

**CITY OF SPOKANE,
WASHINGTON**

CSO FLOW MONITORING PROJECT

FLOW, FREQUENCY AND DURATION

SEWER MAINTENANCE

**Monthly Report
August 2008**

October 8, 2008
CSOMonthly2008-08.doc

OVERFLOW EVENTS

Table 1 – Flow-Frequency-Duration, provides a summary of the flow volume calculated for the overflow pipes at each site for each event recorded. The flow calculations are based on flow monitor recorded level and velocity measurements. See Attachment A for a summary of the precipitation volumes.

Table 1 – Flow-Frequency-Duration

	Location	CSO#	Freq.	Date of Event ¹	Estimated ² Total Flow (Gallons)	Event Duration (Minutes)	Comments
1.	AL Parkway Storage (West)	2	None				Missing data 8/11 09:35 to 8/11 09:40
2.	NW Blvd @ Kiernan	6	2	Total	110,380	100	Missing data 8/11 09:20 to 8/11 09:25
				8/20	220	30	
				8/21	110,160	70	
3.	Columbia @ Downriver	7	1	Total	17,852	45	Missing data 8/11 09:05 to 8/11 09:10
				8/21	17,852	45	
4.	Nettleton @ York/Buckeye	10	1	Total	339	10	Missing data 8/11 09:50 to 8/11 10:00
				8/21	339	10	
5.	Nora @ Pettet	12	1	Total	201	30	Missing data 8/11 10:10 to 8/11 10:15
				8/20	201	30	
6.	Sherwood @ Summit	14	None				Missing data 8/11 10:30 to 8/11 10:35
7.	Nettleton @ Ohio	15	None				Missing data 8/11 10:45 to 8/11 10:50
8.	A @ Linton	16B	None				
9.	7 th @ Inland Empire	19	None				
10.	3500 High Drive	20	None				

¹ Designation as an event means that both a level and velocity reading were recorded concurrently. Not all level and velocity readings that were coincident are included in this report, however. The level and velocity readings that appear to be “background noise” from the electronic equipment are not included in the table.

² The flows presented in this column are calculated from measurements of velocity and depth of flow by electronic devices inserted in the water stream. These measurements are subject to singular and possibly cumulative errors. These errors result from limitations inherent in the measuring devices and from the introduction of a measuring device in to the physical flow stream. Also, error in velocity and depth measurements may be and typically are introduced by the physical conditions of each site. The flow numbers presented in this table are estimates only.

August 2008

	Location	CSO#	Freq.	Date of Event ¹	Estimated ² Total Flow (Gallons)	Event Duration (Minutes)	Comments
11.	Main @ Oak	22B	1	Total	70,572	40	
				8/19	70,572	40	
12.	Cedar @ Ide	23	1	Total	334	10	Missing data 8/11 11:00 to 8/11 11:05
				8/21	334	10	
13.	Riverside @ Cedar	24A	None				Missing data 8/11 13:50 to 8/11 13:55
14.	Riverside @ Cedar	24B	None				Missing data 8/8 02:05 to 8/8 11:05 Missing data 8/11 13:45 to 8/11 13:50
15.	Cedar @ Main	25	3	Total	2,054	85	
				8/20	1,145	45	
				8/21	755	30	
				8/27	154	10	
16.	Riverside @ Lincoln	26	1	Total	30,665	30	
				8/21	30,665	30	
17.	Arthur @ 5 th	33A	None				
18.	Perry @ 3 rd	33B	None				Missing data 8/7 09:40 to 8/7 09:45
19.	Arthur @ 3 rd	33C	None				
20.	Arthur @ 1 st	33D	None				Missing data 8/7 10:00 to 8/7 10:05
21.	Riverside @ Napa/Crestline	34	1	Total	328	10	Missing data 8/7 10:10 to 8/7 10:15
				8/21	328	10	
22.	S. Riverton @ Magnolia	38	None				Missing data 8/6 13:20 to 8/6 13:25
23.	S. Riverton @ Altamont	39	None				Missing data 8/6 13:30 to 8/6 13:35
24.	S. Riverton @ Regal	40	None				Missing data 8/6 13:55 to 8/6 14:00
25.	Rebecca @ Upriver	41	1	Total	154	25	
				8/21	154	25	
26.	Riverton @ Surro	42	None				Missing data 8/6 12:30 to 8/7 12:30
	Monthly Total		13		232,879	385	No Dry Weather Overflows

Table 2 – Rainfall Summary³

Date	1004 Rain	343 Rain	344 Rain	Shadle Rain	Hartson Rain	CityHall Rain	Joe_Albi Rain	RkwdVsta Rain	Station8 Rain	W_Drive Rain	Nora&Pet Rain	GEG Rain	Snow	Dpth	NWS Rain	Snow	Dpth
08/01/08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/02/08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/03/08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/04/08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/05/08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/06/08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/07/08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/08/08	0	0.02	0	0	0	0	0	0	0	0	0	T	0	0	T	0	0
08/09/08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/10/08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	T	0	0
08/11/08	0	0	0	0	0	0	0	0	0	0	0P	0	0	0	0	0	0
08/12/08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/13/08	0	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0
08/14/08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/15/08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/16/08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/17/08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/18/08	0.09	0.04	0.04	0.05	0.04	0.02	0.05	0.04	0.04	0.1	0.06	0.06	0	0	0.08	0	0
08/19/08	0	0	0.02	0	0	0	0	0	0	0	0	0	0	0	T	0	0
08/20/08	0.17	0.17	0.09	0.27	0.18	0.17	0.21	0.18	0.31	0.27	0.18	0.2	0	0	0.26	0	0
08/21/08	0.06	0.16	0.05	0.45	0.11	0.22	0.38	0.09	0.29	0.3	0.08	0.06	0	0	0.15	0	0
08/22/08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/23/08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/24/08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/25/08	0.09	0.06	0.08	0.13	0.06	0.08	0.09	0.07	0.11	0.14	0.09	0.09	0	0	0.06	0	0
08/26/08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	T	0	0
08/27/08	0.13	0.17	0.07	0.22	0.17	0.16	0.18	0.16	0.27	0.23	0.19	0.16	0	0	0.21	0	0
08/28/08	0	0	0	0	0	0	0	0	0	0	0	T	0	0	T	0	0
08/29/08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/30/08	0	0	0	0	0	0	0	0	0	0	0	0	M	M	0	0	0
08/31/08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0.54	0.62	0.35	1.62	0.56	0.65	0.91	0.54	1.02	1.04	0.6	0.57	0.0		0.76	0.0	

- E - Erroneous data
- M - Missing data
- P - Partial missing data
- T - Trace of rain/snow
- X - Out of Service

Table 3 – Rain Gauges

1004	Airway Heights
343	23 rd & Ray
344	Division & Manito
Shadle	Shadle Water Tower (was 345)
Hartson	Ray & Hartson (was 346)
CityHall	City Hall (was 347)
Joe_Albi	Joe Albi Stadium
RkwdVsta	Rockwood Vista
Station8	Fire Station 8, Rebecca & Mission
W_Drive	West Drive Reservoir
Nora&Pet	Nora & Pettet
GEG	Spokane Airport
NWS	National Weather Service – Spokane

³ Some rain gauges are heated. Consequently they will tend to record snow melt immediately as rain. The rain gauges that are not heated will typically register snow melt when it actually melts.