This Annual Wastewater Revenue Requirement Analysis (Analysis) was presented to the Hamilton County Board of County Commissioners (BOCC) in “Draft” form by the City of Cincinnati / MSD and is subject to approval by the BOCC. The Analysis is based on the Proposed 2014 MSD Operating Budget and CIP, and provides recommended rate adjustments for the next five years.

The BOCC will set the rate for 2014 at the time the Operating Budget and CIP are approved.

DRAFT

ANNUAL WASTEWATER REVENUE REQUIREMENT ANALYSIS

BLACK & VEATCH PROJECT NO. 178803

PREPARED FOR

Metropolitan Sewer District of Greater Cincinnati

8 NOVEMBER 2013

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1 Introduction

The Metropolitan Sewer District of Greater Cincinnati (“MSD” or “District”) and the Department of Sewers, City of Cincinnati (“City”) was created through legislation, enacted April 10, 1968, by the Board of Hamilton County Commissioners and the City Council of Cincinnati. The legislation provided for consolidation of sanitary wastewater service embracing most of the political subdivisions of Hamilton County (“County”) including the City of Cincinnati, and all unincorporated areas in the County. Warren County is a participant in the District on the basis of an agreement signed in 1970. The City of Cincinnati, through the Department of Sewers, accepted the responsibility for managing and operating the District for the Hamilton County Commissioners.

1.1 GENERAL BACKGROUND

The costs of operating, maintaining, and financing system improvements are met primarily from revenue derived from charges to users. Increased requirements due to new programs associated with the compliance of the consent decree, financing costs of major new facilities, and recognition of inflationary costs associated with day to day operation require more revenue than can be recovered under the schedule of rates implemented January 9, 2013. This study reflects the results of a detailed revenue requirement analysis for a five year study period..

1.2 PURPOSE

This report presents the results of an analysis of the costs of providing wastewater service in the District with projected revenue from the various classes of customers under existing rates. In June of 2004, MSD entered into a Global Consent Decree with the U.S. Environmental Protection Agency, U.S. Department of Justice, and the State of Ohio (“Regulators”) to significantly reduce the number of Sanitary Sewer Overflows, Combined Sewer Overflows, and Water-In-Basement issues. In June of 2006, the District submitted a Long Term Control Plan, intended to meet the requirements of the consent decree. Subsequently, the District and Regulators met regularly to negotiate a final Wet Weather Improvement Program (“WWIP”). On June 5, 2009, the District received conditional approval of its final Wet Weather Improvement Program, and on August 10, 2010, Judge Arthur Spiegel entered the amended WWIP into record.

This study incorporates the impact of the WWIP, called Project Groundwork, as well as all other capital and operating funding needs. It is important to note that with the approval of the WWIP, the District is obligated to accomplish the outlined level of capital funding for both WWIP projects as well as an average annual level of asset management spending to ensure the continued upkeep of the system. The recommended 2014-2018 capital budget, reflecting WWIP and asset management needs, is incorporated in this study. In addition to the financing of the capital program, this study incorporates the recommended 2014 operating budget, as well as assumptions regarding projected operating expenses throughout the study period.

Revenue under existing rates shown for 2013 reflects the previously approved 5.0 percent increase effective January 9, 2013. Revenue needs, including required average rate increases, are indicated for years 2014-2018 and have been projected to provide adequate funds to meet the revenue requirements of the District in each year of the study period, based on the assumptions included in this analysis.

1.3 SCOPE

Included in this report are the results of a comprehensive study of projected revenue under existing rates and total revenue requirements of the wastewater system. The comparison of projected revenue requirements with projected revenue under existing rates is indicative of the degree of adequacy of the overall level of those rates to meet projected costs.

2 Revenue

The revenue for the District to meet costs of wastewater service is derived principally from sewerage service charges and excess strength surcharges. Other revenue sources include pretreatment charges, the sale of permits and licenses, plan review and inspection charges, connection charges, interest earned from the investment of available funds and other miscellaneous sources. The level of future revenue is projected through an analysis of historical system growth in terms of number of customers, wastewater volume, and revenue derived from charges for service.

2.1 PROJECTED CUSTOMERS AND BILLED VOLUME

Table 2-1 presents a summary of the historical and projected average number of customer accounts served by the District. Customer classification (i.e., residential, commercial, multi-family and industrial) is based upon data maintained by the Greater Cincinnati Water Works (GCWW).

GCWW provides water service to residences and businesses in the City of Cincinnati and to areas outside the City in Hamilton County. As such, GCWW bills approximately 90 percent of the District's wastewater customers with the remaining 10 percent billed by other political subdivisions in the County.

The projected number of customers by customer class is based on a detailed evaluation of past trends in the number of accounts, as well as an evaluation of economic conditions within the service area and consideration of the potential impact of implementation of the capital improvement program, and associated necessary rate increases, on individual customer classes. The resulting customer account escalation factors included in this study are as follows:

	Annual Change in Accounts			2013 Rate Study Assumptions					
Customer	2010 - 2011	2011 - 2012	YTD [(a)] 2012 - 2013	2013	2014	2015	2016	2017	2018
Total Residential	-10.59%	-0.57%	1.35%	-0.50%	-0.50%	0.00%	0.00%	0.00%	0.00%
Total Commercial	-0.92%	-1.68%	1.09%	-0.50%	-0.50%	0.00%	0.00%	0.00%	0.00%
Total Multifamily	-4.24%	-4.03%	-1.32%	-2.00%	-2.00%	0.00%	0.00%	0.00%	0.00%
Total Industrial	-0.14%	-1.42%	23.58%	-0.50%	-0.50%	0.00%	0.00%	0.00%	0.00%

(a) 10 month comparison (January - October)

Although revenue is projected to be generated by fees associated with new connections, any new growth will be more than offset by the decline in existing customers.

Table 2-1 Historical and Projected Accounts

Line No.	Description	Historical 2011	Historical 2012	Projected 2013	Projected 2014	Projected 2015	Projected 2016	Projected 2017	Projected 2018
	CWW								
	Bi-Monthly Customers								
1	Residential	58	59	58	58	58	58	58	58
2	Commercial	0	0	0	0	0	0	0	0
3	Industrial	0	0	0	0	0	0	0	0
4	Multi-Family	0	0	0	0	0	0	0	0
5	Subtotal	58	59	58	58	58	58	58	58
	Monthly								
6	Residential	139	18	18	18	18	18	18	18
7	Commercial	650	392	390	388	388	388	388	388
8	Industrial	390	281	279	278	278	278	278	278
9	Multi-Family	273	293	287	281	281	281	281	281
10	Resid-Pmt Plan	0	6,832	6,798	6,764	6,764	6,764	6,764	6,764
11	Subtotal	1,452	7,815	7,772	7,728	7,728	7,728	7,728	7,728
	Quarterly								
12	Residential	168,047	159,588	158,790	157,996	157,996	157,996	157,996	157,996
13	Commercial	13,392	12,265	12,203	12,142	12,142	12,142	12,142	12,142
14	Industrial	230	135	134	133	133	133	133	133
15	Multi-Family	22,435	21,491	21,061	20,639	20,639	20,639	20,639	20,639
16	Subtotal	204,104	193,478	192,188	190,911	190,911	190,911	190,911	190,911
17	Total CWW	205,614	201,351	200,018	198,697	198,697	198,697	198,697	198,697
	Political Bodies								
18	Residential	21,540	21,741	21,632	21,524	21,524	21,524	21,524	21,524
19	Commercial	2,355	2,378	2,366	2,354	2,354	2,354	2,354	2,354
20	Industrial	38	38	38	37	37	37	37	37
21	Warren Co.	1	1	1	1	1	1	1	1
22	Subtotal	23,934	24,158	24,037	23,917	23,917	23,917	23,917	23,917
23	**Total**	**229,548**	**225,509**	**224,055**	**222,614**	**222,614**	**222,614**	**222,614**	**222,614**

Table 2-2 presents a summary of the historical and projected billable wastewater flow volume. The projection of total billable wastewater flow volume requires an analysis of not only historical total billable volume, but also an analysis of billed volume per customer. This is necessary in order to fully reflect any change in customer behavior that could impact total billable volume. In order to project billable volume for each customer class, a detailed analysis of 2010-2012 and year-to-date 2013 billing data (6 months available at time of initial analysis, monitored thereafter, with most recent analysis based on 10 months of billing data) was conducted. Based on the analysis, it was determined that volume per customer continues to decline. This is a trend that has been occurring for some time, and is consistent with the trend being experienced by utilities across the United States. Several factors are likely contributing to a decline in billed volume per customer, including the installation of higher efficiency fixtures and appliances, and increased awareness of environmental concerns and resulting changes in behavior. Economic conditions can also have an impact on billed volume per customer, and current economic conditions could also be contributing to the magnitude of the recent decline.

Based on this analysis, a reduction to the billable volume per customer was reduced from 2012 levels based upon the year-to-date 2013 analysis. In addition, a continued decline in billable volume per customer is assumed to continue, as follows:

Annual Change in Use per Account				2013 Rate Study Assumptions					
			YTD [a]						
Customer	2010 - 2011	2011 - 2012	2012 - 2013	2013	2014	2015	2016	2017	2018
Total Residential	3.08%	-3.57%	-2.76%	-4.00%	-4.00%	-2.00%	-1.50%	-1.00%	-0.50%
Total Commercial	8.62%	-1.84%	-6.18%	-2.00%	-2.00%	-1.00%	-0.75%	-0.50%	-0.25%
Total Multifamily	1.39%	-1.41%	-1.93%	-2.00%	-2.00%	-1.00%	-0.75%	-0.50%	-0.25%
Total Industrial	-11.88%	-2.02%	-12.69%	-5.00%	-5.00%	-5.00%	-2.50%	-1.00%	-1.00%

(a) 10 month comparison (January - October)

This revised volume per customer was then utilized in projecting total billable volume for 2013 through 2018.

As shown in Table 2-2, total water usage or billable wastewater volume is projected at 33,504,893 hundred cubic feet (Ccf) for 2013. As previously discussed, average billable volume per customer is projected to continue decline through 2018; however, the rate of decline is projected to decrease in the outer years of the study period.

Table 2-2 Historical and Projected Billable Volumes

Line		Historical		Projected					
No.	Description	2011	2012	2013	2014	2015	2016	2017	2018
		ccf	ccf	ccf	ccf	ccf	ccf	ccf	ccf
	CWW								
	Bi-Monthly Customers								
1	Residential	4,282	4,559	4,355	4,160	4,077	4,016	3,975	3,956
2	Commercial	0	0	0	0	0	0	0	0
3	Industrial	0	0	0	0	0	0	0	0
4	Multi-Family	0	0	0	0	0	0	0	0
5	Subtotal	4,282	4,559	4,355	4,160	4,077	4,016	3,975	3,956
	Monthly								
6	Residential	925,745	142,026	135,663	129,586	126,994	125,089	123,838	123,219
7	Commercial	1,913,524	1,706,758	1,664,260	1,622,820	1,606,592	1,594,542	1,586,570	1,582,603
8	Industrial	5,633,380	5,432,912	5,135,460	4,854,293	4,611,579	4,496,289	4,451,326	4,406,813
9	Multi-Family	1,936,127	1,926,605	1,850,311	1,777,039	1,759,268	1,746,074	1,737,343	1,733,000
10	Resid-Pmt Plan	0	587,170	560,865	535,738	525,023	517,148	511,977	509,417
10	Subtotal	10,408,776	9,795,471	9,346,559	8,919,476	8,629,456	8,479,142	8,411,054	8,355,052
	Quarterly								
11	Residential	10,359,929	9,775,641	9,337,692	8,919,363	8,740,976	8,609,861	8,523,763	8,481,144
12	Commercial	4,114,737	4,136,986	4,033,975	3,933,529	3,894,194	3,864,987	3,845,662	3,836,048
13	Industrial	491,884	509,057	481,186	454,841	432,099	421,297	417,084	412,913
14	Multi-Family	5,238,114	4,885,190	4,691,736	4,505,944	4,460,884	4,427,428	4,405,290	4,394,277
15	Subtotal	20,204,664	19,306,873	18,544,589	17,813,677	17,528,153	17,323,573	17,191,799	17,124,382
16	Total CWW	30,617,722	29,106,903	27,895,503	26,737,313	26,161,686	25,806,731	25,606,829	25,483,390
	Political Bodies								
17	Residential	1,274,564	1,272,497	1,215,489	1,161,035	1,137,815	1,120,747	1,109,540	1,103,992
18	Commercial	1,252,033	1,250,003	1,218,878	1,188,528	1,176,642	1,167,818	1,161,978	1,159,074
19	Industrial	145,335	145,099	137,155	129,646	123,163	120,084	118,884	117,695
20	Warren Co.	215,239	240,740	234,745	228,900	226,611	224,912	223,787	223,228
21	Subtotal	2,887,171	2,908,339	2,806,267	2,708,109	2,664,232	2,633,561	2,614,189	2,603,988
22	**Total**	**33,504,893**	**32,015,242**	**30,701,771**	**29,445,422**	**28,825,917**	**28,440,292**	**28,221,018**	**28,087,378**

2.2 WASTEWATER REVENUE UNDER EXISTING RATES

The District primarily derives revenues from a schedule of wastewater rates that includes a minimum bill, a block quantity volume charge, and an extra strength surcharge for excess pollutant customers. Charges are applied either monthly or quarterly according to customer distinction. A schedule of current rates, effective January 9, 2013 is shown in Table 2-3. This rate schedule reflects a 5.0 percent increase previously approved by the County Commissioners.

Table 2-3 Existing Rates

Minimum Monthly Charge - $/Bill - 2013

Line No.	Meter Size	Number of Family Units	Quarterly Usage	Quarterly Charge	Monthly Usage	Monthly Charge
	Inches		Cf	$	Cf	$
1	5/8"	1	900	$ 104.44	500	$ 50.83
2	3/4"	2-3	900	$ 134.67	500	$ 60.95
3	1"	4-5	900	$ 184.62	500	$ 78.44
4	1 ½"	6-12	900	$ 313.74	500	$ 120.95
5	2"	13-20	900	$ 444.41	500	$ 166.69
6	3"	21-50	900	$ 1,140.52	500	$ 408.53
7	4"	51-115	900	$ 1,888.84	500	$ 676.47
8	6"	116-250	900	$ 3,731.91	500	$ 1,323.51
9	8"	Over 250	900	$ 5,568.51	500	$ 1,967.31
10	10"		900	$ 7,441.04	500	$ 2,643.74
11	12"		900	$ 8,591.35	500	$ 3,078.35

Volume Charge - $/ccf - 2013

Line No.		Quarterly	Monthly	Rate
		Cf	Cf	$
12	First (cf)	900	500	$ 0
13	To (cf)	15,000	5,000	$ 5.232
14	Over (cf)	15,000	5,000	$ 4.184

Extra Strength Charges - $ per mg/l per 1,000 cubic feet - 2013

Line No.		Rate
		$
15	Suspended Solids (TSS)	$ 0.002756
16	Biochemical Oxygen Demand (BOD)	$ 0.004707
17	Nitrogen Oxygen Demand (TKN)	$ 0.004122

The minimum charge per quarter includes the first 900 (500 cubic feet for monthly bills) of contributed wastewater volume and is based upon the size of water service meter associated with the service. Two additional declining rate blocks are applied to those volumes exceeding the minimum. The Extra Strength Surcharges are applied to specific monitored and tested customers and apply rates per hundred cubic feet for the strength components Biochemical Oxygen Demand (BOD), Suspended Solids (SS) and Total Kjeldahl Nitrogen (TKN), each exceeding 300, 240 and 25 milligrams per liter (mg/l) respectively.

The District's sewer service revenue is projected by applying the wastewater rate structure to the appropriate projected unit of measure for each customer class. These revenue projections are summarized in Table 2-4. Total projected sewer service revenue, from user rates, is expected to average $217,705,000 for the 2013 to 2018 projection period, declining from $224,295,000 in 2013 to $214,670,000. This represents a decline of over 4 percent over the study period.

Table 2-4 Projected User Charge Revenues under Existing Rates

Line No.	Description	Projected 2013	2014	2015	2016	2017	2018
		$	$	$	$	$	$
	CWW						
	Bi-Monthly Customers						
1	Residential	41,702	41,212	41,077	40,978	40,913	40,880
2	Commercial	0	0	0	0	0	0
3	Industrial	0	0	0	0	0	0
4	Multi-Family	0	0	0	0	0	0
5	Subtotal	41,702	41,212	41,077	40,978	40,913	40,880
	Monthly						
6	Residential	680,662	655,227	644,652	636,880	631,776	629,249
7	Commercial	8,010,714	7,834,311	7,767,499	7,717,892	7,685,068	7,668,739
8	Industrial	24,119,095	22,952,000	21,957,825	21,485,592	21,301,421	21,119,092
9	Multi-Family	9,725,928	9,381,992	9,308,777	9,254,415	9,218,446	9,200,551
10	Resid-Pmt Plan	3,944,008	3,878,307	3,856,236	3,840,014	3,829,362	3,824,089
11	Subtotal	46,480,406	44,701,837	43,534,990	42,934,793	42,666,073	42,441,720
	Quarterly						
12	Residential	88,992,873	87,628,289	87,186,872	86,862,430	86,649,380	86,543,920
13	Commercial	28,365,448	27,885,857	27,720,352	27,597,465	27,516,155	27,475,703
14	Industrial	3,189,642	3,073,603	2,978,517	2,933,351	2,915,736	2,898,298
15	Multi-Family	35,705,378	34,616,975	34,433,570	34,297,391	34,207,287	34,162,460
16	Subtotal	156,253,342	153,204,723	152,319,310	151,690,637	151,288,557	151,080,380
17	Total CWW	202,775,450	197,947,772	195,895,377	194,666,408	193,995,543	193,562,980
	Political Bodies						
18	Residential	9,693,249	9,644,782	9,644,782	9,644,782	9,644,782	9,644,782
19	Commercial	10,236,879	10,086,539	10,037,952	10,001,877	9,978,007	9,966,132
20	Industrial	630,854	612,154	597,386	590,371	587,635	584,926
21	Warren Co.	958,095	934,238	924,896	917,959	913,369	911,086
22	Subtotal	21,519,077	21,277,714	21,205,017	21,154,989	21,123,794	21,106,926
23	**Total**	**224,294,527**	**219,225,486**	**217,100,394**	**215,821,397**	**215,119,336**	**214,669,907**

In addition to revenues from billable wastewater flow, revenue is also derived from user charges related to extra strength and industrial wastes. Revenues from extra strength and industrial wastes are projected to contribute an additional $22,921,000 per year to the operating revenues. The sum of user charge revenue and these industrial charges comprise total revenues under the existing rate structure.

Other operating and non-operating revenues of the District consist of revenues derived from other fees including connection charges, plan review, tap permits, and septic tank disposal. As shown on Table 2-5, other operating revenue is projected to remain constant at $4,352,000 per year throughout the projection period, connection charges and tap fees is projected to remain constant at $2,110,000 per year throughout the projection period, and interest earnings are projected to remain constant at $4,005,000 during the projection period.

Table 2-5 Operating and Non-Operating Revenue

Line No.	Description	Projected 2013	2014	2015	2016	2017	2018
		$1,000	$1,000	$1,000	$1,000	$1,000	$1,000
1	Sewerage Service Charge	224,295	219,225	217,100	215,821	215,119	214,670
2	Sewerage Surcharges	22,357	22,357	22,357	22,357	22,357	22,357
3	Pretreatment Monitoring	564	564	564	564	564	564
4	Subtotal	247,216	242,146	240,021	238,742	238,040	237,591
5	Other Operating Revenue						
6	Rental Income	150	150	150	150	150	150
7	Septic Tank Disposal	1,544	1,544	1,544	1,544	1,544	1,544
8	Tap Permits-Licenses	28	28	28	28	28	28
9	Inspection-Plan Review	95	95	95	95	95	95
10	Other (a)	2,535	2,535	2,535	2,535	2,535	2,535
11	Total Other Operating Revenue	4,352	4,352	4,352	4,352	4,352	4,352
12	Connection Fee Revenue (b)	2,110	2,110	2,110	2,110	2,110	2,110
13	Interest-Trust Accounts (c)	4,005	4,005	4,005	4,005	4,005	4,005
14	**Total Revenue**	**257,683**	**252,613**	**250,488**	**249,209**	**248,507**	**248,058**

(a) Includes fines, assessments, purchasing agent sales, expense reimbursements, and other miscellaneous revenue sources.

(b) Connection charges and tap-in fees are shown separate from other operating revenues as these funds are used as a source of financing for the District's capital improvement program.

(c) Reflects interest income on Operating, Surplus, Bond Reserve Account, and Replacement and Improvement Account.

3 Revenue Requirements

The revenue required to adequately provide for the continued operation of the District must be sufficient to meet the cash requirements of operation and maintenance (O&M) of the system; principal, interest, and reserve payments on revenue and other bond indebtedness; and recurring annual capital expenditures for replacements, system betterments, and extensions not debt financed.

Operation and maintenance expenses are those expenditures necessary to transport and treat customers' wastes as well as maintain the system in good working order. Routine annual capital expenditures include expenditures such as equipment replacements, recurring annual replacements, minor extensions, and betterments and are normally revenue financed. Other capital costs include principal and interest payments, bond covenant-required payments, and the costs of infrequent major capital improvements paid directly from annual operating revenues.

3.1 OPERATION AND MAINTENANCE EXPENSE

Table 3-1 presents a summary of projected operation and maintenance (O&M) expenditures for 2013 through 2018 by operating division. Major cost items for each division generally include personal services and employee fringe benefits; the cost of purchased electric power, gas and other treatment chemicals; and other contractual service and material costs. 2013 O&M expenditures reflect the 2013 adopted budget. 2014 O&M expenditures reflect the 2014 recommended budget.

2015-2018 O&M expenditures are projected to increase based upon the following assumed escalation factors:

- Chemicals: 4 percent
- Power: 4 percent
- Benefits: 5 percent
- Labor: 3 percent
- All other: 3 percent

Table 3-1 Projected Operation and Maintenance Expense

Line No.	Description	Projected 2013	2014	2015	2016	2017	2018
		$1,000	$1,000	$1,000	$1,000	$1,000	$1,000
1	**Office of the Director**	19,018	12,369	12,752	13,146	13,553	13,973
2	**Wastewater Administration**						
3	Billing & Collecting	5,365	5,365	5,526	5,692	5,863	6,039
4	All Other	5,027	5,388	5,571	5,760	5,956	6,160
5	Total	10,393	10,753	11,097	11,452	11,819	12,198
6	**Information Technology**	6,909	6,560	6,771	6,990	7,215	7,449
7	**Project/Business Development (b)**	2,953	2,063	2,130	2,199	2,271	2,345
8	**Project Delivery**	7,040	5,886	6,085	6,291	6,505	6,725
9	**Wastewater Collection**	19,592	25,274	26,103	26,961	27,848	28,765
10	**Wastewater Treatment**						
11	Superintendent	1,935	2,532	2,615	2,701	2,790	2,882
12	Mill Creek	21,386	21,056	21,798	22,568	23,367	24,194
13	Little Miami	6,555	6,736	6,973	7,219	7,473	7,737
14	Muddy Creek	3,329	3,173	3,284	3,399	3,518	3,642
15	Sycamore	2,223	2,090	2,163	2,238	2,316	2,397
16	Taylor Creek	2,165	1,932	1,999	2,068	2,139	2,214
17	Polk Run	1,826	1,619	1,674	1,731	1,790	1,851
18	Equipment Maintenance	10,823	11,077	11,451	11,838	12,238	12,653
19	Total Wastewater Treatment	50,242	50,215	51,957	53,762	55,632	57,570
20	**Industrial Waste Management**	5,912	7,776	8,044	8,321	8,609	8,907
21	**Water in Basement**	5,705	10,109	10,415	10,729	11,053	11,387
22	**Total O&M**	127,765	131,007	135,354	139,852	144,505	149,320
23	Incremental Expenditures	0	0	300	1,100	2,700	3,300
24	Office Equipment & Motorized Vehicles	(4,338)	(7,207)	(7,423)	(7,646)	(7,875)	(8,112)
25	**Total Net O&M Expense**	123,426	123,800	128,231	133,306	139,330	144,509

3.2 CAPITAL IMPROVEMENT PROGRAM

The District has developed a recommended multi-year capital improvement program (CIP) covering anticipated commitments for the period 2014 through 2018. For the year 2013, the amounts shown are based on the previously adopted 2013-2017 CIP, as adjusted for planned changes since adoption of the CIP. A summary of the capital improvement program, totaling

$962,016,000 for years 2013-2018, is shown in Table 3-2. The capital program summarized in Table 3-2 reflects anticipated projects required to be legislated in each year of the projection period, as outlined in the recommended 2014 CIP Book. The CIP shown in Table 3-2 does not include individual project contingency, nor does it include an allowance for Program Contingency. A second scenario, illustrating the impact of funding Program Contingency separately from the CIP, through the Surplus Fund, is discussed in Section 4 of this report.

Actual expenditures, as well as encumbrances, in each year are anticipated to differ from these totals, as many projects are multi-year in nature. In addition, the because the District is required to meet certain schedule requirements as outlined in the amended consent decree, the CIP is structured to allow for flexibility in moving projects between years as necessary to maintain the overall Project Groundwork schedule.

Table 3-2 Capital Improvement Program

No.	Description	Projected 2013	2014	2015	2016	2017	2018	Total Cost
		$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000
1	**OWDA Projects**	79,200	79,200	79,200	24,750	24,750	24,750	311,850
2	**Program Contingency**	0	0	0	0	0	0	0
3	**All Other CIP**	55,956	201,745	243,190	98,922	33,800	16,555	650,166
4	**Total Forecasted Capital Program**	**135,156**	**280,945**	**322,390**	**123,672**	**58,550**	**41,305**	**962,016**

3.2.1 Capital Improvement Program Financing Plan

Annual expenditures for the majority of the CIP (Line 3 of Table 3-2) are anticipated to be met from a combination of available funds on hand, interest earnings, connection fee revenues, and transfers from the Surplus Fund, as shown in Table 3-3. Connection fee revenue is anticipated to remain at 2012 levels throughout the projection period, at an annual level of $2,110,000 per year, as shown in Line 2 of Table 3-3. Transfers from the Surplus Fund are the primary source of funding for the capital program and are anticipated to vary in each year of the projection period as shown on Line 3 of Table 3-3, reflecting projected annual encumbrances in each year. Surplus Fund revenues include proceeds from revenue bonds and cash financed capital from the operating fund, as well as interest earnings on balances within the Surplus Account, Bond Reserve Fund and Replacement and Improvement Account. Interest on the average balance within Fund 704 is projected at a rate of one percent annually as indicated on Line 4 of Table 3-3.

The application of funds summarized in Line 6 of Table 3-3 indicates estimated total annual encumbrances, excluding projects funded directly by OWDA loans, and represents the total amount required to be funded from revenue bond proceeds and other cash sources. Because the cost of projects funded by OWDA loans are administered jointly by the OWDA and EPA and are reimbursed directly by OWDA at the time expenses are incurred, both the loan proceeds and associated capital costs are excluded from the determination of capital funding needs.

Table 3-3 Capital Improvement Financing Plan (Fund 704)

Line No.	Description	Projected 2013	2014	2015	2016	2017	2018
		$1,000	$1,000	$1,000	$1,000	$1,000	$1,000
	Source of Funds						
1	Beginning of Year Balance	71,000	17,595	34,218	33,475	31,989	30,611
2	Connection Fees	2,110	2,110	2,110	2,110	2,110	2,110
3	Transfer from / (to) Surplus Account	0	216,000	240,000	95,000	30,000	15,000
4	Interest Income	441	258	337	326	311	309
5	Total Source of Funds	73,551	235,963	276,665	130,911	64,410	48,030
	Application of Funds						
6	Major Capital Improvements	55,956	201,745	243,190	98,922	33,800	16,555
7	Total Use of Funds	55,956	201,745	243,190	98,922	33,800	16,555
8	**End of Year Balance**	**17,595**	**34,218**	**33,475**	**31,989**	**30,611**	**31,475**

3.2.2 Debt Service Requirements

A summary of the District's existing and proposed debt service requirements is shown in Table 3-4. Existing debt service requirements are related to the 2003A, 2003B, 2004A, 2005A, 2005B, 2006A, 2007A, 2009A, 2009B, 2010A and 2010B Series revenue bonds; separate Ohio Water Development Authority (OWDA) contract loans; and a Water Pollution Control Loan Fund (WPCLF) loan.

Debt service requirements on proposed revenue bond issues required during the projection period are based upon equal annual principal and interest payments over a period of 25 years at an estimated net effective interest rate of 5.4 percent. Bond issuances are projected to occur in July of the years indicated. Debt service requirements on anticipated WPCLF/OWDA loans are based upon equal annual principal and interest payments over a period of 20 years at an estimated effective interest rate of 3.4 percent. Debt service payments on WPCLF/OWDA loans are assumed to begin two years after issuance.

Because a bond issuance occurred during 2013, and included a partial refunding as well as "new money", the debt service associated with Series 2013A and Series 2013B has been reflected in Table 3-4 in two parts: 1) change in existing debt service in Line 1 due to partial refunding outstanding bonds, and 2) additional "proposed" debt beginning in 2013 in Line 2, reflecting debt service on the "new money" portion of the bond issuance. The "Issuance Amount" for 2013 bonds, as shown in the third column, reflects the "new money" or deposit to Surplus Fund provided by the issuance of the 2013 bonds.

As shown in Table 3-4, $479 million in revenue bonds, including the 2013 issuance, and $315 million in low interest loans are projected over the planning period.

Table 3-4 Existing and Projected Long-Term Debt Service

Line No.	Description	Issue Amount	Projected 2013	2014	2015	2016	2017	2018
		$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000
1	**Existing Revenue Bonds**		71,770	74,215	74,327	74,196	74,747	56,982
	Proposed Revenue Bonds							
2	2013 Series	124,000	2,057	6,119	6,119	6,119	6,119	6,119
3	2014 Series	50,000		1,538	3,691	3,691	3,691	3,691
4	2015 Series	235,000			7,229	17,349	17,349	17,349
5	2016 Series	70,000				2,153	5,168	5,168
6	2017 Series	0					0	0
7	2018 Series	0						0
8	Total Revenue Bonds	479,000	73,827	81,872	91,365	103,508	107,073	89,308
9	**Existing Other Debt (a)**		17,264	19,663	25,782	24,977	24,435	24,125
	Proposed Other Debt (a)							
10	2013 Series	80,000	0	0	465	5,578	5,578	5,578
11	2014 Series	80,000		0	0	465	5,578	5,578
12	2015 Series	80,000			0	0	465	5,578
13	2016 Series	25,000				0	0	145
14	2017 Series	25,000					0	0
15	2018 Series	25,000						0
16	Total Other Debt	315,000	17,264	19,663	26,247	31,020	36,056	41,004
17	**Total Debt Service**		91,090	101,536	117,612	134,527	143,129	130,312

(a) Includes OWDA, OPWC, WPCLF bonds, and Note Proceeds.

3.3 REVENUE REQUIREMENT LEVELS

There are three approaches to establishing utility revenue requirements. The first approach identifies the cash requirements of utilities – operation and maintenance expense, principal and interest to satisfy debt service requirements of bonds or loan programs, capital improvements funded from revenues, and deposits to reserve funds. The second addresses the utilities' financial statements. Operation and maintenance expenses and bond or loan generated debt service interest are the same as in the cash approach. However, the financial statements recognize depreciation of existing assets instead of actual cash spent on capital related items. The third approach addresses covenants that the utilities have made to bond holders, financing agents, or mandated policies in regards to minimum reserve balances. The financial plan presented herein was developed to satisfy annual revenue requirements based on the cash needs of the utility and to sustain appropriate fund balances and coverage requirements.

The pro forma operation statement or cash flow analysis presented in Table 3-5 provides a basis for evaluation of the adequacy of revenues under existing rates to meet the projected revenue requirements of the District for the period 2013 through 2018. Revenue under existing rates, as shown in Line 2, reflect calculated revenue under rates effective January 9, 2013. The indicated increased revenue levels shown on Lines 4 through 9 of Table 3-5 are based on the effective dates and magnitude of required revenue adjustments considered necessary to meet the revenue requirement obligations of the District as well as required revenue bond coverage provisions. The effective amount of increased revenues shown during the first year of each annual rate adjustment includes an allowance for the effect of bill proration and billing lag on the level of revenues to be received. As shown in Line 4, no increase in revenue is shown for 2013, indicating that the revenue increase implemented January 9, 2013 and reflected in Line 2, is adequate to meet operating and capital needs in 2013.

Total revenue requirements are summarized on Line 23 of Table 3-5. The ending balance/deficit available shown on Line 24 is the projected Operating Reserve end-of-year cash balance from the annual operation of the Utility. Operating reserve requirements are listed on Line 26 and are needed to maintain the mandated two month's expenditures requirement in the Operating Fund. Funds in excess of this requirement are assumed to be transferred to the Surplus Fund, as shown in Line 22.

Presented at the bottom of Table 3-5 is an analysis of the District's ability to provide adequate debt service coverage on revenue bonds and total debt service obligations. The District's current revenue bond rate covenant requires that system net revenues (total revenue less operation and maintenance expense) be sufficient to provide at least 125 percent coverage of the annual revenue bond debt service requirements due each year, and 110 percent coverage of total debt service obligations. The revenue increases projected in this study reflect the level of funding necessary to recover all annual expenditures and maintain revenue bond debt coverage at a level of 150 percent or higher, and total debt service coverage at a level of 130 percent or higher, reflecting District policy. Establishing policies and maintaining debt service coverage at a level greater than that required by the Trust Indenture helps to maintain stability of the District's financial condition while implementing the anticipated magnitude of Project Groundwork.

Table 3-5 Estimated Revenues and Revenue Requirements under Increased Rates

Line No.	Description	Projected 2013	2014	2015	2016	2017	2018
		$1,000	$1,000	$1,000	$1,000	$1,000	$1,000
	Revenues:						
1	Revenue from Rates:						
2	Revenue from Existing Rates	247,216	242,146	240,021	238,742	238,040	237,591
3	Increased Revenue						
4	1/1/13 - 0.00%	0	0	0	0	0	0
5	1/1/14 - 6.00%		12,519	14,401	14,325	14,282	14,255
6	1/1/15 - 9.00%			19,730	22,776	22,709	22,666
7	1/1/16 - 8.00%				19,014	22,003	21,961
8	1/1/17 - 6.00%					15,356	17,788
9	1/1/18 - 5.00%						13,539
8	Total Revenue from Rates	247,216	254,665	274,153	294,857	312,391	327,801
10	Other Operating Revenues	4,352	4,352	4,352	4,352	4,352	4,352
11	Non Operating Revenues	4,156	3,925	3,854	3,809	3,789	3,892
12	Total Operating Revenues	255,724	262,943	282,359	303,019	320,532	336,045
	Revenue Requirements:						
13	O&M Expenses	123,426	123,800	128,231	133,306	139,230	144,409
14	Debt Service Requirements						
15	Existing Revenue Bonds	71,770	74,215	74,327	74,196	74,747	56,982
16	Proposed Revenue Bonds	2,057	7,657	17,038	29,312	32,326	32,326
17	Total Revenue Bonds	73,827	81,872	91,365	103,508	107,073	89,308
18	Other Existing Debt Obligations	17,264	19,663	25,782	24,977	24,435	24,125
19	Other New Debt Obligations	0	0	465	6,043	11,621	16,879
20	Total Debt Service	91,090	101,536	117,612	134,527	143,129	130,312
21	Annual Equipment Purchases	4,338	7,207	7,423	7,646	7,875	8,112
22	Transfer to Surplus Account	70,070	36,510	30,339	28,364	26,705	29,323
23	Total Revenue Requirements	288,925	269,052	283,606	303,843	316,939	312,156
24	Annual Net Balance	(33,201)	(6,109)	(1,247)	(825)	3,592	23,889
25	Cumulative Annual Balance	56,799	50,690	49,443	48,618	52,211	76,100
26	Minimum Required Operating Balance	20,289	20,351	21,079	21,913	22,887	23,738
	Debt Service Coverage:						
27	Net Revenue from Operations	132,298	139,143	154,128	169,713	181,302	191,636
28	Transfer to Surplus Account (b)	0	0	0	0	0	0
29	Connection Fee Revenue	2,110	2,110	2,110	2,110	2,110	2,110
30	Other Interest Income (c)	2,352	3,562	2,914	3,202	3,286	3,372
31	Revenue Available for Coverage	136,759	144,815	159,152	175,024	186,698	197,119
	Debt Service Coverage for:						
32	Revenue Bonds	185%	177%	174%	169%	174%	221%
33	*Minimum Required*	*125%*	*125%*	*125%*	*125%*	*125%*	*125%*
34	*MSD Policy*	*150%*	*150%*	*150%*	*150%*	*150%*	*150%*
35	Total Debt Service	150%	143%	135%	130%	130%	151%
36	*Minimum Required*	*110%*	*110%*	*110%*	*110%*	*110%*	*110%*
37	*MSD Policy*	*130%*	*130%*	*130%*	*130%*	*130%*	*130%*

(a) Beginning of year account balances at December 2012 represent unencumbered funds available to meet ongoing obligations of the sewer system.
(b) Equal to one-half of calculated transfer to Surplus Fund, based on current year revenues and expenses. Assumes approval of change to Trust Indenture to eliminate the inclusion of one-half of the calculated transfer to the Surplus Fund in the calculation of debt service coverage.
(c) Includes interest earnings on cash invested in the Bond Reserve and Surplus Fund accounts.

As shown in Figure 3-1, operation and maintenance expenses and debt service requirements comprise approximately 85 percent of the District's total revenue requirements over the planning period. Other requirements include annual equipment purchases and generation of sufficient amounts of net revenues to meet required revenue bond coverage provisions, which provides cash funding of a portion of the CIP.

Over the planning period, the total revenue requirements of the utility are expected to continue to increase due to the implementation of the CIP. As shown in Figure 3-2, while operation and maintenance expenses are projected to remain at current levels, adjusted for inflation, debt service costs and funds transferred to the Surplus Account (to be used for capital funding) are expected to increase dramatically over the planning period.

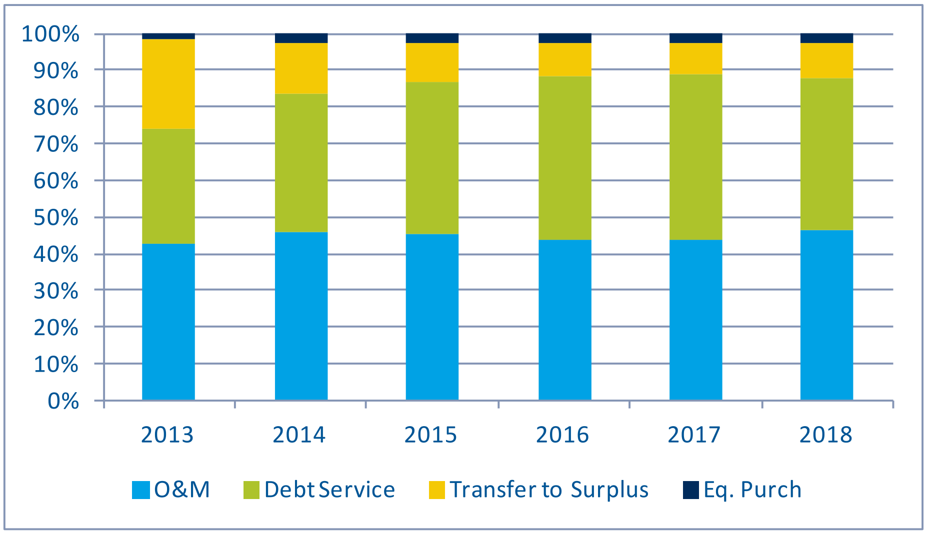

Figure 3-1 Breakdown of Annual Revenue Requirements

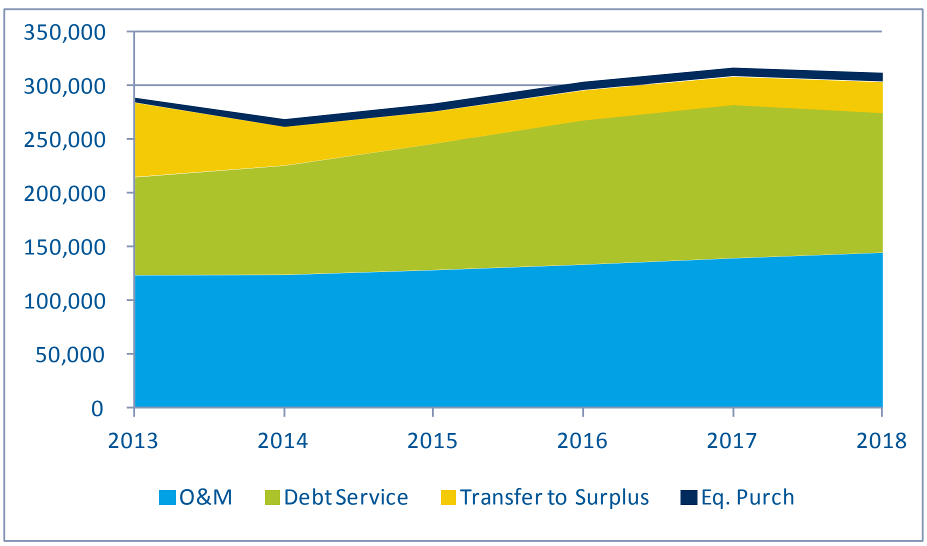

Figure 3-2 Summary of Annual Revenue Requirements

4 Impact of Funding a Program Contingency Fund

In addition to the Base Scenario described in Section 3 above, Black & Veatch, through discussions with District staff, also evaluated the impact of funding Program Contingency. Table 4-1 presents projected capital spending, including the addition of Program Contingency.

Table 4-1 Capital Improvement Program

No.	Description	Projected 2013	2014	2015	2016	2017	2018	Total Cost
		$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000
1	**OWDA Projects**	79,200	79,200	79,200	24,750	24,750	24,750	311,850
2	**Program Contingency**	0	8,800	12,400	10,000	9,000	4,500	44,700
3	**All Other CIP**	55,956	201,745	243,190	98,922	33,800	16,555	650,168
4	**Total Forecasted Capital Program**	**135,156**	**289,745**	**334,790**	**133,672**	**67,550**	**45,805**	**1,006,718**

The analysis assumes that Program Contingency would be funded directly from the Surplus Fund, and not through Fund 704/Construction Fund. As such, the sources and uses of funds for Fund 704, as shown in Table 3-3, is unchanged. However, revenue bond funding is projected to be greater than under the Base Scenario, due to the use of Surplus Funds for Program Contingency. Projected debt issuances under this scenario are shown in Table 4-2, and indicate a need for $524 million in revenue bonds and $315 million in low interest loans over the planning period.

Table 4-2 Existing and Projected Long-Term Debt Service

Line No.	Description	Issue Amount	Projected 2013	2014	2015	2016	2017	2018
		$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000
1	**Existing Revenue Bonds**		71,770	74,215	74,327	74,196	74,747	56,982
	Proposed Revenue Bonds							
2	2013 Series	124,000	2,057	6,119	6,119	6,119	6,119	6,119
3	2014 Series	60,000		1,846	4,429	4,429	4,429	4,429
4	2015 Series	245,000			7,536	18,087	18,087	18,087
5	2016 Series	75,000				2,307	5,537	5,537
6	2017 Series	20,000					615	1,476
7	2018 Series	0						0
8	Total Revenue Bonds	524,000	73,827	82,180	92,411	105,138	109,534	92,630
9	**Existing Other Debt (a)**		17,264	19,663	25,782	24,977	24,435	24,125
	Proposed Other Debt (a)							
10	2013 Series	80,000	0	0	465	5,578	5,578	5,578
11	2014 Series	80,000		0	0	465	5,578	5,578
12	2015 Series	80,000			0	0	465	5,578
13	2016 Series	25,000				0	0	145
14	2017 Series	25,000					0	0
15	2018 Series	25,000						0
16	Total Other Debt	315,000	17,264	19,663	26,247	31,020	36,056	41,004
17	**Total Debt Service**		91,090	101,843	118,658	136,158	145,590	133,634

(a) Includes OWDA, OPWC, WPCLF bonds, and Note Proceeds.

Table 4-3 presents the resulting pro forma operation statement or cash flow analysis.

Table 4-3 Estimated Revenues and Revenue Requirements under Increased Rates

Line No.	Description	Projected 2013	2014	2015	2016	2017	2018
		$1,000	$1,000	$1,000	$1,000	$1,000	$1,000
	Revenues:						
1	Revenue from Rates:						
2	Revenue from Existing Rates	247,216	242,146	240,021	238,742	238,040	237,591
3	Increased Revenue						
4	1/1/13 - 0.00%	0	0	0	0	0	0
5	1/1/14 - 6.00%		12,519	14,401	14,325	14,282	14,255
6	1/1/15 - 9.00%			19,730	22,776	22,709	22,666
7	1/1/16 - 9.00%				21,391	24,753	24,706
8	1/1/17 - 7.00%					18,082	20,945
9	1/1/18 - 5.00%						13,793
8	Total Revenue from Rates	247,216	254,665	274,153	297,234	317,866	333,957
10	Other Operating Revenues	4,352	4,352	4,352	4,352	4,352	4,352
11	Non Operating Revenues	4,156	3,924	3,847	3,808	3,808	3,921
12	Total Operating Revenues	255,724	262,941	282,352	305,394	326,026	342,231
	Revenue Requirements:						
13	O&M Expenses	123,426	123,800	128,231	133,306	139,230	144,409
14	Debt Service Requirements						
15	Existing Revenue Bonds	71,770	74,215	74,327	74,196	74,747	56,982
16	Proposed Revenue Bonds	2,057	7,964	18,084	30,942	34,787	35,648
17	Total Revenue Bonds	73,827	82,180	92,411	105,138	109,534	92,630
18	Other Existing Debt Obligations	17,264	19,663	25,782	24,977	24,435	24,125
19	Other New Debt Obligations	0	0	465	6,043	11,621	16,879
20	Total Debt Service	91,090	101,843	118,658	136,158	145,590	133,634
21	Annual Equipment Purchases	4,338	7,207	7,423	7,646	7,875	8,112
22	Transfer to Surplus Account	70,070	36,510	30,030	27,311	27,450	32,357
23	Total Revenue Requirements	288,925	269,360	284,342	304,421	320,145	318,512
24	Annual Net Balance	(33,201)	(6,419)	(1,990)	973	5,881	23,719
25	Cumulative Annual Balance	56,799	50,381	48,390	49,363	55,244	78,963
26	Minimum Required Operating Balance	20,289	20,351	21,079	21,913	22,887	23,738
	Debt Service Coverage:						
27	Net Revenue from Operations	132,298	139,141	154,121	172,088	186,796	197,822
28	Transfer to Surplus Account (b)	0	0	0	0	0	0
29	Connection Fee Revenue	2,110	2,110	2,110	2,110	2,110	2,110
30	Other Interest Income (c)	2,352	3,604	2,966	3,202	3,296	3,424
31	Revenue Available for Coverage	136,759	144,856	159,197	177,400	192,202	203,356
	Debt Service Coverage for:						
32	Revenue Bonds	185%	176%	172%	169%	175%	220%
33	*Minimum Required*	*125%*	*125%*	*125%*	*125%*	*125%*	*125%*
34	*MSD Policy*	*150%*	*150%*	*150%*	*150%*	*150%*	*150%*
35	Total Debt Service	150%	142%	134%	130%	132%	152%
36	*Minimum Required*	*110%*	*110%*	*110%*	*110%*	*110%*	*110%*
37	*MSD Policy*	*130%*	*130%*	*130%*	*130%*	*130%*	*130%*

(a) Beginning of year account balances at December 2012 represent unencumbered funds available to meet ongoing obligations of the sewer system.
(b) Equal to one-half of calculated transfer to Surplus Fund, based on current year revenues and expenses. Assumes approval of change to Trust Indenture to eliminate the inclusion of one-half of the calculated transfer to the Surplus Fund in the calculation of debt service coverage.
(c) Includes interest earnings on cash invested in the Bond Reserve and Surplus Fund accounts.

5 Conclusion

The results of this analysis indicate that a series of revenue increases are expected to be required from 2014-2018 to allow for continued proper funding of all District programs. The key drivers of required revenue increases are the impact of declining volume per customer and the implementation of the capital requirements outlined in proposed CIP, which includes Project Groundwork (Consent Decree mandated) projects as well as a commitment for a specified level of funding for Asset Management. However, revenue increases in 2015 and beyond may differ from those shown, and are dependent upon the capital costs required to meet the requirements of the consent decree and the timing of projects, as well as the source of funding of such projects.