

Hi-Desert Water District
Water Reclamation Facility
2021 ANNUAL REPORT

January 24, 2022

Prepared by Doug Culbert
Chief Plant Operator

1. Introduction	1
2. Summary	1
3. OPERATIONS	2
<i>a. Pretreatment</i>	2
<i>b. Influent Treatment and Quality</i>	3
<i>c. Preliminary Treatment</i>	3
<i>d. Biological Treatment</i>	4
<i>e. Secondary Treatment</i>	4
<i>f. Ultraviolet (UV) Disinfection</i>	4
<i>g. Final Effluent Treatment and Quality</i>	5
4. GROUNDWATER WELL MONITORING	7
<i>a. Overview</i>	7
5. MAINTENANCE	8
<i>a. Maintenance Summary</i>	8
<i>b. Flow Meter Calibration Record</i>	9
6. CHEMICALS AND UTILITIES	9
<i>a. Chemicals</i>	9
i. Magnesium Hydroxide for Nutrient Removal and pH Adjustment	9
ii. Sodium Hypochlorite/Citric Acid	9
iii. MicroC 2000™	9
7. HUMAN RESOURCES	9
<i>a. Staffing</i>	9
<i>b. Safety Training</i>	10
<i>c. Operator Certification</i>	10
8. Certification of Report	11
Appendix A	12
Appendix B	39



1. Introduction

The Hi-Desert Water District (District) Water Reclamation Facility (WRF) treats sewage from a new collection system, completed in 2019, within the Town of Yucca Valley (TOYV). In order to meet effluent water quality and operational objectives, the District constructed a membrane bioreactor (MBR) treatment process for the WRF. The MBR permeate quality allows the District to use the permeate for groundwater recharge and future water reuse in Phase 2 of the project. The Plant processes are designed to operate in compliance with the Waste Discharge Requirements (WDR) and produces Title 22 disinfected tertiary recycled water. The WRF has the ability to treat flows from the collection system equal to an annual average daily flow (AADF) of 1.0 million gallons per day (MGD). The WRF will be expanded in the future to treat collection system flows equal to an AADF of 1.6 MGD.

The District is governed by Board Order R7-2015-0043 under the jurisdiction of the California Regional Water Control Board Colorado River Basin Region (Regional Board). Order R7-2015-0043 provides the Waste Discharge Requirements (WDR) for the facility. In addition to the requirements specific to the WDR as mandated by the Regional Board, the District is required to meet discharge standards defined in the California Code of Regulations (CCR) Title 22 due to the future plan to become a Groundwater Reuse and Replenishing Project (GRRP).

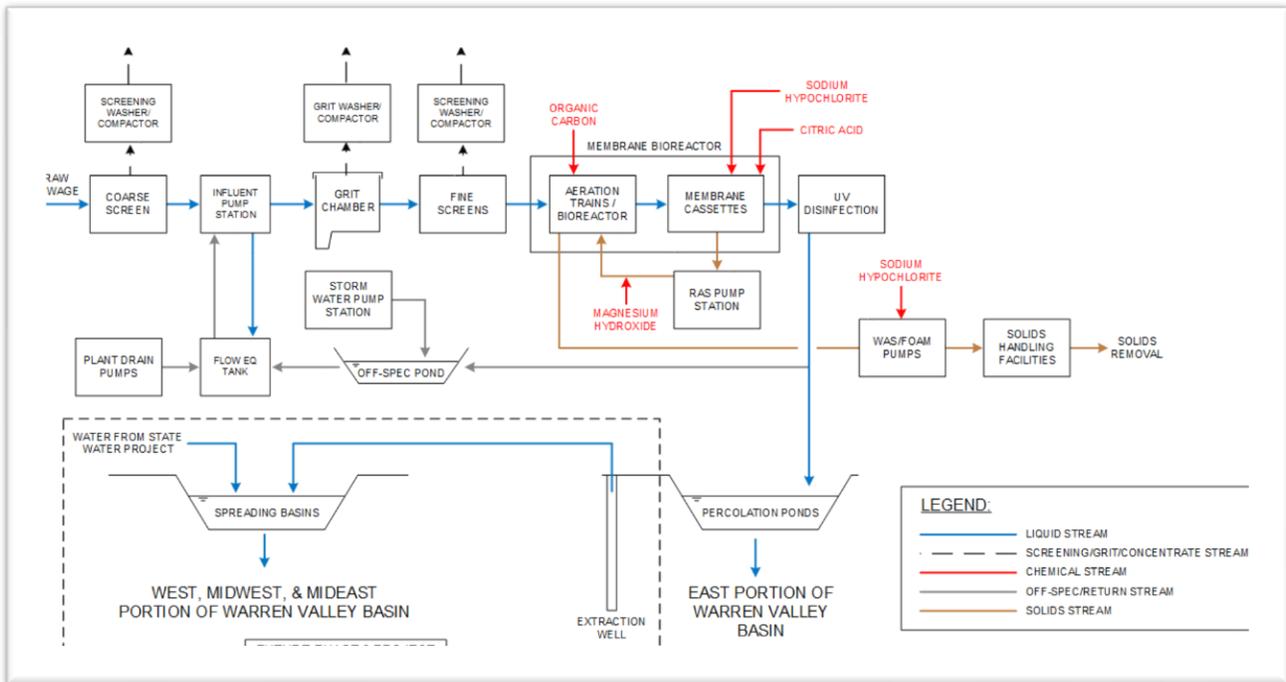
2. Summary

The WRF site sits on two rectangular 40-acre parcels running north-south for a total of 80-acres located adjacent to and south of State Route 62 (SR 62), Twenty-nine Palms Highway, east of Indio Avenue, and north of Sunnyslope Drive. The WRF consists of preliminary treatment, accomplished through both coarse and fine screens and a grit removal chamber, membrane bioreactor (MBR) treatment, ultraviolet (UV) disinfection for pathogen inactivation, solids dewatering, effluent percolation ponds, and support buildings/facilities. The MBR system is the main process for wastewater treatment. The MBR is a combined biological and filtration process and serves as the location of denitrification and suspended solids removal.

A process flow schematic is included on Figure 2-1. It shows the WRF treatment processes and

the disinfected MBR effluent flowing to the percolation ponds. The graphics within the dotted portion represents future plans for a GRRP.

Figure 2-1 Process Flow Schematic:



Following is a list of Sanitary Sewer Overflows (SSO), Effluent Violations (EV) and Order Condition (OC) infractions from 2021:

February

- UV dose of 159 mW-s/cm² fell below 160 mW-s/cm² for 4 seconds (OC)

June

- UV dose of 138 mW-s/cm² fell below 160 mW-s/cm² minimum for 21 seconds (OC)

3. OPERATIONS

a. Pretreatment

As part of the District's Sewer Use Ordinance (SUO) implementation of the Fats, Oils and Grease (FOG) Control Program (Element 7 of the City's SSMP) staff conducted regular inspections of commercial businesses with pretreatment devices within the town. The authority to require grease interceptors, when necessary, at commercial businesses lies with the Town of Yucca Valley (TOYV) although enforcing the maintenance requirements and Best Management Practices (BMPs) are under the authority of the District.

The District requires that all commercial businesses, regardless of whether they believe they are FOG producers, submit a FOG inspection application. The application is reviewed by District staff to determine whether an inspection is needed based on information provided by the applicant in the inspection application. Following the inspection, a discharge permit is issued if it is deemed necessary. The commercial businesses that are required to have a discharge permit are inspected annually to ensure BMPs are being followed. Inspection procedures includes an informal interview of the commercial business's Owner or Manager regarding their existing infrastructure and kitchen practices, and an

educational discussion of FOG source control as well as inspection of facilities and review of FOG disposal documentation. Violations are documented and proof of corrective actions is required. While most of the discharge permits issued are for Food Service Establishments (FSE) there are car washes and auto repair shops that have required permits as well in order to monitor the grease and oil discharge through the applicable grease removal devices installed.

To date 355 total applications have been submitted with 58 commercial businesses requiring inspection and 45 discharge permits have been issued. Twenty-two discharge permits were renewed during 2021.

The District’s Collection crew is proactive and inspects the sewer manholes and other infrastructure for Inflow & Infiltration (I&I) that may contribute to unnecessary volumes of wastewater to be treated. Routine maintenance and flushing of the lines are done on a monthly basis.

b. Influent Treatment and Quality

The plant operated 24/7 in 2021 at an average dry weather (ADWF) flow of 0.441 Million Gallons per Day (MGD) in 2021. 1,290 connections were installed during the year for a total of 3,197, which represents approximately 70% of the total connections in Phase 1.

The treatment plant operates through a series of both gravity and pressurized process streams. Wastewater enters the plant at the influent pump station, where the influent first passes through a coarse screen and flows by gravity to the influent pump station wet well. The coarse screen is a mechanically cleaned coarse screen with 6-millimeter (mm) openings. The screen has a hydraulic capacity of 7.3 million gallons per day (MGD), which is the buildout peak hour flow. A manually cleaned bar rack is available as the standby unit for periods when the mechanically cleaned screen may be out of service.

After passing through the primary screens, wastewater flows by gravity to a wet well where variable speed submersible pumps convey the wastewater to either the equalization (EQ) tank or the grit removal structure. At this juncture the flows do not warrant grit removal as the fine screens have done the job well enough without the use of the Grit Removal System so that is bypassed. The Flow EQ pumps are designed to accommodate the difference between the design influent pumping capacity (peak diurnal flow) and the peak hour wet weather flows.

A summary of annual comparison of flow and influent parameter concentrations is shown in Table 1.

Table 1: Influent Parameters

	2020	2021
Mean Influent Flow, MGD	0.203	0.441
Total Annual Flow, MG	74.4	161.1
Mean Influent TSS, mg/L	222	420
Mean Influent BOD ₅ , mg/L	257	234

c. Preliminary Treatment

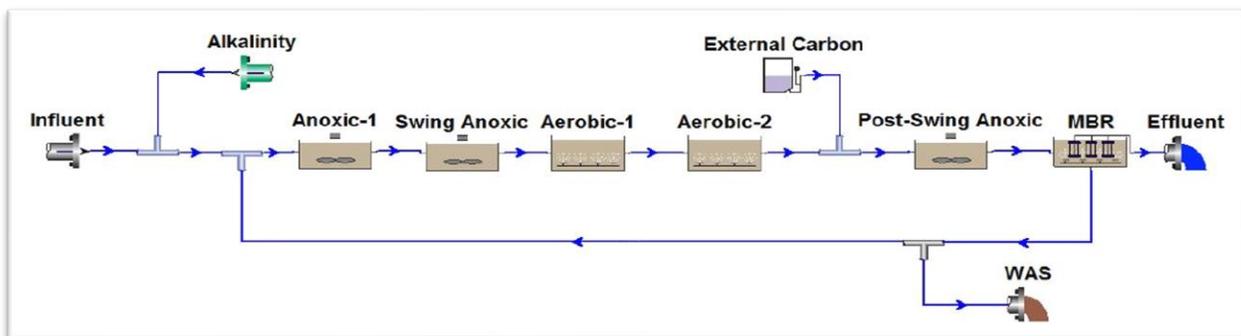
The preliminary treatment process includes screening and grit removal (when needed) as well as influent flow monitoring. The process water is currently pumped from the influent pump station directly to the fine screens. The MBR units require upstream fine screening to protect the membranes from damage. Fine screening consists of two screens, operating in a 1 duty + 1 standby configuration, and each are sized for a 2.6 MGD capacity.

d. Biological Treatment

The screened influent flows by gravity from the fine screens to the influent mixing chamber and aeration tank distribution channel. The influent mixing chamber and aeration tank distribution channel are partially separated by a baffle wall. After the screened influent mixes with the return activated sludge in the influent mixing chamber, the process water flows by gravity past the baffle wall into the aeration tank distribution channel. The aeration tank distribution channel distributes the mixed influent and RAS flow. Process water flows from the aeration tank distribution channel and splits into two process streams that feed the two anoxic tanks.

The biological process consists of one anoxic zone, one swing/anoxic zone ahead of two aerobic zones, followed by a post swing/anoxic zone and the MBR tanks. The swing/anoxic zones can be operated as either an anoxic or an aerobic zone and provide some flexibility in adjusting the aerobic and anoxic Sludge Residence Time (SRT) based on effluent water quality and seasonal temperature variations. A Returned Activated Sludge (RAS) recycle stream is connected to the back of the MBR tanks and is pumped to the RAS splitting chamber which then mixes with influent in the Influent Mixing Chamber and is conveyed via the Aeration Tank Distribution Channel to the first anoxic zone to achieve denitrification of nitrate contained in the return stream using readily biodegradable chemical oxygen demand (COD) in the influent wastewater as well as to maintain the desired biomass in the process. For operational flexibility, an Anoxic Bypass Chamber is available for the purpose of conveying influent flow and RAS flow directly into the first aerobic tank. Figure 3-1 represents the flow schematic of the biological process.

Figure 3-1: Biological Flow Schematic



e. Secondary Treatment

Water flows by gravity through the anoxic tanks, aeration tanks, and MBR tanks to the membrane distribution channel. Permeate is drawn through the membranes within the membrane tanks and additional flows enter the membrane distribution channel via an overflow weir. RAS is pumped from the back of the membrane tanks to the beginning of the process trains. The permeate pumps convey secondary effluent through the UV disinfection system and into the back-pulse tank. The treated water then flows from the back-pulse tank through the plant water tank and to the percolation ponds by gravity. The MBR process meets all effluent requirements for BOD⁵, TSS, TN, nitrite and pH under all operating conditions. When needed the addition of supplemental alkalinity and external carbon source is added to achieve desired parameters to remain in compliance.

f. Ultraviolet (UV) Disinfection

After the process water has been treated by the MBR, the permeate is pumped to the UV system. The UV system disinfects water for the production of Title 22 disinfected tertiary recycled water. The minimum performance of the UV system meets the Guidelines for ultraviolet disinfection system design

in water reuse applications published in the 2012 Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse, published by the National Water Research Institute (NWRI). Those guidelines include the following:

- Minimum UV dose of 80 millijoules¹ per centimeter squared (mJ/cm²)
- Effluent Turbidity equal or less than 0.2 NTU 95 percent of the time, not to exceed 0.5 NTU
- Filtered water UV transmittance (UVT) of 55 percent or greater at 254 nanometers (nm)

The UV system consists of two reactors operated in a duty/standby (1+1) configuration with a capacity of 1.6 MGD each. The UV system can take several minutes to warm up during the plant startup or after a power failure. Once the reactors are warmed up the MBRs will activate and permeate will begin to flow through the reactors. The off-spec valve is manually opened, and flow is diverted until all regulatory compliance parameters are met.

Per the WRF project objectives, a performance test was required on the UV system once flows reached 0.500 MGD. The final completion for the contractor could not be issued until this test was completed. The flows were at a point that it would be some time until the 0.500 MGD parameter was met so it was decided that since flows through the plant were not expected to reach that level soon the performance test would be conducted using simulated flows. The performance test strategy was written by Kennedy Jenks, the designer of the project, to include all the simulated flows needed and District operations staff ensured that the EQ basin had the required volume of influent to meet the demands of the simulations. This strategy was approved by the Division of Drinking Water and the test was performed in April. Upon acceptance of the bioassay the DDW authorized a decrease minimum dose of 100 mJ/cm².

A summary of key UV parameters for 2021 is shown in Table 4. Details of the UV qualities are presented in graphical form in Appendix A.

Table 4: Ultraviolet Disinfection Parameters 2021

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
TURBIDITY, S.U.												
Min	0.020	0.019	0.018	0.018	0.018	0.026	0.026	0.019	0.021	0.019	0.019	0.019
Max	0.043	0.027	0.033	0.039	0.059	0.036	0.039	0.040	0.050	0.052	0.065	0.043
Average	0.023	0.022	0.023	0.020	0.027	0.029	0.029	0.025	0.024	0.030	0.023	0.023
UV TRANSMITTANCE												
Min	72	71	65	65	70	67	70	70	65	71	69	70
Max	95	79	78	98	76	77	77	81	94	79	78	79
Average	75	74	73	73	73	72	73	73	74	73	73	73
UV DOSE												
Min	160	159	188	184	196	138	175	216	132	185	165	159
Max	650	441	650	650	396	374	516	420	650	650	412	450
Average	264	283	313	293	299	254	290	288	266	279	267	283

¹This number was increased to 160 mJ/cm² until the UV bioassay could be completed and reduced to 100 mJ/cm² in August following the UV bioassay

g. Final Effluent Treatment and Quality

After the effluent has been delivered to the Back-pulse and Plant Water Tank, effluent, meeting the quality requirements for discharge, flows into pipelines for conveyance to onsite percolation ponds on the northern side of the site. Effluent that meets all the requirements of the WDR discharges into the ponds and has an engineered outfall to protect against scouring, and the effluent percolates into the ground within the unlined ponds. As mentioned in the previous section, in the unlikely event that effluent does not meet the specified quality for discharge, “off-spec” water will not be discharged into the

percolation ponds, but rather is conveyed by gravity to the Off-Spec Basin where it flows by gravity back into the flow equalization tank and reintroduced to the influent stream for treatment. 483.6 acre-feet of treated Title 22 effluent was discharged into the aquifer in 2021. A summary of other key treatment parameters for 2021 is shown in Table 5.

Table 5: Key Treatment Parameters 2021

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
INFLUENT BOD, mg/L												
Max	290	270	350	300	240	270	230	320	210	250	260	300
Mean	243	255	268	258	200	225	213	232	183	230	230	275
Average lbs/day	681	742	829	848	686	813	815	815	749	973	997	1256
EFFLUENT BOD, mg/L												
Max	7.7	9.2	ND									
Mean	0.96	2.3	ND									
Average lbs/day	2.67	6.58	0	0	0	0	0	0	0	0	0	0
INFLUENT TSS, mg/L												
Max	280	290	400	690	380	530	330	1100	340	2000	940	1000
Mean	255	240	248	458	223	275	253	466	238	1103	532	668
Average lbs/day	714.6	698.6	767.3	1505.0	764.4	993.1	968.5	1838.3	974.6	4663.9	2307.2	3327.7
EFFLUENT TSS, mg/L												
Max	ND	ND	ND	2.0	ND	2.0	3.0	4.0	ND	2.0	2.0	2.0
Mean	ND	ND	ND	1.0	ND	1.0	2.3	3.0	ND	0.5	0.4	0.5
Average lbs/day	0	0	0	3.2	0	3.5	8.7	11.5	0	2.1	1.7	2.2
INFLUENT FLOW, MGD												
Max	0.373	0.397	0.412	0.428	0.436	0.472	0.505	0.518	0.529	0.535	0.559	0.596
Mean	0.336	0.349	0.371	0.394	0.411	0.433	0.459	0.473	0.491	0.507	0.520	0.532
TOTAL(MG)	10.401	9.760	11.510	11.834	12.747	13.392	14.229	14.676	14.729	15.704	15.605	16.497
EFFLUENT FLOW, MGD												
Max	0.368	0.375	0.401	0.450	0.443	0.458	0.530	0.507	0.540	0.534	0.574	0.611
Mean	0.333	0.343	0.360	0.385	0.405	0.422	0.455	0.461	0.480	0.494	0.510	0.530
TOTAL(MG)	10.310	9.591	11.164	11.551	12.567	12.668	14.106	14.290	14.413	15.255	15.312	16.419
OIL & GREASE, ml/L												
Max	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mean	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL COLIFORM, MPN												
Median	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Max	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	2	<1.8	<1.8	<1.8	<1.8
PH, s.u.												
Min pH	6.8	6.6	7.1	7.1	7.0	7.1	7.1	7.0	7.2	7.1	7.1	7.0
Max pH	7.6	7.8	7.5	7.4	7.5	7.5	7.6	8.0	7.7	7.7	7.6	7.5
TDS, mg/L												
Max	420	470	430	440	420	430	430	430	420	420	410	380
Mean	415	335	422	420	413	415	413	410	405	400	394	375
TOC, mg/L												
Max	NA	6	6	6	6	6	6	5	5	6	5	6
Mean	NA	5	5	5	6	6	6	5	5	5	5	6

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
AMMONIA, mg/L												
Max	0.05	1.60	0.84	0.44	0.55	0.72	ND	0.04	0.03	ND	0.02	ND
Mean	0.02	0.25	0.33	0.16	0.33	0.28	ND	0.03	0.02	ND	0.01	ND
NITRITE, mg/L												
Max	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mean	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NITRATE, mg/L												
Max	1.2	1.0	0.8	0.4	0.6	0.7	0.8	0.7	1.0	ND	0.9	0.3
Mean	0.94	0.5	0.3	0.2	0.3	0.3	0.3	0.4	0.3	ND	0.1	0.04

4. GROUNDWATER WELL MONITORING

a. Overview

Prior to construction the District installed four groundwater monitoring wells adjacent to the WRF site location. The purpose of the groundwater monitoring wells network in the area of the recharge basins is to determine the water quality conditions on the first encountered groundwater after discharge has been initiated. Four wells were monitored for pH, Coliform, Total Dissolved Solids, Ammonia, Nitrate, Nitrite and Total Nitrogen. A summary of quarterly results for the respective parameters for 2021 is shown in Table 6.

Table 6: Monitoring Well Parameters 2021

	1st Q	2nd Q	3rd Q	4th Q
DEPTH TO GROUNDWATER				
YV-3	417	520	416	415
YVUZ-4	427	430	426	425
YVUZ-5	358	391	353	348
YVUZ-6	323	340	319	316
PH, S.U.				
YV-3	8.4	8.2	8.3	8.5
YVUZ-4	8.1	7.9	8.3	8.4
YVUZ-5	8.2	8.0	7.9	8.0
YVUZ-6	8.2	8.7	7.2	8.4
FECAL COLIFORM, MPN				
YV-3	<1.8	<1.8	<1.8	<1.8
YVUZ-4	<1.8	<1.8	<1.8	<1.8
YVUZ-5	<1.8	<1.8	<1.8	<1.8
YVUZ-6	<1.8	<1.8	<1.8	<1.8
TOTAL COLIFORM, MPN				
YV-3	<1.8	<1.8	<1.8	<1.8
YVUZ-4	<1.8	<1.8	<1.8	<1.8
YVUZ-5	<1.8	<1.8	<1.8	<1.8
YVUZ-6	<1.8	<1.8	<1.8	<1.8
ENTEROCOCCOUS, MPN				
YV-3	<1.8	<1.8	<1.8	<1.8
YVUZ-4	<1.8	<1.8	<1.8	<1.8
YVUZ-5	<1.8	<1.8	<1.8	<1.8
YVUZ-6	<1.8	<1.8	<1.8	<1.8

	1st Q	2nd Q	3rd Q	4th Q
TDS, MG/L				
YV-3	210	280	210	200
YVUZ-4	230	240	250	230
YVUZ-5	400	440	490	160
YVUZ-6	170	170	180	370
AMMONIA AS N, MG/L				
YV-3	ND	ND	ND	ND
YVUZ-4	ND	ND	ND	ND
YVUZ-5	ND	ND	ND	0.3
YVUZ-6	ND	ND	ND	ND
NITRATE AS N, MG/L				
YV-3	2.3	ND	2.5	2.5
YVUZ-4	2.5	2.6	2.6	2.7
YVUZ-5	3.7	2.0	3.5	3.4
YVUZ-6	3.1	3.1	3.3	0.85
NITRITE AS N, MG/L				
YV-3	ND	ND	ND	ND
YVUZ-4	ND	ND	ND	ND
YVUZ-5	ND	ND	ND	ND
YVUZ-6	ND	ND	ND	ND
TOTAL NITROGEN, MG/L				
YV-3	2.3	ND	2.5	2.5
YVUZ-4	2.5	2.6	2.6	2.7
YVUZ-5	3.7	2.0	3.5	3.7
YVUZ-6	3.1	3.1	3.3	0.9

5. MAINTENANCE

a. Maintenance Summary

The WRF performed a variety of scheduled, preventative, predictive and breakdown maintenance on a wide array of equipment. The main goal of maintenance activities is to ensure equipment availability to meet plant process operation requirements.

The WRF work area includes all major and auxiliary processes. Maintenance minimizes callouts, reduces overtime costs, limits potential for discharge violations due to mechanical failure, and costs associated with repairs are significantly lower than replacement costs. In addition to routine lubrication and preventative maintenance activities, the following notable predictive maintenance and repairs were completed in 2021:

- Isolation valve was installed on plant water system to be able to turn plant water off without shutting the plant down.
- Grit compactor repaired by Big Bear Electric
- MBR 3 cassette leaking. Bubble tested, repaired, and put back in service
- Ripped surface of percolation ponds
- Repaired MBR 1 cassette

b. Flow Meter Calibration Record

The flow meter at the headworks has never worked properly to give an accurate flow in to the plant. A fairly accurate influent flow is obtained by calculating the flow from the influent pump station and adding the daily flow from the EQ basin into the influent pump station. The functioning meters are checked annually for accuracy and functionality. Comprehensive calibrations are completed per meter specification.

6. CHEMICALS AND UTILITIES

a. Chemicals

When needed, several chemicals are used for a variety of treatment processes at the plant. Major process chemicals are discussed below and include:

- Magnesium Hydroxide
- Sodium Hypochlorite
- Citric Acid
- MicroC 2000™

i. Magnesium Hydroxide for Nutrient Removal and pH Adjustment

When needed, Magnesium hydroxide is added to the screened influent as it enters the aeration tank distribution channel in order to increase the alkalinity to support the biological conversion of ammonia to nitrate. Magnesium hydroxide is delivered as a slurry and the chemical injection point is in the aeration tank distribution channel.

ii. Sodium Hypochlorite/Citric Acid

Sodium hypochlorite is injected at three locations: (1) plant water pipeline downstream of the plant water pumps, (2) MBR permeate line for MBR Clean-In-Place (CIP), and (3) foam/waste activated sludge (WAS) pipeline downstream of the foam/WAS blowers. The membrane filters require periodic chemical cleaning to remove foulants from the membrane surface. Sodium hypochlorite and citric acid are used for chemical CIP maintenance and recovery cleanings of the MBR system. The recovery clean soaks the membranes in a chemical solution for several hours and is performed twice per year.

iii. MicroC 2000™

When needed, MicroC 2000™ is added to the anoxic tank in order to supplement the biological oxygen demand (BOD) for the nitrate converting microbes in the biological treatment.

7. HUMAN RESOURCES

a. Staffing

The Wastewater Department includes treatment operations and collection maintenance staff. In 2021, the treatment plant employed 7 employees.

Plant staffing for 2021 is shown in Table 7.

Table 7: Plant Staffing

Chief Plant Operator	1
Lead Operator	1
WRF Operator	2
Collection Maintenance Lead Technician ¹	1
Collection Maintenance Technician ¹	1
Administrative Assistant ²	1

¹Also holds Grade I OIT Certification

² We lost the Administrative Assistant in February

b. Safety Training

Weekly safety meetings are conducted to discuss relevant safety topics, resulting in better service to the public and better, more efficient safe operation of the facility.

Notable safety training conducted by WRF operating staff:

- Chemical Handling Safety
- Lockout/Tagout Procedures
- Confined Space Safety
- Wastewater Maintenance Safety
- Workplace Fire Safety
- Safety Showers and Eyewash Stations

c. Operator Certification

The WRF functions with three Grade IV and one Grade II operator and operates 7 days a week. While operating daily only, staff is split into two crews with one crew of two operators working a 4/10 schedule Monday through Thursday and the second two-person crew works the same schedule Tuesday through Friday. All four operators share Standby duties with the operator on duty covering abbreviated operations on Saturday, Sunday and holidays.

Table 8 summarizes the status of operator certification held by WRF operators at the facility during 2021.

Table 8: Wastewater Treatment Certifications

Grade IV	3
Grade II	1
O.I.T.	2

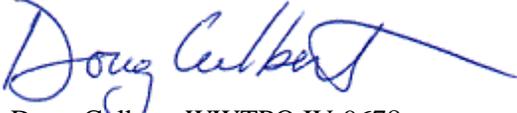
Additional certifications held by WRF staff include Laboratory Analyst, Collection System Maintenance, Mechanical Technician & Cross Connection Specialist.

8. Certification of Report

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 there are significant penalties for submitting false information, including fine and imprisonment for withholding information regarding permit violations.

If you have any questions or need additional information, please feel free to contact me at dougc@hdwd.com or (760)228-6278.

Sincerely,

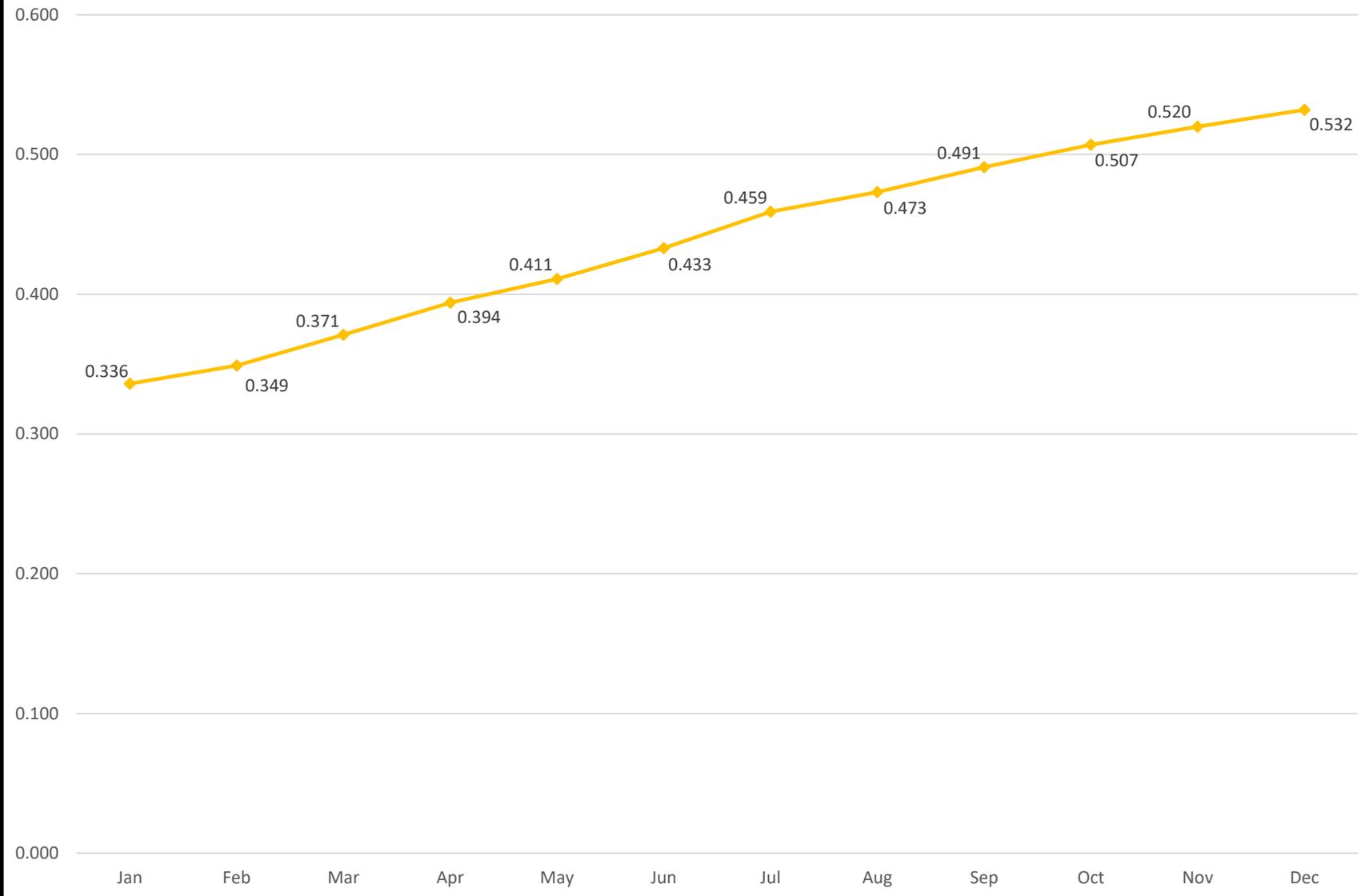


Doug Culbert, WWTP0 IV-9678
Chief Plant Operator
Hi-Desert Water District Water Reclamation Facility

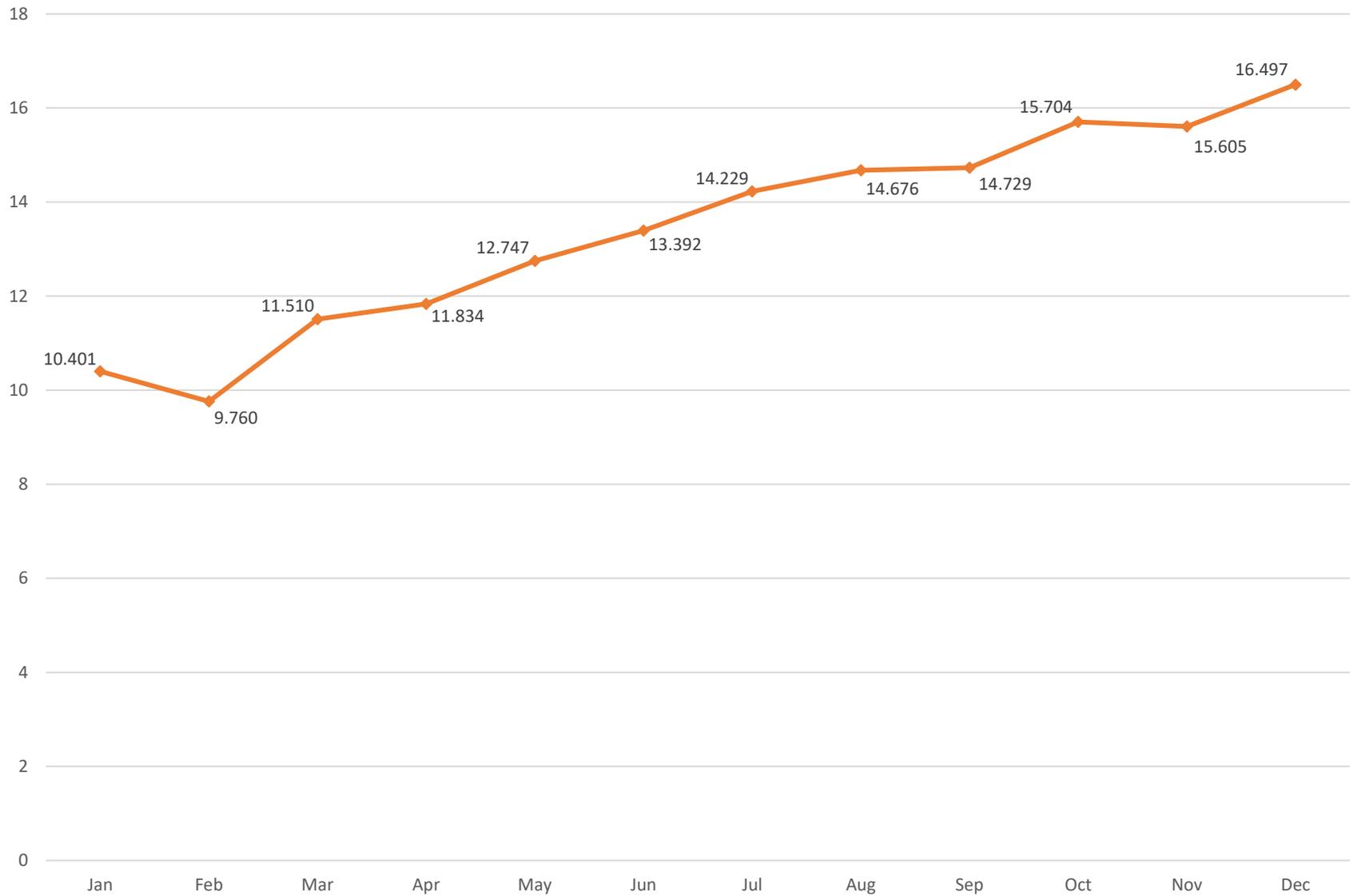
Appendix A

WRF Performance Charts

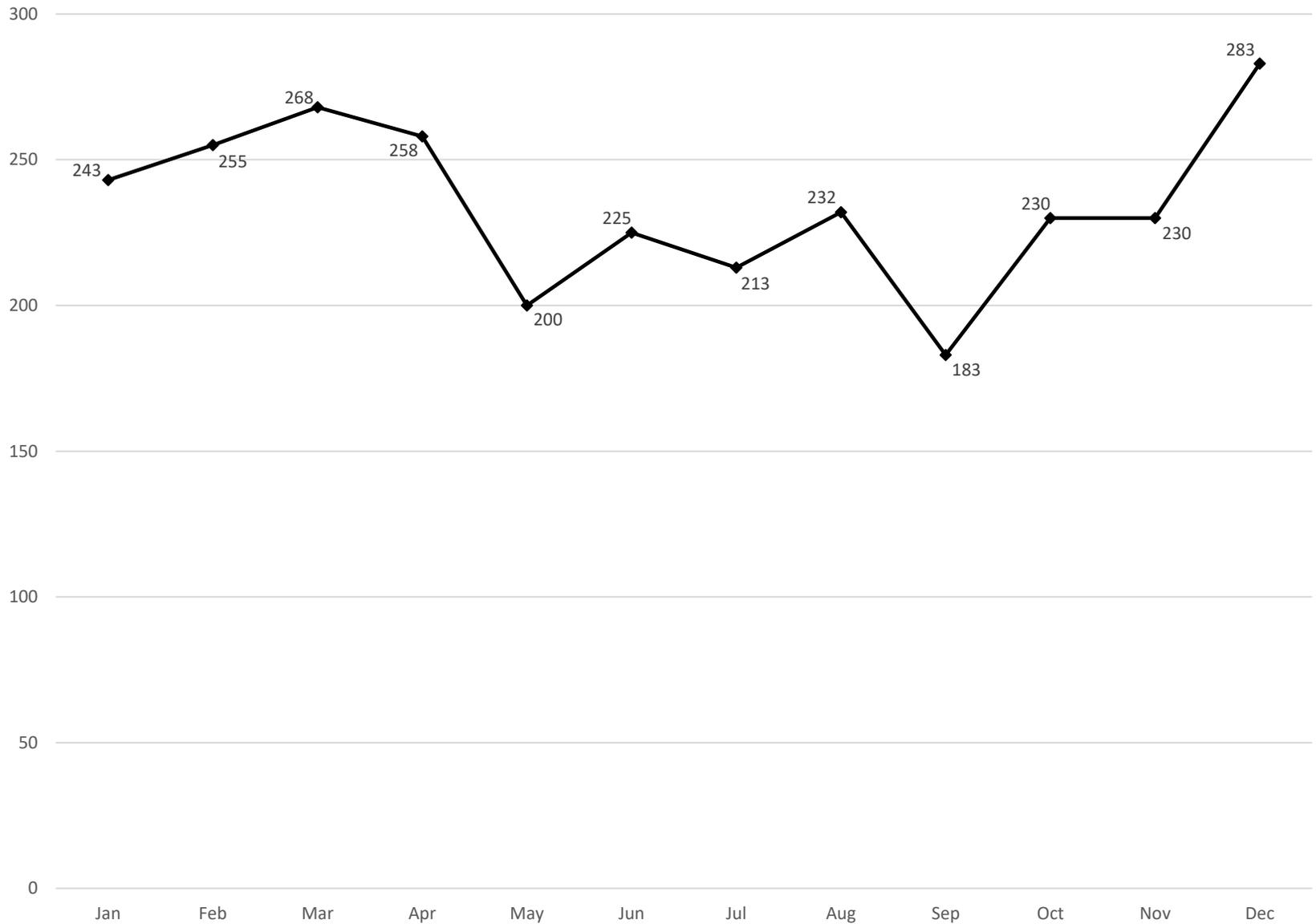
Average Influent Flow, MGD



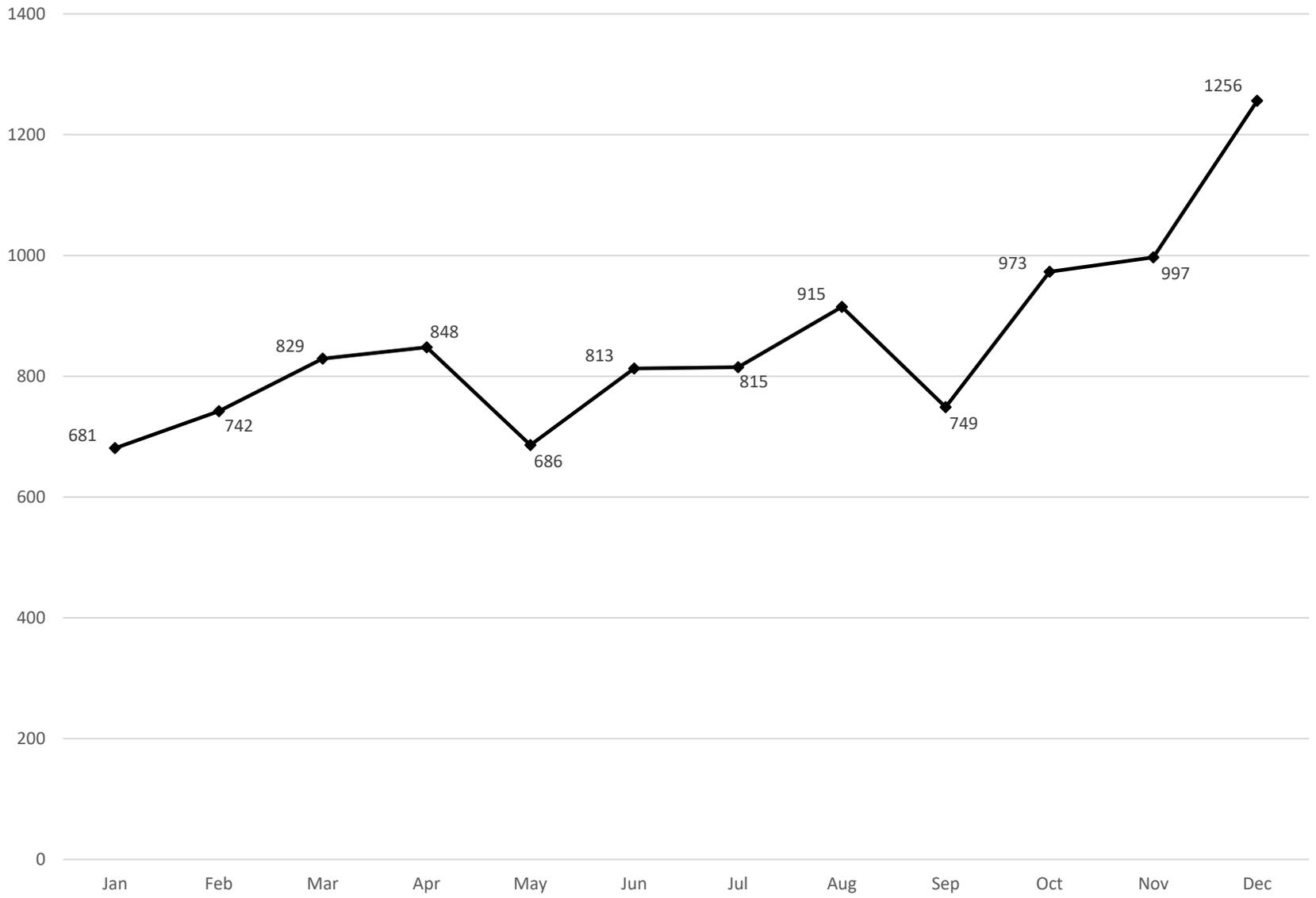
Total Monthly Influent Flows (MGD)



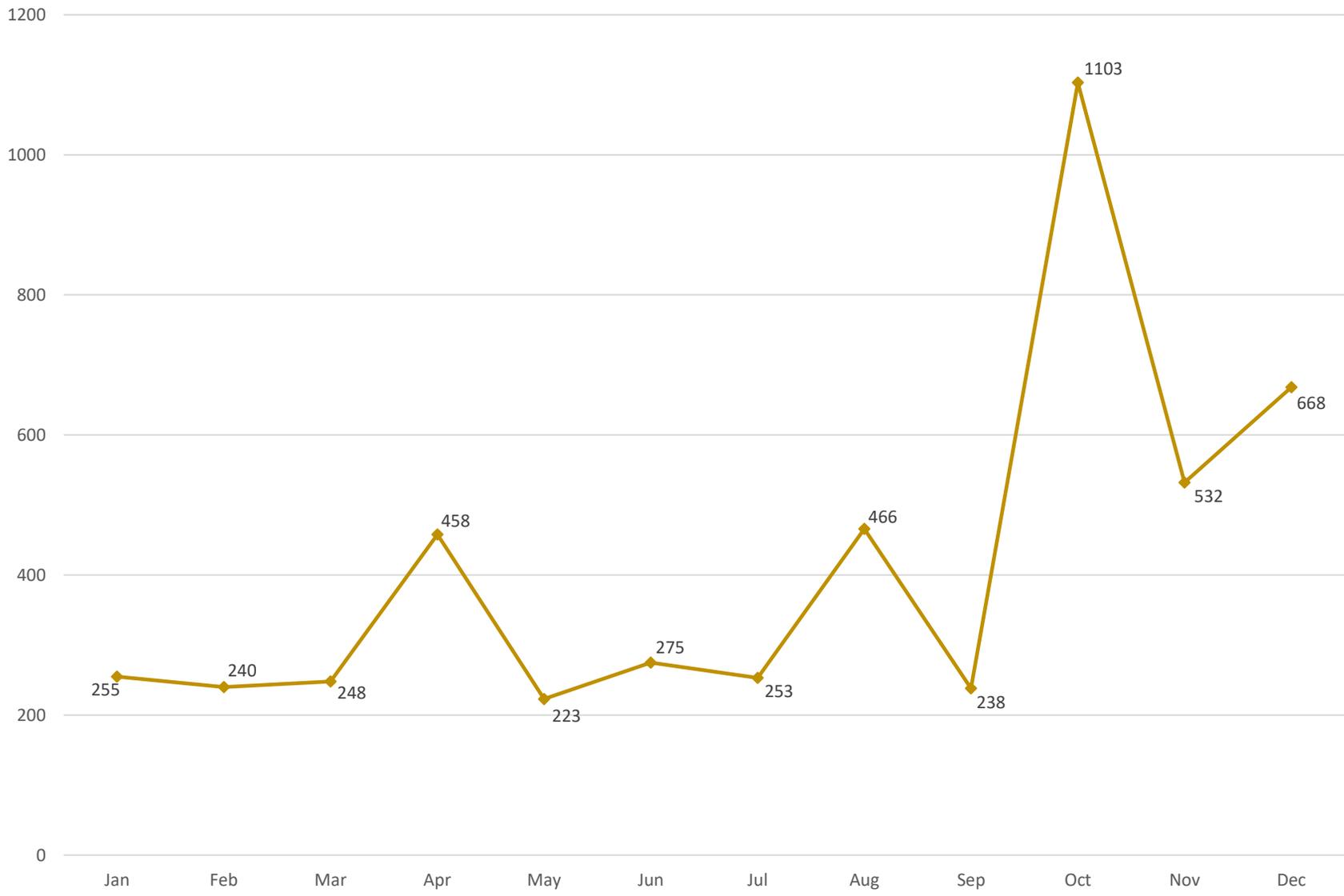
Average Influent BOD, mg/L



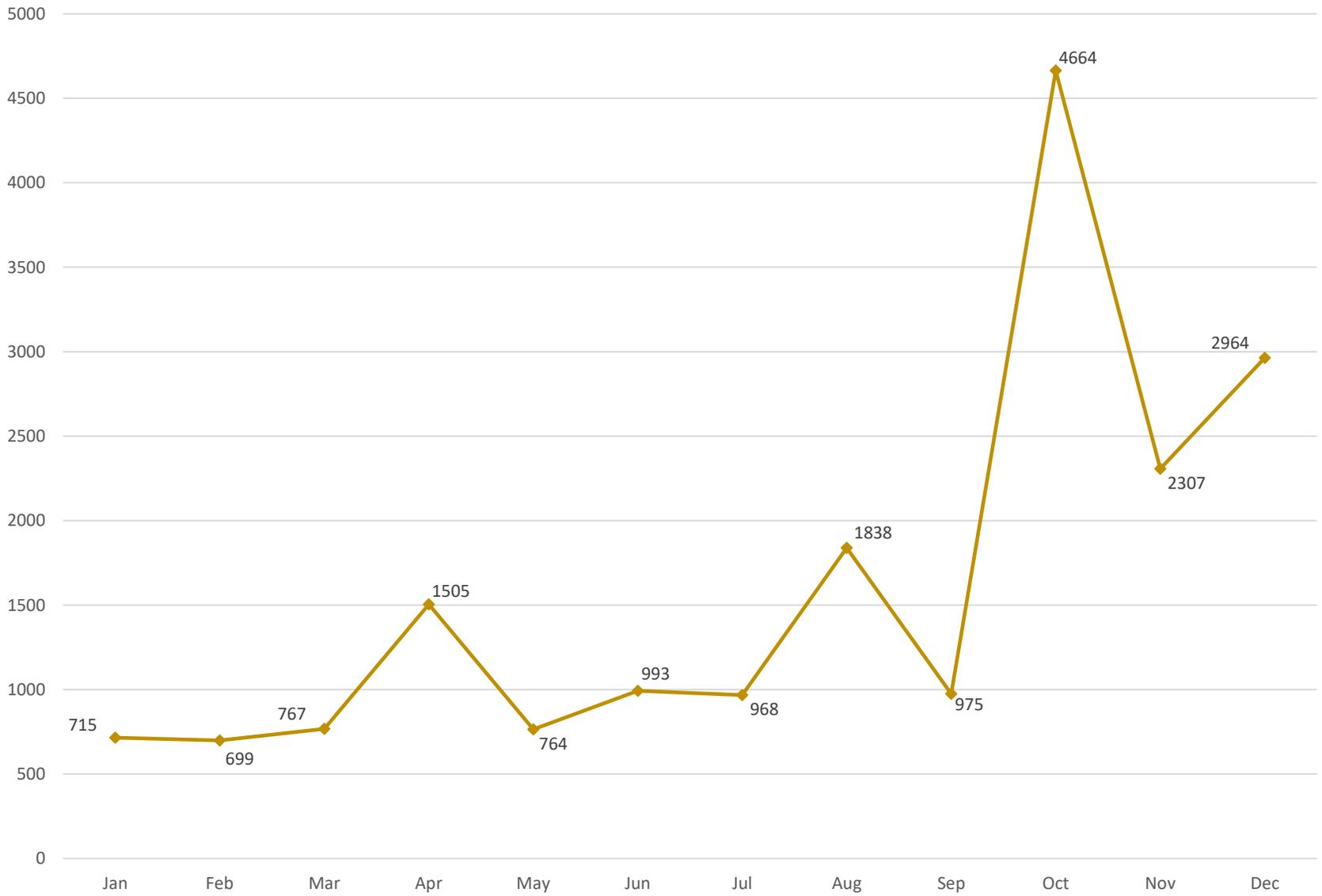
Influent BOD, Total Pounds



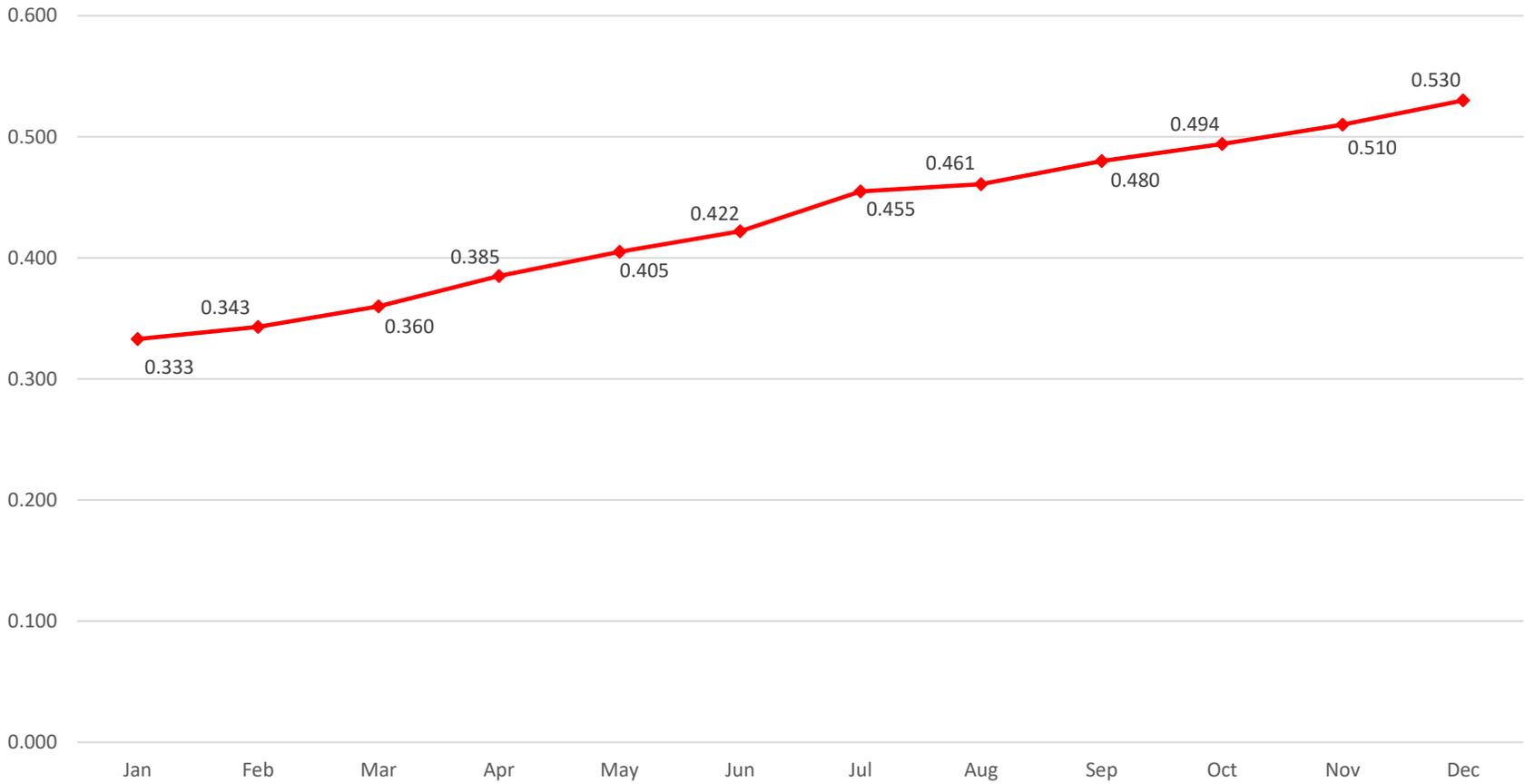
Average Influent TSS, mg/L



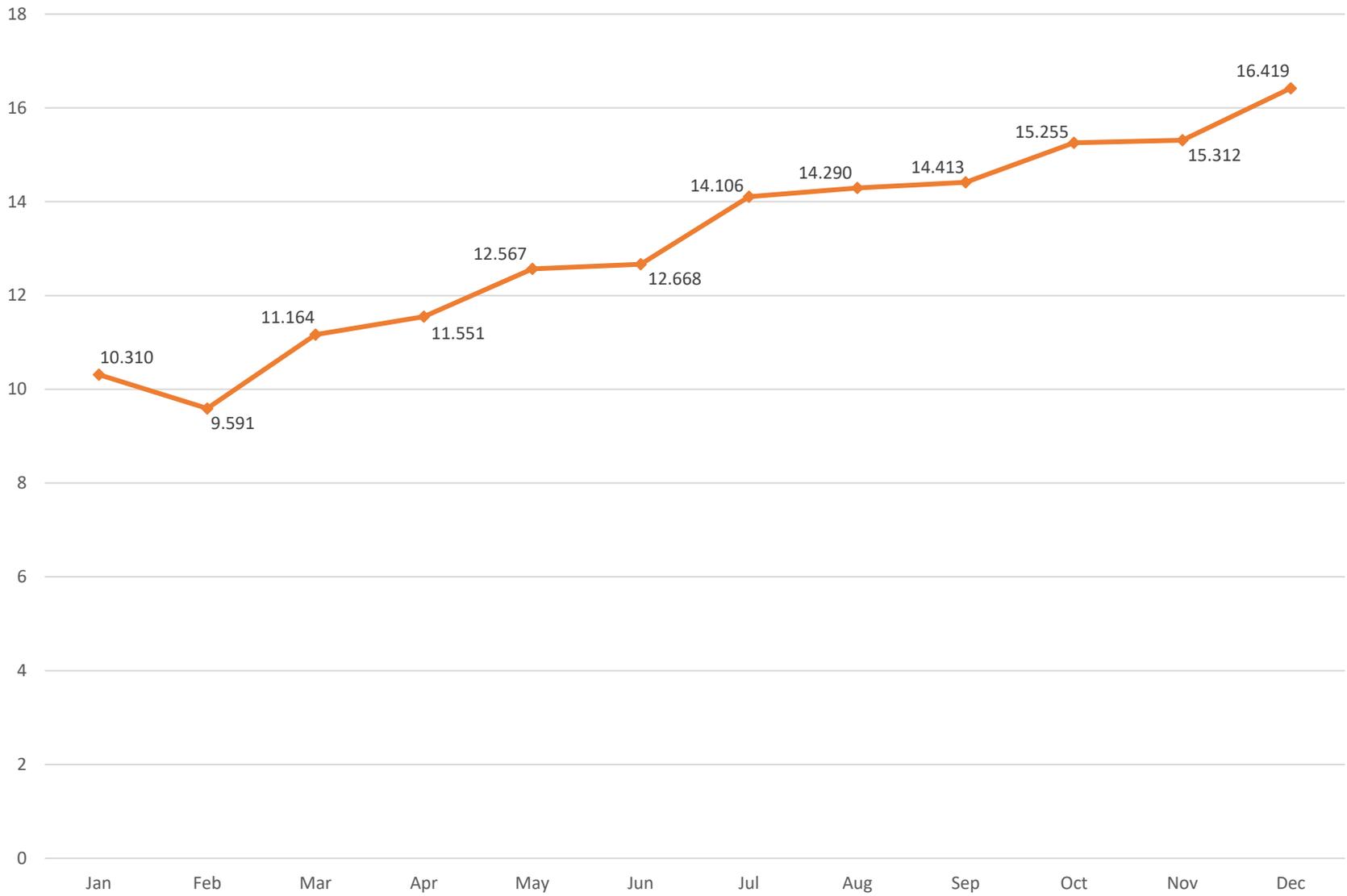
Influent TSS, Total Pounds



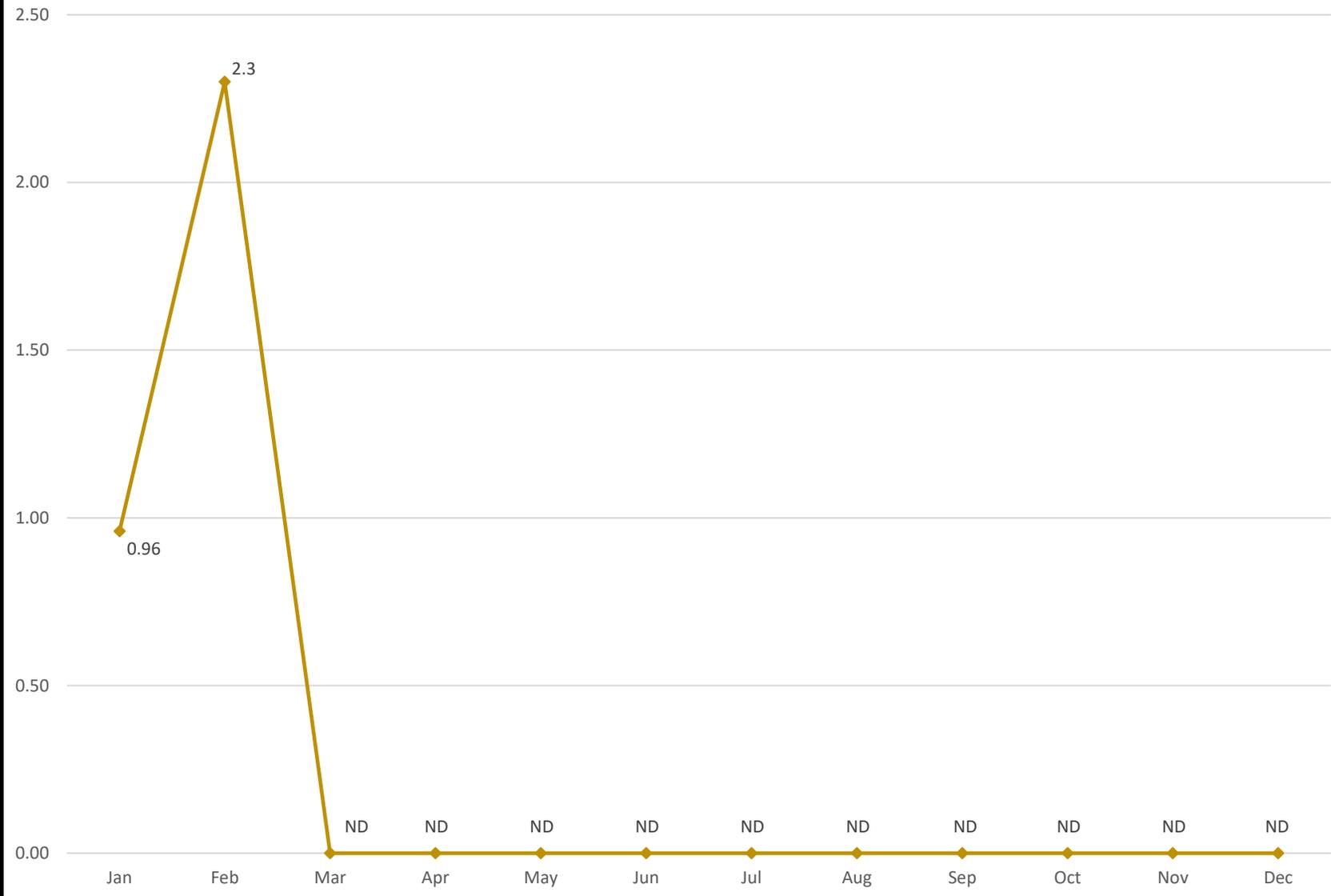
Average Effluent Flow, MGD

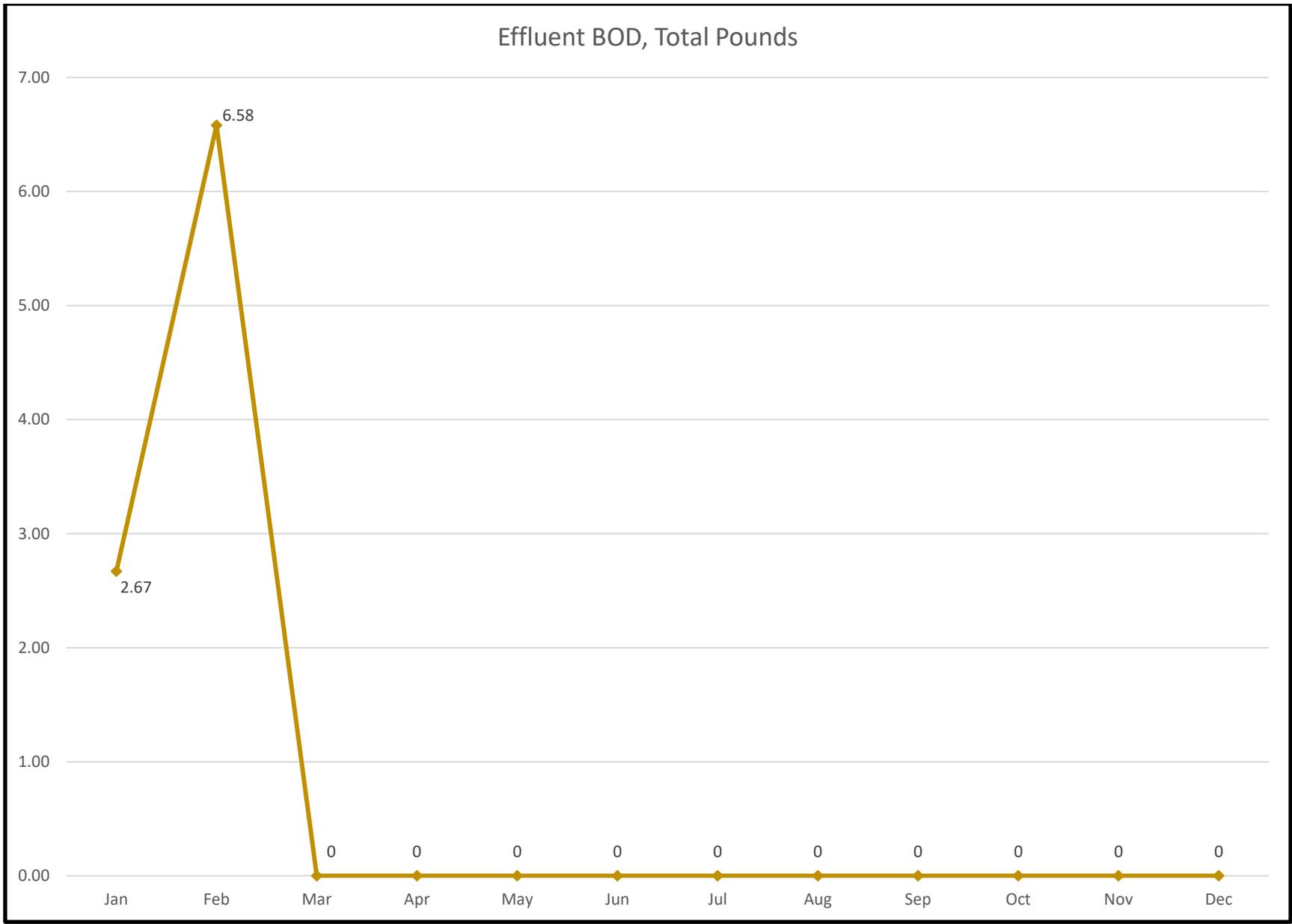


Total Monthly Effluent Flows (MGD)

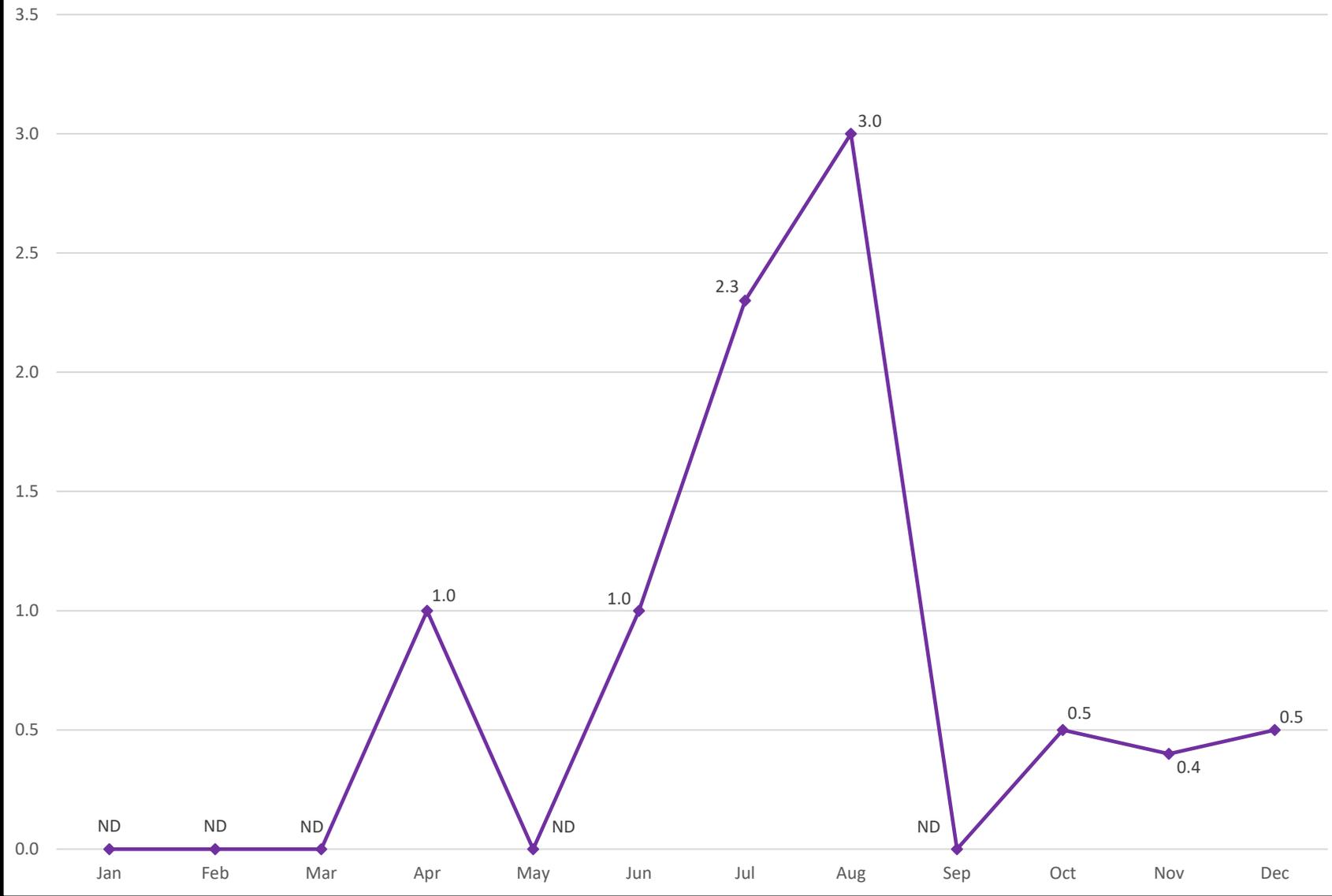


Average Effluent BOD, mg/L

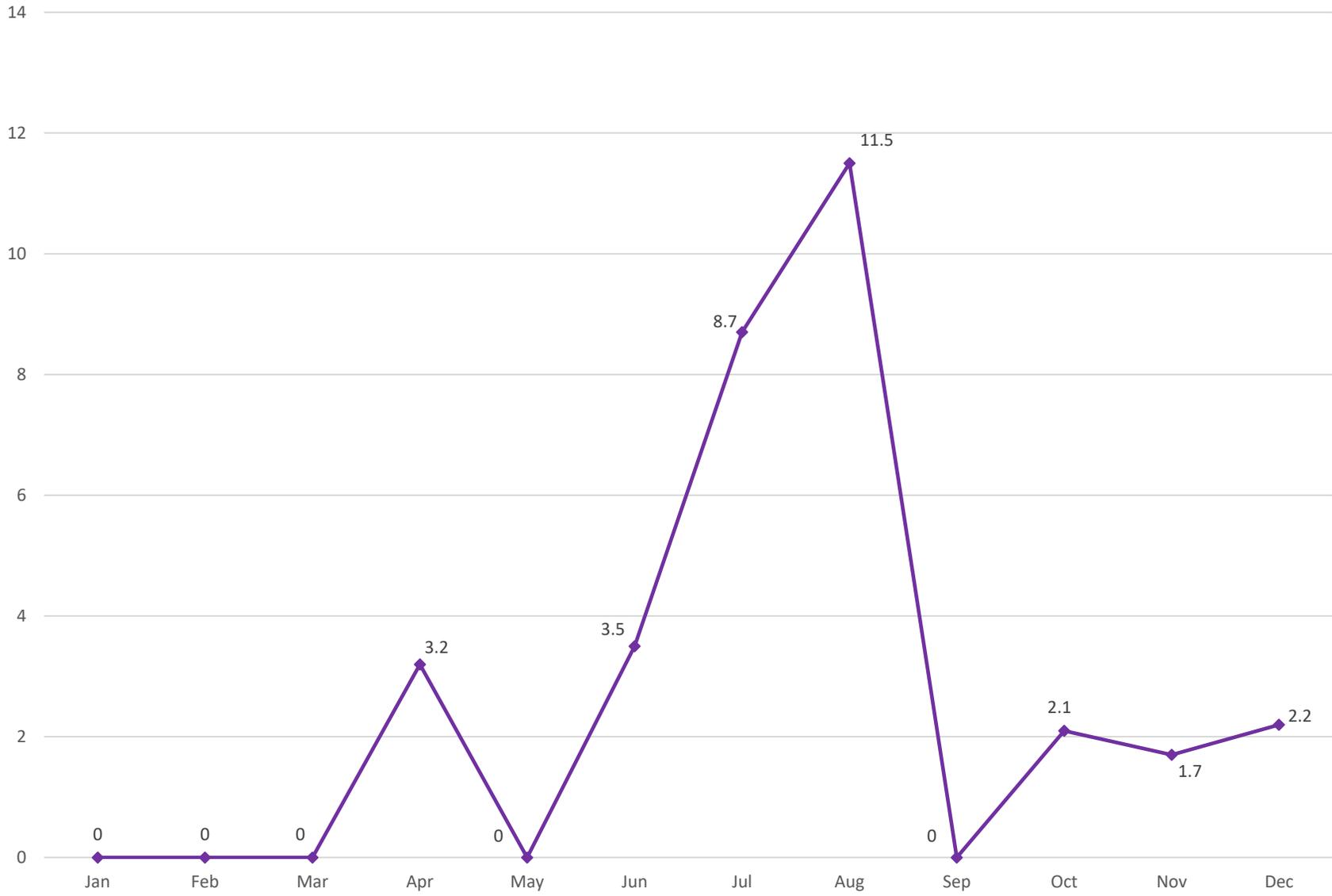


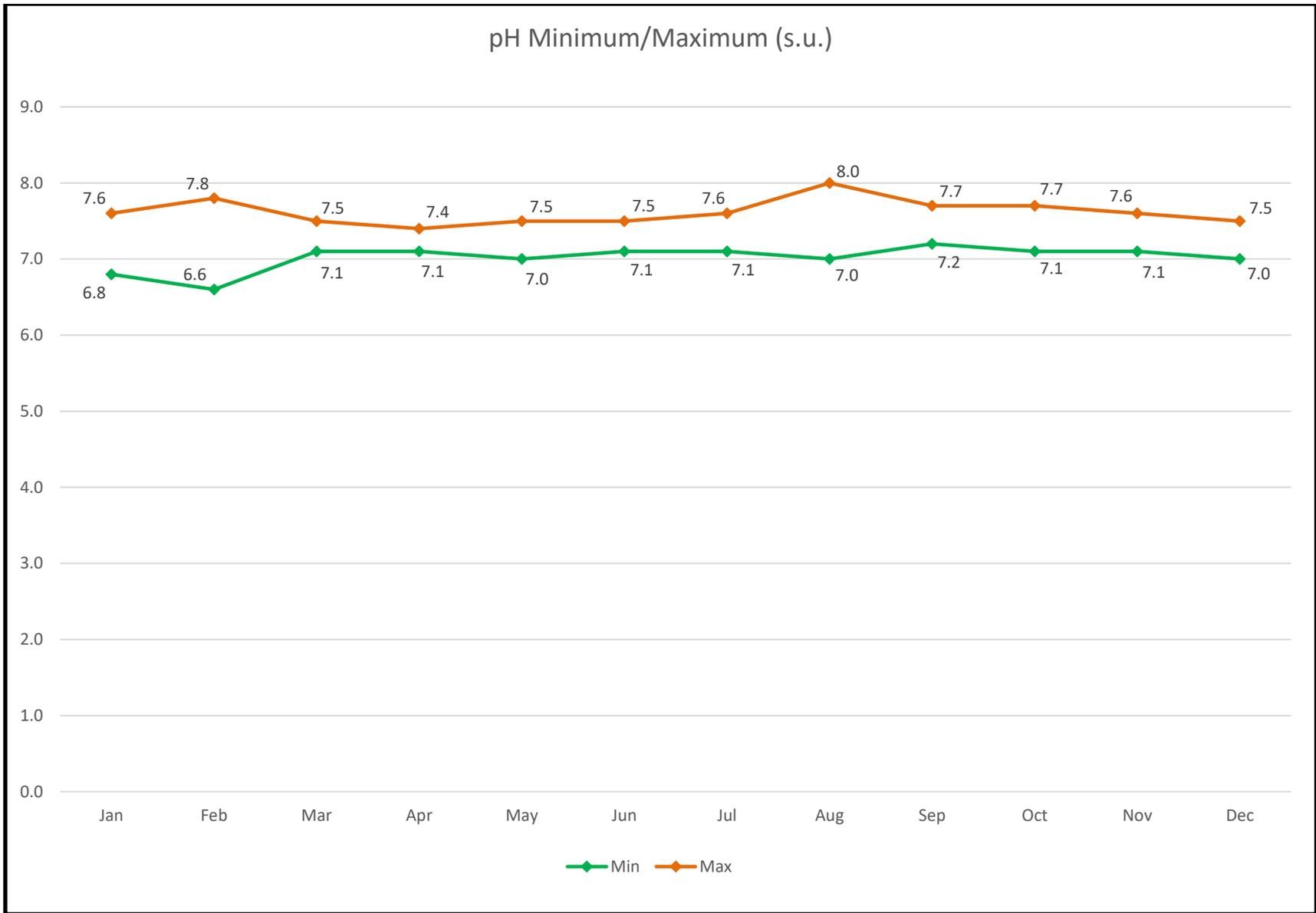


Average Effluent TSS, mg/L

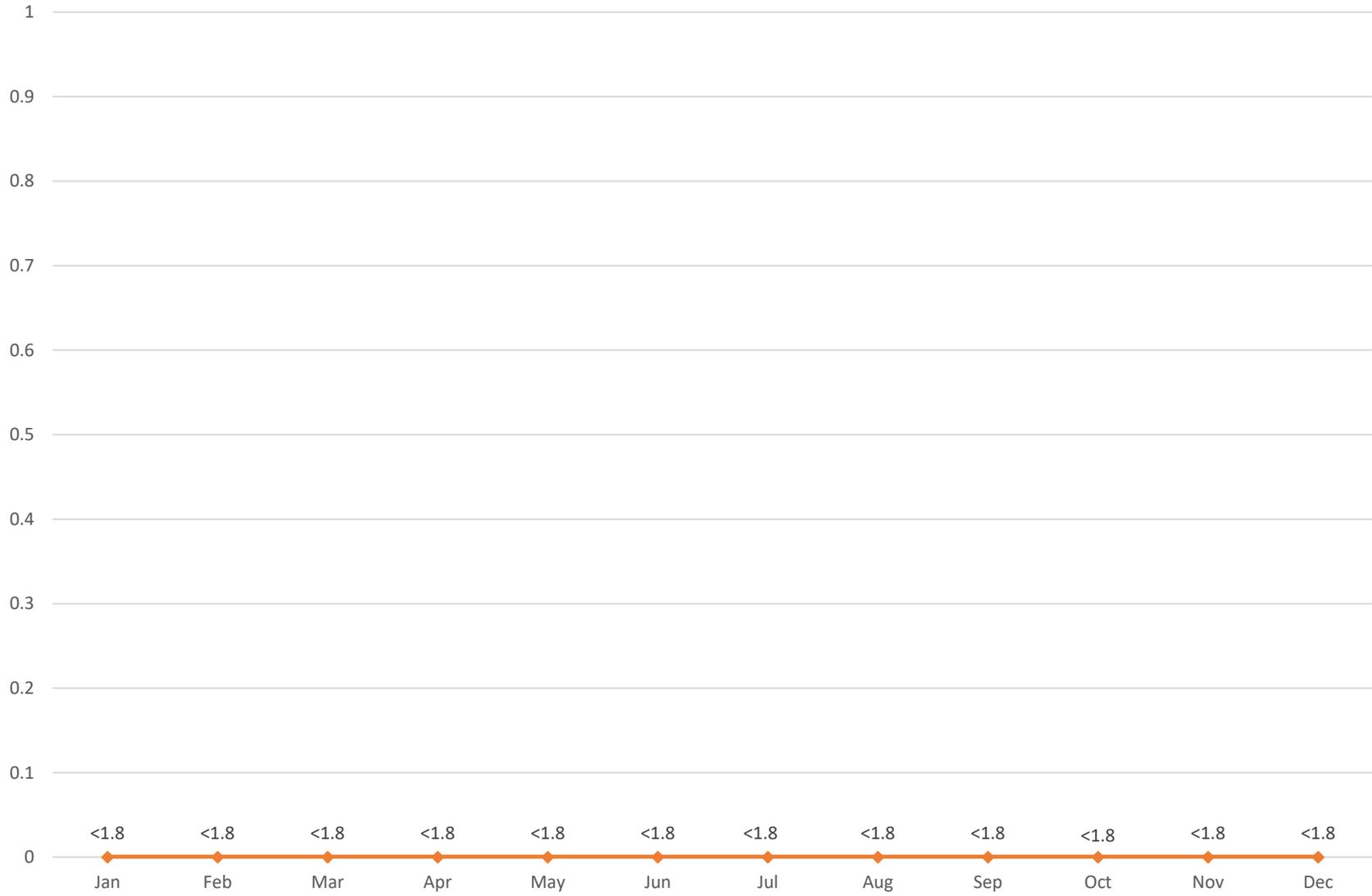


Effluent TSS, Total Pounds

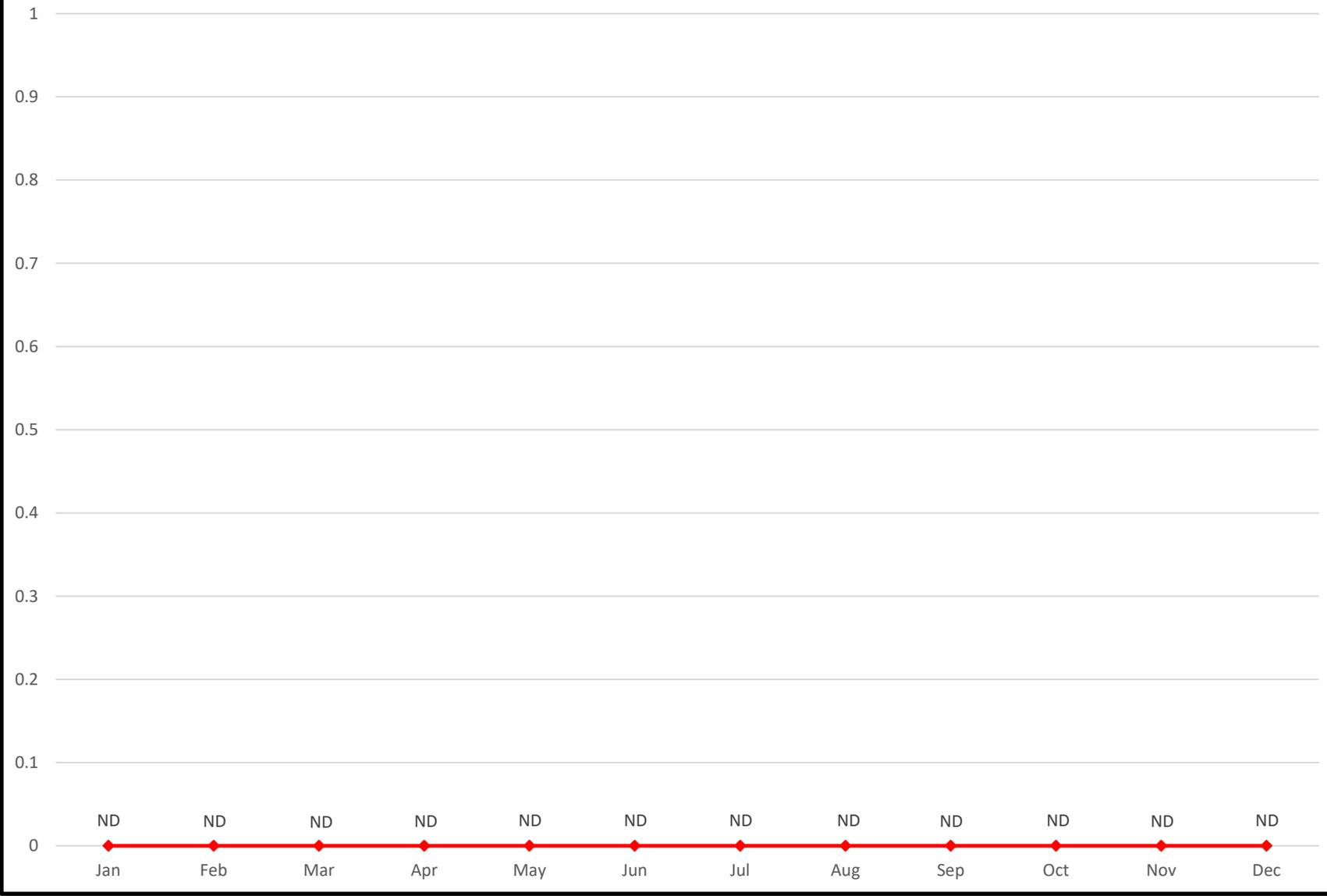


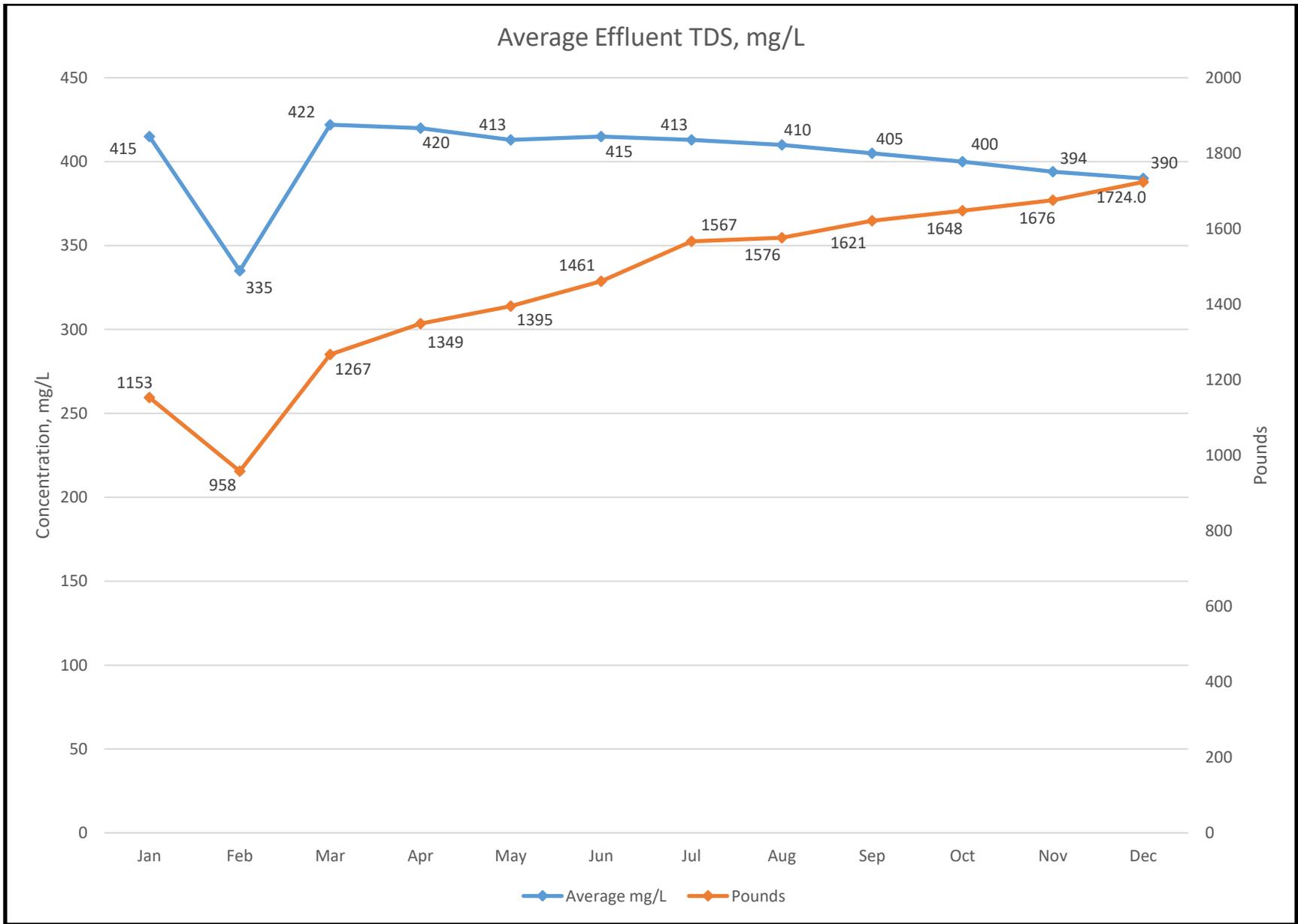


Total Coliform Median, MPN

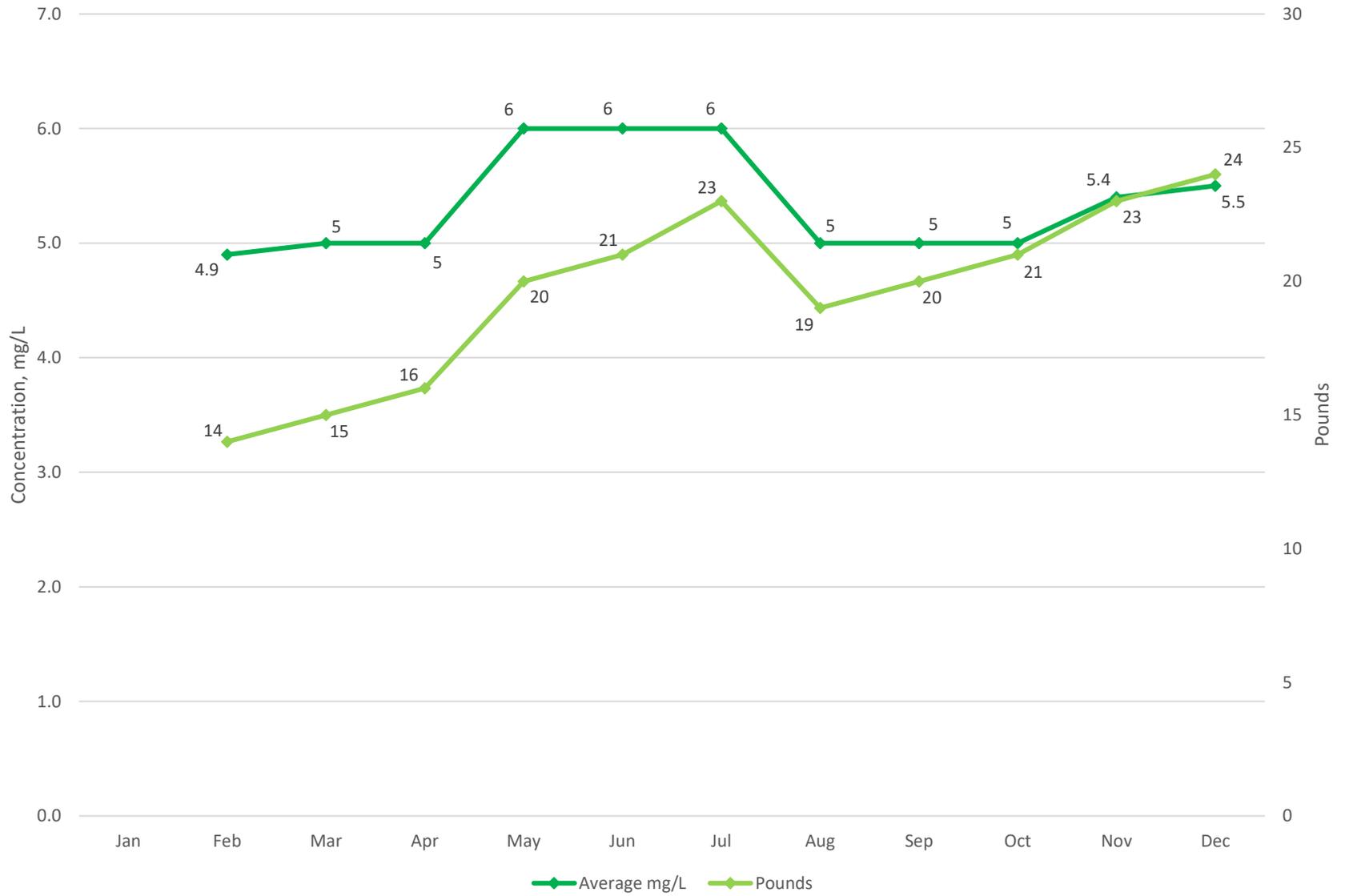


Average Oil & Grease, mg/L

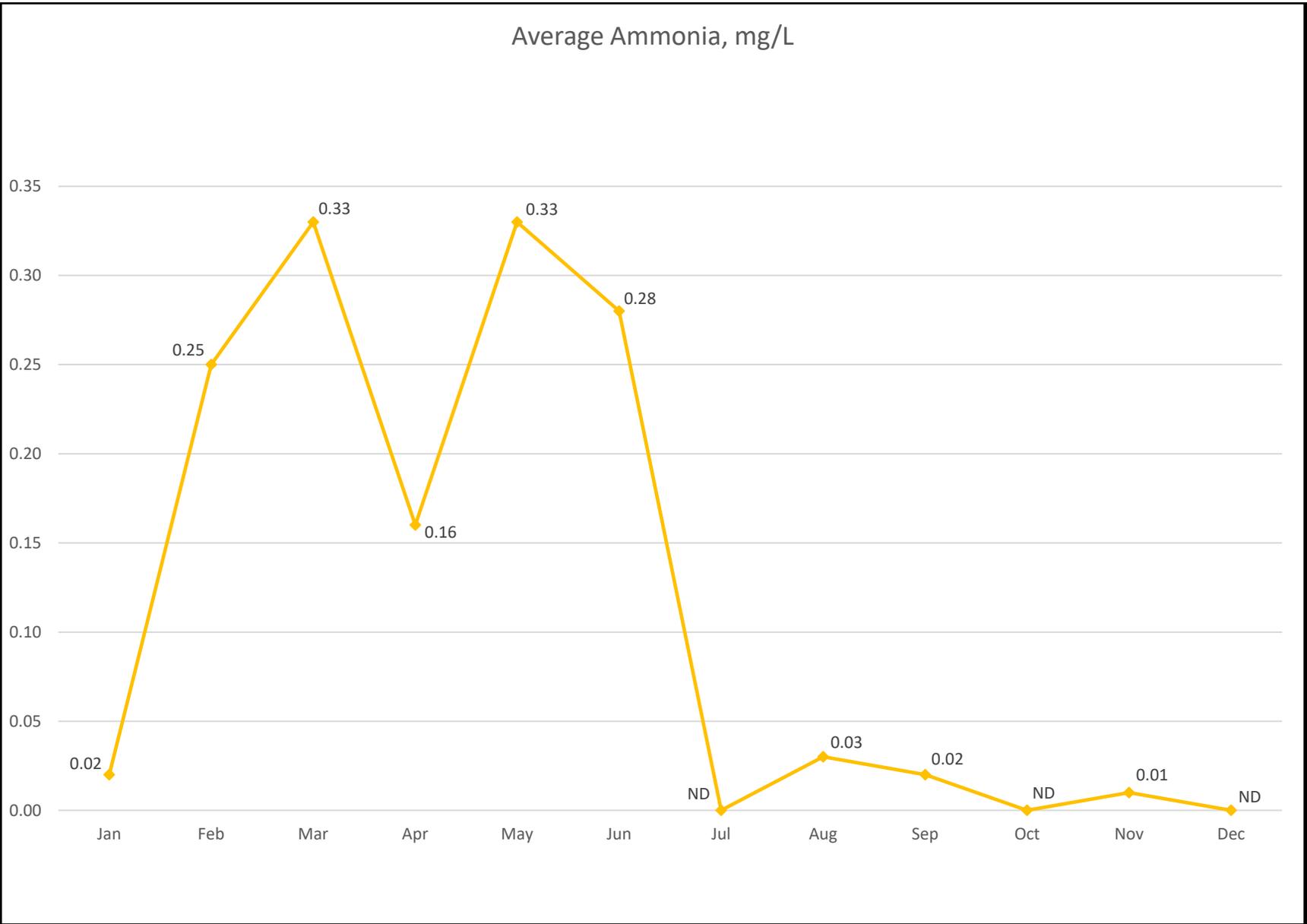




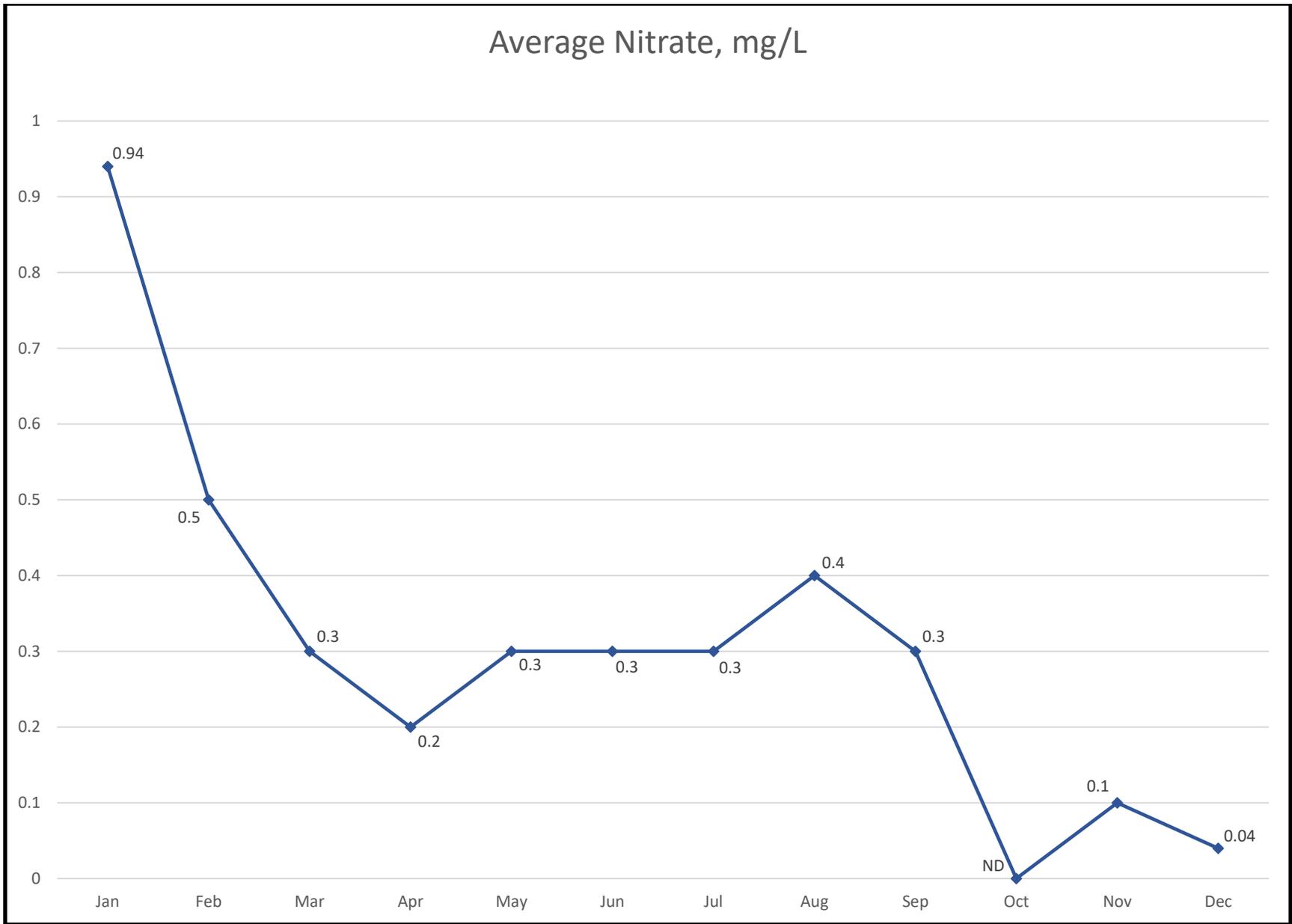
Total Organic Carbon



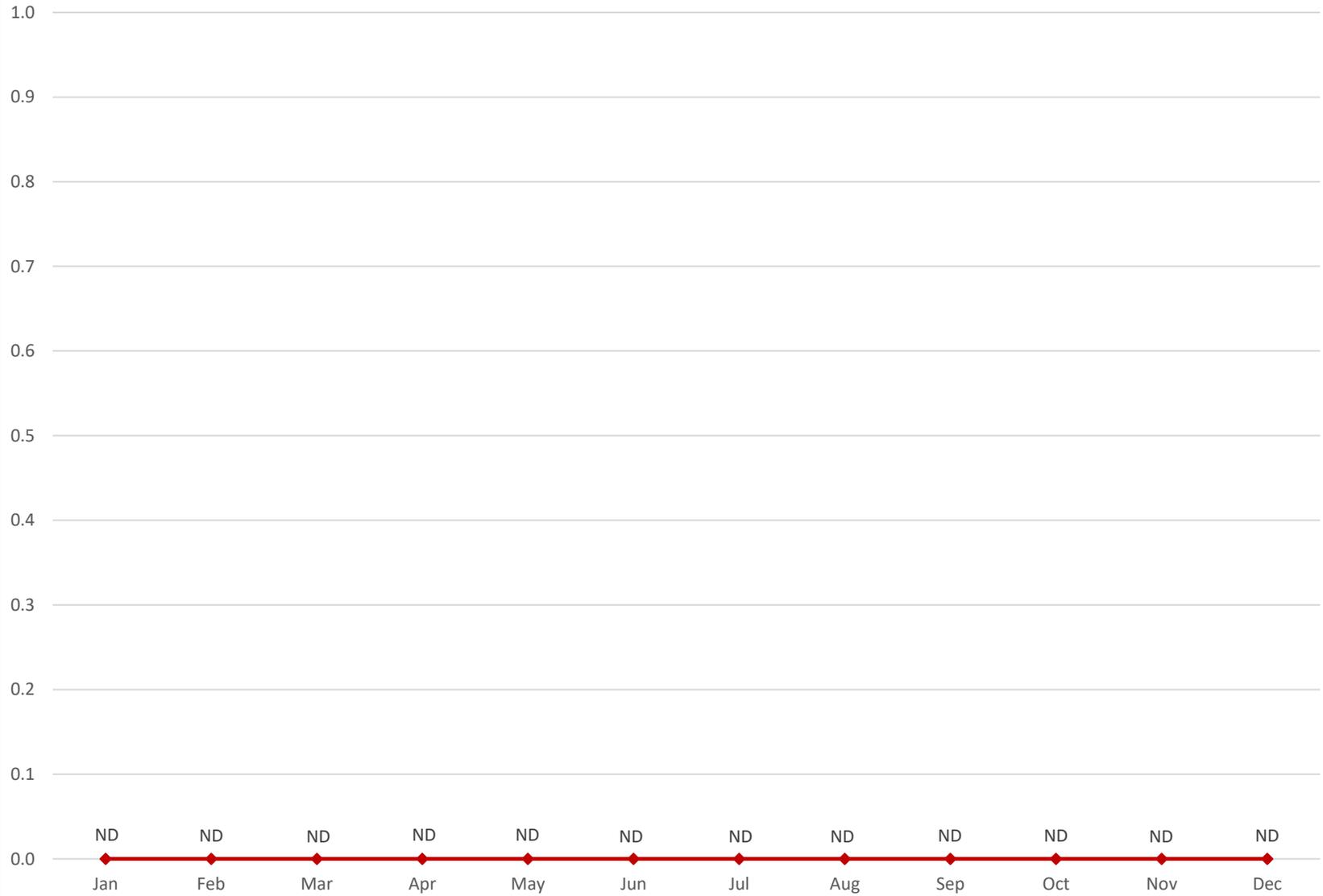
Average Ammonia, mg/L



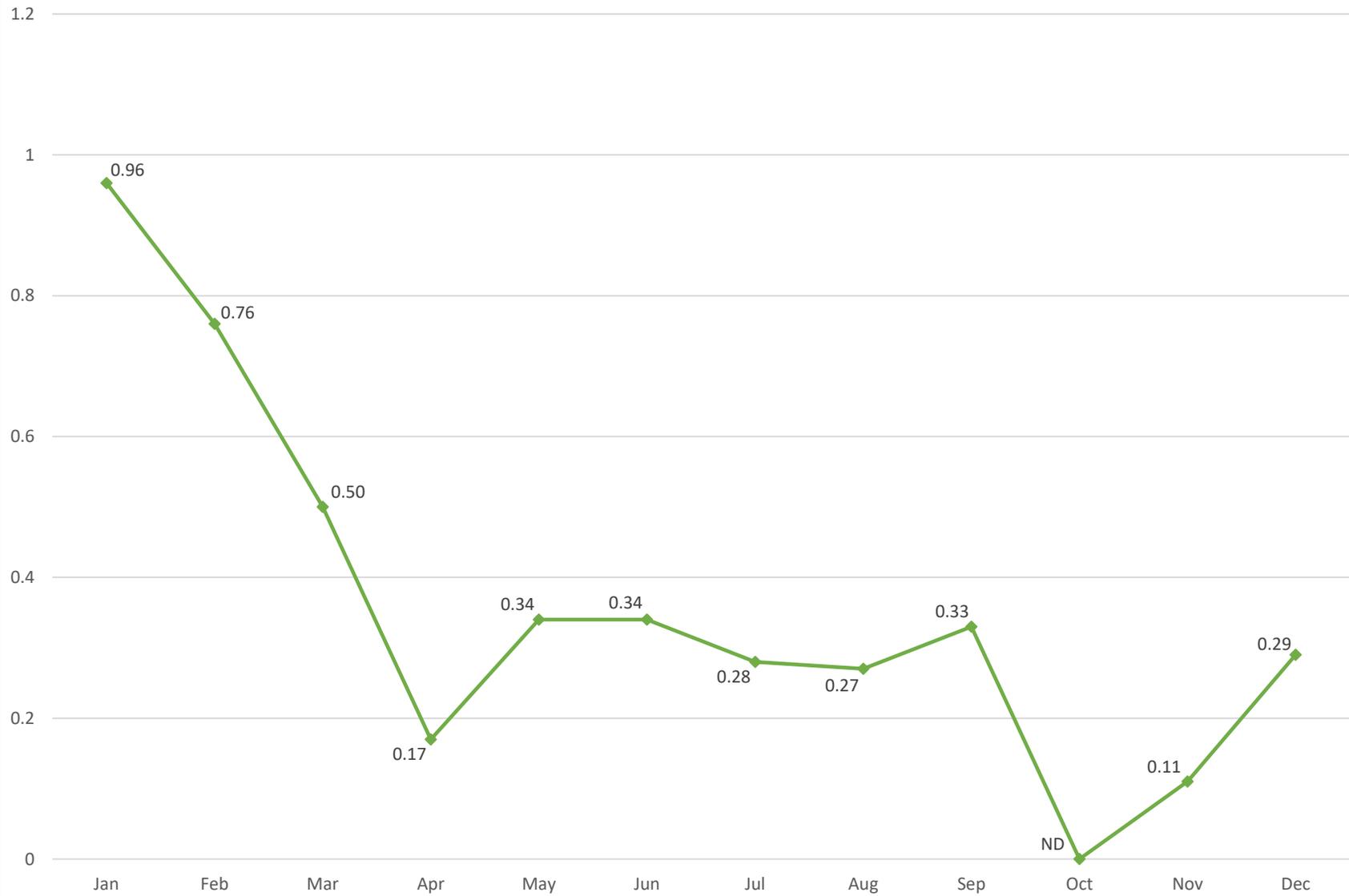
Average Nitrate, mg/L



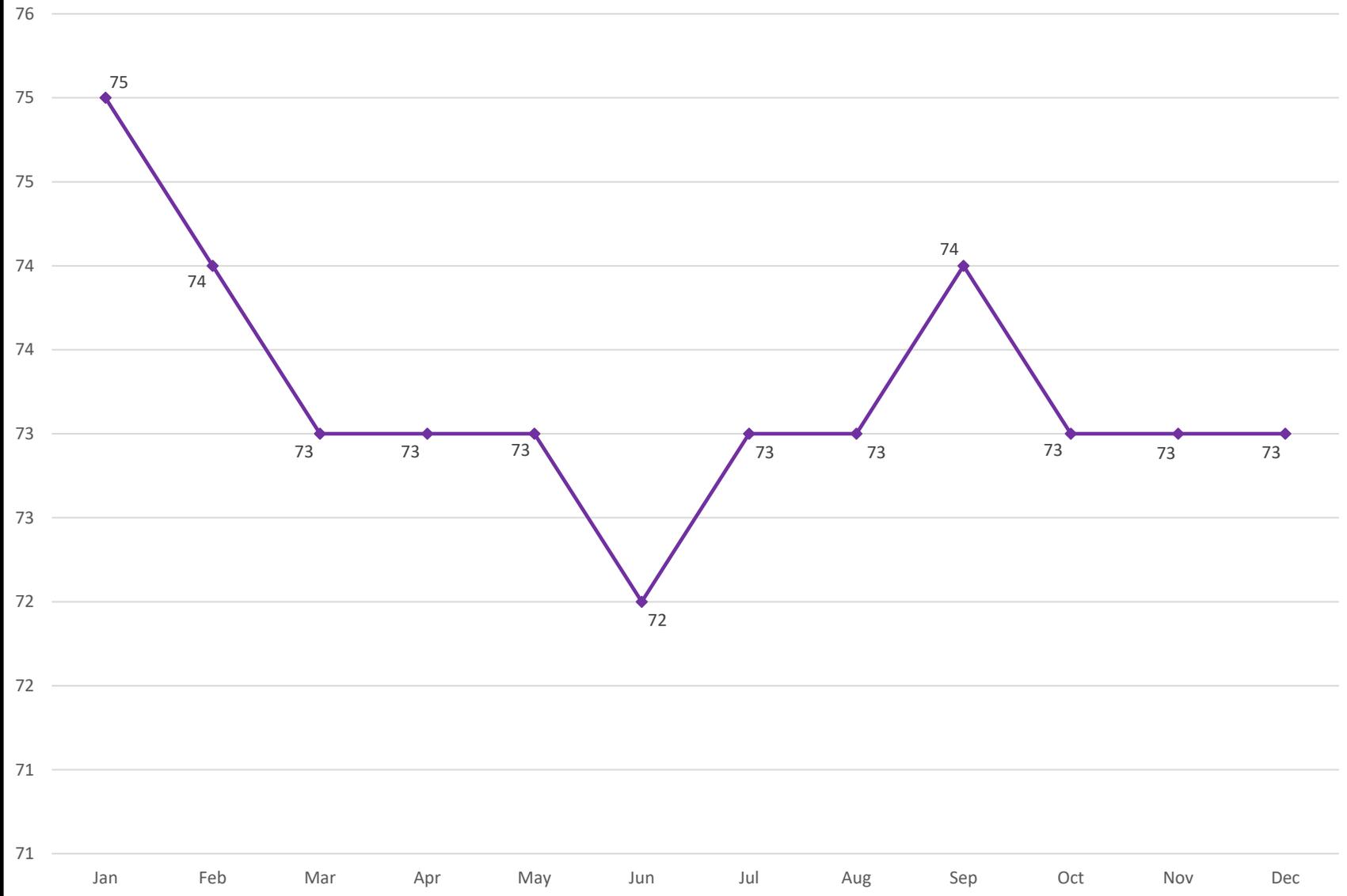
Average Nitrite, mg/L



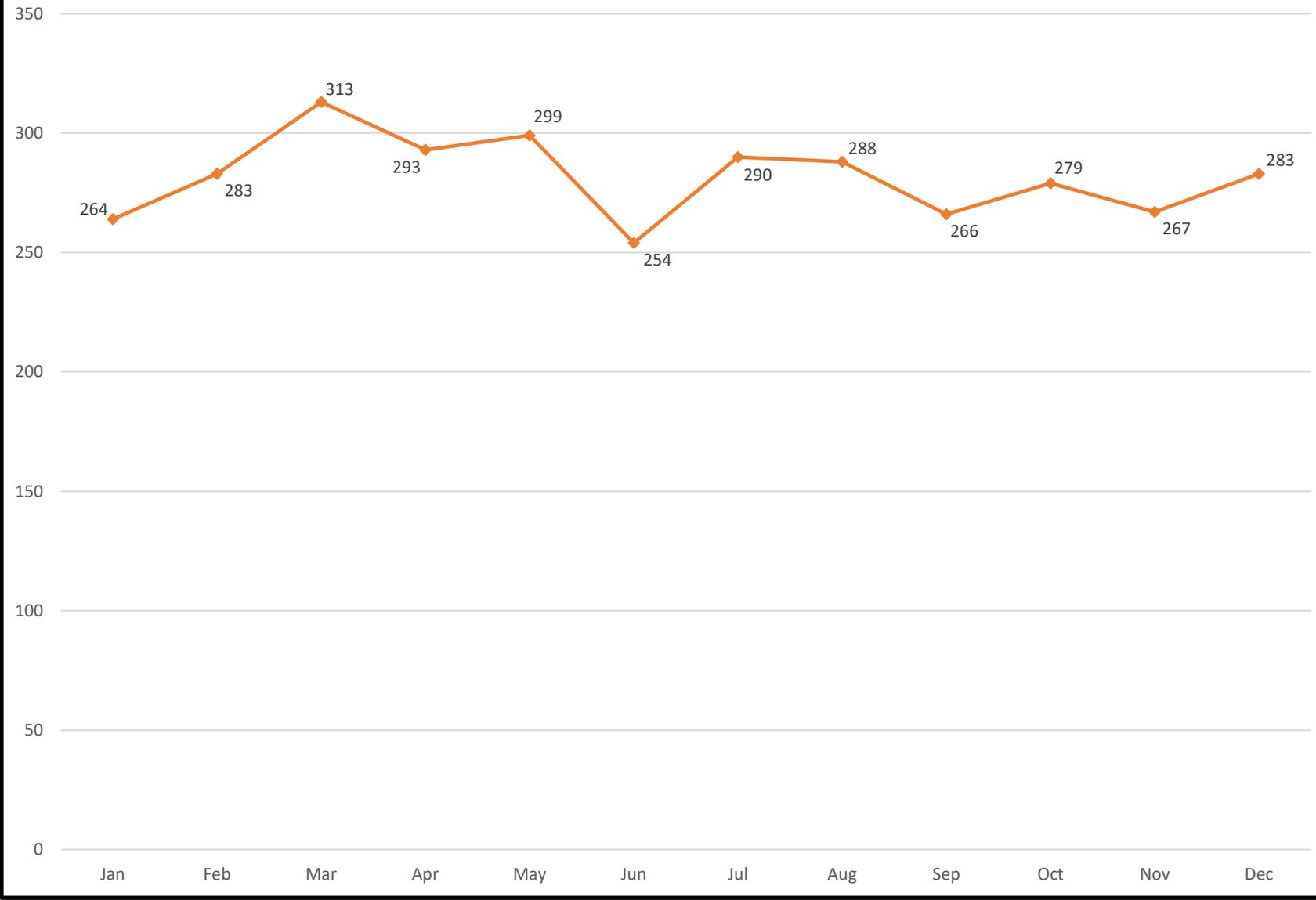
Average Total Nitrogen, mg/L



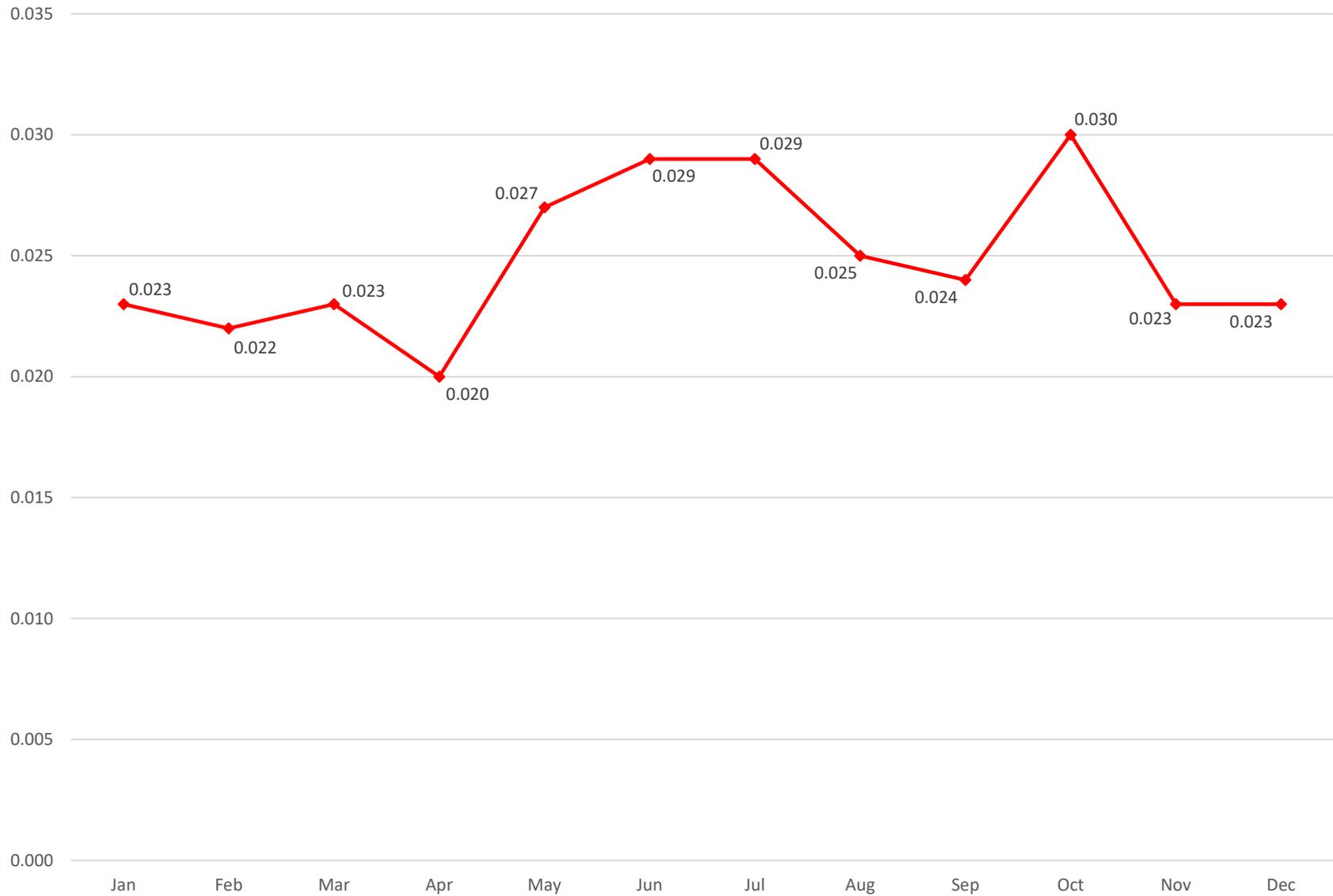
Average UV Transmittance, %



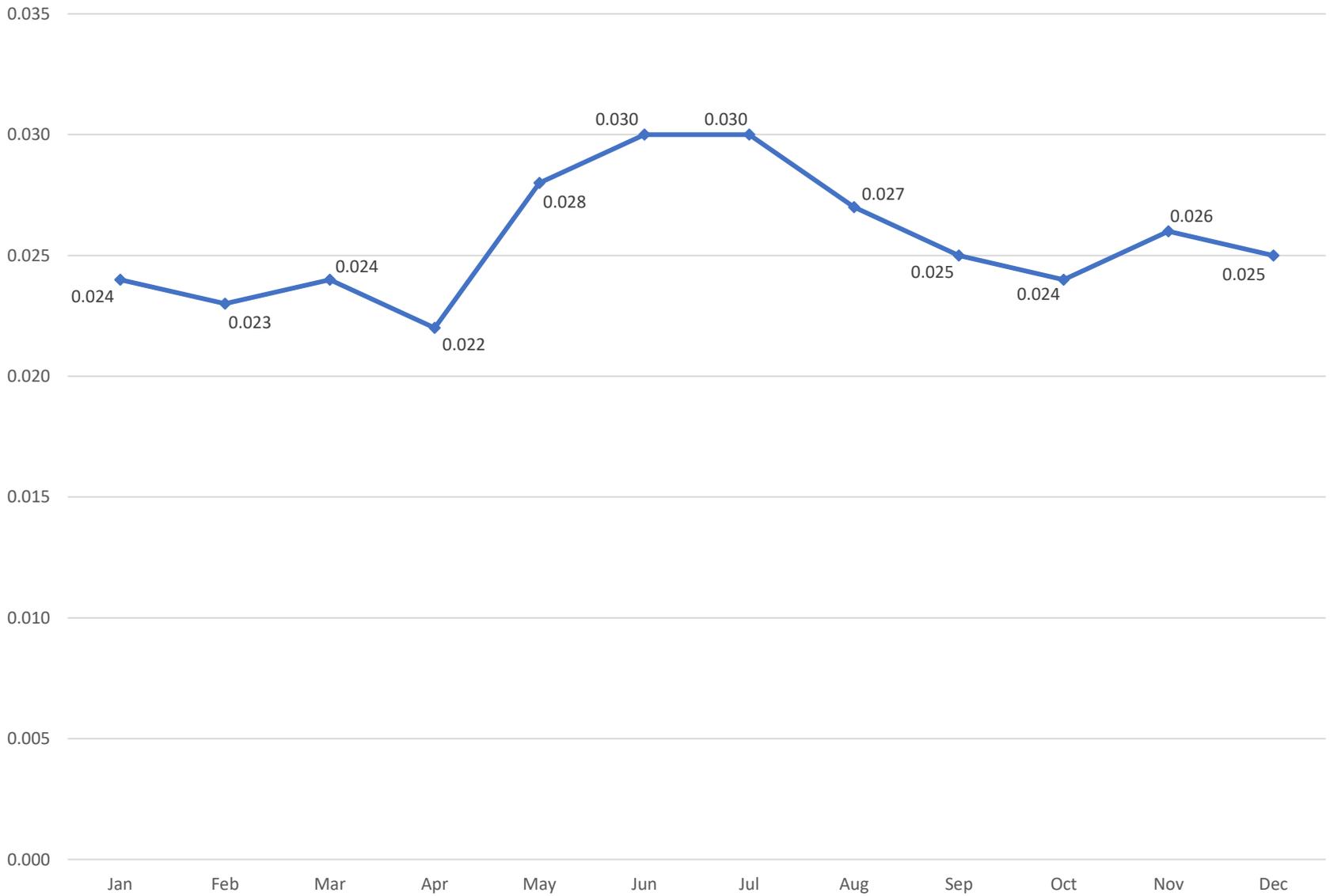
Average UV Dose, (mJ/cm²)



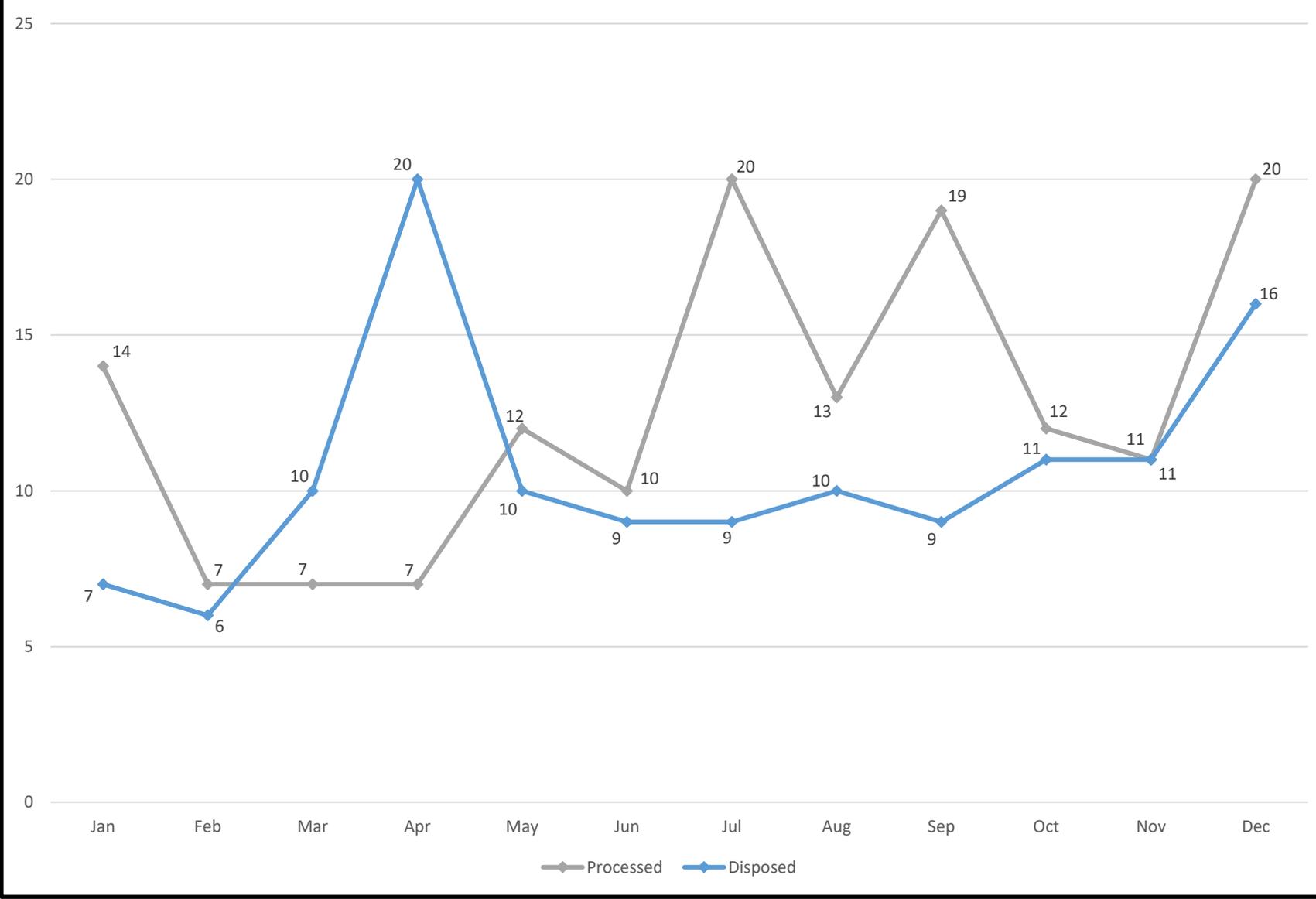
Average Effluent Turbitidy, NTU



Turbidity, 95th Percentile



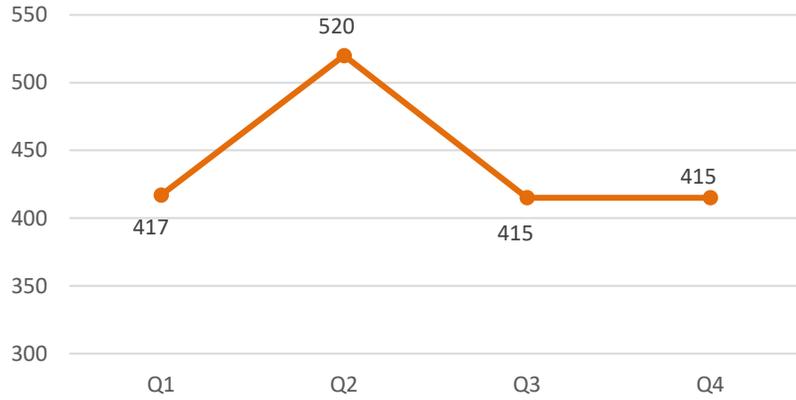
Total Biosolids Processed/Disposed, Dry Metric Tons



Appendix B

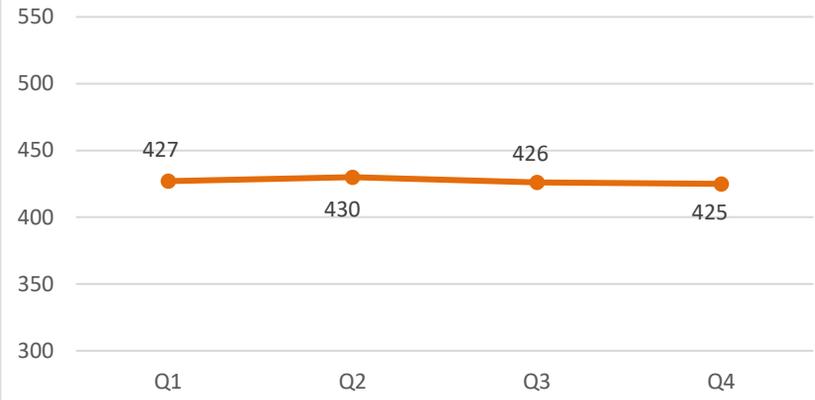
Monitoring Well Performance Charts

Depth to Groundwater in Feet



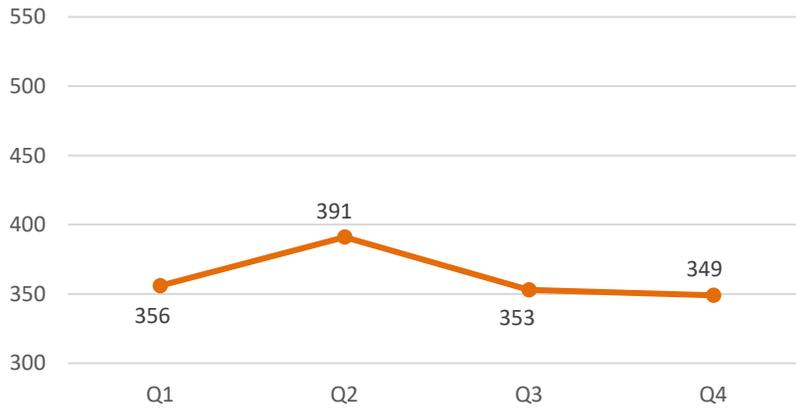
YV-3

Depth to Groundwater in Feet



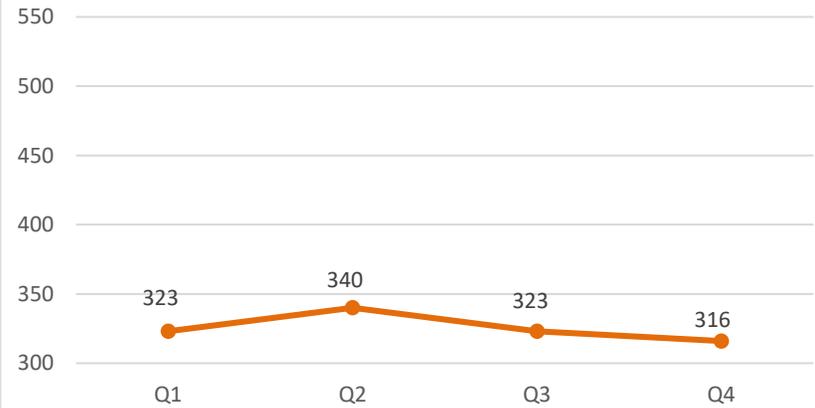
YVUZ-4

Depth to Groundwater in Feet

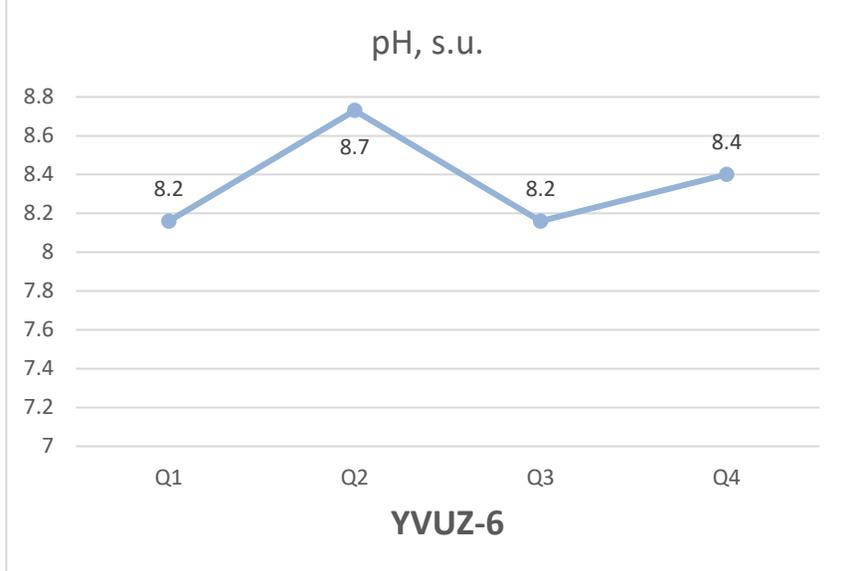
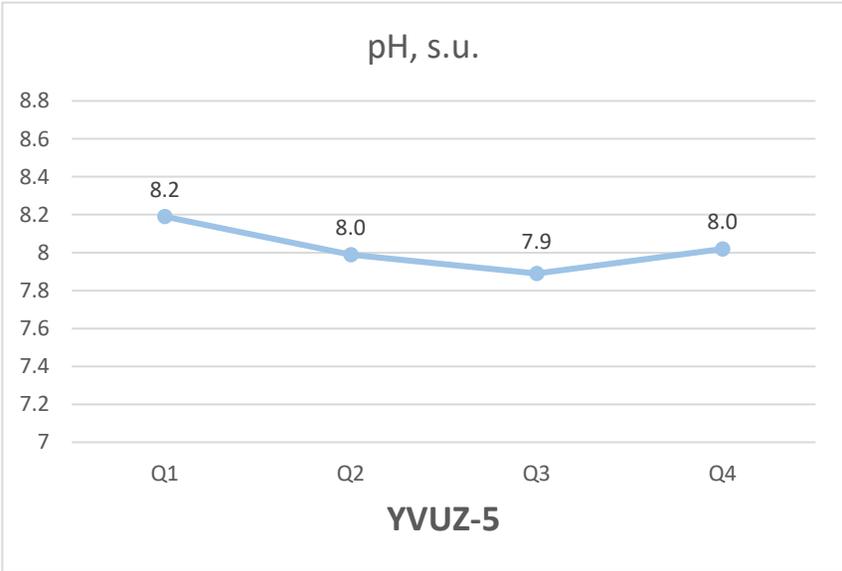
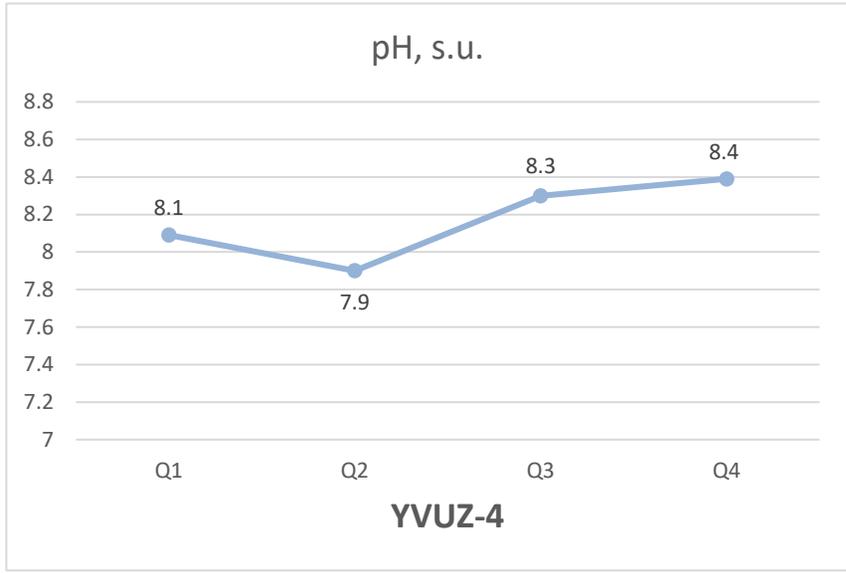
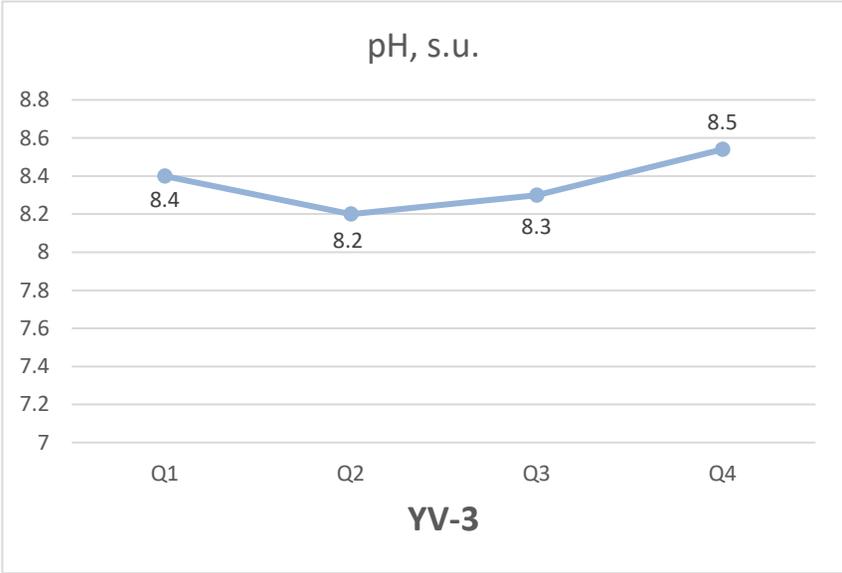


YVUZ-5

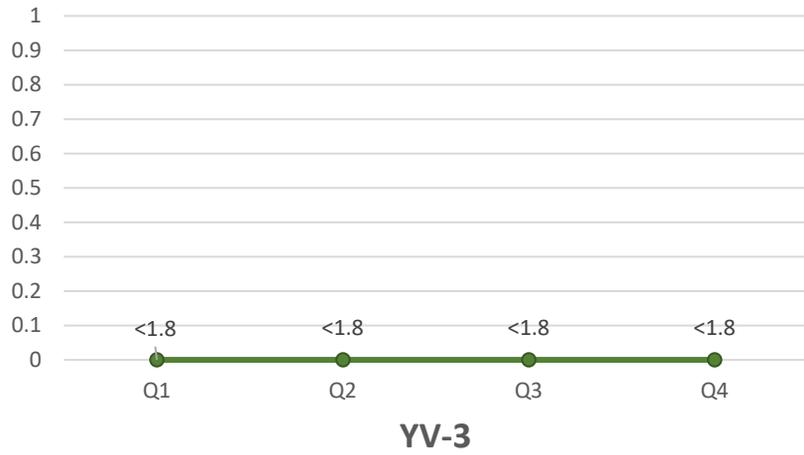
Depth to Groundwater in Feet



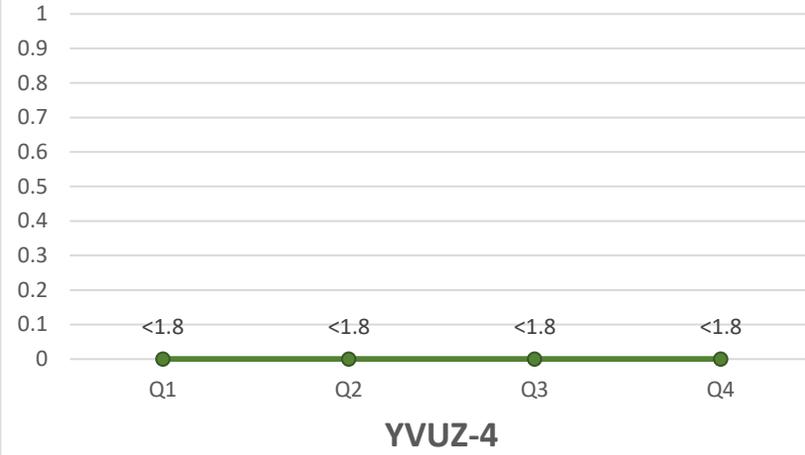
YVUZ-6



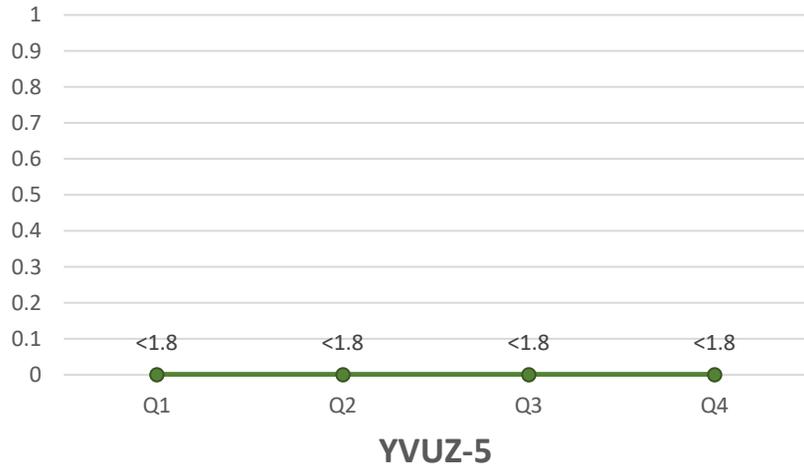
Fecal Coliform, MPN



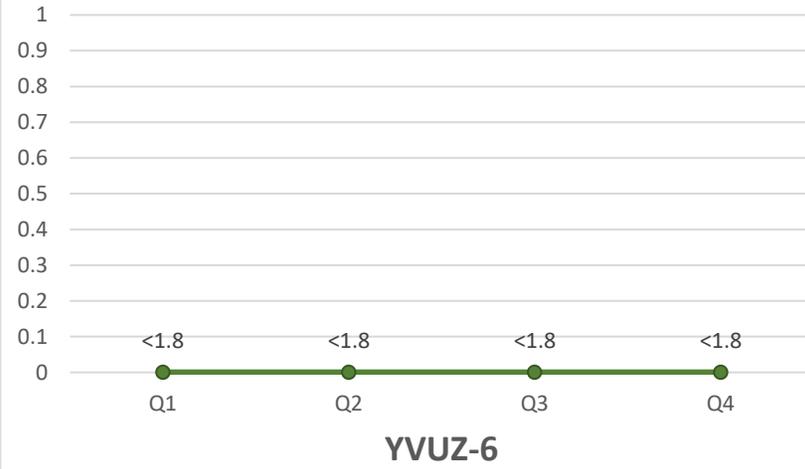
Fecal Coliform, MPN



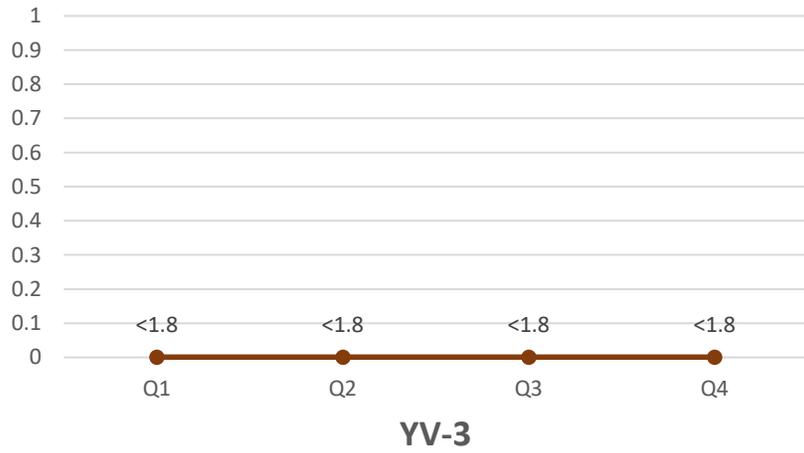
Fecal Coliform, MPN



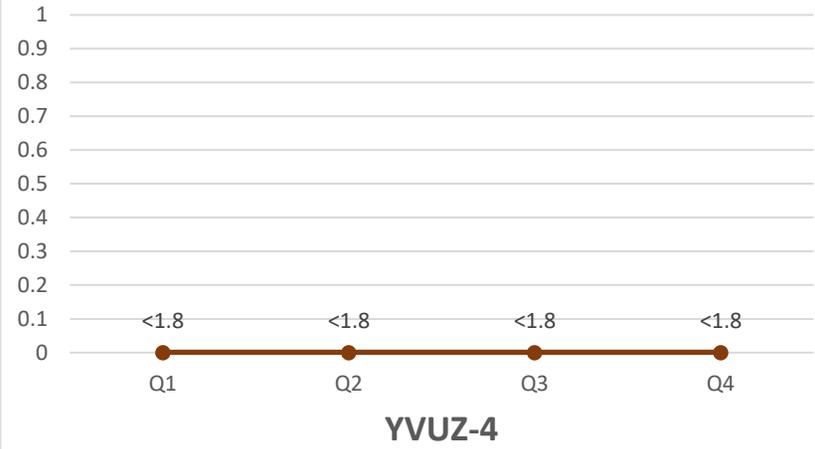
Fecal Coliform, MPN



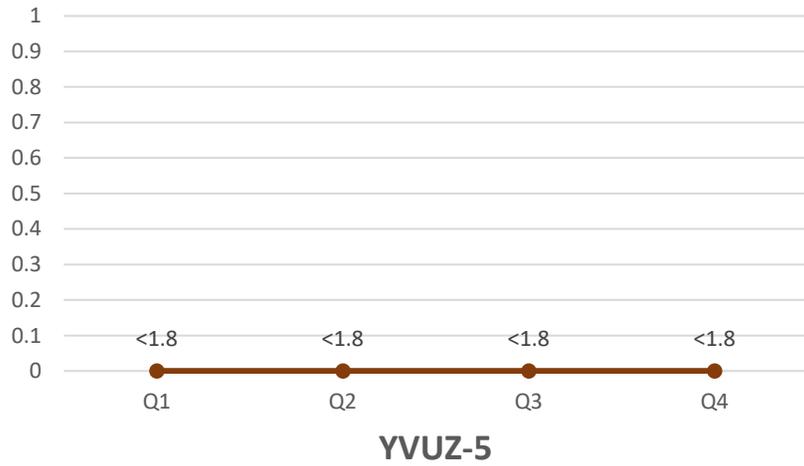
Total Coliform, MPN



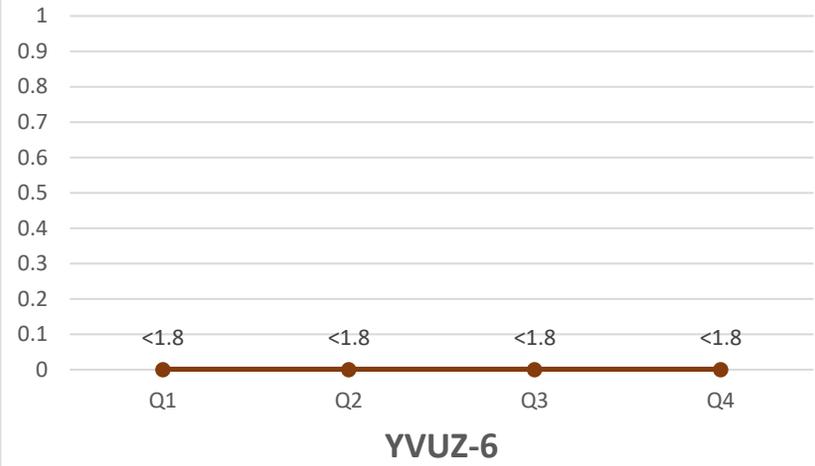
Total Coliform, MPN



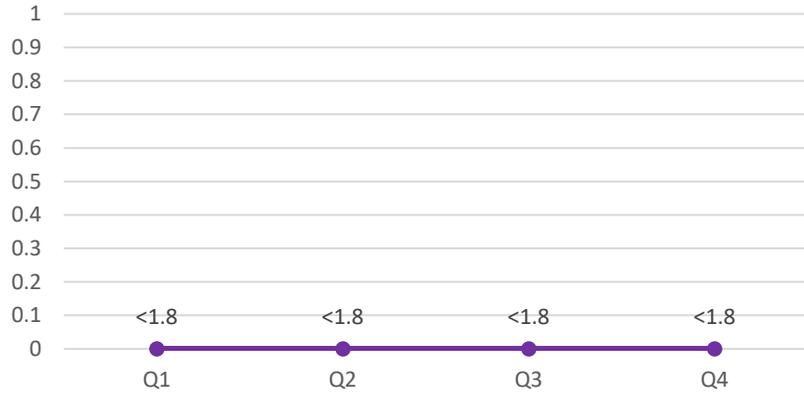
Total Coliform, MPN



Total Coliform, MPN

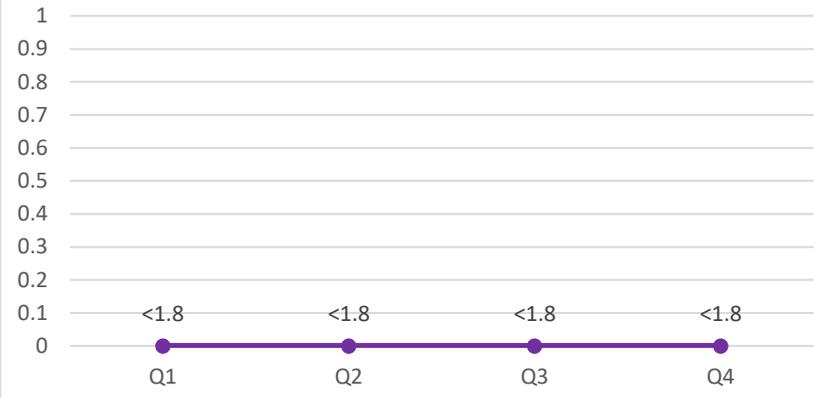


Enterococcous, MPN



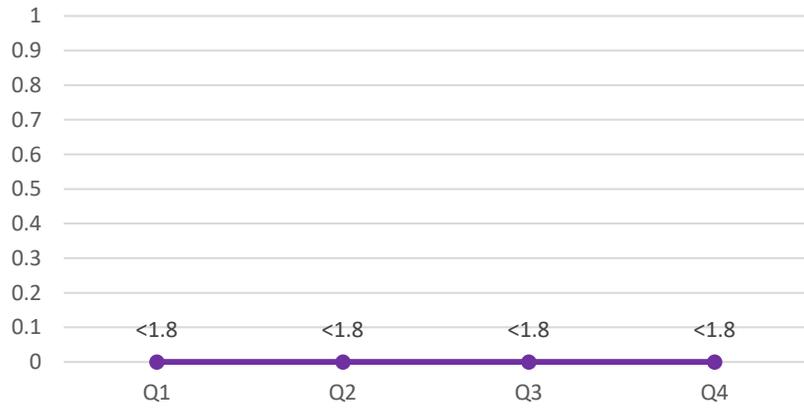
YV-3

Enterococcous, MPN



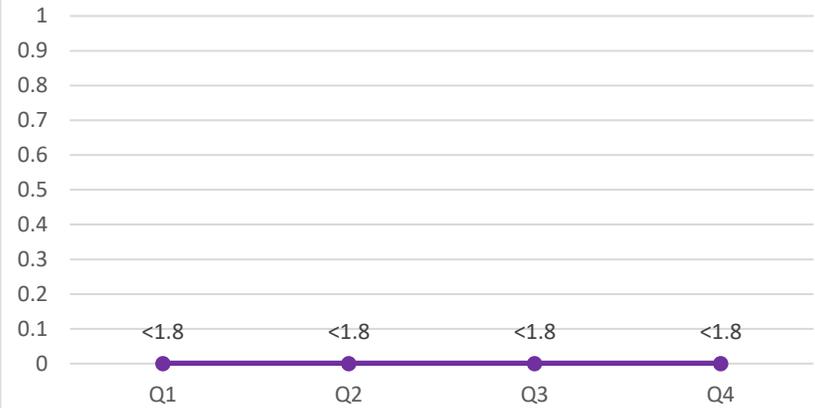
YVUZ-4

Enterococcous, MPN



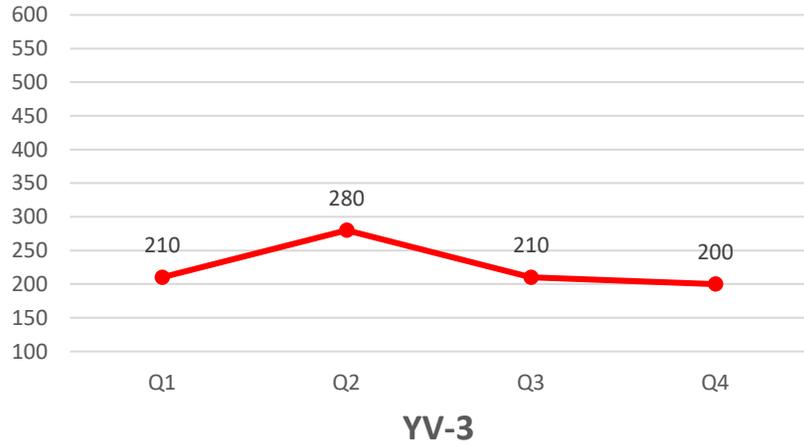
YVUZ-5

Enterococcous, MPN

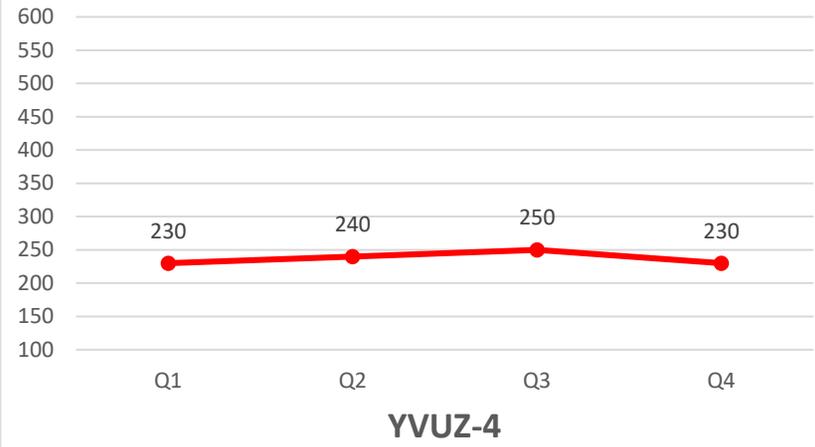


YVUZ-6

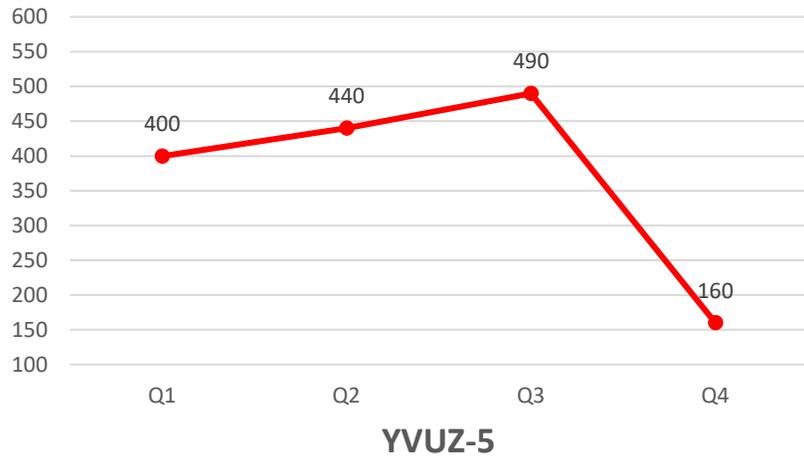
Total Dissolved Solids, mg/L



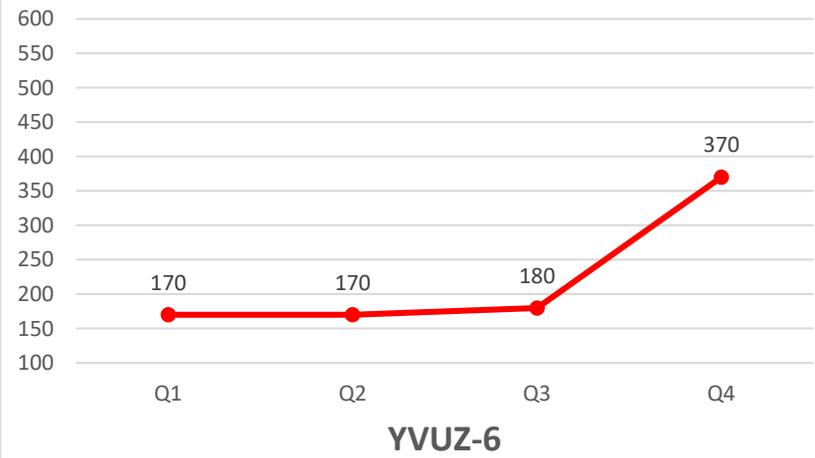
Total Dissolved Solids, mg/L



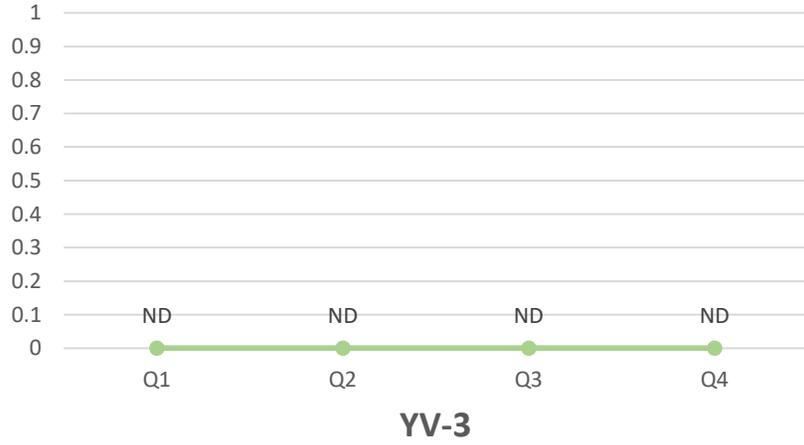
Total Dissolved Solids, mg/L



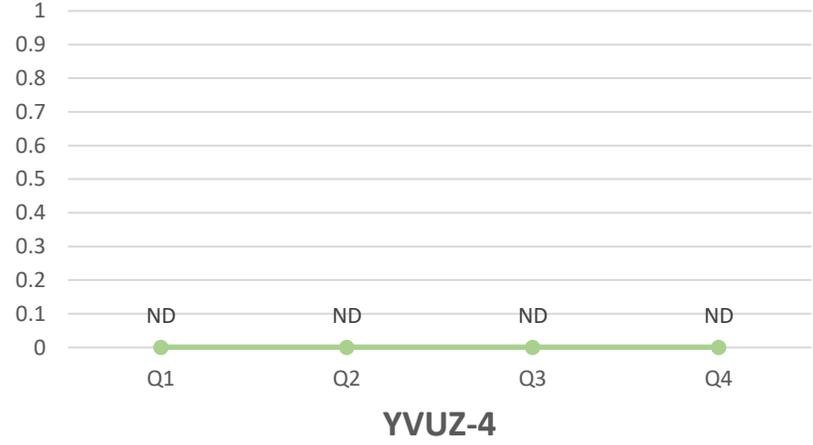
Total Dissolved Solids, mg/L



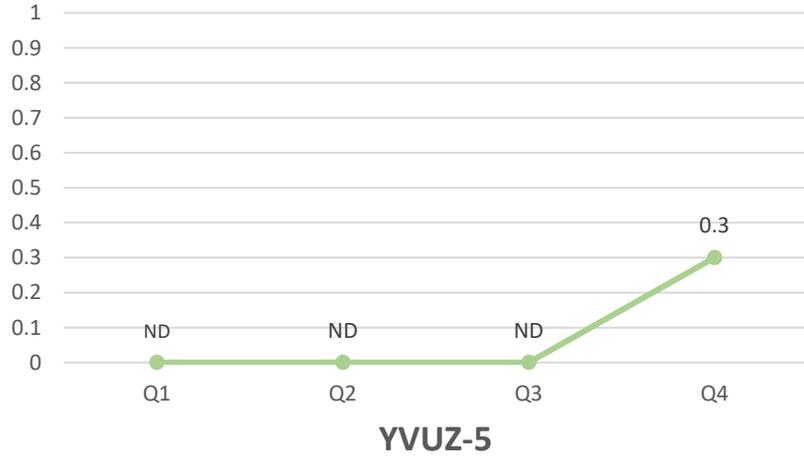
Ammonia as N, mg/L



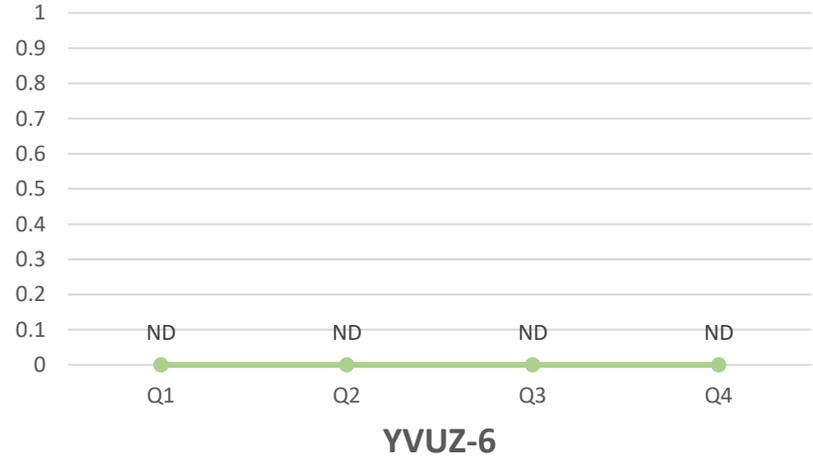
Ammonia as N, mg/L



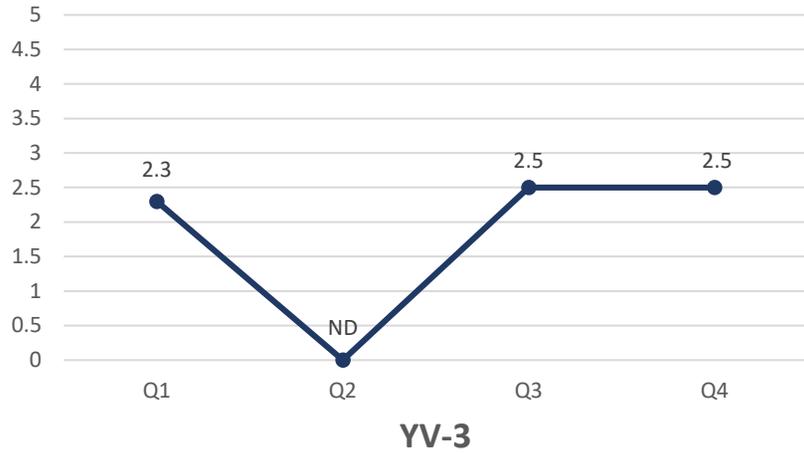
Ammonia as N, mg/L



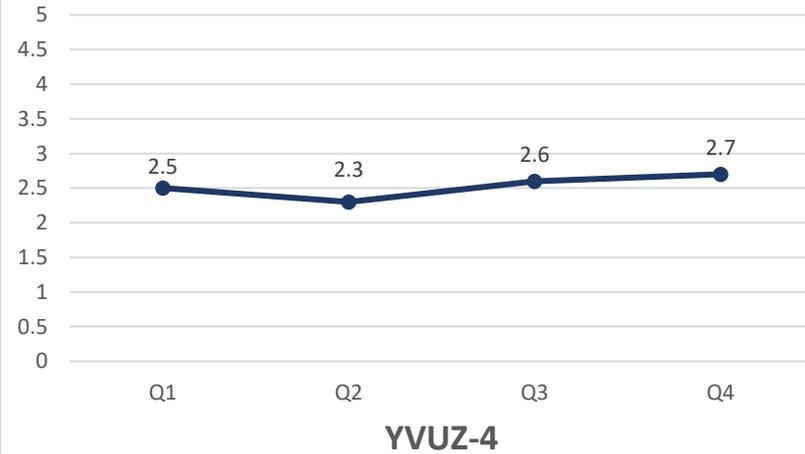
Ammonia as N, mg/L



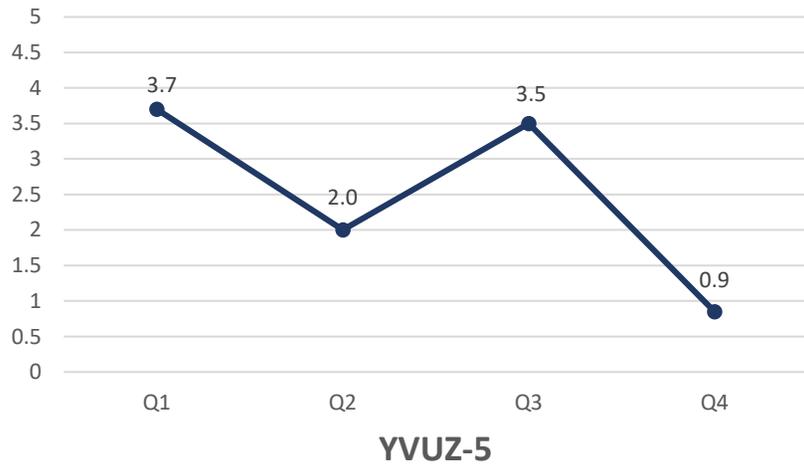
Nitrate as N, mg/L



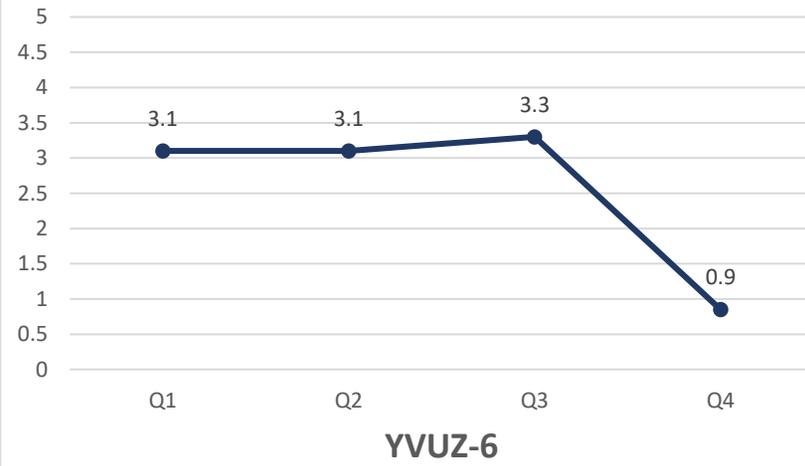
Nitrate as N, mg/L



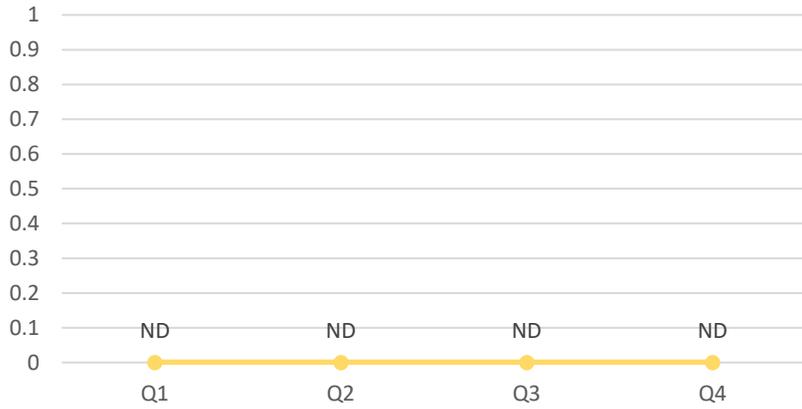
Nitrate as N, mg/L



Nitrate as N, mg/L

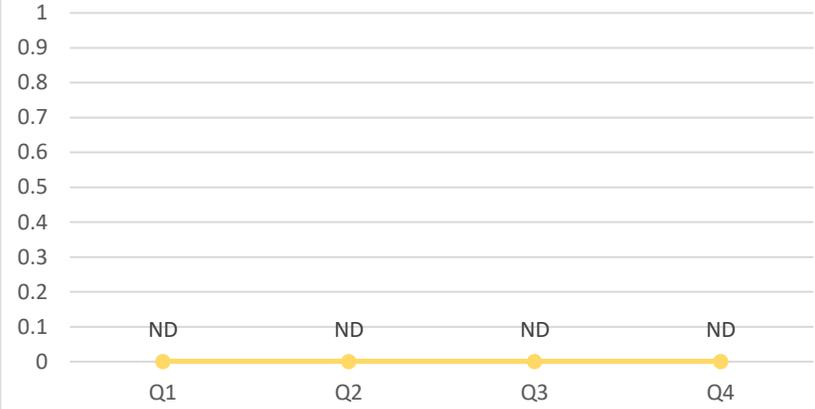


Nitrite as N, mg/L



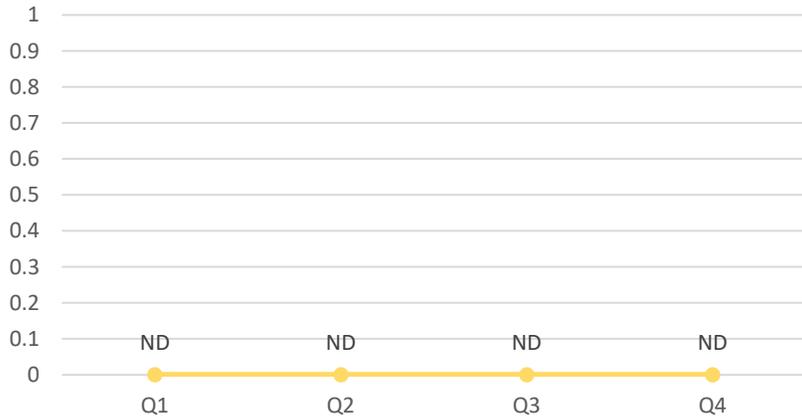
YV-3

Nitrite as N, mg/L



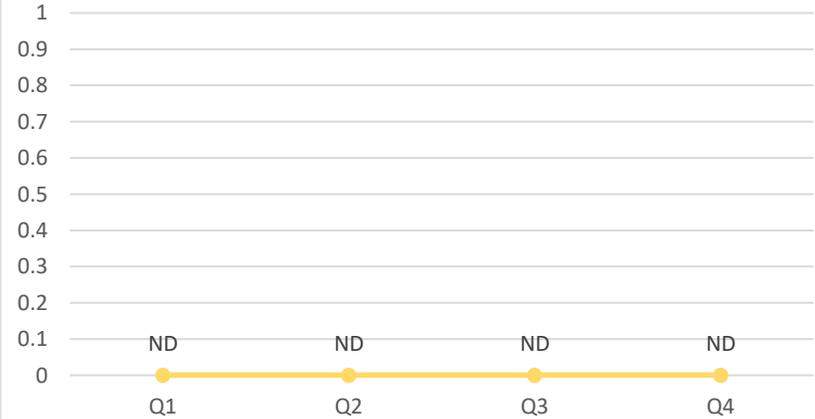
YVUZ-4

Nitrite as N, mg/L



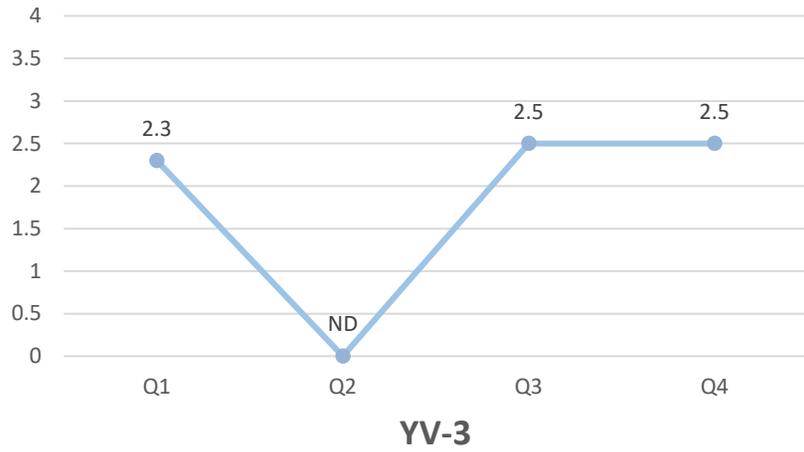
YVUZ-5

Nitrite as N, mg/L

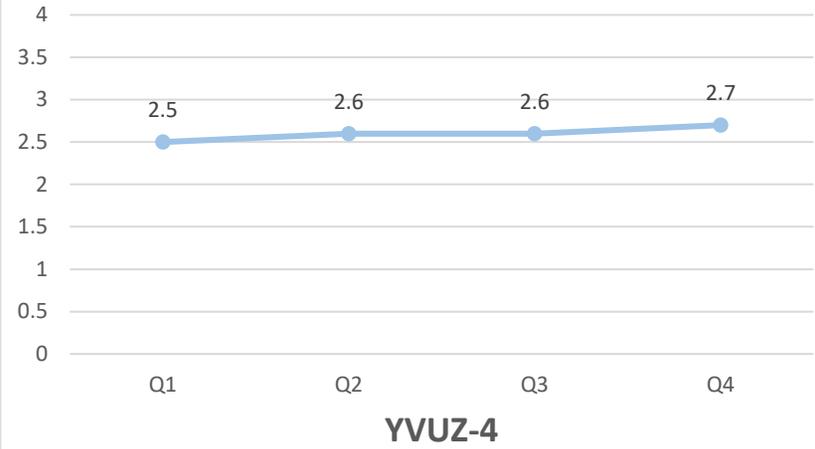


YVUZ-6

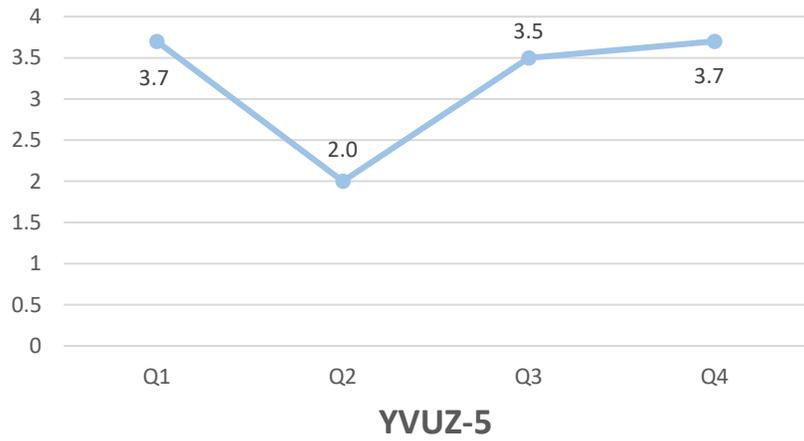
Total Nitrogen, mg/L



Total Nitrogen, mg/L



Total Nitrogen, mg/L



Total Nitrogen, mg/L

