

Memo

Date: February 6, 2012
To: Kevin Stewart
From: Markus Ritsch
Subject: January 2012 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 January 10 through January 31, 2012. ALERT reports were missing for the first 10 days of the month when an upgrade of the Linux OS jammed the serial port. The ALERT serial port was re-started on January 10, 2012.

The Linux upgrade disabled both the ALERT and ALERT2 serial ports when the modem manager auto-started and tried to connect to Internet accessible devices thereby taking over all serial ports. The modem manager software has since been removed, hopefully avoiding this problem in the future.

Legacy ALERT reports were back-filled for the missing 10 days using data from the NS4 (Alert2) machine. ALERT2 protocol reports are missing for the entire month and are not recoverable. The ALERT2 serial port was re-started on February 2, 2012.

II. General System Analysis Summary

A total of 233,014 ALERT (legacy) data reports were analyzed. Meteorological sensors account for 87 percent, water level sensors 3 percent, and rain sensors 1 percent of the total monthly records.

The system-wide radio traffic loading was 10,592 reports per day with an average hourly loading of 441 reports. The peak hour of radio traffic loading was 634 reports, which occurred on January 22nd, between 3:00 PM and 4:00 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 Performance	Event Performance
1700	Cherry Creek at Champa	90%	60%
1420	Wx-Diamond Hill	89%	63%
4490	Apple Valley	85%	68%
2980	Dakan Road	92%	69%
1660	SPR at Henderson	98%	75%
2320	Choke Cherry Res	63%	100%
1460	Wx-Urban Farm	69%	100%
1520	Wx-Marston Lake North	69%	83%
1440	Wx-Elbert	73%	100%
1000	Maple Grove Res.	76%	100%
4520	Eagle Ridge	77%	100%
1530	Bear Creek at Lowell (PX)	Sensors with a large number of invalid reports	
1643	SPR at Union Ave. (level)	Sensors with a large number of invalid reports	
755	Quincy Res (battery)	Sensors with a large number of invalid reports	
4774	Cal-Wood Ranch (BP)	Sensors with a large number of invalid reports	
1470	Unknown sensor IDs with excessive reports		
1423			
1926			
2811			
2811			

B. Continuous Operation of Base Receiver/Decoder

The ALERT/ALERT2/NS5 receiver/decoder was continuously operational for the entire month. However, the ALERT and ALERT2 serial ports on the NS5 computer were not operational for portions of the month. The ALERT serial port was down for the first 10 days of the month and was restarted on January 10. The A2 serial port was down for the entire month and was restarted on February 2, 2012.

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											
1460											
1520											
1440											
1000											
4520											

*- 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	4.89	Only the 1-mm rain sensors were included in the analysis
Median	4	Only the 1-mm rain sensors were included in the analysis
Standard deviation	3.05	Only the 1-mm rain sensors were included in the analysis
Mean plus three standard deviations	14.03	Only the 1-mm rain sensors were included in the analysis
Minimum total count	1	Many
Maximum total count	19	ID 4490 (Apple Valley)

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												

*- 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
There were no 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 95.4 percent. A total of 330 incrementing reports were received and a total of 357 reports were expected. The total loss of incrementing reports for the month was approximately 4.6 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											
1420											
4490											
2980											
1660											
4090											

*-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 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 700 reports was analyzed to quantify the number of missing rain reports for that hour.

There were no hourly periods exceeding 700 reports this month.

Table 7. Heavy Radio Traffic Periods

Day	Hr	Expected Tips	Received Tips	Total Load	Loss
22	15	0	0	634	0%
25	23	0	0	633	0%
21	1	0	0	629	0%
18	12	1	1	621	0%
13	16	0	0	616	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)	213
Total reports from unknown IDs	692
Unknown IDs with only a single received report (potential noise)	116
Total reports from all IDs – RecData Log entire month	233,014
Unknown reports as a fraction of total reports	0.30%

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											

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%											

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 Sensor ID	Reports
1470	33
1423	26
1926	21
2811	20
1919	18
1929	18
1923	15
1954	14
1534	13
1933	13
1953	13
2771	12
2748	11
1446	10
1453	10

1934	10
2768	10
1481	9
1486	9
1935	9
1419	8
1915	8
2706	8
2775	8
154	7
1454	7
1458	7
1478	7
1918	7
1951	7
2746	7
1430	6

General System Analysis

Database Name P:\A207-UDFCD-Data-Analysis\2012\01-2012\Novastar_extract_2012Jan.mdb

First Date in Database	1/10/12 4:37 PM	Total Days	20.4
Last Date in Database	1/31/12 1:04 AM	Total Hours	488.4

Total Records Analyzed 233,014

Records by Group

Wind Gust	44,546	19%
Temperature	41,000	18%
Relative Humidity	40,048	17%
Wind Speed Average & Azimuth	27,367	12%
Barometric Pressure	20,096	9%
Wind Direction	12,592	5%
Wind Speed Average	12,301	5%
Battery Voltage	7,931	3%
Solar Radiation	5,585	2%
Fuel Temperature	3,482	1%
Fuel Moisture	3,480	1%
Precipitation	3,297	1%
Water Level PT-HSE	2,610	1%
Water Level Float	2,213	1%
Soil Moisture	1,557	1%
Repeater Status Report	1,452	1%
Water Level PT	1,189	1%
Wind ALERT	1,018	0%
Unknown	692	0%
Repeater Pass List	401	0%
12Hr Status Report	132	0%
Solar Power	16	0%
Handar 585 ALARM Status	6	0%
Water Level	2	0%
ALERT/A2 Testing	1	0%
Total	233,014	

Records by Major Group

Meteorologic Sensors	203,535	87%
Soil and Fuel Sensors	8,519	4%
Water Level Sensors	6,012	3%
Rain Sensors	3,297	1%
Sensor Status Transmissions	2,007	1%
Total	223,370	

Traffic Loading Summary

Alert Reports	233,014	
Average Daily Traffic	10,592	
Average Hourly Traffic	441	
Median Hourly Traffic	481	hour beginning
Peak Hourly Traffic	634	Jan 22, 3:00 PM
2nd Max	633	Jan 25, 11:00 PM
3rd Max	629	Jan 21, 1:00 AM
4th Max	621	Jan 18, 12:00 PM
5th Max	616	Jan 13, 4:00 PM

Rain Timer Performance

Analyze Rain Sensors

12:51

89%

Rain ID	Description	Rcv	Timer	Exp	Performance
2320	Choke Cherry Resvr	39	17:49	62	63%
1460	Wx-Urban Farm	43	14:27	62	69%
1520	Wx-Marston Lake North	43	15:54	62	69%
1440	Wx-Elbert	45	16:21	62	73%
1000	Maple Grove Resv.	47	15:01	62	76%
4520	Eagle Ridge	48	14:08	62	77%
1480	Third Creek at DIA	50	14:27	62	81%
900	Wx-Aurora Reservoir	51	13:42	62	82%
1570	Wx-Brighton Ditch	51	14:24	62	82%
4180	Gold Lake	51	14:24	62	82%
4510	Pinewood Springs	51	13:35	62	82%
140	Wx-Blue Mountain	52	14:12	62	84%
4150	Gold Hill	52	13:55	62	84%
4470	Little Narrows	52	14:10	62	84%
4750	Wx-Louisville Lake	52	14:07	62	84%
4850	Porphory Mtn	52	13:57	62	84%
4060	Lakeshore	53	13:40	62	85%
4490	Apple Valley	53	13:25	62	85%
4570	St. Antons	53	13:26	62	85%
3010	EPC at Hwy 105	54	12:58	62	87%
4010	Crescent	54	13:36	62	87%
4070	Bear Peak	54	12:25	62	87%
4090	Magnolia	54	13:08	62	87%
4330	Hansen Rain	54	13:11	62	87%
4530	Winiger Ridge	54	13:24	62	87%
920	Wx-Aurora Town Hall	55	13:21	62	89%
1420	Wx-Diamond Hill	55	12:28	62	89%
2750	Wx-Castle Rock	55	12:27	62	89%
4030	Red Garden	55	13:09	62	89%
4080	Twin Sisters	55	12:53	62	89%
4130	Swiss Peaks	55	12:56	62	89%
4170	Pine Brook	55	12:55	62	89%
4220	Fling's	55	13:22	62	89%
4270	Cannon Mountain	55	13:20	62	89%
4810	Shanahan Ridge	55	13:20	62	89%
4840	SBC@S Boulder Ditch	55	12:54	62	89%
1640	SPR at Union Ave.	56	12:00	62	90%
1700	Cherry Cr @ Champa	56	13:07	62	90%
4110	Betasso	56	12:53	62	90%
4140	Logan Mill	56	13:05	62	90%
4240	Sunset	56	13:04	62	90%
4310	Johnny Park	56	13:07	62	90%
4820	Doudy Draw	56	12:52	62	90%
1810	Sand Creek at mouth	57	11:46	62	92%
1920	Wx-Brighton	57	12:51	62	92%
2710	Wx-Highlands Ranch WTP	57	12:00	62	92%
2980	Dakan Rd	57	12:42	62	92%
4230	Golden Age	57	12:50	62	92%
4290	Red Hill	57	12:39	62	92%
4300	Big Elk Park	57	12:51	62	92%
4340	Riverside	57	12:11	62	92%
4360	Justice Center	57	12:51	62	92%
2990	Wx-Tomah Rd-DougCnty	58	12:27	62	94%
3030	WX-Bingham Lake Park	58	12:27	62	94%

4040	Martin Gulch	58	12:25	62	94%
4160	Sunshine	58	12:25	62	94%
4190	Slaughterhouse	58	12:37	62	94%
4790	Wx-Button Rock	58	12:13	62	94%
4830	SBC @ San Souci	58	12:24	62	94%
4860	Fairview Peak	58	12:00	62	94%
700	Toll Gate @ 6th	59	12:13	62	95%
2190	Wx-Squaw Mountain	59	12:12	62	95%
3020	Wx-West Creek WX	59	12:25	62	95%
4020	Rio Grande	59	12:23	62	95%
4050	Walker Ranch	59	12:23	62	95%
4250	Geer Canyon	59	12:24	62	95%
4770	Wx-Cal-Wood Ranch	59	12:12	62	95%
750	Wx-Quincy Reservoir	60	12:10	62	97%
970	Pump Sta 3	60	12:12	62	97%
2210	Wx-Hiwan G.C.	60	12:12	62	97%
2930	Wx-Spring Valley Rd-DougCnty	60	12:12	62	97%
4100	Filter Plant	60	12:12	62	97%
4200	Lazy Acres	60	11:59	62	97%
4260	Taylor Mountain	60	12:10	62	97%
4350	Conifer Hill	60	12:10	62	97%
1660	SPR at Henderson	61	11:51	62	98%
2730	Wx-Salisbury Park	61	12:00	62	98%
4710	Wx-Ward C-1	61	12:00	62	98%
4730	Wx-Sugarloaf	61	12:00	62	98%

Rain Event Performance				Analyze Rain Sensors												
		Reports Received	330													
		Systemwide Avg	Total Tips													
		92.44%	Data Loss													
			7.56%													
Description	Rain ID	Performance	1-tips	2-tips	3-tips	4-tips	5-tips	6-tips	>6-tips	Rcv	Exp	Miss	Hold	Bucket		
Cherry Cr @ Champa	1700	60%	1	2	0	0	0	0	0	0	3	5	2	0	0.0393701	
Wx-Diamond Hill	1420	63%	4	0	0	1	0	0	0	0	5	8	3	0	0.0393701	
Apple Valley	4490	68%	9	2	2	0	0	0	0	0	13	19	6	0	0.0393701	
Dakan Rd	2980	69%	5	4	0	0	0	0	0	0	9	13	4	0	0.0393701	
SPR at Henderson	1660	75%	2	1	0	0	0	0	0	0	3	4	1	0	0.0393701	
Magnolia	4090	80%	3	1	0	0	0	0	0	0	4	5	1	0	0.0393701	
Swiss Peaks	4130	80%	3	1	0	0	0	0	0	0	4	5	1	0	0.0393701	
Gold Hill	4150	80%	3	1	0	0	0	0	0	0	4	5	1	0	0.0393701	
Wx-Marston Lake North	1520	83%	4	1	0	0	0	0	0	0	5	6	1	0	0.0393701	
Lazy Acres	4200	83%	4	1	0	0	0	0	0	0	5	6	1	0	0.0393701	
Hansen Rain	4330	83%	4	1	0	0	0	0	0	0	5	6	1	0	0.0393701	
Geer Canyon	4250	86%	5	1	0	0	0	0	0	0	6	7	1	0	0.0393701	
EPC at Hwy 105	3010	88%	6	1	0	0	0	0	0	0	7	8	1	0	0.01	
Pinewood Springs	4510	89%	7	1	0	0	0	0	0	0	8	9	1	0	0.0393701	
Martin Gulch	4040	90%	8	1	0	0	0	0	0	0	9	10	1	0	0.0393701	
Wx-Ward C-1	4710	90%	8	1	0	0	0	0	0	0	9	10	1	0	0.0393701	
Wx-Blue Mountain	140	100%	2	0	0	0	0	0	0	0	2	2	0	0	0.0393701	
Toll Gate @ 6th	700	100%	7	0	0	0	0	0	0	0	7	7	0	1	0.0393701	
Wx-Quincy Reservoir	750	100%	2	0	0	0	0	0	0	0	2	2	0	0	0.0393701	
Wx-Aurora Reservoir	900	100%	2	0	0	0	0	0	0	0	2	2	0	0	0.0393699	
Wx-Aurora Town Hall	920	100%	1	0	0	0	0	0	0	0	1	1	0	0	0.0393701	
Maple Grove Resv.	1000	100%	8	0	0	0	0	0	0	0	8	8	0	0	0.0393701	
Wx-Urban Farm	1460	100%	3	0	0	0	0	0	0	0	3	3	0	0	0.0393701	
Third Creek at DIA	1480	100%	1	0	0	0	0	0	0	0	1	1	0	0	0.0393701	
SPR at Union Ave.	1640	100%	7	0	0	0	0	0	0	0	7	7	0	0	0.0393701	
Sand Creek at mouth	1810	100%	4	0	0	0	0	0	0	0	4	4	0	0	0.0393701	
Wx-Squaw Mountain	2190	100%	3	0	0	0	0	0	0	0	3	3	0	0	0.0393701	
Wx-Hiwan G.C.	2210	100%	3	0	0	0	0	0	0	0	3	3	0	0	0.0393701	
Choke Cherry Resvr	2320	100%	6	0	0	0	0	0	0	0	6	6	0	0	0.0393701	
Wx-Highlands Ranch WTP	2710	100%	3	0	0	0	0	0	0	0	3	3	0	0	0.0393701	
Wx-Salisbury Park	2730	100%	2	0	0	0	0	0	0	0	2	2	0	0	0.0393701	
Wx-Castle Rock	2750	100%	1	0	0	0	0	0	0	0	1	1	0	0	0.0393701	
Wx-Tomah Rd-DougCnty	2990	100%	8	0	0	0	0	0	0	0	8	8	0	0	0.0393701	
Wx-West Creek WX	3020	100%	2	0	0	0	0	0	0	0	2	2	0	0	0.0393701	
WX-Bingham Lake Park	3030	100%	7	0	0	0	0	0	0	0	7	7	0	0	0.0393701	
Crescent	4010	100%	3	0	0	0	0	0	0	0	3	3	0	0	0.0393701	
Rio Grande	4020	100%	3	0	0	0	0	0	0	0	3	3	0	0	0.0393701	
Red Garden	4030	100%	5	0	0	0	0	0	0	0	5	5	0	0	0.0393701	
Walker Ranch	4050	100%	3	0	0	0	0	0	0	0	3	3	0	0	0.0393701	
Lakeshore	4060	100%	5	0	0	0	0	0	0	0	5	5	0	0	0.0393701	
Bear Peak	4070	100%	5	0	0	0	0	0	0	0	5	5	0	0	0.0393701	
Twin Sisters	4080	100%	4	0	0	0	0	0	0	0	4	4	0	0	0.0393701	
Filter Plant	4100	100%	7	0	0	0	0	0	0	0	7	7	0	0	0.0393701	
Betasso	4110	100%	4	0	0	0	0	0	0	0	4	4	0	0	0.0393701	
Logan Mill	4140	100%	3	0	0	0	0	0	0	0	3	3	0	0	0.0393701	
Sunshine	4160	100%	4	0	0	0	0	0	0	0	4	4	0	0	0.0393701	
Pine Brook	4170	100%	2	0	0	0	0	0	0	0	2	2	0	0	0.0393701	
Gold Lake	4180	100%	4	0	0	0	0	0	0	0	4	4	0	0	0.0393701	
Slaughterhouse	4190	100%	4	0	0	0	0	0	0	0	4	4	0	0	0.0393701	
Fling's	4220	100%	6	0	0	0	0	0	0	0	6	6	0	0	0.0393701	
Golden Age	4230	100%	1	0	0	0	0	0	0	0	1	1	0	0	0.0393701	
Sunset	4240	100%	3	0	0	0	0	0	0	0	3	3	0	0	0.0393701	
Taylor Mountain	4260	100%	5	0	0	0	0	0	0	0	5	5	0	0	0.0393701	
Cannon Mountain	4270	100%	4	0	0	0	0	0	0	0	4	4	0	0	0.0393701	
Red Hill	4290	100%	8	0	0	0	0	0	0	0	8	8	0	0	0.0393701	
Big Elk Park	4300	100%	4	0	0	0	0	0	0	0	4	4	0	0	0.0393701	
Johnny Park	4310	100%	8	0	0	0	0	0	0	0	8	8	0	0	0.0393701	
Riverside	4340	100%	4	0	0	0	0	0	0	0	4	4	0	0	0.0393701	
Conifer Hill	4350	100%	3	0	0	0	0	0	0	0	3	3	0	0	0.0393701	
Justice Center	4360	100%	3	0	0	0	0	0	0	0	3	3	0	0	0.0393701	
Little Narrows	4470	100%	2	0	0	0	0	0	0	0	2	2	0	0	0.0393701	
Eagle Ridge	4520	100%	2	0	0	0	0	0	0	0	2	2	0	0	0.0393701	
Winiger Ridge	4530	100%	6	0	0	0	0	0	0	0	6	6	0	0	0.0393701	
St. Antons	4570	100%	2	0	0	0	0	0	0	0	2	2	0	0	0.0393701	
Wx-Sugarloaf	4730	100%	4	0	0	0	0	0	0	0	4	4	0	0	0.0393701	
Wx-Cal-Wood Ranch	4770	100%	2	0	0	0	0	0	0	0	2	2	0	0	0.0393701	
Wx-Button Rock	4790	100%	4	0	0	0	0	0	0	0	4	4	0	0	0.0393701	
Shanahan Ridge	4810	100%	3	0	0	0	0	0	0	0	3	3	0	0	0.0393701	
Doudy Draw	4820	100%	3	0	0	0	0	0	0	0	3	3	0	0	0.0393701	
SBC @ San Souci	4830	100%	3	0	0	0	0	0	0	0	3	3	0	0	0.0393701	
SBC@S Boulder Ditch	4840	100%	4	0	0	0	0	0	0	0	4	4	0	0	0.0393701	
Porphory Mtn	4850	100%	9	0	0	0	0	0	0	0	9	9	0	0	0.01	
Fairview Peak	4860	100%	10	0	0	0	0	0	0	0	10	10	0	0	0.01	
		Total Tips	307	20	2	1	0	0	0	0	330	357	27	1		

2012 Monthly ALERT Radio Traffic Summary

