

Memo



Date: May 12, 2010
To: Kevin Stewart
From: Markus Ritsch
Subject: April 2010 ALERT Data Analysis

I. ALERT Data Source

Raw ALERT data records extracted from the Urban Drainage and Flood Control District's Nova Star 4.0 base station (ALERT 2) were analyzed for the period April 1 through April 30, 2010.

II. General System Analysis Summary

A total of 371,445 ALERT data reports were analyzed from the ALERT 2 base station. Meteorological sensors account for 73 percent, water level sensors 10 percent, and rain sensors 6 percent of the total monthly records.

The system-wide radio traffic loading was 12,382 reports per day with an average hourly loading of 516 reports. The peak hourly traffic loading was 1,332 reports, which occurred on April 23, between 11:00 AM and noon. A plot of monthly average and peak hourly traffic loading is provided.

A. Specific Issues Identified this Month

Performance of the following sensors (Table 1) was unacceptable this month.

Table 1. Rain Sensors with Unacceptable Performance Characteristics

Rain ID	Description	Timer	Event	Comments
410	Kelly Dam	0.68	0.97	Poor timer performance
430	Utah Park	0.78	0.64	Poor event performance
700	Toll Gate at 6th	0.35	0.18	Poor performance
940	Sampson Gulch	0.92	0.60	Poor event performance on April 24 and high rainfall accumulation
1530	Bear Creek at Lowell	0.92	0.93	Large number of invalid reports
2900	Russellville Road	0.92	0.68	Poor event performance
2970	Rampart Range Road	0.02	0.07	Antenna system will be modified in May
3010	EPC at Hwy 105	0.28	0.79	Telemetry system was modified on 4/28/2010
4170	Pine Brook	0.67	0.81	Poor performance
4330	Indian Ruins	0.65	0.70	Poor performance
4470	Little Narrows	0.87	0.73	Poor performance
4860	Fairview Peak	0.62	0.83	Poor timer performance
321	Unknown	--	--	More than 500 reports from this sensor during the month
322	Unknown	--	--	More than 500 reports from this sensor during the month
324	Unknown	--	--	More than 500 reports from this sensor during the month
327	Unknown	--	--	More than 500 reports from this sensor during the month
328	Unknown	--	--	More than 500 reports from this sensor during the month
2000	D.G. Van Wie Test	--	--	374 reports received from this ID on 4/30/2010 (only on legacy ALERT, no reports received on the ALERT2 channel)

III. 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 2).

Table 2. Monthly Summary of Sensors with Poor Timer Performance (Sensor ID)

Jan*	Feb*	Mar*	Apr	May	Jun	Jul	Aug	Sep	Oct*	Nov*	Dec*
--	--	--	2970						--	--	--
--	--	--	3010						--	--	--
--	--	--	700						--	--	--
--	--	--	4860						--	--	--
--	--	--	4330						--	--	--
--	--	--	4170						--	--	--

*- Due to system start-up/shut-down, timer statistics are evaluated only when the entire network is operational between April 1 and October 15.

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.

IV. Rain Sensor Event Reporting Summary

A. District-Wide Total Tip/Count Statistics

The incrementing reports from all 1-mm rain sensors were analyzed to quantify the District-wide statistical total monthly tip summary (Table 3).

Table 3. District-Wide Total Tip/Count Statistical Summary

Statistical Parameter	Value	Comments
Mean	70.57	Only the 1-mm rain sensors were included in the analysis
Median	69	Only the 1-mm rain sensors were included in the analysis
Standard deviation	21.79	Only the 1-mm rain sensors were included in the analysis
Mean plus three standard deviations	136	Only the 1-mm rain sensors were included in the analysis
Minimum total count	2	Numerous IDs
Maximum total count	205	ID 940 (Sampson Gulch)

B. Monthly Average Tip/Count Summary

A monthly summary of the District-wide mean total tip/count is presented (Table 4).

Table 4. 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									

*-Event statistics are skewed in these months because system start-up/shut-down occurs. The rain network is operational between April 1 and October 15. Only the weather stations remain operational throughout the year.

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 5).

Table 5. Sensors with a Jump of More than 6 in Sequential Count

Sensor Description	Sensor ID	Comment
Guy Hill Ranch	310	Jump in sequential count seen during the period April 21 to April 23
Utah Park	430	Jump in sequential count seen during the period April 21 to April 23
Toll Gate at 6 th Avenue	700	Jump in sequential count seen during the period April 21 to April 23
Wx-Quincy Reservoir	750	Jump in sequential count seen during the period April 21 to April 23
Sampson Gulch	940	Jump in sequential count seen on April 24
Choke Cherry Reservoir	2320	Jump in sequential count seen during the period April 21 to April 23
Russellville Gulch	2900	Jump in sequential count seen during the period April 21 to April 23
Rampart Range Road	2970	Jump in sequential count seen during the period April 21 to April 23
Cannon Mountain	4270	Jump in sequential count seen during the period April 21 to April 23

D. Sensor-by-Sensor Incrementing Count Summary

The system-wide reception rate of incrementing, 1-mm tip reports for the month was approximately 87 percent. A total of 10,198 incrementing reports were received and a total of 11,715 were expected. The total loss of incrementing reports for the month was approximately 13 percent. Those sensors with the worst event transmission performance are summarized (Table 6).

Table 6. Monthly Summary of Sensors with the Most Missed Tips

Jan*	Feb*	Mar*	Apr	May	Jun	Jul	Aug	Sep	Oct*	Nov*	Dec*
--	--	--	2970						--	--	--
--	--	--	700						--	--	--
--	--	--	940						--	--	--
--	--	--	430						--	--	--
--	--	--	2900						--	--	--
--	--	--	4330						--	--	--

*-Event statistics are skewed in these months and therefore not computed because system start-up/shut-down occurs. The rain network is operational between April 1 and October 15.

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.

V. Heavy Radio Traffic Analysis

Periods exceeding 500 messages per hour were analyzed independently in an attempt to quantify data loss rates from rain sensors using the sequential tip count series.

A. The Heaviest Hourly Traffic Periods This Month

The hours of highest radio traffic this month are shown (Table 7).

Table 7. Heavy Radio Traffic Periods

Peak Traffic Periods	Reports/hour	Hour Beginning
Peak Hourly Traffic	1,332	4/23/2010 11:00 AM
2nd Max	1,306	4/23/2010 10:00 AM
3rd Max	1,026	4/22/2010 12:00 AM
4th Max	1,006	4/23/2010 5:00 AM
5th Max	991	4/23/2010 6:00 AM

Each hour exceeding 600 reports was analyzed to quantify the number of missing rain reports for that hour (Figure 1). The following plot shows the loss of data as a function of data loading.

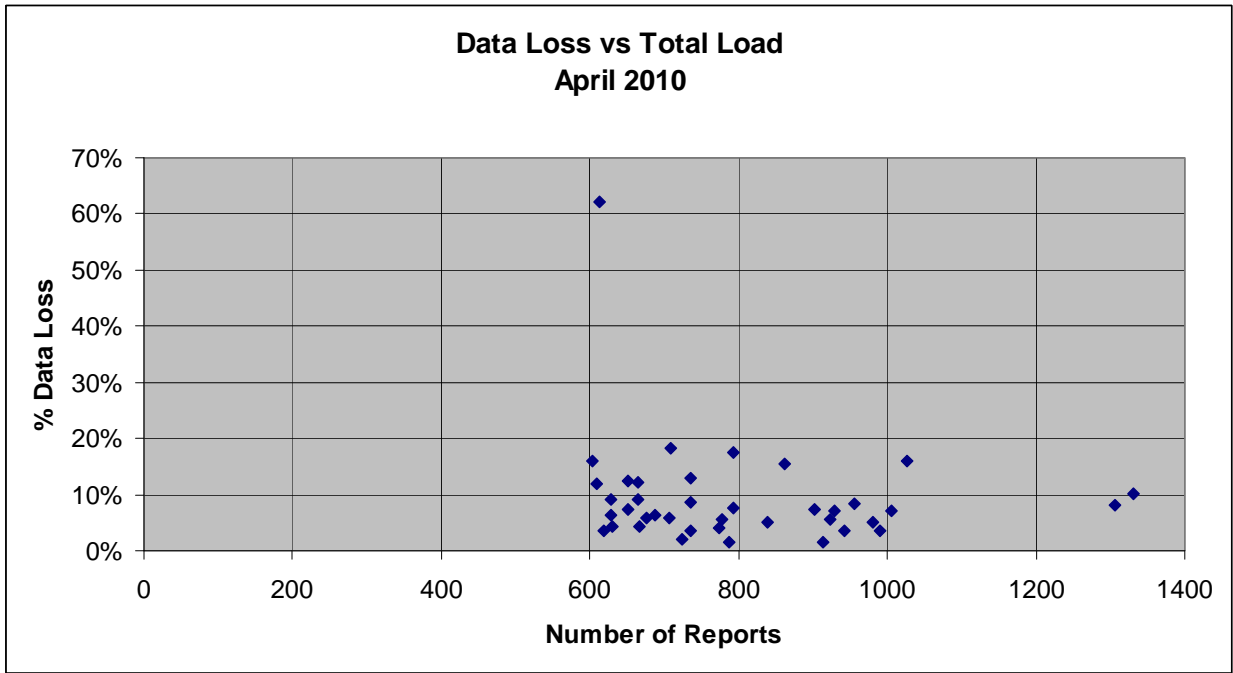


Figure 1. Data Loss vs. Data Loading

The extreme data loss of more than 60% occurred on April 24 between 8:00 am and 9:00 am and is driven by the loss of incrementing reports at sensor 940, Sampson Gulch. In a one hour period, this sensor experienced a change in count of 110 and the base received only 37 incrementing reports.

VI. 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 8).

Table 8. Summary of Unknown IDs

Description	Quantity
Total number of unknown IDs (IDs without a device definition)	456
Total reports from unknown IDs	1,174
Unknown IDs with only a single received report (potential noise)	273
Total reports from all IDs – RecData Log entire month	371,445
Unknown reports as a fraction of total reports	0.32%

The total number of reports from unknown sensors is very small relative to the total reports received for the month. Shown below (Table 9) are the total reports received from unknown sensor IDs for each month of the year.

Table 9. Monthly Summary of Total Reports from Unknown IDs

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ave
2010	1,220	1,474	1,276	1,174									

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 10).

Table 10. Reports Received by Unknown IDs

Unknown ID	Total Reports
1730	112
1470	24
1299	23
2811	21
1486	16
1631	16
949	14
1423	14
1953	13
2746	10
1453	9
1529	9
1933	9
1955	9
2239	9
2768	9
1449	8
1478	8
1531	8
1534	8
1729	8
1923	8
1938	8
152	7
1443	7
1481	7
1653	7
1919	7
1929	7
2706	7
2756	7
2878	7
1915	6
1951	6
2715	6
154	5
206	5
207	5
612	5
1231	5
1302	5
1306	5
1307	5
1308	5
1415	5

1455	5
1487	5
1501	5
1528	5
2748	5
201	4
237	4
497	4
1161	4
1162	4
1166	4
1167	4
1301	4
1304	4
1407	4
1419	4
1430	4
1432	4
1454	4
1457	4
1611	4
1612	4
1918	4
1930	4
1941	4
1959	4
2215	4
2352	4
2784	4
2871	4
2872	4
2879	4
4031	4
4087	4

The “unknown” device reports are analyzed temporally to understand when they are received during the day (Table 11). The goal of this analysis is to determine a pattern of occurrence that may correspond to a source of noise in the system, such as the use of a wireless microphone nearby.

The following table includes all the reports received from the unknown IDs in the 320 range.

Table 11. Temporal Distribution of Received Reports

Hour (AM)	Reports	Hour (PM)	Reports
0:00-00:59	247	12:00-12:59	142
1:00-1:59	269	1:00-1:59	210
2:00-2:59	185	2:00-2:59	267
3:00-3:59	192	3:00-3:59	123
4:00-4:59	235	4:00-4:59	62
5:00-5:59	302	5:00-5:59	8
6:00-6:59	260	6:00-6:59	98
7:00-7:59	288	7:00-7:59	41
8:00-8:59	102	8:00-8:59	61
9:00-9:59	51	9:00-9:59	258
10:00-10:59	40	10:00-10:59	276
11:00-11:59	79	11:00-11:59	272

VII. Sensors with Invalid Reports

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

Sensor ID	Description	Feb	Mar	Apr	May	June	July	Aug	Sep
120	West Woods	47	1	3					
1420	Diamond Hill	2	1	2					
1460	Urban Farm	1	3	2					
1530	Bear Creek at Lowell	12	13	10					
1800	Sand Creek Park	--	4	0					
2310	Genesee Village	--	5	0					
2320	Choke Cherry Resvr	1	7	3					
2750	Castle Rock WX	--	4	6					
2970	Rampart Range Road	--	3	0					
4030	Red Garden	6	2	3					
4330	Indian Ruins	2	1	2					

General System Analysis

Database Name P:\A207-UDFCD-Data-Analysis\2010\04-2010\Novastar_extract_2010Apr.mdb

First Date in Database	4/1/10 12:00 AM	Total Days	30.0
Last Date in Database	4/30/10 11:59 PM	Total Hours	720.0

Total Records Analyzed 371445

Records by Group

Wind Gust	57133	15%
Temperature	53480	14%
Relative Humidity	53032	14%
Wind Speed Average & Azimuth	33048	9%
Water Level PT-HSE	26137	7%
Barometric Pressure	24690	7%
Precipitation	21744	6%
Wind Direction	20378	5%
Wind Speed Average	19853	5%
Solar Radiation	9546	3%
Battery Voltage HSE	7977	2%
Fuel Temperature	5592	2%
Fuel Moisture	5567	1%
Water Level Float	4934	1%
Water Level PT	4656	1%
Battery Voltage Digital	4626	1%
Battery Voltage Analog	3628	1%
Soil Moisture	2949	1%
Repeater Status Report	2712	1%
Battery	2306	1%
Wing Gust	711	0%
Repeater Pass List	596	0%
Handar 585 ALARM Status	577	0%
12Hr Status Report	498	0%
Hayman Battery	347	0%
Battery Voltage	294	0%
Water Level	196	0%
Solar Power	18	0%
Total	367225	

Records by Major Group

Meteorologic Sensors	271160	73%
Water Level Sensors	35727	10%
Rain Sensors	21744	6%
Sensor Status Transmissions	20632	6%
Soil and Fuel Sensors	14108	4%
Total	363371	

Traffic Loading Summary

Alert Reports	371445	
Average Daily Traffic	12382	
Average Hourly Traffic	516	
Median Hourly Traffic	491	hour beginning
Peak Hourly Traffic	1332	4/23/10 11:00 AM
2nd Max	1306	4/23/10 10:00 AM
3rd Max	1026	4/22/10 12:00 AM
4th Max	1006	4/23/10 5:00 AM
5th Max	991	4/23/10 6:00 AM

Rain Timer Performance

Analyze Rain Sensors

Rain Timer Performance

Rain ID	Description	Rcv	Timer	Ave Exp	87% Performance
2970	Rampart Range Rd	1	0:00	60.00	2%
3010	EPC at Hwy 105	17	2:24	60.00	28%
700	Toll Gate @ 6th	21	0:00	60.00	35%
4860	Fairview Peak	37	15:13	60.00	62%
4330	Indian Ruins	39	14:26	60.00	65%
4170	Pine Brook	40	14:32	60.00	67%
410	Kelly Dam	41	12:20	60.00	68%
710	Horseshoe Park Drop	42	11:58	60.00	70%
1720	Cherry Cr @ Steele	42	13:03	60.00	70%
2270	Cub Cr below Blue	42	14:45	60.00	70%
4080	Twin Sisters	43	16:04	60.00	72%
4850	Porphory Mtn	43	13:35	60.00	72%
2230	Bear Cr below Cub	44	14:30	60.00	73%
4730	Wx-Sugarloaf	44	13:45	60.00	73%
4570	St. Antons	45	14:06	60.00	75%
4130	Swiss Peaks	46	15:16	60.00	77%
4270	Cannon Mountain	46	14:52	60.00	77%
430	Utah Park	47	14:33	60.00	78%
4060	Lakeshore	47	13:20	60.00	78%
4090	Magnolia	47	14:57	60.00	78%
950	Piney at Liverpool	71	9:19	90.00	79%
1340	Sanderson at Xavier	48	12:17	60.00	80%
2240	Cold Sprg Glch conf	48	14:42	60.00	80%
4180	Gold Lake	48	14:03	60.00	80%
4510	Pinewood Springs	48	12:57	60.00	80%
2250	Rosedale	49	13:13	60.00	82%
2960	Indian Creek	49	13:45	60.00	82%
4150	Gold Hill	49	14:21	60.00	82%
4230	Golden Age	49	14:00	60.00	82%
4550	Boulder Jail	49	13:45	60.00	82%
840	Fire Station 12	50	12:18	60.00	83%
1640	SPR at Union Ave.	50	13:25	60.00	83%
2320	Choke Cherry Resvr	200		240.00	83%
4190	Slaughterhouse	50	13:35	60.00	83%
4240	Sunset	50	13:19	60.00	83%
4310	Johnny Park	50	13:45	60.00	83%
4520	Eagle Ridge	51	12:35	60.00	85%
4750	Wx-Louisville Lake	51	12:51	60.00	85%
140	Wx-Blue Mountain	52	13:07	60.00	87%
310	Guy Hill Ranch	52	12:32	60.00	87%
820	ETG @ Buckley	52	12:50	60.00	87%
1310	LDC at 64th	52	14:03	60.00	87%
2810	Pine Cliff Road	52	12:50	60.00	87%
2820	Haskins Gulch Conf	52	13:11	60.00	87%
2940	Willow Creek - DougCnty	52	12:32	60.00	87%
4340	Riverside	52	12:53	60.00	87%
4470	Little Narrows	52	13:09	60.00	87%
4530	Winiger Ridge	52	12:47	60.00	87%
330	Van Bibber @ Hwy 93	53	12:50	60.00	88%
400	Montview Park	53	12:47	60.00	88%
720	Confluence Pond	53	13:19	60.00	88%
1000	Maple Grove Resv.	53	12:46	60.00	88%
2280	Kinney Peak	53	12:48	60.00	88%
2710	Wx-Highlands Ranch WTP	53	13:21	60.00	88%

2850	Cherry Cr bl Bayou Glch	53	12:32	60.00	88%
2860	CC at Stroh Rd	53	13:40	60.00	88%
2930	Wx-Spring Valley Rd-DougCnty	53	12:31	60.00	88%
4010	Crescent	53	13:19	60.00	88%
4040	Martin Gulch	53	12:32	60.00	88%
4220	Fling's	53	12:51	60.00	88%
4290	Red Hill	53	12:56	60.00	88%
4490	Apple Valley	53	12:51	60.00	88%
4790	Wx-Button Rock	53	12:34	60.00	88%
4810	Shanahan Ridge	53	12:33	60.00	88%
4830	SBC @ San Souci	53	13:45	60.00	88%
530	Fire Station #19	54	12:44	60.00	90%
610	Harvard @ Jackson	54	12:44	60.00	90%
900	Wx-Aurora Reservoir	54	12:31	60.00	90%
1300	Hidden Lake	81	8:09	90.00	90%
1440	Wx-Elbert	54	13:01	60.00	90%
1800	Sand Creek Park	54	12:30	60.00	90%
2260	Brook Forest	54	13:04	60.00	90%
2340	El Rancho	54	13:03	60.00	90%
2920	West Cherry Head-Douglas Cnty	54	12:50	60.00	90%
2980	Dakan Rd	54	12:16	60.00	90%
4100	Filter Plant	54	13:25	60.00	90%
4140	Logan Mill	54	12:49	60.00	90%
4360	Justice Center	54	12:15	60.00	90%
4710	Wx-Ward C-1	54	12:17	60.00	90%
4840	SBC@S Boulder Ditch	54	12:44	60.00	90%
200	Leyden Reservoir	55	12:29	60.00	92%
420	Expo Park	55	12:29	60.00	92%
440	Fire Station #7	55	12:45	60.00	92%
510	Virginia Court	55	12:30	60.00	92%
760	Mission Viejo Park	55	12:14	60.00	92%
940	Sampson Gulch	55	12:30	60.00	92%
1010	Denver West	55	12:13	60.00	92%
1060	Heritage Square	55	12:15	60.00	92%
1360	Denver Zoo	55	12:46	60.00	92%
1420	Wx-Diamond Hill	55	12:49	60.00	92%
1460	Wx-Urban Farm	55	12:16	60.00	92%
1530	Bear Creek @ Lowell	55	12:28	60.00	92%
1620	Slaughterhouse Glch	55	12:44	60.00	92%
1660	SPR at Henderson	55	12:43	60.00	92%
2840	Sulphur Gulch	55	12:48	60.00	92%
2870	Cottonwood (Apache)	55	11:58	60.00	92%
2900	Russelville Gulch-Douglas	55	12:00	60.00	92%
2950	DC Public Works	55	12:50	60.00	92%
4020	Rio Grande	55	12:30	60.00	92%
4160	Sunshine	55	12:32	60.00	92%
4250	Geer Canyon	55	12:48	60.00	92%
4350	Conifer Hill	55	12:30	60.00	92%
4770	Wx-Cal-Wood Ranch	55	12:17	60.00	92%
100	Carr Street	56	12:29	60.00	93%
120	West Woods	56	12:14	60.00	93%
210	Leyden Confluence	56	12:29	60.00	93%
220	Upper Leyden	56	12:15	60.00	93%
320	Sports Complex	56	11:58	60.00	93%
630	Temple Pond at DTC	56	12:29	60.00	93%
640	Goldsmith @ Eastman	56	12:15	60.00	93%
830	Side Creek Park	56	12:30	60.00	93%
970	Pump Sta 3	56	12:00	60.00	93%
1030	NREL/S. Table Mtn.	56	12:45	60.00	93%

1040	Lena @ U.S. Hwy 6	56	12:31	60.00	93%
1050	Jeffco Fairgrounds	56	12:29	60.00	93%
1110	Gunbarrel	56	12:32	60.00	93%
1330	Roslyn	56	12:15	60.00	93%
1810	Sand Creek at mouth	56	11:58	60.00	93%
2210	Wx-Hiwan G.C.	56	12:31	60.00	93%
2310	Genesee Village	56	12:14	60.00	93%
2360	Indian Hills	56	12:14	60.00	93%
2370	Red Rocks Park	56	12:29	60.00	93%
2910	East Cherry Cr-Douglas	56	12:15	60.00	93%
2990	Wx-Tomah Rd-DougCnty	56	12:33	60.00	93%
3020	Wx-West Creek WX	56	12:15	60.00	93%
4050	Walker Ranch	56	12:29	60.00	93%
4070	Bear Peak	56	12:14	60.00	93%
4300	Big Elk Park	56	12:31	60.00	93%
4820	Doudy Draw	56	12:14	60.00	93%
110	Ralston Reservoir	57	11:58	60.00	95%
300	Van Bibber Park	57	12:13	60.00	95%
500	Havana Park	57	12:28	60.00	95%
540	Parker/Mississippi	57	12:13	60.00	95%
620	Quincy/Highline	57	12:14	60.00	95%
870	Murphy Creek GC	57	12:16	60.00	95%
1100	Louisville Rec Ctr	57	12:15	60.00	95%
1320	SPR at 3rd Ave	57	11:57	60.00	95%
1400	Upper Sloan Det.	57	12:13	60.00	95%
1480	Third Creek at DIA	57	11:57	60.00	95%
1500	Powers Park	57	12:14	60.00	95%
1920	Wx-Brighton	57	12:00	60.00	95%
2730	Wx-Salisbury Park	57	12:15	60.00	95%
4030	Red Garden	57	12:32	60.00	95%
150	Nott Creek	58	12:10	60.00	97%
650	Iloff Pond	58	11:58	60.00	97%
750	Wx-Quincy Reservoir	58	11:57	60.00	97%
800	Sable Ditch @ 18th	58	11:57	60.00	97%
850	Flying J	58	12:00	60.00	97%
920	Wx-Aurora Town Hall	58	12:00	60.00	97%
1350	Chatfield COE	58	11:49	60.00	97%
1370	West Metro FS13	58	12:13	60.00	97%
1520	Wx-Marston Lake North	58	12:15	60.00	97%
1550	Lakewood CC	58	12:13	60.00	97%
1570	Wx-Brighton Ditch	58	12:00	60.00	97%
1600	Englewood Dam	58	12:45	60.00	97%
1900	Niver Detention	58	12:12	60.00	97%
2190	Wx-Squaw Mountain	58	12:12	60.00	97%
4110	Betasso	58	12:15	60.00	97%
4200	Lazy Acres	58	11:59	60.00	97%
520	Jewell Detention	59	12:13	60.00	98%
600	Harvard Gulch Park	59	12:12	60.00	98%
1700	Cherry Cr @ Champa	59	11:49	60.00	98%
2330	Morrison	59	12:13	60.00	98%
2350	Idledale	59	11:57	60.00	98%
2750	Wx-Castle Rock	59	12:12	60.00	98%
730	No Name @ Quincy	60	11:57	60.00	100%
810	Granby Ditch @ 6th	60	11:58	60.00	100%
1200	Broomfield 3207	60	11:57	60.00	100%
4260	Taylor Mountain	60	11:58	60.00	100%
5720	Four Mile Creek	41	13:27	60.00	68%
5730	West Creek	55	13:01	60.00	92%
5740	Trail Creek	54	12:32	60.00	90%

5770	Lazy Gulch	57	12:00	60.00	95%
5780	Monument Gulch	9	18:51	60.00	15%
5790	Flying G	2	12:00	60.00	3%
5800	Goose Creek	7	12:00	60.00	12%
5810	Stump Bump	58	12:00	60.00	97%
5820	Corral Creek	56	12:16	60.00	93%

Rain Event Performance				Analyze Rain Sensors									
		Reports Received	10,198										
	Systemwide Avg	Total Tips	11,715										
	87.05%	Data Loss	12.95%										
Rain ID	Perf	1-tips	2-tips	3-tips	4-tips	5-tips	6-tips	>6-tips	Rcv	Exp	Miss	Hold	Bucket
2970	7%	1	1	0	0	0	0	3	5	67	62	0	0.0393701
700	18%	4	0	2	0	2	0	3	11	61	50	0	0.0393701
940	60%	99	12	6	0	0	0	6	123	205	82	1	0.0393699
430	64%	45	7	0	0	0	0	2	54	85	31	0	0.0393701
2900	68%	39	7	1	0	1	1	1	50	74	24	0	0.0393701
4330	70%	55	6	4	2	1	1	0	69	98	29	0	0.0393701
4470	73%	52	9	0	4	1	0	0	66	91	25	0	0.0393701
4240	73%	25	11	0	1	0	0	0	37	51	14	0	0.0393701
2320	73%	42	6	4	0	0	0	1	53	73	20	0	0.0393701
310	73%	34	1	0	0	0	0	1	36	49	13	0	0.0393701
4750	74%	40	6	3	2	0	0	0	51	69	18	0	0.0393701
2280	76%	51	8	2	1	0	1	0	63	83	20	1	0.0393701
4550	76%	49	11	3	1	0	0	0	64	84	20	0	0.0393701
4270	77%	45	6	0	1	0	0	1	53	69	16	0	0.0393701
2270	77%	39	7	0	1	1	0	0	48	62	14	0	0.0393701
4090	78%	51	12	2	1	0	0	0	66	85	19	0	0.0393701
3010	79%	9	1	1	0	0	0	0	11	14	3	0	0.0393701
750	79%	45	6	0	0	0	0	1	52	66	14	1	0.0393701
140	79%	41	3	5	0	0	0	0	49	62	13	0	0.0393701
4520	79%	46	16	0	0	0	0	0	62	78	16	0	0.0393701
4180	80%	52	4	4	1	0	0	0	61	76	15	0	0.0393701
4170	81%	56	13	2	0	0	0	0	71	88	17	0	0.0393701
620	81%	41	8	2	0	0	0	0	51	63	12	0	0.0393701
4510	81%	62	14	2	0	0	0	0	78	96	18	0	0.0393701
4080	82%	42	10	1	0	0	0	0	53	65	12	0	0.0393701
110	82%	51	11	0	1	0	0	0	63	77	14	0	0.0393701
4790	82%	57	10	1	1	0	0	0	69	84	15	0	0.0393701
400	83%	42	9	1	0	0	0	0	52	63	11	0	0.0393701
4140	83%	73	15	2	0	0	0	0	90	109	19	0	0.0393701
530	83%	45	5	3	0	0	0	0	53	64	11	0	0.0393701
1010	83%	48	9	0	1	0	0	0	58	70	12	0	0.0393701
1900	83%	31	8	0	0	0	0	0	39	47	8	0	0.0393701
4010	83%	55	8	1	1	0	0	0	65	78	13	0	0.0393701
4290	83%	22	2	0	1	0	0	0	25	30	5	0	0.0393701
4840	84%	59	10	2	0	0	0	0	71	85	14	0	0.0393701
4830	84%	60	10	2	0	0	0	0	72	86	14	0	0.0393701
4150	84%	69	12	2	0	0	0	0	83	99	16	0	0.0393701
4820	84%	61	10	2	0	0	0	0	73	87	14	0	0.0393701
4220	84%	45	6	2	0	0	0	0	53	63	10	0	0.0393701
4060	84%	58	10	0	1	0	0	0	69	82	13	0	0.0393701
1720	84%	41	5	2	0	0	0	0	48	57	9	0	0.0393701
4730	85%	51	7	2	0	0	0	0	60	71	11	0	0.0393701
4770	85%	50	9	1	0	0	0	0	60	71	11	0	0.0393701
2910	85%	24	3	1	0	0	0	0	28	33	5	0	0.0393701
2730	85%	38	6	1	0	0	0	0	45	53	8	0	0.0393701
2980	85%	58	12	0	0	0	0	0	70	82	12	0	0.0393701
4530	85%	62	4	4	0	0	0	0	70	82	12	0	0.0393701
800	85%	40	6	1	0	0	0	0	47	55	8	0	0.0393701
4810	86%	69	14	0	0	0	0	0	83	97	14	0	0.0393701
710	86%	42	5	0	1	0	0	0	48	56	8	0	0.0393701
970	86%	52	6	2	0	0	0	0	60	70	10	0	0.0393701
4570	86%	50	10	0	0	0	0	0	60	70	10	0	0.0393701
2240	86%	55	4	3	0	0	0	0	62	72	10	0	0.0393701
4490	86%	58	2	1	0	0	0	1	62	72	10	0	0.0393701
2330	86%	77	8	3	0	0	0	0	88	102	14	1	0.0393701
1350	86%	55	6	2	0	0	0	0	63	73	10	0	0.0393701
420	86%	45	5	0	1	0	0	0	51	59	8	0	0.0393701
4130	87%	56	8	1	0	0	0	0	65	75	10	0	0.0393701
4030	87%	80	12	1	0	0	0	0	93	107	14	0	0.0393701
1420	87%	52	7	1	0	0	0	0	60	69	9	0	0.0393701
2230	87%	49	4	2	0	0	0	0	55	63	8	0	0.0393701
210	88%	56	7	1	0	0	0	0	64	73	9	0	0.0393701
540	88%	43	7	0	0	0	0	0	50	57	7	0	0.0393701
950	88%	56	9	0	0	0	0	0	65	74	9	0	0.0393701
1660	88%	38	6	0	0	0	0	0	44	50	6	0	0.0393701
4190	88%	78	8	2	0	0	0	0	88	100	12	0	0.0393701
2860	88%	51	8	0	0	0	0	0	59	67	8	0	0.0393701
1700	89%	27	4	0	0	0	0	0	31	35	4	0	0.0393701
2960	89%	84	7	1	1	0	0	0	93	105	12	0	0.0393701
1310	89%	42	4	1	0	0	0	0	47	53	6	0	0.0393701
4250	89%	79	9	1	0	0	0	0	89	100	11	0	0.0393701
2850	89%	58	6	1	0	0	0	0	65	73	8	0	0.0393701
500	89%	45	2	2	0	0	0	0	49	55	6	0	0.0393701
1040	89%	59	6	1	0	0	0	0	66	74	8	0	0.0393701

4260	89%	52	5	1	0	0	0	0	58	65	7	0	0.0393701
2370	90%	69	7	1	0	0	0	0	77	86	9	0	0.0393701
650	90%	47	4	1	0	0	0	0	52	58	6	0	0.0393701
820	90%	47	4	1	0	0	0	0	52	58	6	0	0.0393701
4040	90%	87	8	0	1	0	0	0	96	107	11	0	0.0393701
2810	90%	90	3	4	0	0	0	0	97	108	11	0	0.0393701
1550	90%	49	4	1	0	0	0	0	54	60	6	0	0.0393701
4020	90%	66	4	2	0	0	0	0	72	80	8	0	0.0393701
1600	90%	58	5	1	0	0	0	0	64	71	7	0	0.0393701
1810	90%	42	5	0	0	0	0	0	47	52	5	0	0.0393701
2840	91%	61	5	1	0	0	0	0	67	74	7	0	0.0393701
4710	91%	44	3	1	0	0	0	0	48	53	5	0	0.0393701
630	91%	62	5	1	0	0	0	0	68	75	7	0	0.0393701
2750	91%	35	4	0	0	0	0	0	39	43	4	0	0.0393701
4070	91%	80	7	1	0	0	0	0	88	97	9	0	0.0393701
720	91%	44	5	0	0	0	0	0	49	54	5	0	0.0393701
2710	91%	54	4	1	0	0	0	0	59	65	6	0	0.0393701
840	91%	56	2	2	0	0	0	0	60	66	6	0	0.0393701
1360	91%	47	2	0	1	0	0	0	50	55	5	0	0.0393701
2820	91%	81	9	0	0	0	0	0	90	99	9	0	0.0393701
1000	91%	56	6	0	0	0	0	0	62	68	6	0	0.0393701
1620	91%	56	6	0	0	0	0	0	62	68	6	0	0.0393701
4110	91%	85	9	0	0	0	0	0	94	103	9	0	0.0393701
4360	91%	85	9	0	0	0	0	0	94	103	9	0	0.0393701
1460	91%	58	4	1	0	0	0	0	63	69	6	1	0.0393701
2260	91%	38	4	0	0	0	0	0	42	46	4	0	0.0393701
2340	91%	38	4	0	0	0	0	0	42	46	4	0	0.0393701
2930	91%	19	2	0	0	0	0	0	21	23	2	0	0.0393701
2350	91%	68	5	1	0	0	0	0	74	81	7	0	0.0393701
1030	91%	59	4	1	0	0	0	0	64	70	6	0	0.0393701
850	92%	50	3	1	0	0	0	0	54	59	5	0	0.0393701
2870	92%	69	7	0	0	0	0	0	76	83	7	0	0.0393701
100	92%	62	4	1	0	0	0	0	67	73	6	0	0.0393701
1920	92%	53	3	1	0	0	0	0	57	62	5	0	0.0393701
4050	92%	53	3	1	0	0	0	0	57	62	5	0	0.0393701
4160	92%	94	9	0	0	0	0	0	103	112	9	0	0.0393701
4340	92%	63	6	0	0	0	0	0	69	75	6	0	0.0393701
200	92%	66	2	2	0	0	0	0	70	76	6	0	0.0393701
2310	92%	64	6	0	0	0	0	0	70	76	6	0	0.0393701
4300	92%	55	5	0	0	0	0	0	60	65	5	0	0.0393701
1500	92%	67	6	0	0	0	0	0	73	79	6	0	0.0393701
1370	93%	57	5	0	0	0	0	0	62	67	5	0	0.0393701
1530	93%	57	5	0	0	0	0	0	62	67	5	0	0.0393701
330	93%	69	6	0	0	0	0	0	75	81	6	0	0.0393701
300	93%	61	2	0	1	0	0	0	64	69	5	0	0.0393701
1110	93%	86	5	1	0	0	0	0	92	99	7	0	0.0393701
1320	93%	49	4	0	0	0	0	0	53	57	4	0	0.0393701
2250	93%	49	4	0	0	0	0	0	53	57	4	0	0.0393701
320	93%	62	5	0	0	0	0	0	67	72	5	0	0.0393701
1400	93%	50	4	0	0	0	0	0	54	58	4	0	0.0393701
1640	93%	50	4	0	0	0	0	0	54	58	4	0	0.0393701
120	93%	76	6	0	0	0	0	0	82	88	6	0	0.0393701
1480	93%	52	4	0	0	0	0	0	56	60	4	0	0.0393701
2950	93%	79	6	0	0	0	0	0	85	91	6	0	0.0393701
4200	93%	80	4	1	0	0	0	0	85	91	6	0	0.0393701
1520	93%	67	3	1	0	0	0	0	71	76	5	0	0.0393701
810	94%	56	4	0	0	0	0	0	60	64	4	0	0.0393701
900	94%	45	1	1	0	0	0	0	47	50	3	0	0.0393699
1060	94%	60	4	0	0	0	0	0	64	68	4	0	0.0393701
1570	94%	92	6	0	0	0	0	0	98	104	6	4	0.0393701
4230	94%	47	3	0	0	0	0	0	50	53	3	0	0.0393701
220	95%	81	5	0	0	0	0	0	86	91	5	0	0.0393701
640	95%	49	3	0	0	0	0	0	52	55	3	0	0.0393701
4310	95%	82	5	0	0	0	0	0	87	92	5	0	0.0393701
4100	95%	84	5	0	0	0	0	0	89	94	5	0	0.0393701
920	95%	71	4	0	0	0	0	0	75	79	4	0	0.0393701
830	95%	54	3	0	0	0	0	0	57	60	3	0	0.0393701
4350	95%	72	4	0	0	0	0	0	76	80	4	0	0.0393701
600	95%	55	3	0	0	0	0	0	58	61	3	0	0.0393701
1200	95%	56	3	0	0	0	0	0	59	62	3	0	0.0393701
440	95%	57	3	0	0	0	0	0	60	63	3	0	0.0393701
870	95%	59	3	0	0	0	0	0	62	65	3	0	0.0393701
510	95%	60	3	0	0	0	0	0	63	66	3	0	0.0393701
1440	96%	21	1	0	0	0	0	0	22	23	1	0	0.0393701
1300	96%	64	3	0	0	0	0	0	67	70	3	0	0.0393701
2990	96%	90	4	0	0	0	0	0	94	98	4	0	0.0393701
2360	96%	69	3	0	0	0	0	0	72	75	3	0	0.0393701

1100	96%	71	3	0	0	0	0	0	74	77	3	0	0.0393701
1330	96%	50	2	0	0	0	0	0	52	54	2	0	0.0393701
3020	96%	25	1	0	0	0	0	0	26	27	1	0	0.0393701
410	97%	58	2	0	0	0	0	0	60	62	2	0	0.0393701
2920	97%	30	1	0	0	0	0	0	31	32	1	0	0.0393701
610	97%	61	2	0	0	0	0	0	63	65	2	0	0.0393701
520	97%	64	2	0	0	0	0	0	66	68	2	0	0.0393701
1340	97%	64	2	0	0	0	0	0	66	68	2	0	0.0393701
730	98%	42	1	0	0	0	0	0	43	44	1	0	0.0393701
2940	98%	43	1	0	0	0	0	0	44	45	1	0	0.0393701
1800	98%	56	1	0	0	0	0	0	57	58	1	0	0.0393701
1050	98%	62	1	0	0	0	0	0	63	64	1	0	0.0393701
150	100%	2	0	0	0	0	0	0	2	2	0	0	0.0393701
760	100%	72	0	0	0	0	0	0	72	72	0	0	0.0393701
2210	100%	45	0	0	0	0	0	0	45	45	0	0	0.0393701
	Total Tips	9,103	907	132	27	6	3	20	####	11,715	1,517	9	

Monthly Traffic Loading

2010 Monthly ALERT Radio Traffic Summary

