

City of Anacortes
NPDES Permit No. WA0020257
2018 CSO & Wet Weather Operation Report

The City of Anacortes currently has two combined sewer overflow (CSO) locations as identified in the NPDES Permit issued to the City of Anacortes Wastewater Treatment Plant. Both outfalls satisfy the Washington State requirement of “greatest reasonable reduction” defined in WAC 173-245-020(22) by meeting the standard of not more than one discharge event per outfall per year on average and therefore are classified as controlled CSOs.

Background

Areas within the City of Anacortes are served by a partially combined sewer system where both the storm and sanitary sewer systems are joined. The City of Anacortes has two CSOs which have the potential to allow untreated wastewater combined with stormwater to discharge to Guemes Channel during extreme storm events. The CSOs are identified as CSO Outfall 002, the “B Avenue CSO” and CSO Outfall 004, the “Q Avenue CSO”.

Outfall 002 – B Avenue CSO

The B Avenue CSO is located one-half block north of the intersection of B Avenue and 11th Street. Discharges from the CSO occur when combined stormwater and sanitary sewer levels rise high enough in the collection system to overflow a dam in the CSO manhole separating the manhole channel from the CSO outfall pipe. Flow from the CSO is discharged into Guemes Channel through a 12-inch pipe to the outfall located at latitude: 48.515278, longitude: -122.634167 as stated in the NPDES permit.

The B Avenue CSO is monitored with Flo-Tote flowmeter and flow logging system. The flow meter measures level and velocity to determine flow which is reported to the treatment plant via a telemetry system. When the meter is active a signal is transmitted to the plant which activates an alarm in the SCADA system indicating overflow at this CSO. Flow data and totalized flow are recorded by the plant data acquisition system and are available for publishing on plant reports.

Outfall 004 – Q Avenue CSO

The Q Avenue CSO manhole is located at the intersection of 2nd Street and Commercial Avenue on Port of Anacortes property leased to Dakota Creek Industries, Inc. (DCI) who operates a shipyard on this site. This CSO is in a Residential/Commercial/Industrial zoned drainage basin. The outfall pipe is located at the northernmost end of Q Avenue directly underneath DCI's syncro lift facility which they use to haul large ships out of the water for maintenance. Discharges from this CSO occur when combined stormwater and sanitary sewer levels rise high enough in the collection system to overflow a concrete dam separating the manhole channel from the CSO outfall pipe in the CSO manhole at 2nd Street and Commercial Avenue. The concrete dam is equipped with a scum baffle to keep solids and floatables out of the CSO flow stream. Flow from the CSO is discharged into Guemes Channel through the outfall located at latitude: 48.521667, longitude: -122.609444 as stated in the NPDES permit.

The Q Avenue CSO is monitored by a Krohne Tidal Flux Magmeter and flow logging system installed in October 2018. The original Krohne flow measurement system, installed in 1998, was destroyed in 2017 and replaced by a Flo-Tote flowmeter. After installation and setup, it was determined the Flo-Tote was not well suited for the application and, therefore, was replaced by a new Krohne meter. In addition to the new flow meter, the duck bill valve at the end of the CSO outfall was replaced in February 2018. Both flow meters (the Krohne and the Flo-Tote) measure level and velocity to determine flow which is reported to the treatment plant via a telemetry system. Flow data and totalized flow are recorded by the plant data acquisition system and are available for publishing on plant reports. This site has a local flow totalizer as a back up to the telemetry and SCADA system. Impending overflow events are detected via a float switch which provides an alarm at the treatment plant. The float switch is activated when the level in the sewer system approaches the height of the overflow weir. The alarm alerts plant personnel of the impending CSO activity.

Rainfall Data

Rainfall reported is recorded at the Anacortes Wastewater Treatment Plant by a tipping bucket rain gauge. Rainfall totals are reported from 7:00 a.m. on the indicated day to 6:59:59 a.m. on the following day.

Supporting Documents and Public Notice

Detailed information for the B Avenue and Q Avenue CSOs are included in later next sections of this report with applicable flow trends included in Appendix A.

Rainfall data is included in Appendix B.

Public notice announcing the availability of the Annual CSO report will be advertised in the Anacortes American, the City of Anacortes official newspaper of record.

CSO Event Summary

Table 1 and Table 2 include specific information for CSO events at each outfall in the last 5 years and a 20 year summary of the total number of CSO events per outfall.

Table 1. City of Anacortes Wastewater Collection System B Avenue CSO History

B Avenue CSO – Discharge 002					
Date	Duration (hours)	Overflow Total (gallons)	Precipitation During Event (inches)	Storm Duration	Comments
2014 - 2018	n/a	0			
5 Year Average Number of Events: 0			No events in the past 20 years		
Unauthorized CSO Discharge – (event not caused by precipitation)					
2/4/18	12 minutes	3,400	Estimated Volume.	Discharge reported under ERTS 679072.	

B Avenue CSO

There have been no overflow events caused by precipitation at this CSO since 1997 and one discharge caused by equipment malfunction in 2018 during a power outage when the automatic transfer switch failed to transfer the pump station from line power to the emergency generator. This event was reported under ERTS 679072.

The average frequency of overflow events at this CSO in the past 20 years is equivalent to zero events, or a 0% probability of an overflow event occurring during any given year.

Table 2. City of Anacortes Wastewater Collection System Q Avenue CSO History

Q Avenue CSO – Discharge 004					
Date	Duration (hours)	Overflow Total (gallons)	Precipitation During Event (inches)	Storm Duration	Comments
2014	n/a	0			
1/5/2015	5.2	160,600	2.30		
11/17/2015	2.0	46,000	4.21		Estimated Volume
2/15/2016	5.07	76,471	3.09	28.2 hrs	
2017	n/a	0			
2/3 to 2/4 2018	14.15	1,704,100	2.12	32 hrs	
5 Year Average Number of Events: 0.8		Past 20 years (1999-2018): 9 events			
2018 Annual Rainfall: 28.04 inches					

Q Avenue CSO

Flow monitoring was installed on this CSO in January of 1998. A total of nine overflow events caused by precipitation have occurred during the past twenty years; one in 2003, two in 2007, one in 2009, one in 2010, two in 2015, one in 2016 and one in 2018.

The average frequency of overflow events at this CSO in the past 20 years is equivalent to one event every 2.2 years, or a 45% probability of an overflow event occurring during any given year.

The NPDES permit requires that a five year moving average value for CSO events be calculated and reported. During the last five years there have been four events at this CSO. This equates to an average of 0.8 events per year, or an 80% probability that a CSO event would occur during any given year.

A chart detailing overflow events and rainfall information for this CSO site during the most recent five year period is included in Appendix A.

Sewer Line Repairs and CSO Reduction Accomplishments

In 2018 approximately 6298 linear feet of sanitary sewer pipe ranging in sizes from 6-inch to 21-inch was rehabilitated with cast in place pipe. In 2018, the City expended approximately \$400,000 in sewer rehabilitation work. Additionally, the City contracted with an engineering firm to study the feasibility of inline or some other form of sewer storage to contain excess water during peak flow events.

Planned Improvements

The City continues to work with the engineering firm to model the system and evaluate possible sewer storage solutions.

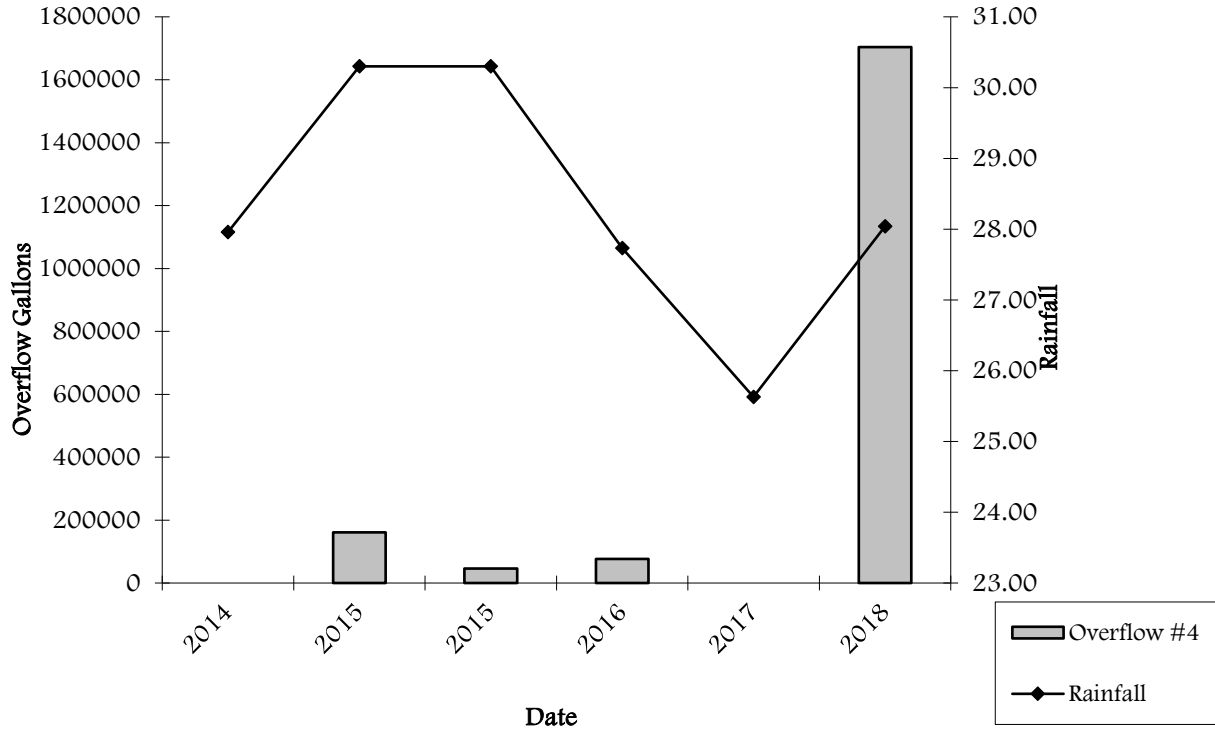
**Wet Weather Report
Summary of Secondary Bypass Events**

Influent flow to the Anacortes Wastewater Treatment Plant exceeded the capacity of the secondary treatment process two times. The following information about those events is summarized in the table below:

Date	Duration (hours)	Bypass Volume in gallons	Flow at the time bypass started	Precipitation (inches)
1/11/18	2.1	167,639	9.8 MGD	1.01
2/3 to 2/4/18	18.65	1,541,932	9.9 MGD	2.12

Appendix A

Discharge 004, Q Ave CSO Annual Baseline



Appendix B

Anacortes Wastewater Plant Annual Rainfall Report 2018

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0.00	0.30	0.00	0.03	0.00	0.00	0.04	0.00	0.00	0.02	0.92	0.00
2	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
3	0.00	1.90	0.00	0.00	0.00	0.19	0.00	0.00	0.00	0.00	0.38	0.00
4	0.12	0.35	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00
5	0.16	0.11	0.00	0.56	0.00	0.00	0.00	0.00	0.00	0.05	0.01	0.00
6	0.01	0.15	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.60	0.02	0.10	0.02	0.00	0.01	0.00	0.00	0.19	0.14	0.00	0.00
8	0.20	0.00	0.13	0.06	0.03	0.26	0.00	0.00	0.00	0.10	0.02	0.00
9	0.01	0.00	0.00	0.00	0.55	0.06	0.01	0.00	0.17	0.00	0.41	0.19
10	0.16	0.00	0.00	0.14	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.09
11	1.01	0.00	0.00	0.03	0.00	0.00	0.00	0.05	0.03	0.00	0.00	0.67
12	0.35	0.00	0.00	0.02	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.29
13	0.00	0.26	0.34	0.10	0.00	0.04	0.00	0.00	0.01	0.00	0.19	0.04
14	0.00	0.09	0.15	0.37	0.00	0.00	0.03	0.00	0.08	0.00	0.11	0.13
15	0.01	0.15	0.00	0.07	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.00
16	0.00	0.60	0.00	0.70	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.28
17	0.11	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
20	0.01	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.05
21	0.26	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.04	0.00	0.29	0.00
22	0.01	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.14	0.05
23	0.29	0.20	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.13	0.10
24	0.44	0.18	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.07	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.12	0.01
26	0.13	0.00	0.62	0.00	0.00	0.00	0.00	0.01	0.00	0.17	0.21	0.17
27	0.07	0.00	0.11	0.09	0.00	0.00	0.00	0.00	0.00	0.84	0.04	0.02
28	0.05	0.03	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.08	0.03	0.94
29	0.52		0.22	0.10	0.00	0.04	0.00	0.00	0.20	0.01	0.00	0.69
30	0.10		0.00	0.09	0.00	0.12	0.00	0.00	0.14	0.27	0.05	0.00
31	0.03		0.00		0.00		0.00	0.00		0.56		0.00
Monthly Total	4.72	4.89	2.75	3.14	0.66	0.78	0.08	0.06	1.17	2.54	3.16	4.09
Annual Rainfall												28.04

Rainfall data represents inches of precipitation in a 24-hour period from 7 am to 7 am.