

Memo



Date: November 2, 2011
To: Kevin Stewart
From: Markus Ritsch
Subject: October 2011 ALERT Data Analysis

I. ALERT Data Source

Raw ALERT data records extracted from the Urban Drainage and Flood Control District’s NovaStar base station were analyzed for the period October 1 through October 31, 2011.

II. General System Analysis Summary

A total of 370,375 ALERT (legacy) data reports were analyzed. Meteorological sensors account for 78 percent, water level sensors 7 percent, and rain sensors 4 percent of the total monthly records.

The system-wide radio traffic loading was 11,948 reports per day with an average hourly loading of 498 reports. The peak hourly traffic loading was 1,035 reports, which occurred on October 8, between 6:00 AM and 7:00 AM. 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 Performance	Event Performance
4330	Hansen Rain	71%	65%
3020	WX-West Creek	73%	100%
4710	WX-Ward C-1	87%	64%
4730	WX-Sugarloaf	100%	68%
4790	WX-Button Rock	76%	74%
1470	Unknown sensor IDs with excessive reports		
1934			
1423			

B. Continuous Operation of Base Receiver/Decoder

The ALERT/ALERT2/NS5 receiver/decoder was continuously operational 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*
1520	4710	4490	1700	1700	700	4300	4330	4330	4330		
1440	1440	4270	3060	700	4710	4330	4850	2320	3020		
4470	4470	4330	3030	540	4330	2750	2750	440	4790		
1460	1460	4510	700	1710	1700	2280	2950	4490	4770		
140	140	1440	3090	500	4270	870	540	4520	4270		
1570	4490	4810	2970	710	4300	4270	2280	2270	4510		

*- 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	25.73	Only the 1-mm rain sensors were included in the analysis
Median	26.00	Only the 1-mm rain sensors were included in the analysis
Standard deviation	8.42	Only the 1-mm rain sensors were included in the analysis
Mean plus three standard deviations	50.99	Only the 1-mm rain sensors were included in the analysis
Minimum total count	4	ID 2190 (WX-Squaw Mountain)
Maximum total count	48	ID 1420 (WX-Diamond Hill)

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			

*- 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
Hansen Rain	4330	Occurred on October 27
WX-Ward C-1	4710	Occurred on October 25
There were two stations this month that experienced a jump in sequential count of more than 6.		

D. Sensor-by-Sensor Incrementing Count Summary

The system-wide reception rate of incrementing, 1-mm tip reports for the month was approximately 91.2 percent. A total of 1,549 incrementing reports were received and a total of 1,698 reports were expected. The total loss of incrementing reports for the month was approximately 8.8 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*
1420	1350	2820	1700	1620	2280	870	2980	2980	4710		
1460	950	2970	1620	1660	4300	4300	400	4490	4330		
4470	1320	710	2930	810	4330	4330	4330	4330	4730		
4330	1330	4330	2990	650	4270	2980	2270	4240	4790		
2710	840	870	4330	940	2980	4490	2240	4470	4090		
1640	1720	1200	2950	1900	310	4790	4530	330	4230		

*-Only sensors that are operational year-round (weather stations and stations in Boulder County) are included for the analysis in these months. **-Due to Spring start-up Fall shut-down the performance values in these months are not accurate.

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 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 hourly periods of highest radio traffic this month are shown (Table 7). Each hour exceeding 700 reports was analyzed to quantify the number of missing rain reports for that hour.

Table 7. Heavy Radio Traffic Periods

Day	Hr	Expected Tips	Received Tips	Total Load	Loss
8	6	87	87	1035	0
8	7	50	50	978	0
8	14	146	139	970	4.79%
8	11	51	51	924	0
8	5	105	105	892	0
8	12	71	71	851	0
8	13	113	110	842	2.65%
8	15	79	78	821	1.27%
8	16	30	30	816	0
8	4	68	67	762	1.47%
27	13	218	205	756	5.96%
8	10	40	40	753	0
25	21	7	7	732	0
8	8	24	24	724	0
25	19	44	44	717	0
8	9	34	34	716	0
8	17	20	20	713	0
25	20	5	5	707	0
27	14	178	173	705	2.81%
7	7	0	0	701	0

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)	340
Total reports from unknown IDs	683
Unknown IDs with only a single received report (potential noise)	217
Total reports from all IDs – RecData Log entire month	370,375
Unknown reports as a fraction of total reports	0.18%

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		

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%		

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	Reports
1470	29
1934	21
1423	17
1446	9
2808	9
1454	8
1951	8
2239	8
1443	7
1531	7
1918	7
1949	7
1950	7
1453	6
1455	6
1919	6
1953	6
2768	6
4087	6
153	5
1534	5
1637	5
1937	5
2706	5
2715	5
2748	5

The “unknown” device reports are analyzed temporally to understand when they are received during the day (Table 12). 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.

Table 12. Temporal Distribution of Received Reports

Hour (AM)	Reports	Hour (PM)	Reports
0:00-00:59	16	12:00-12:59	53
1:00-1:59	40	1:00-1:59	18
2:00-2:59	30	2:00-2:59	16
3:00-3:59	27	3:00-3:59	5
4:00-4:59	22	4:00-4:59	8
5:00-5:59	43	5:00-5:59	13
6:00-6:59	43	6:00-6:59	10
7:00-7:59	57	7:00-7:59	16
8:00-8:59	34	8:00-8:59	48
9:00-9:59	10	9:00-9:59	53
10:00-10:59	10	10:00-10:59	35
11:00-11:59	47	11:00-11:59	21

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	Apr 2011	May 2011	Jun 2011	Jul 2011	Aug 2011	Sep 2011	Oct 2011
140	Wx-Blue Mountain	0	4	1	0	0	0	2
900	WX-Aurora Reservoir	0	0	0	0	0	0	6
920	Wx-Aurora Town Hall	0	7	1	0	0	0	0
1460	Wx-Urban Farm	0	5	1	0	1	0	1
1480	Third Creek at DIA	0	0	0	5	0	0	0
1520	Wx-Marston Lake North	2	4	1	0	1	0	2
1920	Wx-Brighton	3	3	1	2	1	1	0
2190	Wx-Squaw Mountain	0	8	0	1	0	0	0
2710	Wx-Highlands Ranch WTP	0	0	0	0	0	0	3
2750	Wx-Castle Rock	0	0	0	0	0	0	2
3020	Wx-West Creek	2	1	3	1	2	0	0
4330	Hansen Rain	0	5	4	2	3	3	0
4850	Porphyry Mtn	0	0	0	4	1	2	1
4860	Fairview Peak	0	0	0	0	0	0	4

General System Analysis

Database Name

P:\A207-UDFCD-Data-Analysis\2011\10-2011\Novastar_extract_2011Oct.mdb

First Date in Database

10/1/11 12:00 AM

Total Days

31.0

Last Date in Database

10/31/11 11:59 PM

Total Hours

744.0

Total Records Analyzed

370,375

Records by Group

Wind Gust	63,292	17%
Temperature	62,999	17%
Relative Humidity	60,457	16%
Barometric Pressure	29,513	8%
Wind Speed Average & Azimuth	21,867	6%
Wind Direction	21,364	6%
Wind Speed Average	20,802	6%
Battery Voltage	20,010	5%
Water Level PT-HSE	18,470	5%
Precipitation	15,509	4%
Solar Radiation	9,440	3%
Fuel Moisture	5,864	2%
Fuel Temperature	5,861	2%
Water Level Float	3,505	1%
Soil Moisture	2,878	1%
Water Level PT	2,584	1%
Repeater Status Report	2,315	1%
Wind ALERT	994	0%
Water Level	759	0%
Unknown	683	0%
Repeater Pass List	597	0%
12Hr Status Report	392	0%
Hayman Battery	143	0%
Handar 585 ALARM Status	63	0%
Solar Power	14	0%
Total	370,375	

Records by Major Group

Meteorologic Sensors	289,734	78%
Water Level Sensors	24,559	7%
Rain Sensors	15,509	4%
Soil and Fuel Sensors	14,603	4%
Sensor Status Transmissions	3,381	1%
Total	347,786	

Traffic Loading Summary

Alert Reports	370,375	
Average Daily Traffic	11,948	
Average Hourly Traffic	498	
Median Hourly Traffic	488	hour beginning
Peak Hourly Traffic	1,035	Oct-08, 6:00:00 AM
2nd Max	996	Oct-08, 2:00:00 PM
3rd Max	978	Oct-08, 7:00:00 AM
4th Max	924	Oct-08, 11:00:00 AM
5th Max	892	Oct-08, 5:00:00 AM

Rain Timer Performance

Analyze Rain Sensors

Rain ID	Description	Rcv	Timer	Exp	Performance
4330	Hansen Rain	44	16:21	62.00	71%
3020	Wx-West Creek WX	45	12:55	62.00	73%
4790	Wx-Button Rock	47	15:30	62.00	76%
4770	Wx-Cal-Wood Ranch	49	12:00	62.00	79%
4270	Cannon Mountain	50	13:06	62.00	81%
4510	Pinewood Springs	52	14:14	62.00	84%
4470	Little Narrows	52	13:48	62.00	84%
4150	Gold Hill	52	13:22	62.00	84%
4750	Wx-Louisville Lake	53	13:47	62.00	85%
4860	Fairview Peak	53	13:18	62.00	85%
4830	SBC @ San Souci	53	13:18	62.00	85%
4530	Winiger Ridge	53	13:04	62.00	85%
4490	Apple Valley	53	12:55	62.00	85%
4220	Fling's	53	12:45	62.00	85%
4710	Wx-Ward C-1	54	13:38	62.00	87%
2990	Wx-Tomah Rd-DougCnty	54	12:31	62.00	87%
2930	ix-Spring Valley Rd-DougCn	54	12:45	62.00	87%
4310	Johnny Park	54	13:18	62.00	87%
4080	Twin Sisters	54	12:58	62.00	87%
4180	Gold Lake	55	13:29	62.00	89%
4130	Swiss Peaks	55	13:16	62.00	89%
1460	Wx-Urban Farm	56	12:44	62.00	90%
1440	Wx-Elbert	56	12:18	62.00	90%
140	Wx-Blue Mountain	56	12:43	62.00	90%
4820	Doudy Draw	56	13:07	62.00	90%
4570	St. Antons	56	12:44	62.00	90%
4520	Eagle Ridge	56	13:08	62.00	90%
4360	Justice Center	56	12:27	62.00	90%
4200	Lazy Acres	56	13:11	62.00	90%
4190	Slaughterhouse	56	12:42	62.00	90%
4170	Pine Brook	56	12:13	62.00	90%
4090	Magnolia	56	12:27	62.00	90%
4060	Lakeshore	56	12:58	62.00	90%
4020	Rio Grande	56	12:45	62.00	90%
4010	Crescent	56	12:40	62.00	90%
750	Wx-Quincy Reservoir	57	12:39	62.00	92%
4850	Porphory Mtn	57	12:15	62.00	92%
4810	Shanahan Ridge	57	12:40	62.00	92%
4550	Boulder Jail	57	12:38	62.00	92%
4110	Betasso	57	12:28	62.00	92%
1520	Wx-Marston Lake North	58	11:47	62.00	94%
1570	Wx-Brighton Ditch	58	12:55	62.00	94%
4350	Conifer Hill	58	12:25	62.00	94%
4340	Riverside	58	12:12	62.00	94%
4290	Red Hill	58	12:53	62.00	94%
4240	Sunset	58	12:55	62.00	94%
4160	Sunshine	58	12:12	62.00	94%
4040	Martin Gulch	58	12:12	62.00	94%
2190	Wx-Squaw Mountain	59	12:13	62.00	95%
2730	Wx-Salisbury Park	59	12:27	62.00	95%
1420	Wx-Diamond Hill	59	12:00	62.00	95%
920	Wx-Aurora Town Hall	59	12:00	62.00	95%
4250	Geer Canyon	59	12:24	62.00	95%
4100	Filter Plant	59	12:12	62.00	95%

4070	Bear Peak	59	12:25	62.00	95%
4030	Red Garden	59	12:25	62.00	95%
2750	Wx-Castle Rock	60	12:13	62.00	97%
4840	SBC@S Boulder Ditch	60	12:10	62.00	97%
4300	Big Elk Park	60	12:11	62.00	97%
4260	Taylor Mountain	60	12:12	62.00	97%
4140	Logan Mill	60	12:10	62.00	97%
2210	Wx-Hiwan G.C.	61	11:53	62.00	98%
2710	Wx-Highlands Ranch WTP	61	12:00	62.00	98%
1920	Wx-Brighton	61	12:00	62.00	98%
4050	Walker Ranch	61	12:11	62.00	98%
900	Wx-Aurora Reservoir	62	10:26	62.00	100%
4230	Golden Age	62	11:45	62.00	100%
4730	Wx-Sugarloaf	63	11:21	62.00	102%
3090	Highland Heritage Park	53	13:36	62.00	85%
3080	Tallman Gulch	58	12:14	62.00	94%
3070	Newlin Gulch	59	12:13	62.00	95%
3060	Fire Sta 47	59	12:13	62.00	95%
3050	East/West Trailhead	60	12:00	62.00	97%
3030	Bingham Lake Park	53	13:31	62.00	85%
3010	EPC at Hwy 105	61	12:00	62.00	98%
2980	Dakan Rd	54	13:14	62.00	87%
2960	Indian Creek	49	14:47	62.00	79%
2950	DC Public Works	48	14:02	62.00	77%
2940	Willow Creek - DougCnty	51	14:08	62.00	82%
2920	est Cherry Head-Douglas Cr	58	12:28	62.00	94%
2910	East Cherry Cr-Douglas	59	12:27	62.00	95%
2900	Russelville Gulch-Douglas	61	12:00	62.00	98%
2890	Spruce Mt - Douglas	116	6:16	62.00	187%
2880	Happy Canyon at N Surrey D	55	12:57	62.00	89%
2870	Cottonwood (Apache)	57	12:40	62.00	92%
2860	CC at Stroh Rd	60	12:24	62.00	97%
2850	Cherry Cr bl Bayou Glch	54	12:46	62.00	87%
2840	Sulphur Gulch	58	12:27	62.00	94%
2820	Haskins Gulch Conf	54	13:28	62.00	87%
2810	Pine Cliff Road	56	12:57	62.00	90%
2370	Red Rocks Park	20	11:56	62.00	32%
2360	Indian Hills	19	11:57	62.00	31%
2350	Idledale	20	11:56	62.00	32%
2340	El Rancho	17	12:44	62.00	27%
2330	Morrison	20	11:57	62.00	32%
2320	Choke Cherry Resvr	43	15:12	62.00	69%
2310	Genesee Village	17	12:49	62.00	27%
2280	Kinney Peak	19	11:56	62.00	31%
2270	Cub Cr below Blue	15	14:31	62.00	24%
2260	Brook Forest	20	11:58	62.00	32%
2250	Rosedale	19	12:39	62.00	31%
2240	Cold Sprg Glch conf	16	13:57	62.00	26%
2230	Bear Cr below Cub	17	13:33	62.00	27%
1900	Niver Detention	60	12:11	62.00	97%
1810	Sand Creek at mouth	59	11:56	62.00	95%
1800	Sand Creek Park	49	12:29	62.00	79%
1720	Cherry Cr @ Steele	58	12:11	62.00	94%
1710	Shop Creek	49	13:50	62.00	79%
1700	Cherry Cr @ Champa	60	12:00	62.00	97%
1660	SPR at Henderson	57	12:25	62.00	92%
1640	SPR at Union Ave.	60	12:00	62.00	97%
1620	Slaughterhouse Glch	50	13:52	62.00	81%
1600	Englewood Dam	60	11:57	62.00	97%

1550	Lakewood CC	9	11:57	62.00	15%
1530	Bear Creek @ Lowell	61	12:09	62.00	98%
1500	Powers Park	57	12:32	62.00	92%
1480	Third Creek at DIA	58	11:58	62.00	94%
1400	Upper Sloan Det.	54	13:13	62.00	87%
1370	West Metro FS13	56	12:12	62.00	90%
1360	Denver Zoo	59	12:43	62.00	95%
1350	Chatfield COE	59	12:00	62.00	95%
1340	Sanderson at Xavier	59	12:14	62.00	95%
1330	Roslyn	47	12:33	62.00	76%
1320	SPR at 3rd Ave	60	12:10	62.00	97%
1310	LDC at 64th	50	12:29	62.00	81%
1300	Hidden Lake	50	12:29	62.00	81%
1200	Broomfield 3207	58	12:25	62.00	94%
1110	Gunbarrel	59	12:24	62.00	95%
1100	Louisville Rec Ctr	55	12:42	62.00	89%
1060	Heritage Square	56	12:11	62.00	90%
1050	Jeffco Fairgrounds	55	12:26	62.00	89%
1040	Lena @ U.S. Hwy 6	59	12:27	62.00	95%
1030	NREL/S. Table Mtn.	54	12:41	62.00	87%
1010	Denver West	60	12:10	62.00	97%
1000	Maple Grove Resv.	57	12:11	62.00	92%
970	Pump Sta 3	61	12:00	62.00	98%
950	Piney at Liverpool	60	11:57	62.00	97%
940	Sampson Gulch	59	12:10	62.00	95%
870	Murphy Creek GC	51	14:27	62.00	82%
860	Sand Cr at Colfax	51	12:00	62.00	82%
850	Flying J	48	12:33	62.00	77%
840	Fire Station 12	47	13:07	62.00	76%
830	Side Creek Park	54	11:57	62.00	87%
820	ETG @ Buckley	51	12:44	62.00	82%
810	Granby Ditch @ 6th	53	12:12	62.00	85%
800	Sable Ditch @ 18th	51	12:13	62.00	82%
760	Mission Viejo Park	58	12:12	62.00	94%
730	No Name @ Quincy	57	12:26	62.00	92%
720	Confluence Pond	56	12:55	62.00	90%
710	Horseshoe Park Drop	51	12:13	62.00	82%
700	Toll Gate @ 6th	61	12:00	62.00	98%
650	Iliff Pond	57	12:26	62.00	92%
640	Goldsmith @ Eastman	59	12:19	62.00	95%
630	Temple Pond at DTC	58	11:57	62.00	94%
620	Quincy/Highline	55	12:40	62.00	89%
610	Harvard @ Jackson	58	12:39	62.00	94%
600	Harvard Gulch Park	57	12:25	62.00	92%
540	Parker/Mississippi	57	12:54	62.00	92%
530	Fire Station #19	60	12:11	62.00	97%
520	Jewell Detention	55	11:57	62.00	89%
510	Virginia Court	53	12:14	62.00	85%
500	Havana Park	48	12:33	62.00	77%
440	Fire Station #7	54	11:57	62.00	87%
430	Utah Park	50	12:18	62.00	81%
420	Expo Park	52	12:36	62.00	84%
410	Kelly Dam	51	12:14	62.00	82%
400	Montview Park	50	12:12	62.00	81%
330	Van Bibber @ Hwy 93	56	12:26	62.00	90%
320	Sports Complex	53	12:12	62.00	85%
310	Guy Hill Ranch	17	12:48	62.00	27%
300	Van Bibber Park	53	11:25	62.00	85%
220	Upper Leyden	59	12:00	62.00	95%

210	Leyden Confluence	52	12:13	62.00	84%
200	Leyden Reservoir	57	12:11	62.00	92%
150	Nott Creek	18	11:57	62.00	29%
120	West Woods	55	12:41	62.00	89%
110	Ralston Reservoir	58	12:26	62.00	94%
100	Carr Street	51	11:57	62.00	82%
5720	Four Mile Creek	9	20:00	62.00	15%
5730	West Creek	24	11:28	62.00	39%
5740	Trail Creek	24	12:00	62.00	39%
5810	Stump Bump	23	12:00	62.00	37%
5860	Cedar Mountain	25	11:40	62.00	40%
5880	Hackett Mountain	23	12:00	62.00	37%
5940	Log Jumper	7	7:12	62.00	11%

Rain Event Performance					Analyze Rain Sensors								
		Reports Received	1,549										
	Systemwide Avg	Total Tips	1,698										
	91.22%	Data Loss	8.78%										
Rain ID	Performance	1-tips	2-tips	3-tips	4-tips	5-tips	6-tips	>6-tips	Rcv	Exp	Miss	Hold	Bucket
4710	64%	15	1	0	0	0	0	1	16	25	1	0	0.0393701
4330	65%	15	0	0	0	0	0	1	15	23	0	0	0.0393701
4730	68%	11	1	0	0	0	1	0	13	19	6	0	0.0393701
4790	74%	11	2	0	1	0	0	0	14	19	5	0	0.0393701
4090	79%	15	3	1	0	0	0	0	19	24	5	0	0.0393701
4230	80%	10	1	1	0	0	0	0	12	15	3	0	0.0393701
4010	81%	16	5	0	0	0	0	0	21	26	5	0	0.0393701
4040	81%	27	2	0	0	0	1	0	30	37	7	0	0.0393701
4190	84%	22	3	1	0	0	0	0	26	31	5	0	0.0393701
4270	85%	18	4	0	0	0	0	0	22	26	4	0	0.0393701
4750	86%	15	3	0	0	0	0	0	18	21	3	0	0.0393701
1440	86%	5	1	0	0	0	0	0	6	7	1	0	0.0393701
4510	86%	16	3	0	0	0	0	0	19	22	3	0	0.0393701
4080	86%	16	3	0	0	0	0	0	19	22	3	0	0.0393701
4550	87%	22	4	0	0	0	0	0	26	30	4	0	0.0393701
4490	87%	17	3	0	0	0	0	0	20	23	3	0	0.0393701
4240	88%	19	1	1	0	0	0	0	21	24	3	0	0.0393701
4220	88%	19	3	0	0	0	0	0	22	25	3	0	0.0393701
900	88%	20	3	0	0	0	0	0	23	26	3	0	0.0393699
4470	88%	21	1	1	0	0	0	0	23	26	3	0	0.0393701
4140	88%	21	1	1	0	0	0	0	23	26	3	0	0.0393701
750	89%	28	2	1	0	0	0	0	31	35	4	0	0.0393701
4770	89%	7	1	0	0	0	0	0	8	9	1	0	0.0393701
4260	89%	21	3	0	0	0	0	0	24	27	3	0	0.0393701
4030	90%	23	3	0	0	0	0	0	26	29	3	1	0.0393701
4110	90%	32	2	1	0	0	0	0	35	39	4	1	0.0393701
1520	91%	28	1	1	0	0	0	0	30	33	3	0	0.0393701
4810	91%	29	1	1	0	0	0	0	31	34	3	0	0.0393701
2730	91%	19	2	0	0	0	0	0	21	23	2	0	0.0393701
1570	91%	38	4	0	0	0	0	0	42	46	4	0	0.0393701
4340	92%	22	2	0	0	0	0	0	24	26	2	0	0.0393701
4170	92%	11	1	0	0	0	0	0	12	13	1	0	0.0393701
4020	92%	22	2	0	0	0	0	0	24	26	2	0	0.0393701
4060	93%	23	2	0	0	0	0	0	25	27	2	0	0.0393701
140	93%	12	1	0	0	0	0	0	13	14	1	0	0.0393701
4290	93%	24	2	0	0	0	0	0	26	28	2	0	0.0393701
4310	93%	25	2	0	0	0	0	0	27	29	2	0	0.0393701
4150	93%	25	2	0	0	0	0	0	27	29	2	0	0.0393701
4360	93%	26	2	0	0	0	0	0	28	30	2	0	0.0393701
4840	94%	31	2	0	0	0	0	0	33	35	2	0	0.0393701
1460	95%	37	2	0	0	0	0	0	39	41	2	0	0.0393701
4820	95%	19	1	0	0	0	0	0	20	21	1	0	0.0393701
4350	95%	20	1	0	0	0	0	0	21	22	1	0	0.0393701
4050	95%	20	1	0	0	0	0	0	21	22	1	0	0.0393701
4200	96%	23	1	0	0	0	0	0	24	25	1	1	0.0393701
4160	96%	24	1	0	0	0	0	0	25	26	1	0	0.0393701
920	96%	25	1	0	0	0	0	0	26	27	1	0	0.0393701
4250	96%	25	1	0	0	0	0	0	26	27	1	0	0.0393701
4530	96%	26	1	0	0	0	0	0	27	28	1	0	0.0393701
4070	96%	26	1	0	0	0	0	0	27	28	1	0	0.0393701
2210	97%	28	1	0	0	0	0	0	29	30	1	1	0.0393701
2710	97%	28	1	0	0	0	0	0	29	30	1	0	0.0393701
1920	98%	39	1	0	0	0	0	0	40	41	1	0	0.0393701
1420	98%	46	1	0	0	0	0	0	47	48	1	0	0.0393701
3020	100%	23	0	0	0	0	0	0	23	23	0	0	0.0393701
2990	100%	42	0	0	0	0	0	0	42	42	0	0	0.0393701
2190	100%	4	0	0	0	0	0	0	4	4	0	0	0.0393701
2930	100%	18	0	0	0	0	0	0	18	18	0	0	0.0393701
2750	100%	19	0	0	0	0	0	0	19	19	0	0	0.0393701
4830	100%	32	0	0	0	0	0	0	32	32	0	0	0.0393701
4570	100%	22	0	0	0	0	0	0	22	22	0	0	0.0393701
4520	100%	15	0	0	0	0	0	0	15	15	0	0	0.0393701
4300	100%	21	0	0	0	0	0	0	21	21	0	0	0.0393701
4180	100%	14	0	0	0	0	0	0	14	14	0	0	0.0393701
4130	100%	23	0	0	0	0	0	0	23	23	0	0	0.0393701
4100	100%	20	0	0	0	0	0	0	20	20	0	0	0.0393701
TOTAL		1,436	100	10	1	0	2	2	1,549	1,698	133	4	

2011 Monthly ALERT Radio Traffic Summary

