

**CITY OF SPOKANE,  
WASHINGTON**

**CSO FLOW MONITORING PROJECT**

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**FLOW, FREQUENCY AND DURATION**

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**SEWER MAINTENANCE**

**Monthly Report  
October 2007**

December 19, 2007  
*CSOMonthly2007-10.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 10/8 08:05 to 10/8 08:10
2.	NW Blvd @ Kiernan	6	None				Missing data 10/8 08:25 to 10/8 08:30
3.	Columbia @ Downriver	7	1	Total	3,481	75	Missing data 10/8 08:15 to 10/8 08:20
				10/2	3,481	75	
4.	Nettleton @ York/Buckeye	10	1	Total	372	40	
				10/2	372	40	
5.	Nora @ Pettet	12	1	Total	102	30	Missing data 10/8 09:10 to 10/8 09:15
				10/19	102	30	
6.	Sherwood @ Summit	14	1	Total	445	75	Missing data 10/8 09:25 to 10/8 09:30
				10/2	445	75	
7.	Nettleton @ Ohio	15	None				Missing data 10/8 09:35 to 10/8 09:40
8.	A @ Linton	16B	None				Missing data 10/8 10:25 to 10/8 10:30
9.	7 <sup>th</sup> @ Inland Empire	19	None				Missing data 10/1 09:30 to 10/1 09:35
10.	3500 High Drive	20	None				Missing data 10/1 10:15 to 10/1 10:20
11.	Main @ Oak	22B	None				

<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.

	Location	CSO#	Freq.	Date of Event <sup>1</sup>	Estimated <sup>2</sup> Total Flow (Gallons)	Event Duration (Minutes)	Comments
12.	Cedar @ Ide	23	None				Missing data 10/2 13:15 to 10/2 14:30 Missing data 10/24 08:05 to 10/24 11:00
13.	Riverside @ Cedar	24A	2	Total	236,611	250	Missing data 10/8 12:35 to 10/8 12:40
				10/1	235,196	220	
				10/4	1,415	30	
14.	Riverside @ Cedar	24B	None				
15.	Cedar @ Main	25	1	Total	9,792	110	Missing data 10/12 10:10 to 10/12 10:50
				10/1	9,792	110	
16.	Riverside @ Lincoln	26	1	Total	683,373	150	
				10/1	683,373	150	
17.	Arthur @ 5 <sup>th</sup>	33A	2	Total	1,315	110	Missing data 10/1 14:00 to 10/1 14:05 Missing data 10/5 10:25 to 10/5 11:15 Missing data 10/12 09:10 to 10/12 09:35
				10/1	413	95	
				10/4	902	15	
18.	Perry @ 3 <sup>rd</sup>	33B	None				Missing data 10/1 13:45 to 10/1 13:50 Missing data 10/24 09:05 to 10/24 09:15
19.	Arthur @ 3 <sup>rd</sup>	33C	2	Total	1,141	355	Missing data 10/1 13:50 to 10/1 13:55
				10/1	543	275	
				10/4	598	80	
20.	Arthur @ 1 <sup>st</sup>	33D	1	Total	5,889	95	Missing data 10/1 14:10 to 10/1 14:15 Missing data 10/3 10:05 to 10/3 11:30
				10/4	5,889	95	
21.	Riverside @ Napa/Crestline	34	1	Total	358,959	115	Missing data 10/1 13:10 to 10/1 13:15
				10/1	358,959	115	
22.	S. Riverton @ Magnolia	38	1	Total	195	110	Missing data 10/1 12:10 to 10/1 12:15
				10/1	195	110	
23.	S. Riverton @ Altamont	39	1	Total	9,335	400	
				10/21	9,335	400	
24.	S. Riverton @ Regal	40	1	Total	113	15	
				10/2	113	15	
25.	Rebecca @ Upriver	41	1	Total	4,158	30	Missing data 10/1 11:55 to 10/1 12:00
				10/1	4,158	30	

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	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				Missing data 10/1 11:40 to 10/1 11:45
	<b>Monthly Total</b>		<b>18</b>		<b>1,315,281</b>	<b>1,960</b>	<b>No Dry Weather Overflows</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
10/01/07	0.06	0.21	0.18	0.08	0.2	0.12	0.07	0.15	0.14	0.11	0.09	0.08	0	0	0.07	0	0
10/02/07	0.29	0.27	0.2	0.27	0.29	0.25	0.31	0.24	0.5	0.31	0.26	0.33	0	0	0.32	0	0
10/03/07	0.01	0	0	0	0	0	0	0	0	0	0	0.01	0	0	T	0	0
10/04/07	0.01	0	0.1	0.02	0.01	0.01	0.08	0.23	0.11	0.04	0	0.26	T	0	0.02	0	0
10/05/07	0	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/06/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/07/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	T	0	0
10/08/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/09/07	0	0	0	0E	0	0	0	0	0	0	0	0	0	0	0	0	0
10/10/07	0.05	0.02	0.01	0	0.02	0.03	0.04	0.02	0.02	0.03	0.03	0.04	0	0	0.07	0	0
10/11/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/12/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/13/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/14/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/15/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/16/07	0.08	0.15	0.13	0	0.14	0.09	0.1	0.15	0.21	0.08	0.1	0.07	0	0	0.03	0	0
10/17/07	0.03	0.05	0.01	0	0.04	0.03	0.05	0.02	0.06	0.08	0.05	0.07	0	0	0.01	0	0
10/18/07	0.01	0	0	0E	0	0	0.01	0	0	0.02	0.01	0.01	0	0	0.01	0	0
10/19/07	0.24	0.23	0.2	0	0.25	0.18	0.22	0.21	0.26	0.32	0.21	0.21	0	0	0.26	0	0
10/20/07	0.08	0.06	0.03	0E	0.07	0.04	0.07	0.04	0.13	0.05	0.03	0.08	0	0	0.04	0	0
10/21/07	0.03	0.03	0.02	0	0.03	0.02	0.03	0.02	0.02	0.04	0.02	0.02	0	0	0.06	0	0
10/22/07	0	0	0	0	0	0	0	0	0	0	0	0	T	0	T	0	0
10/23/07	0.01	0	0	0E	0	0	0	0	0	0	0	0	0	0	0	0	0
10/24/07	0	0	0	0	0	0	0	0	0	0	0.01	0	0	0	0	0	0
10/25/07	0	0	0	0E	0	0	0	0	0	0	0	0	0	0	0	0	0
10/26/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/27/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/28/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/29/07	0	0	0	0E	0	0	0	0	0	0	0	0	T	0	T	0	0
10/30/07	0	0P	0	0E	0	0	0	0	0	0	0	0	0	0	0	0	0
10/31/07	0	0M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0.9</b>	<b>1.03</b>	<b>0.88</b>	<b>0.37</b>	<b>1.05</b>	<b>0.77</b>	<b>0.98</b>	<b>1.08</b>	<b>1.45</b>	<b>1.08</b>	<b>0.81</b>	<b>1.18</b>	<b>0.0</b>		<b>0.89</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.