

# Memo

**Date:** August 6, 2012  
**To:** Kevin Stewart  
**From:** Markus Ritsch  
**Subject:** July 2012 ALERT Data Analysis

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## 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 July 1 through July 31, 2012.

## II. General System Analysis Summary

A total of 409,224 legacy ALERT data reports were analyzed. Meteorological sensors account for 44 percent, water level sensors 7 percent, and rain sensors 7 percent of the total monthly records.

The system-wide radio traffic loading was 13,201 reports per day with an average hourly loading of 550 reports. The peak hour of radio traffic loading was 1,865 reports, which occurred on July 7<sup>th</sup>, between 5:00 PM and 6:00 PM. 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 questionable this month.

**Table 1. Rain Sensors with Poor Performance Characteristics**

Rain ID	Description	Timer	Event	Comments
710	Horseshoe Park Drop	--	--	1,311 invalid reports
1660	SPR at Henderson	55%	71%	
2270	Cub Creek below Blue	68%	85%	
2320	Choke Cherry Res	68%	96%	
2790	W. Cherry Creek Wx	56%	80%	
2970	Rampart Range Road	84%	99%	Sutron Iridium site
2980	Dakan Road	94%	68%	CSI ALERT site
3070	Newlin Gulch	84%	16%	CSI ALERT site
4330	Hansen Rain	60%	64%	
4470	Little Narrows	81%	61%	
4870	SBC @ SB Road	71%	68%	
4323	Lee Hill 2012 new rain gage is sending stage ID			

### B. Continuous Operation of Base Receiver/Decoder

The ALERT and ALERT2 data feeds on the NS5 base station computer were in continuous operation for the entire month.

### 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*
2320	4550	4270	2890	1710	1660	1660					
1460	1460	4870	1640	2230	2950	2790					
1520	4470	4790	2270	4870	540	4330					
1440	1520	4850	2970	1900	1710	2270					
1000	1440	4570	4490	1660	4330	2320					
4520	140	4070	3010	4330	2320	4870					

\*. 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.

### 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). 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 3. District-Wide Total Tip/Count Statistical Summary**

Statistical Parameter	Value	Comments
Mean	73.03	Only the 1-mm rain sensors were included in the analysis
Median	67	Only the 1-mm rain sensors were included in the analysis
Standard deviation	39.97	Only the 1-mm rain sensors were included in the analysis
Mean plus three standard deviations	192.95	Only the 1-mm rain sensors were included in the analysis
Minimum total count	8	ID 1720 (Cherry Creek at Steele)
Maximum total count	336	ID 630 (Temple Pond at DTC – influenced by irrigation)

#### 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	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						

\*. 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 5).

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

Sensor Description	Sensor ID	Comment
Little Narrows	4470	Two large jumps both occurring on July 7 <sup>th</sup> during the large storm
Newlin Gulch	3070	A total of 5 separate jumps exceeding 6 occurred throughout the month
Hansen Rain	4330	One jump on July 7 <sup>th</sup>

## D. Sensor-by-Sensor Incrementing Count Summary

The system-wide reception rate of incrementing, 1-mm tip reports for the month was approximately 93 percent. A total of 3,110 incrementing reports were received and a total of 3,345 reports were expected. The total loss of incrementing reports for the month was approximately 7 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*
1700	2980	2710	4490	2270	700	3070					
1420	3030	4860	2980	4870	2970	4470					
4490	4240	2930	1660	4470	3070	4330					
2980	1520	3030	3010	2980	400	2980					
1660	4490	2990	2320	310	2730	4870					
4090	1420	4050	4470	2280	4330	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.

## V. Heavy Radio Traffic Analysis

Periods exceeding 700 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 7). Each hour exceeding 1,000 reports was analyzed to quantify the number of missing rain reports for that hour.

**Table 7. Heavy Radio Traffic Periods**

Day	Hour	Expected	Received	Total Load	Loss
7	17	1,157	890	1,865	23%
7	16	669	580	1,395	13%
6	21	455	404	1,147	11%
6	20	485	459	1,132	5%
7	18	113	113	1,096	0%
30	15	481	405	1,074	16%
31	14	158	152	1,013	4%

## 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)	286
Total reports from unknown IDs	453
Unknown IDs with only a single received report (potential noise)	225
Total reports from all IDs – RecData Log entire month	409,224
Unknown reports as a fraction of total reports	0.11%

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
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					

The fraction of reports from unknown sensors relative to the total number of reports is shown below (Table 10).

**Table 10. 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%					

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 11).

**Table 11. Reports Received by Unknown IDs**

Unknown ID	Total No of Reports
4323	61
1499	9
2239	7
3052	5
4031	5
171	4
897	4
898	4
899	4
4222	4
4786	4

## VII. Rain Sensors with Invalid Reports

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

Sensor	Description	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
710	Horseshoe Park Drop					1,311					
900	Wx-Aurora Reservoir		8	5	16	9					
2210	Wx-Hiwan G.C.					3					
2280	Kinney Peak					3					
2810	Pine Cliff Road					5					
3090	Highland Heritage Park	0	0	0	16	0					
4330	Hansen Rain			4	3	4					



Rainfall rate alarm	630	Temple Pond at	07/14/2012	23:02:40
Rainfall rate alarm	4730	Sugarloaf	07/12/2012	17:15:24
Rainfall rate alarm	4730	Sugarloaf	07/12/2012	17:15:24
Rainfall rate alarm	4730	Sugarloaf	07/12/2012	17:15:24
Rainfall rate alarm	4100	BC Filter Plant	07/09/2012	10:51:37
Rainfall rate alarm	4170	Pine Brook	07/09/2012	10:16:50
Rainfall rate alarm	530	Fire Sta #19	07/09/2012	09:42:12
Rainfall rate alarm	530	Fire Sta #19	07/09/2012	09:28:43
Rainfall rate alarm	4850	Porphyry Mtn	07/09/2012	00:49:09
Rainfall rate alarm	4850	Porphyry Mtn	07/09/2012	00:49:09
Rainfall rate alarm	4850	Porphyry Mtn	07/09/2012	00:49:09
Rainfall rate alarm	4170	Pine Brook	07/08/2012	19:24:54
Rainfall rate alarm	4140	Logan Mill	07/08/2012	18:58:10
Rainfall rate alarm	4130	Swiss Peaks	07/08/2012	18:51:38
Rainfall rate alarm	4080	BC Twin Sisters	07/08/2012	18:48:39
Rainfall rate alarm	4090	BC Magnolia	07/08/2012	18:46:01
Rainfall rate alarm	4180	Gold Lake	07/08/2012	18:45:30
Rainfall rate alarm	4100	BC Filter Plant	07/08/2012	18:41:20
Rainfall rate alarm	4080	BC Twin Sisters	07/08/2012	18:40:52
Rainfall rate alarm	4730	Sugarloaf	07/08/2012	18:39:50
Rainfall rate alarm	4730	Sugarloaf	07/08/2012	18:39:50
Rainfall rate alarm	4730	Sugarloaf	07/08/2012	18:39:50
Rainfall rate alarm	4150	Gold Hill	07/08/2012	18:39:39
Rainfall rate alarm	4130	Swiss Peaks	07/08/2012	18:32:19
Rainfall rate alarm	4150	Gold Hill	07/08/2012	18:24:53
Rainfall rate alarm	4850	Porphyry Mtn	07/08/2012	18:18:49
Rainfall rate alarm	4850	Porphyry Mtn	07/08/2012	18:18:49
Rainfall rate alarm	4850	Porphyry Mtn	07/08/2012	18:18:49
Rainfall rate alarm	1050	Jeffco Fairgrou	07/08/2012	17:59:49
Rainfall rate alarm	4170	Pine Brook	07/07/2012	20:41:39
Rainfall rate alarm	4850	Porphyry Mtn	07/07/2012	19:52:18
Rainfall rate alarm	4850	Porphyry Mtn	07/07/2012	19:52:18
Rainfall rate alarm	4850	Porphyry Mtn	07/07/2012	19:52:18
Rainfall rate alarm	4090	BC Magnolia	07/07/2012	19:26:00
Rainfall rate alarm	4770	Cal-Wood Ranch	07/07/2012	17:56:39
Rainfall rate alarm	4490	Apple Valley	07/07/2012	17:56:01
Rainfall rate alarm	4850	Porphyry Mtn	07/07/2012	17:44:45
Rainfall rate alarm	4850	Porphyry Mtn	07/07/2012	17:44:45
Rainfall rate alarm	4850	Porphyry Mtn	07/07/2012	17:44:45
Rainfall rate alarm	4190	Slaughterhouse	07/07/2012	17:43:25
Rainfall rate alarm	4190	Slaughterhouse	07/07/2012	17:43:25
Rainfall rate alarm	4230	Golden Age	07/07/2012	17:42:07
Rainfall rate alarm	4230	Golden Age	07/07/2012	17:42:07
Rainfall rate alarm	4230	Golden Age	07/07/2012	17:42:07
Rainfall rate alarm	4230	Golden Age	07/07/2012	17:42:07
Rainfall rate alarm	4140	Logan Mill	07/07/2012	17:38:30
Rainfall rate alarm	4230	Golden Age	07/07/2012	17:38:18
Rainfall rate alarm	4230	Golden Age	07/07/2012	17:38:18
Rainfall rate alarm	4230	Golden Age	07/07/2012	17:38:18
Rainfall rate alarm	4200	Lazy Acres	07/07/2012	17:32:49
Rainfall rate alarm	4200	Lazy Acres	07/07/2012	17:32:49
Rainfall rate alarm	4230	Golden Age	07/07/2012	17:32:19
Rainfall rate alarm	4230	Golden Age	07/07/2012	17:32:19
Rainfall rate alarm	4860	Fairview Peak	07/07/2012	17:31:38
Rainfall rate alarm	410	Kelly Dam	07/07/2012	17:31:15
Rainfall rate alarm	4100	BC Filter Plant	07/07/2012	17:31:08

Rainfall rate alarm	4200	Lazy Acres	07/07/2012	17:31:06
Rainfall rate alarm	4200	Lazy Acres	07/07/2012	17:31:06
Rainfall rate alarm	4860	Fairview Peak	07/07/2012	17:30:42
Rainfall rate alarm	4170	Pine Brook	07/07/2012	17:30:14
Rainfall rate alarm	4860	Fairview Peak	07/07/2012	17:28:30
Rainfall rate alarm	4200	Lazy Acres	07/07/2012	17:28:22
Rainfall rate alarm	4230	Golden Age	07/07/2012	17:26:56
Rainfall rate alarm	4230	Golden Age	07/07/2012	17:26:56
Rainfall rate alarm	4230	Golden Age	07/07/2012	17:26:56
Rainfall rate alarm	400	Montview Park	07/07/2012	17:24:20
Rainfall rate alarm	4860	Fairview Peak	07/07/2012	17:24:05
Rainfall rate alarm	420	Expo Park	07/07/2012	17:23:37
Rainfall rate alarm	400	Montview Park	07/07/2012	17:23:13
Rainfall rate alarm	1460	Urban Farm	07/07/2012	17:22:46
Rainfall rate alarm	4200	Lazy Acres	07/07/2012	17:21:47
Rainfall rate alarm	520	Jewell Detentio	07/07/2012	17:19:23
Rainfall rate alarm	420	Expo Park	07/07/2012	17:17:48
Rainfall rate alarm	430	Utah Park	07/07/2012	17:17:12
Rainfall rate alarm	4230	Golden Age	07/07/2012	17:15:23
Rainfall rate alarm	4230	Golden Age	07/07/2012	17:15:23
Rainfall rate alarm	4230	Golden Age	07/07/2012	17:15:23
Rainfall rate alarm	730	No Name @ Quinc	07/07/2012	17:14:51
Rainfall rate alarm	4840	SBC@S Boulder D	07/07/2012	17:14:27
Rainfall rate alarm	4200	Lazy Acres	07/07/2012	17:14:08
Rainfall rate alarm	4850	Porphyry Mtn	07/07/2012	17:12:13
Rainfall rate alarm	4850	Porphyry Mtn	07/07/2012	17:12:13
Rainfall rate alarm	430	Utah Park	07/07/2012	17:12:07
Rainfall rate alarm	4850	Porphyry Mtn	07/07/2012	17:11:55
Rainfall rate alarm	4850	Porphyry Mtn	07/07/2012	17:11:55
Rainfall rate alarm	4850	Porphyry Mtn	07/07/2012	17:11:55
Rainfall rate alarm	4850	Porphyry Mtn	07/07/2012	17:11:55
Rainfall rate alarm	4850	Porphyry Mtn	07/07/2012	17:10:18
Rainfall rate alarm	4850	Porphyry Mtn	07/07/2012	17:10:18
Rainfall rate alarm	4850	Porphyry Mtn	07/07/2012	17:10:18
Rainfall rate alarm	4850	Porphyry Mtn	07/07/2012	17:10:18
Rainfall rate alarm	2870	CC at Cottonwoo	07/07/2012	17:08:18
Rainfall rate alarm	4840	SBC@S Boulder D	07/07/2012	17:06:53
Rainfall rate alarm	4190	Slaughterhouse	07/07/2012	17:06:46
Rainfall rate alarm	4190	Slaughterhouse	07/07/2012	17:06:46
Rainfall rate alarm	4190	Slaughterhouse	07/07/2012	17:06:46
Rainfall rate alarm	4190	Slaughterhouse	07/07/2012	17:03:49
Rainfall rate alarm	4850	Porphyry Mtn	07/07/2012	17:03:09
Rainfall rate alarm	4850	Porphyry Mtn	07/07/2012	17:03:09
Rainfall rate alarm	4850	Porphyry Mtn	07/07/2012	17:03:09
Rainfall rate alarm	2870	CC at Cottonwoo	07/07/2012	17:01:41
Rainfall rate alarm	4180	Gold Lake	07/07/2012	16:59:14
Rainfall rate alarm	950	Piney at Liverp	07/07/2012	16:59:19
Rainfall rate alarm	4160	Sunshine	07/07/2012	16:58:32
Rainfall rate alarm	2840	Sulphur Gulch	07/07/2012	16:56:25
Rainfall rate alarm	4190	Slaughterhouse	07/07/2012	16:55:55
Rainfall rate alarm	2730	Salisbury Park	07/07/2012	16:54:05
Rainfall rate alarm	4180	Gold Lake	07/07/2012	16:51:01
Rainfall rate alarm	2840	Sulphur Gulch	07/07/2012	16:49:08
Rainfall rate alarm	2850	CC blw Bayou Gu	07/07/2012	16:48:12
Rainfall rate alarm	4160	Sunshine	07/07/2012	16:46:16
Rainfall rate alarm	2860	Cherry at Stroh	07/07/2012	16:44:38
Rainfall rate alarm	2730	Salisbury Park	07/07/2012	16:44:35



Rainfall rate alarm	4150	Gold Hill	07/07/2012	16:39:02
Rainfall rate alarm	4130	Swiss Peaks	07/07/2012	16:35:48
Rainfall rate alarm	2850	CC blw Bayou Gu	07/07/2012	16:32:44
Rainfall rate alarm	4090	BC Magnolia	07/07/2012	16:26:18
Rainfall rate alarm	4080	BC Twin Sisters	07/07/2012	16:25:50
Rainfall rate alarm	2940	Willow Creek	07/07/2012	16:24:31
Rainfall rate alarm	2940	Willow Creek	07/07/2012	16:13:40
Rainfall rate alarm	2270	Cub Cr below Bl	07/07/2012	16:04:38
Rainfall rate alarm	4730	Sugarloaf	07/07/2012	15:40:21
Rainfall rate alarm	4730	Sugarloaf	07/07/2012	15:40:21
Rainfall rate alarm	4730	Sugarloaf	07/07/2012	15:40:21
Rainfall rate alarm	4570	St. Antons	07/07/2012	15:32:33
Rainfall rate alarm	4570	St. Antons	07/07/2012	15:31:50
Rainfall rate alarm	4570	St. Antons	07/07/2012	15:24:28
Rainfall rate alarm	4570	St. Antons	07/07/2012	15:21:09
Rainfall rate alarm	4130	Swiss Peaks	07/07/2012	15:18:40
Rainfall rate alarm	4080	BC Twin Sisters	07/07/2012	15:17:53
Rainfall rate alarm	5730	West Creek	07/07/2012	13:01:24
Rainfall rate alarm	630	Temple Pond at	07/06/2012	22:56:55
Rainfall rate alarm	630	Temple Pond at	07/06/2012	22:43:45
Rainfall rate alarm	630	Temple Pond at	07/06/2012	22:40:31
Rainfall rate alarm	4140	Logan Mill	07/06/2012	21:55:48
Rainfall rate alarm	4200	Lazy Acres	07/06/2012	21:49:41
Rainfall rate alarm	4180	Gold Lake	07/06/2012	21:41:53
Rainfall rate alarm	4090	BC Magnolia	07/06/2012	21:36:52
Rainfall rate alarm	4230	Golden Age	07/06/2012	21:36:33
Rainfall rate alarm	4230	Golden Age	07/06/2012	21:36:33
Rainfall rate alarm	4230	Golden Age	07/06/2012	21:36:33
Rainfall rate alarm	4160	Sunshine	07/06/2012	21:32:31
Rainfall rate alarm	4080	BC Twin Sisters	07/06/2012	21:27:54
Rainfall rate alarm	4130	Swiss Peaks	07/06/2012	21:23:42
Rainfall rate alarm	4230	Golden Age	07/06/2012	21:22:32
Rainfall rate alarm	4230	Golden Age	07/06/2012	21:22:32
Rainfall rate alarm	4230	Golden Age	07/06/2012	21:22:32
Rainfall rate alarm	4230	Golden Age	07/06/2012	21:22:32
Rainfall rate alarm	4150	Gold Hill	07/06/2012	21:14:22
Rainfall rate alarm	4160	Sunshine	07/06/2012	21:08:05
Rainfall rate alarm	4730	Sugarloaf	07/06/2012	21:07:19
Rainfall rate alarm	4730	Sugarloaf	07/06/2012	21:07:19
Rainfall rate alarm	4730	Sugarloaf	07/06/2012	21:07:19
Rainfall rate alarm	4130	Swiss Peaks	07/06/2012	20:56:44
Rainfall rate alarm	4190	Slaughterhouse	07/06/2012	20:52:41
Rainfall rate alarm	4080	BC Twin Sisters	07/06/2012	20:50:39
Rainfall rate alarm	2820	Haskins Gulch C	07/06/2012	20:43:32
Rainfall rate alarm	4850	Porphyry Mtn	07/06/2012	20:42:32
Rainfall rate alarm	4850	Porphyry Mtn	07/06/2012	20:42:32
Rainfall rate alarm	4850	Porphyry Mtn	07/06/2012	20:42:32
Rainfall rate alarm	2820	Haskins Gulch C	07/06/2012	20:40:30
Rainfall rate alarm	2250	Rosedale	07/06/2012	20:38:23
Rainfall rate alarm	2270	Cub Cr below Bl	07/06/2012	20:26:18
Rainfall rate alarm	5810	Stump Bump	07/06/2012	19:17:37
Rainfall rate alarm	2910	East Cherry Cre	07/06/2012	18:15:14
Rainfall rate alarm	4850	Porphyry Mtn	07/06/2012	17:18:28
Rainfall rate alarm	4850	Porphyry Mtn	07/06/2012	17:18:28
Rainfall rate alarm	4850	Porphyry Mtn	07/06/2012	17:18:28
Rainfall rate alarm	4180	Gold Lake	07/06/2012	17:13:11
Rainfall rate alarm	2820	Haskins Gulch C	07/06/2012	17:02:52

Rainfall rate alarm	4130	Swiss Peaks	07/06/2012	17:02:34
Rainfall rate alarm	4090	BC Magnolia	07/06/2012	16:50:39
Rainfall rate alarm	2750	Castle Rock	07/06/2012	16:35:38
Rainfall rate alarm	2750	Castle Rock	07/06/2012	16:30:55
Rainfall rate alarm	2990	Tomah Road	07/06/2012	15:13:01
Rainfall rate alarm	2990	Tomah Road	07/06/2012	15:07:51
Rainfall rate alarm	2990	Tomah Road	07/06/2012	14:55:34
Rainfall rate alarm	4230	Golden Age	07/06/2012	14:45:03
Rainfall rate alarm	4230	Golden Age	07/06/2012	14:45:03
Rainfall rate alarm	4230	Golden Age	07/06/2012	14:45:03
Rainfall rate alarm	4230	Golden Age	07/05/2012	16:56:00
Rainfall rate alarm	4230	Golden Age	07/05/2012	16:56:00
Rainfall rate alarm	4230	Golden Age	07/05/2012	16:56:00
Rainfall rate alarm	4230	Golden Age	07/05/2012	16:51:14
Rainfall rate alarm	4230	Golden Age	07/05/2012	16:51:14
Rainfall rate alarm	4230	Golden Age	07/05/2012	16:51:14
Rainfall rate alarm	4190	Slaughterhouse	07/05/2012	16:39:29
Rainfall rate alarm	4160	Sunshine	07/05/2012	16:36:38
Rainfall rate alarm	4850	Porphyry Mtn	07/05/2012	16:34:15
Rainfall rate alarm	4850	Porphyry Mtn	07/05/2012	16:34:15
Rainfall rate alarm	4850	Porphyry Mtn	07/05/2012	16:34:15
Rainfall rate alarm	4180	Gold Lake	07/05/2012	16:33:41
Rainfall rate alarm	4140	Logan Mill	07/05/2012	16:29:31
Rainfall rate alarm	4160	Sunshine	07/05/2012	16:28:27
Rainfall rate alarm	4730	Sugarloaf	07/05/2012	16:27:40
Rainfall rate alarm	4730	Sugarloaf	07/05/2012	16:27:40
Rainfall rate alarm	4730	Sugarloaf	07/05/2012	16:27:40
Rainfall rate alarm	4160	Sunshine	07/05/2012	16:21:45
Rainfall rate alarm	4140	Logan Mill	07/05/2012	16:20:26
Rainfall rate alarm	4150	Gold Hill	07/05/2012	16:20:23
Rainfall rate alarm	4090	BC Magnolia	07/05/2012	16:13:22
Rainfall rate alarm	4140	Logan Mill	07/05/2012	16:13:04
Rainfall rate alarm	4730	Sugarloaf	07/05/2012	16:12:11
Rainfall rate alarm	4730	Sugarloaf	07/05/2012	16:12:11
Rainfall rate alarm	4730	Sugarloaf	07/05/2012	16:12:11
Rainfall rate alarm	4080	BC Twin Sisters	07/05/2012	16:11:11
Rainfall rate alarm	630	Temple Pond at	07/02/2012	11:13:59
Rainfall rate alarm	630	Temple Pond at	07/02/2012	11:08:23
Rainfall rate alarm	710	Horseshoe Park	07/02/2012	09:46:07
Rainfall rate alarm	710	Horseshoe Park	07/02/2012	01:40:12
Rainfall rate alarm	710	Horseshoe Park	07/02/2012	01:39:12
Rainfall rate alarm	710	Horseshoe Park	07/02/2012	01:30:10
Rainfall rate alarm	710	Horseshoe Park	07/02/2012	01:29:10
Rainfall rate alarm	710	Horseshoe Park	07/02/2012	01:23:48
Rainfall rate alarm	710	Horseshoe Park	07/02/2012	01:19:46
Rainfall rate alarm	710	Horseshoe Park	07/02/2012	00:47:36
Rainfall rate alarm	710	Horseshoe Park	07/02/2012	00:43:35
Rainfall rate alarm	710	Horseshoe Park	07/02/2012	00:39:34
Rainfall rate alarm	710	Horseshoe Park	07/02/2012	00:35:32
Rainfall rate alarm	710	Horseshoe Park	07/02/2012	00:23:29
Rainfall rate alarm	710	Horseshoe Park	07/01/2012	22:59:05
Rainfall rate alarm	710	Horseshoe Park	07/01/2012	22:55:04
Rainfall rate alarm	710	Horseshoe Park	07/01/2012	22:51:03
Rainfall rate alarm	710	Horseshoe Park	07/01/2012	22:47:01
Rainfall rate alarm	710	Horseshoe Park	07/01/2012	22:43:00
Rainfall rate alarm	710	Horseshoe Park	07/01/2012	22:38:59

Rainfall rate alarm	710	Horseshoe Park	07/01/2012	22:34:57
Rainfall rate alarm	710	Horseshoe Park	07/01/2012	22:30:56
Rainfall rate alarm	710	Horseshoe Park	07/01/2012	22:18:52
Rainfall rate alarm	710	Horseshoe Park	07/01/2012	20:10:11
Rainfall rate alarm	710	Horseshoe Park	07/01/2012	19:46:04
Rainfall rate alarm	710	Horseshoe Park	07/01/2012	19:34:00
Rainfall rate alarm	710	Horseshoe Park	07/01/2012	19:29:59
Rainfall rate alarm	710	Horseshoe Park	07/01/2012	19:25:57
Rainfall rate alarm	710	Horseshoe Park	07/01/2012	19:25:57
Rainfall rate alarm	710	Horseshoe Park	07/01/2012	18:25:39
Rainfall rate alarm	710	Horseshoe Park	07/01/2012	18:21:37
Rainfall rate alarm	710	Horseshoe Park	07/01/2012	17:45:26
Rainfall rate alarm	710	Horseshoe Park	07/01/2012	16:37:04
Rainfall rate alarm	710	Horseshoe Park	07/01/2012	16:30:23
Rainfall rate alarm	710	Horseshoe Park	07/01/2012	16:27:01

# General System Analysis

**Database Name** P:\A207-UDFCD-Data-Analysis\2012\07-2012\Novastar\_extract\_2012Jul.mdb

<b>First Date in Database</b>	7/1/12 12:00 AM	<b>Total Days</b>	31.0
<b>Last Date in Database</b>	7/31/12 11:59 PM	<b>Total Hours</b>	744.0

**Total Records Analyzed** 409,224

## Records by Group

Wind Data	132,933	32%
Temperature	72,525	18%
Relative Humidity	64,095	16%
Barometric Pressure	33,071	8%
Water Level	28,984	7%
Precipitation	26,836	7%
Battery Voltage	20,352	5%
Solar Radiation	9,990	2%
Fuel Moisture	5,913	1%
Fuel Temperature	5,913	1%
Soil Moisture	2,832	1%
Repeater Status Report	2,405	1%
Flasher Status	1,304	0%
Repeater Pass List	595	0%
12Hr Status Report	498	0%
Unknown	453	0%
Hayman Battery	386	0%
Evapotranspiration	79	0%
Handar 585 ALARM Status	58	0%
Dewpoint Temperature	2	0%
<b>Total</b>	<b>409,224</b>	

## Records by Major Group

Meteorologic Sensors	179,681	44%
Water Level Sensors	28,984	7%
Rain Sensors	26,836	7%
Soil and Fuel Sensors	14,658	4%
Sensor Status Transmissions	3,556	1%
<b>Total</b>	<b>253,715</b>	

## Traffic Loading Summary

Alert Reports	409,224	
Average Daily Traffic	13,201	
Average Hourly Traffic	550	
Median Hourly Traffic	523	hour beginning
Peak Hourly Traffic	1,865	Jul 7, 5:00 PM
2nd Max	1,395	Jul 7, 4:00 PM
3rd Max	1,147	Jul 6, 9:00 PM
4th Max	1,132	Jul 6, 8:00 PM
5th Max	1,100	Jul 30, 3:00 PM

# Rain Timer Performance

Analyze Rain Sensors

12:01

95%

Rain Sensors	Description	Rcv	Timer	Exp	Performance
1660	SPR at Henderson	34	14:00	62	55%
2790	W. Cherry Creek Wx	35	13:46	62	56%
4330	Hansen Rain	37	16:14	62	60%
2270	Cub Cr below Blue	42	14:21	62	68%
2320	Choke Cherry Resvr	42	15:51	62	68%
4870	SBC @ SB Road	44	14:10	62	71%
540	Parker/Mississippi	47	15:23	62	76%
4820	Doudy Draw	47	13:17	62	76%
4510	Pinewood Springs	48	13:20	62	77%
4270	Cannon Mountain	49	13:07	62	79%
2230	Bear Cr below Cub	50	13:13	62	81%
4470	Little Narrows	50	13:25	62	81%
2240	Cold Sprg Glch conf	51	14:06	62	82%
3010	EPC at Hwy 105	51	12:37	62	82%
4490	Apple Valley	51	14:14	62	82%
2970	Rampart Range Rd	52	12:18	62	84%
3070	Newlin Gulch	52	12:31	62	84%
4290	Red Hill	52	13:57	62	84%
310	Guy Hill Ranch	53	12:15	62	85%
4170	Pine Brook	53	13:06	62	85%
4880	Whispering Pines	53	12:33	62	85%
870	Murphy Creek GC	54	13:20	62	87%
2280	Kinney Peak	54	12:50	62	87%
3090	Highland Heritage Park	54	12:33	62	87%
4530	Winiger Ridge	54	12:18	62	87%
4550	Boulder Jail	54	12:14	62	87%
4830	SBC @ San Souci	54	12:31	62	87%
4850	Porphory Mtn	54	13:45	62	87%
4360	Justice Center	55	12:14	62	89%
4790	Wx-Button Rock	55	11:51	62	89%
1200	Broomfield 3207	56	12:14	62	90%
4080	Twin Sisters	56	12:16	62	90%
4150	Gold Hill	56	12:34	62	90%
4570	St. Antons	56	12:36	62	90%
860	Sand Cr at Colfax	57	12:29	62	92%
2880	Happy Canyon at N Surrey Dr	57	12:16	62	92%
2940	Willow Creek - DougCnty	57	12:30	62	92%
2950	DC Public Works	57	12:00	62	92%
4010	Crescent	57	12:16	62	92%
330	Van Bibber @ Hwy 93	58	12:31	62	94%
400	Montview Park	58	12:42	62	94%
1050	Jeffco Fairgrounds	58	12:27	62	94%
1100	Louisville Rec Ctr	58	12:15	62	94%
1620	Slaughterhouse Glch	58	12:41	62	94%
2330	Morrison	58	11:58	62	94%
2800	Columbine Open Space	58	12:34	62	94%
2860	CC at Stroh Rd	58	11:57	62	94%
2870	Cottonwood (Apache)	58	12:29	62	94%
2980	Dakan Rd	58	12:31	62	94%
4070	Bear Peak	58	11:41	62	94%
4090	Magnolia	58	12:34	62	94%
4130	Swiss Peaks	58	12:08	62	94%
4140	Logan Mill	58	11:41	62	94%
4190	Slaughterhouse	58	12:15	62	94%

4810	Shanahan Ridge	58	12:11	62	94%
110	Ralston Reservoir	59	12:12	62	95%
200	Leyden Reservoir	59	12:28	62	95%
220	Upper Leyden	59	12:00	62	95%
640	Goldsmith @ Eastman	59	12:31	62	95%
1040	Lena @ U.S. Hwy 6	59	12:29	62	95%
1110	Gunbarrel	59	11:43	62	95%
1340	Sanderson at Xavier	59	12:31	62	95%
1440	Wx-Elbert	59	12:16	62	95%
1710	Shop Creek	59	12:14	62	95%
2250	Rosedale	59	12:15	62	95%
2260	Brook Forest	59	12:15	62	95%
2350	Idledale	59	12:26	62	95%
2840	Sulphur Gulch	59	12:34	62	95%
2850	Cherry Cr bl Bayou Glch	59	12:16	62	95%
2920	West Cherry Head-Douglas Cnty	59	12:30	62	95%
3030	WX-Bingham Lake Park	59	12:00	62	95%
4040	Martin Gulch	59	11:25	62	95%
4230	Golden Age	59	12:13	62	95%
4260	Taylor Mountain	59	12:16	62	95%
4340	Riverside	59	12:15	62	95%
4750	Wx-Louisville Lake	59	12:00	62	95%
4840	SBC@S Boulder Ditch	59	12:13	62	95%
4860	Fairview Peak	59	12:18	62	95%
300	Van Bibber Park	60	12:11	62	97%
320	Sports Complex	60	12:11	62	97%
410	Kelly Dam	60	11:43	62	97%
420	Expo Park	60	11:56	62	97%
500	Havana Park	60	12:16	62	97%
610	Harvard @ Jackson	60	12:24	62	97%
620	Quincy/Highline	60	12:27	62	97%
650	Iliff Pond	60	12:12	62	97%
800	Sable Ditch @ 18th	60	12:11	62	97%
810	Granby Ditch @ 6th	60	12:10	62	97%
820	ETG @ Buckley	60	12:10	62	97%
1010	Denver West	60	11:57	62	97%
1350	Chatfield COE	60	11:59	62	97%
1370	West Metro FS13	60	12:13	62	97%
1460	Wx-Urban Farm	60	12:13	62	97%
1480	Third Creek at DIA	60	12:10	62	97%
1700	Cherry Cr @ Champa	60	12:13	62	97%
2310	Genesee Village	60	11:58	62	97%
2360	Indian Hills	60	12:13	62	97%
2370	Red Rocks Park	60	12:13	62	97%
2960	Indian Creek	60	12:15	62	97%
3050	East/West Trailhead	60	12:00	62	97%
3080	Tallman Gulch	60	11:53	62	97%
4030	Red Garden	60	11:59	62	97%
4050	Walker Ranch	60	12:13	62	97%
4060	Lakeshore	60	12:15	62	97%
4200	Lazy Acres	60	12:15	62	97%
4220	Fling's	60	11:50	62	97%
4320	Lee Hill Rain 2012	60	11:42	62	97%
4730	Wx-Sugarloaf	60	12:00	62	97%
4770	Wx-Cal-Wood Ranch	60	12:00	62	97%
120	West Woods	61	11:57	62	98%
140	Wx-Blue Mountain	61	12:00	62	98%
520	Jewell Detention	61	11:57	62	98%
530	Fire Station #19	61	11:57	62	98%

700	Toll Gate @ 6th	61	12:00	62	98%
710	Horseshoe Park Drop	61	11:59	62	98%
720	Confluence Pond	61	11:58	62	98%
760	Mission Viejo Park	61	11:57	62	98%
840	Fire Station 12	61	12:00	62	98%
850	Flying J	61	12:00	62	98%
950	Piney at Liverpool	61	11:58	62	98%
970	Pump Sta 3	61	12:05	62	98%
1030	NREL/S. Table Mtn.	61	11:58	62	98%
1060	Heritage Square	61	11:57	62	98%
1300	Hidden Lake	61	11:26	62	98%
1320	SPR at 3rd Ave	61	11:57	62	98%
1330	Roslyn	61	12:00	62	98%
1360	Denver Zoo	61	12:00	62	98%
1420	Wx-Diamond Hill	61	12:00	62	98%
1520	Wx-Marston Lake North	61	12:00	62	98%
1550	Lakewood CC	61	11:36	62	98%
1570	Wx-Brighton Ditch	61	12:00	62	98%
2340	El Rancho	61	11:56	62	98%
2900	Russelville Gulch-Douglas	61	11:45	62	98%
2930	Wx-Spring Valley Rd-DougCnty	61	12:02	62	98%
3040	CC @ Prairie Canyon Ranch	61	11:56	62	98%
3060	Fire Sta 47	61	12:00	62	98%
4020	Rio Grande	61	11:52	62	98%
4110	Betasso	61	11:59	62	98%
4160	Sunshine	61	11:58	62	98%
4180	Gold Lake	61	11:26	62	98%
4240	Sunset	61	12:14	62	98%
4350	Conifer Hill	61	11:58	62	98%
150	Nott Creek	62	11:42	62	100%
210	Leyden Confluence	62	11:43	62	100%
430	Utah Park	62	11:39	62	100%
440	Fire Station #7	62	11:57	62	100%
510	Virginia Court	62	11:57	62	100%
630	Temple Pond at DTC	62	12:18	62	100%
730	No Name @ Quincy	62	11:57	62	100%
830	Side Creek Park	62	11:57	62	100%
940	Sampson Gulch	62	11:58	62	100%
1310	LDC at 64th	62	11:50	62	100%
1400	Upper Sloan Det.	62	11:29	62	100%
1530	Bear Creek @ Lowell	62	11:57	62	100%
1600	Englewood Dam	62	11:58	62	100%
1720	Cherry Cr @ Steele	62	11:44	62	100%
1800	Sand Creek Park	62	11:57	62	100%
1810	Sand Creek at mouth	62	11:57	62	100%
2190	Wx-Squaw Mountain	62	12:00	62	100%
2210	Wx-Hiwan G.C.	62	11:58	62	100%
2710	Wx-Highlands Ranch WTP	62	12:00	62	100%
2810	Pine Cliff Road	62	11:53	62	100%
2820	Haskins Gulch Conf	62	12:00	62	100%
2890	Spruce Mt - Douglas	62	12:00	62	100%
2910	East Cherry Cr-Douglas	62	12:00	62	100%
4100	Filter Plant	62	11:44	62	100%
4250	Geer Canyon	62	11:58	62	100%
4310	Johnny Park	62	11:58	62	100%
920	Wx-Aurora Town Hall	63	12:00	62	102%
1920	Wx-Brighton	63	11:34	62	102%
2730	Wx-Salisbury Park	63	12:00	62	102%
2750	Wx-Castle Rock	63	11:46	62	102%

2990	Wx-Tomah Rd-DougCnty	63	11:56	62	102%
3020	Wx-West Creek WX	63	11:53	62	102%
4300	Big Elk Park	63	11:40	62	102%
4520	Eagle Ridge	63	11:38	62	102%
1500	Powers Park	68	9:22	62	110%
4710	Wx-Ward C-1	68	10:45	62	110%
1000	Maple Grove Resv.	71	10:00	62	115%
600	Harvard Gulch Park	76	9:24	62	123%
900	Wx-Aurora Reservoir	82	8:22	62	132%
1900	Niver Detention	93	7:33	62	150%
750	Wx-Quincy Reservoir	99	7:08	62	160%
5720	Four Mile Creek	30	20:00	62	48%
5730	West Creek	61	11:48	62	98%
5740	Trail Creek	60	12:00	62	97%
5810	Stump Bump	60	12:17	62	97%
5860	Cedar Mountain	60	12:15	62	97%
5880	Hackett Mountain	58	12:15	62	94%
5900	Horse Creek-Satellite	62		62	100%
5940	Log Jumper	61	12:15	62	98%



Rain Event Performance			Analyze Rain Sensors												
	Systemwide Avg	Reports Received	11,830												
	90.49%	Total Tips	13,073												
		Data Loss	9.51%												
Sensor	Performance	1-tips	2-tips	3-tips	4-tips	5-tips	6-tips	>6-tips	Rcv	Exp	Miss	Hold	Bucket		
3070	16%	1	8	1	5	2	4	5	21	129	108	0	0.0393701		
4470	61%	37	13	1	0	0	0	2	51	84	33	0	0.0393701		
4330	64%	49	6	4	1	0	1	1	61	96	35	0	0.0393701		
2980	68%	34	22	3	0	0	0	0	59	87	28	0	0.0393701		
4870	68%	34	13	2	1	0	0	1	50	73	23	0	0.0393701		
2870	70%	36	5	1	0	0	0	1	42	60	18	0	0.0393701		
1660	71%	8	3	1	0	0	0	0	12	17	5	0	0.0393701		
2230	73%	37	4	3	1	1	0	0	46	63	17	0	0.0393701		
4270	75%	77	5	7	1	2	0	0	92	122	30	0	0.0393701		
4290	76%	36	5	3	1	0	0	0	45	59	14	0	0.0393701		
4040	77%	70	8	7	0	1	0	0	86	112	26	0	0.0393701		
4030	78%	54	10	3	1	0	0	0	68	87	19	0	0.0393701		
630	78%	217	29	14	3	0	0	1	263	336	73	2	0.0393701		
870	79%	19	2	0	0	1	0	0	22	28	6	0	0.0393701		
4510	79%	54	8	5	0	0	0	0	67	85	18	0	0.0393701		
3090	80%	45	9	1	1	0	0	0	56	70	14	0	0.0393701		
2790	80%	33	11	0	0	0	0	0	44	55	11	0	0.0393701		
4490	80%	33	11	0	0	0	0	0	44	55	11	0	0.0393701		
4790	82%	51	9	1	1	0	0	0	62	76	14	0	0.0393701		
2280	83%	45	6	1	1	0	0	0	53	64	11	0	0.0393701		
4150	83%	89	13	4	0	0	0	0	106	127	21	0	0.0393701		
4190	83%	82	12	0	1	1	0	0	96	115	19	0	0.0393701		
720	84%	29	7	0	0	0	0	0	36	43	7	3	0.0393701		
410	84%	39	7	1	0	0	0	0	47	56	9	0	0.0393701		
540	84%	43	10	0	0	0	0	0	53	63	10	0	0.0393701		
4090	85%	82	9	1	2	0	0	0	94	111	17	0	0.0393701		
2270	85%	78	8	2	0	1	0	0	89	105	16	0	0.0393701		
2880	85%	61	2	0	0	0	0	1	63	74	11	0	0.0393701		
2730	85%	54	9	1	0	0	0	0	64	75	11	0	0.0393701		
1200	85%	41	5	0	1	0	0	0	47	55	8	0	0.0393701		
2840	86%	36	7	0	0	0	0	0	43	50	7	0	0.0393701		
110	86%	43	6	1	0	0	0	0	50	58	8	0	0.0393701		
900	86%	29	1	2	0	0	0	0	32	37	5	1	0.0393699		
1100	87%	41	3	0	0	1	0	0	45	52	7	0	0.0393701		
4880	87%	101	13	1	1	0	0	0	116	134	18	1	0.0393701		
3030	87%	57	7	0	1	0	0	0	65	75	10	0	0.0393701		
1800	87%	24	1	0	1	0	0	0	26	30	4	0	0.0393701		
4180	87%	97	13	2	0	0	0	0	112	129	17	0	0.0393701		
4710	87%	168	21	2	1	0	0	0	192	220	28	0	0.0393701		
4080	87%	115	13	3	0	0	0	0	131	150	19	0	0.0393701		
4830	88%	70	8	0	1	0	0	0	79	90	11	0	0.0393701		
4570	88%	155	14	5	0	0	0	0	174	198	24	0	0.0393701		
4230	88%	91	10	2	0	0	0	0	103	117	14	0	0.0393701		
4530	88%	87	11	1	0	0	0	0	99	112	13	0	0.0393701		
4730	89%	95	14	0	0	0	0	0	109	123	14	0	0.0393701		
4820	89%	63	7	1	0	0	0	0	71	80	9	0	0.0393701		
940	89%	38	2	0	1	0	0	0	41	46	5	0	0.0393699		
650	89%	29	4	0	0	0	0	0	33	37	4	0	0.0393701		
4240	89%	44	6	0	0	0	0	0	50	56	6	0	0.0393701		
4220	90%	100	10	0	1	0	0	0	111	124	13	0	0.0393701		
4010	90%	79	8	1	0	0	0	0	88	98	10	0	0.0393701		
2860	90%	65	5	0	1	0	0	0	71	79	8	0	0.0393701		
810	90%	16	2	0	0	0	0	0	18	20	2	0	0.0393701		
2850	90%	74	7	1	0	0	0	0	82	91	9	0	0.0393701		
4250	90%	51	3	0	1	0	0	0	55	61	6	0	0.0393701		
4140	90%	84	6	2	0	0	0	0	92	102	10	0	0.0393701		
4770	90%	101	8	2	0	0	0	0	111	123	12	0	0.0393701		
4170	91%	53	4	1	0	0	0	0	58	64	6	0	0.0393701		
760	91%	27	3	0	0	0	0	0	30	33	3	0	0.0393701		
4550	92%	49	5	0	0	0	0	0	54	59	5	0	0.0393701		
850	92%	31	1	1	0	0	0	0	33	36	3	0	0.0393701		
400	92%	52	3	1	0	0	0	0	56	61	5	0	0.0393701		
1620	92%	31	3	0	0	0	0	0	34	37	3	0	0.0393701		
4130	92%	119	9	1	0	0	0	0	129	140	11	0	0.0393701		

4840	92%	77	5	1	0	0	0	0	83	90	7	0	0.0393701
2820	92%	111	6	2	0	0	0	0	119	129	10	0	0.0393701
1110	92%	33	3	0	0	0	0	0	36	39	3	0	0.0393701
1530	92%	33	3	0	0	0	0	0	36	39	3	0	0.0393701
4070	92%	89	8	0	0	0	0	0	97	105	8	1	0.0393701
4750	92%	45	4	0	0	0	0	0	49	53	4	0	0.0393701
4060	93%	68	6	0	0	0	0	0	74	80	6	0	0.0393701
2810	93%	57	5	0	0	0	0	0	62	67	5	0	0.0393701
620	93%	37	3	0	0	0	0	0	40	43	3	0	0.0393701
2950	93%	105	2	3	0	0	0	0	110	118	8	0	0.0393701
310	93%	64	5	0	0	0	0	0	69	74	5	0	0.0393701
420	93%	52	4	0	0	0	0	0	56	60	4	0	0.0393701
1570	93%	66	5	0	0	0	0	0	71	76	5	0	0.0393701
1700	93%	53	4	0	0	0	0	0	57	61	4	0	0.0393701
4020	94%	83	3	0	1	0	0	0	87	93	6	0	0.0393701
2340	94%	55	2	1	0	0	0	0	58	62	4	0	0.0393701
830	94%	27	2	0	0	0	0	0	29	31	2	0	0.0393701
2330	94%	68	5	0	0	0	0	0	73	78	5	0	0.0393701
4050	94%	70	5	0	0	0	0	0	75	80	5	0	0.0393701
4350	94%	120	6	1	0	0	0	0	127	135	8	0	0.0393701
2930	94%	94	6	0	0	0	0	0	100	106	6	0	0.0393701
3080	94%	47	3	0	0	0	0	0	50	53	3	0	0.0393701
510	95%	50	3	0	0	0	0	0	53	56	3	0	0.0393701
3050	95%	69	1	0	1	0	0	0	71	75	4	0	0.0393701
4260	95%	120	7	0	0	0	0	0	127	134	7	0	0.0393701
2260	95%	86	5	0	0	0	0	0	91	96	5	0	0.0393701
500	95%	53	3	0	0	0	0	0	56	59	3	0	0.0393701
4810	95%	71	4	0	0	0	0	0	75	79	4	0	0.0393701
2750	95%	95	5	0	0	0	0	0	100	105	5	0	0.0393701
840	95%	19	1	0	0	0	0	0	20	21	1	0	0.0393701
2890	95%	77	4	0	0	0	0	0	81	85	4	0	0.0393701
3040	95%	80	4	0	0	0	0	0	84	88	4	0	0.0393701
4310	95%	80	4	0	0	0	0	0	84	88	4	0	0.0393701
300	95%	61	1	1	0	0	0	0	63	66	3	0	0.0393701
800	95%	20	1	0	0	0	0	0	21	22	1	0	0.0393701
520	96%	61	3	0	0	0	0	0	64	67	3	0	0.0393701
2800	96%	82	4	0	0	0	0	0	86	90	4	0	0.0393701
530	96%	62	3	0	0	0	0	0	65	68	3	0	0.0393701
700	96%	21	1	0	0	0	0	0	22	23	1	0	0.0393701
4200	96%	88	4	0	0	0	0	0	92	96	4	0	0.0393701
440	96%	45	2	0	0	0	0	0	47	49	2	0	0.0393701
2320	96%	45	2	0	0	0	0	0	47	49	2	0	0.0393701
730	96%	46	2	0	0	0	0	0	48	50	2	0	0.0393701
1460	96%	46	2	0	0	0	0	0	48	50	2	7	0.0393701
2250	96%	117	5	0	0	0	0	0	122	127	5	0	0.0393701
2370	96%	72	3	0	0	0	0	0	75	78	3	0	0.0393701
950	96%	48	2	0	0	0	0	0	50	52	2	0	0.0393701
860	96%	26	1	0	0	0	0	0	27	28	1	0	0.0393701
2920	96%	53	2	0	0	0	0	0	55	57	2	0	0.0393701
4340	97%	134	3	1	0	0	0	0	138	143	5	1	0.0393701
1340	97%	54	2	0	0	0	0	0	56	58	2	0	0.0393701
1330	97%	27	1	0	0	0	0	0	28	29	1	0	0.0393701
640	97%	55	2	0	0	0	0	0	57	59	2	0	0.0393701
1030	97%	83	3	0	0	0	0	0	86	89	3	0	0.0393701
1370	97%	56	2	0	0	0	0	0	58	60	2	0	0.0393701
1040	97%	29	1	0	0	0	0	0	30	31	1	0	0.0393701
210	97%	59	2	0	0	0	0	0	61	63	2	0	0.0393701
2910	97%	90	3	0	0	0	0	0	93	96	3	0	0.0393701
1810	97%	30	1	0	0	0	0	0	31	32	1	0	0.0393701
2990	97%	121	4	0	0	0	0	0	125	129	4	0	0.0393701
1500	97%	94	0	0	1	0	0	0	95	98	3	0	0.0393701
4320	97%	124	4	0	0	0	0	0	128	132	4	0	0.0393701
970	97%	31	1	0	0	0	0	0	32	33	1	0	0.0393701
2240	97%	31	1	0	0	0	0	0	32	33	1	0	0.0393701
120	97%	65	0	1	0	0	0	0	66	68	2	0	0.0393701
1420	97%	64	2	0	0	0	0	0	66	68	2	0	0.0393701
4360	97%	67	2	0	0	0	0	0	69	71	2	0	0.0393701
140	97%	69	2	0	0	0	0	0	71	73	2	1	0.0393701
750	97%	37	1	0	0	0	0	0	38	39	1	1	0.0393701

4300	97%	113	3	0	0	0	0	0	116	119	3	0	0.0393701
2940	98%	77	2	0	0	0	0	0	79	81	2	0	0.0393701
610	98%	39	1	0	0	0	0	0	40	41	1	0	0.0393701
1350	98%	40	1	0	0	0	0	0	41	42	1	0	0.0393701
4160	98%	122	3	0	0	0	0	0	125	128	3	0	0.0393701
4100	98%	84	2	0	0	0	0	0	86	88	2	0	0.0393701
3020	98%	92	2	0	0	0	0	0	94	96	2	0	0.0393701
1360	98%	46	1	0	0	0	0	0	47	48	1	0	0.0393701
1320	98%	48	1	0	0	0	0	0	49	50	1	0	0.0393701
2360	98%	51	1	0	0	0	0	0	52	53	1	0	0.0393701
1000	98%	57	1	0	0	0	0	0	58	59	1	0	0.0393701
4520	98%	57	1	0	0	0	0	0	58	59	1	0	0.0393701
220	99%	65	1	0	0	0	0	0	66	67	1	0	0.0393701
2310	99%	65	1	0	0	0	0	0	66	67	1	0	0.0393701
1060	99%	67	1	0	0	0	0	0	68	69	1	0	0.0393701
150	99%	69	1	0	0	0	0	0	70	71	1	0	0.0393701
330	99%	70	1	0	0	0	0	0	71	72	1	0	0.0393701
2970	99%	73	1	0	0	0	0	0	74	75	1	0	0.0393701
1010	99%	79	1	0	0	0	0	0	80	81	1	0	0.0393701
1050	99%	80	1	0	0	0	0	0	81	82	1	0	0.0393701
2900	99%	82	1	0	0	0	0	0	83	84	1	0	0.0393701
1550	99%	89	1	0	0	0	0	0	90	91	1	0	0.0393701
430	100%	108	0	0	0	0	0	0	108	108	0	0	0.0393701
920	100%	80	0	0	0	0	0	0	80	80	0	0	0.0393701
2190	100%	75	0	0	0	0	0	0	75	75	0	0	0.0393701
2210	100%	58	0	0	0	0	0	0	58	58	0	0	0.0393701
1400	100%	54	0	0	0	0	0	0	54	54	0	0	0.0393701
2960	100%	49	0	0	0	0	0	0	49	49	0	0	0.0393701
320	100%	48	0	0	0	0	0	0	48	48	0	0	0.0393701
600	100%	48	0	0	0	0	0	0	48	48	0	1	0.0393701
1440	100%	48	0	0	0	0	0	0	48	48	0	0	0.0393701
2350	100%	48	0	0	0	0	0	0	48	48	0	0	0.0393701
200	100%	47	0	0	0	0	0	0	47	47	0	0	0.0393701
1300	100%	43	0	0	0	0	0	0	43	43	0	0	0.0393701
1310	100%	38	0	0	0	0	0	0	38	38	0	0	0.0393701
2710	100%	36	0	0	0	0	0	0	36	36	0	0	0.0393701
1600	100%	34	0	0	0	0	0	0	34	34	0	0	0.0393701
1920	100%	34	0	0	0	0	0	0	34	34	0	0	0.0393701
1520	100%	32	0	0	0	0	0	0	32	32	0	0	0.0393701
1900	100%	29	0	0	0	0	0	0	29	29	0	0	0.0393701
1710	100%	23	0	0	0	0	0	0	23	23	0	0	0.0393701
3060	100%	23	0	0	0	0	0	0	23	23	0	0	0.0393701
820	100%	22	0	0	0	0	0	0	22	22	0	0	0.0393701
1480	100%	14	0	0	0	0	0	0	14	14	0	0	0.0393701
4110	100%	13	0	0	0	0	0	0	13	13	0	0	0.0393701
1720	100%	8	0	0	0	0	0	0	8	8	0	0	0.0393701
		10927	747	108	33	10	5	12	11830	13073			
3010	76%	183	14	12	6	2	1	2	218	287	69	0	0.01
4850	75%	346	67	13	6	6	3	1	441	591	150	48	0.01
4860	77%	358	87	21	2	1	0	0	469	608	139	100	0.01
5720	48%	15	8	3	2	2	1	3	31	64	33	0	0.0393701
5730	95%	100	5	0	0	0	0	0	105	110	5	0	0.0393701
5740	97%	71	2	0	0	0	0	0	73	75	2	0	0.0393701
5810	99%	103	1	0	0	0	0	0	104	105	1	0	0.0393701
5860	96%	74	3	0	0	0	0	0	77	80	3	0	0.0393701
5880	99%	66	1	0	0	0	0	0	67	68	1	0	0.0393701
5900	100%	67	0	0	0	0	0	0	67	67	0	0	0.0393701
5940	92%	72	5	1	0	0	0	0	78	85	7	0	0.0393701
710	99%	683	9	0	0	0	0	58	692	701	9	1	0.0393701

## 2012 Monthly ALERT Radio Traffic Summary

