,774	\$343,766,784
Less:		
Net Assets Appropriable ²	(41,249,139)	(43,123,600)
Revenue from Investments, Land Rentals, Sewer Permit Fees, Service Agreements, etc. ²	(6,752,000)	(10,298,000)
Revenue from Current Services for Sewer Service Agreements, Water Sales and Scrap Sales	(577,500)	NA ³
Revenue from Personal Property Replacement Tax ²	(14,603,352)	(19,891,000)
Reimbursement from Construction Fund ²	(0.00)	(0.00)
Revenue from Miscellaneous Sources of Ad- ministrative Penalties but not including Vil- lage of Glenview Payment ²	(4,070,448)	(2,087,000)
Village of Glenview Payment	(225,000)	(225,000)
Revenues from Other Sources	(67,477,439)	(75,624,600)
Administrative Costs to be Recovered through Charges Under the User Charge System ⁴	(6,453,745)	(6,494,273)
Subtotal of Revenues from Other Sources and Administrative Costs	<u>(73,931,184)</u>	<u>(82,118,873)</u>
Adjusted Total OM&R Cost	\$254,135,590	\$261,647,911
	\$254,136,000	\$261,648,000

Rounded Off Figure

¹ From Table 1 on page 2.

² From pp 81 and 82 of 2004 Budget and pp 83 and 84 of 2005 Budget.

³ Included in item above.

⁴ From Table 3 on page 11.

These unit costs of treatment will be used in the subsequent analysis for distributing costs by class and in distributing the costs of treating infiltration/inflow (I/I) and stormwater. The basis of the District's User Charge system is its cost to treat each gallon of flow, each pound of BOD and each pound of SS.

Distribution of Equalized Assessed Valuations and Quantities by Source

The sources of loadings to the District and the assessed valuations for these sources are shown in Table 5.

The District utilized the 2002 total equalized assessed value (EAV) for its service area of \$110,270,000,000. This included railroad property. Through a review and evaluation of all tax credits claimed by Large Commercial-Industrial and Tax-Exempt Users in 2004, based on their 2003 real estate property taxes paid in 2004, it was established, that the EAV of the Large Commercial-Industrial sources was \$10,905,779,501. These are based on the most recently updated verified User data in the District's files and were for tax year 2003 payable in 2004. Some tax-exempt Users pay property taxes on their facilities which they utilize for commercial purposes. This EAV was \$317,299,723. Subtracting the EAV of the Large Commercial-Industrial Users (\$10,905,779,501) and the EAV of the Tax-Exempt Users (\$317,299,723) on City property leaves a total EAV of \$99,046,920,776 for the Residential and Small Nonresidential Commercial-Industrial (R&SNC-I) Users.

Allocation of Rain, I/I and Recycle

As stated earlier, the total quantities of flow, BOD and SS are determined from District operating records. Following is an explanation of how these quantities were allocated to the four sources of R&SNC-I, Large Commercial-Industrial, Tax-Exempt, and I/I, Rain, and Recycle, as shown in Table 5.

The Recycle item was introduced in the 1987 User Charge rate calculations for BOD and SS because failure to include this item results in disproportionately high and improper assignment of BOD and SS concentrations and total loadings to the R&SNC-I class. This item was designated "Recycle" because, currently, samples of plant loadings include substantial "loadings" due to recycle of in-plant wastestreams and thus do not adequately reflect User-generated loadings. In the 2006 calculations, the recycle flow volume was established as 13,359 MG/year, based on the May 19, 2005 memorandum from the District's Maintenance and Operations Department providing the 2004 recycle flow volume.

The initial BOD and SS loadings assigned to the R&SNC-I Class in Table 5 prior to the allocation of I/I, Rain and Recycle in Table 6, were computed based on the volume for the R&SNC-I Class listed in Table 5 (computed as in prior years), and the standard domestic concentrations of 119 mg/L for BOD and 168 mg/L for SS. I/I, Rain and Recycle flows were determined to be 132,028 MG per year. (see Table 6)

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 3

ADMINISTRATION COSTS
OF USER CHARGE AND SEWAGE AND WASTE CONTROL ORDINANCES
TO BE RECOVERED UNDER USER CHARGE SYSTEM

Small Commercial-Industrial Users ¹	\$ 103,732
Tax-Exempt Users ^{1,2}	\$ 590,541
Large Commercial-Industrial ^{3,4} Users	<u>\$ 5,800,000</u>
Total Administrative Costs to be Recovered from Users Under the User Charge Ordinance	\$ 6,494,273

¹Based on information provided for by the District's Finance Department for 2004 expenditures.

²This is based on the 2004 budgeted cost as stated on page 140 of the 2005 budget..

³This Administrative Cost is the total of the estimated cost for Minimum Pretreatment Requirement Charges and User Charge Verification Charges.

⁴The assessed Administrative Cost Recovery Charges for the Large Commercial-Industrial Users are in accordance with Appendix E of the District's User Charge Ordinance.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 4

UNIT COST OF TREATMENT

Total District Loadings for 2004¹

Volume	=	456,487 MG
BOD	=	801,787 Klbs
SS	=	1,121,278 Klbs

Total OM&R Cost = \$ 261,648,000

Allocation of Cost According to Parameters of Flow, BOD & SS²

Flow	=	28.0% x \$261,648,000 = \$ 73,261,440
BOD	=	38.0% x \$261,648,000 = \$ 99,426,240
SS	=	34.0% x \$261,648,000 = \$ 88,960,320

Unit Costs of Treatment

Volume	=	\$ 73,261,440 / 456,487 MG = \$ 160.49/MG
BOD	=	\$ 99,426,240 / 801,787 Klbs = \$ 124.01/Klbs
SS	=	\$ 88,960,320 / 1,121,278 Klbs = \$ 79.34/Klbs

¹The 2004 District loadings are used in the calculation of 2006 rates because this is the latest full year's operating data at the time the calculations were made. (Source: R&D Department Water Reclamation Plant 2004 Operating Records.)

²Percent distribution of cost-to-load parameters derived from the Finance Department CMSR02 Reports for the years 1995 through 1999.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 5

DISTRIBUTION OF EQUALIZED ASSESSED VALUATIONS AND QUANTITIES
BY SOURCES

Source	Equalized Assessed Valuation (EAV) (\$)	Volume (MG)	BOD (Klbs)	SS (Klbs)
R&SNC-I	\$ 99,046,920,776 ³	291,407	289,210	408,296
Large Commercial- Industrial ¹	\$ 10,905,779,501 ²	22,242	107,565	37,736
Tax-Exempt ¹ (and gov- ernmental)	\$ 317,299,723 ³	10,810	17,877	39,028
I/I, Rain and Recycle (See Table 6)		132,028	387,135	636,218
Total (Approximate Due to Roundoff)	\$110,270,000,000 ⁴	456,487	801,787	1,121,278

¹The quantities shown on these lines constitute the billable flows and loads for the classes indicated.

²EAV is based on actual tax credits reported to District Users. The tax credit data was taken from the 2004 annual statements filed by the Users. This data is verified by real estate property tax bills submitted with the 2004 annual statements. \$39,369,864 in 2003 real estate taxes were claimed by Large Commercial-Industrial Users in 2004, and the District's 2003 real estate property tax rate was 0.361 cents per \$100.00 of EAV. Therefore, $(\$39,369,864/0.361) \times \$100 = \$10,905,779,501$, the imputed EAV of the Large Commercial-Industrial Class.

³Similarly, Users in the City of Chicago airports paid real estate taxes of \$1,145,452 for properties which were utilized for commercial usage. Based on this tax paid, the EAV of the tax-exempt class was $(\$1,145,452/0.361) \times \$100 = \$317,299,723$. The EAV of the R&SNC-I Class is computed by deducting all other figures from the total EAV.

⁴Total EAV is for the year 2003 as supplied by the Country Assessor Multiplier for 2003 = 2.4598.

Analysis of Dry- and Wet-Weather Flows

The method of determining dry- and wet-weather flows in the 2001 through 2004 rate-setting process was revised from the method used in the rate calculations for 2000 and previous years. For rate settings prior to 1982, rain-attributed loads were derived by extracting all loads received at a WRP on a day with 0.10 inches of precipitation or more, projecting the remaining loads over 365 days, and subtracting this value from total WRP flows. This method, however, does not account for rain loads received days after a storm due to the lag time required for flows to arrive from the perimeter of a collection area.

In the 1982 through 1989 rate calculations, rain-attributed flows were determined by an analysis of the daily plant operating records for a previous year. For the 1986 through 1989 rate calculations, the records for 1985 were used. Because the dry-weather flow is thought to be relatively stable, it was felt that a separate determination each year was not warranted. The month in 1985 exhibiting the lowest total precipitation was identified as January.

The month of January 1985 was chosen because it has these characteristics and, therefore, represented a baseline condition. The flow and pollutant loadings for each day during this month were calculated and totaled for the month. The monthly sums were then divided by the number of days in the month.

The difference between total dry-weather load and the total load was considered to be the wet-weather or rain load. For the 1990 through 1998 rate calculations, the Rain and I/I flows were determined by using 1988 plant operating data. The operating records from each WRP were screened to find the five lowest flow days. These days were averaged and used as dry-weather flow for each of the seven WRPs. The seven WRPs were tabulated to give a District-wide daily dry-weather flow quantity of 911 million gallons per day. The tabulated daily dry-weather flow was converted into an annual volume.

However, for the 1999 and 2000 rate calculations, it was decided to update the dry-weather flow quantity and methodology, because the 1988 data was then ten years old and the method did not account for changes which may reasonably occur over time. Therefore, for 1999 and 2000, the User Charge rate calculation utilized the average of the five lowest days for each of the previous five years for which flow data was available to identify the average dry-weather flow. WRP flow data was available for 1994 through 1998 for the 2000 rate calculations. For each WRP the five lowest days for each year were averaged for each of the five available years.

Based on 1994 through 1998 WRP operating data, the average daily dry-weather flow was 923.34 MGD (rounded off to 923 MGD). The highest year was 1997 with an average dry weather flow of 939.90 MGD, while the lowest year was 1995 with 890.73 MGD.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 6

ALLOCATION OF I/I, RAIN AND RECYCLE

Class Loadings	Flow (MG)	%	BOD (Klb)	%	SS (Klb)	%
<u>Dry-Weather Loadings</u>						
R&SNC-I ¹	291,407	89.81	289,210	69.75	408,296	84.17
Large Commercial-Industrial ²	22,242	6.86	107,565	25.94	37,736	7.78
Tax-Exempt (and Governmental) ²	<u>10,810</u>	<u>3.33</u>	<u>17,877</u>	<u>4.31</u>	<u>39,028</u>	<u>8.05</u>
TOTAL	324,459	100.00	414,652	100.00	485,060	100.00
<u>Allocating I/I, Rain and Recycle</u>						
R&SNC-I	118,579		270,018		535,532	
Large Commercial-Industrial	9,051		100,427		49,496	
Tax-Exempt (and Governmental)	<u>4,399</u>		<u>16,691</u>		<u>51,190</u>	
TOTAL ³	132,028		387,135		636,218	
GRAND TOTAL ⁴	456,487		801,787		1,121,278	

¹ R&SNC-I flows are derived by subtracting rain, I/I and recycle figures as well as known Large Commercial-Industrial and Tax-Exempt loads from the grand totals. Standard domestic sewage concentrations of 119 mg/L for BOD and 168 mg/L for SS are used (as specified in Section 7g of the User Charge Ordinance) and have been applied to the volume so derived to establish the R&SNC-I BOD and SS loadings, respectively.

² These numbers were arrived at from the District's records of all 2004 User Charge Annual Statements.

³ Daily M&O Department records for the District's seven WRPs for the year 2004 show a total volume treated of 456,487 MG. The projected annual dry-weather volume is 923 x 366 days = 337,818 MG. I/I, Rain and Recycle flows are equal to Total Flow (456,487 MG) minus Dry-Weather Flow (337,818 MG), or 118,669 MG plus Recycle (13,359 MG) = 132,028 MG. See Page 10 for an explanation of the Recycle item as first introduced in the 1987 User Charge rate calculations. Totals may not equal sum of components due to rounding.

⁴ Grand totals come from 2004 operating records as explained on Page 5.

Beginning with the 2001 rate calculations, the District determined that it would utilize the total of the seven consecutive lowest flow days recorded in 1999 at each of the District's WRPs for identifying the average daily dry weather flow. This method accounts for a complete normal workweek for each WRP along with weekends. Utilizing this method, the dry weather flow for 1999 was 941 MGD.

However, in 2002, 2003 and 2004, significant decreases occurred in the dry weather flows as calculated by the total of the lowest seven consecutive days for each plant. In 2002 the dry weather flow was 892 MGD, in 2003 it was 859 MGD and in 2004 it was 885.5 MGD. This may be due to a general reduction in Commercial-Industrial activities. However, since the User Charge rates are impacted by the dry weather flow, and because we are unable to assure ourselves that this is a permanent reduction in the dry weather flow, for the 2006 User Charge rate calculations the five year average of the dry weather flow, for the lowest seven consecutive days for each plant, observed for 2000 through 2004 will be utilized. This information is also shown in Table 7.

The five year average is 923 MGD with a high of 1,000 MGD observed in 2001 and a low of 859 MGD seen in 2003.

Distribution of I/I, Rain, and Recycle OM&R Costs

As shown in Table 5 on Page 13, there are four sources of loadings to the District's WRPs. However, under the ad valorem tax system, there are three sources which contribute toward the payment of OM&R costs: the R&SNC-I User classes, the Large Commercial-Industrial User class and the Tax-Exempt class. The OM&R costs to treat flows and loads from the I/I, Rain, and Recycle must be distributed to the R&SNC-I, Large Commercial-Industrial and Tax-Exempt classes in proportion to the dry-weather loads and flows contributed by these three regulated classes. The results of the distribution of loads and flows are shown in Table 6.

Calculation of Rates for the Large Commercial-Industrial and Tax-Exempt Classes

After allocating the I/I, Rain, and Recycle-attributed flows to the three classes, a cost for each class was calculated by multiplying each class parameter quantity by the unit cost generated in Table 4 on Page 12. The results of these calculations are shown in Table 8. Please note that the class totals shown include the administrative cost for the R&SNC-I Class and the Tax-Exempt Class distributed to volume, BOD and SS in proportion to the total treatment costs, for each parameter, for each class. However, the Administrative cost is not included for the Large Commercial-Industrial User Class. These costs, totaling \$262,347,959 must be recovered by the District through the ad valorem (real estate) tax system and User surcharges.

In summary, the total OM&R cost by class is:

R&SNC-I	\$210,135,563
Large Commercial-Industrial	37,736,289
Tax-Exempt	<u>14,476,107</u>
TOTAL	\$262,347,959

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 7

SEVEN CONSECUTIVE DAYS
 DRY WEATHER FLOW IN MGD

	2000	2001	2002	2003	2004
Calumet	170.00	193.00	178.00	165.00	159.00
Stickney	548.00	546.00	494.00	463.00	494.00
Northside	209.00	212.00	174.00	186.00	186.00
Lemont	1.44	1.58	1.23	1.49	1.44
Kirie	22.91	20.31	21.82	20.88	21.64
Egan	21.4	21.4	17.4	17.0	19.0
Hanover	6.14	5.39	5.56	5.71	4.44
Totals	979	999.68	892.01	859.08	885.52

Five year average is 923.1 MGD

The R&SNC-I classes' OM&R costs are collected through the District's dedicated ad valorem tax system. Using the equalized assessed class value of \$99,046,920,776 for the R&SNC-I classes as shown in Table 5, and the class OM&R cost of \$210,135,653 for the R&SNC-I classes, as shown in Table 8, the ad-valorem residential OM&R rate was determined as follows:

$$\$210,135,653 / \$99,046,920,776 = 0.212/\$100 \text{ EAV}$$

This constitutes the OM&R rate for all classes under the ad valorem tax system and represents a 2.75 percent decrease from the 2005 rate of 0.218/\$100 EAV.

In the collection of ad valorem tax revenues, the Cook County Treasurer has experienced a shortfall over the years due to delinquencies. The actual extent of this shortfall is unknown. To compensate for this shortfall, however, it is customary for taxing bodies to increase their tax levies by an amount which approximates the shortfall. The District's budget for 2005 included a 3.5 percent allowance for tax revenues uncollected in the year of levy.

The calculation of the ad valorem residential OM&R rate of 0.212/\$100 EAV is without the allowance for uncollectibles. This rate adjusted downward by 3.5 percent for uncollectibles would be 0.205/\$100 EAV. The adjusted ad valorem OM&R rate is 56.8 percent (0.205/0.361) of the District's total 2003 ad valorem tax rate.

The User Charge rates for the Large Commercial-Industrial class are equal to the total cost per parameter for this class divided by the billable flow and loads, as shown in Tables 5 and 8. Using this data, the following rates were established for the Large Commercial-Industrial User class:

Flow:	\$ 5,022,214/22,242	MG	=	\$225.80/MG
BOD:	\$ 25,793,088/107,565	Klbs	=	\$239.79/Klbs
SS:	\$ 6,920,987/37,736	Klbs	=	\$183.41/Klbs

The Tax-Exempt class OM&R costs must be fully collected by the User Charge System. Using the total cost per parameter for this class divided by the billable flow as shown in Tables 5 and 8 the following rates were established for the Tax-Exempt User class:

Flow:	\$ 2,544,901/10,810	MG	=	\$235.40/MG
BOD:	\$ 4,469,091/17,877	Klbs	=	\$249.99/Klbs
SS:	\$ 7,462,315/39,028	Klbs	=	\$191.20/Klbs

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 8

COST PER PARAMETER AND TOTAL COST PER USER CLASS
FOR 2006 RATES

Class	Flow (MG)	BOD (Klbs)	SS (Klbs)	Total
R&SNC-I	409,986	559,228	943,828	
UNIT COST	\$ 160.49	\$ 124.01	\$ 79.34	
TREATMENT COST + ADMINISTRATION COST	\$65,798,653	\$69,349,864	\$74,883,314	\$210,031,831
CLASS TOTAL	<u>\$ 32,497</u>	<u>\$ 34,251</u>	<u>\$ 36,984</u>	<u>\$ 103,732</u>
	\$65,831,150	\$69,384,115	\$74,920,298	\$210,135,563
Large Commercial- Industrial	31,293	207,992	87,232	
UNIT COST	\$ 160.49	\$ 124.01	\$ 79.34	
TREATMENT COST CLASS TOTAL	<u>\$5,022,214</u>	<u>\$25,793,088</u>	<u>\$6,920,987</u>	<u>\$ 37,736,289</u>
	\$5,022,214	\$25,793,088	\$6,920,987	\$ 37,736,289
Tax-Exempt (and Governmental)	15,209	34,568	90,218	
UNIT COST	\$ 160.49	\$ 124.01	\$ 79.34	
TREATMENT COST + ADMINISTRATION COST	\$2,440,892	\$4,286,778	\$7,157,896	\$ 13,885,566
CLASS TOTAL	<u>\$ 103,809</u>	<u>\$ 182,313</u>	<u>\$ 304,419</u>	<u>\$ 590,541</u>
	\$2,544,701	\$4,469,091	\$7,462,315	\$ 14,476,107
TOTAL COST				\$262,347,959

The 2005 rates compare with current 2004 rates as follows:

<u>Class Parameters</u>	<u>2006</u>	<u>2005</u>	<u>% Change</u>
Large Commercial-Industrial			
Flow \$/MG	\$225.80	\$210.91	+7.06
BOD \$/Klbs	\$239.79	\$226.64	+5.80
SS \$/Klbs	\$183.41	\$174.33	+5.21
Tax-Exempt			
Flow \$/MG	\$235.40	\$219.30	+7.34
BOD \$/Klbs	\$249.99	\$235.65	+6.09
SS \$/Klbs	\$191.20	\$181.26	+5.48
OM&R Factor	0.568	0.568	0.0

The above comparison shows increases in the rates for both the Large Commercial-Industrial and Tax-Exempt User classes. The 2004 plant loadings are higher than the 2003 loadings. The flow increased by 1.72 percent, the BOD loading increased by 4.14 percent and the SS loading increased by 7.88 percent. The rate calculation uses financial data from the District's 2005 Budget, District operating costs and plant loading data for 2004 and User loading data for 2004. The significant increase in the BOD and SS Plant loadings would lower the direct unit costs for treatment. However, the OM&R cost increased from \$254 million to \$262 million which is an increase of 3.1 percent and would tend to increase the rates.

The User Class loadings for the Large-Commercial-Industrial User Class for 2004 showed a decline from what was observed in 2003. Flow declined by 1.45 percent, BOD by 8.14 percent and SS by 16.97 percent. However, the decline in the dry weather flow and the increased Plant flow BOD and SS loadings would increase the allocation of I/I, rain and recycle loadings, and the applicable cost of treatment, into both the Large Commercial-Industrial and Tax-Exempt User Classes.

The main reasons for the increase in the User Charge rates for 2006 are the increased District OM&R cost, and the decrease in the dry weather flow.

Administrative Cost Recovery

The costs incurred by the District in 2004 in administering the Sewage and Waste Control Ordinance (SWCO) and the User Charge Ordinance (UCO) were considered in determining the 2006 User Charges for the Large Commercial-Industrial User class, the R&SNC-I User class, and the Tax-Exempt User class.

Prior to 2001, the administrative costs were included in determining the User Charge rates for flow, BOD and SS for the above three classes of Users and/or were recovered from Users subject to federal categorical pretreatment standards. However, on December 7, 2000, the District's Board of Commissioners (Board) amended the UCO, which altered the method of recovery of the administrative costs. Under these amendments, the cost for administering the minimum pretreatment requirements (MPR) and the cost for administering the noncompliance enforcement activities (NCE) of the SWCO were segregated from the administrative costs. Similarly, the cost for administering the User Charge Verification requirements (UCV) of the UCO was also segregated from the administrative costs.

Beginning in 2001, the MPR charges are recovered from the Significant Industrial Users in the Large Commercial-Industrial User class. The NCE charges were recovered from Users who are found in noncompliance with the SWCO. The UCV charges are recovered from the Large Commercial-Industrial User class.

The activities associated with MPR, NCE, and UCV were recovered under Section 10 and Appendix F of the UCO. On November 4, 2004 the Board amended the UCO to remove the recovery of the NCE Charges from the UCO. Since the NCE charges are incurred by a User for violations of effluent limitations specified in the SWCO it was determined that the collection of the NCE charges under the SWCO was more fair, efficient and equitable. The collection of the NCE charges in the SWCO was also approved by the Board on November 4, 2004. These changes became effective January 1, 2005. The Appendix F of the UCO was redesignated as Appendix E and the MPR and UCV charges applicable to 2005 were incorporated therein. The 2005 NCE charges were incorporated in Appendix F, Enforcement Response Procedure, Paragraph I of the SWCO.

As reflected in the 2005 Budget, the OM&R costs that must be recovered through the User Charge system, have increased by 3.0 percent. In order to keep pace with the District's OM&R costs, the 2006 MPR, UCV, and NCE were increased by 3 percent over the 2005 rates.

Prepared by Donald J. Byron

Reviewed by Kishan Devulapally

Approved by Louis Kollias