

INTRODUCTION

The Arkansas Division of Environmental Quality – Office of Water Quality (OWQ) conducted a review of the Clinton, AR Land Application Permit (5130-WR2) and found multiple compliance issues. The violations are summarized below:

- Sampling Violations
- Incorrect Acreage on Annual Reports

In addition, OWQ suspected an over-application of effluent and asked for a Corrective Action Plan to establish a per acre daily application rate, and a water balance for the Wastewater Treatment Plant (WWTP).

WATER BALANCE

Water Sold to Sewer Customers

The City of Clinton has approximately 1,059 sewer customers. The table on the next page shows the total water sold to sewer customers for each month for 2019, 2020, and 2021. The 3-year average monthly water sold to sewer customers was 5.18 MG, or approximately 0.173 MGD. The 3-year maximum monthly water sold was in September 2019 at 6.66 MG, or approximately 0.222 MGD. The 3-year minimum monthly water sold was in December 2020 at 4.0 MG, or approximately 0.133 MGD.

The maximum monthly WWTP peaking factor, defined as total water treated divided by the total water sold to sewer customers, occurred in March 2019 at 6.68. The WWTP does not currently have an influent flow meter, therefore, the calculated monthly peaking factor is the only estimate available. The table on the next page also show the estimated Infiltration and Inflow (I/I). The maximum estimated I/I value occurred in March 2021, at 25.71 MG. Due to large daily and intra-day peaks in I/I, it isn't useful to report the estimated I/I as a daily average.

An influent flow meter is planned for installation at the WWTP so that more accurate values for peak I/I can be determined. The installation will require significant changes to the existing headworks structure, as detailed later in this report.

Water Sprayed on Irrigation Fields

The water sprayed values shown in the Water Balance Table were estimated based on the irrigation pump and system curve from the original installation, and the length of application. The estimated flow was 2,200 gpm. Impeller wear since installation has likely resulted in the water sprayed value being slightly over-estimated. Clinton staff have, in the past, installed a clamp-on ultra-sonic flow meter on the forcemain feeding the irrigation fields. Results from that period indicated a flow of approximately 1,900 gpm to the irrigation fields. This value was used in calculating the irrigation application rate and derived required acreage per application.

Date	Water Sold – Sewer Customers Only (MG)	WWTP Effluent (MG)	Water Sprayed (MG)	Estimated I/I (MG)
J-19	4.43	22.37		17.94
F-19	5.9	26.34		20.44
M-19	4.33	28.91		24.58
A-19	5.1		10.56	5.46
M-19	4.52		12.14	7.62
J-19	5.4		10.03	4.63
J-19	5.72		7.39	1.67
A-19				
S-19	6.66		4.75	-1.91
O-19	5.98		4.75	-1.23
N-19	5.34		7.39	2.05
D-19	4.34		6.33	1.99
2019	57.72	77.62	63.34	83.24
J-20	5.42	28.8		23.38
F-20	4.6	25.6		21
M-20	5.02	27.5		22.48
A-20	4.95	27.9		22.95
M-20	4.11	8.91	4.2	9
J-20	4.53	16.95	4.7	17.12
J-20	5.55		7.92	2.37
A-20	5.61		6.86	1.25
S-20	5.57		4.75	-0.82
O-20	4.95		3.69	-1.26
N-20	5.82		5.28	-0.54
D-20	4		5.8	1.8
2020	60.13	135.66	43.2	118.73
J-21	5.56	23.79		18.23
F-21	5.45	18.99		13.54
M-21	4.84	30.55		25.71
A-21	4.01		9.5	5.49
M-21	4.54		8.44	3.9
J-21	5.65		7.92	2.27
J-21	5.62		7.39	1.77
A-21	5.81		6.33	0.52
S-21	6.55		7.92	1.37
O-21	5.43		4.75	-0.68
N-21	4.91		8.97	4.06
D-21	5.03		6.86	1.83
2021	63.4	73.33	68.08	78.01