



MSD

Metropolitan Sewerage District
of Buncombe County, North Carolina

2028 Riverside Drive
Asheville, NC 28804
Telephone: (828) 254-9646
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Thomas E. Hartye, General Manager
William Clarke, General Counsel

August 27th, 2019

System Performance Annual Report
North Carolina Division of Water Quality
1617 Mail Service Center
Raleigh, NC 27699-1617

M. Jerry VeHaun, Chairman
E. Glenn Kelly, Vice Chairman
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Dear Sirs,

Please find the three (3) enclosed copies of the System Performance Annual Report for the Metropolitan Sewerage District of Buncombe County, as required in the General Statute 143-215.1C. Public notification was published subsequent to the mailing of this letter on August 27th, 2019 in the Asheville Citizen-Times. Reference was made in the article to the viewing of the report on our website, www.msdbc.org, written request to the MSD, or by request by phone for a printed copy. An abbreviated report is also available to our customers. Please feel free to call me if you need any additional information.

Respectfully,

Metropolitan Sewerage District of Buncombe County, NC

By,

Thomas E. Hartye, P.E.
General Manager MSD

CC: Ms. Linda Wiggs

System Performance Annual Report
Fiscal Year 2019 (July '18 thru June '19)

I. General Information

Metropolitan Sewerage District of Buncombe County, NC
2028 Riverside Drive, William H. Mull Building
Asheville, North Carolina 28804

General Manager	Thomas E. Hartye, P.E.	(828) 254-9646
Director of Wastewater Reclamation Facility (WRF)	Roger Edwards (ORC)	(828) 225-8224
Operations Manager (WRF)	Dwayne Martin (ORC-Backup)	(828) 225-8204
Director of Technical Services (Collection System)	Ken Stines (ORC)	(828) 225-8244
Director of Construction (Collection System)	Mike Stamey, P.E. (ORC-Backup)	(828) 225-8262

Permit Numbers:

- NPDES Permit # NC0024911
- General Storm water Permit # NCG110000 COC # NCG110158
- Air Quality (WNCRAPCA) Title V Permit # 11-772-18
- Collection System # WQCS00004

II. Description of Facilities

A. Collection System- System Services Division

In the fiscal year of 2019 (FY19), the Metropolitan Sewerage District provided wastewater service to over 55,000 customers with an estimated population of 130,000. This large service area spans the French Broad River and Swannanoa River Valleys covering about 180 square miles of land. Pipes conveying the wastewater from homes and businesses form an extensive collection system operated and maintained by our System Services Division. With over 1,041 miles of public sanitary sewer lines, 30 pump stations and approximately 30,988 manhole access points; significant manpower and equipment is required. Pipes vary in size from 66" diameter large interceptors down to 6" serving residential communities. Most of the piping within the District is between 50 and 100 years old and requires continual upkeep and/or replacement.

B. Water Reclamation Facility (WRF)

The Water Reclamation Facility (WRF) is rated at 40 million gallons per day (MGD) capacity serving most of Buncombe County (Asheville, Biltmore Forest, Black Mountain, Montreat, Weaverville, Woodfin and part of northern Henderson County). In FY19 an average flow of 25.9 million gallons per day were treated with the majority coming from residences. For the year, 9.5 billion gallons were treated with more than one-third coming from Infiltration & Inflow (I&I). That's the industry term for groundwater seeping in from cracks in pipes and manholes or rainwater entering through manhole lids

and unauthorized Storm Water connections. The District has been aggressively working to abate this problem.

The design of our wastewater treatment system is called “attached growth” relying heavily on 152 rotating biological contactors (RBC’s) to do the bulk of treatment. These RBC’s provide over 400 acres (about 2.5 acres per unit) of surface area for microorganisms to grow upon. As the backbone of treatment these microorganisms do the heavy lifting providing the return of clean, safe water back to the French Broad River; our receiving stream. MSD’s facility is believed to be the largest RBC plant in the world. A detailed listing of our treatment system components is as follows;

Preliminary Treatment Components

- Influent Multi-rake Barscreens (2 units, ½ inch Bar Spacing, 40 MGD each) with screenings washer/compactor and shaftless screw conveyor
- Influent Pumps (3 units) - 35 MGD rated capacity each
- Perforated Plate Fine Screens (3 units, ¼ inch openings, 40 MGD each) with screenings washer/compactor
- Vortex Grit Removal (2 units rated at 50 MGD) - Removal Rate 95% of Grit > 140 Mesh
- Storm Surge System - Utilizes three pumps rated at 5MGD each and two storm surge tanks rated at 2.1 million-gallons each

Primary Treatment Components

- Primary Clarification - Chemically Enhanced Kruger ACTIFLO system (Under Construction as of March 2019. Completion expected by Spring 2021)

Secondary Treatment Components

- 1st Stage RBC’s (44 units)
- 2nd Stage RBC’s (72 units)
- 3rd Stage RBC’s (36 units)
- Intermediate Pumps (3 units) - pump water to clarifier from 3rd RBC stage
- Intermediate Clarifier (4 cells - total volume 2 MG)
- Microfiltration via AASI AquaDisk Units (16 units)

Disinfection Components

- Sodium Hypochlorite solution - average feed 1000 gallons/day at 6.5% solution strength

Residuals Handling Components

- Gravity Thickeners (2 units) - 100 foot-diameter each
- 2.5 Meter Belt Presses (2 units)
- Fluidized Bed Incinerator (2,561 dry pounds per hour)

Energy Management Components

- Two separate power circuits from Duke Energy for plant, with Automatic Transfer Switch if one fails
- 4-Megawatt total from three Diesel Generators (emergency backup power for WRF; will maintain full treatment processes during a power outage)
- 850 Kilowatt Hydro Turbines (3 units) - induction units (French Broad River source). These generate power using the District’s dam/flume. The power is sold back to Duke energy.

Automation Components

- SCADA (Supervisory Control and Data Acquisition) - full automated control of WRF

Sludge Management Plan

MSD utilizes its Fluidized Bed Incinerator as its primary residual management option. MSD also maintains an arrangement with the Buncombe County Landfill (lined) for emergencies. Presently the facility is managing 17-20 dry tons per day of residuals. The facilities are designed for 2,561 dry pounds per hour. Due to the lack of true primary clarifiers, most of the sludge generated at the facility is secondary in nature (i.e. sloughings from the RBC's).

Sludge is thickened in on-site gravity thickeners to a consistency of 2-5% solids at which time it is then pumped to the 2 1/2-meter belt presses. These units dewater the sludge to over 22% solids and then it is pumped to the incinerator. Air emissions from the incinerator are of excellent quality. Recent air emissions testing place removal efficiency of the air scrubbers at 99+% for regulated parameters, and air quality is further enhanced by a new filtration system added in 2016. Incinerator ash is thickened on-site via a gravity ash thickener and then pumped to an on-site lagoon. Groundwater is monitored in accordance with NCDEQ requirements (up & down gradient).

The incinerator system provides the most cost-effective method for sludge management. Supplementary fuel is sometimes required due to the 22% solids content - natural gas via Dominion Energy (formerly PSNC Energy) is utilized for this purpose.

MSD also maintains an agreement with the local county landfill (lined) to dispose of dewatered sludge during emergency and/or maintenance activities. This provides a second residuals management alternative, when or if needed.

III. Improvements to Facilities

A. Collection System Improvements

MSD assumed ownership and maintenance of the various local public collection systems in 1990, and since that time MSD has undertaken an aggressive program to correct existing known collection system problems. Between 1990 and 2019, over 1,261,996 linear feet (or 239 miles) of pipe have been replaced and over \$397 million has been re-invested in plant and collection system rehabilitation projects. However, due to the large size of the MSD system, there is much work still to be done. From FY 2020 to FY 2029, the District expects to rehabilitate or replace an additional 414,491 linear feet.

Approximately \$332 million will be spent for the District's Capital Improvement Program (CIP) over the next ten years. Of this, 26% will be spent on rehabilitating medium to large interceptors, 38% on rehabilitating or replacing small collection lines, and 35% on the treatment plant and pump station projects. The total estimated cost to rehabilitate the District's aged collection system and WRF facilities over the next twenty-year period is estimated at over \$460 million.

MSD's Pipe Rating Program is used to objectively prioritize rehabilitation projects throughout the regional collection system. This published, award winning program utilizes the District's Geographic Information System (GIS) and database software to collect rating data for each project. The data include SSO & overflow history, customer service requests, proximity to streams/waterways, structural condition, and monitoring/maintenance schedules by MSD staff. A priority rating is then generated for each project, which is used to prioritize the ten-year CIP.

MSD maintains an aggressive Preventative Maintenance Program whereby approximately 900,250 lineal feet (or about 170 miles) of sewer lines were cleaned by high pressure water jetting equipment. In addition, over 88,350 linear feet of sewer lines are mechanically treated to remove tree roots and blockages. MSD also maintains its Rights-of-Way to ensure access to the system for cleaning and maintenance activities. During FY 2019 over 94,100 ft. were cleared.

Collection System, System Services Division Performance Measures

- The District has an aggressive Preventative Maintenance program of high-pressure cleaning and root control. This year over 988,600 lineal feet (or 187 miles) of pipeline was treated by MSD in this way; approximately 18% of the 1,041 miles of the system.
- System Services division completed and submitted to NCDEQ-DWR two six-month High Priority Line Inspection Reports. The High Priority Line report documents inspection of aerial lines, siphons and lines in proximity to vulnerable creeks and streams.
- The collection system recorded 40 sanitary sewer overflows (SSO's). All SSO's were remediated according to the District's standard operating procedures for sanitary sewer overflow cleanup and no severe environmental impact occurred.

Attachments

(These documents are in Adobe Acrobat format.)

- [Customer Service response times](#)
- [Pipeline Maintenance totals](#)
- [SSO Report - monthly](#)
- [Construction totals \(In System Services Division\)](#)
- [SSO's per 100 miles of sewer chart for FY19](#)
- [Performance measures SSO chart](#)

B. Water Reclamation Facility Improvements

Recently completed or underway facility projects include the following;

- Plant Headworks Project: This is the first recommended project from the Water Reclamation Facility Plan and is now complete. It is comprised of new Bar Screens at the Influent Pump Station, New Fine Screens and Grit Removal, and the re-use of existing abandoned tanks to provide a surge system for better treatment during high-flow storm events.
- High Rate Primary Treatment Project: This is the second project recommended by the Water Reclamation Facility Plan. This \$17.0 million project will provide high-rate primary clarification and will help the plant's Rotating Biological Contactor system perform at a higher level and be better equipped to meet future regulations. Construction is currently underway, and completion is expected by Spring 2021.

Water Reclamation Facility (WRF) Performance Measures

During the FY19 annual reporting period, high performance measures were again achieved. The WRF continues to provide effective/efficient treatment services to the community averaging wastewater CBOD & TSS removal efficiencies of 92% and 95% respectively (state permit requires a minimum of 85% removal rates for compliance). The volume of flow to the WRF continues to remain well below hydraulic capacity for the plant averaging 25.9 million gallons per day. The WRF remains in compliance for all permitted parameters and receives favorable reviews by NC Department of Environmental Quality and the WNC Regional Air Quality Agency.

MSD maintains a service contract agreement with Pace Analytical, Inc. (NC certified lab). This agreement incorporates the exchange of full laboratory testing services for use of the existing laboratory space. This progressive opportunity continues to yield significant long-term savings to MSD. Also, the WRF successfully participated in surveillance audits regarding ISO14001 certification – coming through with

zero (0) non-conformances. This program, also referred to as an Environmental Management System, continues to provide significant benefits to MSD both in the short & long-term.

Task	FY17	FY18	FY19
1. Daily (average) flow, treated MGD	19.5	20.8	25.9
2. Maximum daily flow treated, MGD	53.0	64.8	67.5
3. Dry tons of bio-solids processed	6,523	7,280	7,212
4. Cost per million gallons (MG), treated	\$767	\$718	\$554
5. Energy costs per MG, treated	\$117	\$121	\$107
6. Carbonaceous biochemical oxygen demand (CBOD) removal, %	94%	95%	92%
7. Total suspended solids (TSS) removal efficiency, %	97%	97%	95%
8. Number of NPDES permit non-compliance	0	1	3
9. Preventative to corrective maintenance ratio	70:30	70:30	70:30

Attachments

(These documents are in Adobe Acrobat format.)

- Plant location map with contours
- Schematic of Wastewater Reclamation Facility
- Water Reclamation Facility site
- WRF performance chart
- WRF pollutant removals
- Biosolids production
- Air emissions

IV. Certification

I certify under penalty of law that this report is complete and accurate to the best of my knowledge. I further certify that this report has been made available to the users and customers of the MSD system and that those users have been notified of its availability.



Thomas E. Hartye, P.E.

General Manager
Metropolitan Sewerage District of Buncombe County, NC

August 27, 2019

If you would like a hard copy or more information...

Write to webmaster@msdbc.org



CUSTOMER SERVICE REQUESTS

Monthly - All Crews

CREW	MONTH	JOBS	AVERAGE RESPONSE TIME	AVERAGE TIME SPENT
DAY 1ST RESPONDER				
	July, 2018	97	20	35
	August, 2018	127	28	30
	September, 2018	75	21	40
	October, 2018	94	25	35
	November, 2018	76	28	35
	December, 2018	117	30	41
	January, 2019	107	28	42
	February, 2019	118	31	36
	March, 2019	135	23	35
	April, 2019	143	29	35
	May, 2019	114	25	40
	June, 2019	97	22	45
		1,300	26	37
NIGHT 1ST RESPONDER				
	July, 2018	11	17	25
	August, 2018	19	15	23
	September, 2018	13	21	20
	October, 2018	20	28	22
	November, 2018	20	29	33
	December, 2018	12	22	25
	January, 2019	23	28	27
	February, 2019	18	22	25
	March, 2019	19	29	18
	April, 2019	24	29	34
	May, 2019	16	24	22
	June, 2019	16	23	31
		211	24	26
ON-CALL CREW *				
	July, 2018	44	46	54
	August, 2018	37	41	40

* On-Call Crew Hours: 8:00pm-7:30am Monday-Friday, Weekends, and Holidays



CUSTOMER SERVICE REQUESTS

Monthly - All Crews

CREW	MONTH	JOB	AVERAGE RESPONSE TIME	AVERAGE TIME SPENT
ON-CALL CREW *				
	September, 2018	31	34	44
	October, 2018	38	51	38
	November, 2018	42	58	53
	December, 2018	49	39	30
	January, 2019	59	41	31
	February, 2019	48	52	36
	March, 2019	51	41	50
	April, 2019	69	49	35
	May, 2019	31	50	29
	June, 2019	38	62	40
		537	47	40
Grand Totals:		2,048	31	37

* On-Call Crew Hours: 8:00pm-7:30am Monday-Friday, Weekends, and Holidays



PIPELINE MAINTENANCE TOTALS BY DATE COMPLETED - Monthly

July 01, 2018 to June 30, 2019

	Main Line Wash Footage	Service Line Wash Footage	Rod Line Footage	Cleaned Footage	CCTV Footage	Smoke Footage	SL-RAT Footage
2018							
July	78,545	1,208	693	79,238	23,634	0	1,683
August	67,431	1,082	1,765	69,196	35,905	35,328	23,056
September	61,707	856	8,164	69,871	17,818	300	12,942
October	94,807	1,141	11,984	106,791	19,250	10,504	4,765
November	85,234	1,974	8,074	93,308	14,766	24,371	3,595
December	47,029	1,200	2,758	49,787	16,156	38,524	0
2019							
January	88,137	2,254	6,458	94,595	14,037	28,090	20,459
February	67,560	2,788	6,961	74,521	15,221	500	3,631
March	60,919	2,593	8,146	69,065	19,758	2,300	5,960
April	98,295	1,695	7,314	105,609	20,464	5,051	20,776
May	85,082	2,057	13,136	98,218	30,062	1,700	41,391
June	65,503	1,434	12,901	78,404	27,098	2,000	15,314
Grand Total:	900,249	20,282	88,354	988,603	254,168	148,668	153,572
Avg Per Month:	75,021	1,690	7,363	82,384	21,181	12,389	12,798



SSO Report - Monthly

From 7/1/2018 to 6/30/2019

	SSO Count	AVG Response Time (min.)	AVG SSO Volume (gal.)	AVG Surface Volume (gal.)	Spills >= 1000 Gallons	Spills >= 15,000 Gallons	Total SSO Volume (gal.)	Total Surface Volume (gal.)
July, 2018	1	16	900	900	0	0	900	900
August, 2018	4	15	570	570	1	0	2,280	2,280
September, 2018	3	13	140,132	140,132	1	1	420,397	420,397
October, 2018	1	25	630	300	0	0	630	300
November, 2018	1	67	8,000	8,000	1	0	8,000	8,000
December, 2018	11	23	4,458	4,430	8	0	49,033	48,725
January, 2019	2	12	310	300	0	0	620	600
February, 2019	3	60	11,864	11,800	1	0	35,592	35,400
March, 2019	3	15	394	250	0	0	1,183	750
April, 2019	8	33	4,586	4,571	5	0	36,684	36,564
May, 2019	2	21	703	575	0	0	1,405	1,150
June, 2019	1	14	303	303	0	0	303	303
Grand Totals:	40	21	13,926	13,884	17	1	557,027	555,369



CONSTRUCTION TOTALS BY DATE COMPLETED - Monthly

From 7/1/2018 to 6/30/2019

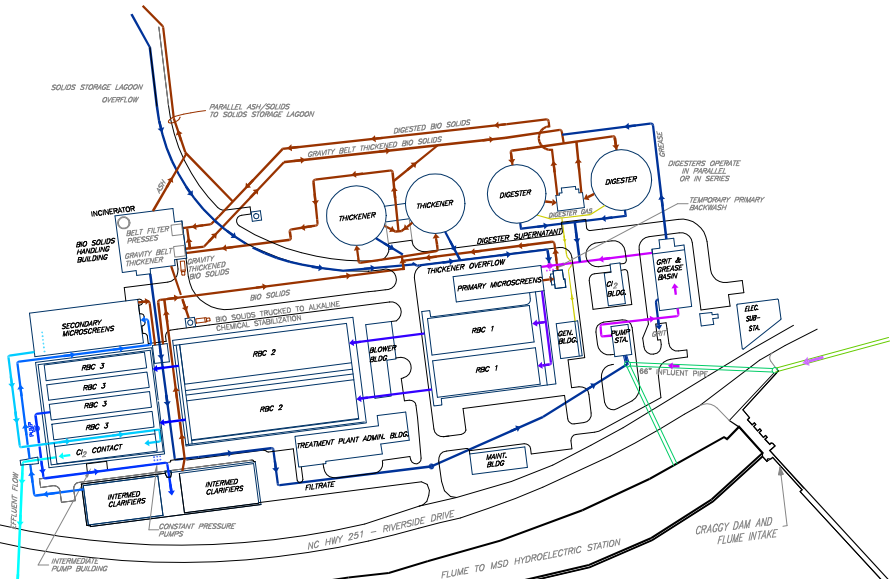
	Dig Ups	Emergency Dig Ups	Dig Up ML Ftg	Dig Up SL Ftg	Manhole Repairs	Taps Installed	Creek Crossings Cleared	ROW Ftg	Service Line Bore Ftg	Service Line Burst Ftg
July 2018	27	8	99	986	23	39	0	4,335	0	0
August 2018	25	8	104	1,238	24	41	4	17,360	0	0
September 2018	23	8	171	974	21	36	1	470	0	0
October 2018	37	9	256	614	46	28	0	2,630	120	0
November 2018	24	15	54	416	16	8	0	2,377	0	0
December 2018	23	7	41	578	20	15	0	1,220	0	0
January 2019	23	13	105	539	19	15	2	1,340	35	78
February 2019	38	20	120	1,033	5	25	0	80	100	0
March 2019	40	9	136	1,107	22	34	0	624	80	45
April 2019	35	15	85	852	39	28	1	6,091	183	0
May 2019	39	13	284	991	27	36	1	32,250	193	300
June 2019	25	9	296	621	24	19	1	5,843	25	0
Grand Total	359	134	1,750	9,949	286	324	10	74,620	736	423



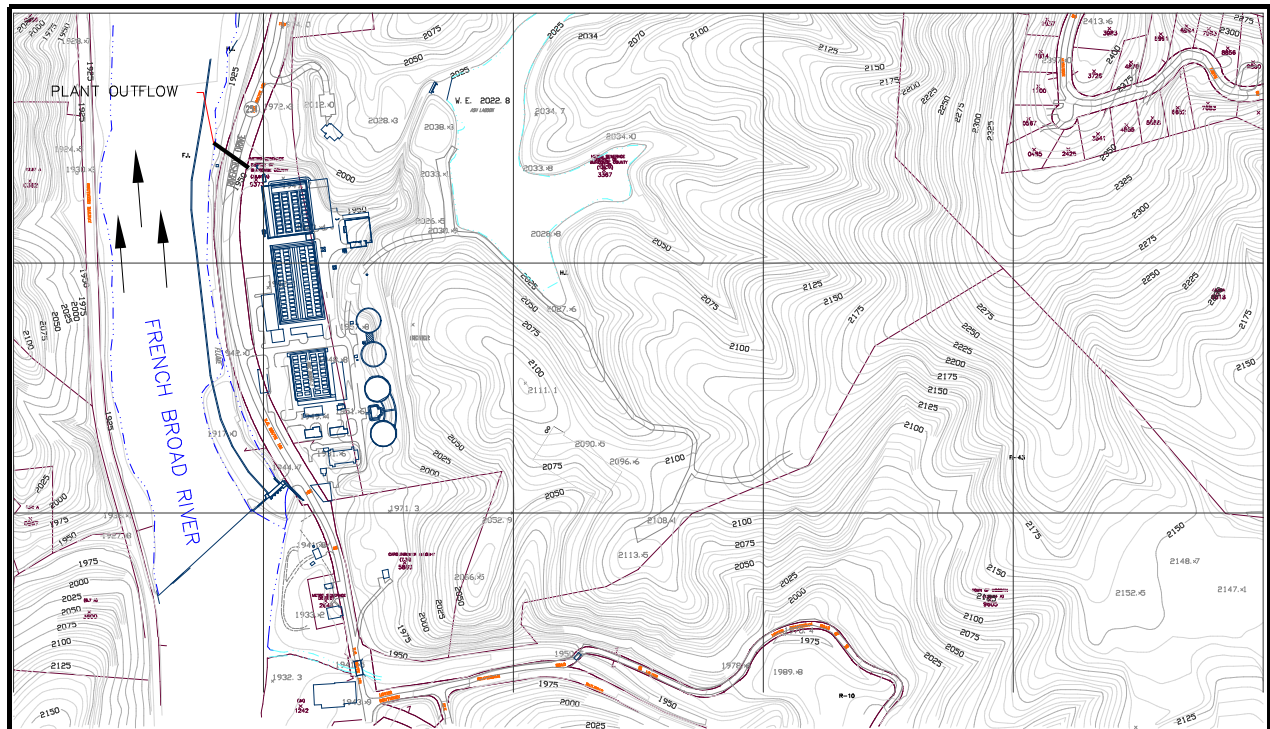
CONSTRUCTION REHAB TOTALS BY DATE COMPLETED - Monthly

From 7/1/2018 to 6/30/2019

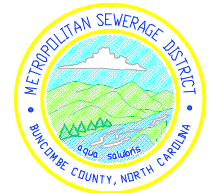
	# IRS Repairs	IRS Ftg	IRS Accept Ftg	Const Ftg	Const Accept Ftg	# D-R	D-R Ftg	#MH	Mainline PB Ftg	Mainline Bore Ftg	Total Rehab Ftg
July 2018	0	0	0	156	321	3	660	19	185	227	1393
August 2018	0	0	0	495	677	3	968	12	0	576	2221
September 2018	0	0	0	216	216	2	1317	11	0	0	1533
October 2018	0	0	0	205	205	2	916	9	145	362	1628
November 2018	0	0	0	514	514	2	287	2	0	0	801
December 2018	0	0	0	0	0	2	1452	10	0	0	1452
January 2019	0	0	0	44	68	2	1400	8	0	0	1468
February 2019	0	0	0	192	192	1	253	2	0	0	445
March 2019	0	0	0	0	0	2	2206	27	0	178	2384
April 2019	0	0	0	0	0	4	3775	6	0	0	3775
May 2019	0	0	0	16	16	0	8	2	129	0	153
June 2019	0	0	0	0	0	1	3670	1	0	0	3670
Grand Totals	0	0	0	1838	2209	24	16912	109	459	1343	20923

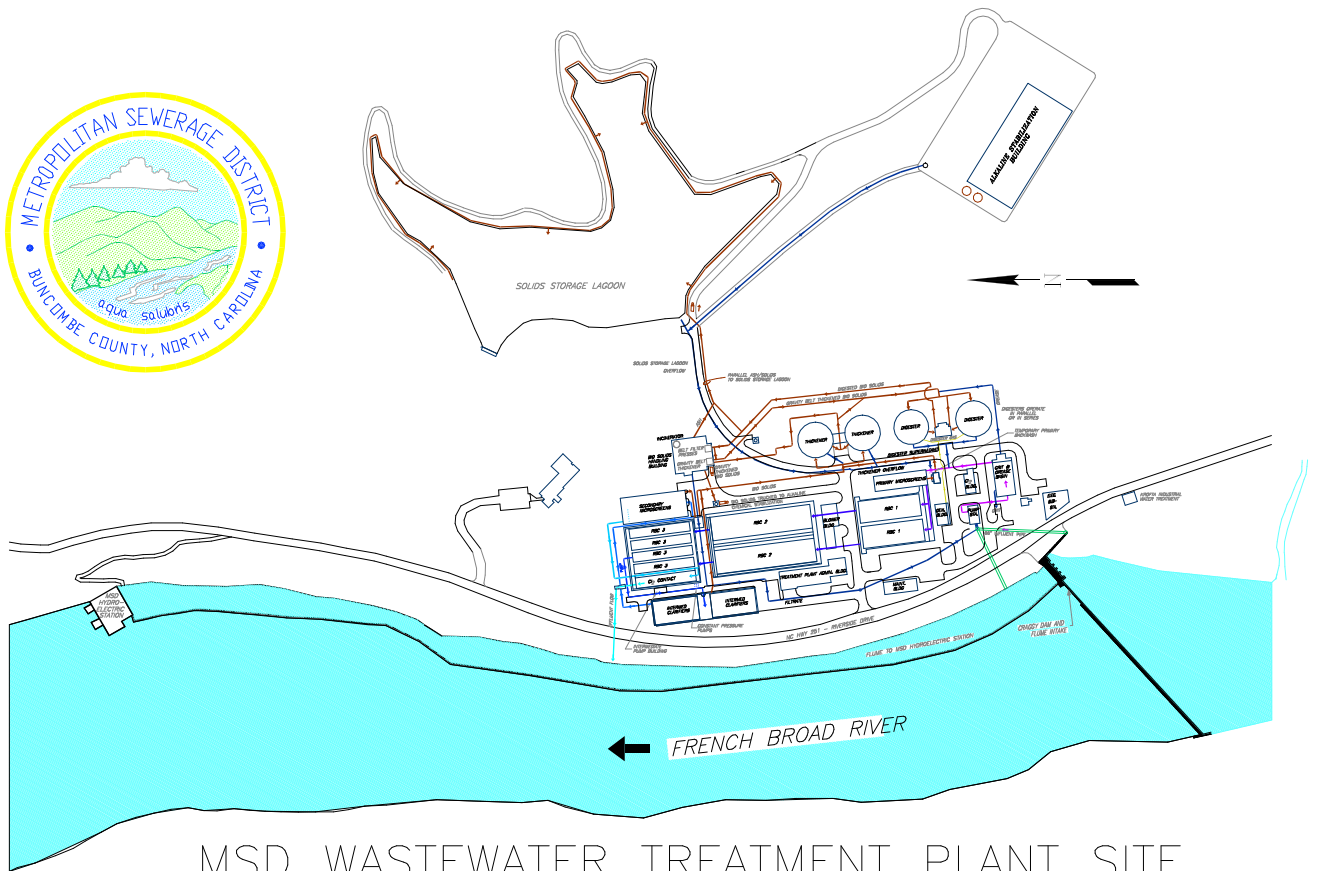
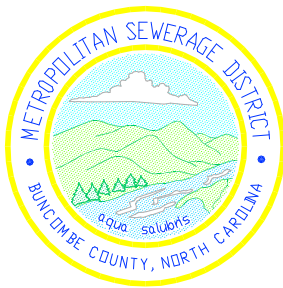


Treatment Plant Wastewater Flow



PLANT LOCATION
NOT TO SCALE

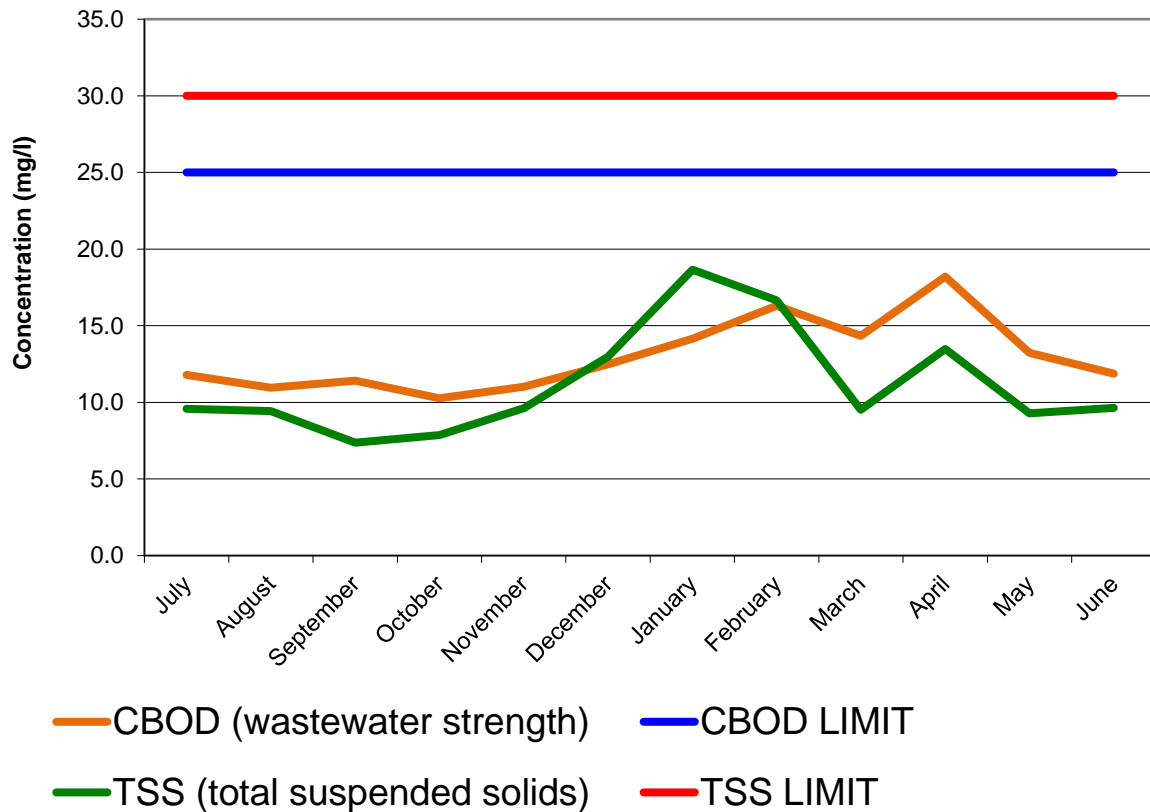




MSD WASTEWATER TREATMENT PLANT SITE
NOT TO SCALE

Month	CBOD (wastewater strength)	CBOD LIMIT	TSS (total suspended solids)	TSS LIMIT
July	11.8	25	9.6	30
August	11.0	25	9.4	30
September	11.4	25	7.4	30
October	10.3	25	7.9	30
November	11.0	25	9.6	30
December	12.5	25	13.0	30
January	14.1	25	18.7	30
February	16.3	25	16.6	30
March	14.3	25	9.5	30
April	18.2	25	13.5	30
May	13.2	25	9.3	30
June	11.9	25	9.6	30
Average	13.0		11.2	

Wastewater Reclamation Facility Performance in FY19



Month	INF CBOD	EFF CBOD	% Removal	Req'd % Removal
July	204.2	11.8	94%	85%
August	152.0	11.0	93%	85%
September	157.3	11.0	93%	85%
October	143.4	10.3	93%	85%
November	147.4	11.0	93%	85%
December	148.5	12.5	92%	85%
January	135.0	14.1	90%	85%
February	165.7	16.3	90%	85%
March	197.1	14.3	93%	85%
April	185.6	18.2	90%	85%
May	189.5	13.2	93%	85%
June	189.7	11.9	94%	85%

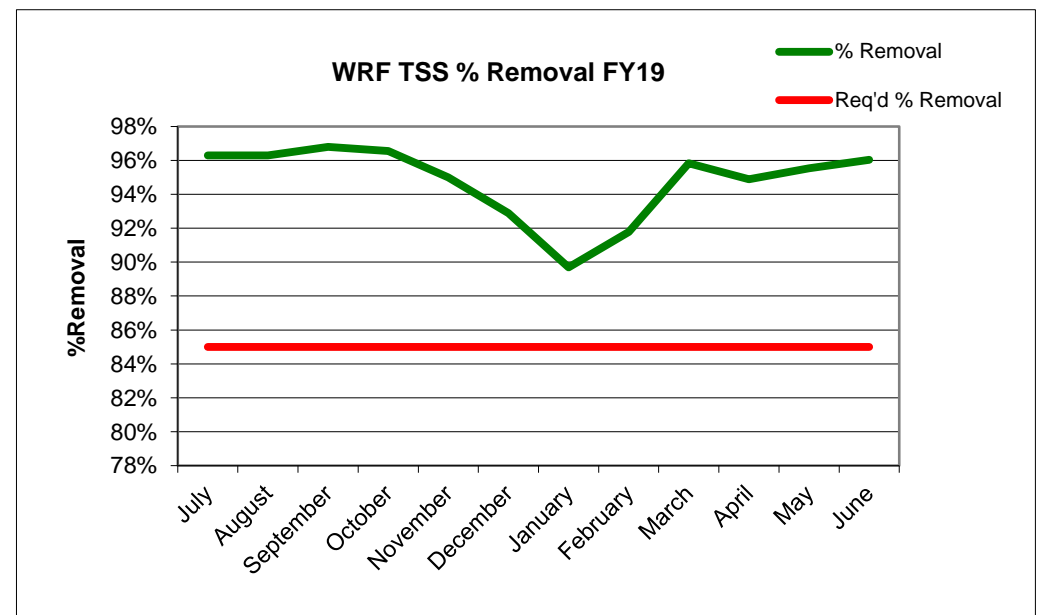
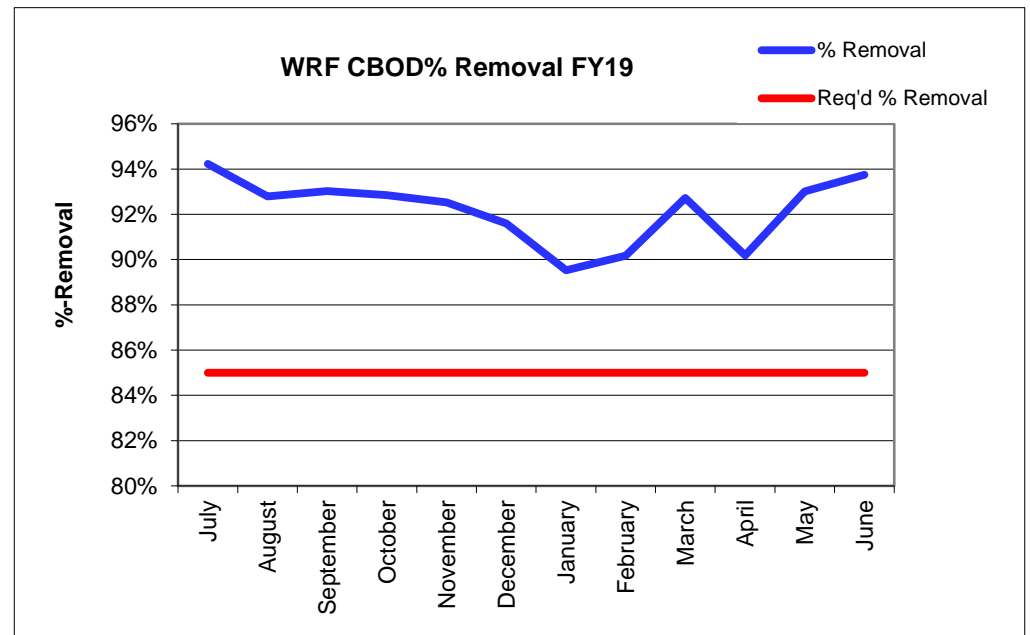
Average 167.9 13.0

% Removal 92%

Month	INF TSS	EFF TSS	% Removal	Req'd % Removal
July	258.8	9.6	96%	85%
August	255.3	9.4	96%	85%
September	230.1	7.4	97%	85%
October	228.3	7.9	97%	85%
November	192.3	9.6	95%	85%
December	182.7	13.0	93%	85%
January	181.0	18.7	90%	85%
February	202.7	16.6	92%	85%
March	227.9	9.5	96%	85%
April	263.2	13.5	95%	85%
May	208.4	9.3	96%	85%
June	243.2	9.6	96%	85%

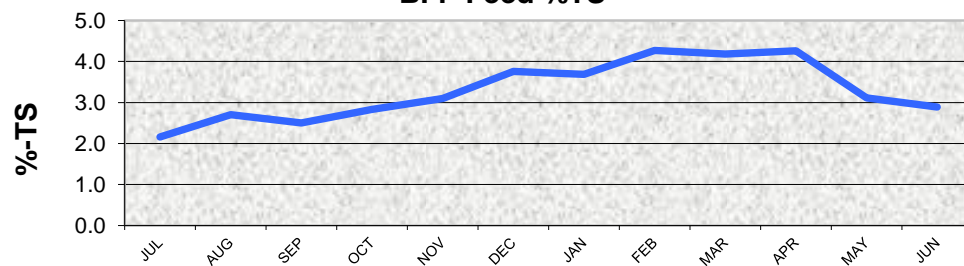
Average 222.8 11.2

% Removal 95%

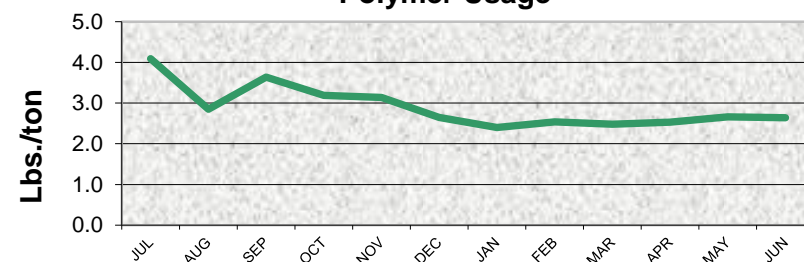


FY19 Biosolids Management	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Yearly Totals	Average per month	Units
Feed Solids	2.2	2.7	2.5	2.8	3.1	3.8	3.7	4.3	4.2	4.3	3.1	2.9		3.3	%-TS
Cake Solids	19.3	20.1	19.4	20.5	20.4	21.5	21.6	22.8	21.9	23.1	20.9	20.9		21.0	%-TS
Polymer - Lbs./ton	4.1	2.9	3.6	3.2	3.1	2.7	2.4	2.5	2.5	2.5	2.7	2.6		2.9	Lbs./Ton
Polymer - Total Lbs.	2,618	1,732	2,074	1,758	1,752	1,569	1,301	1,504	1,698	1,766	1,670	1,459	20,901	1,742	Lbs./Mth
Dry Tons Burned	640	608	570	551	554	592	542	592	685	698	628	553	7,212	601	Dry Tons
Hours Burned	692	651	620	617	604	610	582	569	664	687	628	613	7,537	628	Hours
Burn Rate - lbs/hr	1,850	1,867	1,838	1,786	1,834	1,941	1,863	2,081	2,063	2,032	1,999	1,804		1,913	lbs/hour
Natural Gas - MCF	3.90	3.90	3.60	2.10	3.20	2.60	2.60	1.71	2.13	2.19	2.70	3.00	33.63	2.80	MCF
Dry Tons - Landfill													-		Dry Tons
Wet Tons - Scales													-		Wet Tons

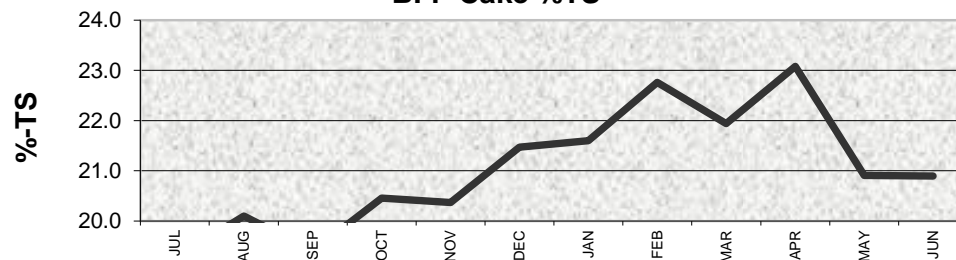
BFP Feed %-TS



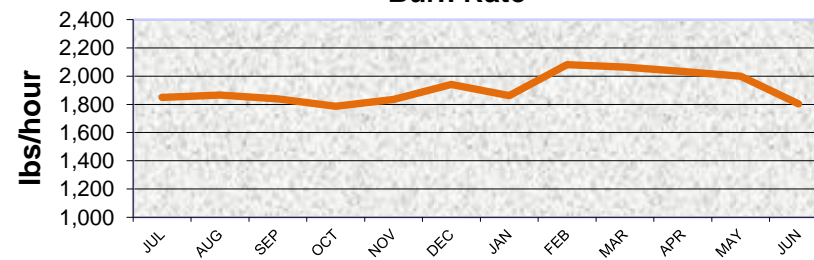
Polymer Usage



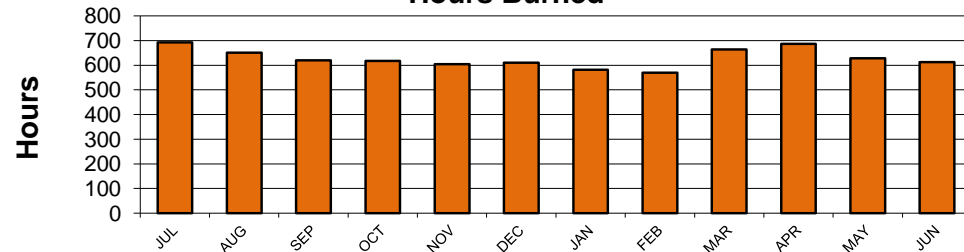
BFP Cake %-TS



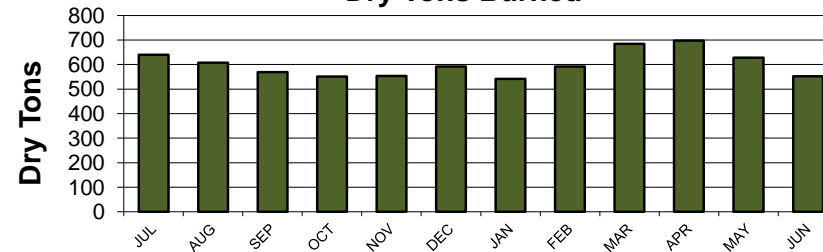
Burn Rate



Hours Burned

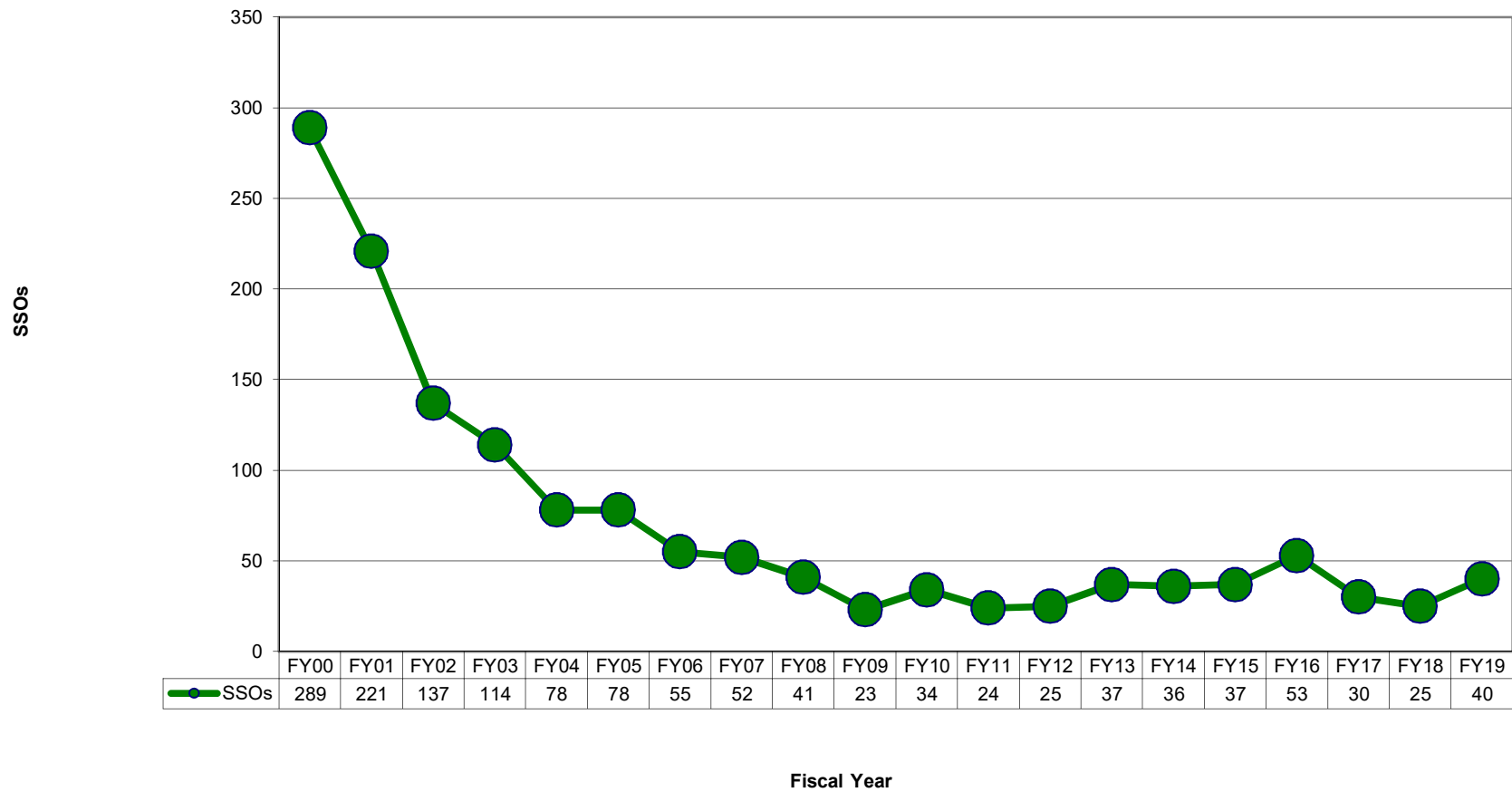


Dry Tons Burned

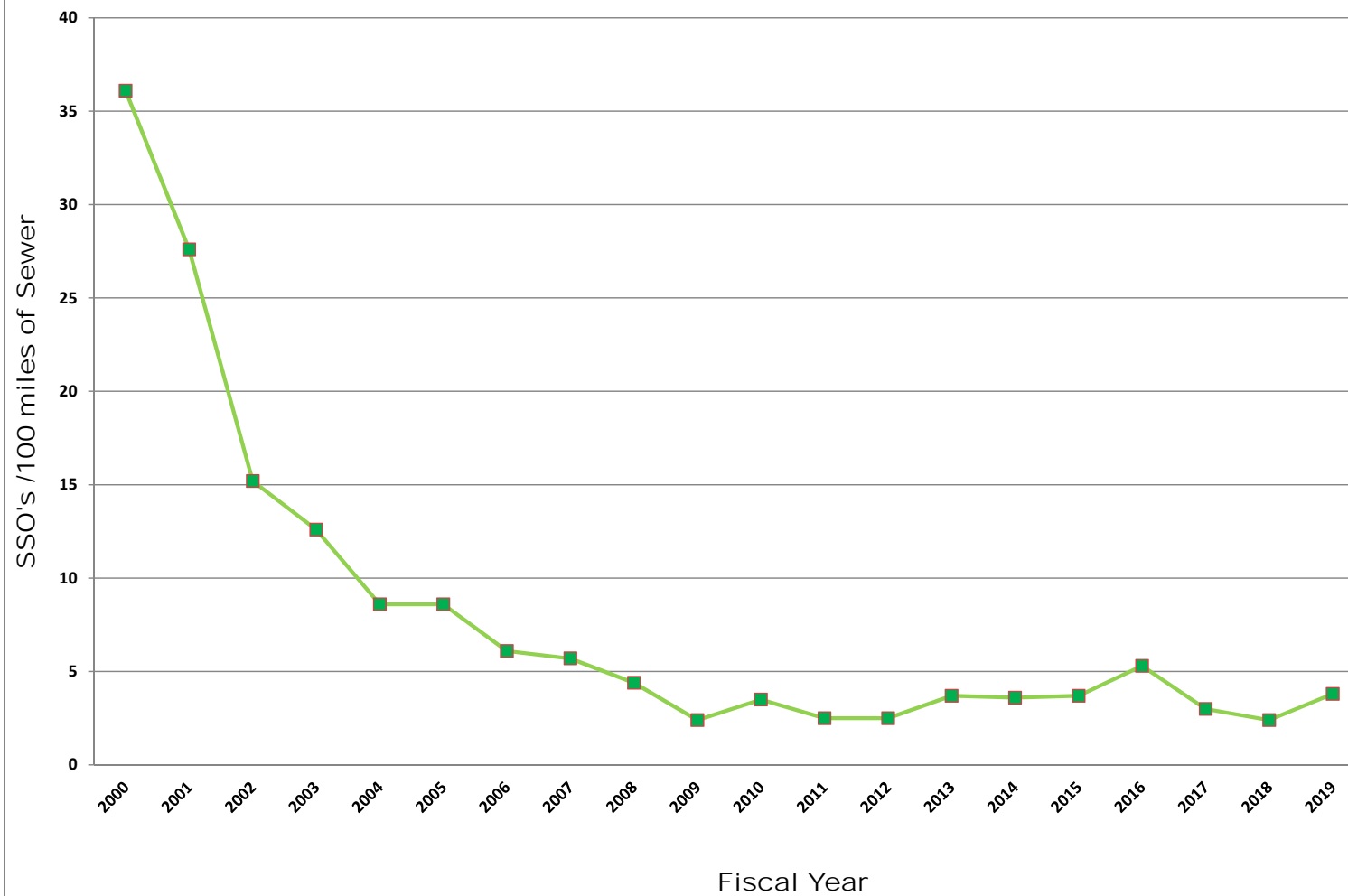


METROPOLITAN SEWERAGE DISTRICT				AIR EMISSIONS DATA 2016															
B.F.P. SLUDGE METALS DATA	Removal Efficiency	RSC ug/M3	LIMITS Mg/Kg	2018				dispersion factor = 245				2019							
				JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN				
ARSENIC	99.83%	0.023	298	<4.8	<4.2	<3.1	<4.7	<4.2	<4.5	<2.3	<5.8	<4.0	<3.2	<4.8	<4.5				
BERYLLIUM	99.83%			<0.48	<0.42	<0.31	<0.47	<0.42	<0.45	<0.23	0.58	<0.40	0.33	<0.48	<0.45				
CADMIUM	99.89%	0.057	1,142	0.78	0.75	0.93	0.69	0.93	0.74	0.62	1.70	0.86	0.83	0.77	0.91				
CHROME	99.85%	0.65	9,551	26.8	36.7	45.7	21.2	29.7	22.6	24.5	46.3	21.4	24.5	33.3	33.1				
COPPER	99.99%			197	251	255	187	204	165	164	307	164	164	235	208				
NICKEL	99.83%	2.0	23,201	36.6	36.3	40.9	23.4	32.0	28.9	33.2	64.5	28.9	28.7	20.4	30.9				
LEAD	99.81%	0.015	3,306	20.5	25.5	25.9	17.8	22.2	19.4	24	50.0	12.9	20.7	39.5	25.0				
ZINC	99.99%			938	1030	1150	825	936	836	822	1420	821	1030	1360	1050				
MERCURY	25%			0.23	0.31	0.310	0.100	0.250	0.250	0.410	0.041	<0.024	0.390	0.360	0.270				
				average												0.266			
PRESSURE DROP	Venturi & Tray Scrubber			25/40	25/39	25/39	25/39	25/39	25/39	25/39	25/39	25/38	27/39	27/39	26/40	26/40			
OXYGEN	In Stack Gas			10.7	10.8	11.1	10.8	11.0	11.2	11.1	10.9	11.1	11.1	10.7	10.9				
CARBON MONOXIDE	In Stack Gas			1.4	1.5	2.8	3.1	3.7	3.2	3.5	1.9	1.5	0.6	0.5	0.5				
COMBUSTION TEMP.	A-Probe Freeboard			1525	1528	1522	1529	1525	1529	1531	1536	1535	1532	1530	1532				
TONS BURNED				640	608	570	551	554	592	542	592	685	698	628	553				
HOURS OPERATED				692	651	620	617	604	610	582	569	664	687	628	613				
note - Lead limit is derived from NAAQS of 1.5ug/M3														Daily Averages		Annual Totals			
note - dispersion factor & limits changed per 2009 emission testing & associated dispersion modeling (cooler exhaust gas temperature)														19.8		7,212		Tons	
														20.7		7,537		Hours	

Sanitary Sewer Overflows



Number of SSO's/100 miles of Sewer



PUBLIC NOTICE
THE MSD SYSTEM PERFORMANCE ANNUAL REPORT
IS AVAILABLE

Metropolitan Sewerage District of Buncombe County

The Metropolitan Sewerage District of Buncombe County notifies the public that a summary of the System Performance Annual Report (SPAR) is now available on our website; www.msdbc.org

This informative report summarizes the fiscal year July 1, 2018 through June 30, 2019 with basic descriptions, achievements, effluent and emissions data, charts and maps.

This document is available by request by calling 254-9646.

Please ask for the SPAR 2019 Report.