

City of Dayton

Wastewater Treatment Plant

Permit No. WA0020729

Annual Treatment Facility Review Report (Wasteload Assessment)

Reporting Year:

From:

1/1/2022

To:

12/31/2022

Design Parameters:

Max monthly design flow (dry):	0.75	mgd
Max monthly design flow (wet):	0.75	mgd
Peak daily design flow:	2.25	mgd
Ave Month Design Influent BOD loading:	850	lbs/day
Ave Month Design Influent TSS loading:	1,200	lbs/day

Design Population Equivalent:	2,720
Present Population Served:	2,750
Projected Population growth:	22%

Compliance with effluent permit limitation?
☒ Yes ☐ No

Table 1, Influent Monthly Average Loading & Peak Daily Flow (From Monthly DMR) Highlighted value = Max

Month	Avg flow (mgd)	Peak flow (mgd)	BOD (lbs/day)	TSS (lbs/day)
January	0.259	0.409	289	293
February	0.264	0.395	530	410
March	0.264	0.314	373	313
April	0.268	0.329	317	332
May	0.319	0.382	291	342
June	0.326	0.466	415	482
July	0.240	0.266	359	335
August	0.214	0.249	349	332
September	0.208	0.222	377	358
October	0.213	0.267	427	415
November	0.238	0.280	382	328
December	0.244	0.338	415	376

Table 2, Maximum Influent Monthly Average Loading (Highest Month)

	Month	Max Monthly Average Value	Design Capacity	% Design Capacity	Previous year Max Monthly Avg value	% Increase / Decrease
Dry Weather Flow MGD	June	0.3258	0.7500	43.44%	0.2132	52.82%
Wet Weather Flow MGD	April	0.2679	0.7500	35.72%	0.3347	-19.94%
Peak Flow MGD	June	0.4662	2.2500	20.72%	0.3347	39.29%
BOD (lbs/day)	February	530	850	62.38%	470	12.82%
TSS (lbs/day)	June	482	1,200	40.15%	509	-5.34%

Table 3, Maximum Monthly Average Data for the Last Three Years

Year	Flow (mgd)	BOD (lbs/day)	TSS (lbs/day)
2022	0.326	530	482
2021	0.257	470	509
2020	0.466	458	487

Estimated year when the design capacity is projected to be reached:

Flow = Based on last 14 year trends, 2100+
BOD = 2050
TSS = 2050

Design Capacity Graphs

Table 4: Max month Flow Data

Year	max month avg Flow, mgd	design cap, mgd
2022	0.326	0.75
2021	0.257	0.75
2020	0.446	0.75
2019	0.395	0.75
2018	0.316	0.75
2017	0.403	0.75
2016	0.291	0.75
2015	0.285	0.75
2014	0.313	0.75
2013	0.444	0.75
2012	0.434	0.75
2011	0.383	0.75
2010	0.307	0.75
2009	0.466	0.75
2008	0.306	0.75
2007	0.327	0.75
2006	0.334	0.75
2005	0.364	0.75
2004	0.292	0.75
2003	0.376	0.750

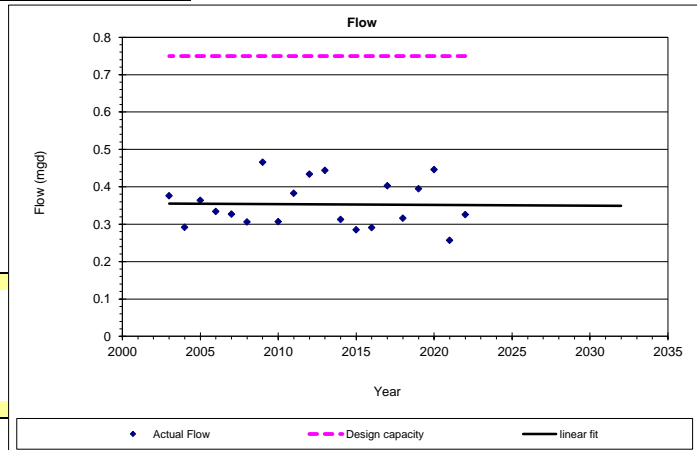


Table 5: Max month BOD Data

Year	max month avg BOD, lbs/day	design cap, lbs/day
2022	530	850
2021	470	850
2020	458	850
2019	1,209	850
2018	742	850
2017	796	850
2016	662	850
2015	534	850
2014	700	850
2013	626	850
2012	590	850
2011	530	850
2010	655	850
2009	606	850
2008	632	850
2007	582	850
2006	334	850
2005	727	850
2004		850
2003	456	850

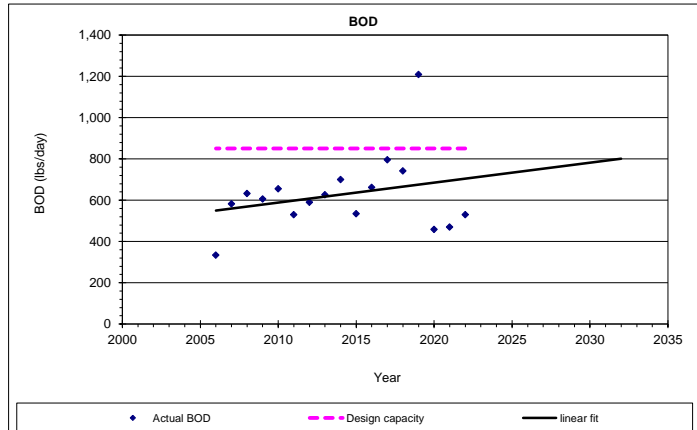
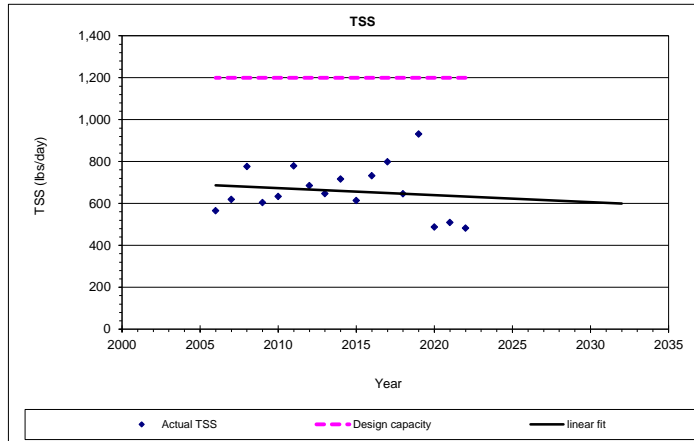


Table 6: Max month TSS Data

Year	max month avg TSS, lbs/day	design cap lbs/day
2022	482	1,200
2021	509	1,200
2020	487	1,200
2019	931	1,200
2018	646	1,200
2017	799	1,200
2016	732	1,200
2015	614	1,200
2014	716	1,200
2013	647	1,200
2012	685	1,200
2011	779	1,200
2010	633	1,200
2009	604	1,200
2008	776	1,200
2007	619	1,200
2006	565	1,200
2005	470	1,200
2004		1,200
2003	516	1,200



EFFLUENT QUALITY SECTION--Permit Limits

Parameter	Monthly Avg. Units	Monthly Avg. Limit Lb.	Weekly Avg. Units	Weekly Avg. Limit Lb.
Flow (mgd)	0.75			
BOD, mg/L	30	173	45	259
TSS, mg/L	30	188	45	281
Fecal Coliform (cfu/100 mL)	200		400	
pH max	8.5			
pH min	6.5			
Temperature °C Max				
NH ₃ -N, mg/L	5			
Other				
Other				

Table 8: Effluent monthly AVERAGES (max/min for pH) for subject year

Month	Avg flow mgd	Effluent BOD		Effluent TSS		Total Coliform MPN/100 mL	Min pH Std. Units	Max pH Std. Units	Temp. °C	NH ₃ -N mg/L	NH ₃ -N Lb.	Other mg/L	Other mg/L
		mg/L	Lb.	mg/L	Lb.								
January	0.259	9	18	17	31	15	7.5	8.0	9.83872	1.54			
February	0.264	10	23	15	34	11	7.5	7.8	9.63294	1.34			
March	0.264	9	19	16	34	9	7.4	8.0	11.73833	1.20			
April	0.268	10	21	15	33	17	7.4	8.0	12.19817	0.81			
May	0.319	11	28	17	44	25	7.4	7.9	14.46056	0.89			
June	0.326	12	33	17	45	75	7.4	7.7	17.20183	1.03			
July	0.240	13	27	16	31	45	6.6	7.4	20.95339	1.62			
August	0.214	9	16	14	25	2	6.5	7.0	21.82256	1.36			
September	0.208	8	15	13	23	9	6.5	7.0	19.25739	1.29			
October	0.213	9	16	14	23	5	6.5	6.9	16.85483	1.16			
November	0.238	14	27	19	38	17	6.8	7.3	11.17594	4.56			
December	0.244	13	25	20	40	19	6.7	8.0	9.17744	2.88			

Table 9: Effluent monthly MAXIMUMS for subject year

Month	Max flow mgd	Effluent BOD		Effluent TSS		Total Coliform MPN/100 mL	Min pH Std. Units	Max pH Std. Units	Temp. °C	NH ₃ -N mg/L	NH ₃ -N Lb.	Other mg/L	Other mg/L
		mg/L	Lb.	mg/L	Lb.								
January	0.409	10	21	18	34	19	7.5	8.0	12.61111	2.86			
February	0.395	13	28	16	47	30	7.5	7.8	12.27778	2.20			
March	0.314	10	22	18	38	15	7.4	8.0	14.11111	1.82			
April	0.329	11	24	15	35	20	7.4	8.0	14.72222	1.00			
May	0.382	14	39	20	51	46	7.4	7.9	17.05556	1.09			
June	0.466	15	56	20	67	152	7.4	7.7	20.61111	1.32			
July	0.266	14	30	19	41	68	6.6	7.4	24.22222	1.89			
August	0.249	10	19	17	31	4	6.5	7.0	23.22222	1.50			
September	0.222	9	16	14	25	31	6.5	7.0	22.22222	1.34			
October	0.267	10	18	15	27	9	6.5	6.9	19.61111	1.27			
November	0.280	16	30	23	42	36	6.8	7.3	14.38889	7.80			
December	0.338	14	26	25	46	35	6.7	8.0	12.72222	5.30			

Table 9: Effluent monthly VIOLATIONS calculated for subject year (violations are designated by an "X")

Month	Max flow gpd	Effluent BOD		Effluent TSS		Fecal Coliform no./100 mL	pH MIN S.U.	pH MAX S.U.	Temperature °C Max	NH3-N mg/L	NH4-N Lb.	Other mg/L	Other mg/L
January		mg/L	Lb.	mg/L	Lb.								
February													
March													
April													
May													
June													
July													
August													
September													
October													
November										X			
December										X			

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Lloyd Fletcher
NAME
Plant Operator
TITLE

Lloyd Fletcher
SIGNATURE
01/24/2023
DATE