Memo

Water & Earth Technologies, Inc.
Water Resources and Environmental Consulting

Date: June 3, 2010
To: Kevin Stewart
From: Markus Ritsch
Subject: **May 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 May 1 through May 31, 2010.

II. General System Analysis Summary

A total of 368,950 ALERT data reports were analyzed from the ALERT 2 base station. Meteorological sensors account for 77 percent, water level sensors 8 percent, and rain sensors 5 percent of the total monthly records.

The system-wide radio traffic loading was 11,902 reports per day with an average hourly loading of 496 reports. The peak hourly traffic loading was 991 reports, which occurred on May 11, between 6:00 PM and 7:00 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 unacceptable this month.

Table 1. Rain Sensors with Unacceptable Performance Characteristics

Rain ID	Description	Timer	Event	Comments
700	Toll Gate at 6th	0.39	0.33	Poor performance
1300	Hidden Lake	0.98	0.81	Large number of invalid reports
1530	Bear Creek at Lowell	0.87	0.96	Large number of invalid reports
2190	Squaw Mountain	0.92	0.67	Poor performance
2230	Bear Creek below Cub	0.73	0.86	Poor performance
2240	Cold Spring Gulch Conf	0.65	0.81	Poor performance
2280	Kinney Peak	0.90	0.42	Poor performance
2320	Choke Cherry Reservoir	0.84	0.93	Large number of invalid reports
2970	Rampart Range Road	0.00	0.50	Antenna system will be modified in June
2980	Dakan Road	0.85	0.56	Poor performance
4270	Cannon Mountain	0.71	0.93	Poor performance
4330	Indian Ruins	0.69	0.89	Poor performance
4490	Apple Valley	0.69	0.88	Poor performance

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	2970					--	--	--
--	--	--	3010	700					--	--	--
--	--	--	700	2240					--	--	--
--	--	--	4860	4330					--	--	--
--	--	--	4330	4490					--	--	--
--	--	--	4170	4270					--	--	--

***- 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	39.63	Only the 1-mm rain sensors were included in the analysis
Median	39.00	Only the 1-mm rain sensors were included in the analysis
Standard deviation	15.44	Only the 1-mm rain sensors were included in the analysis
Mean plus three standard deviations	85.94	Only the 1-mm rain sensors were included in the analysis
Minimum total count	2	ID 2970 (Rampart Range Road)
Maximum total count	80	ID 430 (Utah Park)

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								

***-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
Toll Gate at 6th Avenue	700	Several large gaps in sequential series identified during the month
Kinney Peak	2280	Several large gaps in sequential series identified during the month

D. Sensor-by-Sensor Incrementing Count Summary

The system-wide reception rate of incrementing, 1-mm tip reports for the month was approximately 92 percent. A total of 6,116 incrementing reports were received and a total of 6,618 were expected. The total loss of incrementing reports for the month was approximately 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*
--	--	--	2970	700					--	--	--
--	--	--	700	2280					--	--	--
--	--	--	940	2970					--	--	--
--	--	--	430	2980					--	--	--
--	--	--	2900	2190					--	--	--
--	--	--	4330	2240					--	--	--

***-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 600 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	991	5/11/2010 6:00 PM
2nd Max	965	5/11/2010 7:00 PM
3rd Max	854	5/11/2010 9:00 PM
4th Max	834	5/14/2010 4:00 PM
5th Max	825	5/11/2010 8:00 PM

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.

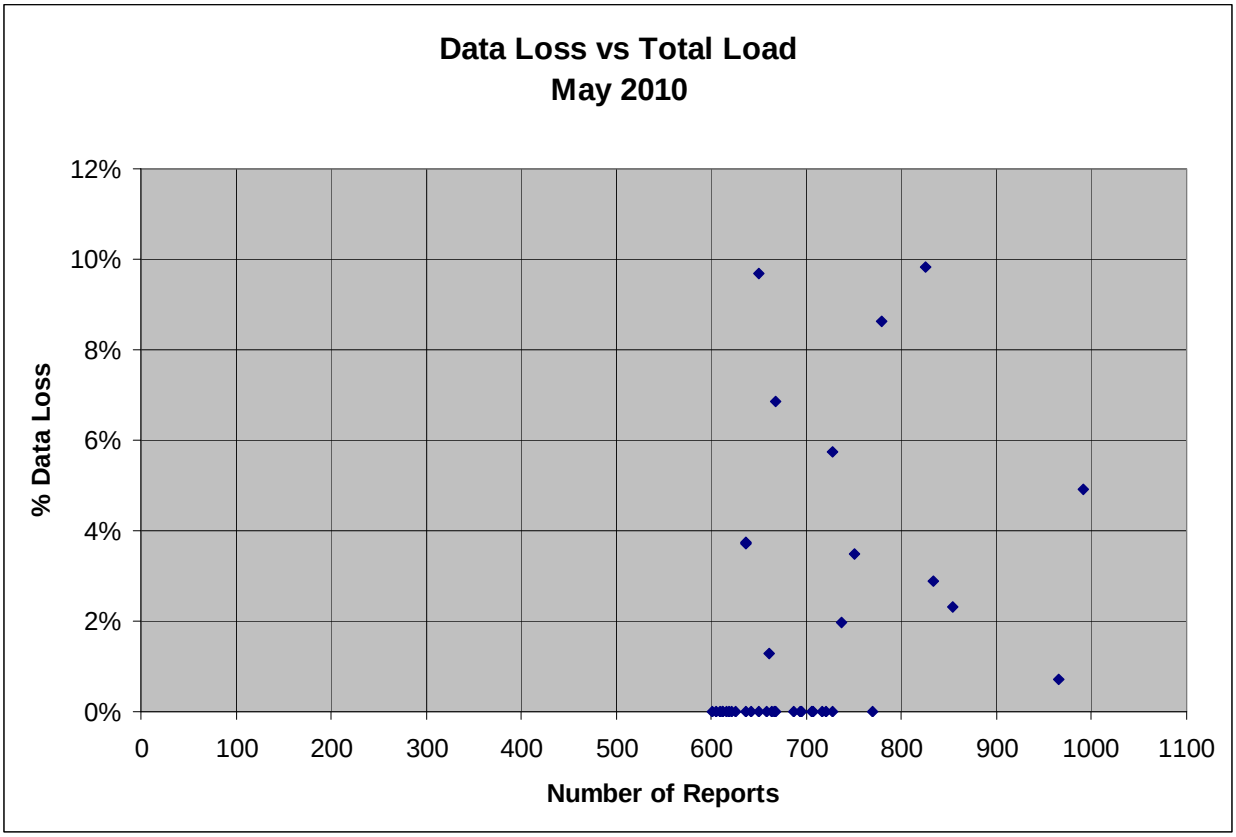

Figure 1. Data Loss vs. Data Loading

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)	384
Total reports from unknown IDs	721
Unknown IDs with only a single received report (potential noise)	254
Total reports from all IDs – RecData Log entire month	368,950
Unknown reports as a fraction of total reports	0.20%

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	721								

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	Reports
1470	20
1719	20
319	18
1529	15
4601	14
1631	13
487	10
1950	8
2239	8
1478	7
1446	6
1954	6
1423	5
1528	5
1531	5
1919	5
1926	5
1953	5
2748	5
2753	5
497	4
1162	4
1167	4
1430	4
1453	4
1663	4
1933	4
1934	4
1955	4
2745	4
2756	4
2808	4
13	3
111	3
148	3
207	3
328	3
642	3
738	3
1111	3
1163	3
1208	3
1211	3
1231	3
1359	3
1419	3
1443	3
1449	3
1511	3
1612	3
1628	3
1637	3
1915	3
1918	3
1938	3
1944	3
2367	3
2708	3
2715	3
2746	3
2754	3
2775	3
2784	3
2811	3
4063	3
4149	3
4179	3
4199	3
4269	3
4339	3

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	47	12:00-12:59	36
1:00-1:59	21	1:00-1:59	54
2:00-2:59	25	2:00-2:59	29
3:00-3:59	23	3:00-3:59	37
4:00-4:59	10	4:00-4:59	30
5:00-5:59	2	5:00-5:59	37
6:00-6:59	10	6:00-6:59	28
7:00-7:59	35	7:00-7:59	14
8:00-8:59	21	8:00-8:59	25
9:00-9:59	17	9:00-9:59	37
10:00-10:59	43	10:00-10:59	69
11:00-11:59	16	11:00-11:59	55

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	0				
1300	Hidden Lake	0	0	0	4				
1420	Diamond Hill	2	1	2	0				
1460	Urban Farm	1	3	2	1				
1530	Bear Creek at Lowell	12	13	10	6				
1800	Sand Creek Park	--	4	0	0				
2310	Genesee Village	--	5	0	0				
2320	Choke Cherry Resvr	1	7	3	4				
2750	Castle Rock WX	--	4	6	1				
2970	Rampart Range Road	--	3	0	1				
4030	Red Garden	6	2	3	1				
4330	Indian Ruins	2	1	2	0				

VIII. Rainfall Alarms and Intensity Analysis

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

Urban Drainage and Flood Control District
ALERT Web Server

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<<<<<<<<<<<<<<<<<<<<<<<<<< RAINFALL RATE ALARMS >>>>>>>>>>>>>>>>>>>>>>>>>
Historical alarm log: All alarm actions
No alarms logged for the month of May, 2010
```

General System Analysis

Database Name P:\A207-UDFCD-Data-Analysis\2010\05-2010\Novastar_extract_2010May.mdb

First Date in Database	5/1/10 12:00 AM	**Total Days**	31.0
Last Date in Database	5/31/10 11:59 PM	**Total Hours**	744.0

Total Records Analyzed 368950

Records by Group

Wind Gust	58506	16%
Relative Humidity	56726	15%
Temperature	56701	15%
Wind Speed Average & Azimuth	32542	9%
Barometric Pressure	25635	7%
Wind Direction	21495	6%
Wind Speed Average	21145	6%
Water Level PT-HSE	18996	5%
Precipitation	17831	5%
Solar Radiation	9948	3%
Battery Voltage HSE	8391	2%
Fuel Temperature	5837	2%
Fuel Moisture	5789	2%
Water Level Float	5347	1%
Battery Voltage Digital	4523	1%
Water Level PT	4153	1%
Battery Voltage Analog	3779	1%
Soil Moisture	2995	1%
Repeater Status Report	2886	1%
Battery	2213	1%
Wing Gust	732	0%
Unknown IDs	721	0%
Repeater Pass List	597	0%
12Hr Status Report	501	0%
Hayman Battery	416	0%
Battery Voltage	274	0%
Water Level	136	0%
Handar 585 ALARM Status	65	0%
Hayman Stage	50	0%
Solar Power	20	0%
Total	368950	

Records by Major Group

Meteorologic Sensors	282698	77%
Water Level Sensors	28462	8%
Sensor Status Transmissions	20762	6%
Rain Sensors	17831	5%
Soil and Fuel Sensors	14621	4%
Total	364374	

Traffic Loading Summary

Alert Reports	368950	
Average Daily Traffic	11902	
Average Hourly Traffic	496	
Median Hourly Traffic	491	hour beginning
Peak Hourly Traffic	991	5/11/10 6:00 PM
2nd Max	965	5/11/10 7:00 PM
3rd Max	854	5/11/10 9:00 PM
4th Max	834	5/14/10 4:00 PM
5th Max	825	5/11/10 8:00 PM

Rain Timer Performance

Analyze Rain Sensors

			12:43	Ave	87%
Rain ID	**Description**	**Rcv**	**Average Timer Interval**	**Exp**	**Performance**
2970	Rampart Range Rd	1		62.00	0%
700	Toll Gate @ 6th	24	1:12	62.00	39%
2240	Cold Sprg Glch conf	40	16:27	62.00	65%
4330	Indian Ruins	43	17:02	62.00	69%
4490	Apple Valley	43	15:50	62.00	69%
4270	Cannon Mountain	44	14:25	62.00	71%
2230	Bear Cr below Cub	45	16:04	62.00	73%
2270	Cub Cr below Blue	45	14:48	62.00	73%
4750	Wx-Louisville Lake	46	15:28	62.00	74%
4470	Little Narrows	47	14:37	62.00	76%
4850	Porphory Mtn	47	12:39	62.00	76%
4220	Fling's	48	13:34	62.00	77%
430	Utah Park	49	14:21	62.00	79%
310	Guy Hill Ranch	50	13:57	62.00	81%
4510	Pinewood Springs	50	13:43	62.00	81%
4530	Winiger Ridge	50	14:21	62.00	81%
4570	St. Antons	50	14:37	62.00	81%
2250	Rosedale	51	13:43	62.00	82%
4820	Doudy Draw	51	13:45	62.00	82%
2370	Red Rocks Park	52	13:33	62.00	84%
4080	Twin Sisters	52	13:43	62.00	84%
4090	Magnolia	52	13:08	62.00	84%
4100	Filter Plant	52	13:09	62.00	84%
4180	Gold Lake	52	14:20	62.00	84%
4240	Sunset	52	11:40	62.00	84%
4360	Justice Center	52	12:50	62.00	84%
4830	SBC @ San Souci	52	13:08	62.00	84%
2320	Choke Cherry Resvr	208		248.00	84%
2340	El Rancho	53	14:05	62.00	85%
2350	Idledale	53	13:17	62.00	85%
2980	Dakan Rd	53	13:03	62.00	85%
4030	Red Garden	53	13:23	62.00	85%
4060	Lakeshore	53	12:33	62.00	85%
4130	Swiss Peaks	53	13:05	62.00	85%
4150	Gold Hill	53	13:33	62.00	85%
4710	Wx-Ward C-1	53	13:15	62.00	85%
4730	Wx-Sugarloaf	53	13:20	62.00	85%
210	Leyden Confluence	54	13:16	62.00	87%
1530	Bear Creek @ Lowell	54	13:13	62.00	87%
2930	Wx-Spring Valley Rd-DougCnty	54	13:01	62.00	87%
4010	Cresent	54	13:04	62.00	87%
4140	Logan Mill	54	13:04	62.00	87%
4170	Pine Brook	54	13:10	62.00	87%
110	Ralston Reservoir	55	13:01	62.00	89%
150	Nott Creek	55	13:12	62.00	89%
600	Harvard Gulch Park	55	12:28	62.00	89%
820	ETG @ Buckley	55	12:56	62.00	89%
1050	Jeffco Fairgrounds	55	13:14	62.00	89%
1330	Roslyn	55	13:48	62.00	89%
2260	Brook Forest	55	13:12	62.00	89%
2840	Sulphur Gulch	55	13:29	62.00	89%
3020	Wx-West Creek WX	55	13:00	62.00	89%
4290	Red Hill	55	13:12	62.00	89%
4790	Wx-Button Rock	55	12:46	62.00	89%

4840	SBC@S Boulder Ditch	55	13:15	62.00	89%
4860	Fairview Peak	55	13:05	62.00	89%
420	Expo Park	56	12:30	62.00	90%
630	Temple Pond at DTC	56	12:32	62.00	90%
650	Iliff Pond	56	13:12	62.00	90%
1060	Heritage Square	56	12:57	62.00	90%
1350	Chatfield COE	56	12:57	62.00	90%
1360	Denver Zoo	56	12:46	62.00	90%
1440	Wx-Elbert	56	13:01	62.00	90%
1500	Powers Park	56	12:15	62.00	90%
1550	Lakewood CC	56	12:56	62.00	90%
1800	Sand Creek Park	56	12:42	62.00	90%
2210	Wx-Hiwan G.C.	56	12:46	62.00	90%
2280	Kinney Peak	56	12:56	62.00	90%
2330	Morrison	56	12:56	62.00	90%
2810	Pine Cliff Road	56	12:30	62.00	90%
2900	Russelville Gulch-Douglas	56	13:00	62.00	90%
2920	West Cherry Head-Douglas Cnty	56	12:30	62.00	90%
4020	Rio Grande	56	13:03	62.00	90%
4050	Walker Ranch	56	13:04	62.00	90%
4190	Slaughterhouse	56	13:27	62.00	90%
4230	Golden Age	56	13:12	62.00	90%
4550	Boulder Jail	56	12:45	62.00	90%
100	Carr Street	57	12:42	62.00	92%
200	Leyden Reservoir	57	12:42	62.00	92%
220	Upper Leyden	57	12:15	62.00	92%
400	Montview Park	57	12:42	62.00	92%
440	Fire Station #7	57	12:54	62.00	92%
500	Havana Park	57	12:59	62.00	92%
640	Goldsmith @ Eastman	57	12:57	62.00	92%
750	Wx-Quincy Reservoir	57	12:39	62.00	92%
800	Sable Ditch @ 18th	57	12:57	62.00	92%
840	Fire Station 12	57	12:43	62.00	92%
950	Piney at Liverpool	57	12:40	62.00	92%
1000	Maple Grove Resv.	57	12:26	62.00	92%
1010	Denver West	57	12:26	62.00	92%
1040	Lena @ U.S. Hwy 6	57	12:43	62.00	92%
1100	Louisville Rec Ctr	57	12:30	62.00	92%
1110	Gunbarrel	57	12:44	62.00	92%
1200	Broomfield 3207	57	12:28	62.00	92%
1400	Upper Sloan Det.	57	12:40	62.00	92%
1480	Third Creek at DIA	57	12:41	62.00	92%
1700	Cherry Cr @ Champa	57	12:58	62.00	92%
1810	Sand Creek at mouth	57	12:57	62.00	92%
2190	Wx-Squaw Mountain	57	12:13	62.00	92%
2310	Genesee Village	57	12:42	62.00	92%
2750	Wx-Castle Rock	57	12:27	62.00	92%
2820	Haskins Gulch Conf	57	12:42	62.00	92%
2850	Cherry Cr bl Bayou Glch	57	12:57	62.00	92%
2860	CC at Stroh Rd	57	12:54	62.00	92%
2870	Cottonwood (Apache)	57	12:42	62.00	92%
4040	Martin Gulch	57	12:45	62.00	92%
4070	Bear Peak	57	12:45	62.00	92%
4110	Betasso	57	12:29	62.00	92%
4250	Geer Canyon	57	12:29	62.00	92%
4260	Taylor Mountain	57	12:14	62.00	92%
4300	Big Elk Park	57	13:01	62.00	92%
4520	Eagle Ridge	57	12:48	62.00	92%
4810	Shanahan Ridge	57	12:13	62.00	92%

120	West Woods	58	12:42	62.00	94%
300	Van Bibber Park	58	12:41	62.00	94%
330	Van Bibber @ Hwy 93	58	12:42	62.00	94%
410	Kelly Dam	58	12:41	62.00	94%
510	Virginia Court	58	12:27	62.00	94%
540	Parker/Mississippi	58	12:26	62.00	94%
620	Quincy/Highline	58	12:41	62.00	94%
710	Horseshoe Park Drop	58	12:40	62.00	94%
730	No Name @ Quincy	58	12:39	62.00	94%
830	Side Creek Park	58	12:40	62.00	94%
1030	NREL/S. Table Mtn.	58	12:42	62.00	94%
1310	LDC at 64th	58	12:27	62.00	94%
1320	SPR at 3rd Ave	58	12:40	62.00	94%
1370	West Metro FS13	58	12:41	62.00	94%
1420	Wx-Diamond Hill	58	12:17	62.00	94%
1520	Wx-Marston Lake North	58	12:44	62.00	94%
1570	Wx-Brighton Ditch	58	12:15	62.00	94%
1600	Englewood Dam	58	12:26	62.00	94%
1620	Slaughterhouse Glch	58	12:36	62.00	94%
2730	Wx-Salisbury Park	58	12:28	62.00	94%
2910	East Cherry Cr-Douglas	58	12:28	62.00	94%
2960	Indian Creek	58	12:44	62.00	94%
2990	Wx-Tomah Rd-DougCnty	58	12:42	62.00	94%
3010	EPC at Hwy 105	58	12:06	62.00	94%
4310	Johnny Park	58	12:41	62.00	94%
4350	Conifer Hill	58	12:03	62.00	94%
720	Confluence Pond	59	12:26	62.00	95%
760	Mission Viejo Park	59	12:27	62.00	95%
810	Granby Ditch @ 6th	59	12:11	62.00	95%
850	Flying J	59	12:13	62.00	95%
870	Murphy Creek GC	59	12:27	62.00	95%
900	Wx-Aurora Reservoir	59	12:32	62.00	95%
920	Wx-Aurora Town Hall	59	12:14	62.00	95%
940	Sampson Gulch	59	12:37	62.00	95%
970	Pump Sta 3	59	12:26	62.00	95%
1340	Sanderson at Xavier	59	12:28	62.00	95%
1640	SPR at Union Ave.	59	12:14	62.00	95%
1660	SPR at Henderson	59	12:12	62.00	95%
1920	Wx-Brighton	59	12:28	62.00	95%
2940	Willow Creek - DougCnty	59	12:27	62.00	95%
2950	DC Public Works	59	12:14	62.00	95%
4340	Riverside	59	12:29	62.00	95%
4770	Wx-Cal-Wood Ranch	59	12:14	62.00	95%
520	Jewell Detention	60	12:11	62.00	97%
530	Fire Station #19	60	12:25	62.00	97%
610	Harvard @ Jackson	60	12:24	62.00	97%
1460	Wx-Urban Farm	60	12:19	62.00	97%
1900	Niver Detention	60	12:11	62.00	97%
2360	Indian Hills	60	12:12	62.00	97%
2710	Wx-Highlands Ranch WTP	60	12:14	62.00	97%
1300	Hidden Lake	61	12:11	62.00	98%
4160	Sunshine	62	12:12	62.00	100%
4200	Lazy Acres	62	12:12	62.00	100%
140	Wx-Blue Mountain	64	10:56	62.00	100%
320	Sports Complex	77	9:04	62.00	100%
1720	Cherry Cr @ Steele	79	8:42	62.00	100%

Rain Event Performance

		Reports Received	6,116		Analyze Rain Sensors								
	Systemwide Avg	Total Tips	6,618										
	92.41%	Data Loss	7.59%										
Rain ID	**Performance**	**1-tips**	**2-tips**	**3-tips**	**4-tips**	**5-tips**	**6-tips**	**>6-tips**	**Rcv**	**Exp**	**Miss**	**Hold**	**Bucket**
700	33%	2	1	0	2	0	1	1	6	18	27	0	0.0393701
2280	42%	22	3	2	0	1	0	3	28	66	38	0	0.0393701
2970	50%	0	1	0	0	0	0	0	1	2	1	0	0.0393701
2980	56%	7	8	3	0	0	0	0	18	32	14	0	0.0393701
2190	67%	1	1	0	0	0	0	0	2	3	1	0	0.0393701
2240	81%	25	2	1	1	0	0	0	29	36	7	0	0.0393701
1300	81%	23	2	0	0	1	0	0	26	32	6	0	0.0393701
2250	83%	31	6	1	0	0	0	0	38	46	8	0	0.0393701
4820	83%	36	7	1	0	0	0	0	44	53	9	0	0.0393701
970	85%	19	2	1	0	0	0	0	22	26	4	0	0.0393701
2820	85%	14	3	0	0	0	0	0	17	20	3	0	0.0393701
510	85%	19	4	0	0	0	0	0	23	27	4	0	0.0393701
4790	86%	41	6	1	0	0	0	0	48	56	8	0	0.0393701
830	86%	16	1	1	0	0	0	0	18	21	3	0	0.0393701
2230	86%	32	4	1	0	0	0	0	37	43	6	0	0.0393701
4530	86%	44	4	2	0	0	0	0	50	58	8	0	0.0393701
2900	86%	22	2	1	0	0	0	0	25	29	4	0	0.0393701
4080	87%	34	4	1	0	0	0	0	39	45	6	0	0.0393701
4730	87%	34	4	1	0	0	0	0	39	45	6	0	0.0393701
4750	87%	33	6	0	0	0	0	0	39	45	6	0	0.0393701
4170	87%	35	6	0	0	0	0	0	41	47	6	0	0.0393701
4240	88%	31	3	1	0	0	0	0	35	40	5	0	0.0393701
4030	88%	50	6	1	0	0	0	0	57	65	8	0	0.0393701
140	88%	32	3	1	0	0	0	0	36	41	5	2	0.0393701
4510	88%	53	4	2	0	0	0	0	59	67	8	0	0.0393701
4490	88%	47	5	1	0	0	0	0	53	60	7	1	0.0393701
1660	88%	33	5	0	0	0	0	0	38	43	5	0	0.0393701
4010	88%	40	6	0	0	0	0	0	46	52	6	0	0.0393701
4140	88%	40	6	0	0	0	0	0	46	52	6	0	0.0393701
620	88%	20	3	0	0	0	0	0	23	26	3	0	0.0393701
1480	89%	49	3	2	0	0	0	0	54	61	7	0	0.0393701
1460	89%	28	2	1	0	0	0	0	31	35	4	1	0.0393701
4550	89%	49	5	1	0	0	0	0	55	62	7	0	0.0393701
4090	89%	42	6	0	0	0	0	0	48	54	6	0	0.0393701
750	89%	15	0	1	0	0	0	0	16	18	2	0	0.0393701
3010	89%	52	3	2	0	0	0	0	57	64	7	0	0.0393701
850	89%	29	4	0	0	0	0	0	33	37	4	0	0.0393701
800	89%	23	1	1	0	0	0	0	25	28	3	0	0.0393701
4250	90%	55	4	0	1	0	0	0	60	67	7	0	0.0393701
4330	90%	47	4	1	0	0	0	0	52	58	6	0	0.0393701
4830	90%	48	4	1	0	0	0	0	53	59	6	0	0.0393701
4840	90%	49	6	0	0	0	0	0	55	61	6	0	0.0393701
530	90%	33	4	0	0	0	0	0	37	41	4	0	0.0393701
4060	90%	42	5	0	0	0	0	0	47	52	5	0	0.0393701
900	90%	18	0	1	0	0	0	0	19	21	2	0	0.0393699
1360	91%	43	5	0	0	0	0	0	48	53	5	0	0.0393701
4020	91%	45	5	0	0	0	0	0	50	55	5	0	0.0393701
300	91%	27	3	0	0	0	0	0	30	33	3	0	0.0393701
710	91%	18	2	0	0	0	0	0	20	22	2	0	0.0393701
500	91%	28	3	0	0	0	0	0	31	34	3	0	0.0393701
1370	91%	28	3	0	0	0	0	0	31	34	3	0	0.0393701
210	91%	29	3	0	0	0	0	0	32	35	3	0	0.0393701
120	92%	30	3	0	0	0	0	0	33	36	3	0	0.0393701
2340	92%	30	3	0	0	0	0	0	33	36	3	0	0.0393701
920	92%	21	2	0	0	0	0	0	23	25	2	0	0.0393701
4710	92%	53	5	0	0	0	0	0	58	63	5	0	0.0393701
1340	92%	32	3	0	0	0	0	0	35	38	3	0	0.0393701
2270	92%	44	2	1	0	0	0	0	47	51	4	0	0.0393701
1110	92%	55	5	0	0	0	0	0	60	65	5	0	0.0393701
4520	92%	44	4	0	0	0	0	0	48	52	4	0	0.0393701
4290	92%	45	4	0	0	0	0	0	49	53	4	0	0.0393701
310	93%	34	3	0	0	0	0	0	37	40	3	0	0.0393701
4180	93%	47	2	1	0	0	0	0	50	54	4	0	0.0393701
1010	93%	35	3	0	0	0	0	0	38	41	3	0	0.0393701
2310	93%	35	3	0	0	0	0	0	38	41	3	0	0.0393701
420	93%	49	1	0	1	0	0	0	51	55	4	0	0.0393701
2320	93%	36	3	0	0	0	0	0	39	42	3	0	0.0393701
2330	93%	37	1	1	0	0	0	0	39	42	3	0	0.0393701
1440	93%	24	2	0	0	0	0	0	26	28	2	0	0.0393701
2910	93%	24	2	0	0	0	0	0	26	28	2	0	0.0393701
2730	93%	12	1	0	0	0	0	0	13	14	1	0	0.0393701

4220	93%	49	4	0	0	0	0	0	53	57	4	0	0.0393701
1100	93%	37	3	0	0	0	0	0	40	43	3	0	0.0393701
1810	93%	37	3	0	0	0	0	0	40	43	3	0	0.0393701
4310	93%	51	4	0	0	0	0	0	55	59	4	0	0.0393701
4470	93%	52	2	1	0	0	0	0	55	59	4	0	0.0393701
330	93%	26	2	0	0	0	0	0	28	30	2	0	0.0393701
730	93%	13	1	0	0	0	0	0	14	15	1	0	0.0393701
1720	93%	53	4	0	0	0	0	0	57	61	4	0	0.0393701
1330	93%	40	3	0	0	0	0	0	43	46	3	0	0.0393701
4270	93%	40	3	0	0	0	0	0	43	46	3	0	0.0393701
150	94%	27	2	0	0	0	0	0	29	31	2	0	0.0393701
4230	94%	27	2	0	0	0	0	0	29	31	2	0	0.0393701
1050	94%	28	2	0	0	0	0	0	30	32	2	0	0.0393701
4190	94%	43	3	0	0	0	0	0	46	49	3	0	0.0393701
200	94%	29	2	0	0	0	0	0	31	33	2	0	0.0393701
1500	94%	45	3	0	0	0	0	0	48	51	3	0	0.0393701
4100	94%	45	3	0	0	0	0	0	48	51	3	0	0.0393701
2930	94%	15	1	0	0	0	0	0	16	17	1	0	0.0393701
110	94%	31	2	0	0	0	0	0	33	35	2	0	0.0393701
1900	94%	32	0	1	0	0	0	0	33	35	2	0	0.0393701
1420	94%	47	3	0	0	0	0	0	50	53	3	0	0.0393701
1570	94%	64	4	0	0	0	0	0	68	72	4	0	0.0393701
2810	94%	16	1	0	0	0	0	0	17	18	1	0	0.0393701
2860	94%	16	1	0	0	0	0	0	17	18	1	0	0.0393701
2370	95%	34	2	0	0	0	0	0	36	38	2	0	0.0393701
2850	95%	17	1	0	0	0	0	0	18	19	1	0	0.0393701
2990	95%	17	1	0	0	0	0	0	18	19	1	0	0.0393701
1040	95%	35	2	0	0	0	0	0	37	39	2	0	0.0393701
1320	95%	35	2	0	0	0	0	0	37	39	2	0	0.0393701
1700	95%	35	2	0	0	0	0	0	37	39	2	0	0.0393701
430	95%	73	2	1	0	0	0	0	76	80	4	0	0.0393701
2840	95%	18	1	0	0	0	0	0	19	20	1	0	0.0393701
4770	95%	37	2	0	0	0	0	0	39	41	2	0	0.0393701
720	95%	19	1	0	0	0	0	0	20	21	1	0	0.0393701
640	95%	20	1	0	0	0	0	0	21	22	1	0	0.0393701
2940	95%	20	1	0	0	0	0	0	21	22	1	0	0.0393701
940	96%	21	1	0	0	0	0	0	22	23	1	0	0.0393699
4050	96%	43	2	0	0	0	0	0	45	47	2	0	0.0393701
650	96%	23	1	0	0	0	0	0	24	25	1	0	0.0393701
820	96%	24	1	0	0	0	0	0	25	26	1	0	0.0393701
4070	96%	49	2	0	0	0	0	0	51	53	2	0	0.0393701
760	96%	25	1	0	0	0	0	0	26	27	1	0	0.0393701
1350	96%	25	1	0	0	0	0	0	26	27	1	0	0.0393701
2260	96%	51	2	0	0	0	0	0	53	55	2	0	0.0393701
4360	96%	52	2	0	0	0	0	0	54	56	2	0	0.0393701
2710	96%	26	1	0	0	0	0	0	27	28	1	0	0.0393701
4300	96%	53	2	0	0	0	0	0	55	57	2	0	0.0393701
4040	97%	54	2	0	0	0	0	0	56	58	2	0	0.0393701
4200	97%	56	2	0	0	0	0	0	58	60	2	1	0.0393701
540	97%	28	1	0	0	0	0	0	29	30	1	0	0.0393701
810	97%	28	1	0	0	0	0	0	29	30	1	0	0.0393701
610	97%	29	1	0	0	0	0	0	30	31	1	0	0.0393701
1530	97%	31	1	0	0	0	0	0	32	33	1	0	0.0393701
1030	97%	33	1	0	0	0	0	0	34	35	1	0	0.0393701
4810	97%	67	2	0	0	0	0	0	69	71	2	0	0.0393701
410	97%	34	1	0	0	0	0	0	35	36	1	0	0.0393701
1000	97%	34	1	0	0	0	0	0	35	36	1	0	0.0393701
1550	97%	34	1	0	0	0	0	0	35	36	1	0	0.0393701
2350	97%	34	1	0	0	0	0	0	35	36	1	0	0.0393701
400	97%	35	1	0	0	0	0	0	36	37	1	0	0.0393701
1200	97%	36	1	0	0	0	0	0	37	38	1	0	0.0393701
100	97%	37	1	0	0	0	0	0	38	39	1	0	0.0393701
600	97%	37	1	0	0	0	0	0	38	39	1	0	0.0393701
2360	98%	38	1	0	0	0	0	0	39	40	1	0	0.0393701
840	98%	41	1	0	0	0	0	0	42	43	1	0	0.0393701
220	98%	42	1	0	0	0	0	0	43	44	1	0	0.0393701
630	98%	47	1	0	0	0	0	0	48	49	1	0	0.0393701
1920	98%	49	1	0	0	0	0	0	50	51	1	0	0.0393701
4350	98%	50	1	0	0	0	0	0	51	52	1	0	0.0393701
4570	98%	51	1	0	0	0	0	0	52	53	1	0	0.0393701
4110	98%	54	1	0	0	0	0	0	55	56	1	0	0.0393701
4150	98%	54	1	0	0	0	0	0	55	56	1	0	0.0393701
4160	98%	56	1	0	0	0	0	0	57	58	1	0	0.0393701
4260	98%	61	1	0	0	0	0	0	62	63	1	0	0.0393701
4340	100%	55	0	0	0	0	0	0	55	55	0	0	0.0393701

4130	100%	51	0	0	0	0	0	0	51	51	0	0	0.0393701
2210	100%	42	0	0	0	0	0	0	42	42	0	0	0.0393701
1310	100%	38	0	0	0	0	0	0	38	38	0	0	0.0393701
1400	100%	38	0	0	0	0	0	0	38	38	0	0	0.0393701
320	100%	37	0	0	0	0	0	0	37	37	0	0	0.0393701
1060	100%	36	0	0	0	0	0	0	36	36	0	0	0.0393701
1520	100%	32	0	0	0	0	0	0	32	32	0	0	0.0393701
1640	100%	31	0	0	0	0	0	0	31	31	0	0	0.0393701
1800	100%	30	0	0	0	0	0	0	30	30	0	0	0.0393701
870	100%	28	0	0	0	0	0	0	28	28	0	0	0.0393701
2920	100%	25	0	0	0	0	0	0	25	25	0	0	0.0393701
2960	100%	25	0	0	0	0	0	0	25	25	0	0	0.0393701
520	100%	23	0	0	0	0	0	0	23	23	0	0	0.0393701
440	100%	21	0	0	0	0	0	0	21	21	0	0	0.0393701
950	100%	20	0	0	0	0	0	0	20	20	0	0	0.0393701
2870	100%	20	0	0	0	0	0	0	20	20	0	0	0.0393701
1600	100%	19	0	0	0	0	0	0	19	19	0	0	0.0393701
2950	100%	16	0	0	0	0	0	0	16	16	0	0	0.0393701
2750	100%	13	0	0	0	0	0	0	13	13	0	0	0.0393701
3020	100%	13	0	0	0	0	0	0	13	13	0	0	0.0393701
1620	100%	3	0	0	0	0	0	0	3	3	0	0	0.0393701
	Total Tips	**5,701**	**367**	**40**	**5**	**2**	**1**	**4**	**6,116**	**6,618**	**517**	**5**	

Monthly Traffic Loading