

**CITY OF SPOKANE,  
WASHINGTON**

**CSO FLOW MONITORING PROJECT**

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**FLOW, FREQUENCY AND DURATION**

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**SEWER MAINTENANCE**

**Monthly Report  
August 2007**

October 4, 2007  
*CSOMonthly2007-08.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 <sup>1</sup>	Estimated <sup>2</sup> Total Flow (Gallons)	Event Duration (Minutes)	Comments
1.	AL Parkway Storage (West)	2	None				Missing data 8/13 08:40 to 8/13 08:45
2.	NW Blvd @ Kiernan	6	2	Total	182,175	205	Missing data 8/13 14:40 to 8/13 14:45
				8/19	181,058	145	
				8/31	1,117	60	
3.	Columbia @ Downriver	7	1	Total	46,739	85	Missing data 8/13 09:00 to 8/13 09:05
				8/19	46,739	85	
4.	Nettleton @ York/Buckeye	10	1	Total	2,940	50	Missing data 8/13 09:50 to 8/13 09:55 Missing data 8/28 13:40 to 8/28 14:35 Missing data 8/29 08:20 to 8/29 09:15
				8/19	2,940	50	
5.	Nora @ Pettet	12	1	Total	36,387	130	Missing data 8/13 10:15 to 8/13 10:20
				8/19	36,387	130	
6.	Sherwood @ Summit	14	1	Total	653	70	Missing data 8/13 10:20 to 8/13 10:30
				8/19	653	70	
7.	Nettleton @ Ohio	15	None				Missing data 8/13 10:30 to 8/13 10:35
8.	A @ Linton	16B	None				
9.	7 <sup>th</sup> @ Inland Empire	19	None				
10.	3500 High Drive	20	None				Missing data 8/6 09:30 to 8/6 10:15

<sup>1</sup> 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.

<sup>2</sup> 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 2007

	Location	CSO#	Freq.	Date of Event <sup>1</sup>	Estimated <sup>2</sup> Total Flow (Gallons)	Event Duration (Minutes)	Comments
11.	Main @ Oak	22B	None				Missing data 8/9 10:05 to 8/9 10:35 Missing data 8/13 13:30 to 8/13 13:35
12.	Cedar @ Ide	23	1	Total	29,529	60	Missing data 8/1 08:50 to 8/1 09:35 Missing data 8/3 08:45 to 8/3 09:30 Missing data 8/13 10:50 to 8/13 11:10
				8/19	29,529	60	
13.	Riverside @ Cedar	24A	None				Missing data 8/2 09:05 to 8/2 10:10 Missing data 8/13 14:10 to 8/13 14:20
14.	Riverside @ Cedar	24B	None				Missing data 8/3 09:55 to 8/3 10:40 Missing data 8/13 14:15 to 8/13 14:20
15.	Cedar @ Main	25	2	Total	3,044	175	
				8/6	36	135	Dry Weather Overflow; DOE letter sent 8/10.
				8/19	3,008	40	
16.	Riverside @ Lincoln	26	1	Total	1,798	15	
				8/19	1,798	15	
17.	Arthur @ 5 <sup>th</sup>	33A	None				Missing data 8/7 12:05 to 8/7 12:10
18.	Perry @ 3 <sup>rd</sup>	33B	None				Missing data 8/6 13:20 to 8/6 14:10
19.	Arthur @ 3 <sup>rd</sup>	33C	None				
20.	Arthur @ 1 <sup>st</sup>	33D	1	Total	506	45	Missing data 8/7 12:20 to 8/7 12:25
				8/19	506	45	
21.	Riverside @ Napa/Crestline	34	None				
22.	S. Riverton @ Magnolia	38	1	Total	270	50	Missing data 8/7 11:30 to 8/7 11:35
				8/20	270	50	
23.	S. Riverton @ Altamont	39	None				Missing data 8/7 11:20 to 8/7 11:25 Missing data 8/14 11:10 to 8/14 13:15 Missing data 8/14 13:20 to 8/14 13:30 Missing data 8/14 13:35 to 8/14 13:45
24.	S. Riverton @ Regal	40	1	Total	1,454	20	Missing data 8/7 11:15 to 8/7 11:20
				8/20	1,454	20	
25.	Rebecca @ Upriver	41	1	Total	123,090	55	Missing data 8/7 11:05 to 8/7 11:10 Missing data 8/30 09:35 to 8/30 15:10
				8/20	123,090	55	

August 2007

	Location	CSO#	Freq.	Date of Event <sup>1</sup>	Estimated <sup>2</sup> Total Flow (Gallons)	Event Duration (Minutes)	Comments
26.	Riverton @ Surro	42	None				
	<b>Monthly Total</b>		<b>14</b>		<b>428,585</b>	<b>960</b>	<b>1 Dry Weather Overflow</b>

**Table 2 – Rainfall Summary<sup>3</sup>**

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
08/01/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/02/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/03/07	0	0	0	0	0	0	0	0	0	0	0	T	0	0	0	0	0
08/04/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/05/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/06/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/07/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/08/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/09/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/10/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/11/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/12/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/13/07	0	0	0	0	0	0	0	0	0	0	OP	0	0	0	0	0	0
08/14/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/15/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/16/07	0	0	0	0	0	0	0	0	0	0	0	T	0	0	0	0	0
08/17/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/18/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/19/07	0.34	0.22	0.2	0.31	0.23	0.22	0.34	0.21	0.33	0.35	0.31	0.38	0	0	0.36	0	0
08/20/07	0.02	0.01	0	0.44	0.04	0.14	0.3	0.02	0.29	0.09	0.16	0.02	0	0	0.09	0	0
08/21/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/22/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/23/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/24/07	0	OP	0	OP	0	0	0	0	0	0	0	0	0	0	0	0	0
08/25/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/26/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/27/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/28/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/29/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/30/07	0	0	0	0	0	0	0	0	0	0	0	T	0	0	T	0	0
08/31/07	0.12	0.1	0.01	0.08	0.05	0.04	0.05	0.02	0.02	0.1	0.09	0.17	0	0	0.03	0	0
<b>Total</b>	<b>0.48</b>	<b>0.33</b>	<b>0.21</b>	<b>0.83</b>	<b>0.32</b>	<b>0.4</b>	<b>0.69</b>	<b>0.25</b>	<b>0.64</b>	<b>0.54</b>	<b>0.56</b>	<b>0.57</b>	<b>0.0</b>		<b>0.48</b>	<b>0.0</b>	

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

**Table 3 – Rain Gauges**

1004	Airway Heights
343	23 <sup>rd</sup> & 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

<sup>3</sup> 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.