Stantec

Field Report

Project:	City of Wasilla WWTP Pilot Study	Field Crew:	Jake Alward, John Marshall
File:	204700415	Date:	August 28 & 29, 2019

Subsurface☐ Surface☒ Vegetation Plot☐

Reference: August 28 & 29 Water Sampling Event

1.1 BACKGROUND

The August sampling event was for surface water only. All 19 sites, two duplicates, and 4 nitrate monitoring locations were sampled.

1.2 SAMPLING EVENT HIGHLIGHTS

SURFACE
Water was sampled at all 18 surface water locations on the city property with a duplicate of SW8 and SW18. Mr. Shaw's property and the effluent discharge were also sampled. All samples were collected by dipping. Intrinsic data from the YSI was taken at all locations apart from SW1 and the effluent discharge.

In-situ nitrate testing was conducted for four (4) nitrate monitoring locations as well as SW 11, 12, 13, 14, 15, 16, and Mr. Shaw's. All in-situ readings were below 1.0 mg/l. A table of nitrate testing results can be found below.

It was observed that the vegetation around the effluent discharge bed is noticeably greener and thicker than surrounding areas. There is now water pooled in the discharge bed and there is ground growing in the gravel discharge bed. The velocity of the water is still drastically cut as soon as it enters the discharge bed and therefore no erosion around the bed is present.

Small flows and streams were noticed throughout the wetland while water was being collected. There was a noticeable amount of extra water in the wetland, especially between SW6 and SW7. The small flows can start to be observed around SW9. The water appears to be flowing underneath a thin layer of algae slime. Larger flows are present around SW15. It is unclear if these flows are impacted from the percolation bed leakage or not.

WIER FLOW

Weir 1 (SW17)
Width: 2.21 -ft
Water Depth: 0.6 -ft
Veoicty: 0.295 -ft/s
Flow: 0.39 -cf/s

Reference: August 28 & 29 Water Sampling Event

Weir 2 (SW17)
Width: 3.22 -ft
Water Depth: 0.62 -ft
Velocity: 0.196 -ft/s
Flow: 0.39 -cf/s

IMPROVEMENTS FOR FUTURE SAMPLING:

Ensure the YSI always has a set of new batteries.

1.3 SAMPLE RESULT

Complete lab results can be found in the attachments. Results are from SGS.

August 29, 2019 *In-Situ* Nitrate Sampling Results

Sample Location	Date	Time	Result (mg/l)
BW8	8/29/2019	13:21	0
BW14	8/29/2019	13:30	0
BW10	8/29/2019	13:40	0
BW12	8/29/2019	13:43	0
SW11	8/29/2019	13:53	0
SW12	8/29/2019	13:56	0
Shaw	8/29/2019	14:01	0.5
SW13	8/29/2019	14:09	0
SW15	8/29/2019	14:13	0.2
SW16	8/29/2019	14:21	0.6
SW14	8/29/2019	14:23	0.5

Site ID	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW8.1	SW9	SW10
Date Collected	8/28/2019	8/28/2019	8/28/2019	8/28/2019	8/28/2019	8/28/2019	8/28/2019	8/28/2019	8/28/2019	8/28/2019	8/28/2019
Time	10:31	10:58	11:11	12:26	12:35	12:18	12:08	14:06	14:06	13:52	13:40
Sample Type	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
Water Temperature (°C)		11.28	12.12	13.19	12.07	13.16	13.24	12.23	12.23	14.53	12.69
Conductivity		814	945	897	479	995	502	332	332	738	477
pH		5.62	6.1	6.23	6.26	6.51	5.61	5.8	5.8	6.24	5.54
DO		1.97	1.51	5.27	4.65	8.08	1.9	1.46	1.46	4.18	1.36
Nitrate	ND(0.100)	ND(0.100)	9.59	ND(0.100)	ND(0.100)	ND(0.100)	ND(0.100)	ND(0.100)	ND(0.100)	ND(0.100)	ND(0.100)
Total Nitrate/Nitrite	ND(0.100)	ND(0.100)	9.6	ND(0.100)	ND(0.100)	ND(0.100)	ND(0.100)	ND(0.100)	ND(0.100)	ND(0.100)	ND(0.100)
TSS	1040	70.8	39.2	56.7	7.27	19.5	49.4	92.2	157	105	98.6
TKN	ND(0.500)	ND(0.500)	ND(0.500)	ND(0.500)	ND(0.500)	ND(0.500)	ND(0.500)	ND(0.500)	ND(0.500)	ND(0.500)	ND(0.500)
Ammonia	0.279	ND(0.0500)	0.101	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)
Total P	0.637	0.195	0.819	0.384	ND(0.0100)	ND(0.0100)	0.074	0.267	0.0287	0.124	0.12
BOD	6.03	3.2	ND(2.00)	2.9	4.43	2.42	2.65	4.95	4.21	3.27	4.83
FC	17	50	ND(2)	ND(2)	66	20	10	120	830	12	40
E. Coli	ND(10)	10	ND(10)	ND(10)	52	25	ND(10)	105	60	ND(10)	40
TC	1960	3650	2910	14140	1733	1986	2600	2420	1610	5170	24200

Site ID	SW11	SW12	SW13	SW14	SW15	SW16	SW17	SW18	SW18.1	Shaw	Effluent
Date Collected	8/29/2019	8/29/2019	8/29/2019	8/29/2019	8/29/2019	8/29/2019	8/29/2019	8/29/2019	8/29/2019	8/29/2019	8/29/2019
Time	10:07	10:20	10:32	11:15	11:00	10:48	11:42	11:56	11:56	12:33	13:39
Sample Type	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
Water Temperature (°C)	9.03	10.48	11.36	9.48	10.38	11.06	8.43	8.51	8.51	10.41	
Conductivity	421	458	468	474	381	340	673	725	725	495	
pH	5.56	5.89	6.22	6.64	6.26	6.03	5.89	6.27	6.27	6.32	
DO	1.88	2.2	1.96	2.29	1.43	1.12	6.9	7.35	7.35	2.8	
Nitrate	ND(0.100)	ND(0.100)	ND(0.100)	ND(0.100)	ND(0.100)	ND(0.100)	3.31	4.1	4.11	ND(0.100)	33.6
Total Nitrate/Nitrite	ND(0.100)	ND(0.100)	ND(0.100)	ND(0.100)	ND(0.100)	ND(0.100)	3.32	4.13	4.14	ND(0.100)	34.3
TSS	153	1950	124	211	124	928	2.16	2.78	3.09	108	14.7
TKN	ND(0.500)	ND(0.500)	ND(0.500)	ND(0.500)	ND(0.500)	1.33	ND(0.500)	ND(0.500)	ND(0.500)	ND(0.500)	2.36
Ammonia	ND(0.0500)	0.12	0.128	ND(0.0500)	0.121	0.168	ND(0.0500)	0.205	0.209	0.2	0.203
Total P	0.864	0.779	0.225	0.94	0.115	0.697	0.161	0.324	0.416	1.16	5.58
BOD	7.81	7.76	5.52	7.73	5.73	9.17	ND(2.00)	2.74	2.49	3.2	12.7
FC	155	100	55	9.1	ND(9)	ND(100)	153	96	70	36	950
E. Coli	410	54	20	ND(10)	11	89	185	60	79	80	860
TC	1620	24200	12030	2910	387	24200	1986	1260	1300	4350	24200

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August Photo Log

Photo 1:
Berm (looking north)

Photo 2:
Berm (looking south)

Photo 3:
SW-1

Photo 4:
Effluent Discharge

Photo 5:
SW-5

Photo 6:
SW-10