

Memo

Date: October 10, 2013
To: Kevin Stewart
From: Markus Ritsch
Subject: September 2013 ALERT Data Analysis

I. ALERT Data Source

Raw ALERT data records extracted from the Urban Drainage and Flood Control District’s NovaStar 5.0 base station were analyzed for the period September 1 through September 30, 2013.

II. General System Analysis Summary

In 2013 the District will upgrade the telemetry backbone from legacy ALERT (A1) to the new A2 protocol. As the season progresses, the A1 feed from outlying repeaters to the District base station at Diamond Hill will terminate and all data will be received as A2. The following table quantifies the data reception throughout the conversion of the telemetry system as the season progresses. As of January 29, 2013, the West Creek repeater in Douglas County processes both incoming data on A1 and A2 but passes on only A2 format messages to Diamond Hill.

Table 1. Reception of A1/A2 Data at Diamond Hill

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Legacy	321,136	218,368	264,984	243,044	318,423	342,585	269,475	294,652	353,016			
Concentrator	304,067	319,089	379,891	381,523	571,616	686,278	538,090	430,404	374,351			
ALERT2	--	--	16,450	47,415	88,786	113,822	97,216	88,860	86,550			
TOTAL	625,203	537,457	661,325	671,982	978,825	1,142,685	904,781	813,916	813,917	0	0	0
Conc+A2	--	--	396,341	428,938	660,402	800,100	635,306	519,264	460,901			
Conc/Leg			1.43	1.57	1.80	2.00	2.00	1.46	1.06			

The daily ratio of ALERT2 reports received versus legacy ALERT is shown below.

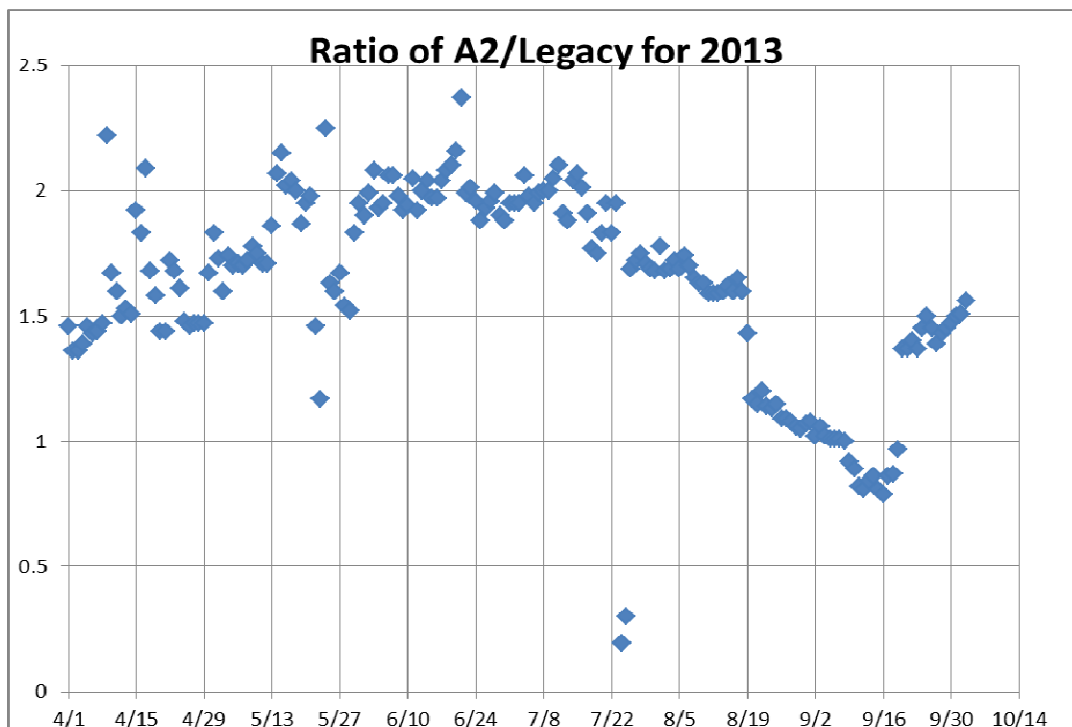


Figure 1. Daily Ratio of ALERT2/Legacy Reports

The following discussion pertains to Figure 1 – Daily ratio of ALERT2/Legacy Reports. The number of A2 reports should be greater than the received legacy reports. Additionally, the stations in Douglas County are received only via A2 which inflates the number of A2 reports versus legacy. There is a third inflation factor which is the fact that pass-listing is not currently available for A2 so duplicate and triplicate reports are received on the A2 channel.

In mid-May the NS5 base station software was moved to a new VMServer at Diamond Hill. During this move the serial A2 feed was changed to an IP connection interrupting the A2 feed for a few days.

In June the ratio seems to stabilize around 2. Twice as many A2 reports were received versus legacy. The A2 repeaters are not pass-listed so many A2 reports are received in duplicate causing the ratio to be high.

On July 24 and 25, the A2 data collection service on NS5 had stopped. Legacy reports continued to be received during this period.

In mid-July the A2 radio receiver at Diamond Hill begins to deteriorate. The receiver exhibits gradual deterioration until August 19 when a significant decrease was observed. A corresponding decrease in legacy reception is NOT noticed on August 19.....this decrease was isolated to the A2 side.

The A2 radio receiver at Diamond Hill was replaced by OneRain on September 20.

In October the ratio seems to have stabilized around 1.5. Why is this ratio not as high as it was in June and July where it averaged around 2?

A. Performance of New A2 Sites

Currently there are only a handful of remote sites operating on the new A2 protocol. The “event” performance of these sites is tracked throughout the 2013 flood season in the table below.

Table 2. Event Performance of New A2 Sites

Description	ID	Install Date	Apr	May	Jun	Jul	Aug*	Sep*	Oct	
Heritage Regional Park	3090	03/14/2013	100%	93%	100%	91%	81%	99%		
ETG @ Hampden	100110	05/01/2013	--	100%	100%	100%	100%	99%		
Blackstone	100100	05/03/2013	--	100%	100%	100%	100%	95%		
Newlin Gulch	3070	05/24/2013	--	--	51%	50%	45%	42%		
Carr Street	100	05/31/2013	--	--	36%	85%	92%	88%		
Maple Grove	1000	05/20/2013	--	--	67%	95%	100%	89%		
*-ALERT2 data reception at Diamond Hill was deteriorating										

Newlin Gulch is using a CR850 logger and the General Sensor Report (GSR) format but is not able to package multiple GSR reports into a single data packet. It seems the transmitter is sending only one GSR rain report per frame causing missed tips when multiple tips occur within the same frame. An updated OS for the CR850 will be installed over the winter.

The reception of rain reports from Carr Street (ID 100) at Diamond Hill was only 88 percent in September. A total of 184 incrementing tip reports were expected and only 162 were received. Note however that the A2 radio receiver at Diamond Hill was deteriorating and likely accounts for the missed transmissions. This would apply to all sites received via A2.

B. Performance of Legacy ALERT System

The extreme rainfall and flooding event of September 2013 offers a unique opportunity to analyze the performance of the legacy ALERT system under extreme loading. The peak hour traffic was just over 2,000 messages occurring on September 12, from 9:00 am to 10:00 am. During this hour a total of 724 incrementing rain reports were expected and 536 reports were received. The loss of incrementing reports was approximately 26 percent. The table below shows the distribution of lost reports.

Table 3. Distribution of Lost Legacy ALERT Rain Reports During Peak Hour Loading

	Single Tips (zero loss)	2-tips (1 tip lost)	3-tips (2 tips lost)	4-tips (3 lost)	5-tips (4 lost)	6-tips (5 lost)	More than 6-tips
Distribution	416	87	22	8	2	1	2
Invalid rain tips by NS5 base station	0	0	0	0	10	6	15

The majority of lost reports yielded double tips and triple tips. Only two occurrences of a sequential change in count larger than 6 tips were identified for this peak hour. These occurred at Aurora Town Hall (920) and Cannon Mountain (4270). The large jump at Aurora Town Hall went from 378 to 385 in a 10 minute period from 9:26:47 am to 9:36:37 am. The large jump at Cannon Mountain went from 500 to 509 in a 2 minute period from 9:49:12 am to 9:51:26 am. The data validation scheme employed in NS5 at Diamond Hill allows for a change in count of 4. Any sequential change of 5 or more tips is invalidated. For the peak hour a total 31 tips were invalidated by NS5. These invalid tips were confined to three sites. A total of 31 tips out of 724 or 4.3 percent of the total rainfall were lost. Although 26 percent of the incrementing rain reports were lost during the peak hour...the system was able to track accurate rain totals for all but three of the rain monitoring sites in the system. At the three sites only 4 percent of the total rainfall was lost. The District was fortunate to have the legacy ALERT system running in a redundant fashion to A2 during this historic event.

C. Specific Issues Identified this Month

Performance of the following sensors (Table 4) was questionable this month.

Table 4. Sensors with Poor Performance Characteristics

Sensor ID	Description	Timer	Event	Comments
4570	St. Antons	88%	55%	
840	Fire Station 12	42%	91%	
920	Aurora Town Hall	83%	56%	
4330	Hansen Rain	77%	56%	
4470	Little Narrows	73%	57%	
2790	W. Cherry Creek	48%	59%	
1481...1487	Unknown IDs with 800+ reports this month (Third Creek at DIA)			
4471...4478	Unknown IDs with 50+ reports this month (Little Narrows)			

D. Continuous Operation of Base Receiver/Decoder

The NS5 base station was in continuous operation for the entire month.

E. Rain Sensor Timer Reporting Summary

The following analysis assumes that each rain sensor has a 12-hour timer-reporting interval. The worst performing rain sensors for the month are summarized (Table 5).

Table 5. Monthly Summary of Sensors with Poor Timer Performance (Sensor ID)

Jan*	Feb*	Mar*	Apr	May	Jun	Jul	Aug	Sep	Oct*	Nov*	Dec*
4470	4470	2790	1200	3070	2710	1480	840	840			
3070	4550	4550	840	2800	840	2190	2790	2790			
1660	4870	2710	800	840	4350	840	2730	2730			
2790	2790	4870	4330	1700	2790	1660	2910	2930			
4870	4490	4270	2360	2790	5940	3010	2230	2840			
2320	4510	4190	620	100100	1660	3090	2860	2880			

*- Only sensors that operate year-round (weather stations and stations in Boulder County) are included for the analysis in these months.

Sensors identified as having poor timer performance in multiple months are shaded with unique colors. A developing trend can thus be identified from the color shading as the year progresses.

III. Rain Sensor Event Reporting Summary

A. District-Wide Total Tip/Count Statistics

A number of rainfall stations under-reported rainfall due to clogged funnels. These stations were removed prior to the following analyses and include: Sports Complex (320), Kelly Dam (410), Havana Park (500), No Name at Quincy (730), Fire Station 12 (840), SPR at Union Ave (1640), Cherry Creek at Champa (1700), Hiwan Golf Course (2210), Genesee Village (2310), Cherry Creek below Bayou Gulch (2850), and Bingham Lake Park (3030).

The incrementing reports from all 1-mm rain sensors were analyzed to quantify the District-wide statistical total monthly tip summary (Table 6). For the months of January, February, March, October, November and December only the stations that operate year-round are included in the rain event analysis. These stations include all weather stations and the stations in Boulder County.

Table 6. District-Wide Total Tip/Count Statistical Summary

Statistical Parameter	Value	Comments
Mean	229.74	Only the 1-mm rain sensors were included in the analysis
Median	198	Only the 1-mm rain sensors were included in the analysis
Standard deviation	107.8	Only the 1-mm rain sensors were included in the analysis
Mean plus three standard deviations	553.24	Only the 1-mm rain sensors were included in the analysis
Minimum total count	70	Dakan Road (2980)
Maximum total count	485	SBC @ S. Boulder Road (4870)

B. Monthly Average Tip/Count Summary

A monthly summary of the District-wide mean total tip/count is presented (Table 7).

Table 7. Monthly Summary of District-Wide Mean Total 1-mm Tip/Count

Year	Jan*	Feb*	Mar*	Apr	May	Jun	Jul	Aug	Sep	Oct*	Nov*	Dec*	Ave
2006	4.62	5.92	18.39	20.47	19.44	13.75	74.03	46.89	24.17	41.13	5.04	16.45	24.19
2007	11.56	5.40	29.75	65.03	68.30	15.87	36.20	46.38	22.13	29.50	6.54	11.29	29.00
2008	4.05	7.38	12.26	20.57	54.82	26.06	16.43	90.20	37.54	19.59	2.82	9.24	25.08
2009	6.33	3.11	11.37	59.26	63.45	68.00	65.00	20.00	27.29	30.24	11.00	5.60	30.89
2010	5.97	11.90	32.54	70.57	39.63	56.04	50.23	31.01	4.18	18.31	8.30	3.31	27.67
2011	6.78	7.45	7.54	33.94	92.68	39.42	90.87	18.25	37.67	25.73	10.41	13.59	32.03
2012	4.89	13.57	2.35	30.17	38.97	19.35	73.03	11.31	48.81	22.32	2.98	4.18	22.66
2013	2.96	14.31	21.86	35.96	45.87	16.39	52.33	50.63	229.74				

*- Only sensors that operate year-round (weather stations and stations in Boulder County) are included for the analysis in these months.

C. Sensors with a Jump of Six or More in the Sequential Count

Several sensors experienced a large jump in the sequential tip count (Table 8).

Table 8. Sensors with a Jump of 6 or More in Sequential Count

Sensor Description	Sensor ID	Comment
St. Antons	4570	These sites all experienced several large jumps in count during the period September 10 through 17
Hansen Rain	4330	
Aurora Town Hall	920	
Little Narrows	4470	

D. Sensor-by-Sensor Incrementing Count Summary

The system-wide reception rate of incrementing, 1-mm tip reports for the month was approximately 85 percent. A total of 33,564 incrementing reports were received and a total of 39,056 reports were expected. The total loss of incrementing reports for the month was approximately 15 percent. Those sensors with the worst event transmission performance are summarized (Table 9).

Table 9. Monthly Summary of Sensors with the Most Missed Tips

Jan*	Feb*	Mar*	Apr	May	Jun	Jul	Aug	Sep	Oct*	Nov*	Dec*
4470	4510	4270	1200	4470	100	840	840	4570			
2330	2930	4490	840	5900	4470	3070	4470	920			
2980	4470	4790	4330	2980	1000	2980	4330	4330			
1660	2980	4510	4100	2790	500	1700	2820	4470			
--	2730	4320	4270	840	1660	2790	1660	2790			
--	4790	4870	2980	4060	3070	2730	2790	2870			

*-Only sensors that are operational year-round (weather stations and stations in Boulder County) are included for the analysis in these months.

Sensors identified as having poor event performance in multiple months are shaded with unique colors. A developing trend can thus be identified from the color shading as the year progresses.

IV. Heavy Radio Traffic Analysis

Periods exceeding 1,000 messages per hour are analyzed independently in an attempt to quantify data loss rates from rain sensors using their sequential tip count series.

A. The Heaviest Hourly Traffic Periods This Month

The hourly periods of highest radio traffic this month are shown (Table 10). The five heaviest hours of radio traffic are analyzed to quantify the number of missing rain reports for that hour.

Table 10. Periods of Heavy Radio Traffic (total load includes legacy and A2 reports)

Day	Hour	Expected	Received	Total Load	Loss
12	17	744	642	3,305	13.71%
12	9	798	661	3,302	17.17%
12	16	703	597	3,132	15.08%
12	8	824	711	2,989	13.71%
12	22	705	609	2,986	13.62%

V. Unknown Device Analysis – Received Data Log

The ALERT IDs present in the audio signal received by the decoder are compared against a list of “active” device IDs that are defined within NovaStar. Those IDs received by the decoder that are not defined within NovaStar are considered to be “unknown” and may be the result of radio noise or problems with the telemetry system. The reception of “unknown” device reports for the month is summarized (Table 11).

Table 11. Summary of Unknown IDs

Description	Quantity
Total number of unknown IDs (IDs without a device definition)	285
Total reports from unknown IDs	4,429
Unknown IDs with only a single received report (potential noise)	192
Total reports from all IDs – RecData Log entire month	460,901
Unknown reports as a fraction of total reports	0.96%

The total number of reports from unknown sensors is very small relative to the total reports received for the month. Shown below (Table 12) are the total reports received from unknown sensor IDs for each month of the year.

Table 12. Monthly Summary of Total Reports from Unknown IDs

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	1,220	1,474	1,276	1,174	721	5,707	610	1,738	442	533	2,857	6,396
2011	1,231	2,165	3,065	1,254	2,051	439	489	456	191	683	747	861
2012	692	750	1,575	977	5,469	11,016	453	683	774	2,657	3,854	5,466
2013	4,265	994	1,100	2,589	3,623	6,973	5,230	1,070	4,429			

The fraction of reports from unknown sensors relative to the total number of reports is shown below (Table 13).

Table 13. Monthly Percent of Unknown Sensor Reports

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	0.42%	0.56%	0.38%	0.32%	0.20%	1.61%	0.17%	0.49%	0.13%	0.16%	0.93%	1.88%
2011	0.39%	0.73%	0.90%	0.37%	0.58%	0.12%	0.12%	0.05%	0.12%	0.18%	0.22%	0.26%
2012	0.30%	0.25%	0.43%	0.26%	1.37%	2.74%	0.11%	0.18%	0.20%	0.72%	1.15%	1.62%
2013	1.40%	0.31%	0.29%	0.60%	0.37%	0.61%	0.82%	0.21%	0.96%			

Any month shaded in yellow has an excessive number of reports from unknown sensors.

A number of “unknown” sensors had multiple reports, which may indicate the existence of a transmitter that is sending information on an ID that is not currently defined within NovaStar. The unknown IDs with multiple reports including the number of reports received by each are shown (Table 14).

Table 14. Reports Received by Unknown IDs

Unknown ID	Reports	Comment
1482	902	IDs are likely coming from DIA @ Third Creek (1480)
1481	890	
1487	867	
1486	848	
4329	74	Likely coming from Little Narrows (4470)
4478	70	
4471	67	
4477	67	
4472	57	
4474	52	
729	29	
2215	26	

VI. Sensors with Invalid Reports

The following sensors had a large number of invalid reports (bit flip/contention errors/random decode):

Sensor ID	Description	Invalid Reports	Comments
100117	ETG @ Hampden	172	NS5 data validation set to change of 0.10 ft...we were getting changes of greater than 0.10 ft during the flooding that were being invalidated. Have since set the validation change criteria to 0.20 ft.
4473	Little Narrows	187	Transmitter problem starting 9/12/2013 at 12:15:31 AM
1484/1483	DIA @ Third Creek	317	Invalid reports starting at 9/10/2013 at 1:06:12 AM
730	No Name @ Quincy	18	Transmitter problem starting 9/15/2013 at 3:36:38 PM – fixed by OneRain
4330	Hansen Rain	17	Occurring primarily on 9/12/2013 – mostly bit flip errors, some large jumps
4850	Porphyry Mtn	14	Occurring primarily on 9/9 to 9/15 – mostly bit flip errors, some large jumps

VII. Rainfall Alarms and Intensity Analysis

The following rainfall rate alarms from the Urban Drainage and Flood Control District NovaStar 5.0 Web Server were identified this month.

ID	Description	Type	Date
5880	Hackett Mountain Precipitation-TL	Hayman 30 minute rainfall	9/1/2013 15:30
5720	Four Mile Creek Precipitation-DG	Hayman 30 minute rainfall	9/1/2013 15:31
5880	Hackett Mountain Precipitation-TL	Hayman 1 hour rainfall	9/1/2013 15:38
5880	Hackett Mountain Precipitation-TL	Hayman 90 minute rainfall	9/1/2013 15:44
5740	Trail Creek Precipitation-TL	Hayman 30 minute rainfall	9/1/2013 15:45
5740	Trail Creek Precipitation-TL	Hayman 30 minute rainfall	9/1/2013 16:04
5740	Trail Creek Precipitation-TL	Hayman 1 hour rainfall	9/1/2013 16:04
970	Pump Station 3 Precipitation-AR	Plains 1 hour rainfall	9/4/2013 16:49
3080	Tallman Gulch at Tallman Park Precipitation-DG	Douglas County 10 minute rainfall	9/4/2013 17:45
3030	Bingham Lake Park Precipitation-DG	Douglas County 1 hour rainfall	9/4/2013 18:16
4240	Sunset Precipitation-BO	FMC-BA 0.50" in 30 Min Rainfall	9/9/2013 14:21
2320	Choke Cherry Reservoir Precipitation-JF	Jefferson County 10 minute rainfall	9/9/2013 14:31
4180	Gold Lake Precipitation-BO	FMC-BA 0.50" in 30 Min Rainfall	9/9/2013 14:37
1060	Heritage Square Precipitation-JF	Jefferson County 10 minute rainfall	9/9/2013 14:44
4850	Porphyry Mountain Precipitation-BO	FMC-BA 0.50" in 30 Min Rainfall	9/9/2013 14:46
1040	Lena @ U.S. Highway 6 Precipitation-JF	Jefferson County 10 minute rainfall	9/9/2013 14:50
1030	NREL/South Table Mountain Precipitation-JF	Jefferson County 10 minute rainfall	9/9/2013 14:54
1040	Lena @ U.S. Highway 6 Precipitation-JF	Jefferson County 1 hour rainfall	9/9/2013 14:56
1010	Denver West Precipitation-JF	Jefferson County 10 minute rainfall	9/9/2013 14:58
1050	Jeffco Fairgrounds Precipitation-JF	Jefferson County 10 minute rainfall	9/9/2013 14:59
1010	Denver West Precipitation-JF	Jefferson County 1 hour rainfall	9/9/2013 15:03
1000	Maple Grove Reservoir Precipitation-JF	Jefferson County 10 minute rainfall	9/9/2013 15:06
1030	NREL/South Table Mountain Precipitation-JF	Jefferson County 1 hour rainfall	9/9/2013 15:07
1000	Maple Grove Reservoir Precipitation-JF	Jefferson County 1 hour rainfall	9/9/2013 15:14
100	Carr Street Precipitation-JF	Jefferson County 10 minute rainfall	9/9/2013 15:22

1060	Heritage Square Precipitation-JF	Jefferson County 1 hour rainfall	9/9/2013 15:27
100	Carr Street Precipitation-JF	Jefferson County 1 hour rainfall	9/9/2013 15:30
1300	Hidden Lake Precipitation-AD	Plains 10 minute rainfall	9/9/2013 15:36
1310	Little Dry at 64th Precipitation-AD	Plains 10 minute rainfall	9/9/2013 15:37
1810	Sand Creek at mouth Precipitation-DN	Plains 10 minute rainfall	9/9/2013 15:45
1310	Little Dry at 64th Precipitation-AD	Plains 1 hour rainfall	9/9/2013 15:52
1480	Third Creek at DIA Precipitation-DN	Plains 10 minute rainfall	9/9/2013 16:28
1480	Third Creek at DIA Precipitation-DN	Plains 1 hour rainfall	9/9/2013 16:32
2270	Cub Creek below Blue Creek Precipitation-JF	Jefferson County 10 minute rainfall	9/9/2013 19:24
2240	Cold Spring Gulch C Precipitation-JF	Jefferson County 10 minute rainfall	9/9/2013 19:44
2320	Choke Cherry Reservoir Precipitation-JF	Jefferson County 10 minute rainfall	9/9/2013 19:53
2320	Choke Cherry Reservoir Precipitation-JF	Jefferson County 1 hour rainfall	9/9/2013 20:20
1400	Upper Sloan Detention Precipitation-JF	Jefferson County 10 minute rainfall	9/9/2013 20:30
1310	Little Dry at 64th Precipitation-AD	Plains 10 minute rainfall	9/9/2013 20:46
3090	Big Dry Creek at Heritage Regional Park Precipitation-DG	Douglas County 1 hour rainfall	9/10/2013 16:26
1600	Englewood Dam Precipitation-AR	Plains 10 minute rainfall	9/10/2013 16:39
630	Temple Pond at DTC Precipitation-DN	Plains 10 minute rainfall	9/10/2013 16:46
720	Confluence Pond Precipitation-AR	Plains 10 minute rainfall	9/10/2013 16:59
830	Side Creek Park Precipitation-AR	Plains 10 minute rainfall	9/10/2013 17:00
440	Fire Station #7 Precipitation-AR	Plains 10 minute rainfall	9/10/2013 17:01
710	Horseshoe Park Drop Precipitation-AR	Plains 10 minute rainfall	9/10/2013 17:03
440	Fire Station #7 Precipitation-AR	Plains 1 hour rainfall	9/10/2013 17:08
710	Horseshoe Park Drop Precipitation-AR	Plains 1 hour rainfall	9/10/2013 17:08
820	East Toll Gate @ Buckley Precipitation-AR	Plains 10 minute rainfall	9/10/2013 17:11
810	Granby Ditch @ 6th Precipitation-AR	Plains 10 minute rainfall	9/10/2013 17:14
430	Utah Park Precipitation-AR	Plains 1 hour rainfall	9/10/2013 17:15
860	Sand Creek at Colfax Precipitation-AD	Plains 10 minute rainfall	9/10/2013 17:15
700	Toll Gate @ 6th Precipitation-AR	Plains 10 minute rainfall	9/10/2013 17:16
800	Sable Ditch @ Colfax Precipitation-AD	Plains 10 minute rainfall	9/10/2013 17:16
860	Sand Creek at Colfax Precipitation-AD	Plains 1 hour rainfall	9/10/2013 17:22
850	Flying J Truck Plaza Precipitation-AD	Plains 10 minute rainfall	9/10/2013 17:23
840	Aurora Fire Station 12 Precipitation-AD	Plains 10 minute rainfall	9/10/2013 17:24
700	Toll Gate @ 6th Precipitation-AR	Plains 1 hour rainfall	9/10/2013 17:25
800	Sable Ditch @ Colfax Precipitation-AD	Plains 1 hour rainfall	9/10/2013 17:27
850	Flying J Truck Plaza Precipitation-AD	Plains 1 hour rainfall	9/10/2013 17:42
1480	Third Creek at DIA Precipitation-DN	Plains 1 hour rainfall	9/11/2013 13:18
1040	Lena @ U.S. Highway 6 Precipitation-JF	Jefferson County 1 hour rainfall	9/11/2013 15:12
4750	Louisville Lake Precipitation-BO	Boulder County 1 hour rainfall	9/11/2013 20:03
4870	SBC @ South Boulder Road Precipitation-BO	Boulder County 1 hour rainfall	9/11/2013 20:04
4840	SBC at S. Boulder D Precipitation-BO	Boulder County 1 hour rainfall	9/11/2013 20:26
4870	SBC @ South Boulder Road Precipitation-BO	Boulder County 10 minute rainfall	9/11/2013 20:28
4570	St. Antons Precipitation-BO	Boulder County 10 minute rainfall	9/11/2013 20:30
4810	Shanahan Ridge Precipitation-BO	Boulder County 1 hour rainfall	9/11/2013 20:32
4030	Red Garden Precipitation-BO	Boulder County 1 hour rainfall	9/11/2013 21:06
4040	Martin Gulch Precipitation-BO	Boulder County 1 hour rainfall	9/11/2013 21:17
4020	Rio Grande Precipitation-BO	Boulder County 1 hour rainfall	9/11/2013 21:22

140	Blue Mountain Precipitation	Jefferson County 1 hour rainfall	9/11/2013 21:26
4010	Crescent Precipitation-BO	Boulder County 1 hour rainfall	9/11/2013 21:27
220	Upper Leyden Precipitation-JF	Jefferson County 1 hour rainfall	9/11/2013 21:35
4820	Doudy Draw Precipitation-BO	Boulder County 1 hour rainfall	9/11/2013 21:38
4100	Filter Plant Precipitation-BO	FMC-BA 0.50" in 30 Min Rainfall	9/11/2013 21:41
220	Upper Leyden Precipitation-JF	Jefferson County 10 minute rainfall	9/11/2013 21:49
4100	Filter Plant Precipitation-BO	FMC-BA 0.75" in 1 Hour Rainfall	9/11/2013 21:54
1460	Urban Farm Precipitation	Plains 1 hour rainfall	9/11/2013 22:00
4160	Sunshine Precipitation-BO	FMC-BA 0.25" in 10 Min Rainfall	9/11/2013 22:01
4320	Lee Hill Rain Precipitation-BO	FMC-BA 0.25" in 10 Min Rainfall	9/11/2013 22:02
4320	Lee Hill Rain Precipitation-BO	FMC-BA 0.50" in 30 Min Rainfall	9/11/2013 22:02
4880	Whispering Pines Precipitation-BO	FMC-BA 0.25" in 10 Min Rainfall	9/11/2013 22:03
4160	Sunshine Precipitation-BO	FMC-BA 0.50" in 30 Min Rainfall	9/11/2013 22:04
4150	Gold Hill Precipitation-BO	FMC-BA 0.50" in 30 Min Rainfall	9/11/2013 22:06
4150	Gold Hill Precipitation-BO	FMC-BA 0.25" in 10 Min Rainfall	9/11/2013 22:07
4320	Lee Hill Rain Precipitation-BO	FMC-BA 0.75" in 1 Hour Rainfall	9/11/2013 22:09
4880	Whispering Pines Precipitation-BO	FMC-BA 0.50" in 30 Min Rainfall	9/11/2013 22:10
4160	Sunshine Precipitation-BO	FMC-BA 0.75" in 1 Hour Rainfall	9/11/2013 22:15
4880	Whispering Pines Precipitation-BO	FMC-BA 0.75" in 1 Hour Rainfall	9/11/2013 22:22
4150	Gold Hill Precipitation-BO	FMC-BA 0.75" in 1 Hour Rainfall	9/11/2013 22:23
4310	Johnny Park Precipitation-BO	Boulder County 1 hour rainfall	9/11/2013 22:30
1110	Gunbarrel Precipitation-BO	Boulder County 1 hour rainfall	9/11/2013 22:34
140	Blue Mountain Precipitation	Jefferson County 2 hour rainfall	9/11/2013 22:38
4510	Pinewood Springs Precipitation-BO	Boulder County 1 hour rainfall	9/11/2013 22:39
4350	Conifer Hill Precipitation-BO	Boulder County 1 hour rainfall	9/11/2013 22:47
4070	Bear Peak Precipitation-BO	Boulder County 1 hour rainfall	9/11/2013 22:48
4360	Justice Center Precipitation-BO	Boulder County 1 hour rainfall	9/11/2013 22:50
4790	Button Rock Precipitation-BO	Boulder County 1 hour rainfall	9/11/2013 22:51
4110	Betasso Precipitation-BO	FMC-BA 0.50" in 30 Min Rainfall	9/11/2013 22:51
4270	Cannon Mountain Precipitation-BO	Boulder County 1 hour rainfall	9/11/2013 23:06
4300	Big Elk Park Precipitation-BO	Boulder County 1 hour rainfall	9/11/2013 23:15
4200	Lazy Acres Precipitation-BO	FMC-BA 0.50" in 30 Min Rainfall	9/11/2013 23:24
4340	Riverside Precipitation-BO	Boulder County 1 hour rainfall	9/11/2013 23:26
4110	Betasso Precipitation-BO	FMC-BA 0.75" in 1 Hour Rainfall	9/11/2013 23:31
4200	Lazy Acres Precipitation-BO	FMC-BA 0.75" in 1 Hour Rainfall	9/11/2013 23:39
4090	Magnolia Precipitation-BO	FMC-BA 0.75" in 1 Hour Rainfall	9/11/2013 23:46
4170	Pine Brook Precipitation-BO	FMC-BA 0.50" in 30 Min Rainfall	9/11/2013 23:47
4090	Magnolia Precipitation-BO	FMC-BA 0.50" in 30 Min Rainfall	9/11/2013 23:48
4140	Logan Mill Precipitation-BO	FMC-BA 0.25" in 10 Min Rainfall	9/11/2013 23:50
4200	Lazy Acres Precipitation-BO	Boulder County 1 hour rainfall	9/11/2013 23:51
4110	Betasso Precipitation-BO	Boulder County 1 hour rainfall	9/11/2013 23:54
4170	Pine Brook Precipitation-BO	FMC-BA 0.75" in 1 Hour Rainfall	9/11/2013 23:54
4230	Golden Age Precipitation-BO	FMC-BA 0.75" in 1 Hour Rainfall	9/12/2013 0:00
4230	Golden Age Precipitation-BO	FMC-BA 0.50" in 30 Min Rainfall	9/12/2013 0:00
4140	Logan Mill Precipitation-BO	FMC-BA 0.50" in 30 Min Rainfall	9/12/2013 0:02
4170	Pine Brook Precipitation-BO	Boulder County 1 hour rainfall	9/12/2013 0:04

4880	Whispering Pines Precipitation-BO	Boulder County 1 hour rainfall	9/12/2013 0:05
4160	Sunshine Precipitation-BO	Boulder County 1 hour rainfall	9/12/2013 0:07
4320	Lee Hill Rain Precipitation-BO	Boulder County 1 hour rainfall	9/12/2013 0:07
4100	Filter Plant Precipitation-BO	Boulder County 1 hour rainfall	9/12/2013 0:09
4140	Logan Mill Precipitation-BO	FMC-BA 0.75" in 1 Hour Rainfall	9/12/2013 0:12
4190	Slaughterhouse Precipitation-BO	FMC-BA 0.50" in 30 Min Rainfall	9/12/2013 0:12
4190	Slaughterhouse Precipitation-BO	FMC-BA 0.75" in 1 Hour Rainfall	9/12/2013 0:14
4320	Lee Hill Rain Precipitation-BO	Boulder County 10 minute rainfall	9/12/2013 0:19
4860	Fairview Peak Precipitation-BO	Boulder County 1 hour rainfall	9/12/2013 0:23
4190	Slaughterhouse Precipitation-BO	Boulder County 1 hour rainfall	9/12/2013 0:23
4140	Logan Mill Precipitation-BO	Boulder County 1 hour rainfall	9/12/2013 0:23
4850	Porphyry Mountain Precipitation-BO	FMC-BA 0.50" in 30 Min Rainfall	9/12/2013 0:25
4850	Porphyry Mountain Precipitation-BO	FMC-BA 0.75" in 1 Hour Rainfall	9/12/2013 0:25
4230	Golden Age Precipitation-BO	Boulder County 1 hour rainfall	9/12/2013 0:25
4870	SBC @ South Boulder Road Precipitation-BO	Boulder County 6 hour rainfall	9/12/2013 0:28
4870	SBC @ South Boulder Road Precipitation-BO	Boulder County 10 minute rainfall	9/12/2013 0:34
4310	Johnny Park Precipitation-BO	Boulder County 10 minute rainfall	9/12/2013 0:38
4770	Cal-Wood Ranch Precipitation-BO	Boulder County 1 hour rainfall	9/12/2013 0:43
4550	Jail Precipitation-BO	Boulder County 1 hour rainfall	9/12/2013 0:44
4850	Porphyry Mountain Precipitation-BO	Boulder County 1 hour rainfall	9/12/2013 0:45
4730	Sugarloaf Precipitation-BO	FMC-BA 0.50" in 30 Min Rainfall	9/12/2013 0:53
4730	Sugarloaf Precipitation-BO	FMC-BA 0.75" in 1 Hour Rainfall	9/12/2013 1:10
1570	Brighton ETO Precipitation-WE	Plains 1 hour rainfall	9/12/2013 1:43
1660	SPR at Henderson Precipitation	Plains 10 minute rainfall	9/12/2013 3:29
1660	SPR at Henderson Precipitation	Plains 1 hour rainfall	9/12/2013 3:37
4200	Lazy Acres Precipitation-BO	FMC-BA 0.75" in 1 Hour Rainfall	9/12/2013 4:46
4290	Red Hill Precipitation-BO	Boulder County 1 hour rainfall	9/12/2013 4:51
4330	Hansen Precipitation-BO	Boulder County 1 hour rainfall	9/12/2013 4:55
4250	Geer Canyon Precipitation-BO	Boulder County 1 hour rainfall	9/12/2013 5:06
4200	Lazy Acres Precipitation-BO	FMC-BA 0.50" in 30 Min Rainfall	9/12/2013 5:10
1800	Sand Creek Park Precipitation-AD	Plains 1 hour rainfall	9/12/2013 5:17
920	Aurora Town Hall Precipitation-AR	Plains 1 hour rainfall	9/12/2013 5:47
710	Horseshoe Park Drop Precipitation-AR	Plains 1 hour rainfall	9/12/2013 5:55
700	Toll Gate @ 6th Precipitation-AR	Plains 1 hour rainfall	9/12/2013 6:04
920	Aurora Town Hall Precipitation-AR	Plains 10 minute rainfall	9/12/2013 6:09
1460	Urban Farm Precipitation	Plains 1 hour rainfall	9/12/2013 6:26
820	East Toll Gate @ Buckley Precipitation-AR	Plains 1 hour rainfall	9/12/2013 6:54
800	Sable Ditch @ Colfax Precipitation-AD	Plains 1 hour rainfall	9/12/2013 6:59
400	Montview Park Precipitation-AD	Plains 1 hour rainfall	9/12/2013 7:29
810	Granby Ditch @ 6th Precipitation-AR	Plains 1 hour rainfall	9/12/2013 7:47
850	Flying J Truck Plaza Precipitation-AD	Plains 1 hour rainfall	9/12/2013 7:52
4320	Lee Hill Rain Precipitation-BO	FMC-BA 0.50" in 30 Min Rainfall	9/12/2013 8:29
4320	Lee Hill Rain Precipitation-BO	FMC-BA 0.25" in 10 Min Rainfall	9/12/2013 8:31
4320	Lee Hill Rain Precipitation-BO	FMC-BA 0.75" in 1 Hour Rainfall	9/12/2013 8:38
430	Utah Park Precipitation-AR	Plains 1 hour rainfall	9/12/2013 8:45
520	Jewell Detention Precipitation-AR	Plains 1 hour rainfall	9/12/2013 8:46

420	Expo Park Precipitation-AR	Plains 1 hour rainfall	9/12/2013 8:55
440	Fire Station #7 Precipitation-AR	Plains 1 hour rainfall	9/12/2013 9:02
540	Parker/Mississippi Precipitation-DN	Plains 1 hour rainfall	9/12/2013 9:09
510	Virginia Court Precipitation-AR	Plains 1 hour rainfall	9/12/2013 9:20
510	Virginia Court Precipitation-AR	Plains 10 minute rainfall	9/12/2013 9:22
1800	Sand Creek Park Precipitation-AD	Plains 6 hour rainfall	9/12/2013 9:39
920	Aurora Town Hall Precipitation-AR	Plains 10 minute rainfall	9/12/2013 9:41
400	Montview Park Precipitation-AD	Plains 6 hour rainfall	9/12/2013 10:49
440	Fire Station #7 Precipitation-AR	Plains 10 minute rainfall	9/12/2013 11:30
510	Virginia Court Precipitation-AR	Plains 6 hour rainfall	9/12/2013 12:40
2840	Sulphur Gulch Precipitation-DG	Douglas County 1 hour rainfall	9/12/2013 13:03
220	Upper Leyden Precipitation-JF	Jefferson County 1 hour rainfall	9/12/2013 15:55
4840	SBC at S. Boulder D Precipitation-BO	Boulder County 1 hour rainfall	9/12/2013 16:24
4830	SBC at Sans Souci Precipitation-BO	Boulder County 1 hour rainfall	9/12/2013 16:39
4870	SBC @ South Boulder Road Precipitation-BO	Boulder County 1 hour rainfall	9/12/2013 16:39
4820	Doudy Draw Precipitation-BO	Boulder County 1 hour rainfall	9/12/2013 17:01
4810	Shanahan Ridge Precipitation-BO	Boulder County 1 hour rainfall	9/12/2013 17:11
4030	Red Garden Precipitation-BO	Boulder County 1 hour rainfall	9/12/2013 17:26
4170	Pine Brook Precipitation-BO	FMC-BA 0.50" in 30 Min Rainfall	9/12/2013 20:10
4110	Betasso Precipitation-BO	FMC-BA 0.50" in 30 Min Rainfall	9/12/2013 20:35
4110	Betasso Precipitation-BO	FMC-BA 0.75" in 1 Hour Rainfall	9/12/2013 20:45
4100	Filter Plant Precipitation-BO	FMC-BA 0.75" in 1 Hour Rainfall	9/12/2013 21:03
4090	Magnolia Precipitation-BO	FMC-BA 0.50" in 30 Min Rainfall	9/12/2013 21:08
4080	Twin Sisters Precipitation-BO	FMC-BA 0.75" in 1 Hour Rainfall	9/12/2013 21:46
1010	Denver West Precipitation-JF	Jefferson County 10 minute rainfall	9/13/2013 17:28
2870	Cherry Creek at Cottonwood Park Precipitation-DG	Douglas County 10 minute rainfall	9/14/2013 15:16
3070	Newlin Gulch at Jordan Road Precip-DG	Douglas County 10 minute rainfall	9/14/2013 15:16
2870	Cherry Creek at Cottonwood Park Precipitation-DG	Douglas County 1 hour rainfall	9/14/2013 15:20
950	Piney at Liverpool Precipitation-AR	Plains 10 minute rainfall	9/14/2013 15:24
3070	Newlin Gulch at Jordan Road Precip-DG	Douglas County 1 hour rainfall	9/14/2013 15:28
2860	Cherry Creek at Stroh Precipitation-DG	Douglas County 10 minute rainfall	9/14/2013 15:34
2730	Salisbury Park Precipitation-DG	Douglas County 1 hour rainfall	9/14/2013 15:37
730	No Name @ Quincy Precipitation-AR	Plains 10 minute rainfall	9/14/2013 15:39
760	Mission Viejo Park Precipitation-AR	Plains 10 minute rainfall	9/14/2013 15:39
2730	Salisbury Park Precipitation-DG	Douglas County 10 minute rainfall	9/14/2013 15:41
2820	East Plum Creek at Haskins Gulch Precipitation-DG	Douglas County 10 minute rainfall	9/14/2013 15:41
720	Confluence Pond Precipitation-AR	Plains 10 minute rainfall	9/14/2013 15:45
2820	East Plum Creek at Haskins Gulch Precipitation-DG	Douglas County 1 hour rainfall	9/14/2013 15:46
760	Mission Viejo Park Precipitation-AR	Plains 1 hour rainfall	9/14/2013 15:48
2840	Sulphur Gulch Precipitation-DG	Douglas County 1 hour rainfall	9/14/2013 15:52
720	Confluence Pond Precipitation-AR	Plains 1 hour rainfall	9/14/2013 15:52
2860	Cherry Creek at Stroh Precipitation-DG	Douglas County 1 hour rainfall	9/14/2013 15:53
440	Fire Station #7 Precipitation-AR	Plains 10 minute rainfall	9/14/2013 15:56
710	Horseshoe Park Drop Precipitation-AR	Plains 10 minute rainfall	9/14/2013 15:58
440	Fire Station #7 Precipitation-AR	Plains 1 hour rainfall	9/14/2013 16:01
700	Toll Gate @ 6th Precipitation-AR	Plains 10 minute rainfall	9/14/2013 16:04

710	Horseshoe Park Drop Precipitation-AR	Plains 1 hour rainfall	9/14/2013 16:06
820	East Toll Gate @ Buckley Precipitation-AR	Plains 10 minute rainfall	9/14/2013 16:10
430	Utah Park Precipitation-AR	Plains 10 minute rainfall	9/14/2013 16:12
510	Virginia Court Precipitation-AR	Plains 10 minute rainfall	9/14/2013 16:12
820	East Toll Gate @ Buckley Precipitation-AR	Plains 1 hour rainfall	9/14/2013 16:13
420	Expo Park Precipitation-AR	Plains 10 minute rainfall	9/14/2013 16:13
700	Toll Gate @ 6th Precipitation-AR	Plains 1 hour rainfall	9/14/2013 16:13
810	Granby Ditch @ 6th Precipitation-AR	Plains 10 minute rainfall	9/14/2013 16:14
860	Sand Creek at Colfax Precipitation-AD	Plains 10 minute rainfall	9/14/2013 16:16
510	Virginia Court Precipitation-AR	Plains 1 hour rainfall	9/14/2013 16:17
810	Granby Ditch @ 6th Precipitation-AR	Plains 1 hour rainfall	9/14/2013 16:17
920	Aurora Town Hall Precipitation-AR	Plains 10 minute rainfall	9/14/2013 16:18
920	Aurora Town Hall Precipitation-AR	Plains 1 hour rainfall	9/14/2013 16:19
860	Sand Creek at Colfax Precipitation-AD	Plains 1 hour rainfall	9/14/2013 16:22
730	No Name @ Quincy Precipitation-AR	Plains 1 hour rainfall	9/14/2013 16:22
430	Utah Park Precipitation-AR	Plains 1 hour rainfall	9/14/2013 16:23
800	Sable Ditch @ Colfax Precipitation-AD	Plains 10 minute rainfall	9/14/2013 16:26
800	Sable Ditch @ Colfax Precipitation-AD	Plains 1 hour rainfall	9/14/2013 16:26
850	Flying J Truck Plaza Precipitation-AD	Plains 10 minute rainfall	9/14/2013 16:29
5940	Log Jumper Precipitation-DG	Hayman 30 minute rainfall	9/14/2013 16:30
1800	Sand Creek Park Precipitation-AD	Plains 10 minute rainfall	9/14/2013 16:30
1480	Third Creek at DIA Precipitation-DN	Plains 10 minute rainfall	9/14/2013 16:35
420	Expo Park Precipitation-AR	Plains 1 hour rainfall	9/14/2013 16:36
850	Flying J Truck Plaza Precipitation-AD	Plains 1 hour rainfall	9/14/2013 16:36
5940	Log Jumper Precipitation-DG	Hayman 1 hour rainfall	9/14/2013 16:38
1800	Sand Creek Park Precipitation-AD	Plains 1 hour rainfall	9/14/2013 16:41
5940	Log Jumper Precipitation-DG	Hayman 90 minute rainfall	9/14/2013 16:46
5900	Horse Creek Precipitation-DG	Hayman 30 minute rainfall	9/14/2013 17:15
970	Pump Station 3 Precipitation-AR	Plains 1 hour rainfall	9/14/2013 17:31
5810	Stump Bump Precipitation-TL	Hayman 30 minute rainfall	9/14/2013 17:56
5810	Stump Bump Precipitation-TL	Hayman 1 hour rainfall	9/14/2013 18:15
2970	Rampart Range Road Precipitation-DG	2970 Rampart Range Road 0.2" in 30 Minutes Rainfall	9/15/2013 9:15
750	Quincy Reservoir Precipitation	Plains 10 minute rainfall	9/15/2013 10:38
750	Quincy Reservoir Precipitation	Plains 1 hour rainfall	9/15/2013 10:41
1200	Broomfield Basin 3207 Precipitation-BO	Boulder County 1 hour rainfall	9/15/2013 11:29
730	No Name @ Quincy Precipitation-AR	Plains 10 minute rainfall	9/15/2013 12:52
730	No Name @ Quincy Precipitation-AR	Plains 1 hour rainfall	9/15/2013 12:55
710	Horseshoe Park Drop Precipitation-AR	Plains 1 hour rainfall	9/15/2013 13:00
510	Virginia Court Precipitation-AR	Plains 1 hour rainfall	9/15/2013 13:05
720	Confluence Pond Precipitation-AR	Plains 1 hour rainfall	9/15/2013 13:06
860	Sand Creek at Colfax Precipitation-AD	Plains 1 hour rainfall	9/15/2013 13:10
730	No Name @ Quincy Precipitation-AR	Plains 10 minute rainfall	9/15/2013 13:33

General System Analysis

Database Name P:\A207-UDFCD-Data-Analysis\2013\09-2013\Novastar_extract_2013Sep.mdb

First Date in Database	9/1/13 12:00 AM	Total Days	30.0
Last Date in Database	9/30/13 11:59 PM	Total Hours	720.0

Total Records Analyzed 460,901

Records by Group

Wind Data	120,951	26%
Water Level	71,675	16%
Temperature	62,843	14%
Relative Humidity	56,612	12%
Precipitation	43,410	9%
Battery Voltage	27,050	6%
Barometric Pressure	26,603	6%
Dew Point Temperature	8,470	2%
Peak Wind	8,470	2%
Wind Chill	8,470	2%
Solar Radiation	8,151	2%
Fuel Moisture	4,590	1%
Unknown	4,429	1%
Fuel Temperature	4,372	1%
Soil Moisture	2,120	0%
Repeater Status Report	1,296	0%
Flasher Status	471	0%
12Hr Status Report	389	0%
Hayman Battery	315	0%
Evapotranspiration	115	0%
Handar 585 ALARM Status	49	0%
Repeater Pass List	49	0%
Solar Power	1	0%
Total	460,901	

Records by Major Group

Meteorologic Sensors	154,209	33%
Water Level Sensors	71,675	16%
Rain Sensors	43,410	9%
Soil and Fuel Sensors	11,082	2%
Sensor Status Transmissions	1,784	0%
Total	282,160	

Traffic Loading Summary

	A2 (includes Douglas Cnty)	Legacy (ex Doug Cnty)
Alert Reports	460,901	353,016
Average Daily Traffic	15,363	11,767
Average Hourly Traffic	640	490
Median Hourly Traffic	629	398
Peak Hourly Traffic	1,756	1,776
2nd Max	1,747	1,683
3rd Max	1,728	1,620
4th Max	1,623	1,588
5th Max	1,526	1,567

		hour beginning
	Sep 23, 2:00 AM	Sep 12, 9:00 AM
	Sep 23, 3:00 AM	Sep 12, 5:00 PM
	Sep 23, 4:00 AM	Sep 12, 4:00 PM
	Sep 12, 5:00 PM	Sep 12, 8:00 PM
	Sep 12, 9:00 AM	Sep 12, 8:00 AM

Rain Timer Performance

Analyze Rain Sensors

Rain Sensors	Description	Rcv	Timer	Exp	Performance
840	Fire Station 12	25	23:12	60	42%
2790	Wx-W. Cherry Creek	29	18:00	60	48%
2730	Wx-Salisbury Park	33	15:06	60	55%
2930	Spring Valley Rd-Doug	38	15:13	60	63%
2840	Sulphur Gulch	39	14:27	60	65%
2880	ppy Canyon at N Surrey	39	14:24	60	65%
3030	WX-Bingham Lake Park	39	13:42	60	65%
2810	Pine Cliff Road	41	16:53	60	68%
2910	East Cherry Cr-Douglas	41	14:37	60	68%
2990	Wx-Tomah Rd-DougCnt	41	14:13	60	68%
3020	Wx-West Creek WX	41	13:09	60	68%
420	Expo Park	42	12:24	60	70%
2710	Wx-Highlands Ranch WT	42	13:42	60	70%
2750	Wx-Castle Rock	42	14:24	60	70%
3050	East/West Trailhead	42	12:49	60	70%
2900	Russelville Gulch-Dougla	43	13:52	60	72%
2920	Wt Cherry Head-Douglas	43	15:10	60	72%
2940	Willow Creek - DougCnt	44	15:25	60	73%
2960	Indian Creek	44	13:45	60	73%
3080	Tallman Gulch	44	13:52	60	73%
4470	Little Narrows	44	14:16	60	73%
2230	Bear Cr below Cub	45	14:57	60	75%
2280	Kinney Peak	45	13:27	60	75%
2850	Cherry Cr bl Bayou Glch	45	14:50	60	75%
2860	CC at Stroh Rd	45	14:21	60	75%
2980	Dakan Rd	45	13:56	60	75%
3010	EPC at Hwy 105	45	13:52	60	75%
3040	W @ Prairie Canyon Ran	45	13:52	60	75%
3060	Fire Sta 47	45	14:07	60	75%
1660	SPR at Henderson	46	14:40	60	77%
2360	Indian Hills	46	14:11	60	77%
2800	Columbine Open Space	46	13:24	60	77%
4330	Hansen Rain	46	16:28	60	77%
100	A2-Carr Street	47	14:03	60	78%
310	Guy Hill Ranch	47	13:34	60	78%
2820	Haskins Gulch Conf	47	13:56	60	78%
2870	Cottonwood (Apache)	47	13:42	60	78%
2890	Spruce Mt - Douglas	47	13:34	60	78%
620	Quincy/Highline	48	13:57	60	80%
2950	DC Public Works	48	13:53	60	80%
4510	Pinewood Springs	48	13:00	60	80%
2320	Choke Cherry Resvr	49	13:00	60	82%
4270	Cannon Mountain	49	14:42	60	82%
920	Wx-Aurora Town Hall	50	12:00	60	83%
2370	Red Rocks Park	50	12:36	60	83%
4790	Wx-Button Rock	50	13:56	60	83%
4850	Porphyry Mtn	50	12:45	60	83%
4870	SBC @ SB Road	50	14:03	60	83%
1530	Bear Creek @ Lowell	51	12:48	60	85%
400	Montview Park	52	12:51	60	87%
830	Side Creek Park	52	13:09	60	87%
1000	A2-Maple Grove Resv.	52	12:55	60	87%
1360	Denver Zoo	52	12:36	60	87%
1710	Shop Creek	52	13:10	60	87%

4530	Winiger Ridge	52	12:53	60	87%
500	Havana Park	53	12:57	60	88%
540	Parker/Mississippi	53	12:14	60	88%
2270	Cub Cr below Blue	53	12:35	60	88%
4180	Gold Lake	53	12:35	60	88%
4490	Apple Valley	53	12:49	60	88%
4570	St. Antons	53	12:16	60	88%
860	Sand Cr at Colfax	54	12:35	60	90%
1050	Jeffco Fairgrounds	54	12:31	60	90%
1060	Heritage Square	54	12:34	60	90%
1520	Wx-Marston Lake North	54	12:56	60	90%
1550	Lakewood CC	54	12:48	60	90%
1640	SPR at Union Ave.	54	12:13	60	90%
4010	Crescent	54	12:53	60	90%
4050	Walker Ranch	54	12:37	60	90%
4100	Filter Plant	54	12:17	60	90%
4240	Sunset	54	12:19	60	90%
4290	Red Hill	54	11:57	60	90%
4830	SBC @ San Souci	54	13:10	60	90%
630	Temple Pond at DTC	55	12:36	60	92%
640	Goldsmith @ Eastman	55	12:49	60	92%
650	Iliff Pond	55	12:15	60	92%
850	Flying J	55	12:17	60	92%
870	Murphy Creek GC	55	12:16	60	92%
940	Aurora Regional Pond	55	12:30	60	92%
1030	NREL/S. Table Mtn.	55	12:51	60	92%
1100	Louisville Rec Ctr	55	12:15	60	92%
1310	LDC at 64th	55	12:14	60	92%
1350	Chatfield COE	55	11:59	60	92%
1620	Slaughterhouse Glch	55	11:58	60	92%
2330	Morrison	55	12:46	60	92%
4060	Lakeshore	55	12:33	60	92%
4220	Fling's	55	13:36	60	92%
4770	Wx-Cal-Wood Ranch	55	12:18	60	92%
110	Ralston Reservoir	56	12:32	60	93%
220	Upper Leyden	56	12:17	60	93%
440	Fire Station #7	56	11:57	60	93%
520	Jewell Detention	56	11:57	60	93%
700	Toll Gate @ 6th	56	12:00	60	93%
1320	SPR at 3rd Ave	56	12:14	60	93%
1370	West Metro FS13	56	12:14	60	93%
1500	Powers Park	56	11:57	60	93%
1600	Englewood Dam	56	12:14	60	93%
2240	Cold Sprg Glch conf	56	12:14	60	93%
2340	El Rancho	56	12:33	60	93%
4020	Rio Grande	56	11:57	60	93%
4030	Red Garden	56	11:58	60	93%
4300	Big Elk Park	56	11:57	60	93%
4340	Riverside	56	11:57	60	93%
4710	Wx-Ward C-1	56	12:21	60	93%
4810	Shanahan Ridge	56	12:14	60	93%
4820	Doudy Draw	56	12:13	60	93%
4880	Whispering Pines	56	12:32	60	93%
410	Kelly Dam	57	12:28	60	95%
530	Fire Station #19	57	12:13	60	95%
710	Horseshoe Park Drop	57	11:57	60	95%
720	Confluence Pond	57	11:57	60	95%
760	Mission Viejo Park	57	12:14	60	95%
1010	Denver West	57	12:31	60	95%

1040	Lena @ U.S. Hwy 6	57	12:14	60	95%
1110	Gunbarrel	57	11:57	60	95%
1200	Broomfield 3207	57	12:31	60	95%
1300	Hidden Lake	57	11:58	60	95%
1340	Sanderson at Xavier	57	11:59	60	95%
1400	Upper Sloan Det.	57	11:57	60	95%
1420	Wx-Diamond Hill	57	12:15	60	95%
1440	Wx-Elbert	57	12:00	60	95%
1570	Wx-Brighton Ditch	57	12:00	60	95%
1700	Cherry Cr @ Champa	57	11:44	60	95%
1720	Cherry Cr @ Steele	57	11:57	60	95%
1800	Sand Creek Park	57	11:57	60	95%
1920	Wx-Brighton	57	12:00	60	95%
2250	Rosedale	57	12:55	60	95%
2350	Idledale	57	11:57	60	95%
4040	Martin Gulch	57	12:32	60	95%
4110	Betasso	57	11:58	60	95%
4130	Swiss Peaks	57	12:15	60	95%
4140	Logan Mill	57	12:34	60	95%
4230	Golden Age	57	12:14	60	95%
4250	Geer Canyon	57	11:56	60	95%
4360	Justice Center	57	11:57	60	95%
4730	Wx-Sugarloaf	57	12:18	60	95%
4860	Fairview Peak	57	12:19	60	95%
120	West Woods	58	12:14	60	97%
140	Wx-Blue Mountain	58	12:00	60	97%
150	Nott Creek	58	11:57	60	97%
210	Leyden Confluence	58	12:30	60	97%
330	Van Bibber @ Hwy 93	58	11:57	60	97%
600	Harvard Gulch Park	58	11:58	60	97%
610	Harvard @ Jackson	58	11:57	60	97%
750	Wx-Quincy Reservoir	58	12:12	60	97%
800	Sable Ditch @ 18th	58	11:57	60	97%
820	ETG @ Buckley	58	11:41	60	97%
900	Wx-Aurora Reservoir	58	12:00	60	97%
970	Pump Sta 3	58	11:29	60	97%
1480	Third Creek at DIA	58	10:52	60	97%
1900	Niver Detention	58	12:13	60	97%
2210	Wx-Hiwan G.C.	58	12:00	60	97%
2310	Genesee Village	58	12:12	60	97%
4080	Twin Sisters	58	12:13	60	97%
4090	Magnolia	58	11:57	60	97%
4150	Gold Hill	58	12:16	60	97%
4170	Pine Brook	58	12:15	60	97%
4190	Slaughterhouse	58	11:57	60	97%
4200	Lazy Acres	58	11:58	60	97%
4310	Johnny Park	58	11:57	60	97%
4320	Lee Hill Rain 2012	58	11:57	60	97%
4350	Conifer Hill	58	11:57	60	97%
4750	Wx-Louisville Lake	58	12:18	60	97%
4840	SBC@S Boulder Ditch	58	12:13	60	97%
200	Leyden Reservoir	59	11:57	60	98%
300	Van Bibber Park	59	12:14	60	98%
320	Sports Complex	59	12:12	60	98%
430	Utah Park	59	12:15	60	98%
510	Virginia Court	59	11:57	60	98%
810	Granby Ditch @ 6th	59	11:57	60	98%
950	Piney at Liverpool	59	11:57	60	98%
1810	Sand Creek at mouth	59	11:53	60	98%

2260	Brook Forest	59	12:15	60	98%
4070	Bear Peak	59	11:57	60	98%
4260	Taylor Mountain	59	11:57	60	98%
4520	Eagle Ridge	59	12:00	60	98%
4550	Boulder Jail	59	11:57	60	98%
1460	Wx-Urban Farm	60	11:44	60	100%
3090	Highland Heritage Park-A	60	12:00	60	100%
4160	Sunshine	60	11:57	60	100%
730	No Name @ Quincy	90	6:44	60	150%
3070	Newlin Gulch-A2	91	7:13	60	152%
2970	Hampart Range Rd-Satell	267		60	
5720	Four Mile Creek	32	18:43	60	53%
5730	West Creek	42	13:42	60	70%
5740	Trail Creek	43	13:45	60	72%
5810	Stump Bump	40	14:49	60	67%
5860	Cedar Mountain	40	14:15	60	67%
5880	Hackett Mountain	42	14:19	60	70%
5900	Horse Creek-Satellite	1031		60	
5940	Log Jumper	39	14:15	60	65%
100100	A2-Blackstone Precip	59	12:00	60	98%
100110	!-ETG @ Hampden Pre	58	12:00	60	97%

Rain Event Performance		Reports Received	33,564	Analyze Rain Sensors																
	Systemwide Avg	Total Tips	39,056																	
	85.94%	Data Loss	14.06%																	
Description	Sensor	Performance	1-tips	2-tips	3-tips	4-tips	5-tips	6-tips	>6-tips	Rcv	Exp	Miss	Hold	Bucket						
St. Antons	4570	55%	90	20	8	4	1	2	4	125	227	102	0	0.03937						
Wx-Aurora Town Hall	920	56%	143	38	12	6	5	2	3	206	371	165	0	0.03937	Mean				229.74	
Hansen Rain	4330	56%	186	34	7	4	3	2	9	236	420	184	0	0.03937	Median				198	
Little Narrows	4470	57%	126	38	12	11	2	1	4	190	333	143	0	0.03937	St. Dev				107.83	
Wx-W. Cherry Creek	2790	59%	38	7	8	3	2	0	0	58	98	40	0	0.03937	Mean plus 3 SD				553.24	
Cottonwood (Apache)	2870	66%	90	26	7	2	2	1	1	128	195	67	0	0.03937	Min				70	
West Cherry Head-Douglas	2920	67%	54	13	7	4	0	0	0	78	117	39	0	0.03937	Max				485	
Pinewood Springs	4510	67%	173	48	21	6	4	0	0	252	376	124	0	0.03937						
Wx-Button Rock	4790	68%	170	61	17	4	2	1	0	255	375	120	0	0.03937						
Tallman Gulch	3080	68%	83	16	8	5	0	1	0	113	165	52	0	0.03937						
Sulphur Gulch	2840	69%	84	24	4	3	3	0	0	118	171	53	0	0.03937						
Wx-West Creek WX	3020	69%	56	14	6	0	1	1	0	78	113	35	0	0.03937						
Pine Cliff Road	2810	69%	66	21	6	2	1	0	0	96	139	43	0	0.03937						
Choke Cherry Resvr	2320	71%	115	27	7	5	1	1	0	156	221	65	0	0.03937						
Spruce Mt - Douglas	2890	71%	53	15	6	0	1	0	0	75	106	31	0	0.03937						
Wx-Quincy Reservoir	750	71%	73	4	1	0	2	0	2	80	112	32	0	0.03937						
Haskins Gulch Conf	2820	72%	93	14	6	3	3	0	0	119	166	47	0	0.03937						
Indian Creek	2960	72%	68	22	5	2	0	0	0	97	135	38	0	0.03937						
Willow Creek - DougCnty	2940	72%	59	10	5	2	1	0	0	77	107	30	0	0.03937						
Wx-Highlands Ranch WTP	2710	72%	64	10	1	1	2	0	1	78	108	30	0	0.03937						
CC @ Prairie Canyon Ranch	3040	73%	48	11	5	1	0	0	0	65	89	24	0	0.03937						
Kinney Peak	2280	74%	82	16	4	2	2	0	0	106	144	38	1	0.03937						
CC at Stroh Rd	2860	74%	72	8	9	2	0	0	0	91	123	32	0	0.03937						
Wx-Tomah Rd-DougCnty	2990	74%	69	15	5	1	1	0	0	91	123	32	0	0.03937						
East/West Trailhead	3050	74%	42	13	2	1	0	0	0	58	78	20	0	0.03937						
Fire Sta 47	3060	75%	91	15	9	1	1	0	0	117	157	40	0	0.03937						
Wx-Castle Rock	2750	75%	65	14	6	1	0	0	0	86	115	29	0	0.03937						
Columbine Open Space	2800	75%	75	14	3	1	2	0	0	95	126	31	0	0.03937						
SPR at Henderson	1660	76%	115	28	4	2	0	1	0	150	197	47	0	0.03937						
Wx-Cal-Wood Ranch	4770	76%	229	45	12	6	0	0	1	292	383	91	0	0.03937						
Wx-Salisbury Park	2730	76%	82	17	5	2	0	0	0	106	139	33	0	0.03937						
Happy Canyon at N Surrey Trl	2880	76%	88	13	6	3	0	0	0	110	144	34	0	0.03937						
SBC @ SB Road	4870	76%	293	57	15	3	1	2	1	371	485	114	0	0.03937						
Apple Valley	4490	77%	151	34	13	0	0	0	0	198	258	60	0	0.03937						
Eagle Ridge	4520	77%	134	36	5	2	0	0	0	177	229	52	0	0.03937						
Riverside	4340	78%	245	41	8	4	0	0	2	298	382	84	0	0.03937						
East Cherry Cr-Douglas	2910	78%	56	7	2	0	0	0	1	65	83	18	0	0.03937						
Wx-Spring Valley Rd-DougCnty	2930	78%	58	15	3	0	0	0	0	76	97	21	0	0.03937						
Cannon Mountain	4270	79%	236	50	9	4	0	0	0	299	379	80	0	0.03937						
DC Public Works	2950	79%	96	11	4	1	2	0	0	114	144	30	0	0.03937						
Russelville Gulch-Douglas	2900	79%	66	14	4	0	0	0	0	84	106	22	0	0.03937						
Indian Hills	2360	80%	106	17	4	0	0	0	1	127	159	32	0	0.03937						
Shop Creek	1710	80%	87	20	2	1	0	0	0	110	137	27	0	0.03937						
Slaughterhouse Glch	1620	80%	74	10	2	0	0	0	1	86	107	21	0	0.03937						
Red Hill	4290	81%	207	33	7	1	2	0	0	250	308	58	0	0.03937						
Parker/Mississippi	540	82%	106	22	2	1	0	0	0	131	160	29	0	0.03937						
Toll Gate @ 6th	700	82%	246	54	4	1	0	0	0	305	370	65	0	0.03937						
Flying J	850	83%	164	28	5	1	0	0	0	198	239	41	2	0.03937						
Dakan Rd	2980	83%	47	10	1	0	0	0	0	58	70	12	0	0.03937						
Rampart Range Rd-Satellite	2970	83%	68	8	4	0	0	0	0	80	96	16	0	0.03937						
Justice Center	4360	83%	290	36	11	2	1	0	0	340	408	68	0	0.03937						
Gold Lake	4180	83%	202	30	9	0	0	0	0	241	289	48	0	0.03937						
Iliff Pond	650	83%	94	13	4	0	0	0	0	111	133	22	0	0.03937						
Sand Cr at Colfax	860	84%	213	34	5	2	0	0	0	254	304	50	11	0.03937						
A2-Maple Grove Resv.	1000	84%	137	3	0	2	1	1	1	144	172	28	4	0.03937						
Guy Hill Ranch	310	84%	156	15	7	0	1	0	0	179	212	33	0	0.03937						
Filter Plant	4100	85%	259	31	10	1	0	0	0	301	355	54	0	0.03937						
Fling's	4220	85%	207	28	6	1	0	0	0	242	285	43	0	0.03937						
Confluence Pond	720	85%	182	24	5	1	0	0	0	212	249	37	1	0.03937						
Golden Age	4230	85%	279	46	2	1	1	0	0	329	386	57	0	0.03937						
Van Bibber @ Hwy 93	330	85%	170	24	5	0	0	0	0	199	233	34	0	0.03937						
Martin Gulch	4040	86%	259	42	3	1	0	0	0	305	356	51	0	0.03937						
Montview Park	400	86%	233	42	2	0	0	0	0	277	323	46	0	0.03937						
Cub Cr below Blue	2270	86%	134	14	2	1	1	0	0	152	177	25	0	0.03937						
Geer Canyon	4250	87%	287	29	9	1	0	0	0	326	376	50	0	0.03937						
Broomfield 3207	1200	87%	122	11	5	0	0	0	0	138	159	21	0	0.03937						
Expo Park	420	87%	245	28	4	2	0	0	0	279	321	42	0	0.03937						
Crezent	4010	87%	249	31	6	0	0	0	0	286	329	43	0	0.03937						
Red Rocks Park	2370	87%	112	12	2	1	0	0	0	127	146	19	0	0.03937						
Conifer Hill	4350	87%	319	33	9	1	0	0	0	362	416	54	0	0.03937						
Slaughterhouse	4190	87%	298	37	5	1	0	0	0	341	391	50	0	0.03937						
Red Garden	4030	87%	304	40	4	1	0	0	0	349	400	51	0	0.03937						
Rio Grande	4020	87%	273	30	6	1	0	0	0	310	355	45	0	0.03937						
Sand Creek Park	1800	87%	268	42	0	1	0	0	0	311	356	45	1	0.03937						
ETG @ Buckley	820	87%	204	20	5	1	0	0	0	230	263	33	1	0.03937						
Granby Ditch @ 6th	810	87%	229	22	6	1	0	0	0	258	295	37	1	0.03937						
Cold Sprg Glch conf	2240	88%	128	17	2	0	0	0	0	147	168	21	0	0.03937						
Doudy Draw	4820	88%	285	34	4	0	1	0	0	324	370	46	0	0.03937						
A2-Carr Street	100	88%	149	8	2	2	1	0	0	162	184	22	0	0.03937						
Jewell Detention	520	88%	190	27	1	0	0	0	0	218	247	29	0	0.03937						
Ralston Reservoir	110	88%	246	30	2	1	0	0	0	279	316	37	0	0.03937						
Third Creek at DIA	1480	88%	134	16	2	0	0	0	2	152	172	20	0	0.03937						
Shanahan Ridge	4810	88%	327	31	7	1	0	0	0	366	414	48	0	0.03937						

Bear Peak	4070	88%	298	34	2	2	0	0	0	0	336	380	44	0	0.03937
Morrison	2330	89%	124	12	3	0	0	0	0	0	139	157	18	0	0.03937
Bear Creek @ Lowell	1530	89%	79	3	4	0	0	0	0	0	86	97	11	0	0.03937
NREL/S. Table Mtn.	1030	89%	166	20	2	0	0	0	0	0	188	212	24	2	0.03937
Walker Ranch	4050	89%	211	26	2	0	0	0	0	0	239	269	30	0	0.03937
Wx-Elbert	1440	89%	72	8	1	0	0	0	0	0	81	91	10	0	0.03937
Lazy Acres	4200	89%	342	37	5	0	0	0	0	0	384	431	47	0	0.03937
Upper Sloan Det.	1400	89%	96	10	0	1	0	0	0	0	107	120	13	0	0.03937
Virginia Court	510	89%	340	35	5	0	0	0	0	0	380	425	45	0	0.03937
Wx-Marston Lake North	1520	89%	91	10	1	0	0	0	0	0	102	114	12	1	0.03937
Lakeshore	4060	90%	226	23	3	0	0	0	0	0	252	281	29	0	0.03937
Bear Cr below Cub	2230	90%	70	9	0	0	0	0	0	0	79	88	9	0	0.03937
Wx-Brighton Ditch	1570	90%	207	19	3	0	0	0	0	0	229	254	25	0	0.03937
Quincy/Highline	620	90%	91	9	1	0	0	0	0	0	101	112	11	0	0.03937
Sable Ditch @ 18th	800	90%	251	21	3	1	0	0	0	0	276	306	30	0	0.03937
Lakewood CC	1550	90%	84	6	2	0	0	0	0	0	92	102	10	0	0.03937
Side Creek Park	830	90%	182	20	1	0	0	0	0	0	203	225	22	0	0.03937
Upper Leyden	220	90%	280	21	6	0	0	0	0	0	307	340	33	0	0.03937
Idledale	2350	90%	138	8	4	0	0	0	0	0	150	166	16	0	0.03937
Taylor Mountain	4260	90%	284	23	2	2	0	0	0	0	311	344	33	0	0.03937
Sanderson at Xavier	1340	90%	68	8	0	0	0	0	0	0	76	84	8	0	0.03937
Sunshine	4160	90%	305	24	1	3	0	0	0	0	333	368	35	1	0.03937
Johnny Park	4310	90%	284	27	3	0	0	0	0	0	314	347	33	0	0.03937
SBC @ San Souci	4830	91%	313	28	4	0	0	0	0	0	345	381	36	0	0.03937
Nott Creek	150	91%	203	15	2	0	1	0	0	0	221	244	23	0	0.03937
Betasso	4110	91%	306	28	2	1	0	0	0	0	337	372	35	0	0.03937
Big Elk Park	4300	91%	323	31	3	0	0	0	0	0	357	394	37	0	0.03937
Lee Hill Rain 2012	4320	91%	359	30	4	0	0	0	0	0	393	431	38	0	0.03937
Chatfield COE	1350	91%	86	7	1	0	0	0	0	0	94	103	9	0	0.03937
Rosedale	2250	91%	162	15	1	0	0	0	0	0	178	195	17	0	0.03937
West Woods	120	91%	146	11	2	0	0	0	0	0	159	174	15	0	0.03937
Denver Zoo	1360	92%	140	10	2	0	0	0	0	0	152	166	14	0	0.03937
Leyden Confluence	210	92%	119	12	0	0	0	0	0	0	131	143	12	0	0.03937
Fire Station #19	530	92%	129	13	0	0	0	0	0	0	142	155	13	0	0.03937
Fire Station #7	440	92%	331	27	3	0	0	0	0	0	361	394	33	0	0.03937
SPR at 3rd Ave	1320	92%	70	7	0	0	0	0	0	0	77	84	7	0	0.03937
Whispering Pines	4880	92%	323	27	1	1	0	0	0	0	352	384	32	0	0.03937
Lena @ U.S. Hwy 6	1040	92%	234	19	2	0	0	0	0	0	255	278	23	1	0.03937
Louisville Rec Ctr	1100	92%	210	14	3	0	0	0	0	0	227	247	20	0	0.03937
Jeffco Fairgrounds	1050	92%	168	14	1	0	0	0	0	0	183	199	16	1	0.03937
Wx-Urban Farm	1460	92%	309	25	2	0	0	0	0	0	336	365	29	2	0.03937
Boulder Jail	4550	92%	299	24	2	0	0	0	0	0	325	353	28	0	0.03937
Denver West	1010	92%	154	10	2	0	0	0	0	0	166	180	14	1	0.03937
Utah Park	430	92%	312	20	4	0	0	0	0	0	336	364	28	0	0.03937
Wx-Brighton	1920	92%	144	11	1	0	0	0	0	0	156	169	13	0	0.03937
Sunset	4240	92%	200	14	2	0	0	0	0	0	216	234	18	0	0.03937
Niver Detention	1900	92%	137	8	2	0	0	0	0	0	147	159	12	0	0.03937
Wx-Ward C-1	4710	93%	215	16	1	0	0	0	0	0	232	250	18	0	0.03937
Cherry Cr @ Steele	1720	93%	85	5	1	0	0	0	0	0	91	98	7	0	0.03937
Mission Viejo Park	760	93%	244	14	3	0	0	0	0	0	261	281	20	0	0.03937
Winiger Ridge	4530	93%	209	15	1	0	0	0	0	0	225	242	17	0	0.03937
West Metro FS13	1370	93%	98	8	0	0	0	0	0	0	106	114	8	0	0.03937
Wx-Diamond Hill	1420	93%	100	6	1	0	0	0	0	0	107	115	8	0	0.03937
Heritage Square	1060	93%	230	13	1	1	0	0	0	0	245	263	18	0	0.03937
Sand Creek at mouth	1810	93%	167	11	1	0	0	0	0	0	179	192	13	1	0.03937
Horseshoe Park Drop	710	93%	282	20	1	0	0	0	0	0	303	325	22	0	0.03937
Van Bibber Park	300	93%	130	10	0	0	0	0	0	0	140	150	10	0	0.03937
Temple Pond at DTC	630	93%	148	8	0	1	0	0	0	0	157	168	11	0	0.03937
Goldsmith @ Eastman	640	93%	120	9	0	0	0	0	0	0	129	138	9	0	0.03937
Swiss Peaks	4130	94%	246	16	1	0	0	0	0	0	263	281	18	0	0.03937
Leyden Reservoir	200	94%	144	6	2	0	0	0	0	0	152	162	10	0	0.03937
Magnolia	4090	94%	279	17	1	0	0	0	0	0	297	316	19	0	0.03937
LDC at 64th	1310	94%	148	8	1	0	0	0	0	0	157	167	10	1	0.03937
Wx-Blue Mountain	140	94%	342	18	1	1	0	0	0	0	362	385	23	0	0.03937
Aurora Regional Pond	940	94%	137	7	1	0	0	0	0	0	145	154	9	0	0.03937
Harvard @ Jackson	610	94%	108	5	1	0	0	0	0	0	114	121	7	0	0.03937
Englewood Dam	1600	94%	109	7	0	0	0	0	0	0	116	123	7	0	0.03937
Pine Brook	4170	94%	320	18	1	0	0	0	0	0	339	359	20	0	0.03937
Wx-Aurora Reservoir	900	94%	97	6	0	0	0	0	0	0	103	109	6	0	0.03937
Twin Sisters	4080	95%	247	13	1	0	0	0	0	0	261	276	15	0	0.03937
Powers Park	1500	95%	124	5	1	0	0	0	0	0	130	137	7	0	0.03937
Gold Hill	4150	95%	309	17	0	0	0	0	0	0	326	343	17	0	0.03937
A2-Blackstone Precip	100100	95%	119	6	0	0	0	0	0	0	125	131	6	0	0.03937
Wx-Louisville Lake	4750	95%	223	7	2	0	0	0	0	0	232	243	11	0	0.03937
El Rancho	2340	96%	123	6	0	0	0	0	0	0	129	135	6	0	0.03937
Logan Mill	4140	96%	289	13	0	0	0	0	0	0	302	315	13	0	0.03937
Gunbarrel	1110	96%	248	7	0	0	1	0	0	0	256	267	11	0	0.03937
SBC@S Boulder Ditch	4840	96%	407	18	0	0	0	0	0	0	425	443	18	0	0.03937
Pump Sta 3	970	96%	162	7	0	0	0	0	0	0	169	176	7	0	0.03937
Brook Forest	2260	96%	189	8	0	0	0	0	0	0	197	205	8	0	0.03937
Murphy Creek GC	870	96%	142	6	0	0	0	0	0	0	148	154	6	0	0.03937
Piney at Liverpool	950	96%	150	2	2	0	0	0	0	0	154	160	6	0	0.03937
Wx-Sugarloaf	4730	96%	264	8	1	0	0	0	0	0	273	283	10	0	0.03937
Harvard Gulch Park	600	97%	83	3	0	0	0	0	0	0	86	89	3	0	0.03937
Highland Heritage Park-A2	3090	99%	140	0	1	0	0	0	0	0	141	143	2	0	0.03937
Hidden Lake	1300	99%	154	2	0	0	0	0	0	0	156	158	2	0	0.03937
A2-ETG @ Hampden Precip	100110	99%	158	2	0	0	0	0	0	0	160	162	2	0	0.03937
		Total Tips	29,521	3,224	597	150	56	16	34	33,564	39,056	5,492			

Newlin Gulch-A2	3070	34%	14	79	13	14	5	2	9	127	378	251	0	0.019685	Non 1-mm rain gages
EPC at Hwy 105	3010	61%	194	63	25	11	2	2	3	297	483	186	0	0.01	
Porphyry Mtn	4850	74%	803	175	53	13	8	2	1	1054	1423	369	27	0.01	
Fairview Peak	4860	89%	1320	145	10	3	0	0	0	1478	1652	174	44	0.01	
Four Mile Creek	5720	67%	48	6	7	2	0	1	0	64	95	31	0	0.03937	Hayman sites outside the District
West Creek	5730	72%	49	8	4	1	0	1	0	63	87	24	0	0.03937	
Trail Creek	5740	72%	76	26	3	2	0	1	0	108	151	43	0	0.03937	
Stump Bump	5810	71%	63	17	5	3	0	0	0	88	124	36	0	0.03937	
Cedar Mountain	5860	74%	59	16	5	1	0	0	0	81	110	29	0	0.03937	
Hackett Mountain	5880	80%	85	22	3	0	0	0	0	110	138	28	0	0.03937	
Horse Creek-Satellite	5900	99%	84	1	0	0	0	0	0	85	86	1	0	0.03937	
Log Jumper	5940	58%	47	18	5	2	0	1	2	73	126	53	0	0.03937	
Sports Complex	320	100%	24	0	0	0	0	0	0	24	24	0	0	0.03937	These sites all had problems during the Sept flooding event....either plugged funnels or runaway transmitters.
Kelly Dam	410	86%	31	4	1	0	0	0	0	36	42	6	0	0.03937	
Havana Park	500	87%	23	4	0	0	0	0	0	27	31	4	0	0.03937	
No Name @ Quincy	730	66%	534	105	52	18	17	8	30	734	1105	371	17	0.03937	
Fire Station 12	840	91%	85	4	1	1	0	0	4	91	100	9	3	0.03937	
SPR at Union Ave.	1640	95%	60	3	0	0	0	0	0	63	66	3	0	0.03937	
Cherry Cr @ Champa	1700	92%	43	4	0	0	0	0	0	47	51	4	0	0.03937	
Wx-Hiwan G.C.	2210	100%	42	0	0	0	0	0	0	42	42	0	1	0.03937	
Genesee Village	2310	90%	17	0	1	0	0	0	0	18	20	2	0	0.03937	
Cherry Cr bl Bayou Gich	2850	74%	11	1	2	0	0	0	0	14	19	5	0	0.03937	
WX-Bingham Lake Park	3030	76%	38	5	2	2	0	0	0	47	62	15	0	0.03937	

2013 Monthly ALERT Radio Traffic Summary

