de maximis, inc.

200 Day Hill Road
Suite 200
Windsor, CT 06095
(860) 298-0541
(860) 298-0561 FAX

April 15, 2010

Mr. Joseph F. LeMay
Remedial Project Manager
US EPA – New England
5 Post Office Square, Suite 100
Mail Code: OSSR07-4
Boston, MA 02109- 3912

Subject: Industri-plex Operable Unit 2 Superfund Site
Woburn, Massachusetts
Quarterly Storm Flow Surface Water Monitoring Report

Dear Mr. LeMay:

Pursuant to Paragraph 34 of the Consent Decree (CD)(Civil Action No.1:08-cv-10325) and Section V.A.5 of the Remedial Design / Remedial Action (RD/RA) Statement of Work (SOW) for the above referenced site, enclosed please find the Quarterly Storm Flow Surface Water Monitoring Report No. 4.

This report covers the period from December 1, 2009 thru February 28, 2010, and is submitted on behalf of the Settling Defendants.

Also included is a CD containing the Flowlink® data covering this reporting period.

Please contact me if you have any questions.

Sincerely,

for

Bruce Thompson

Enclosure

cc: Jen McWeeney - MassDEP
Settling Defendants
Larry McTiernan – Roux Associates

DRAFT

Quarterly Storm Flow Surface Water Monitoring Report No. 4
(December 2009 – February 2010)

Industri-plex Superfund Site
Operable Unit 2
Woburn, Massachusetts

Disclaimer: This document is a DRAFT document prepared by the Settling Defendants under a government Consent Decree. This document has not undergone formal review by the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP). The opinions, findings, and conclusions expressed are those of the author and not those of the EPA or the MassDEP.

In accordance with the Surface Water Monitoring Plan (SWMP), this Quarterly Storm Flow Surface Water Monitoring Report has been prepared to summarize the sampling activities performed and the data developed for selected storms occurring during the reporting period (December 1, 2009 through February 28, 2010) and to provide a brief discussion of the data. Sampling locations are shown in **Figures 1 and 2**.

Storm Sampling and Related Activities Occurring During the Reporting Period

Storm sampling was conducted for multiple storm events occurring during the reporting period.

Date(s)	Total Precipitation (inches)[1]
December 2-3, 2009	0.98 - 1.24
January 25-26, 2010	0.93 - 1.06
February 24-25, 2010	2.33 - 3.19
February 25-27, 2010[2]	1.57 - 2.04

Sampling for each of the storms was conducted in substantial accordance with the SWMP and included automated collection of aliquots over the duration of the storm and associated runoff event. Aliquots were inspected after the end of the storm event and composited in equal volumes into a single "storm sample" for each station. Grab samples for benzene analysis were collected manually as soon as possible following the onset of the storm, and measurements of surface water and groundwater elevations using staff gauges and piezometers, respectively, were made when safe to do so. Station-specific storm statistics including "indicator" flows,[3] flow at termination of sampling,[4] flow-pacing intervals, the number of aliquots expected at sample termination based on the flow

[1] Range indicates precipitation totals for the entire storm event recorded by the rain gauges at the four stations proximal to the HBHA Pond (SW-2-IP, SW-3-IP, SW-01-TT, and SW-02-TT).

[2] The February 24-25 and 25-27 storm events are considered discrete storm events because there was roughly a 12-hour interval between the two storms that was generally rain-free. However, "end-of-storm" criteria (see footnote 4) for the February 24-25 storm were met prior to onset of the February 25-27 storm only at the monitoring stations north of Route 128 (SW-2-IP, SW-3-IP, and SW-01-TT through SW-04-TT). Therefore, discrete storm samples for the February 24-25 and 25-27 storm events were collected only at these six stations. Samples collected at the other four stations (SW-05-TT through SW-08-TT) are considered representative of the two storms combined.

[3] Indicator flows include pre-storm baseflow, peak flow, and flows at 50% and 75% down the falling limb of the storm hydrograph (i.e., the points at which flow has decreased 50% and 75% of the difference between peak flow and pre-storm baseflow).

[4] In accordance with Quarterly Storm Flow Surface Water Monitoring Report No. 2, sampling is terminated when flow has reached levels between 50% and 75% down the falling limb.

pacing interval used, the total number of sample aliquots collected, and the number of aliquots "successfully" collected[5] are shown for each storm in **Tables 1a through 1d**. The flows given in **Table 1a through 1d** are based on either 1) rating curves presented in the Quarterly Storm Flow Surface Water Monitoring Report No. 2 (Stations SW-2-IP, SW-01-TT, SW-02-TT, SW-04-TT, and SW-08-TT) or by Tetra Tech NUS, Inc. (TTNUS) in the Multiple Source Groundwater Response Plan (MSGRP) Remedial Investigation Report (Stations SW-03-TT, and SW-05-TT through SW-07-TT) or 2) level and velocity (Station SW-3-IP). New rating curves are being developed for Stations SW-03-TT and SW-05-TT through SW-07-TT, which may change the flow estimates for these stations. Charts showing the rainfall and surface water velocity, level, and flow (i.e., hydrographs) recorded at each station during the storms sampled during this reporting period are provided in **Appendix A**. In each hydrograph, the points in time at which sample aliquots were collected are indicated by downward triangles.[6] In addition, flow at 50% and 75% of the falling limb is noted on the hydrographs.

Modifications to SWMP Protocols during Reporting Period

Pre-storm preparations notwithstanding, minor equipment malfunctions and logistical difficulties were experienced during the storm events sampled during the reporting period. The "Storm Narratives" included with the storm charts in **Appendix A** list modifications to SWMP sampling protocols associated with these equipment malfunctions and logistical difficulties.

Post-Storm Maintenance and Monitoring

Following three of the four storm events during which sampling was performed, sample and pump-head tubing was replaced, suction volumes were recalibrated, and post-storm surveying was conducted at each station. These activities were not performed following the February 24-25 storm due to the limited time between that storm and the next storm, which occurred on February 25-27.

[5] "Successful collection" of an aliquot is defined in Section 3.1 of the SWMP QAPP.

[6] Not all of the triangles shown are necessarily aliquots included in the composite storm samples. Due to software limitations, in some cases grab samples, samples collected during pump-head tubing calibration, and/or samples otherwise not included as part of the composite are shown. In some cases, the aliquots indicated by the triangles were not successfully collected (e.g., due to disconnected tubing, power failures, jammed distributor arm, blocked intake, etc.).

Post-storm surveying included surveying of the area-velocity sensors at eight of the ten stations to determine if any sensor elevations changed significantly as a result of storm-related scouring.[7] In addition, surveying of the entire cross-sectional profile at the Montvale Avenue Station (SW-06-TT) was also performed following each storm pursuant to the SWMP. As shown in **Table 2**,[8] sensor elevations did not change significantly (i.e., greater than 0.1 foot) during any of the storm events occurring during the reporting period, although sensors were washed out or dislodged at the Halls Brook (SW-01-TT) and Swanton Street (SW-07-TT) Stations on one or more occasions. On these occasions, the entire cross-sectional profile of these stations was also surveyed as part of post-storm surveying. Post-storm cross-sectional profiles for the Halls Brook, Montvale Avenue, and Swanton Street Stations are shown in **Figure 3, Figure 4, and Figure 5,** respectively. **Figure 3** shows that there were no material changes to the stream profile at the Halls Brook Station, while **Figure 5** shows that there appears to have been some deposition across the whole width of the stream at the Swanton Street Station. For the Montvale Avenue Station (**Figure 4)**, the following observations can be made:

- There appears to have been significant narrowing of the channel. At least on the west bank, the narrowing of the channel is likely attributable to deposition on the upstream side of the access stairs installed by Roux Associates.

- The slight depression that had been evident at the toe of the west bank following the initial survey has since been filled with sediment.

- Additional sediment deposition in the western half of the channel (from 10 feet – 16 feet) was evident following the last two storm events.

- Alternating scouring and filling is evident in the middle of the channel (at ~20 feet).

[7] Beginning with the current reporting period, post-storm surveying is no longer performed at Stations SW-2-IP and SW-04-TT (HBHA Wetland Outlet) because sensors there are mounted to permanent structures.

[8] Although post-storm surveying is still conducted at Station SW-08-TT, the results are not shown in Table 2 because the sensor elevation is always maintained equivalent to the elevation of the adjacent weir crest. Any significant changes in elevation at Station SW-08-TT caused by storm events are noted in the storm narratives in Appendix A.

These observations confirm that the Montvale Avenue Station (SW-06-TT) is a dynamic environment not suitable as a flow monitoring station.

Data Generated During the Reporting Period

1. Storm hydrologic data (including precipitation, peak stage, peak velocity, peak flow, and runoff at 75% of the falling limb) for the storm events occurring during the reporting period are shown in **Tables 3a through 3j**.

2. The ranges of water quality parameters recorded for the storm events occurring during the reporting period are provided in **Tables 4a through 4j**, along with the water quality measurements recorded during all previous SWMP and, where applicable, "Early Action" storm sampling events.[9]

3. Analytical results for composite samples collected during the storm events occurring during the reporting period[10] are provided in **Tables 5a through 5j**, along with validated analytical laboratory results for storm samples collected during the previous SWMP and, where applicable, Early Action sampling events and other previous sampling programs at the site (i.e., the Groundwater and Surface Water Investigation Plan [GSIP] and the MSGRP).

   It is noted that the analytical results shown in **Tables 5c and 5d** for the samples collected from Stations SW-01-TT and SW-02-TT during the January 25-26 storm event do not reflect the laboratory-reported results for those samples. Specifically, based on historical analytical results for these stations and the results of a duplicate sample collected from Station SW-01-TT during the January 25-26 storm event, Roux Associates believes that the sample result designated as SW02TT_20100127 is actually the result for the sample collected from Station SW-01-TT, and that the sample result designated as SW01TT_20100127 is actually the result for the sample collected from Station SW-02-TT. We have reported the results accordingly. The samples are suspected to have been mislabeled in the field.

[9] It was discovered during this reporting period that due to a software error in Flowlink 5™ all turbidity values collected during the SWMP have been incorrectly reported. Corrected values will be submitted to EPA once a software revision is implemented.

[10] These results have not yet been validated.

4. Groundwater and surface water elevation data collected during storm events are provided in **Table 6**.

Data Analysis

Data trends – Benzene, total arsenic, dissolved arsenic, and ammonia concentrations observed in samples collected during the SWMP and previous sampling programs (GSIP, MSGRP, and Early Action) are summarized in box-whisker plots in **Appendix B**. The "boxes" indicate the range within which the central 50% of the results fall (the box edges mark the first and third quartiles and the line dividing the box in two marks the median value), while the "whiskers" show the full range of values reported.[11] Since at least two values are required to construct a "box," cases where an analyte was detected in only one sample during a particular sampling program are shown as diamonds.

Based on storm analytical data collected during the GSIP, MSGRP, Early Action, and the OU2 SWMP sampling programs, the following is noted:

- Benzene has never been detected in any of the storm samples with the exception of samples collected at Stations SW-02-TT and SW-04-TT. Moreover, the maximum concentrations of benzene detected in the storm samples collected at these stations are 9.1 µg/L and 2.2 µg/L respectively, well below the benzene Surface Water Cleanup Standard of 46 µg/L.

- Dissolved arsenic has never been detected in any of the storm samples collected at Station SW-01-TT, and with the exception of one occasion at Station SW-02-TT, all dissolved arsenic concentrations detected in storm samples have been more than an order of magnitude below the applicable Surface Water Cleanup Standard of 150 µg/L.[12]

Based on the above, the Settling Defendants recommend that, during future storm events, analysis for benzene be performed only on samples collected at stations SW-02-TT and SW-04-TT. Further, if the trends continue, then Settling Defendants may at some point

[11] Any statistical outliers have not been determined or identified.
[12] A dissolved arsenic concentration of 27.4 µg/L was detected at this station on one occasion in 2002 (during the MSGRP).

also recommend that sampling for dissolved arsenic be discontinued at all but these locations.

Based on the groundwater and surface water elevations measured during the MSGRP and SWMP, the following is noted:

- At five of the nine stations gauged (SW-2-IP, SW-01-TT, SW-05-TT, SW-07-TT, and SW-08-TT), surface water elevations were predominantly higher than groundwater elevations during storm events. At two of the stations (SW-3-IP and SW-02-TT), surface water elevations were always lower than groundwater elevations.

- The remaining stations (SW-03-TT and SW-06-TT) exhibited variable trends.

As these trends are highly consistent with those observed during the MSGRP, the Settling Defendants also recommend not measuring surface water and groundwater elevations during future storm events.

Table 1a
Storm Statistics - December 2-3, 2009
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Station	Pre-Storm Baseflow (cfs)	Peak Flow (cfs)	50% Falling Limb		75% Falling Limb		Flow at Termination of Sampling (cfs)	Total Runoff at Termination of Sampling (cf)	Flow Pacing[1] (cf)	Expected Number of Aliquots[2]	Total Aliquots Collected	Aliquots Successfully Collected[3]	Notes
			Flow (cfs)	Total Runoff (cf)	Flow (cfs)	Total Runoff (cf)							
SW-2-IP	6.08	24.89	15.48	432,045	10.78	478,335	22.85	370,497	10,000	44 - 48	62	62	a
SW-3-IP	0.00	15.60	7.80	110,889	3.90	115,886	1.63	118,353	3,500	32 - 34	23	23	b
SW-01-TT	0.79	39.31	20.05	901,353	10.42	1,165,503	3.96	1,356,878	40,000	23 - 30	36	36	
SW-02-TT	4.14	31.87	18.01	1,877,639	11.07	2,459,322	12.42	2,297,478	50,000	38 - 50	48	48	
SW-04-TT	3.59	21.76	12.68	1,416,092	8.14	1,869,111	9.35	1,729,687	50,000	29 - 38	35	26	c
SW-03-TT	0.31	37.94	19.12	1,791,286	9.72	2,400,252	10.51	2,335,816	50,000	36 - 49	37	37	d
SW-05-TT	23.81	83.63	53.72	7,431,982	38.76	9,801,157	49.65	7,956,019	90,000	83 109	54	54	
SW-06-TT	11.84	52.00	31.92	5,135,318	21.88	6,724,578	29.10	5,458,027	160,016	33 - 43	29	29	
SW-07-TT	3.86	168.71	86.28	13,302,170	45.07	34,081,250	84.98	13,462,880	255,062	53 - 134	47	47	e, f
SW-08-TT	20.68	180.54	100.61	14,848,850	60.64	20,371,500	56.21	21,609,060	401,042	38 - 51	45	45	g

Notes:

- For Stations SW-2-IP, SW-01-TT, SW-02-TT, SW-04-TT, and SW-08-TT, flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- For Stations SW-03-TT, and SW-05-TT through SW-07-TT, flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report. New rating curves are being developed which may change the flow estimates for these stations.
- Flows shown for station SW-3-IP were estimated based on level and velocity.

in = inches
cfs = cubic feet per second
ERR = Equipment malfunction (e.g., obstructed rain gauge)

1 Flow Pacing for stations SW-01-TT, SW-02-TT, SW-03-TT, SW-05-TT, SW-06-TT, and SW-07-TT is adapted from the flowing pacing reported by TTNUS in the MSGRP RI Report
2 Expected Number of Aliquots = [(flow at 50% falling limb / flow pacing)+1] to [(flow at 75% falling limb / flow pacing)+1]
3 Aliquots Successfully Collected represent aliquots collected as defined in the SWMP QAPP (Sec. 3.1)

a. Due to Isco programming error in flow conversion, more aliquots were collected than expected.
b. Due to current recording interval (i.e., every 5 minutes) and low flow pacing interval at this station, several aliquots were missed by the Isco sampling program.
c. Due to sampling error, the initial 9 aliquots were not collected.
d. Total aliquots low due to late sampling start from communication errors with the Isco unit.
e. Total runoff shown for 75% of the falling limb represents the point in time at which the A/V sensor was re-set.
f. A/V sensor dislodged, flows are not representative.
g. Total aliquots low due to initial power failures.

Table 1b
Storm Statistics - January 25-26, 2010
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Station	Pre-Storm Baseflow (cfs)	Peak Flow (cfs)	50% Falling Limb		75% Falling Limb		Flow at Termination of Sampling (cfs)	Total Runoff at Termination of Sampling (cf)	Flow Pacing[1] (cf)	Expected Number of Aliquots[2]	Total Aliquots Collected	Aliquots Successfully Collected[3]	Notes
			Flow (cfs)	Total Runoff (cf)	Flow (cfs)	Total Runoff (cf)							
SW-2-IP	5.59	38.48	22.04	441,548	13.81	554,197	21.06	441,548	15,000	30 - 37	58	58	
SW-3-IP	5.44	13.38	9.41	173,276	7.42	185,245	7.26	185,245	3,500	50 - 53	23	22	a
SW-01-TT	3.40	50.52	26.96	1,760,821	15.18	2,120,206	19.29	1,988,707	50,000	36 - 43	39	39	b
SW-02-TT	7.62	59.28	33.45	3,012,830	20.53	4,051,856	21.25	3,972,467	50,000	61 - 82	73	73	c
SW-04-TT	8.23	57.46	32.84	3,048,596	20.54	3,939,638	20.71	3,880,905	50,000	61 - 79	73	73	c
SW-03-TT	7.70	45.05	26.37	2,938,321	17.03	3,783,233	20.33	3,514,927	50,000	59 - 76	68	68	
SW-05-TT	37.15	106.88	72.01	9,787,860	54.58	12,692,700	63.01	11,203,700	99,999	98 127	98	98	c
SW-06-TT	18.52	68.34	43.43	7,214,080	30.97	9,435,577	43.26	7,229,477	160,016	46 - 59	45	45	
SW-07-TT	4.17	245.97	125.07	19,623,430	64.62	27,218,250	104.95	21,604,940	255,062	77 - 107	81	81	b
SW-08-TT	30.97	344.26	187.61	38,767,650	109.29	52,620,430	182.91	39,910,910	401,042	97 - 132	98	98	d

Notes:

- For Stations SW-2-IP, SW-01-TT, SW-02-TT, SW-04-TT, and SW-08-TT, flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- For Stations SW-03-TT, and SW-05-TT through SW-07-TT, flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report. New rating curves are being developed which may change the flow estimates for these stations.
- Flows shown for station SW-3-IP were estimated based on level and velocity.

in = inches
cfs = cubic feet per second
ERR = Equipment malfunction (e.g., obstructed rain gauge)

1 Flow Pacing for stations SW-01-TT, SW-02-TT, SW-03-TT, SW-05-TT, SW-06-TT, and SW-07-TT is adapted from the flowing pacing reported by TTNUS in the MSGRP RI Report
2 Expected Number of Aliquots = [(flow at 50% falling limb / flow pacing)+1] to [(flow at 75% falling limb / flow pacing)+1]
3 Aliquots Successfully Collected represent aliquots collected as defined in the SWMP QAPP (Sec. 3.1)

a. Due to current recording interval (i.e., every 5 minutes) and low flow pacing interval at this station, several aliquots were missed by the Isco sampling program; freezing conditions also limited number of aliquots.
b. A/V sensor dislodged, flows are not representative.
c. Number of aliquots collected is lower than expected due to rosette change out activities.
d. Sensor was dislodged therefore total runoff shown for 75% of the falling limb represents the point in time at which the A/V sensor was re-set.

Table 1c
Storm Statistics - February 24-25, 2010
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Station	Pre-Storm Baseflow (cfs)	Peak Flow (cfs)	50% Falling Limb		75% Falling Limb		Flow at Termination of Sampling (cfs)	Total Runoff at Termination of Sampling (cf)	Flow Pacing[1] (cf)	Expected Number of Aliquots[2]	Total Aliquots Collected	Aliquots Successfully Collected[3]	Notes
			Flow (cfs)	Total Runoff (cf)	Flow (cfs)	Total Runoff (cf)							
SW-2-IP	8.23	26.08	17.16	1,614,585	12.69	2,314,125	16.73	2,096,108	10,000	162 - 232	189	189	a
SW-3-IP	0.16	6.79	3.48	103,027	1.82	182,862	2.40	146,183	3,500	30 - 53	23	22	a, b
SW-01-TT	0.61	97.88	49.25	4,473,483	24.93	5,611,494	27.21	5,499,017	40,000	112 - 141	124	124	a, c
SW-02-TT	3.40	71.86	37.63	4,597,435	20.52	5,191,560	31.98	5,102,073	50,000	92 - 104	96	96	a
SW-04-TT	5.39	72.48	38.94	4,583,216	22.16	5,284,940	32.99	5,098,728	50,000	92 - 106	96	96	a
SW-03-TT	12.50	55.79	34.15	5,463,812	23.33	5,938,676	25.28	5,797,967	50,000	110 - 119	106	106	a, d
SW-05-TT	48.21	164.51	106.36	35,002,590	77.29	45,198,860	110.53	34,222,850	90,000	389 - 503	297	296	e
SW-06-TT	13.40	94.72	54.06	21,216,640	33.73	37,094,130	45.76	23,498,110	160,016	133 - 232	144	144	
SW-07-TT	19.72	378.86	199.29	74,544,100	109.51	91,809,740	162.54	81,032,260	255,062	293 - 360	288	288	c, e
SW-08-TT	20.35	697.45	358.90	139,143,200	189.63	271,373,400	319.88	151,245,500	401,042	347 - 677	333	333	c

Notes:

• For Stations SW-2-IP, SW-01-TT, SW-02-TT, SW-04-TT, and SW-08-TT, flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
• For Stations SW-03-TT, and SW-05-TT through SW-07-TT, flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report. New rating curves are being developed which may change the flow estimates for these stations.
• Flows shown for station SW-3-IP were estimated based on level and velocity.

in = inches
cfs = cubic feet per second
ERR = Equipment malfunction (e.g., obstructed rain gauge)

1 Flow Pacing for stations SW-01-TT, SW-02-TT, SW-03-TT, SW-05-TT, SW-06-TT, and SW-07-TT is adapted from the flowing pacing reported by TTNUS in the MSGRP RI Report
2 Expected Number of Aliquots = [(flow at 50% falling limb / flow pacing)+1] to [(flow at 75% falling limb / flow pacing)+1]
3 Aliquots Successfully Collected represent aliquots collected as defined in the SWMP QAPP (Sec. 3.1)

a. Flow shown for 75% falling limb represents the lowest post-storm flow achieved before the onset of new rising limb caused by subsequent precipitation
b. Due to current recording interval (i.e., every 5 minutes) and low flow pacing interval at this station, several aliquots were missed by the Isco sampling program.
c. A/V sensor dislodged, flows are not representative.
d. Peak flow value was determined after the A/V sensor was re-calibrated.
e. Number of aliquots collected is lower than expected due to rosette change out activities.

Table 1d
Storm Statistics - February 25-27, 2010
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Station	Pre-Storm Baseflow (cfs)	Peak Flow (cfs)	50% Falling Limb		75% Falling Limb		Flow at Termination of Sampling (cfs)	Total Runoff at Termination of Sampling (cf)	Flow Pacing[1] (cf)	Expected Number of Aliquots[2]	Total Aliquots Collected	Aliquots Successfully Collected[3]	Notes
			Flow (cfs)	Total Runoff (cf)	Flow (cfs)	Total Runoff (cf)							
SW-2-IP	16.44	35.92	26.18	1,054,251	21.31	1,877,104	17.87	2,429,470	30,000	36 - 63	69	69	
SW-3-IP	1.07	13.85	7.46	132,344	4.27	309,043	6.89	134,410	3,500	38 - 89	14	14	a
SW-01-TT	23.42	106.38	64.90	1,996,175	44.16	1,996,175	7.33	2,781,426	80,000	25 - 25	34	31	b
SW-02-TT	32.21	94.45	63.33	4,543,522	47.77	5,518,684	28.19	7,238,869	99,999	46 - 56	68	68	
SW-04-TT	33.18	92.78	62.98	4,975,505	48.08	5,751,879	31.77	7,414,857	99,999	50 - 58	70	70	
SW-03-TT	20.49	71.68	46.08	3,296,136	33.29	3,903,065	20.45	4,454,469	75,000	44 - 53	56	56	

Notes:

• For Stations SW-2-IP, SW-01-TT, SW-02-TT, and SW-04-TT, flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
• For Station SW-03-TT, flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report. New rating curves are being developed which may change the flow estimates for these stations.
• Flows shown for station SW-3-IP were estimated based on level and velocity.

in = inches
cfs = cubic feet per second
ERR = Equipment malfunction (e.g., obstructed rain gauge)

1 Flow Pacing for stations SW-01-TT, SW-02-TT, SW-03-TT, SW-05-TT, SW-06-TT, and SW-07-TT is adapted from the flowing pacing reported by TTNUS in the MSGRP RI Report
2 Expected Number of Aliquots = [(flow at 50% falling limb / flow pacing)+1] to [(flow at 75% falling limb / flow pacing)+1]
3 Aliquots Successfully Collected represent aliquots collected as defined in the SWMP QAPP (Sec. 3.1)

a. Due to current recording interval (i.e., every 5 minutes) and low flow pacing interval at this station, several aliquots were missed by the Isco sampling program.
b. A/V sensor was not reset following February 24-25 storm event and was shifted twice during February 25-27 storm dislodged, flows are not representative.

Table 2
Post-Storm Survey Results for the Area-Velocity Sensors
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Station Number	Station Location[1]	12/8/2009			2/1/2010			3/1/2010		
		Pre-Storm Sensor Elevation[2]	Post-Storm Sensor Elevation	Δ from Pre-Storm Elevation	Pre-Storm Sensor Elevation	Post-Storm Sensor Elevation	Δ from Pre-Storm Elevation	Pre-Storm Sensor Elevation	Post-Storm Sensor Elevation	Δ from Pre-Storm Elevation
SW-3-IP	BECO Right-of-Way	93.66	93.64	-0.02	93.64	93.64	0.00	93.64	93.66	0.02
SW-01-TT	Halls Brook	93.28	93.19	-0.09	93.19	93.20[3]	NA	93.20	93.25[3]	NA
SW-02-TT	HBHA Pond Outlet	97.84	97.89	0.05	97.89	97.88	-0.01	97.88	97.84	-0.04
SW-03-TT	Aberjona River @ Mishawum Rd.	93.22	93.21	-0.01	93.21	93.20	-0.01	93.20	93.22	0.02
SW-05-TT	Aberjona River @ Salem Street	94.10	94.20	0.10	94.20	94.13	-0.07	94.13	94.17	0.04
SW-06-TT	Aberjona River @ Montvale Avenue	92.84	92.86	0.02	92.86	92.85	-0.01	92.85	92.84	-0.01
SW-07-TT	Aberjona River @ Swanton Street	89.89	89.95[3]	NA	89.95	89.94[3]	NA	89.94	89.98[3]	NA

NA = Not applicable

Notes: 1. Stations SW-2-IP and SW-04-TT are not shown because sensor is fixed to a permanent structure (no elevation change expected).
2. Except where indicated, pre-storm elevation is post-storm sensor elevation from previous storm event.
3. Sensor washed out / dislodged, reset, and re-surveyed at elevation shown.

Table 3a
Storm Hydrologic Data for SW-2-IP (AAD)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Station	Date[1]	Precipitation[2] (in)	Peak Stage (ft)	Peak Velocity[3] (ft/s)	Peak Flow (cfs)	Total Runoff at 75% Falling Limb (cf)
SW-2-IP	06/18/09 - 06/19/10	0.93	0.67	1.85	9.05	379,752
	07/01/09 - 07/02/09	1.40	1.12	3.25	26.32	1,129,314
	07/07/09 - 07/08/09	2.32	1.62	3.59	41.07	626,764
	07/23/09 - 07/24/09	2.23	1.05	3.30	24.94	1,145,352
	11/14/09 - 11/15/09	2.68	1.12	3.39	26.49	1,866,896
	12/02/09 - 12/03/09	0.98	1.07	3.32	24.89	478,335
	01/25/10 - 01/26/10	0.93	1.42	3.46	38.48	554,197
	02/24/10 - 02/25/10	2.33	1.11	3.45	26.08	2,314,125
	02/25/10 - 02/27/10	1.55	1.36	3.62	35.92	1,877,104

Notes:

• Prior to the 11/14/09-11/15/09 storm event, stage is relative to sensor elevation; subsequent stage measurements are relative to the stream bottom.

• Prior to the 11/14/09-11/15/09 storm event, flows shown are based on stage and velocity measurement; subsequent flows are based on the station specific rating curve reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.

1 Dates shown indicate time period over which precipitation was observed.

2 Precipitation total shown may not match precipitation total shown in hydrograph because hydrograph totals may include contributions from subsequent rain events during the falling limb.

3 Due to "noise," Peak Velocity value is approximated.

AAD = Atlantic Avenue Drainway
in = inches
ft = feet
ft/s = feet per second
cfs = cubic feet per second
cf = cubic feet

Table 3b
Storm Hydrologic Data for SW-3-IP (BECO ROW)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Station	Date[1]	Precipitation[2] (in)	Peak Stage (ft)	Peak Velocity[3] (ft/s)	Peak Flow (cfs)	Total Runoff at 75% Falling Limb (cf)
SW-3-IP	06/18/09 - 06/19/10	0.94	0.77	1.30	4.63	104,821
	07/01/09 - 07/02/09	1.46	1.39	1.75	14.97	170,540
	07/07/09 - 07/08/09	2.35	2.07	2.30	35.13	111,560
	07/23/09 - 07/24/09	2.37	2.19	1.82	12.14	193,146
	11/14/09 - 11/15/09	2.69	2.31	1.94	17.77	70,258
	12/02/09 - 12/03/09	1.09	1.55	1.67	15.60	115,886
	01/25/10 - 01/26/10	0.99	2.26	1.41	13.38	220,112
	02/24/10 - 02/25/10	2.46	2.47	1.06	6.79	182,862
	02/25/10 - 02/27/10	1.76	2.98	0.49	13.85	309,043

Notes:
• Stage is relative to sensor elevation.
• Flows shown are estimated based on stage and velocity.

1 Dates shown indicate time period over which precipitation was observed.
2 Precipitation total shown may not match precipitation total shown in hydrograph because hydrograph totals may include contributions from subsequent rain events during the falling limb.
3 Due to "noise," Peak Velocity value is approximated.

BECO ROW = Boston Edison Company Right-of-Way
in = inches
ft = feet
ft/s = feet per second
cfs = cubic feet per second
cf = cubic feet

Table 3c
Storm Hydrologic Data for SW-01-TT (Halls Brook)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Station	Date[1]	Precipitation[2] (in)	Peak Stage (ft)	Peak Velocity[3] (ft/s)	Peak Flow (cfs)	Total Runoff at 75% Falling Limb (cf)
SW-01-TT	06/18/09 - 06/19/10	1.07	1.59	2.27	13.92	974,772
	07/01/09 - 07/02/09	1.80	2.09	3.76	21.67	1,665,930
	07/07/09 - 07/08/09	2.87	2.25	4.36	25.42	2,251,596
	07/23/09 - 07/24/09	3.06	2.69	3.27	33.08	3,940,374
	11/14/09 - 11/15/09	3.43	2.52	3.88	62.66	1,241,900
	12/02/09 - 12/03/09	1.41	2.27	3.53	39.31	1,165,503
	01/25/10 - 01/26/10	1.05	2.41	3.93	50.52	2,120,206
	02/24/10 - 02/25/10	2.90	2.77	4.00	97.88	5,611,494
	02/25/10 - 02/27/10	2.04	2.84	2.21	106.38	1,996,175

Notes:

• Prior to the 11/14/09-11/15/09 storm event, stage is relative to sensor elevation; subsequent stage measurements are relative to the stream bottom.

• Prior to the 11/14/09-11/15/09 storm event, flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report; subsequent flows are based on the station specific rating curve reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.

1 Dates shown indicate time period over which precipitation was observed.

2 Precipitation total shown may not match precipitation total shown in hydrograph because hydrograph totals may include contributions from subsequent rain events during the falling limb.

3 Due to "noise," Peak Velocity value is approximated.

in = inches
ft = feet
ft/s = feet per second
cfs = cubic feet per second
cf = cubic feet

ERR = Equipment malfunction (e.g., sensor was dislodged)

Shaded values indicate readings where the A/V sensor became dislodged. Values shown for peak velocity represent the highest reading recorded prior to A/V sensor dislodgement. In addition, Peak Stage and therefore subsequent Peak Flow and Total Runoff at 75% Falling Limb may not represent actual conditions.

Table 3d
Storm Hydrologic Data for SW-02-TT (HBHA Pond Outlet)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Station	Date[1]	Precipitation[2] (in)	Peak Stage (ft)	Peak Velocity[3] (ft/s)	Peak Flow (cfs)	Total Runoff at 75% Falling Limb (cf)
SW-02-TT	06/18/09 - 06/19/10	1.12	1.87	0.78	17.67	1,743,147
	07/01/09 - 07/02/09	ERR	2.42	1.43	26.85	3,248,161
	07/07/09 - 07/08/09	ERR	2.78	1.84	32.84	4,415,681
	07/23/09 - 07/24/09	2.54	3.27	1.55	40.94	3,948,374
	11/14/09 - 11/15/09	2.94	3.44	ERR	64.42	4,575,912
	12/02/09 - 12/03/09	1.24	2.69	ERR	31.87	2,459,322
	01/25/10 - 01/26/10	0.98	3.34	1.50	59.28	4,051,856
	02/24/10 - 02/25/10	3.19	3.57	1.34	71.86	5,191,560
	02/25/10 - 02/27/10	1.97	3.93	1.42	94.45	5,518,684

Notes:

• Prior to the 11/14/09-11/15/09 storm event, stage is relative to sensor elevation; subsequent stage measurements are relative to the stream bottom.

• Prior to the 11/14/09-11/15/09 storm event, flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report; subsequent flows are based on the station specific rating curve reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.

1 Dates shown indicate time period over which precipitation was observed.

2 Precipitation total shown may not match precipitation total shown in hydrograph because hydrograph totals may include contributions from subsequent rain events during the falling limb.

3 Due to "noise," Peak Velocity value is approximated.

HBHA = Halls Brook Holding Area
in = inches
ft = feet
ft/s = feet per second
cfs = cubic feet per second
cf = cubic feet

ERR = Equipment malfunction

Table 3e
Storm Hydrologic Data for SW-04-TT (HBHA Wetland Outlet)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Station	Date[1]	Precipitation[2] (in)	Peak Stage (ft)	Peak Velocity[3] (ft/s)	Peak Flow (cfs)	Total Runoff at 75% Falling Limb (cf)
SW-04-TT	06/18/09 - 06/19/10	0.95	1.43	3.92	10.42	1,550,883
	07/01/09 - 07/02/09	1.60	1.78	5.12	13.23	2,281,206
	07/07/09 - 07/08/09	2.48	2.20	5.55	17.60	2,441,779
	07/23/09 - 07/24/09	2.40	2.57	6.84	21.02	2,370,051
	11/14/09 - 11/15/09	2.94	2.58	6.97	50.51	3,459,359
	12/02/09 - 12/03/09	1.35	1.87	5.25	21.76	1,869,111
	01/25/10 - 01/26/10	0.95	2.71	6.66	57.46	3,939,638
	02/24/10 - 02/25/10	2.98	2.96	6.92	72.48	5,284,940
	02/25/10 - 02/27/10	1.85	3.27	8.16	92.78	5,751,879

Notes:

• Prior to the 11/14/09-11/15/09 storm event, stage is relative to sensor elevation; subsequent stage measurements are relative to the stream bottom.

• Prior to the 11/14/09-11/15/09 storm event, flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report; subsequent flows are based on the station specific rating curve reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.

1 Dates shown indicate time period over which precipitation was observed.

2 Precipitation total shown may not match precipitation total shown in hydrograph because hydrograph totals may include contributions from subsequent rain events during the falling limb.

3 Due to "noise," Peak Velocity value is approximated.

in = inches
ft = feet
ft/s = feet per second
cfs = cubic feet per second
cf = cubic feet

Table 3f
Storm Hydrologic Data for SW-03-TT (Aberjona)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Station	Date[1]	Precipitation[2] (in)	Peak Stage (ft)	Peak Velocity[3] (ft/s)	Peak Flow (cfs)	Total Runoff at 75% Falling Limb (cf)
SW-03-TT	06/18/09 - 06/19/10	0.91	1.58	1.78	14.37	1,239,944
	07/01/09 - 07/02/09	1.64	2.44	2.55	27.96	2,294,982
	07/07/09 - 07/08/09	2.53	3.10	3.03	38.39	2,499,196
	07/23/09 - 07/24/09	2.53	3.43	2.76	43.52	4,066,986
	11/14/09 - 11/15/09	2.80	3.64	2.74	46.86	4,274,335
	12/02/09 - 12/03/09	ERR	3.08	2.98	37.94	2,400,252
	01/25/10 - 01/26/10	0.96	3.53	3.07	45.05	3,783,233
	02/24/10 - 02/25/10	2.92	3.80[4]	2.93	55.79	5,938,676
	02/25/10 - 02/27/10	1.76	4.80	3.06	71.68	3,903,065

Notes:

• Stage is relative to sensor elevation.
• Flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report. New rating curves are being developed which may change the flow estimates for these stations.

1 Dates shown indicate time period over which precipitation was observed.
2 Precipitation total shown may not match precipitation total shown in hydrograph because hydrograph totals may include contributions from subsequent rain events during the falling limb.
3 Due to "noise," Peak Velocity value is approximated.
4 Peak value is estimated due to inaccurate stage readings (and therefore flow) prior to A/V sensor re-calibration.

in = inches
ft = feet
ft/s = feet per second
cfs = cubic feet per second
cf = cubic feet

ERR = Equipment malfunction (e.g., obstructed rain gauge)

Shaded values indicate readings where the A/V sensor became dislodged. Values shown for peak velocity represent the highest reading recorded prior to A/V sensor dislodgement. In addition, Peak Stage and therefore subsequent Peak Flow and Total Runoff at 75% Falling Limb may not represent actual conditions.

Table 3g
Storm Hydrologic Data for SW-05-TT (Salem Street)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Station	Date[1]	Precipitation[2] (in)	Peak Stage (ft)	Peak Velocity[3] (ft/s)	Peak Flow (cfs)	Total Runoff at 75% Falling Limb (cf)
SW-05-TT	06/18/09 - 06/19/10	Data Loss due to Isco Failure				
	07/01/09 - 07/02/09	1.87	2.45	2.24	72.72	9,737,499
	07/07/09 - 07/08/09	1.35	2.83	2.76	92.22	11,053,420
	07/23/09 - 07/24/09	3.28	3.05	3.23	102.98	11,611,000
	11/14/09 - 11/15/09	3.04	3.26	2.84	113.84	15,373,510
	12/02/09 - 12/03/09	1.18	2.67	1.92	83.63	9,801,157
	01/25/10 - 01/26/10	0.77	3.12	2.90	106.88	12,692,700
	02/24/10 - 02/27/10	5.43	3.79	3.88	164.51	45,198,860

Notes:

• Stage is relative to sensor elevation.

• Flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report. New rating curves are being developed which may change the flow estimates for these stations.

1 Dates shown indicate time period over which precipitation was observed.

2 Precipitation total shown may not match precipitation total shown in hydrograph because hydrograph totals may include contributions from subsequent rain events during the falling limb.

3 Due to "noise," Peak Velocity value is approximated.

in = inches
ft = feet
ft/s = feet per second
cfs = cubic feet per second
cf = cubic feet

Table 3h
Storm Hydrologic Data for SW-06-TT (Montvale Avenue)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Station	Date[1]	Precipitation[2] (in)	Peak Stage (ft)	Peak Velocity[3] (ft/s)	Peak Flow (cfs)	Total Runoff at 75% Falling Limb (cf)
SW-06-TT	06/18/09 - 06/19/10	0.94	2.78	1.40	30.67	4,222,181
	07/01/09 - 07/02/09	ERR	3.86	2.10	52.56	5,950,627
	07/07/09 - 07/08/09	ERR	3.99	2.19	55.19	6,953,697
	07/23/09 - 07/24/09	1.73	4.52	2.47	65.74	8,013,981
	11/14/09 - 11/15/09	ERR	4.86	2.62	72.64	11,251,110
	12/02/09 - 12/03/09	0.63	3.83	2.08	52.00	6,724,578
	01/25/10 - 01/26/10	0.66	4.65	2.52	68.34	9,435,577
	02/24/10 - 02/27/10	4.55	5.77	2.76	94.72	37,094,130

Notes:

• Stage is relative to sensor elevation.

• Flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report. New rating curves are being developed which may change the flow estimates for these stations.

1 Dates shown indicate time period over which precipitation was observed.

2 Precipitation total shown may not match precipitation total shown in hydrograph because hydrograph totals may include contributions from subsequent rain events during the falling limb.

3 Due to "noise," Peak Velocity value is approximated.

in = inches
ft = feet
ft/s = feet per second
cfs = cubic feet per second
cf = cubic feet

ERR = Equipment malfunction (e.g., obstructed rain gauge)

Table 3i
Storm Hydrologic Data for SW-07-TT (Swanton Street)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Station	Date[1]	Precipitation[2] (in)	Peak Stage (ft)	Peak Velocity[3] (ft/s)	Peak Flow (cfs)	Total Runoff at 75% Falling Limb (cf)
SW-07-TT	06/18/09 - 06/19/10	1.04	2.15	4.11	82.67	7,087,030
	07/01/09 - 07/02/09	1.70	3.83	5.40	200.44	16,890,270
	07/07/09 - 07/08/09	0.77	3.32	4.49	164.87	26,349,860
	07/23/09 - 07/24/09	Data Loss due to Isco Failure				
	11/14/09 - 11/15/09	2.64	3.78	5.04	197.26	22,935,700
	12/02/09 - 12/03/09	1.10	3.38	4.25	168.71	34,081,250
	01/25/10 - 01/26/10	0.96	4.48	4.75	245.97	27,218,250
	02/24/10 - 02/27/10	4.85	6.13	6.49	378.86	91,809,740

Notes:

• Stage is relative to sensor elevation.

• Flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report. New rating curves are being developed which may change the flow estimates for these stations.

1 Dates shown indicate time period over which precipitation was observed.

2 Precipitation total shown may not match precipitation total shown in hydrograph because hydrograph totals may include contributions from subsequent rain events during the falling limb.

3 Due to "noise," Peak Velocity value is approximated.

in = inches
ft = feet
ft/s = feet per second
cfs = cubic feet per second
cf = cubic feet

Shaded values indicate readings where the A/V sensor became dislodged. Values shown for peak velocity represent the highest reading recorded prior to A/V sensor dislodgement. In addition, Peak Stage and therefore subsequent Peak Flow and Total Runoff at 75% Falling Limb may not represent actual conditions.

Table 3j
Storm Hydrologic Data for SW-08-TT (USGS / Mystic Avenue)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Station	Date[1]	Precipitation[2] (in)	Peak Stage (ft)	Peak Velocity[3] (ft/s)	Peak Flow (cfs)	Total Runoff at 75% Falling Limb (cf)
SW-08-TT	06/18/09 - 06/19/10	0.55	3.08	1.05	202.28	39,070,400
	07/01/09 - 07/02/09	ERR	4.12	2.12	315.40	104,879,300
	07/07/09 - 07/08/09	ERR	3.62	1.96	261.03	75,114,590
	07/23/09 - 07/24/09	2.22	4.05	2.65	306.76	41,933,140
	11/14/09 - 11/15/09	2.20	12.43	ERR	293.00	43,714,260
	12/02/09 - 12/03/09	0.99	1.96	1.69	180.54	20,371,500
	01/25/10 - 01/26/10	0.92	2.61	2.35	344.26	52,620,430
	02/24/10 - 02/27/10	4.11	3.67	2.59	697.45	271,373,400

Notes:

• Prior to the 11/14/09-11/15/09 storm event, stage is relative to sensor elevation. For the 11/14/09-11/15/09 storm event, stage is Mean Sea Level (there is a 10.02 foot offset); subsequent stage measurements are relative to the stream bottom.

• Prior to the 11/14/09-11/15/09 storm event, flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report. For the 11/14/09-11/15/09 storm event, flow estimates are obtained from USGS station 01102500 - Aberjona River at Wincester, MA; subsequent flows are based on the station specific rating curve reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.

1 Dates shown indicate time period over which precipitation was observed.

2 Precipitation total shown may not match precipitation total shown in hydrograph because hydrograph totals may include contributions from subsequent rain events during the falling limb.

3 Due to "noise," Peak Velocity value is approximated.

in = inches
ft = feet
ft/s = feet per second
cfs = cubic feet per second
cf = cubic feet

ERR = Equipment malfunction (e.g., obstructed rain gauge, AV sensor dislodged)

Shaded values indicate readings where the A/V sensor became dislodged. Values shown for peak velocity represent the highest reading recorded prior to A/V sensor dislodgement. In addition, Peak Stage and therefore subsequent Peak Flow and Total Runoff at 75% Falling Limb may not represent actual conditions.

Table 4a
Ranges of Storm Flow Water Quality Parameters for SW-2-IP (AAD)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date[1]	Temperature (˚C)	Dissolved Oxygen (mg/l)	pH (s.u.)	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)
Remedial Design "Early Action"							
SW-2-IP	12/14/08 - 12/14/08	0.4 - 1.3	10.7 - 11.5	6.5 - 6.5	470.3 - 480.1	240 - 242	3.6 - 4.4
Surface Water Monitoring Plan							
SW-2-IP	06/18/09 - 06/20/09	17.6 - 21.8	4.3 - 6.8	6.8 - 7.1	395.1 - 470.1	174 - 536	NR
	07/01/09 - 07/03/09	16.8 - 18.8	4.0 - 7.9	6.7 - 6.9	379.0 - 489.0	74 - 546	NR
	07/07/09 - 07/09/09	17.3 - 19.8	4.1 - 9.0	6.7 - 7.2	371.3 - 476.1	60 - 518	NR
	07/23/09 - 07/25/09	17.8 - 24.9	4.6 - 9.1	6.6 - 7.0	366.8 - 428.3	46 - 430	NR
	11/14/09 - 11/15/09	9.1 - 11.0	8.0 - 11.0	6.8 - 7.1	387.4 - 424.5	74 - 600	NR
	12/03/09 - 12/03/09	7.2 - 11.0	10.0 - 11.0	6.9 - 7.1	481.5 - 512.9	66 - 336	NR
	01/25/10 - 01/26/10	0.0 - 3.1	9.5 - 11.4	6.8 - 6.9	476.0 - 616.6	584 - 2,162	NR
	02/24/10 - 02/25/10	0.5 - 2.9	9.8 - 13.1	7.0 - 7.3	7.2 - 121.0	314 - 586	NR
	02/25/10 - 02/26/10	2.0 - 4.5	10.5 - 11.6	7.0 - 7.2	100.1 - 138.2	248 - 518	NR

Notes:

AAD = Atlantic Avenue Drainway

˚C = Degrees Celsius

mg/l = milligrams per liter

s.u. = standard units

mV = milliVolts

µS/cm = microSiemens per centimeter

NTU = Nephelometric Turbidity Units

NR = Not recorded. Due to a software error in Flowlink 5™, turbidity values have been incorrectly recorded. These values will be updated following a software revision.

1 Dates shown indicate time period over which sample aliquots used in composite storm samples were collected; ranges of parameters reported are for same time period.

Table 4b
Ranges of Storm Flow Water Quality Parameters for SW-3-IP (BECO ROW)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date[1]	Temperature (˚C)	Dissolved Oxygen (mg/l)	pH (s.u.)	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)
Remedial Design "Early Action"							
SW-3-IP	12/11/08 - 12/13/08	-1.6 - 6.5	NM - 12.5	NM - 4.3	-323.1 - 507.8	-20 - 586	NM - 19.6
Surface Water Monitoring Plan							
SW-3-IP	06/18/09 - 06/19/09	16.4 - 20.4	2.1 - 3.9	6.4 - 6.7	441.2 - 522.3	22 - 86	NR
	07/01/09 - 07/03/09	Data rejected					
	07/07/09 - 07/09/09						
	07/24/09 - 07/24/09						
	11/14/09 - 11/14/09	10.6 - 10.7	9.8 - 10.4	6.3 - 6.7	86.0 - 112.1	16 - 128	NR
	12/03/09 - 12/03/09	10.0 - 14.4	6.8 - 8.5	6.3 - 6.8	298.6 - 332.5	12 - 84	NR
	01/25/10 - 01/25/10	Data rejected	9.3 - 11.0	Data rejected	61.7 - 128.0	Data rejected	NR
	02/24/10 - 02/24/10	0.9 - 5.0	7.5 - 13.3	6.4 - 7.2	-41.9 - 99.5	84 - 1,050	NR
	02/25/10 - 02/25/10	4.5 - 5.0	4.1 - 12.3	6.2 - 6.7	49.4 - 93.6	64 - 1,086	NR

Notes:

BECO ROW = Boston Edison Company right-of-way
˚C = Degrees Celsius
mg/l = milligrams per liter
s.u. = standard units
mV = milliVolts
µS/cm = microSiemens per centimeter
NTU = Nephelometric Turbidity Units
NM = Not measured (e.g., insufficient flow and/or due to equipment limitations)
NR = Not recorded. Due to a software error in Flowlink 5™, turbidity values have been incorrectly recorded. These values will be updated following a software revision.

Water quality parameter data for 7/1-2/09, 7/7-8/09 and 7/23-24/09 storms were reviewed and rejected due to problems associated with the dry conditions that existed prior to the storms.
Temperature, pH and Specific Conductance data for 1/25/10 storm were reviewed and rejected due to suspected icing of the sensors.

1 Dates shown indicate time period over which sample aliquots used in composite storm samples were collected; ranges of parameters reported are for same time period.

Table 4c
Ranges of Storm Flow Water Quality Parameters for SW-01-TT (Halls Brook)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date[1]	Temperature (˚C)	Dissolved Oxygen (mg/l)	pH (s.u.)	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)
Remedial Design "Early Action"							
SW-01-TT	12/11/08 - 12/14/08	1.2 - 4.6	9.8 - 12.2	6.4 - 6.7	503.4 - 556.6	784 - 1,854	22.6 - 2,874
Surface Water Monitoring Plan							
SW-01-TT	06/18/09 - 06/19/09	15.4 - 17.3	5.6 - 8.5	6.7 - 6.9	190.1 - 225.9	276 - 650	Data unrecoverable
	07/01/09 - 07/03/09	15.3 - 17.0	Data unrecoverable	6.6 - 6.9	403.5 - 564.0	170 - 660	NR
	07/07/09 - 07/09/09	15.1 - 17.8	Data unrecoverable	6.6 - 7.1	382.4 - 535.8	94 - 516	NR
	07/24/09 - 07/26/09	16.8 - 20.5	Data unrecoverable	6.3 - 6.9	392.5 - 471.7	158 - 548	NR
	11/14/09 - 11/16/09	9.7 - 10.0	7.9 - 9.2	6.5 - 6.8	449.8 - 476.0	154 - 268	NR
	12/03/09 - 12/04/09	8.1 - 11.7	6.6 - 8.7	6.7 - 6.9	481.3 - 498.3	150 - 396	NR
	01/25/10 - 01/26/10	0.7 - 3.3	10.7 - 11.2	6.8 - 7.0	Data unrecoverable	190 - 552	NR
	02/24/10 - 02/25/10	1.0 - 1.9	9.5 - 10.9	6.6 - 7.0	598.6 - 650.4	278 - 1,032	NR
	02/25/10 - 02/26/10	1.8 - 3.9	9.3 - 10.2	6.6 - 6.8	614.0 - 726.4	190 - 368	NR

Notes:

HBHA = Halls Brook Holding Area

˚C = Degrees Celsius

mg/l = milligrams per liter

s.u. = standard units

mV = milliVolts

µS/cm = microSiemens per centimeter

NTU = Nephelometric Turbidity Units

NR = Not recorded. Due to a software error in Flowlink 5™, turbidity values have been incorrectly recorded. These values will be updated following a software revision.

Turbidity data for 7/1-2/09 and dissolved oxygen data for 7/1-2/09, 7/7-8/09 and 7/23-24/09 storms unrecoverable due to Isco 6712 transmission errors.

ORP data for 1/25-1/26/10 storm unrecoverable due to communication errors between the In-Situ troll and the Isco 6712.

1 Dates shown indicate time period over which sample aliquots used in composite storm samples were collected; ranges of parameters reported are for same time period.

Table 4d
Ranges of Storm Flow Water Quality Parameters for SW-02-TT (HBHA Pond Outlet)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date[1]	Temperature (˚C)	Dissolved Oxygen (mg/l)	pH (s.u.)	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)
Remedial Design "Early Action"							
SW-02-TT	12/14/08 - 12/14/08	1.5 - 2.3	10.0 - 10.2	6.3 - 6.4	524.3 - 527.3	416 - 470	22.6 - 23.3
Surface Water Monitoring Plan							
SW-02-TT	06/18/09 - 06/20/09	16.2 - 21.0	5.4 - 6.8	6.1 - 6.3	360.7 - 423.3	474 - 750	NR
	07/01/09 - 07/03/09	16.0 - 17.7	3.4 - 5.7	6.3 - 6.5	248.1 - 532.9	484 - 890	NR
	07/07/09 - 07/09/09	15.8 - 17.4	1.2 - 6.2	6.0 - 6.1	190.8 - 499.4	282 - 902	NR
	07/24/09 - 07/26/09	17.2 - 20.1	2.6 - 7.5	6.3 - 6.6	182.3 - 471.8	234 - 964	NR
	11/14/09 - 11/15/09	9.3 - 11.2	5.8 - 7.6	6.3 - 6.6	270.0 - 481.3	248 - 880	NR
	12/03/09 - 12/04/09	6.4 - 10.8	7.7 - 8.8	6.4 - 6.5	412.2 - 495.2	402 - 788	NR
	01/25/10 - 01/26/10	1.3 - 3.8	5.9 - 9.8	6.4 - 6.5	Data unrecoverable	552 - 1,700	NR
	02/24/10 - 02/25/10	1.5 - 4.4	6.0 - 10.5	6.2 - 6.5	186.3 - 283.9	346 - 1,548	NR
	02/25/10 - 02/27/10	2.1 - 3.8	9.9 - 10.4	6.1 - 6.3	257.5 - 291.2	242 - 390	NR

Notes:

HBHA = Halls Brook Holding Area

˚C = Degrees Celsius

mg/l = milligrams per liter

s.u. = standard units

mV = milliVolts

µS/cm = microSiemens per centimeter

NTU = Nephelometric Turbidity Units

NR = Not recorded. Due to a software error in Flowlink 5™, turbidity values have been incorrectly recorded. These values will be updated following a software revision.

ORP data for 1/25-1/26/10 storm unrecoverable due to communication errors between the In-Situ troll and the Isco 6712.

1 Dates shown indicate time period over which sample aliquots used in composite storm samples were collected; ranges of parameters reported are for same time period.

Table 4e
Ranges of Storm Flow Water Quality Parameters for SW-04-TT (HBHA Wetland Outlet)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date[1]	Temperature (˚C)	Dissolved Oxygen (mg/l)	pH (s.u.)	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)
Remedial Design "Early Action"							
SW-04-TT	12/14/08 - 12/14/08	1.8 - 2.2	9.7 - 9.8	5.9 - 5.9	373.6 - 374.1	390 - 428	0 - 0
Surface Water Monitoring Plan							
SW-04-TT	06/18/09 - 06/19/09	16.7 - 21.9	5.1 - 7.9	6.5 - 6.7	218.0 - 317.2	358 - 754	NR
	07/01/09 - 07/03/09	16.1 - 18.2	4.6 - 7.8	6.4 - 6.8	237.0 - 347.6	242 - 802	NR
	07/07/09 - 07/09/09	15.7 - 19.3	4.9 - 9.4	6.1 - 6.9	231.7 - 418.4	38 - 728	NR
	07/24/09 - 07/26/09	Data rejected					
	11/14/09 - 11/15/09	10.5 - 11.6	6.5 - 9.9	6.5 - 6.8	177.8 - 331.6	72 - 424	NR
	12/03/09 - 12/04/09	9.7 - 10.7	6.7 - 7.7	6.9 - 6.9	251.7 - 321.8	416 - 612	NR
	01/25/10 - 01/26/10	1.7 - 5.5	8.1 - 10.7	6.6 - 6.7	117.2 - 273.5	620 - 1,232	NR
	02/24/10 - 02/25/10	2.1 - 3.9	9.3 - 11.7	6.6 - 6.8	126.2 - 284.4	364 - 1,278	NR
	02/25/10 - 02/27/10	3.2 - 4.4	10.4 - 11.3	6.5 - 6.6	293.0 - 319.5	250 - 352	NR

Notes:

HBHA = Halls Brook Holding Area

˚C = Degrees Celsius

mg/l = milligrams per liter

s.u. = standard units

mV = milliVolts

µS/cm = microSiemens per centimeter

NTU = Nephelometric Turbidity Units

NR = Not recorded. Due to a software error in Flowlink 5™, turbidity values have been incorrectly recorded. These values will be updated following a software revision.

Water quality data from 7/24-7/26/09 storm rejected due to communication errors between the In-Situ troll and the Isco 6712.

1 Dates shown indicate time period over which sample aliquots used in composite storm samples were collected; ranges of parameters reported are for same time period.

Table 4f
Ranges of Storm Flow Water Quality Parameters for SW-03-TT (Aberjona)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date[1]	Temperature (˚C)	Dissolved Oxygen (mg/l)	pH (s.u.)	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)
Surface Water Monitoring Plan							
SW-03-TT	06/19/09 - 06/20/09	16.9 - 19.6	4.1 - 5.4	6.1 - 6.3	315.0 - 410.3	256 - 688	NR
	07/01/09 - 07/03/09	16.3 - 18.1	5.4 - 8.3	6.5 - 6.7	391.4 - 549.0	226 - 824	NR
	07/07/09 - 07/09/09	15.5 - 18.1	5.4 - 9.5	5.8 - 6.5	412.5 - 550.0	46 - 582	NR
	07/24/09 - 07/26/09	17.9 - 21.4	4.1 - 8.6	6.6 - 6.8	425.9 - 509.3	148 - 782	NR
	11/14/09 - 11/15/09	10.2 - 11.4	6.4 - 9.3	6.1 - 6.7	469.6 - 512.6	88 - 494	NR
	12/03/09 - 12/04/09	8.8 - 11.6	3.5 - 4.0	6.5 - 6.8	233.0 - 286.0	192 - 666	NR
	01/24/10 - 01/26/10	0.8 - 5.4	11.1 - 12.4	6.6 - 6.8	Data unrecoverable	448 - 1,088	NR
	02/24/10 - 02/25/10	1.2 - 2.8	9.0 - 9.6	6.5 - 6.7	246.7 - 325.4	490 - 956	NR
	02/25/10 - 02/26/10	2.4 - 4.2	8.4 - 8.9	6.5 - 6.5	313.8 - 345.9	290 - 438	NR

Notes:

˚C = Degrees Celsius
mg/l = milligrams per liter
s.u. = standard units
mV = milliVolts
µS/cm = microSiemens per centimeter
NTU = Nephelometric Turbidity Units
NR = Not recorded. Due to a software error in Flowlink 5™, turbidity values have been incorrectly recorded. These values will be updated following a software revision.
ORP data for 1/25-1/26/10 storm unrecoverable due to communication errors between the In-Situ troll and the Isco 6712.

1 Dates shown indicate time period over which sample aliquots used in composite storm samples were collected; ranges of parameters reported are for same time period.

Table 4g
Ranges of Storm Flow Water Quality Parameters for SW-05-TT (Salem Street)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date[1]	Temperature (˚C)	Dissolved Oxygen (mg/l)	pH (s.u.)	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)
Surface Water Monitoring Plan							
SW-05-TT	06/18/09 - 06/18/09	Data lost due to Isco 6712 malfunction					
	07/01/09 - 07/02/09	16.5 - 17.9	3.3 - 6.7	6.3 - 6.7	441.6 - 530.5	402 - 1,072	NR
	07/07/09 - 07/09/09	16.5 - 17.6	4.0 - 6.5	6.1 - 6.4	507.5 - 544.2	292 - 670	NR
	07/24/09 - 07/26/09	17.6 - 24.0	2.5 - 7.3	6.2 - 6.6	441.1 - 496.7	264 - 1,022	NR
	11/14/09 - 11/16/09	Data rejected					
	12/03/09 - 12/04/09	Data rejected					
	01/25/10 - 01/26/10	0.5 - 3.1	9.2 - 11.0	6.7 - 6.9	209.7 - 305.1	586 - 1,150	NR
	02/24/10 - 02/27/10	0.9 - 4.2	8.9 - 12.3	6.4 - 6.8	339.6 - 494.7	320 - 2,056	NR

Notes:

HBHA = Halls Brook Holding Area

˚C = Degrees Celsius

mg/l = milligrams per liter

s.u. = standard units

mV = milliVolts

µS/cm = microSiemens per centimeter

NTU = Nephelometric Turbidity Units

NR = Not recorded. Due to a software error in Flowlink 5™, turbidity values have been incorrectly recorded. These values will be updated following a software revision.

Water quality data from 11/14-11/16/09 and 12/3-12/4/09 storms rejected due to communication errors between the In-Situ troll and the Isco 6712.

1 Dates shown indicate time period over which sample aliquots used in composite storm samples were collected; ranges of parameters reported are for same time period.

Table 4h
Ranges of Storm Flow Water Quality Parameters for SW-06-TT (Montvale Avenue)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date[1]	Temperature (˚C)	Dissolved Oxygen (mg/l)	pH (s.u.)	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)
Surface Water Monitoring Plan							
SW-06-TT	06/19/09 - 06/20/09	16.5 - 18.3	7.0 - 7.3	6.7 - 6.8	429.8 - 454.7	Data unrecoverable	NR
	07/01/09 - 07/03/09	16.1 - 17.7	5.8 - 7.5	6.4 - 6.8	401.0 - 525.8	338 - 772	NR
	07/07/09 - 07/09/09	16.0 - 18.5	6.7 - 8.4	6.5 - 7.0	374.5 - 523.4	178 - 654	NR
	07/24/09 - 07/26/09	17.4 - 21.5	5.7 - 7.7	6.5 - 6.8	456.6 - 514.1	174 - 418	NR
	11/14/09 - 11/17/09	8.3 - 11.9	5.7 - 6.7	6.6 - 6.8	453.7 - 487.7	346 - 548	NR
	12/03/09 - 12/04/09	8.4 - 12.0	8.0 - 10.6	6.7 - 6.9	467.3 - 483.2	246 - 476	NR
	01/25/10 - 01/27/10	Data unrecoverable	1.0 - 3.8	6.8 - 7.0	369.1 - 429.1	512 - 1,788	NR
	02/24/10 - 02/28/10	1.4 - 4.4	9.8 - 11.6	6.8 - 7.0	59.1 - 138.9	200 - 954	NR

Notes:

˚C = Degrees Celsius
mg/l = milligrams per liter
s.u. = standard units
mV = milliVolts
µS/cm = microSiemens per centimeter
NTU = Nephelometric Turbidity Units
NR = Not recorded. Due to a software error in Flowlink 5™, turbidity values have been incorrectly recorded. These values will be updated following a software revision.
Specific conductance data for 6/18-19/09 storm unrecoverable due Isco 6712 transmission errors.
Temperature data for 1/25-1/27/10 storm unrecoverable to apparent In-Situ troll sensor damage.

1 Dates shown indicate time period over which sample aliquots used in composite storm samples were collected; ranges of parameters reported are for same time period.

Table 4i
Ranges of Storm Flow Water Quality Parameters for SW-07-TT (Swanton Street)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date[1]	Temperature (˚C)	Dissolved Oxygen (mg/l)	pH (s.u.)	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)
Surface Water Monitoring Plan							
SW-07-TT	06/19/09 - 06/19/09	16.5 - 17.9	6.6 - 7.9	6.5 - 6.8	458.5 - 489.9	432 - 1,402	NR
	07/01/09 - 07/02/09	16.4 - 17.7	6.3 - 7.8	5.6 - 5.9	449.1 - 494.8	58 - 928	NR
	07/07/09 - 07/09/09	16.2 - 18.0	6.3 - 7.7	6.4 - 6.9	389.6 - 503.9	258 - 1,056	NR
	07/24/09 - 07/26/09	17.9 - 20.9	6.0 - 6.7	6.5 - 6.8	482.7 - 506.6	496 - 726	NR
	11/14/09 - 11/16/09	9.8 - 10.8	6.9 - 8.4	7.2 - 7.3	63.6 - 95.3	718 - 1,120	NR
	12/03/09 - 12/04/09	Data rejected					
	01/25/10 - 01/27/10	2.1 - 4.8	8.8 - 9.8	6.7 - 7.0	Data unrecoverable	366 - 1,470	NR
	02/24/10 - 02/27/10	2.7 - 5.1	9.6 - 11.6	6.5 - 7.1	349.4 - 586.2	282 - 1,658	NR

Notes:

˚C = Degrees Celsius
mg/l = milligrams per liter
s.u. = standard units
mV = milliVolts
µS/cm = microSiemens per centimeter
NTU = Nephelometric Turbidity Units
NR = Not recorded. Due to a software error in Flowlink 5™, turbidity values have been incorrectly recorded. These values will be updated following a software revision.
Water quality data from 12/3-12/4/09 storm reviewed and rejected due to communication errors between the In-Situ troll and the Isco 6712.
ORP data for 1/25-1/26/10 storm unrecoverable due to communication errors between the In-Situ troll and the Isco 6712.

1 Dates shown indicate time period over which sample aliquots used in composite storm samples were collected; ranges of parameters reported are for same time period.

Table 4j
Ranges of Storm Flow Water Quality Parameters for SW-08-TT (USGS / Mystic Avenue)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date[1]	Temperature (˚C)	Dissolved Oxygen (mg/l)	pH (s.u.)	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)
Surface Water Monitoring Plan							
SW-08-TT	06/18/09 - 06/20/09	16.9 - 18.7	5.7 - 7.1	6.4 - 6.6	470.9 - 525.3	490 - 976	NR
	07/01/09 - 07/03/09	16.8 - 18.3	4.4 - 8.7	6.8 - 7.1	443.1 - 509.7	358 - 938	NR
	07/07/09 - 07/11/09	17.7 - 20.9	5.3 - 8.0	7.0 - 7.3	361.4 - 508.1	506 - 1,002	NR
	07/24/09 - 07/26/09	18.2 - 22.6	1.8 - 8.1	7.0 - 7.8	360.3 - 488.8	352 - 1,044	NR
	11/14/09 - 11/16/09	9.3 - 11.5	2.7 - 10.5	6.9 - 7.2	387.3 - 463.5	184 - 942	NR
	12/03/09 - 12/05/09	8.3 - 11.7	9.6 - 11.5	7.0 - 7.3	454.3 - 462.7	190 - 534	NR
	01/25/10 - 01/27/10	1.5 - 3.9	11.0 - 11.8	6.9 - 7.2	169.8 - 284.1	398 - 1,040	NR
	02/24/10 - 02/28/10	2.3 - 4.4	10.1 - 14.3	6.9 - 7.2	60.4 - 500.7	310 - 1,132	NR

Notes:
USGS = United States Geological Survey
˚C = Degrees Celsius
mg/l = milligrams per liter
s.u. = standard units
mV = milliVolts
µS/cm = microSiemens per centimeter
NTU = Nephelometric Turbidity Units
NR = Not recorded. Due to a software error in Flowlink 5™, turbidity values have been incorrectly recorded. These values will be updated following a software revision.

1 Dates shown indicate time period over which sample aliquots used in composite storm samples were collected; ranges of parameters reported are for same time period.

Table 5a
Storm Flow Laboratory Analytical Results for SW-2-IP (Atlantic Avenue Drainway)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date[1]	Benzene (µg/l)	Total Arsenic (mg/l)	Dissolved Arsenic (mg/l)	Total Iron (mg/l)	Dissolved Iron (mg/l)	TSS (mg/l)	Ammonia (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TKN (mg/l)	Total Organic Nitrogen (mg/l)
Groundwater & Surface Water Investigation Plan												
SW-2	09/04/00	--	0.002U	0.002U	--	--	5U	--	--	--	--	--
	09/18/00	--	0.0025U	0.0025U	--	--	5U	--	--	--	--	--
	10/09/00	--	0.0025U	0.0025U	--	--	5U	--	--	--	--	--
	10/19/00	--	0.0036B	0.0025U	--	--	12	--	--	--	--	--
	12/18/00	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	03/23/01	--	0.0035U	0.0035U	--	--	21.6	--	--	--	--	--
	03/29/01	--	0.0025B	0.0042U	--	--	14	--	--	--	--	--
Remedial Design "Early Action"												
SW-2-IP	12/15/08	--	0.003U	0.003U	--	--	5U	0.229	0.05U	0.22U	0.54	0.31
Surface Water Monitoring Plan												
SW-2-IP	06/20/09	0.5U	0.003	0.003	1.3	0.06	6.3	0.086	0.08	0.27	0.76	0.67
	07/03/06	0.5U	0.003U	0.003U	1.8	0.34	14	0.187	0.05U	0.28	0.68	0.49
	07/09/09	0.5U	0.003U	0.003U	1.7	0.28	7.9	0.123	0.06	0.43	0.5	0.38
	07/26/09	0.5U	0.0028J	0.003U	1.2	0.38	12	0.613	0.028J	0.34	1.2	0.59
	11/16/09	0.5U	0.003U	0.003U	0.94	0.11	5.1	0.072J	0.05U	0.36	0.42	0.42
	12/04/09	0.5U	0.0025J	0.003U	1.2	0.12	10	0.136	0.05U	0.2	0.55	0.41
	01/27/10	0.5U	0.003U	0.003U	1	0.031J	12	0.182	0.05U	0.3	0.44	0.3U
	02/25/10	0.5U	0.003U	0.003U	0.8	0.13	5.8	0.213	0.05U	0.16	0.52	0.31
	03/01/10*	0.5U	0.0022J	0.003U	0.64	0.12	6.5	0.181	0.025J	0.15	0.43	0.25J

Notes:

1 Dates shown are dates on which composite storm samples were prepared; benzene samples are typically collected one or more days before the date shown.

* Not yet validated
AAD = Atlantic Avenue Drainway
µg/l = micrograms per liter
mg/l = milligrams per liter
TSS = Total Suspended Solids
TKN = Total Kjeldahl Nitrogen
-- = Sample not analyzed for this compound
U = Compound or sample not detected; value shown is reporting limit
J = Analyte concentration is below quantitation limit, but greater than or equal to 1/2 the laboratory detection limit. Value is estimated
B = For organic analytes, compound detected in laboratory blank; for inorganic analytes, analyte below reporting limit, but greater than or equal to 1/2 the laboratory detection limit (value is estimated
NS = Not Sampled

Table 5b
Storm Flow Laboratory Analytical Results for SW-3-IP (Boston Edison Co. ROW)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date[1]	Benzene (µg/l)	Total Arsenic (mg/l)	Dissolved Arsenic (mg/l)	Total Iron (mg/l)	Dissolved Iron (mg/l)	TSS (mg/l)	Ammonia (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TKN (mg/l)	Total Organic Nitrogen (mg/l)
Groundwater & Surface Water Investigation Plan												
SW-3	09/04/00	--	0.0058B	0.0057B	--	--	5U	--	--	--	--	--
	09/18/00	--	0.0102	0.0037B	--	--	5U	--	--	--	--	--
	10/09/00	--	0.0084B	0.0025U	--	--	5U	--	--	--	--	--
	10/19/00	--	0.0122	0.0093B	--	--	5	--	--	--	--	--
	12/18/00	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	03/23/01	--	0.022	0.0106	--	--	35.6	--	--	--	--	--
	03/29/01	--	0.0763	--	--	--	55.6	--	--	--	--	--
Remedial Design "Early Action"												
SW-3-IP	12/15/08	--	0.0024J	0.003U	--	--	15	0.246	0.05U	0.16U	0.59	0.34
Surface Water Monitoring Plan												
SW-3-IP	06/20/09	0.5U	0.024	0.004	1.8	0.06	29	0.759	0.1	0.46	1.2	0.44
	07/03/09	0.5U	0.036	0.004	3.6	0.16	58	1.27	0.05U	0.39	1.8	0.53
	07/09/09	0.5U	0.045	0.003U	5.8	0.046J	60	0.22	0.05U	0.32	0.59	0.37
	07/26/09	0.5U	0.004	0.0028J	0.35	0.05	5U	0.231	0.05U	0.1U	0.34	0.3U
	11/16/09	0.5U	0.05	0.0029J	5.3	0.04J	300	0.412	0.05U	0.19	1.3	0.89
	12/04/09	0.5U	0.042	0.003	3.8	0.042J	30	0.494	0.05U	0.16	0.79	0.3
	01/27/10	0.5U	0.046	0.003U	7.5	0.038J	120	0.27	0.05U	0.11	0.69	0.42
	02/25/10	0.5U	0.014	0.003U	2	0.11	26	1.87	0.05U	0.22	2.1	0.3U
	03/01/10*	0.5U	0.007	0.003U	0.95	0.18	9	1.49	0.05U	0.13	1.7	0.21J

Notes:

1 Dates shown are dates on which composite storm samples were prepared; benzene samples are typically collected one or more days before the date shown.

* Not yet validated
BECO ROW = Boston Edison Company Right-of-Way
µg/l = micrograms per liter
mg/l = milligrams per liter
TSS = Total Suspended Solids
TKN = Total Kjeldahl Nitrogen
-- = Sample not analyzed for this compound
U = Compound or sample not detected; value shown is reporting limit
J = Analyte concentration is below quantitation limit, but greater than or equal to 1/2 the laboratory detection limit. Value is estimated
B = For organic analytes, compound detected in laboratory blank; for inorganic analytes, analyte below reporting limit, but greater than or equal to 1/2 the laboratory detection limit (value is estimated

Table 5c
Storm Flow Laboratory Analytical Results for SW-01-TT (Halls Brook)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date[1]	Benzene (µg/l)	Total Arsenic (mg/l)	Dissolved Arsenic (mg/l)	Total Iron (mg/l)	Dissolved Iron (mg/l)	TSS (mg/l)	Ammonia (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TKN (mg/l)	Total Organic Nitrogen (mg/l)
Groundwater & Surface Water Investigation Plan												
SW-1	09/04/00	--	0.0028B	0.002U	--	--	5U	--	--	--	--	--
	09/18/00	--	0.0044B	0.0025U	--	--	5U	--	--	--	--	--
	10/09/00	--	0.0025U	0.0025U	--	--	5U	--	--	--	--	--
	10/19/00	--	0.0062B	0.005U	--	--	25.5	--	--	--	--	--
	12/18/00	--	0.0063B	0.0035U	--	--	13.6	--	--	--	--	--
	03/23/01	--	0.0036J	0.0035U	--	--	62.8	--	--	--	--	--
	03/29/01	--	0.0024U	0.0042U	--	--	5.2	--	--	--	--	--
Multiple Source Groundwater Response Plan												
SW-01-TT	04/26/02	--	0.0051	0.002U	2.76	0.327	31.2J	--	--	--	--	--
	05/15/02	--	0.0018J	0.002U	1.23	0.447	25.8J	--	--	--	--	--
	07/25/02	--	0.0036	0.0013U	1.94	0.226J	22.1J	--	--	--	--	--
	08/31/02	--	0.0057U	0.0039UJ	1.65	0.0573U	15.8J	--	--	--	--	--
	09/25/02	--	0.0022J	0.0025U	1.68	0.203	21.4J	--	--	--	--	--
	10/18/02	--	0.0042J	0.003U	2.06	0.0818U	20.4	--	--	--	--	--
Remedial Design "Early Action"												
SW-01-TT	12/15/08	--	0.005	0.003U	--	--	30	0.61	0.05U	0.71	1.8	1.2
Surface Water Monitoring Plan												
SW-01-TT	06/20/09	0.5U	0.003U	0.003U	1.5	0.34	6.9	0.992	0.12	0.96	1.7	0.71
	06/20/09A	--	0.0028J	0.003U	1.6	0.29	20	1.24	0.11	0.54	2	0.76
	07/03/09	0.5U	0.0027J	0.003U	3.1	0.6	16	1.01	0.05	0.49	0.98	0.3U
	07/09/09	0.5U	0.003U	0.003U	1.4	0.51	23	0.667	0.08	0.53	1.5	0.83
	07/26/09	0.5U	0.0027J	0.003U	1.3	0.31	7.3	0.0654J	0.05U	0.1	0.55	0.55
	11/16/09	0.5U	0.008	0.003U	5.6	0.3	130	0.474	0.05U	0.31	1.9	1.4
	12/04/09	0.5U	0.0023J	0.003U	1.7	0.26	21	0.63	0.05U	0.42	1.3	0.67
	01/27/10†	0.5U	0.005	0.003U	3.8	0.18	58	0.486	0.05U	0.38	1.3	0.81
	02/25/10	0.5U	0.0026J	0.003U	1.6	0.2	11	0.459	0.05U	0.32	1	0.54
	03/01/10*	0.5U	0.004	0.003U	1.3	0.18	11	0.414	0.05U	0.36	1	0.59

Notes:

1 Dates shown are dates on which composite storm samples were prepared; benzene samples are typically collected one or more days before the date shown.

* Not yet validated

†The samples collected from Stations SW-01-TT and SW-02-TT during the January 25-26, 2010 storm event do not reflect the laboratory-reported results. Specifically, based on historical analytical results for these stations and the results of a duplicate sample collected from Station SW-01-TT during the January 25-26, 2010 storm event, Roux Associates 1) believes that the sample designated as SW02TT_20100127 is actually the sample collected from Station SW-01-TT and the sample designated as SW01TT_20100127 is actually the sample collected from Station SW-02-TT and 2) has reported the results accordingly.

µg/l = micrograms per liter
mg/l = milligrams per liter
TSS = Total Suspended Solids
TKN = Total Kjeldahl Nitrogen
-- = Sample not analyzed for this compound
U = Compound or sample not detected; value shown is reporting limit
J = Analyte concentration is below quantitation limit, but greater than or equal to 1/2 the laboratory detection limit. Value is estimated.
B = For organic analytes, compound detected in laboratory blank; for inorganic analytes, analyte below reporting limit, but greater than or equal to 1/2 the laboratory detection limit (value is estimated)

Table 5d
Storm Flow Laboratory Analytical Results for SW-02-TT (HBHA Pond Outlet)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date[1]	Benzene (µg/l)	Total Arsenic (mg/l)	Dissolved Arsenic (mg/l)	Total Iron (mg/l)	Dissolved Iron (mg/l)	TSS (mg/l)	Ammonia (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TKN (mg/l)	Total Organic Nitrogen (mg/l)
Groundwater & Surface Water Investigation Plan												
SW-4A	09/18/00	--	0.055	0.0034J	5.66	--	20	--	--	--	--	--
SW-4B	09/18/00	--	0.0452	0.0025U	5.01	--	18.5	--	--	--	--	--
SW-4A	10/09/00	--	0.01	0.0025U	0.8	--	5U	--	--	--	--	--
SW-4	10/19/00	--	0.0305	0.0108	2.52	--	7.5	--	--	--	--	--
	12/18/00	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	03/29/01	--	0.006J	0.0071J	0.881UJ	--	7.2	--	--	--	--	--
Multiple Source Groundwater Response Plan												
SW-02-TT	04/26/02	--	0.0217	0.008	2.24	0.56	8.8J	--	--	--	--	--
	05/15/02	--	0.0815	0.0274	5.28	1.28	15.5J	--	--	--	--	--
	07/25/02	--	0.0205	0.0037	2.06	0.138U	6J	--	--	--	--	--
	08/31/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	09/25/02	--	0.037	0.0038J	3.47	0.0391	7.6J	--	--	--	--	--
	10/18/02	--	0.0774	0.0083	6.52	0.297	23.6	--	--	--	--	--
Remedial Design "Early Action"												
SW-02-TT	12/15/08	--	0.012	0.008	--	--	5U	2.95	0.05U	0.58	3.7	0.75
Surface Water Monitoring Plan												
SW-02-TT	06/20/09	0.66	--	--	--	--	--	--	--	--	--	--
	07/03/09	0.5U	0.027	0.011	3.2	1.3	9.2	8.47	0.07	0.51	9.2	0.73
	07/09/09	4.7	0.019	0.009	2.8	1.3	9.5	4.43	0.1	0.68	5	0.57
	07/26/09	1.7	0.015	0.009	1.6	0.67	5U	3.15	0.037J	0.3	4	0.85
	11/16/09	9.1	0.008	0.009	1.3J	1.3J	11J	5.91	0.05U	0.38	6.9	0.99
	12/04/09*	3.8	0.021	0.013	2	0.82	5U	5.7	0.05U	0.47	6.1	0.4
	01/27/10†	4.1	0.024	0.007	3.8	0.64	22	7.49	0.05U	0.4	8.5	1
	02/25/10	7.3	0.016	0.006	2.5	0.69	14	6.69	0.05U	0.34	7.2	0.51
	03/01/10*	0.28J	0.005	0.004	0.72	0.36	10	1.15	0.025J	0.34	1.7	0.55

Notes:

1 Dates shown are dates on which composite storm samples were prepared; benzene samples are typically collected one or more days before the date shown.

* Not yet validated

†The samples collected from Stations SW-01-TT and SW-02-TT during the January 25-26, 2010 storm event do not reflect the laboratory-reported results. Specifically, based on historical analytical results for these stations and the results of a duplicate sample collected from Station SW-01-TT during the January 25-26, 2010 storm event, Roux Associates 1) believes that the sample designated as SW02TT_20100127 is actually the sample collected from Station SW-01-TT and the sample designated as SW01TT_20100127 is actually the sample collected from Station SW-02-TT and 2) has reported the results accordingly.

HBHA = Halls Brook Holding Area
µg/l = micrograms per liter
mg/l = milligrams per liter
TSS = Total Suspended Solids
TKN = Total Kjeldahl Nitrogen
-- = Sample not analyzed for this compound
U = Compound or sample not detected; value shown is reporting limit
J = Analyte concentration is below quantitation limit, but greater than or equal to 1/2 the laboratory detection limit. Value is estimated
NS = Not Sampled

Table 5e
Storm Flow Laboratory Analytical Results for SW-04-TT (HBHA Wetland Outlet)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date[1]	Benzene (µg/l)	Total Arsenic (mg/l)	Dissolved Arsenic (mg/l)	Total Iron (mg/l)	Dissolved Iron (mg/l)	TSS (mg/l)	Ammonia (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TKN (mg/l)	Total Organic Nitrogen (mg/l)
Groundwater & Surface Water Investigation Plan												
SW-9	09/18/00	--	0.0215	0.0028J	1.73	--	7	--	--	--	--	--
	10/09/00	--	0.0093	0.0025U	1.14	--	5	--	--	--	--	--
	10/19/00	--	0.0194	0.0108	1.9	--	5U	--	--	--	--	--
	12/18/00	--	0.009	0.0039J	1.5	--	5U	--	--	--	--	--
	03/23/01	--	0.0142	0.0086	1.49	--	7.2	--	--	--	--	--
	03/29/01	--	0.0072	0.0042U	1.18UJ	--	14.4	--	--	--	--	--
SW-9A	03/23/01	--	0.0035U	--	--	--	5	--	--	--	--	--
Multiple Source Groundwater Response Plan												
SW-04-TT	04/26/02	--	0.0117	0.0059	1.49	0.419	6	--	--	--	--	--
	05/16/02	--	0.0115	0.0049	2.28	0.694	7J	--	--	--	--	--
	07/25/02	--	0.0268	0.0059	2.59	--	20.8J	--	--	--	--	--
	08/06/02	--	0.0368	0.009	3.8	0.0791U	13.6J	--	--	--	--	--
	08/31/02	--	0.029	0.0044UJ	3	0.0276U	15.2J	--	--	--	--	--
	09/25/02	--	0.0253	0.0074	3.06	0.569	10.8J	--	--	--	--	--
	10/18/02	--	0.0478	0.0141	4.6	1.14	15.6	--	--	--	--	--
Remedial Design "Early Action"												
SW-04-TT	12/15/08	--	0.011	0.005	--	--	5.5	2.46	0.05U	0.48	3.1	0.64
Surface Water Monitoring Plan												
SW-04-TT	06/20/09	0.36J	0.016	0.003	--	--	5.5	3.95	0.12	0.58	4.5	0.55
	06/20/09A	--	0.014	0.007	1.9	0.72	14	2.74	0.12	0.53	3.3	0.56
	07/03/09	0.5U	0.02	0.008	--	--	9.5	5.84	0.1	0.71	6.9	1.1
	07/09/09	0.5U	0.016	0.008	--	--	7.3	3.55	0.14	0.55	4.2	0.65
	07/26/09	0.5U	0.011	0.005	--	--	5U	2.38	0.06	0.41	3	0.62
	11/16/09	1.9	0.017	0.008	--	--	5.9	5.79	0.05U	0.4	6.4	0.61
	12/04/09	2.2	0.015	0.007	--	--	5U	5.13	0.028J	0.68	5.4	0.27J
	01/27/10	0.5U	0.015	0.008	--	--	13	7.12	0.032J	0.46	7.7	0.58
	02/25/10	0.5	0.012	0.006	--	--	6.3	6.06	0.05U	0.36	6.4	0.34
	03/01/10*	0.5U	0.004	0.0022J	--	--	5U	0.953	0.05U	0.33	1.3	0.35

Notes:

1 Dates shown are dates on which composite storm samples were prepared; benzene samples are typically collected one or more days before the date shown

* Not yet validated
HBHA = Halls Brook Holding Area
µg/l = micrograms per liter
mg/l = milligrams per liter
TSS = Total Suspended Solids
TKN = Total Kjeldahl Nitrogen
-- = Sample not analyzed for this compound
U = Compound or sample not detected; value shown is reporting limit
J = Analyte concentration is below quantitation limit, but greater than or equal to 1/2 the laboratory detection limit. Value is estimated

Table 5f
Storm Flow Laboratory Analytical Results for SW-03-TT (Aberjona)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date[1]	Benzene (µg/l)	Total Arsenic (mg/l)	Dissolved Arsenic (mg/l)	Total Iron (mg/l)	Dissolved Iron (mg/l)	TSS (mg/l)	Ammonia (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TKN (mg/l)	Total Organic Nitrogen (mg/l)
Multiple Source Groundwater Response Plan												
SW-03-TT	04/26/02	--	0.0121	0.002U	1.93	0.307	--	--	--	--	--	--
	05/15/02	--	0.0075	0.002U	1.44	0.404	5UJ	--	--	--	--	--
	07/25/02	--	0.0117	0.0041	1.32	0.143	7J	--	--	--	--	--
	08/31/02	--	0.0195	0.0037UJ	1.73	0.14U	8.8J	--	--	--	--	--
	09/25/02	--	0.0122	0.004J	1.44	0.335	5.2J	--	--	--	--	--
	10/18/02	--	0.0284	0.003U	3.14	0.0721U	17.2	--	--	--	--	--
Surface Water Monitoring Plan												
SW-03-TT	06/20/09	0.5U	0.006	0.005	--	--	6.6	0.312	0.12	0.57	0.83	0.52
	07/03/09	0.5U	0.005	0.003U	--	--	18	0.249	0.08	0.58	1	0.75
	07/09/09	0.5U	0.004	0.003U	--	--	22	0.241	0.09	0.6	0.93	0.69
	07/26/09	0.5U	0.004	0.0029J	--	--	5U	0.256	0.07	0.75	0.75	0.49
	11/16/09	0.5U	0.009	0.003U	--	--	16	0.134	0.05U	0.36	0.69	0.56
	12/04/09	0.5U	0.003U	0.003	--	--	5U	0.248	0.028J	0.55	0.72	0.47
	01/27/10	0.5U	0.009	0.003U	--	--	28	0.315	0.05U	0.48	0.93	0.62
	02/25/10	0.5U	0.013	0.003U	--	--	42	0.292	0.05U	0.4	1	0.71
	03/01/10*	0.5U	0.003U	0.003U	--	--	6.7	0.201	0.05U	0.45	0.57	0.37

Notes:
1 Dates shown are dates on which composite storm samples were prepared; benzene samples are typically collected one or more days before the date shown

* Not yet validated
µg/l = micrograms per liter
mg/l = milligrams per liter
TSS = Total Suspended Solids
TKN = Total Kjeldahl Nitrogen
-- = Sample not analyzed for this compound
U = Compound or sample not detected; value shown is reporting limit
J = Analyte concentration is below quantitation limit, but greater than or equal to 1/2 the laboratory detection limit. Value is estimated

Table 5g
Storm Flow Laboratory Analytical Results for SW-05-TT (Salem Street)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date[1]	Benzene (µg/l)	Total Arsenic (mg/l)	Dissolved Arsenic (mg/l)	Total Iron (mg/l)	Dissolved Iron (mg/l)	TSS (mg/l)	Ammonia (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TKN (mg/l)	Total Organic Nitrogen (mg/l)
Multiple Source Groundwater Response Plan												
SW-05-TT	04/26/02	--	0.015	0.0022J	2.09	0.356	15.7	--	--	--	--	--
	05/15/02	--	0.0233	0.0126	2.21	0.968	8J	--	--	--	--	--
	07/25/02	--	0.0175	0.0023J	1.85	0.129	4.4J	--	--	--	--	--
	08/31/02	--	0.0126	0.0025U	1.16	0.0884U	3J	--	--	--	--	--
	09/25/02	--	0.0115	0.0025U	1.15	0.0607	3.6J	--	--	--	--	--
	10/18/02	--	0.012	0.003U	1.46	0.244	6.8	--	--	--	--	--
Surface Water Monitoring Plan												
SW-05-TT	06/20/09	0.5U	0.01	0.004	--	--	8	0.801	0.13	0.67	1.6	0.8
	07/03/09	0.5U	0.008	0.004	--	--	10	1.13	0.11	0.65	1.8	0.67
	07/09/09	0.5U	0.008	0.007	--	--	5U	1.65	0.18	0.76	2.3	0.65
	07/26/09	0.5U	0.006	0.005	--	--	5U	0.423	0.07	0.7	0.93	0.51
	11/16/09	0.5U	0.01	0.006	--	--	5U	1.94	0.028J	0.56	2.6	0.66
	12/04/09	0.5U	0.007	0.003	--	--	5U	1.67	0.032J	0.7	2	0.33
	01/27/10	0.5U	0.024	0.0021J	--	--	35	2.67	0.05U	0.51	3.5	0.83
	03/01/10*	0.5U	0.004	0.0027J	--	--	5.9	1.36	0.05U	0.41	1.8	0.44

Notes:
1 Dates shown are dates on which composite storm samples were prepared; benzene samples are typically collected one or more days before the date shown

* Not yet validated
µg/l = micrograms per liter
mg/l = milligrams per liter
TSS = Total Suspended Solids
TKN = Total Kjeldahl Nitrogen
-- = Sample not analyzed for this compound
U = Compound or sample not detected; value shown is reporting limit
J = Analyte concentration is below quantitation limit, but greater than or equal to 1/2 the laboratory detection limit. Value is estimated

Table 5h
Storm Flow Laboratory Analytical Results for SW-06-TT (Montvale Avenue)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date[1]	Benzene (µg/l)	Total Arsenic (mg/l)	Dissolved Arsenic (mg/l)	Total Iron (mg/l)	Dissolved Iron (mg/l)	TSS (mg/l)	Ammonia (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TKN (mg/l)	Total Organic Nitrogen (mg/l)
Multiple Source Groundwater Response Plan												
SW-06-TT	04/26/02	--	0.0168	0.0034J	3.01	0.595	30.4	--	--	--	--	--
	05/15/02	--	0.0212	0.0118	2.15	0.79	11.5J	--	--	--	--	--
	07/25/02	--	0.0152	0.0025J	1.92	0.116U	8J	--	--	--	--	--
	08/31/02	--	0.0152	0.0025U	1.54	0.0919U	9.2J	--	--	--	--	--
	09/25/02	--	0.0255	0.0038J	2.77	0.211	18.6J	--	--	--	--	--
	10/18/02	--	0.0255	0.0026J	3.4	0.378	27.8	--	--	--	--	--
Surface Water Monitoring Plan												
SW-06-TT	06/20/09	0.5U	0.011	0.004	--	--	9.4	0.993	0.16	0.74	1.5	0.51
	07/03/09	0.5U	0.009	0.0022J	--	--	54	1.2	0.09	1	1.9	0.7
	07/09/09	0.5U	0.009	0.004	--	--	7.5	1.15	0.14	0.82	1.8	0.65
	07/26/09	0.5U	0.007	0.004	--	--	5U	0.695	0.06	0.62	1.2	0.5
	11/16/09	0.5U	0.014	0.003	--	--	18	1.57	0.027J	0.62	2.2	0.63
	12/04/09	0.5U	0.009	0.005	--	--	9.1	1.4	0.039J	1.6	1.9	0.5
	01/27/10	0.5U	0.014	0.0024J	--	--	33	2.34	0.029J	0.6	2.9	0.56
	03/01/10*	0.5U	0.0028J	0.003U	--	--	5U	1.11	0.05U	0.51	1.6	0.49

Notes:
1 Dates shown are dates on which composite storm samples were prepared; benzene samples are typically collected one or more days before the date shown

* Not yet validated
µg/l = micrograms per liter
mg/l = milligrams per liter
TSS = Total Suspended Solids
TKN = Total Kjeldahl Nitrogen
-- = Sample not analyzed for this compound
U = Compound or sample not detected; value shown is reporting limit
J = Analyte concentration is below quantitation limit, but greater than or equal to 1/2 the laboratory detection limit. Value is estimated

Table 5i
Storm Flow Laboratory Analytical Results for SW-07-TT (Swanton Street)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date[1]	Benzene (µg/l)	Total Arsenic (mg/l)	Dissolved Arsenic (mg/l)	Total Iron (mg/l)	Dissolved Iron (mg/l)	TSS (mg/l)	Ammonia (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TKN (mg/l)	Total Organic Nitrogen (mg/l)
Multiple Source Groundwater Response Plan												
SW-07-TT	04/26/02	--	0.0117	0.002U	2.52	0.165	33.2	--	--	--	--	--
	05/15/02	--	0.0181	0.0077	1.93J	0.722	9J	--	--	--	--	--
	07/25/02	--	0.0053	0.0014J	0.91	0.0742J	6.1J	--	--	--	--	--
	08/31/02	--	0.0048J	0.0025U	0.777	0.0495U	6J	--	--	--	--	--
	09/25/02	--	0.0072	0.0032	0.88	0.206	4J	--	--	--	--	--
	10/18/02	--	0.0112	0.0036J	1.66	0.224	5.4	--	--	--	--	--
Surface Water Monitoring Plan												
SW-07-TT	06/20/09	0.5U	0.009	0.004	--	--	23	0.573	0.15	0.8	1.2	0.63
	07/03/09	0.5U	0.012	0.003U	--	--	130	0.419	0.08	0.83	1.4	0.98
	07/09/09	0.5U	0.009	0.004	--	--	15	0.949	0.13	0.88	1.75	0.75
	07/24/09	0.5U	0.007	0.0026J	--	--	9.5	0.539	0.07	0.71	1.1	0.56
	11/16/09	0.5U	0.008	0.003	--	--	13	1.13	0.05U	0.62	1.8	0.67
	12/04/09	0.5U	0.006	0.003U	--	--	5	1.08	0.039J	0.85	1.4	0.32
	01/27/10	0.5U	0.012	0.0023J	--	--	44	1.67	0.05U	0.61	2.4	0.73
	03/01/10*	0.5U	0.0023J	0.0024J	--	--	5U	1.12	0.05U	0.58	1.4	0.28J

Notes:
1 Dates shown are dates on which composite storm samples were prepared; benzene samples are typically collected one or more days before the date shown

* Not yet validated
µg/l = micrograms per liter
mg/l = milligrams per liter
TSS = Total Suspended Solids
TKN = Total Kjeldahl Nitrogen
-- = Sample not analyzed for this compound
U = Compound or sample not detected; value shown is reporting limit
J = Analyte concentration is below quantitation limit, but greater than or equal to 1/2 the laboratory detection limit. Value is estimated

Table 5j
Storm Flow Laboratory Analytical Results for SW-08-TT (USGS / Mystic Avenue)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date[1]	Benzene (µg/l)	Total Arsenic (mg/l)	Dissolved Arsenic (mg/l)	Total Iron (mg/l)	Dissolved Iron (mg/l)	TSS (mg/l)	Ammonia (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TKN (mg/l)	Total Organic Nitrogen (mg/l)
Multiple Source Groundwater Response Plan												
SW-08-TT	04/26/02	--	0.0095	0.002U	1.17	0.24	17.3	--	--	--	--	--
	05/16/02	--	0.0073	0.0031J	6.94	0.364	143J	--	--	--	--	--
	07/25/02	--	0.0046	0.0013U	0.512	0.0087U	15.9J	--	--	--	--	--
	08/31/02	--	0.0055	0.0025U	1.54	0.0655U	16.2J	--	--	--	--	--
	09/25/02	--	0.008	0.0026	4.59	0.226	12.5J	--	--	--	--	--
	10/18/02	--	0.003U	0.003U	1.52	0.469	179	--	--	--	--	--
Surface Water Monitoring Plan												
SW-08-TT	06/20/09	0.5U	0.008	0.004	--	--	18	0.413	0.11	0.79	1	0.59
	07/03/09	0.5U	0.006	0.003U	--	--	29	0.462	0.09	0.82	1.5	1
	07/11/09	0.5U	0.003	0.004	--	--	13	0.229	0.07	0.78	0.98	0.75
	07/26/09	0.5U	0.005	0.0025J	--	--	9.4	0.288	0.05	0.65	1.2	0.91
	11/16/09	0.5U	0.006	0.003	--	--	15	0.548	0.026J	0.55	1.4	0.85
	12/04/09	0.5U	0.004	0.0021J	--	--	5U	0.95	0.031J	0.77J	1.1	0.15J
	01/27/10	0.5U	0.009	0.0026J	--	--	33	1.4	0.03J	0.64	2	0.6
	03/01/10*	0.5U	0.003	0.003U	--	--	8.9	0.599	0.05U	0.66	1.1	0.5

Notes:
1 Dates shown are dates on which composite storm samples were prepared; benzene samples are typically collected one or more days before the date shown

* Not yet validated
µg/l = micrograms per liter
mg/l = milligrams per liter
TSS = Total Suspended Solids
TKN = Total Kjeldahl Nitrogen
-- = Sample not analyzed for this compound
U = Compound or sample not detected; value shown is reporting limit
J = Analyte concentration is below quantitation limit, but greater than or equal to 1/2 the laboratory detection limit. Value is estimated

Table 6
Relative Surface Water and Groundwater Elevations at Time of Storm Sampling
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Station ID	Station Description	Date[1]	Surface Water			Groundwater			Gradient
			Measuring Point[2] (ft)	Staff Gage Reading (ft)	Surface Water Elevation[3] (ft)	Measuring Point[4] (ft)	Depth to Water (ft)	Groundwater Elevation[3] (ft)	
SW-2-IP	AAD	06/19/09	92.34	0.62	92.96	95.16	3.16	92.00	Down
		07/01/09	92.34	NM	NA	95.16	NM	NA	NA
		07/07/09	92.34	1.44	93.78	95.16	NM	NA	NA
		07/24/09	92.34	1.05	93.39	95.16	2.42	92.74	Down
		11/14/09	92.34	1.20	93.54	95.16	2.35	92.81	Down
		12/03/09	92.34	0.92	93.26	95.16	2.54	92.62	Down
		01/25/10	92.34	1.28	93.62	95.16	2.41	92.75	Down
		02/24/10	92.34	0.95	93.29	95.16	2.76	92.40	Down
		02/25/10	92.34	1.00	93.34	95.16	2.21	92.95	Down
SW-3-IP	BECO ROW	06/19/09	93.74	0.40	94.14	97.76	2.47	95.29	Up
		07/01/09	93.66	NM	NA	97.76	NM	NA	NA
		07/07/09	93.66	1.68	95.34	97.76	NM	NA	NA
		07/24/09	93.66	1.70	95.36	97.76	1.53	96.23	Up
		11/14/09	93.66	2.00	95.66	97.76	1.05	96.71	Up
		12/03/09	93.66	1.48	95.14	97.76	1.50	96.26	Up
		01/25/10	93.66	1.70	95.36	97.76	1.50	96.26	Up
		02/24/10	93.66	1.79	95.45	97.76	1.20	96.56	Up
		02/25/10	93.66	1.82	95.48	97.76	0.93	96.83	Up
SW-01-TT	Halls Brook	06/19/09	92.98	1.58	94.56	96.87	5.28	91.59	Down
		07/01/09	92.98	NM	NA	96.87	NM	NA	NA
		07/07/09	92.98	2.48	95.46	96.87	NM	NA	NA
		07/24/09	92.98	2.42	95.40	96.87	4.72	92.15	Down
		11/14/09	92.98	2.45	95.43	96.87	5.07	91.80	Down
		12/03/09	92.98	2.26	95.24	96.87	4.89	91.98	Down
		01/25/10	92.98	2.58	95.56	96.87	5.14	91.73	Down
		02/24/10	92.98	2.48	95.46	96.87	4.95	91.92	Down
		02/25/10	92.98	2.40	95.38	96.87	3.92	92.95	Down
SW-02-TT	HBHA Pond Outlet	06/19/09	97.77	1.58	99.35	103.88	4.47	99.41	Up
		07/01/09	97.77	NM	NA	103.88	NM	NA	NA
		07/07/09	97.77	2.74	100.51	103.88	3.21	100.67	Up
		07/24/09	97.77	2.65	100.42	103.88	3.24	100.64	Up
		11/14/09	97.77	2.88	100.65	103.88	3.15	100.73	Up
		12/03/09	97.77	2.70	100.47	103.88	3.38	100.50	Up
		01/25/10	97.77	1.52	99.29	103.88	3.52	100.36	Up
		02/24/10	97.77	2.62	100.39	103.88	3.38	100.50	Up
		02/25/10	97.77	2.95	100.72	103.88	3.05	100.83	Up
SW-03-TT	Aberjona	06/19/09	93.46	1.28	94.74	97.41	2.59	94.82	Up
		07/01/09	93.46	NM	NA	97.41	NM	NA	NA
		07/07/09	93.46	NM	NA	97.41	NM	NA	NA
		07/24/09	93.46	2.30	95.76	97.41	1.75	95.66	Down
		11/14/09	93.46	2.80	96.26	97.41	1.46	95.95	Down
		12/03/09	93.46	2.02	95.48	97.41	1.91	95.50	Up
		01/25/10	93.46	2.58	96.04	97.41	1.50	95.91	Down
		02/24/10	93.32	2.10	95.42	97.41	2.16	95.25	Down
		02/25/10	93.32	2.60	95.92	97.41	1.36	96.05	Up
SW-05-TT	Salem Street	06/19/09	90.89	5.06	95.95	98.23	2.46	95.77	Down
		07/01/09	90.89	NM	NA	98.23	NM	NA	NA
		07/07/09	90.89	NM	NA	98.23	NM	NA	NA
		07/24/09	94.16	NM	NA	98.23	2.21	96.02	NA
		11/14/09	93.98	3.19	97.17	98.23	1.37	96.86	Down
		12/03/09	93.98	NM	NA	98.23	1.66	96.57	NA
		01/25/10	93.96	2.40	96.36	98.23	1.97	96.26	Down
		02/24/10	93.96	2.38	96.34	98.23	2.05	96.18	Down
SW-06-TT	Montvale Avenue	06/19/09	92.76	2.36	95.12	98.48	3.30	95.18	Up
		07/01/09	92.76	NM	NA	98.48	NM	NA	NA
		07/07/09	92.76	NM	NA	98.48	NM	NA	NA
		07/24/09	92.76	NM	NA	98.48	2.84	95.64	NA
		11/14/09	92.76	4.05	96.81	98.48	NM	NA	NA
		12/03/09	92.27	3.78	96.05	98.48	NM	NA	NA
		01/25/10	92.27	4.14	96.41	98.48	2.30	96.18	Down
		02/24/10	92.27	3.70	95.97	98.48	NM	NA	NA

Table 6
Relative Surface Water and Groundwater Elevations at Time of Storm Sampling
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Station ID	Station Description	Date[1]	Surface Water			Groundwater			Gradient
			Measuring Point[2] (ft)	Staff Gage Reading (ft)	Surface Water Elevation[3] (ft)	Measuring Point[4] (ft)	Depth to Water (ft)	Groundwater Elevation[3] (ft)	
SW-07-TT	Swanton Street	06/19/09	90.03	1.55	91.58	93.87	2.11	91.76	Up
		07/01/09	90.03	NM	NA	93.87	NM	NA	NA
		07/07/09	90.03	NM	NA	93.87	NM	NA	NA
		07/24/09	90.11	NM	NA	93.87	1.89	91.98	NA
		11/14/09	90.11	3.10	93.21	93.87	0.87	93.00	Down
		12/03/09	90.11	2.66	92.77	93.87	1.25	92.62	Down
		01/25/10	90.11	2.58	92.69	93.87	1.58	92.29	Down
		02/24/10	90.11	2.30	92.41	93.87	1.85	92.02	Down
SW-08-TT	USGS / Mystic Avenue	06/19/09	89.49	3.30	92.79	95.28	3.05	92.23	Down
		07/01/09	89.49	NM	NA	95.28	NM	NA	NA
		07/07/09	Unk.	NM	NA	95.28	NM	NA	NA
		07/24/09	89.44	11.65	101.09	95.28	2.43	92.85	Down
		11/14/09	81.29	12.30	93.59	95.28	1.97	93.31	Down
		12/03/09	81.29	12.00	93.29	95.28	2.29	92.99	Down
		01/25/10	81.29	11.82	93.11	95.28	2.57	92.71	Down
		02/24/10	81.29	11.70	92.99	95.28	2.72	92.56	Down

Notes:

1 Relative surface water and groundwater elevations were recorded during benzene grab sampling following the onset of the storm.

2 Reference point is base of gauge (0.00 feet)

3 All elevations are relative to station-specific benchmarks and, therefore, are not comparable between stations.

4 Reference point is top of casing

AAD = Atlantic Avenue Drainway

BECO ROW = Boston Edison Company right-of-way

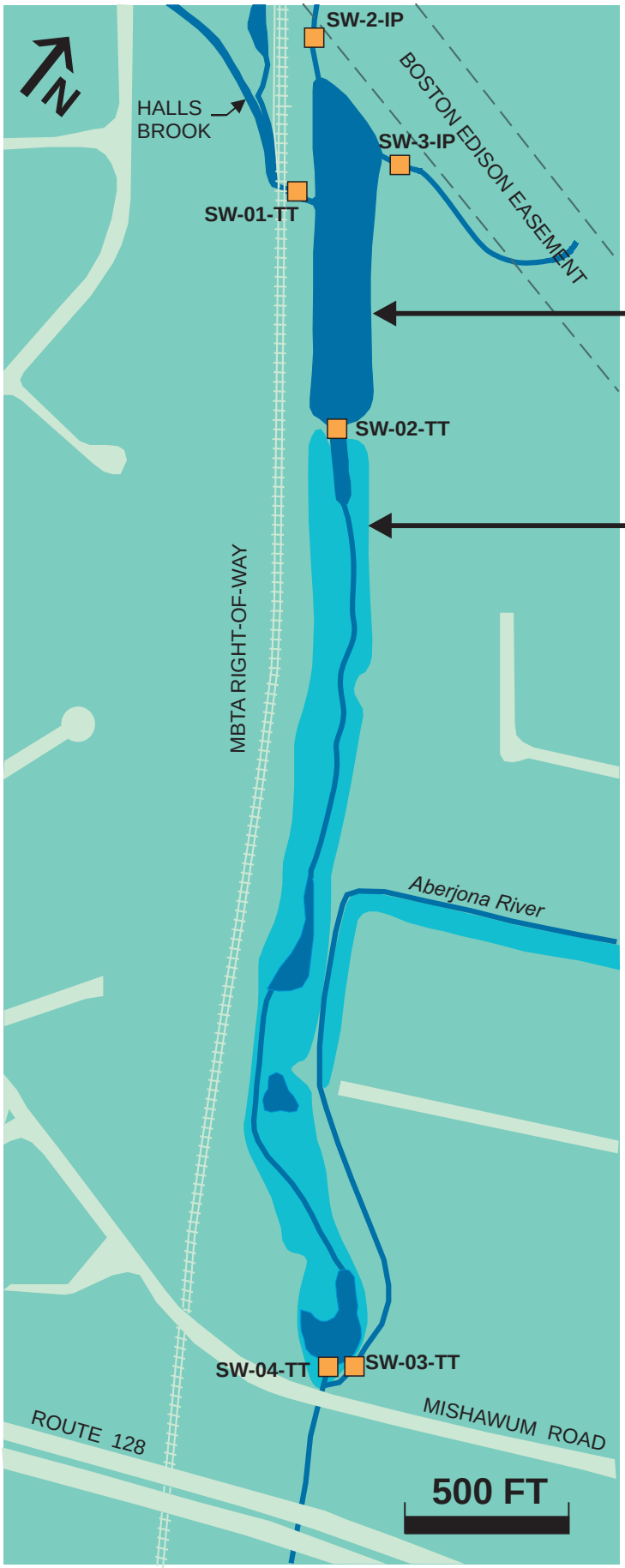
HBHA = Halls Brook Holding Area

USGS = United States Geological Survey

NA = Not Applicable

NM = Not Measured (e.g., unable to access due to high stage, water frozen in piezometer, staff gauge knocked over). During the July 2009 storm events, staff gauges that were knocked over were unable to be reset prior to the subsequent storm, and therefore measurements were not obtained.

Unk. = Unknown Value



LEGEND

SW-01-TT ■ APPROXIMATE LOCATION AND DESIGNATION OF SURFACE WATER MONITORING STATION

DRAFT

Title:

SURFACE WATER MONITORING STATIONS NORTH OF ROUTE 128

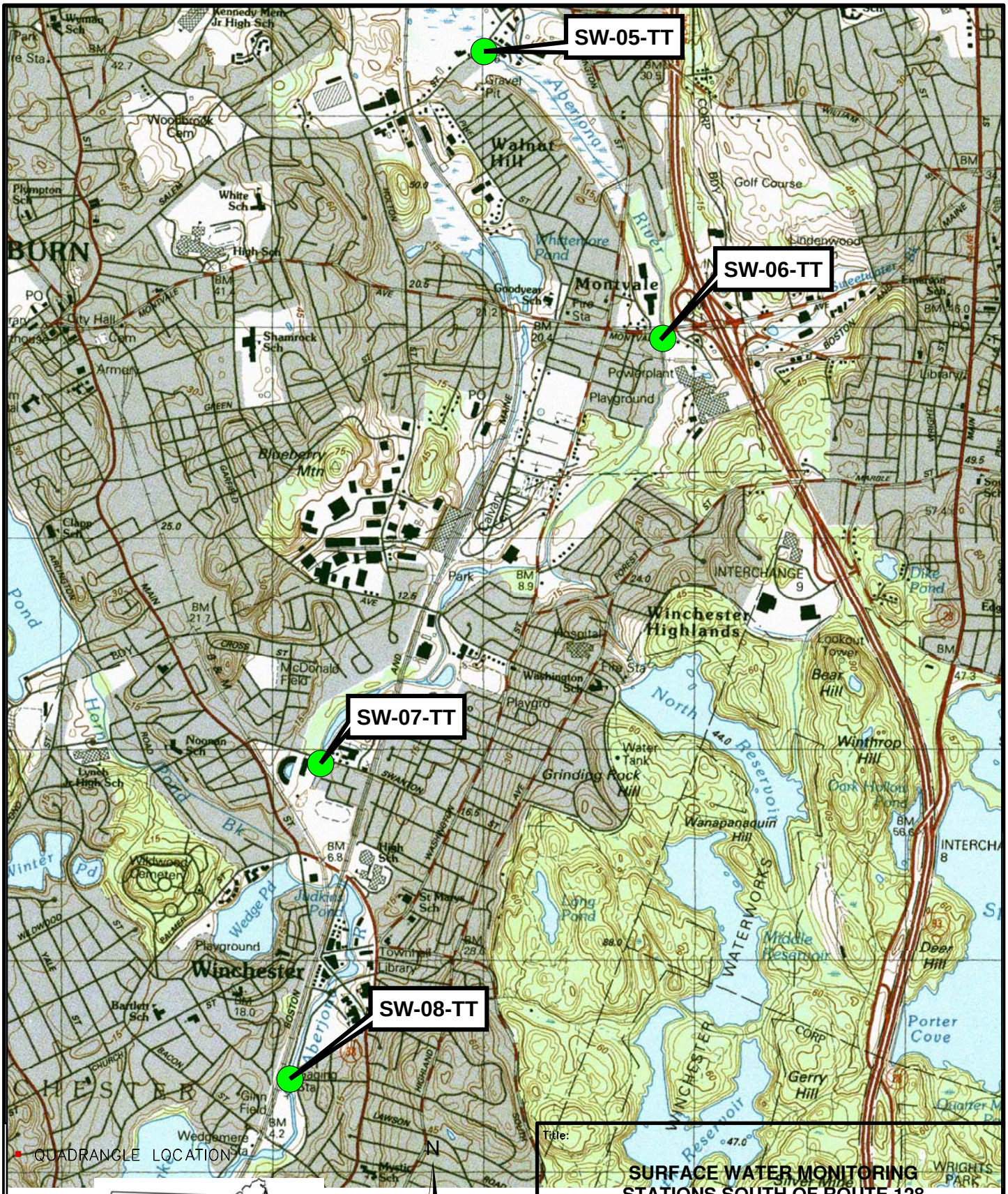
Prepared for:

INDUSTRI-PLEX OU 2 SETTLING DEFENDANTS

ROUX ASSOCIATES INC.
Environmental consulting & Management

Compiled by: LM	Date: 7/10/09	FIGURE
Prepared by: CRS	Scale: AS SHOWN	1
Project Mgr.: LM	Office: MA	
File No.: IPS0114202	Project No.: 119407M07	

N:\PROJECTS\I-PLEX\119401M07\142\IPS0114202.cdr



SOURCE:
USGS, 1987.
Reading (Massachusetts) Quadrangle
1:25,000–scale Topographic Map

Title:

SURFACE WATER MONITORING STATIONS SOUTH OF ROUTE 128

Prepared For:

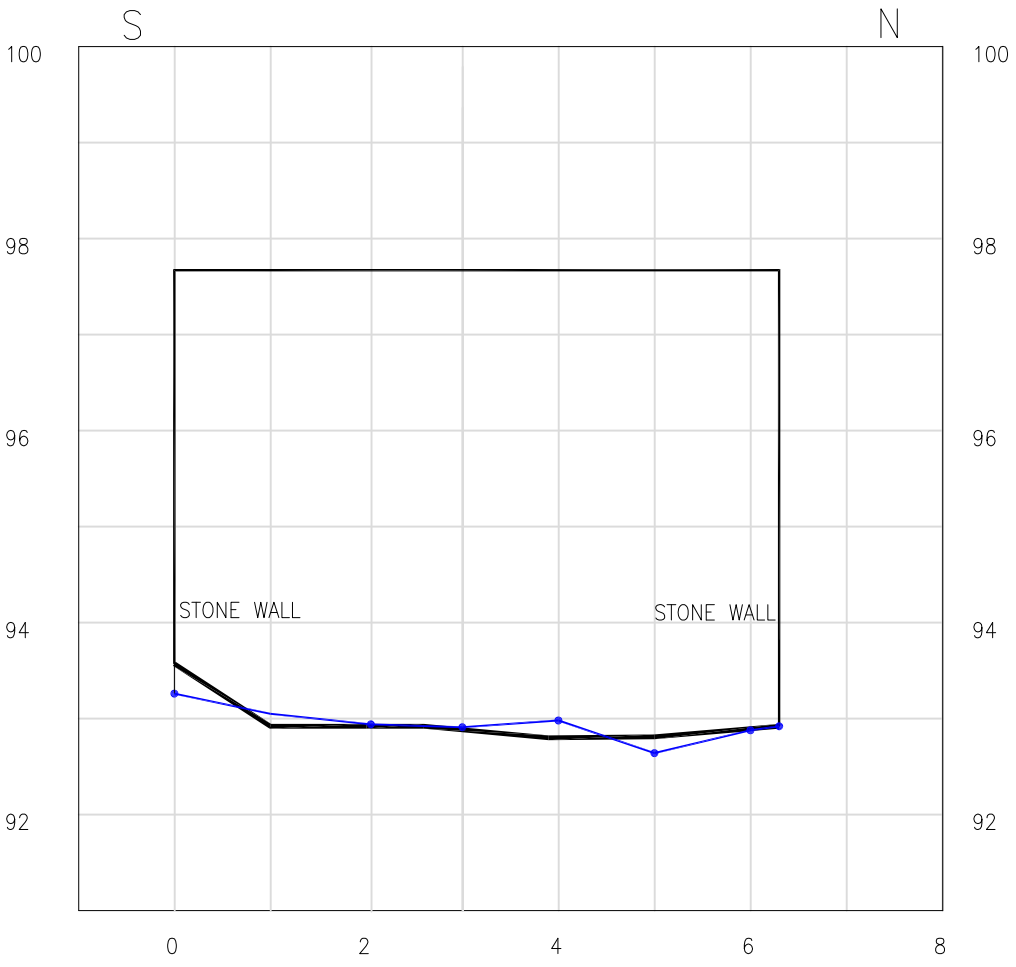
INDUSTRI-PLEX OU 2 SETTLING DEFENDANTS

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled By: LM	Date: 7/10/09	FIGURE	
Prepared By: CRS	Scale: AS SHOWN	2	
Project Mgr.: LM	Office: MA		
File No.: IPS0114201	Project: 119401M		

T:\GIS\I-PLEX\IPS0114201.mxd

N:\PROJECTS\I-PLEX\119401M07\158\IPS0115803.dwg



DRAFT

2' 0 2'

Notes:

1. Profile is drawn looking upstream.

2. Elevations are referenced to an arbitrary benchmark (=100 ft) at the southeast corner of concrete pad.

BASELINE (MARCH 2009) CROSS-SECTION

02-01-10 POST-STORM CROSS-SECTION

Title:

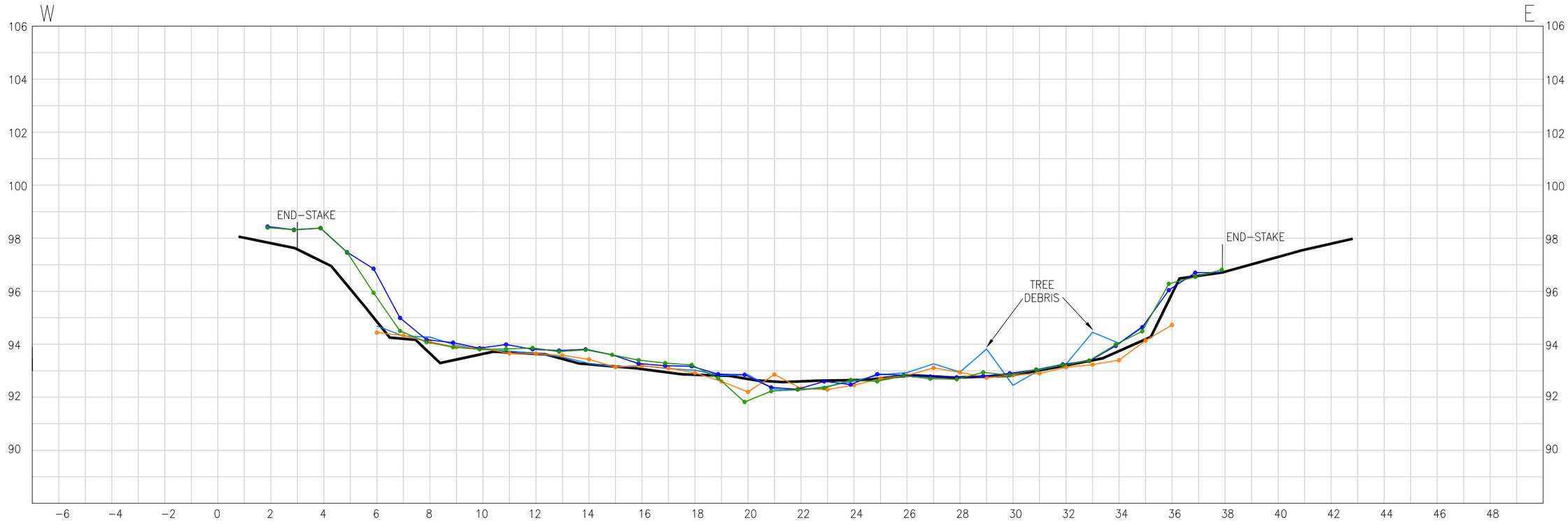
POST-STORM STREAM CROSS-SECTION STATION SW-01-TT (HALLS BROOK)

Prepared For:

INDUSTRI-PLEX OU2 SETTLING DEFENDANTS

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: LM	Date: 3/9/10	FIGURE
Prepared by: CC	Scale: AS SHOWN	3
Project Mgr: LM	Office: MA	
File No: IPS0115803	Project: 119401M07	



4’ 0 4’

DRAFT

Notes:

1. Profile is drawn looking upstream.

2. Elevations are referenced to an arbitrary benchmark (=100 ft) at the southeast corner of concrete pad.

- BASELINE (MARCH 2009) CROSS–SECTION
- 11–18–09 POST–STORM CROSS–SECTION
- 12–08–09 POST–STORM CROSS–SECTION
- 02–01–10 POST–STORM CROSS–SECTION
- 03–03–10 POST–STORM CROSS–SECTION

Title:
POST-STORM STREAM CROSS-SECTION STATION SW-06-TT (MONTVALE AVENUE)

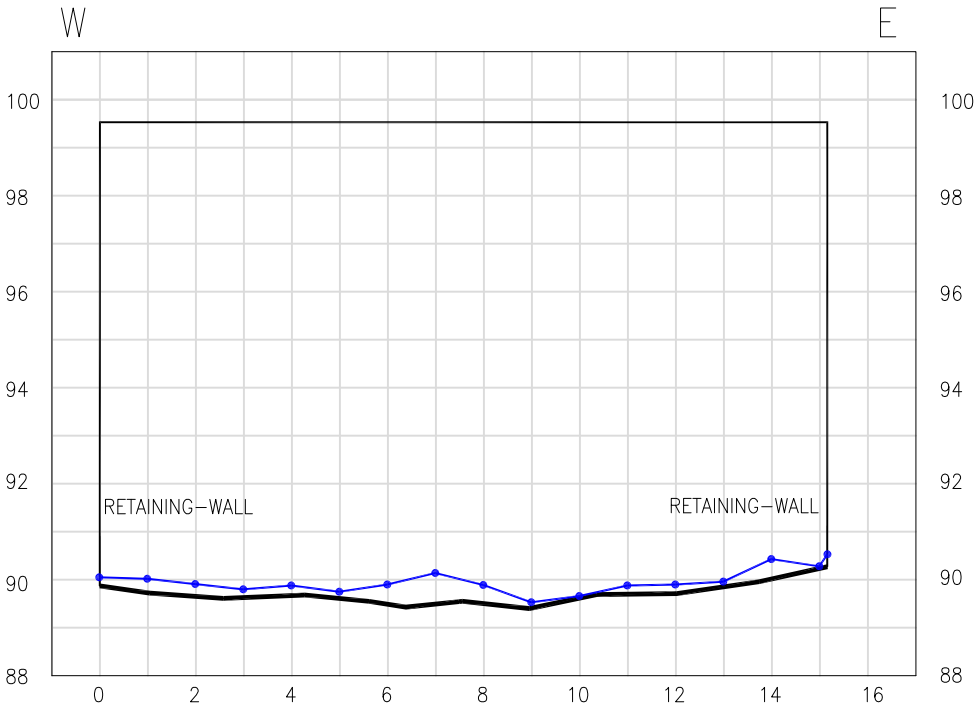
Prepared For:
INDUSTRI–PLEX OU2 SETTLING DEFENDANTS

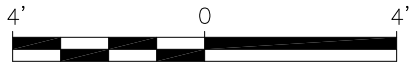
ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: LM	Date: 3/9/10	FIGURE
Prepared by: CRS	Scale: AS SHOWN	4
Project Mgr: LM	Office: MA	
File No: IPS0115802	Project: 119401M07	

N:\PROJECTS\I–PLEX\119401M07\158\IPS0115802.dwg

N:\PROJECTS\I-PLEX\119401M07\158\IPS0115804.dwg





DRAFT

Notes:

1. Profile is drawn looking upstream.

2. Elevations are referenced to an arbitrary benchmark (=100 ft) at the southeast corner of concrete pad.

BASELINE (MARCH 2009) CROSS-SECTION
02-01-10 POST-STORM CROSS-SECTION

Title:

POST-STORM STREAM CROSS-SECTION STATION SW-07-TT (SWANTON STREET)

Prepared For:
INDUSTRI-PLEX OU2 SETTLING DEFENDANTS

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: LM	Date: 3/9/10	FIGURE
Prepared by: CC/CRS	Scale: AS SHOWN	5
Project Mgr: LM	Office: MA	
File No: IPS0115804	Project: 119401M07	

APPENDIX A

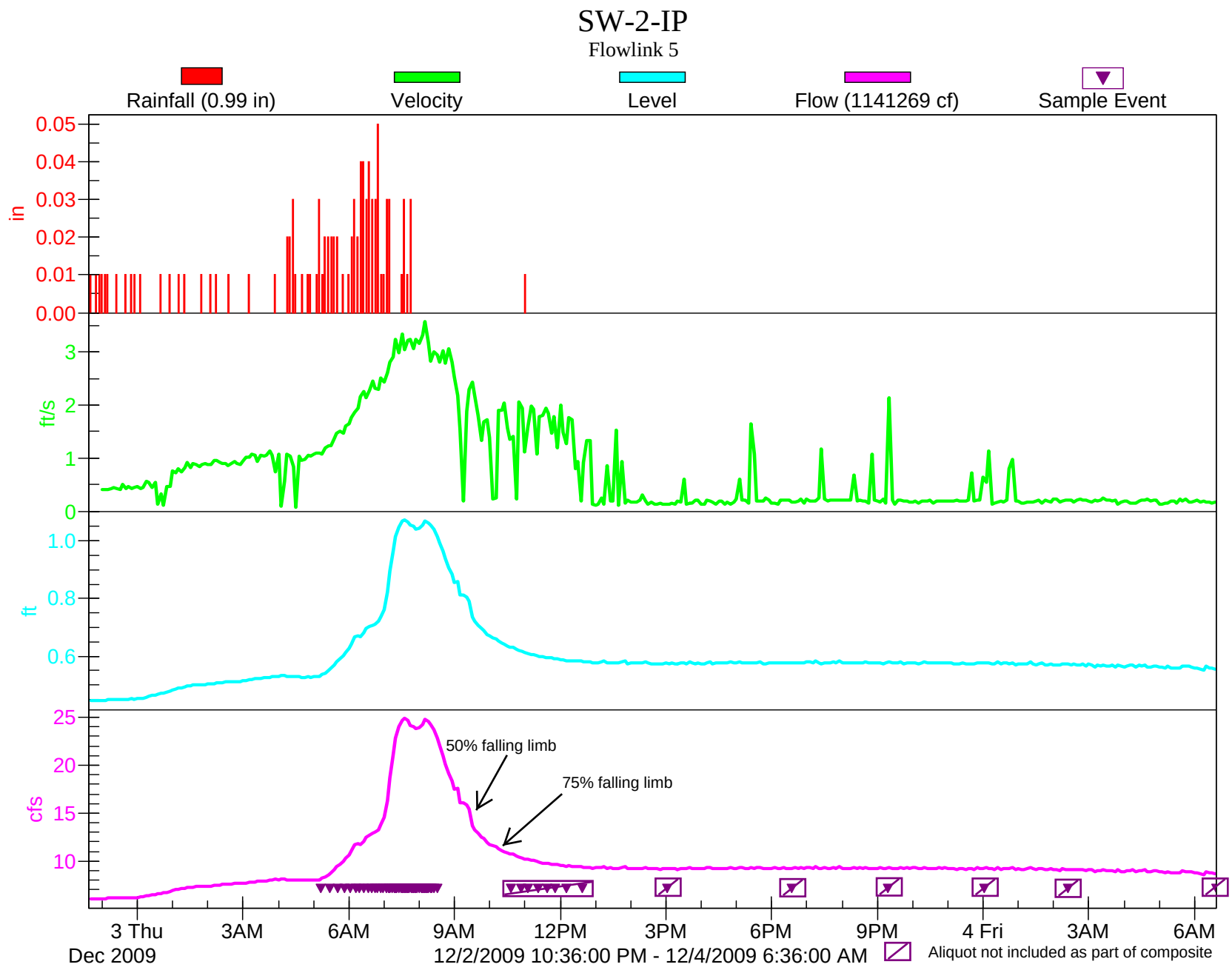
Storm Hydrographs including Narrative

December 2-3, 2009
January 25-26, 2010
February 24-25, 2010
February 25-27, 2010

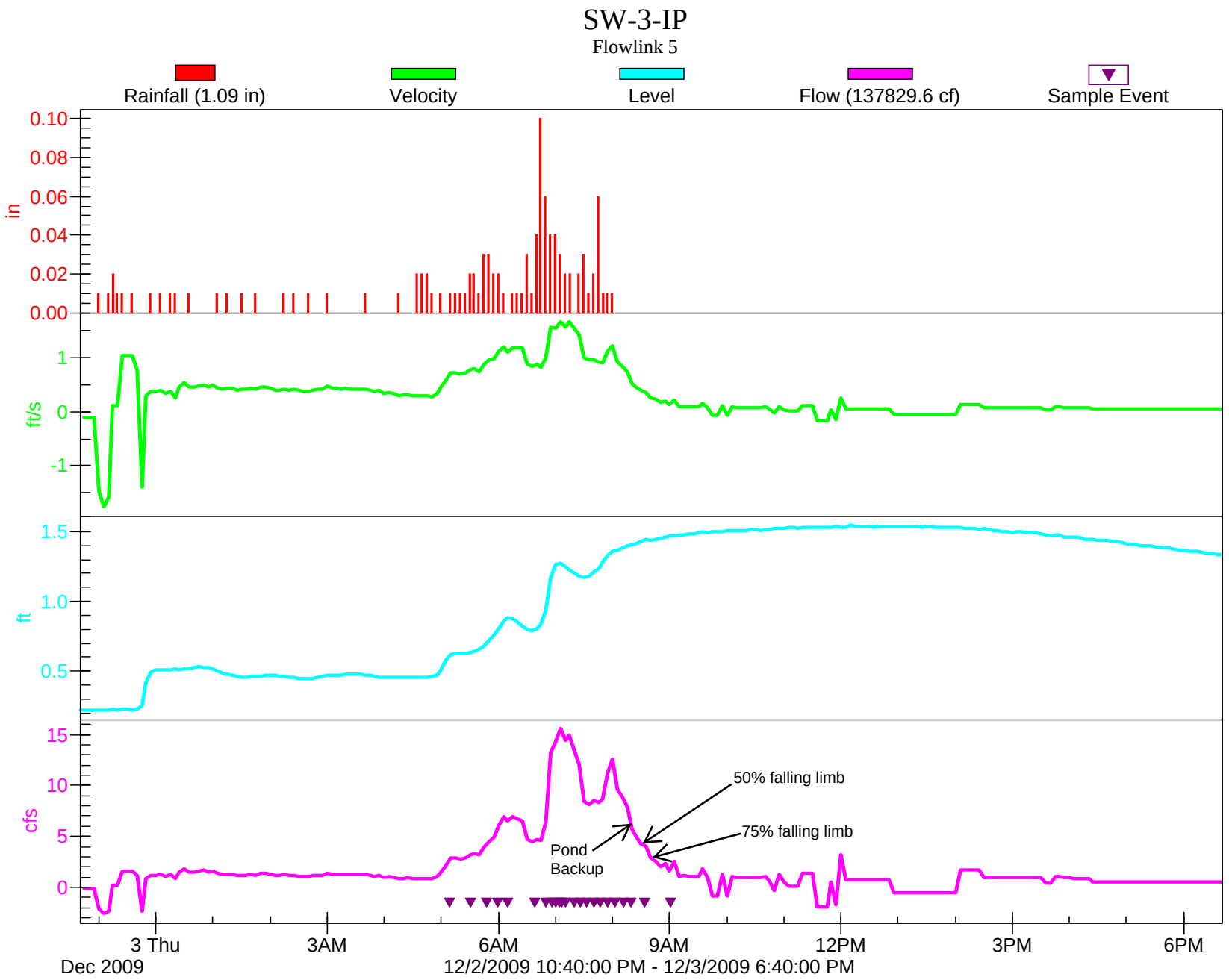
Storm Narrative

December 2-3, 2009

- SW-2-IP:
  - Sampling was terminated before achieving 50% of the falling limb due to delay in changing out rosettes
  - Fourteen aliquots were collected after 75% of the falling limb had been reached, but were not included in the composite
- SW-3-IP:
  - Pond backup occurred at approximately 8:20 am on 12/03
  - Due to current reading interval (i.e., every 5 minutes) and low flow pacing interval at this station, several aliquots were missed by the Isco sampling program
  - One aliquot was collected after 75% of the falling limb was reached and was inadvertently included in the composite
- SW-01-TT:
  - Eight aliquots were collected after 75% of the falling limb was reached, the first six of which were inadvertently included in composite
- SW-02-TT:
  - No velocity data was reported during the storm event due to malfunction of the Isco 750 module
  - Four aliquots are not shown on the hydrographs due to software malfunction
- SW-04-TT:
  - Initial nine aliquots shown on the hydrograph were not successfully collected due to an Isco sampling error on both the primary and secondary units; composite includes only the subsequent 26 aliquots
  - A 0.5-ft difference was observed between staff gauge and Isco A/V sensor at the time of benzene sampling (11:40 am on 12/03)
- SW-03-TT:
  - Measured precipitation low due to blocked rain gauge
  - Initial sampling delayed until 8:05 am on 12/03 due to remote communication errors with the Isco unit; sampling was manually triggered during benzene grab sampling
- SW-05-TT:
  - Aliquots were not collected between approximately 11:52 pm on 12/03 and 8:09 am on 12/04 due to delays in changing out rosettes
- SW-06-TT:
  - Measured precipitation low due to interference from building and/or trees (chronic problem)
- SW-07-TT:
  - A/V sensor became dislodged at approximately 3:00 pm on 12/04; subsequent velocity data do not represent actual conditions and subsequent stage likewise may not represent actual conditions
  - 75% of the falling limb was not attained within the expected timeframe due to the earlier dislodgement of the A/V sensor; sensor was reset at 1:55 pm on 12/08
- SW-08-TT:
  - Initial sampling delayed until 10:46 am on 12/03 due to remote communication limitations due to Isco power failures; sampling was manually triggered during benzene grab sampling
  - Initial two aliquots (shown on the hydrograph) were not collected due to power failures
  - The last five aliquots shown on the hydrograph were not included in the composite. The last aliquot collected prior to 75% of the falling limb was contained in the same bottle as one aliquot collected after 75% of the falling limb was reached, and was therefore discarded.



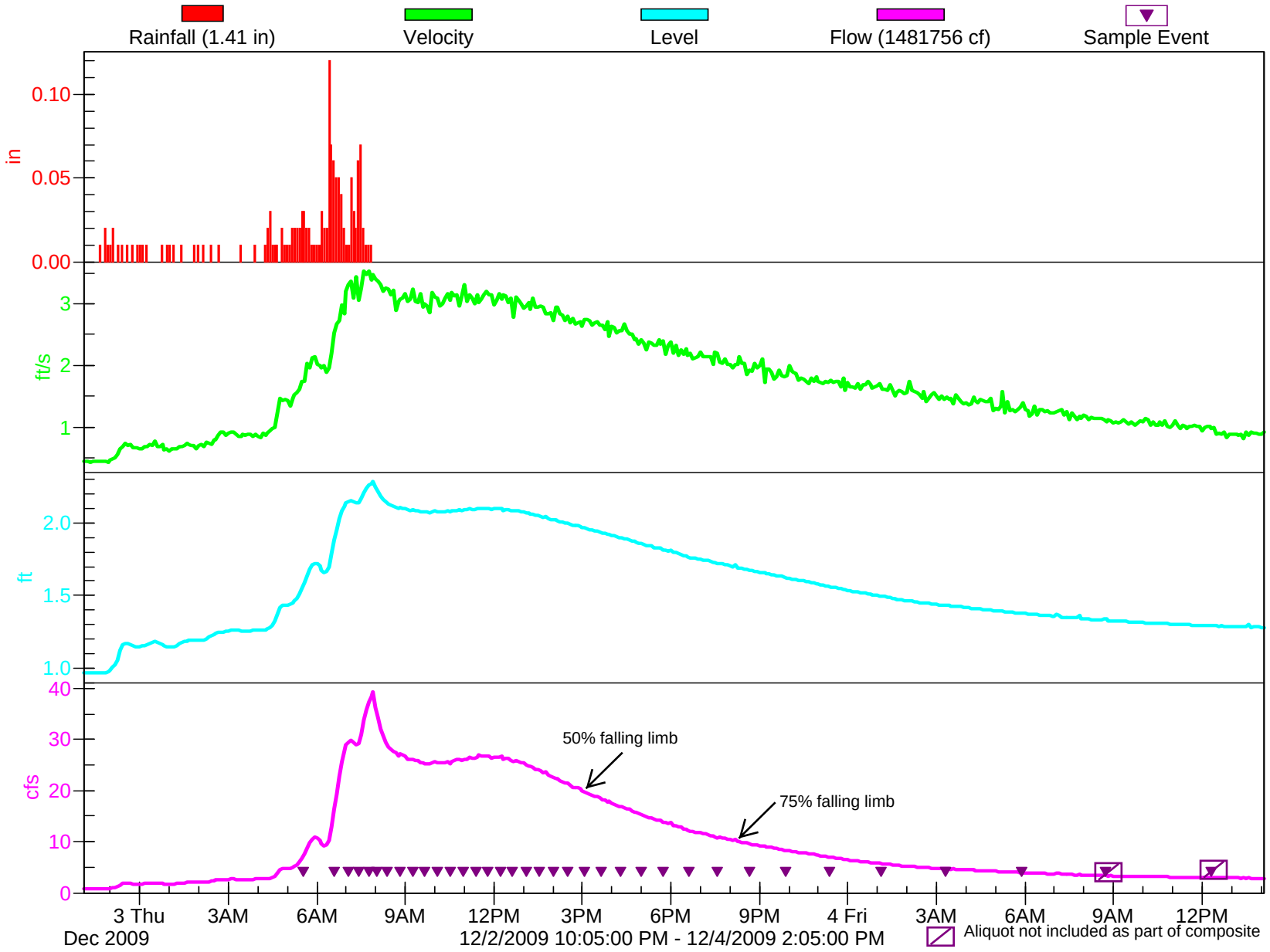
- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.



- Stage is relative to the sensor elevation.
- Flow shown was estimated based on level and velocity.
- Sampling terminated when forward velocity no longer detected; hydrograph extended beyond termination of sampling to show pond backup.

SW-01-TT

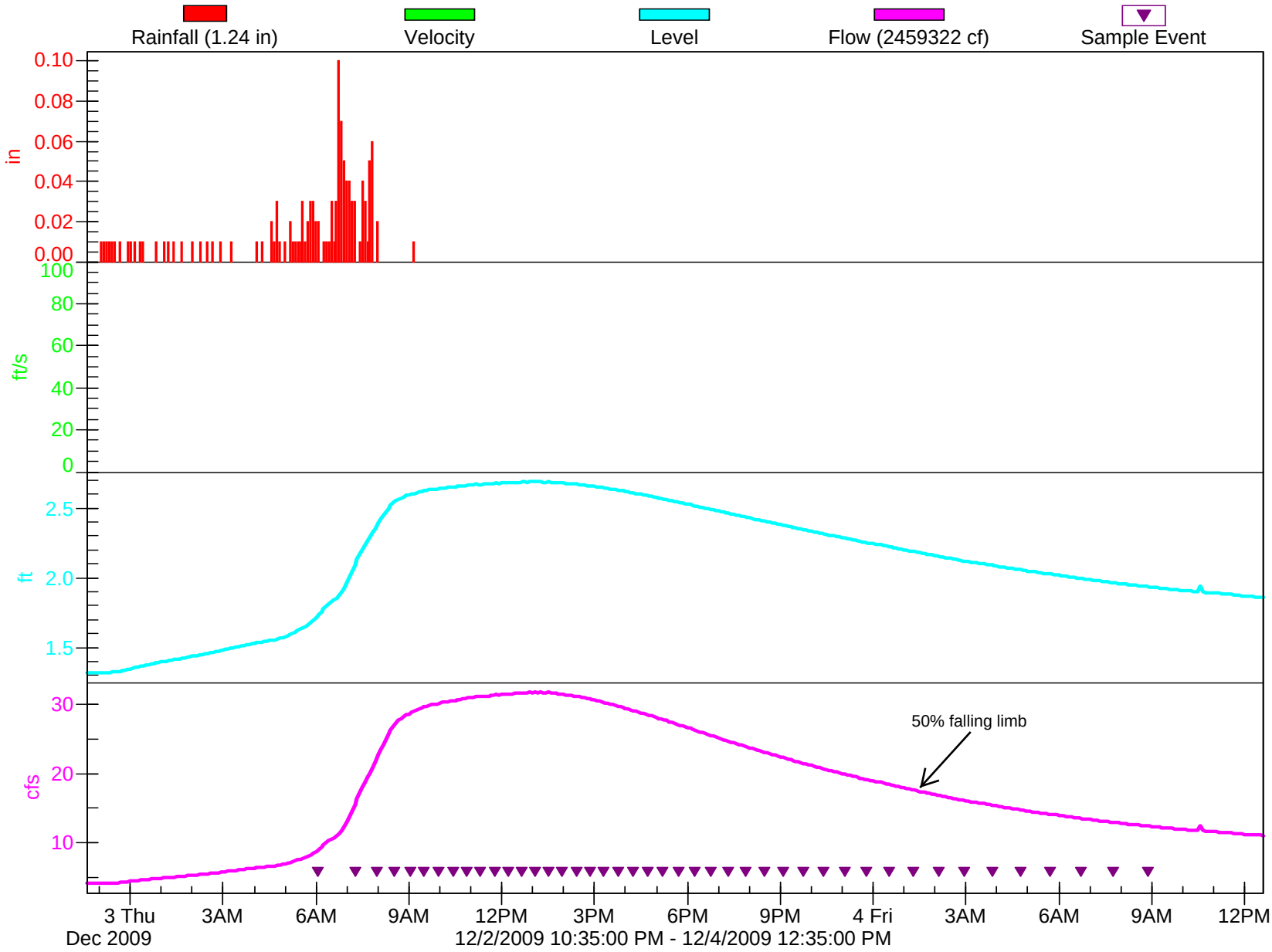
Flowlink 5



- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-02-TT

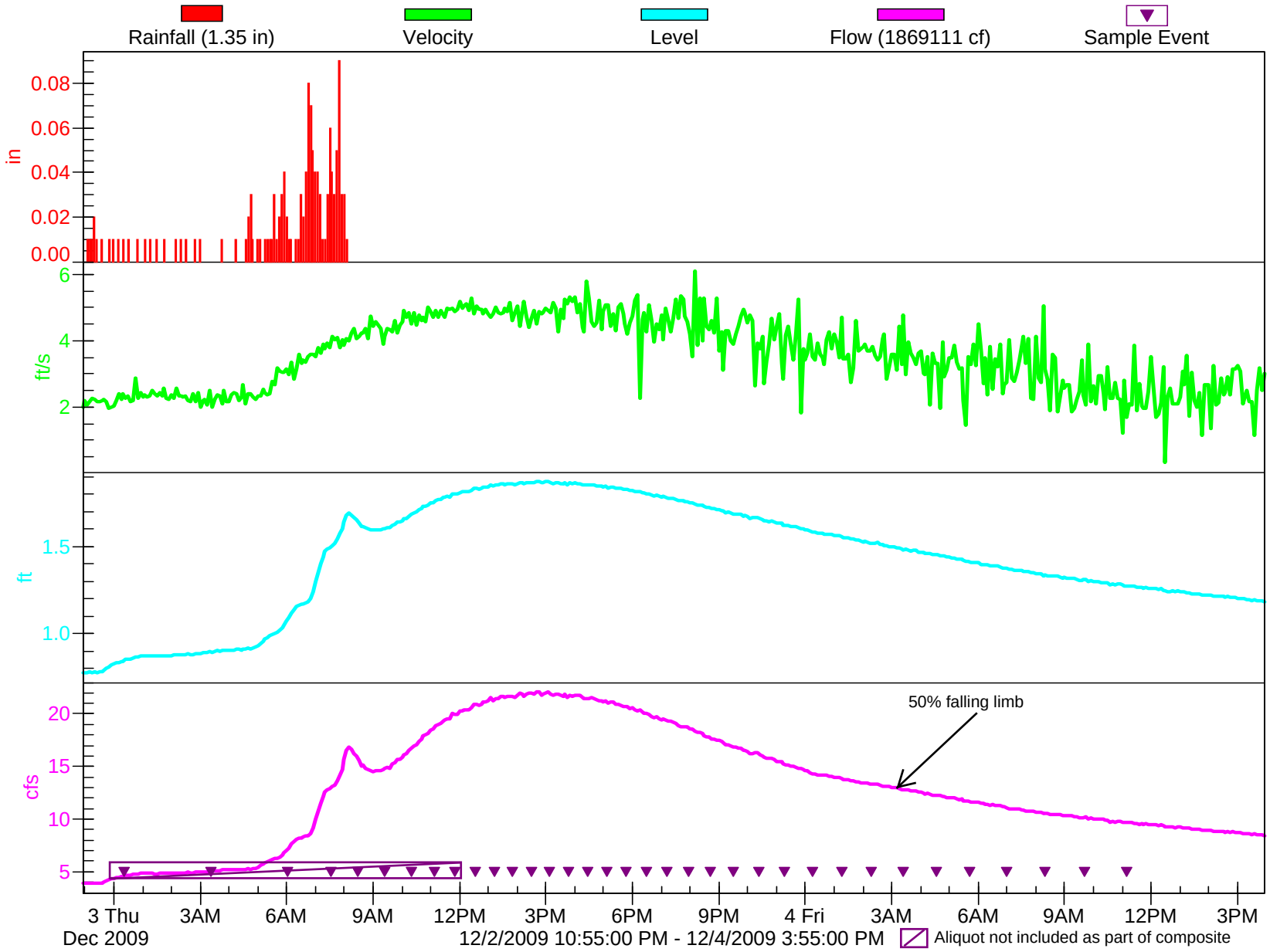
Flowlink 5



- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-04-TT

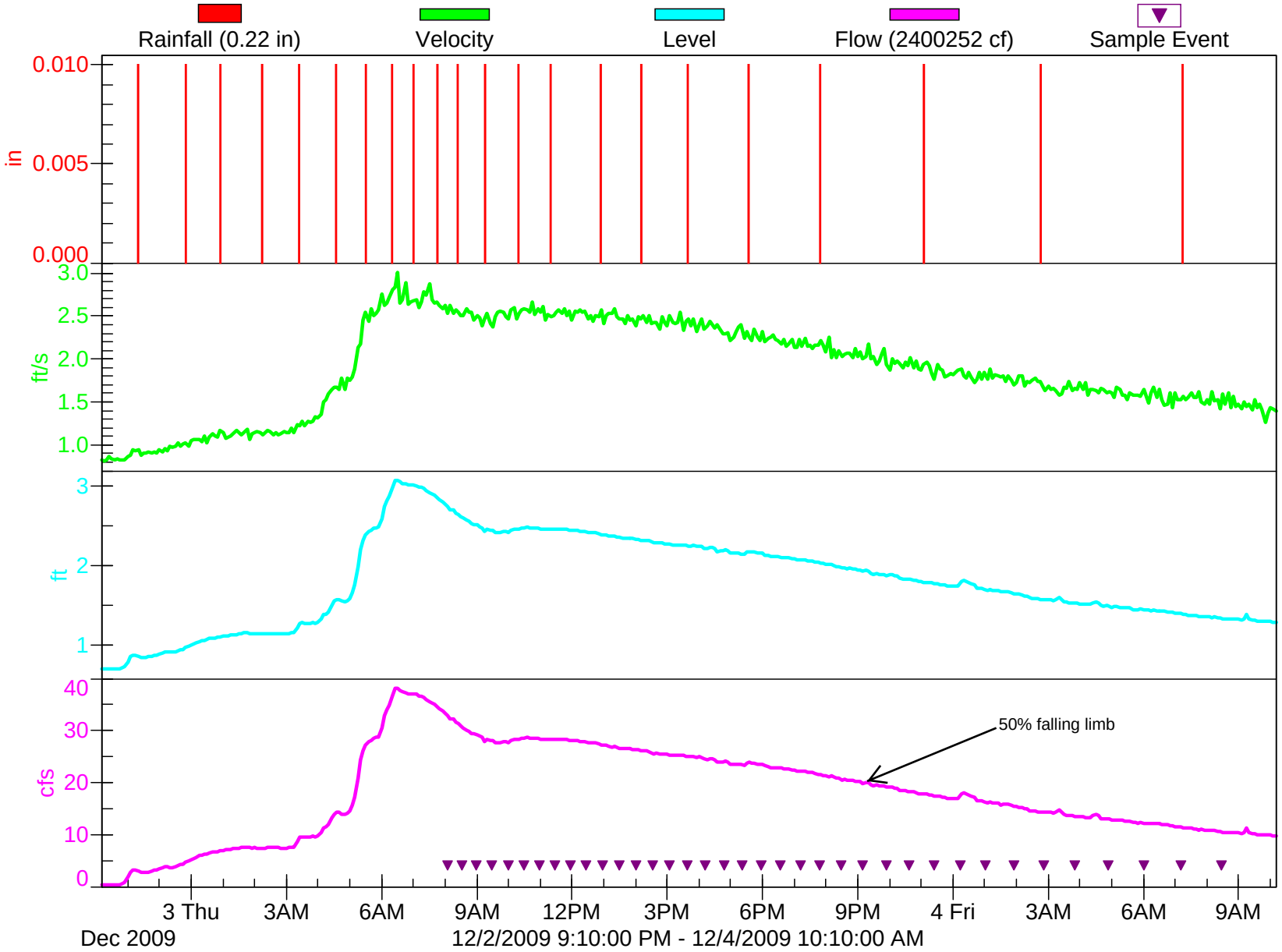
Flowlink 5



- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-03-TT

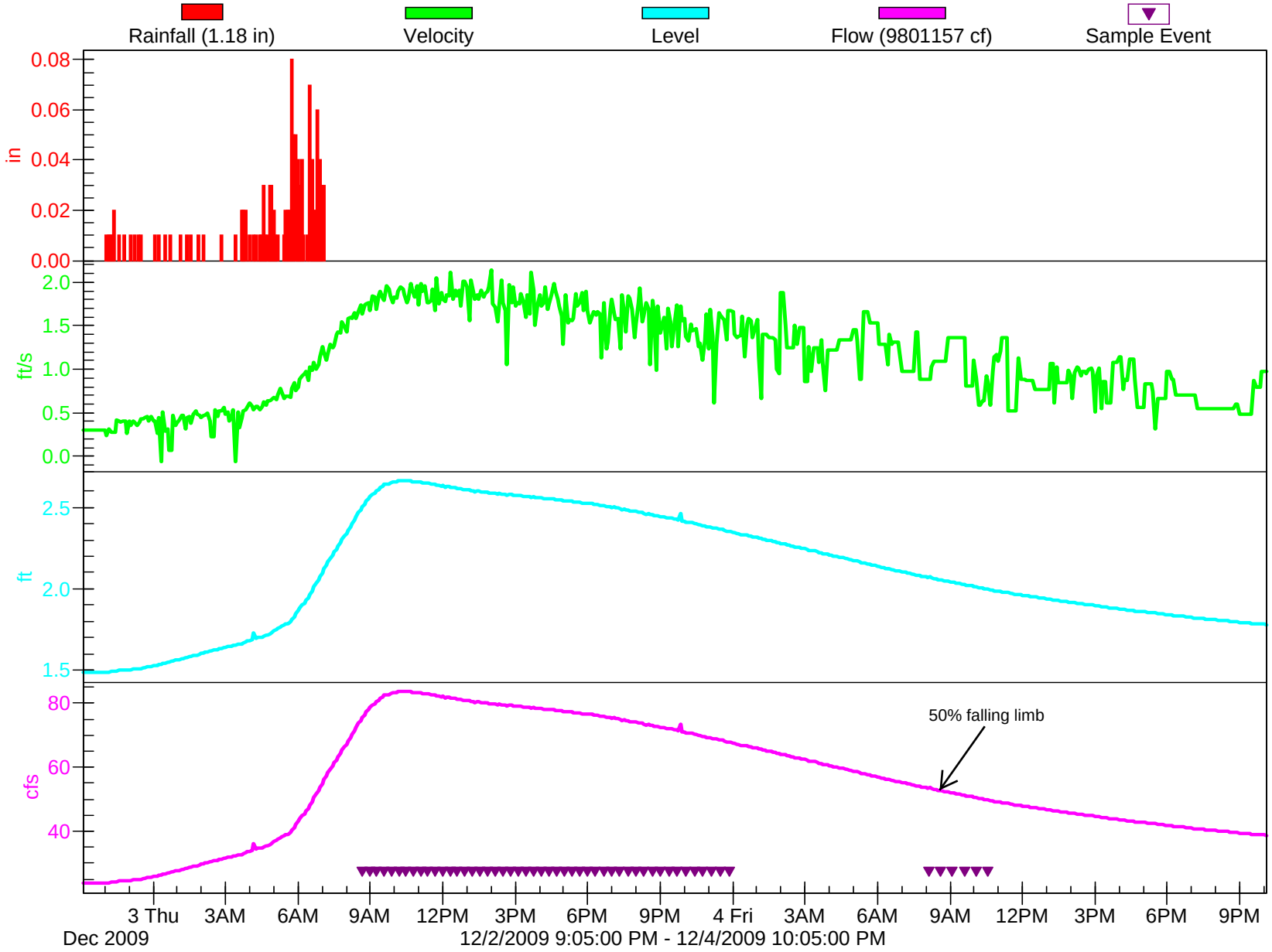
Flowlink 5



- Stage is relative to sensor elevation.
- Flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report. New rating curves are being developed which may change the flow estimates for these stations.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-05-TT

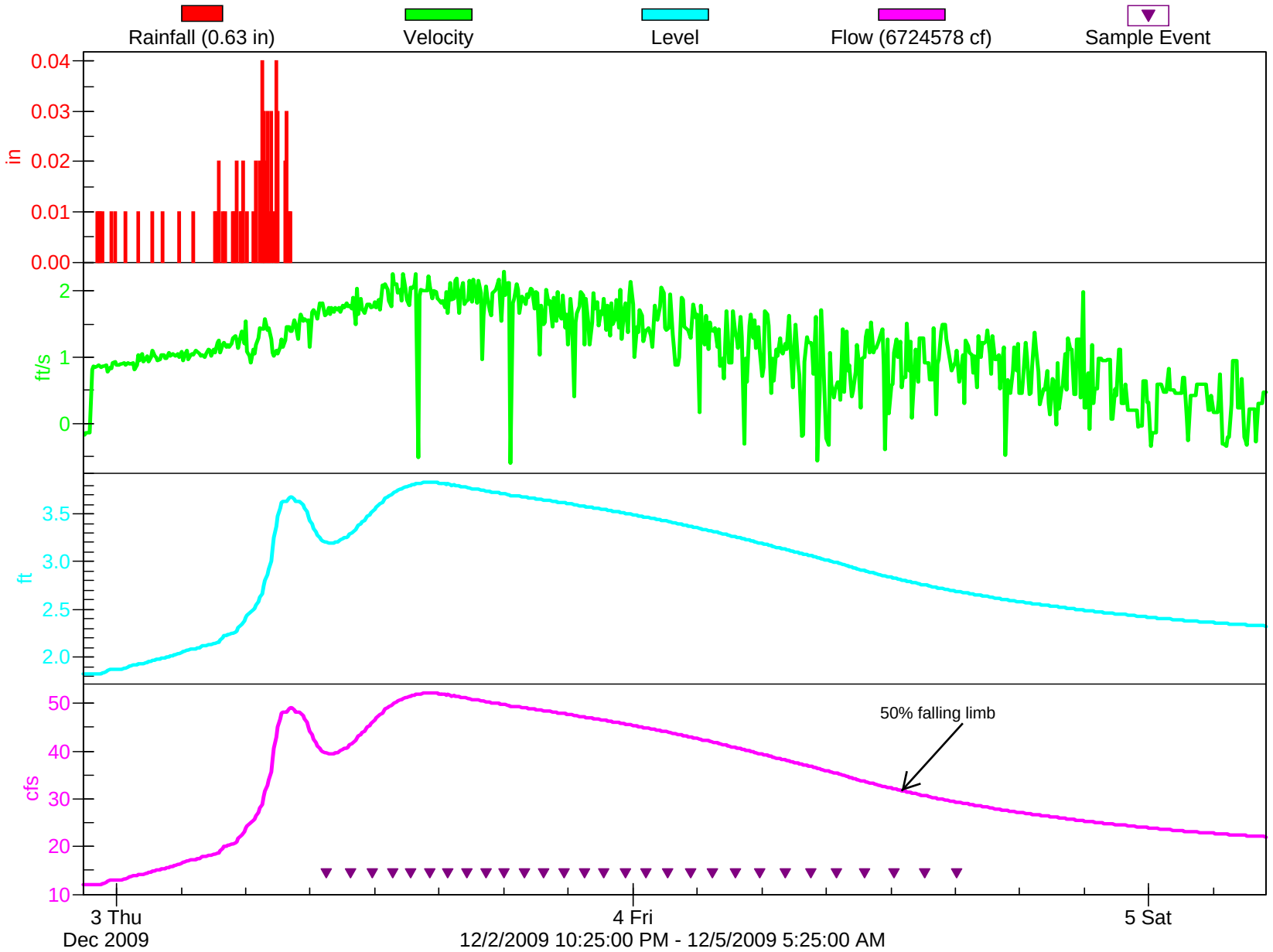
Flowlink 5



- Stage is relative to the sensor elevation.
- Flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report. New rating curves are being developed which may change the flow estimates for these stations.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-06-TT

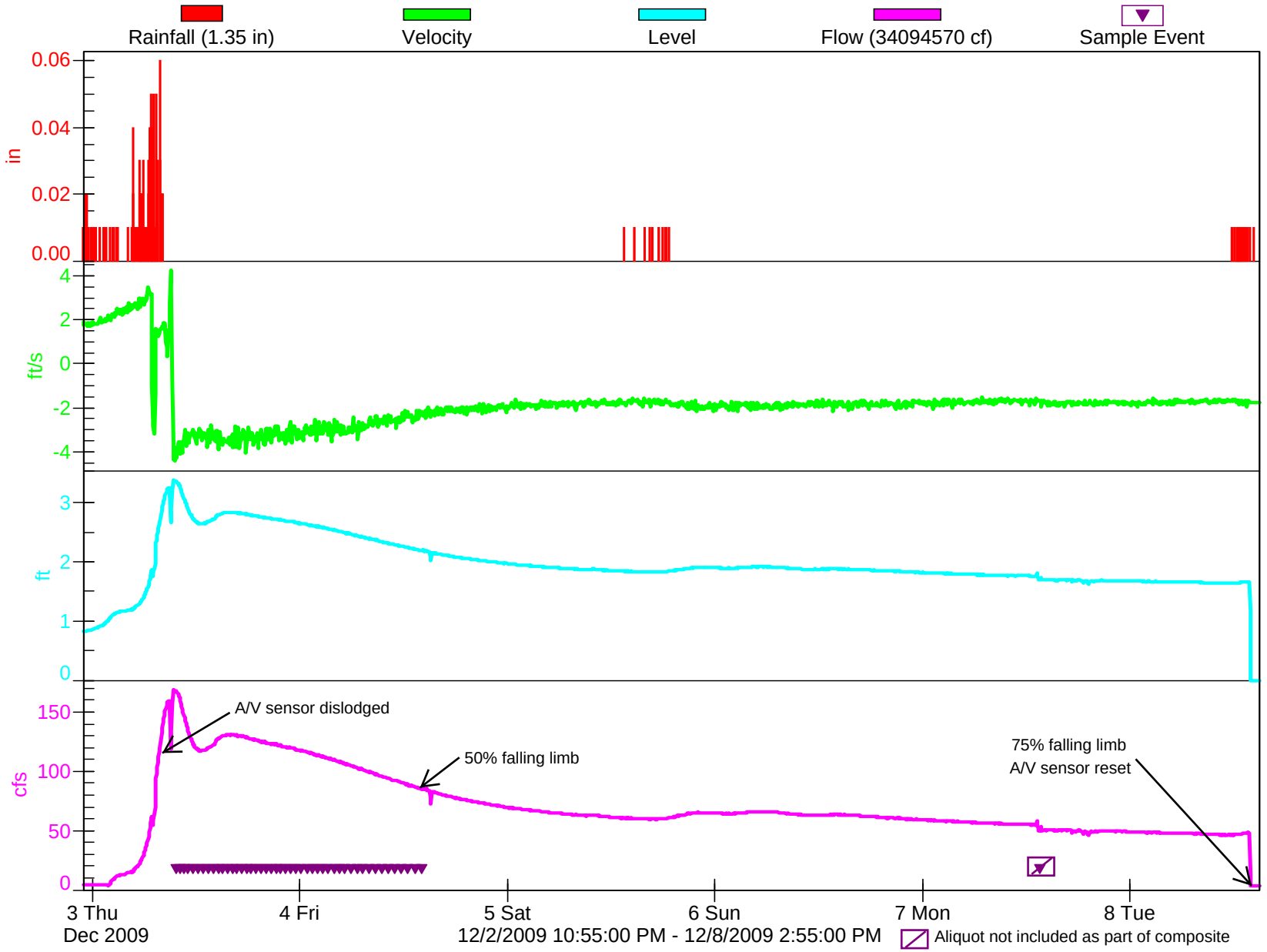
Flowlink 5



- Stage is relative to the sensor elevation.
- Flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report. New rating curves are being developed which may change the flow estimates for these stations.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-07-TT

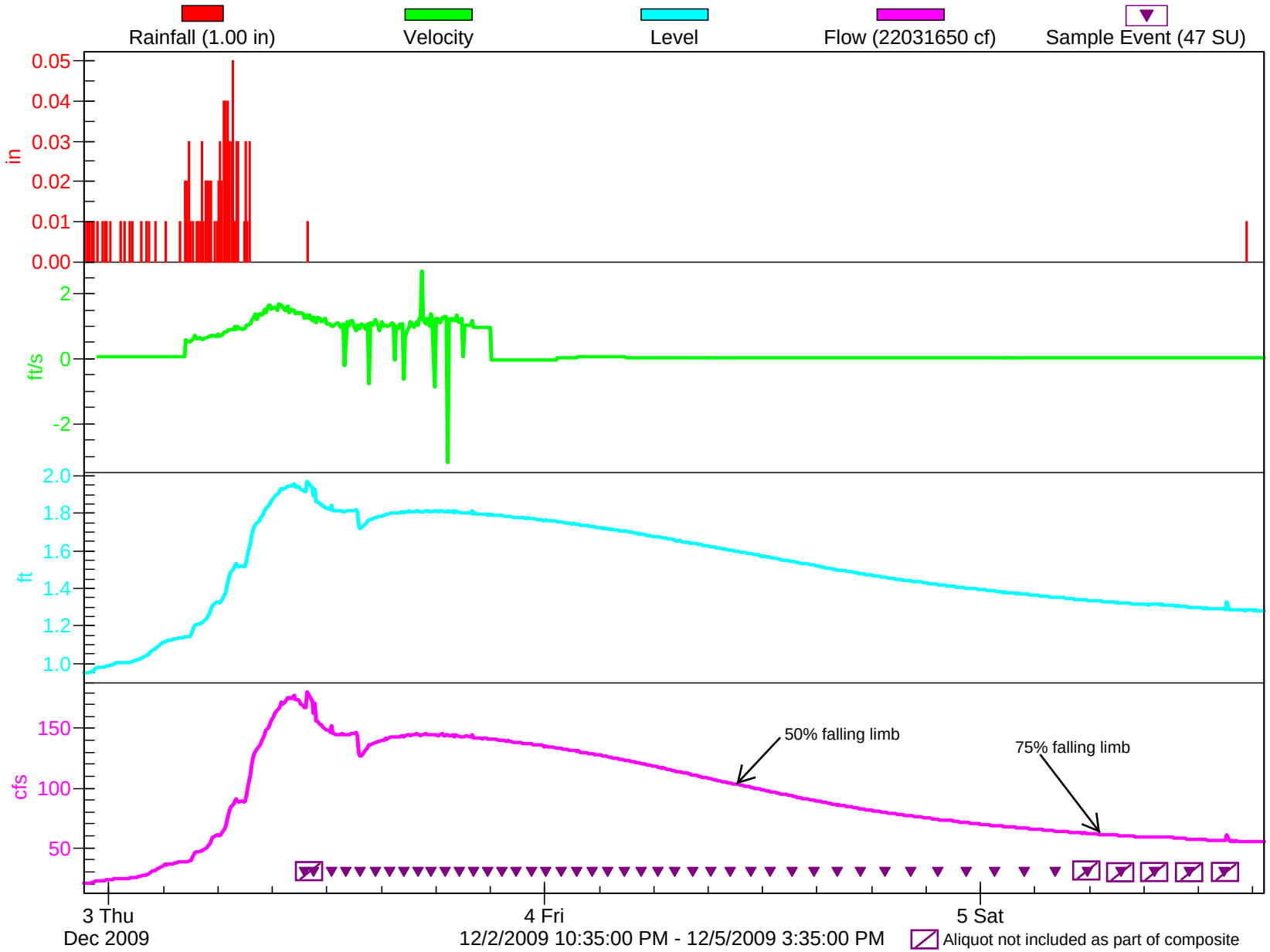
Flowlink 5



- Stage is relative to the sensor elevation.
- Flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report. New rating curves are being developed which may change the flow estimates for these stations.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-08-TT

Flowlink 5



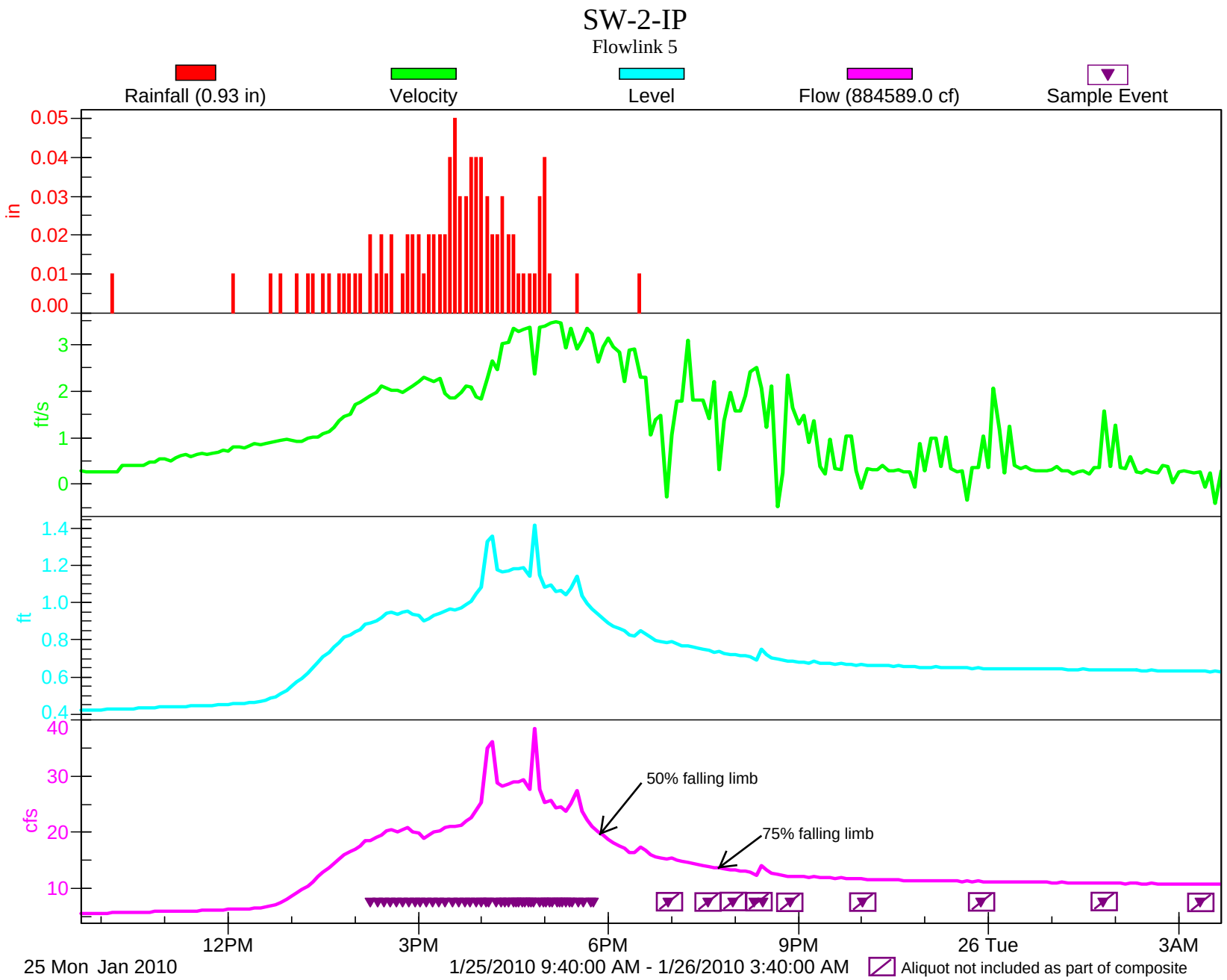
- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

Storm Narrative

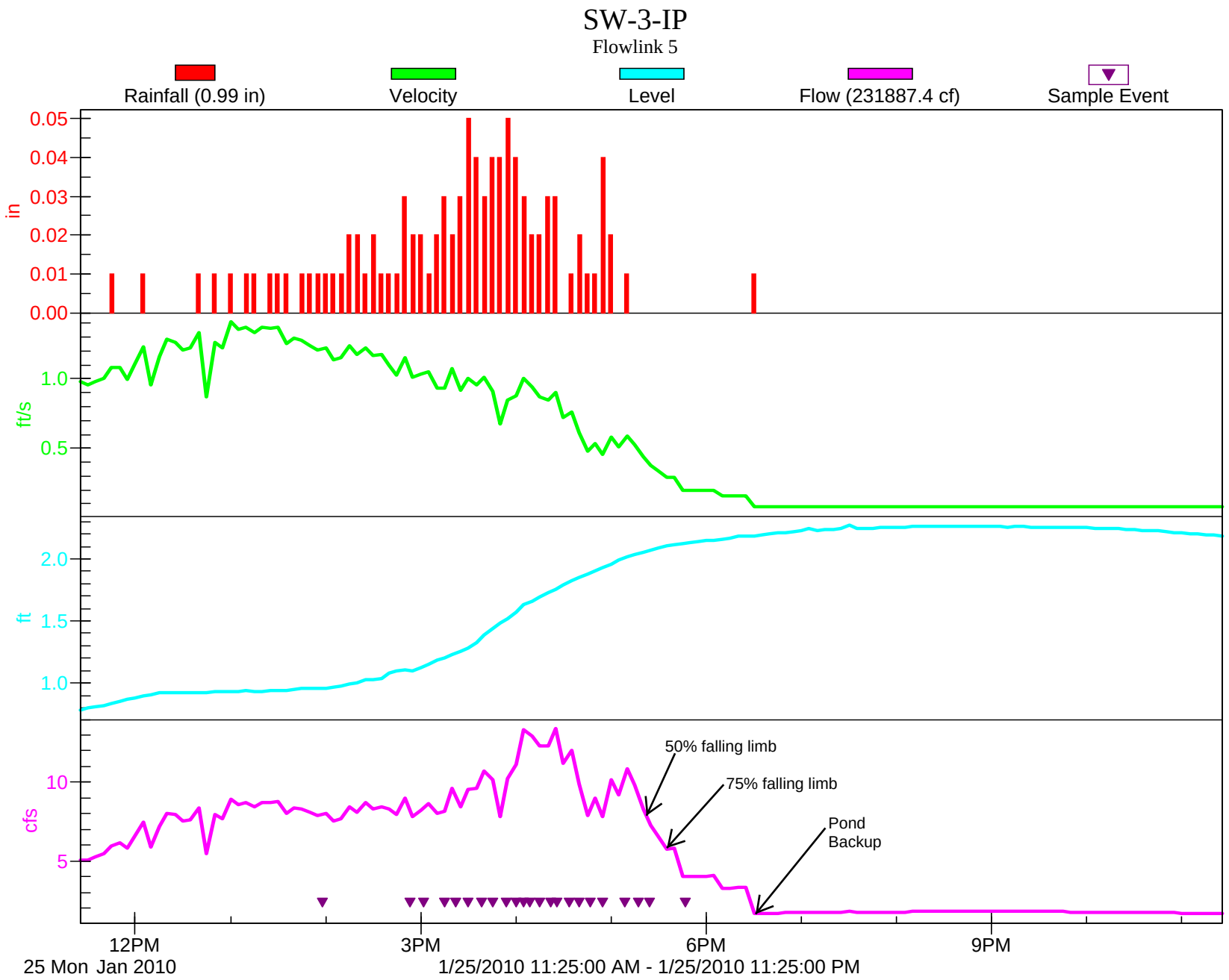
January 25-26, 2010

Hydrographs show a stage rise at all stations due to antecedent conditions (i.e., snowmelt)

- SW-2-IP
  - The last ten aliquots, eight of which were collected after 75% of the falling limb had been reached, were not included in the composite.
- SW-3-IP:
  - The initial seven aliquots were not collected due to frozen intake lines and are thus not shown on the hydrograph
  - Pond backup occurred at approximately 6:30 pm on 1/25
  - One aliquot was collected after 75% of the falling limb was reached and was inadvertently included in composite
- SW-01-TT:
  - A/V sensor became dislodged at approximately 4:10 pm on 1/25; subsequent velocity data do not represent actual conditions and subsequent stage likewise may not represent actual conditions
- SW-02-TT:
  - Aliquots were not collected between approximately 3:28 am and 5:54 am on 1/26 due to delay in changing out rosettes
- SW-04-TT:
  - Aliquots were not collected between approximately 4:18 am and 6:23 am on 1/26 due to delay in changing out rosettes
- SW-03-TT:
  - Aliquots were not collected between approximately 5:34 am and 6:29 am on 1/26 due to delay in changing out rosettes
- SW-05-TT:
  - Aliquots were not collected between approximately 2:55 am and 6:04 am on 1/26 and 9:56 pm and 10:43 pm on 1/26 due to delays in changing out rosettes
- SW-06-TT:
  - Measured precipitation low due to interference from building and/or trees (chronic problem)
  - Aliquots were not collected between approximately 9:57 pm and 11:07 pm on 1/26 due to delays in changing out rosettes
- SW-07-TT:
  - Aliquots were not collected between approximately 7:15 am and 8:42 am on 1/26 due to delays in changing out rosettes
- SW-08-TT
  - Aliquots were not collected between approximately 8:16 am and 8:48 am on 1/26 and 9:15 pm and 10:06 pm on 1/26 due to delays in changing out rosettes
  - A/V sensor became dislodged at approximately 7:10 pm on 1/25; subsequent velocity data do not represent actual conditions and subsequent stage likewise may not represent actual conditions
  - 75% of the falling limb was not attained within the expected timeframe due to the earlier dislodgement of the A/V sensor; sensor was reset at 7:10 am on 1/28



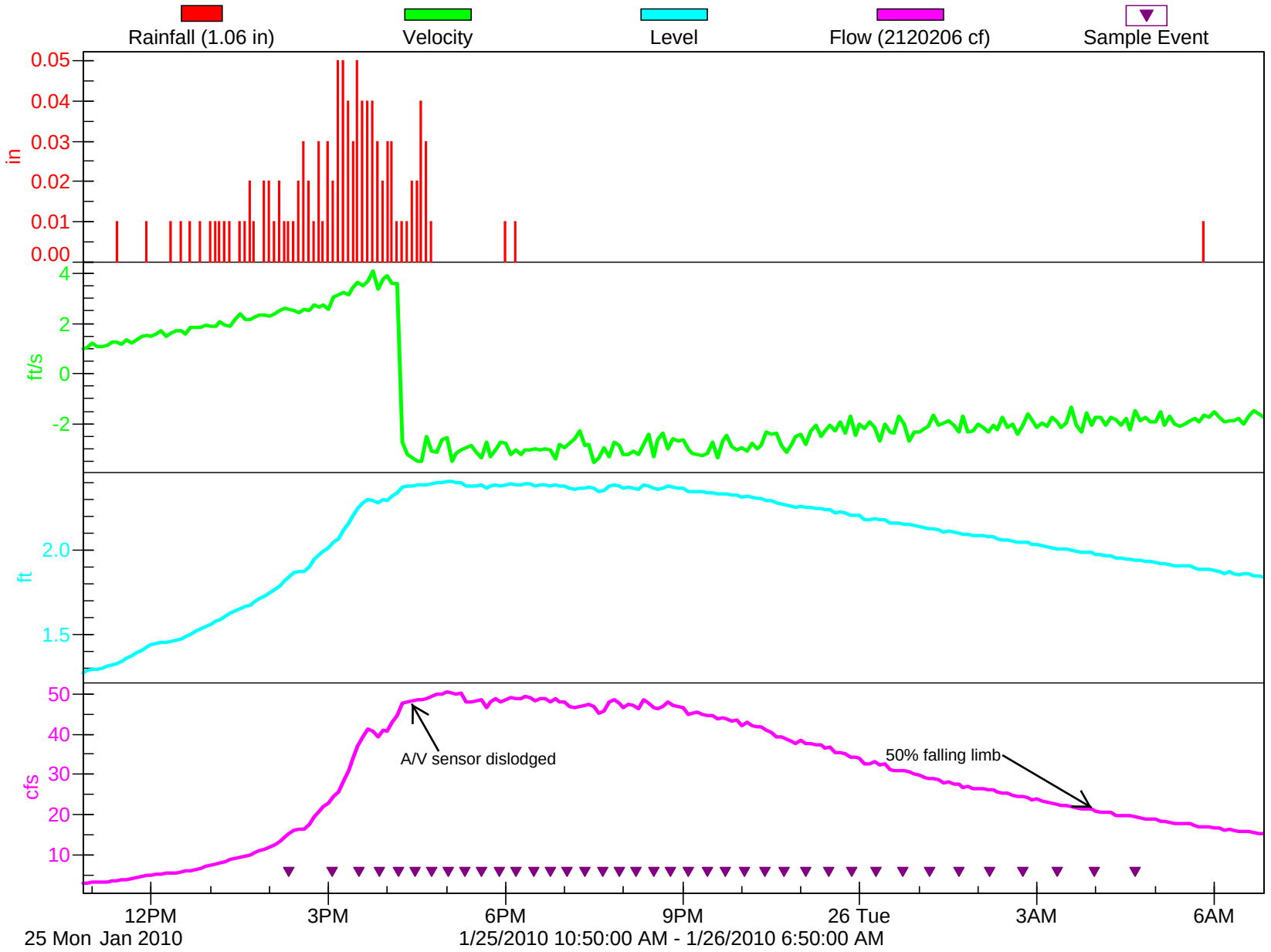
- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.



- Stage is relative to the sensor elevation.
- Flow shown was estimated based on level and velocity.
- Sampling terminated when forward velocity no longer detected; hydrograph extended beyond termination of sampling to show pond backup.

SW-01-TT

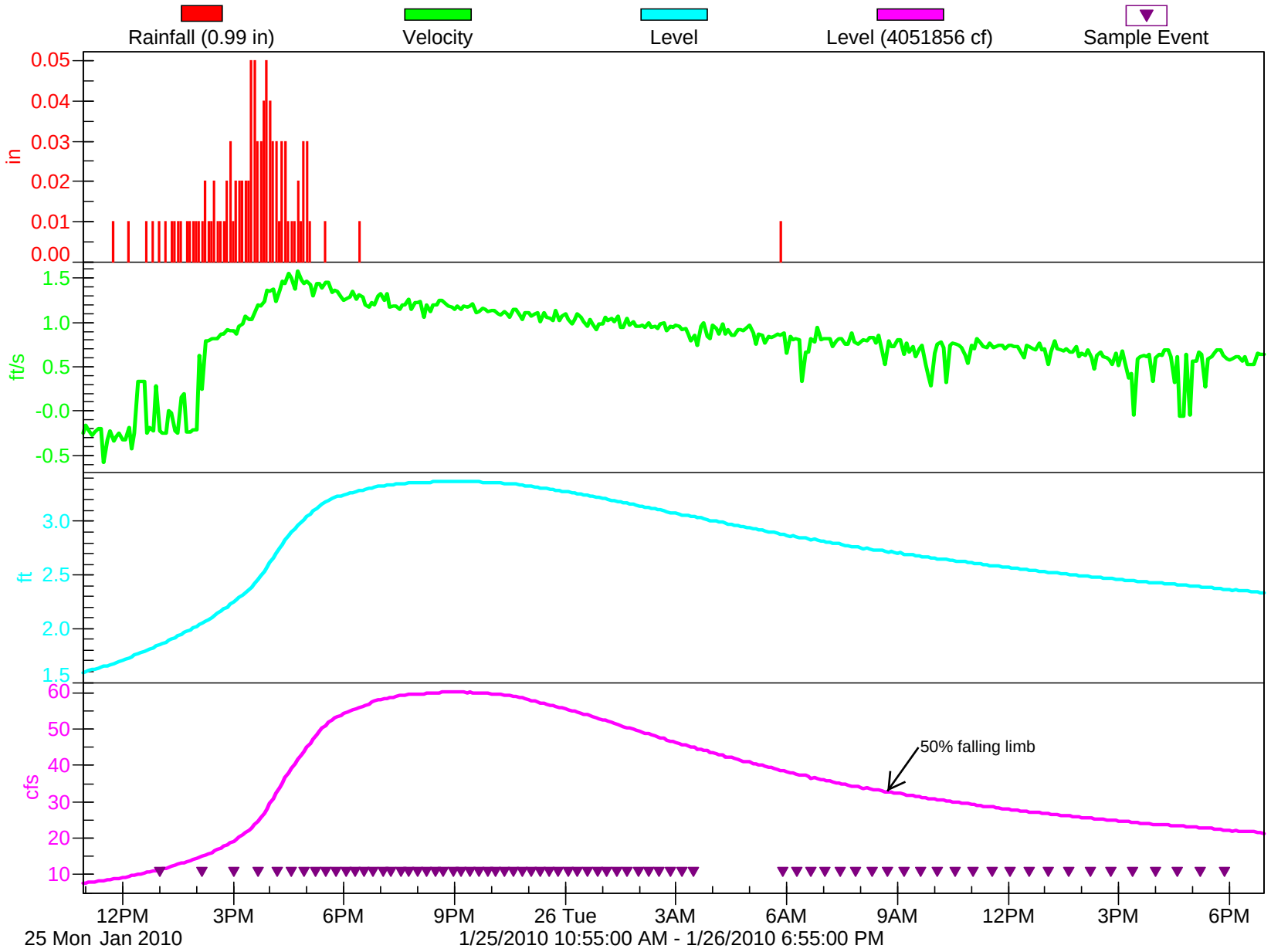
Flowlink 5



- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-02-TT

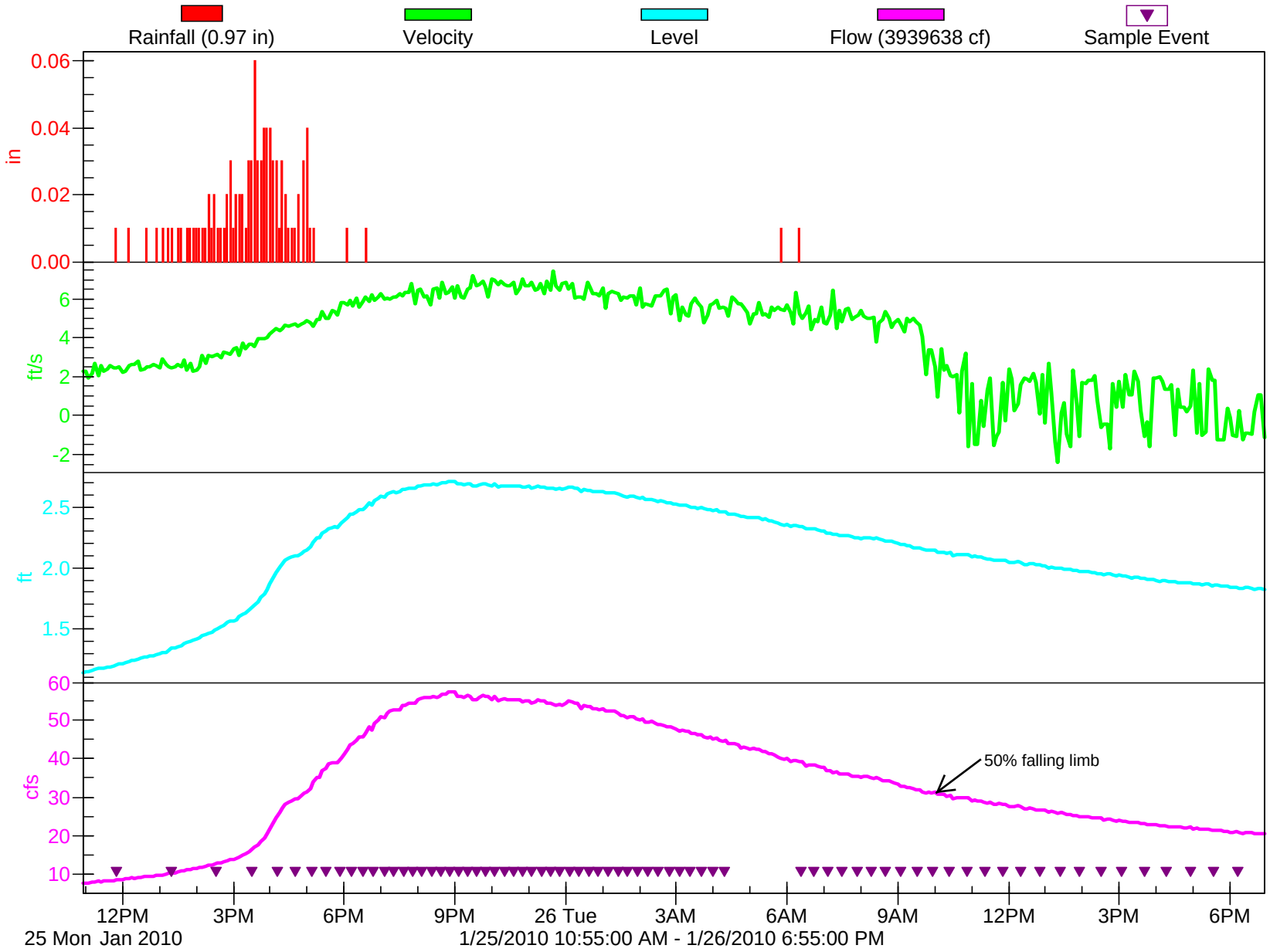
Flowlink 5



- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-04-TT

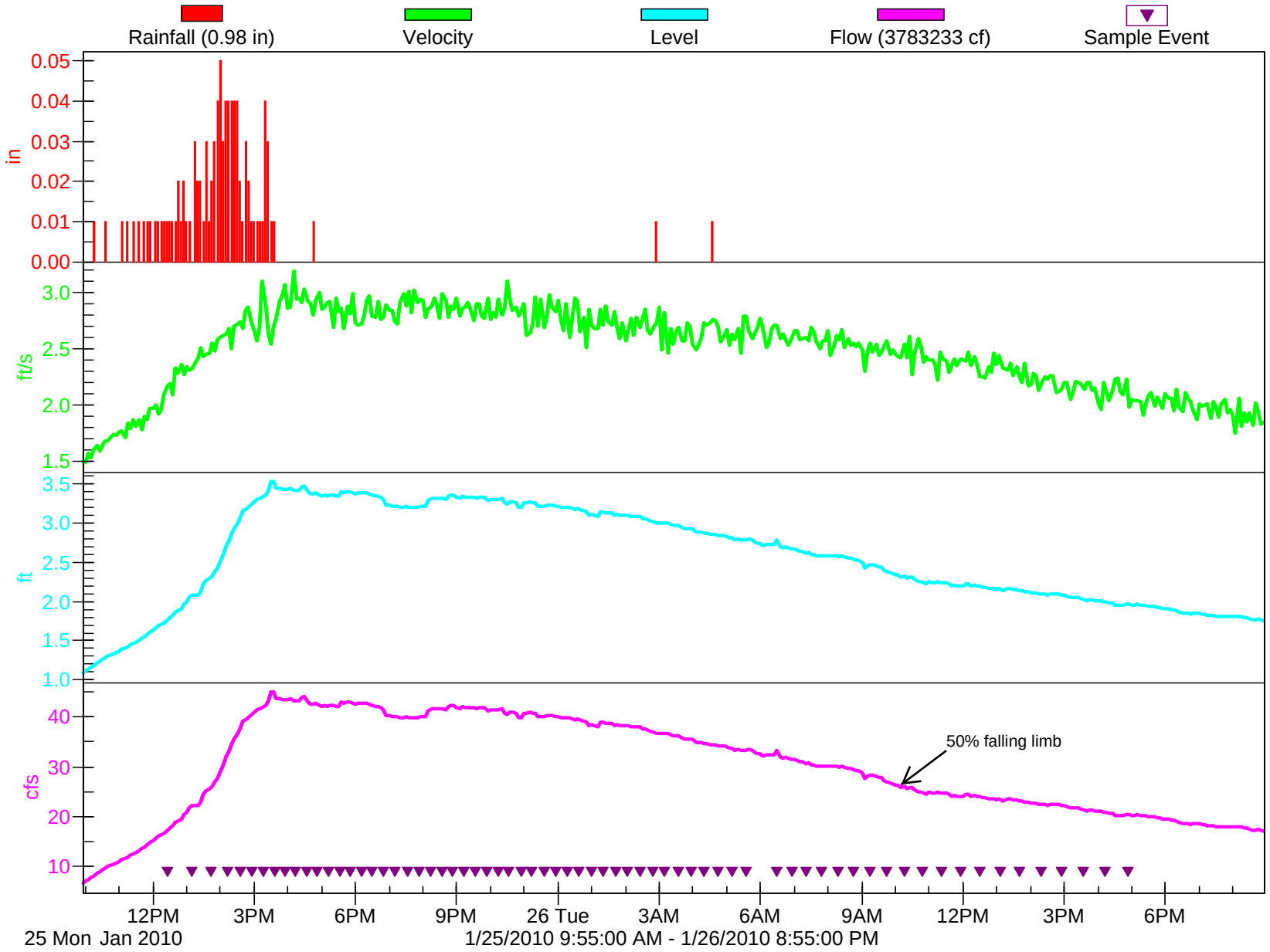
Flowlink 5



- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-03-TT

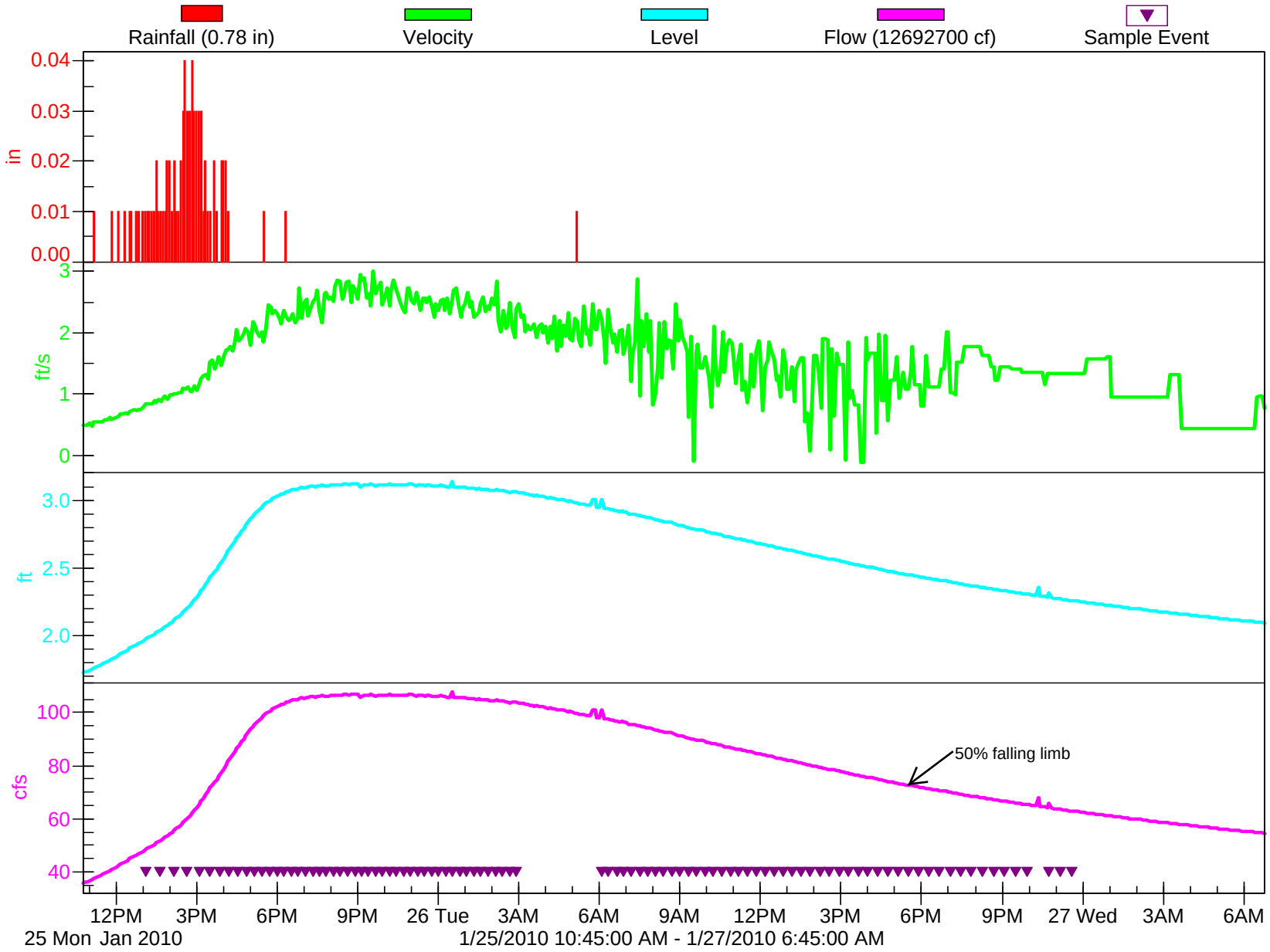
Flowlink 5



- Stage is relative to sensor elevation.
- Flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report. New rating curves are being developed which may change the flow estimates for these stations.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-05-TT

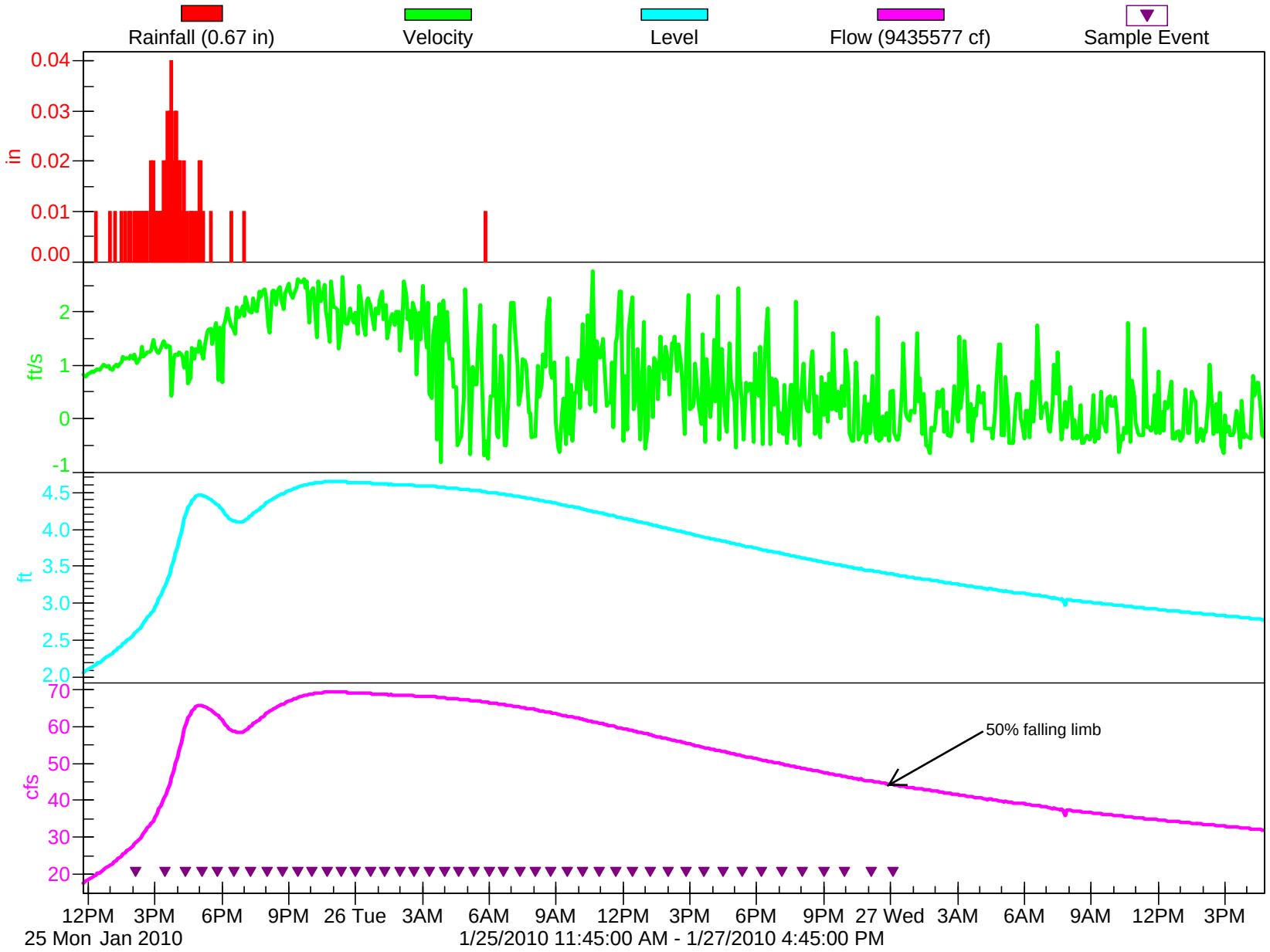
Flowlink 5



- Stage is relative to the sensor elevation.
- Flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report. New rating curves are being developed which may change the flow estimates for these stations.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-06-TT

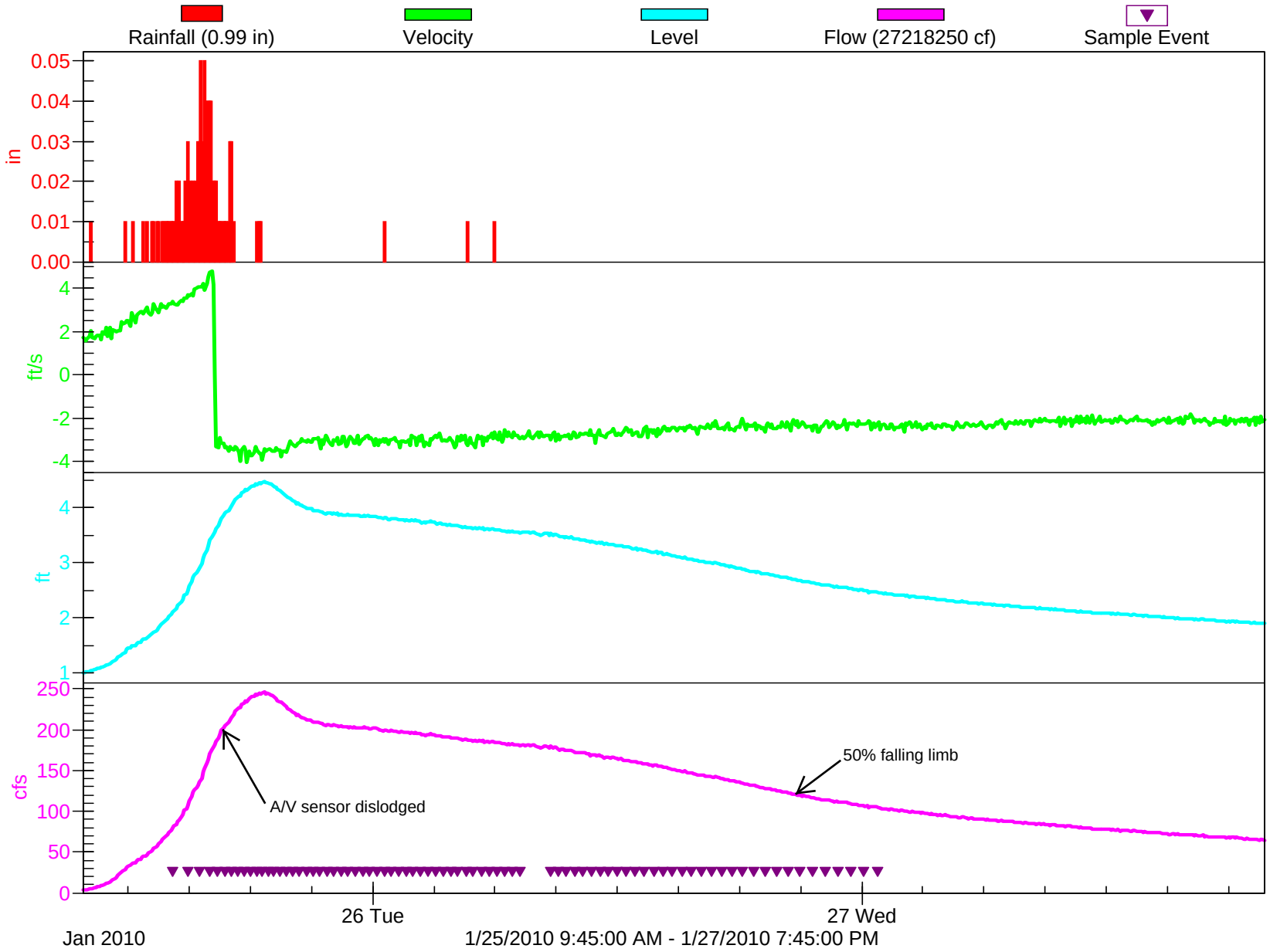
Flowlink 5



- Stage is relative to the sensor elevation.
- Flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report. New rating curves are being developed which may change the flow estimates for these stations.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-07-TT

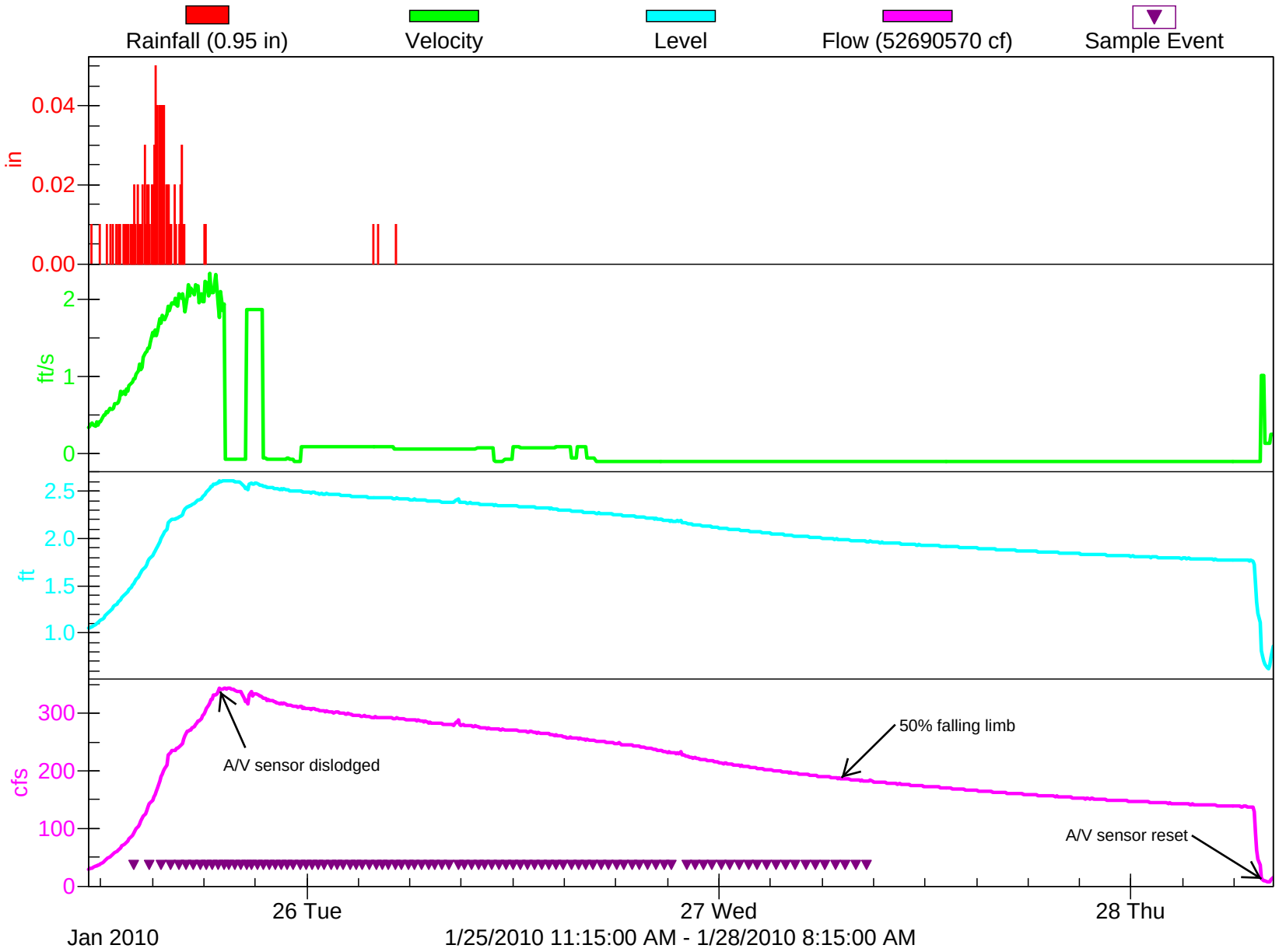
Flowlink 5



- Stage is relative to the sensor elevation.
- Flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report. New rating curves are being developed which may change the flow estimates for these stations.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-08-TT

Flowlink 5



- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

Storm Narrative

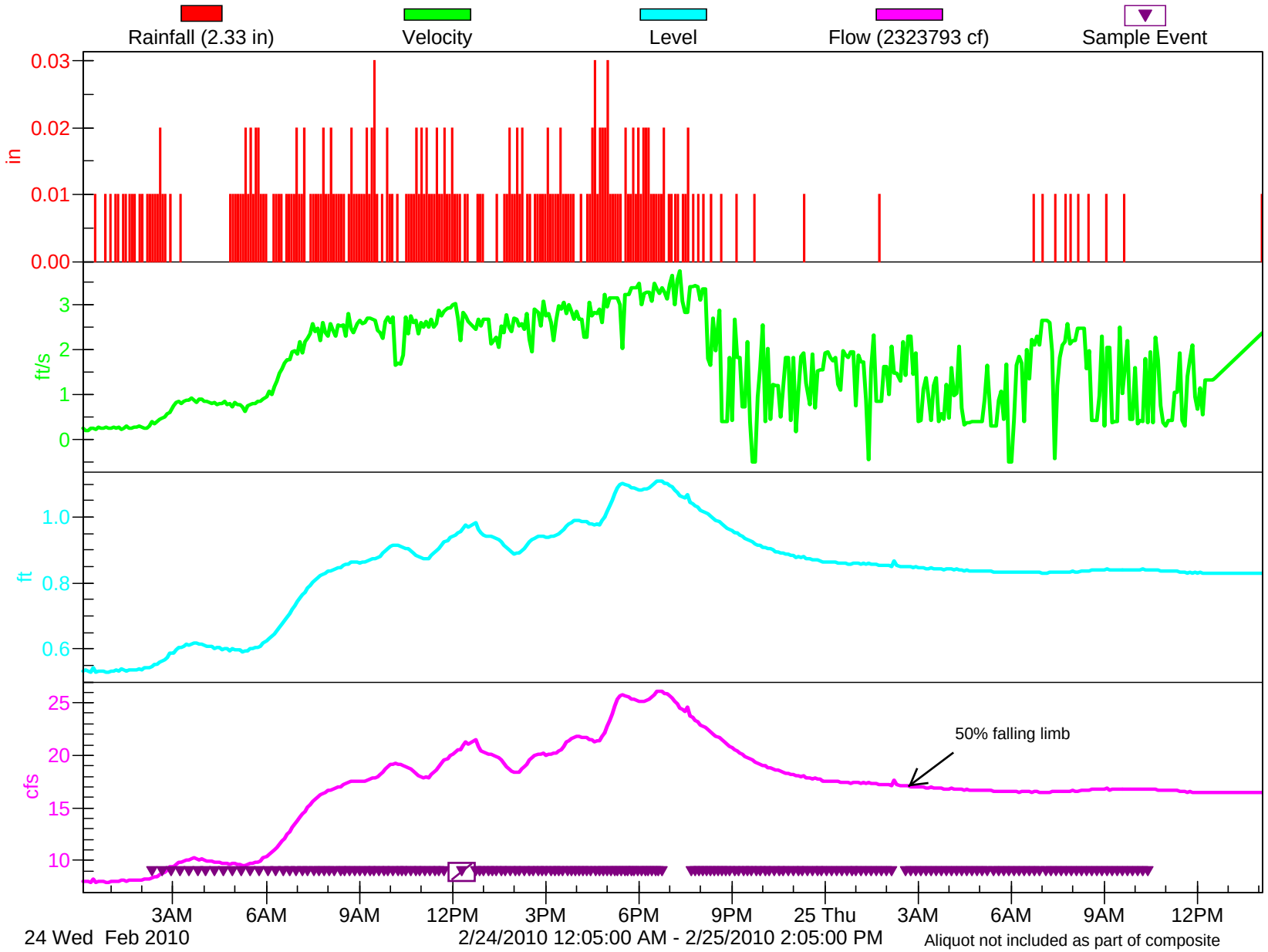
February 24-25, 2010

Downstream stations manually activated following automatic activation of Halls Brook (SW-01-TT) and Pond Outlet (SW-02-TT) stations, which were triggered approximately four hours later than the other upstream stations.

- SW-2-IP:
  - Aliquots were not collected between approximately 11:44 am and 12:18 on 2/24, 6:45 pm and 7:43 on 2/24, and 2:09 am and 2:37 am on 2/25 due to delays in changing out rosettes
- SW-3-IP:
  - Pond backup occurred at approximately 12:00 pm on 2/24
  - The last aliquot was not included in composite due to an error with the Isco sampler or in sample processing
- SW-01-TT:
  - Aliquots were not collected between approximately 5:42 pm and 7:09 pm on 2/24 and 2:11 am and 2:54 am on 2/25 due to delays in changing out rosettes
  - A/V sensor became dislodged at approximately 12:00 pm on 2/24; subsequent velocity and stage (and hence flow) data do not represent actual conditions
- SW-02-TT:
  - Aliquots were not collected between approximately 9:50 pm and 11:12 pm on 2/24 due to delays in changing out rosettes
- SW-04-TT:
  - Aliquots were not collected between approximately 9:56 pm and 11:29 pm on 2/24 due to delays in changing out rosettes
- SW-03-TT:
  - An approximate 3-ft difference was observed between the staff gauge and Isco A/V sensor reading at approximately 4:15 pm on 2/24; stage was therefore re-calibrated
  - Aliquots were not collected between approximately 3:49 pm and 3:57 pm on 2/24 and 1:45 am and 2:19 am on 2/25 due to delays in changing out rosettes
- SW-05-TT:
  - Aliquots were not collected between approximately 3:20 pm and 3:37 pm on 2/24, 7:54 pm and 10:30 pm on 2/24, 6:33 am and 9:27 am on 2/25, 6:51 pm and 8:52 pm on 2/25, 4:22 am and 8:49 am on 2/26, and 4:51 pm and 5:30 pm on 2/26 due to delays in changing out rosettes
  - Sample termination occurred just prior to achieving 50% of the falling limb for logistical reasons
  - One aliquot (#57) was not collected due to power failure
- SW-06-TT:
  - Aliquots were not collected between approximately 12:32 pm and 1:10 pm on 2/25, 1:34 pm and 2:25 pm on 2/26 due to delays in changing out rosettes
  - Additional aliquots were not collected but are shown on the hydrograph due to software issues; sampling was terminated between 50% and 75% down the falling limb
- SW-07-TT:
  - Aliquots were not collected between approximately 10:06 pm and 10:43 pm on 2/24, 10:33 am and 12:09 pm on 2/25, 11:54 pm and 1:25 am on 2/26, 11:15 am and 1:57 pm on 2/26, and 2:09 am and 2:34 am on 2/27 due to delays in changing out rosettes
  - A/V sensor became dislodged at approximately 6:10 pm on 2/24; subsequent velocity data do not represent actual conditions and subsequent stage likewise may not represent actual conditions
- SW-08-TT:
  - Aliquots were not collected between approximately 1:12 am and 3:39 am on 2/25, 5:56 pm and 8:34 pm on 2/25, 4:47 am and 8:24 am on 2/26, 4:38 pm and 5:09 pm on 2/26, 3:01 am and 3:21 am on 2/27, and 3:25 pm and 3:52 pm on 2/27 due to delays in changing out rosettes
  - A/V sensor became dislodged at approximately 7:40 pm on 2/24; subsequent velocity data do not represent actual conditions and subsequent stage and likewise may not represent actual conditions
  - One aliquot is not shown on the hydrograph due to a sampling error with the primary Isco unit; however, this aliquot was replaced with the co-collected aliquot from the secondary Isco unit

SW-2-IP

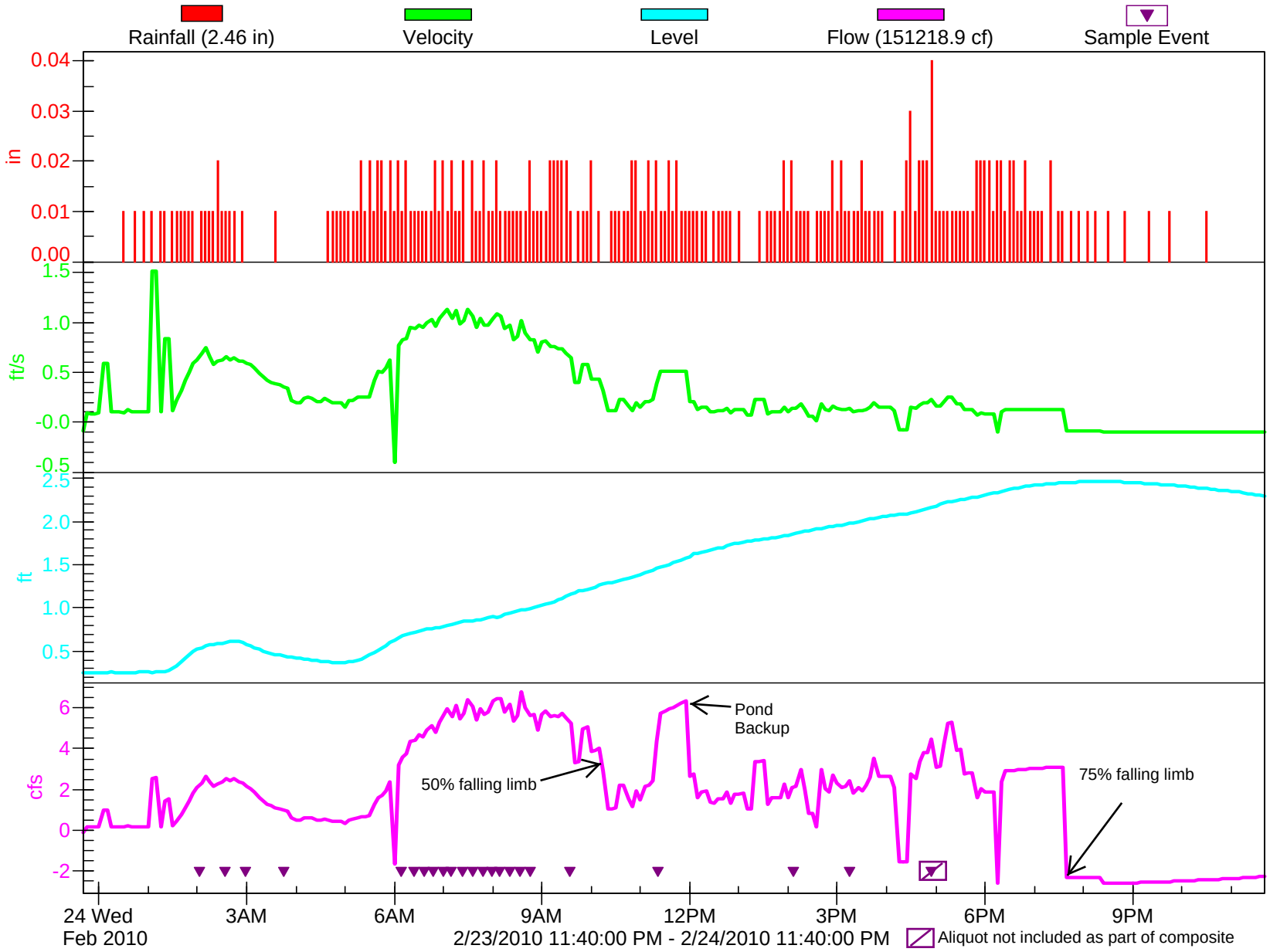
Flowlink 5



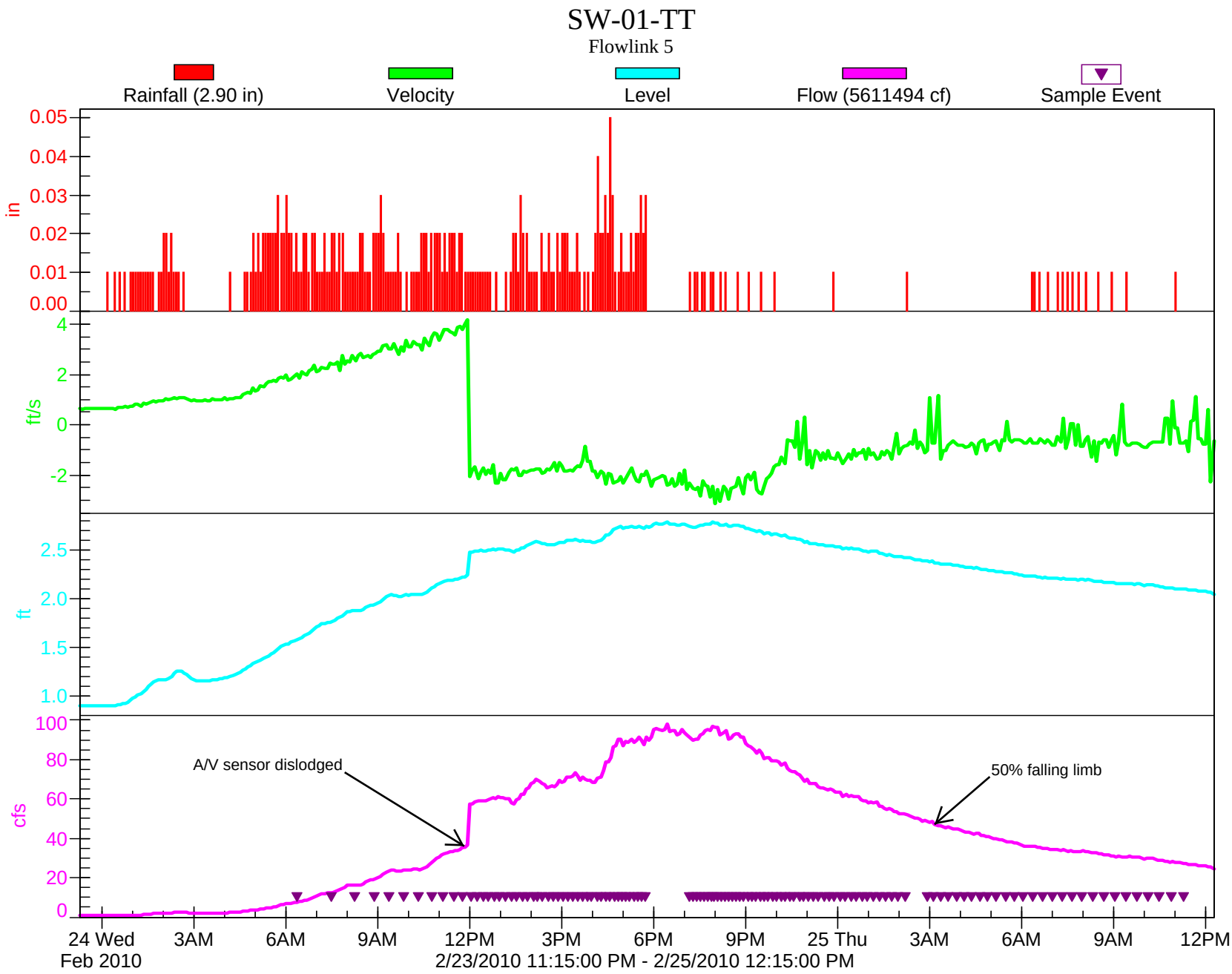
- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-3-IP

Flowlink 5



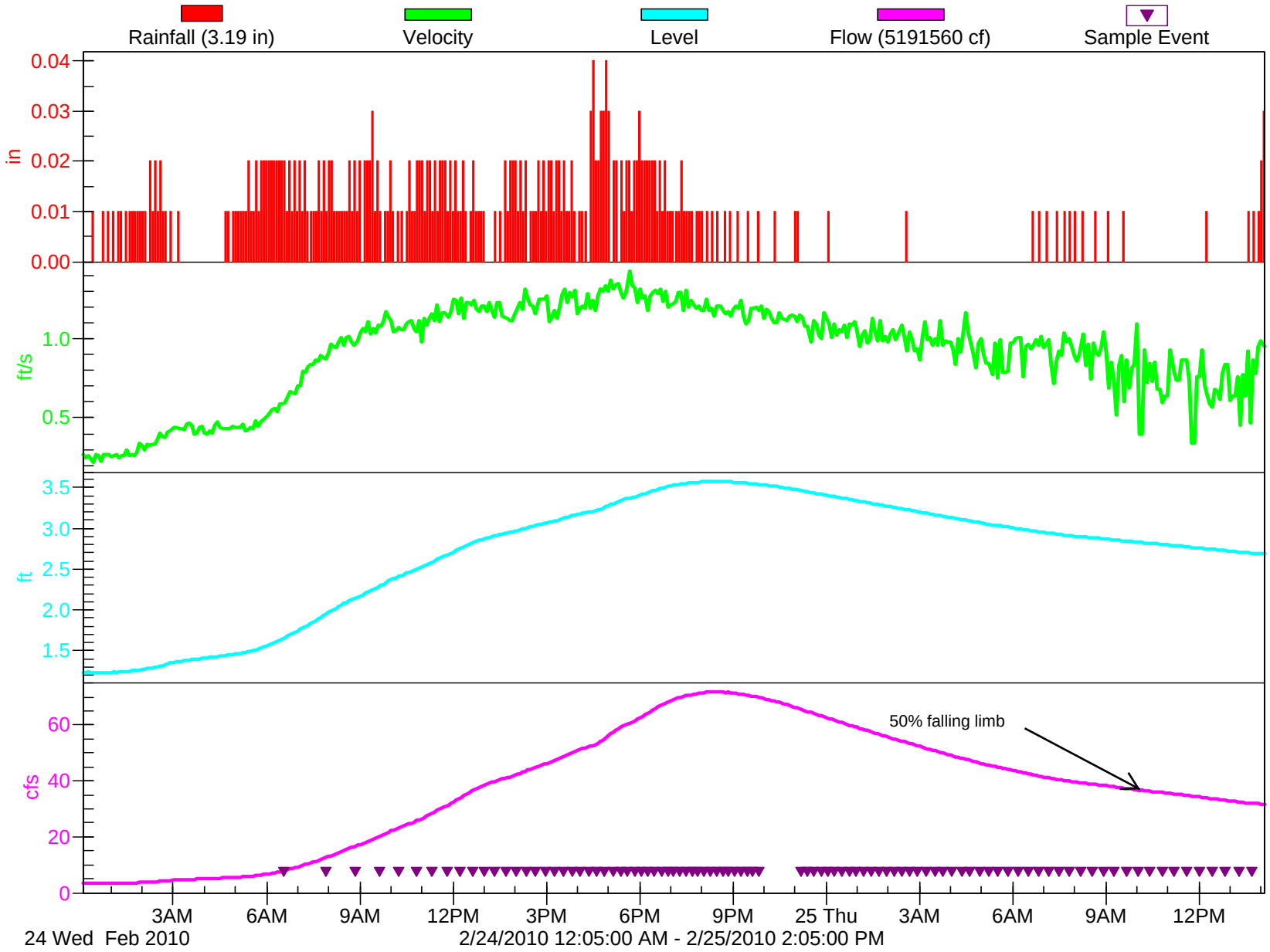
- Stage is relative to the sensor elevation.
- Flow shown was estimated based on level and velocity.
- Sampling terminated when forward velocity no longer detected; hydrograph extended beyond termination of sampling to show pond backup.



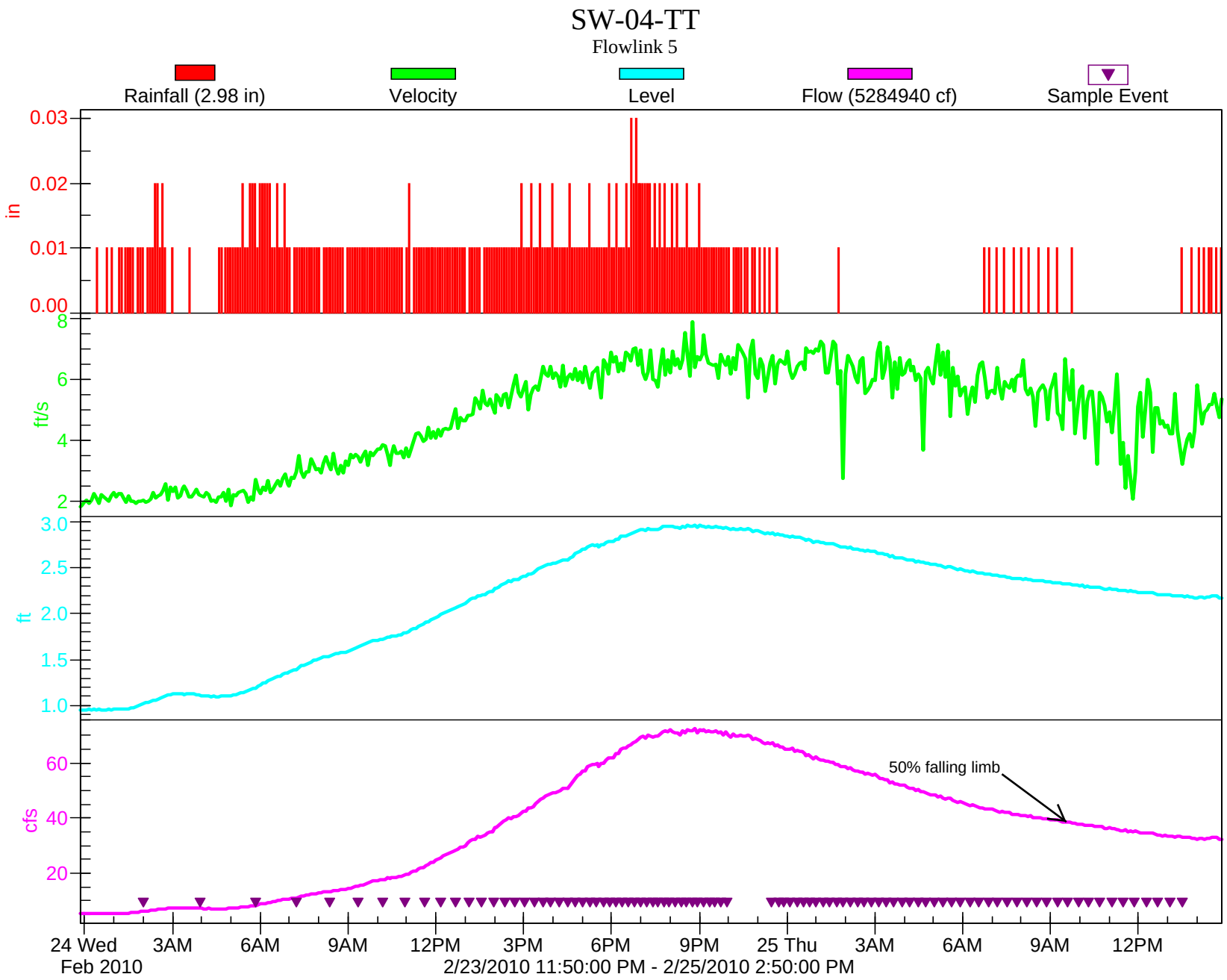
- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-02-TT

Flowlink 5



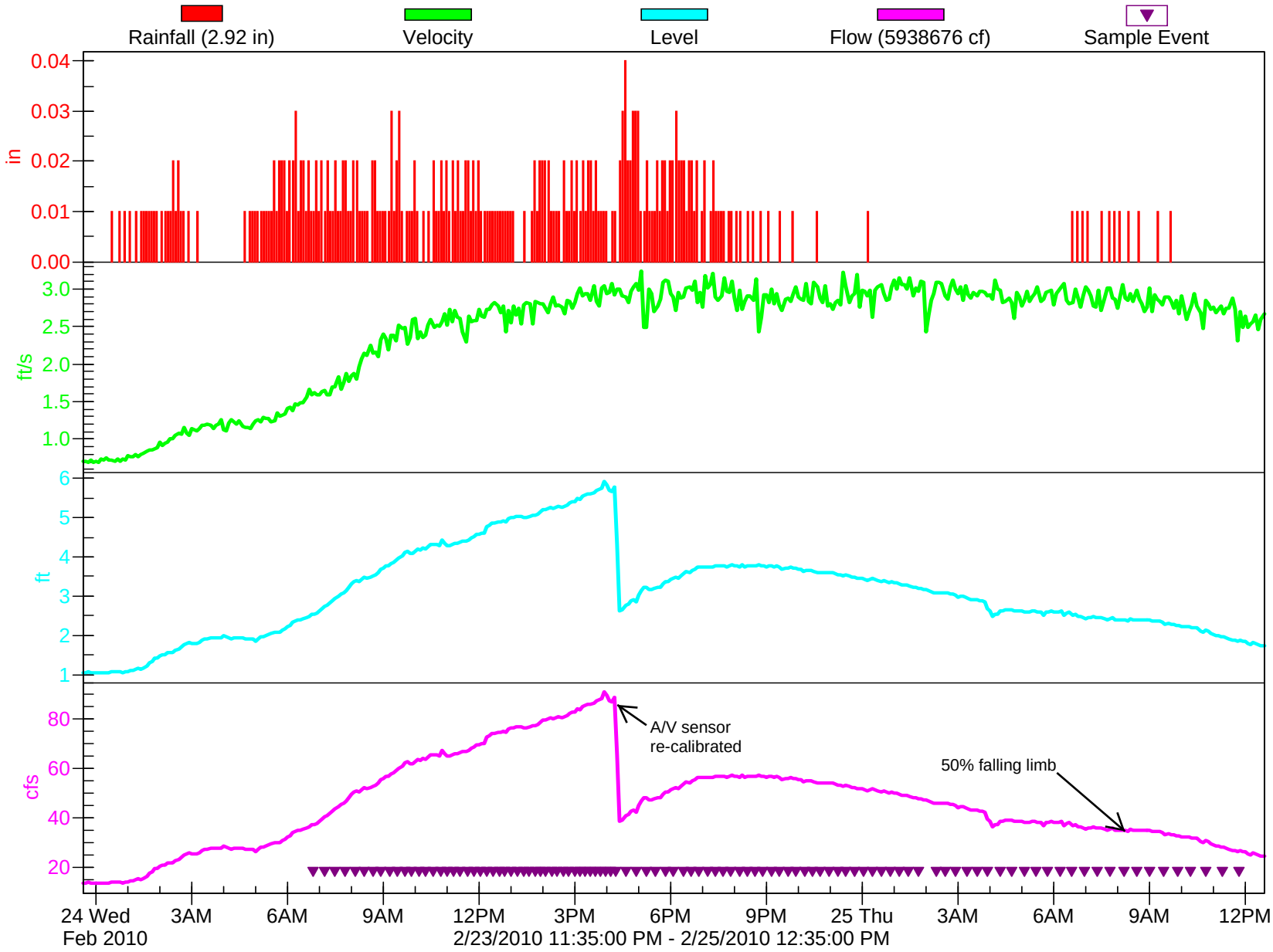
- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.



- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-03-TT

Flowlink 5



- Stage is relative to sensor elevation.
- Flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report. New rating curves are being developed which may change the flow estimates for these stations.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-05-TT

Flowlink 5

Feb 2010

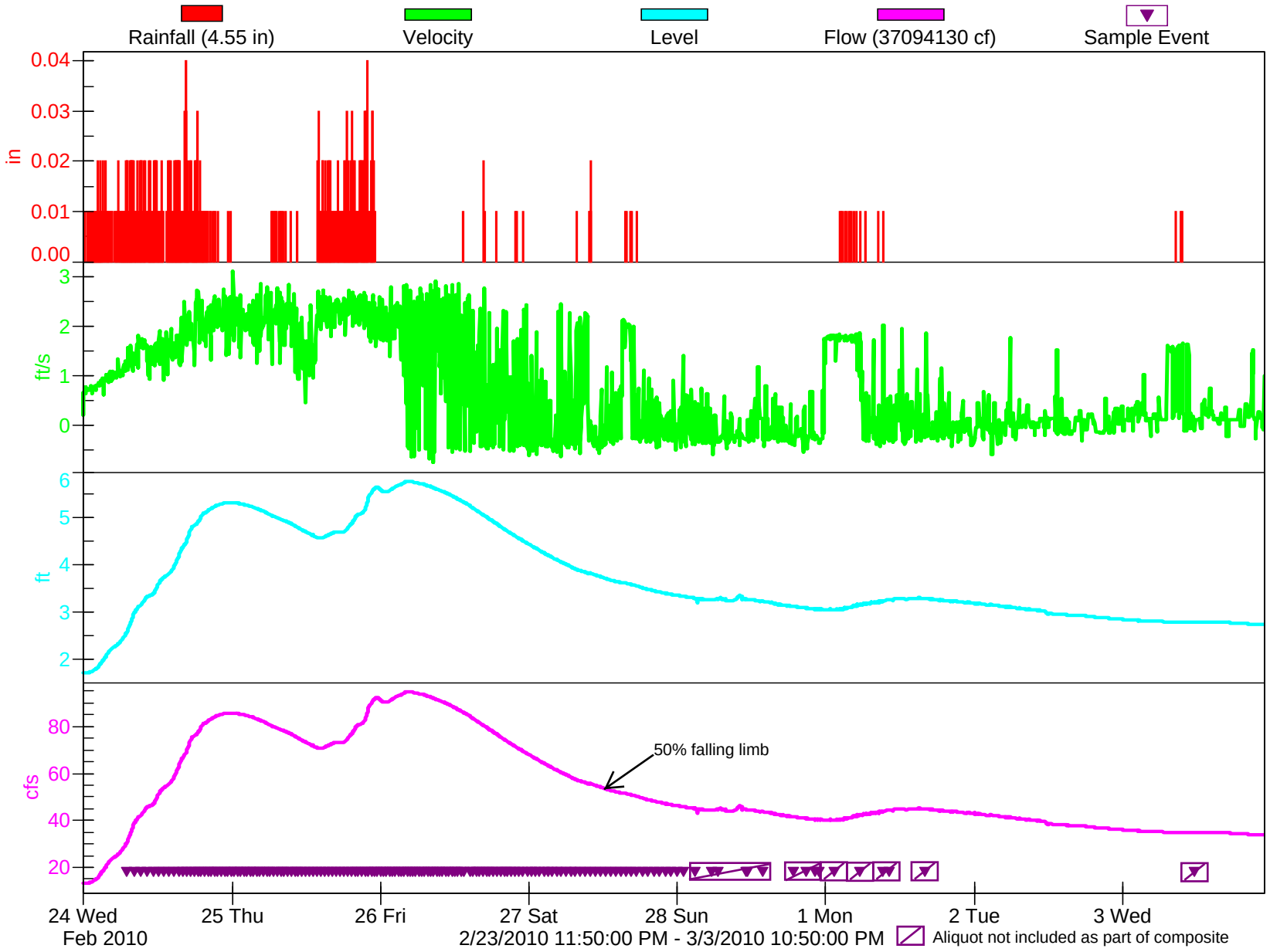
2/24/2010 12:05:00 AM - 2/28/2010 1:05:00 PM

Aliquot not included as part of composite

- Stage is relative to the sensor elevation.
- Flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report. New rating curves are being developed which may change the flow estimates for these stations.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-06-TT

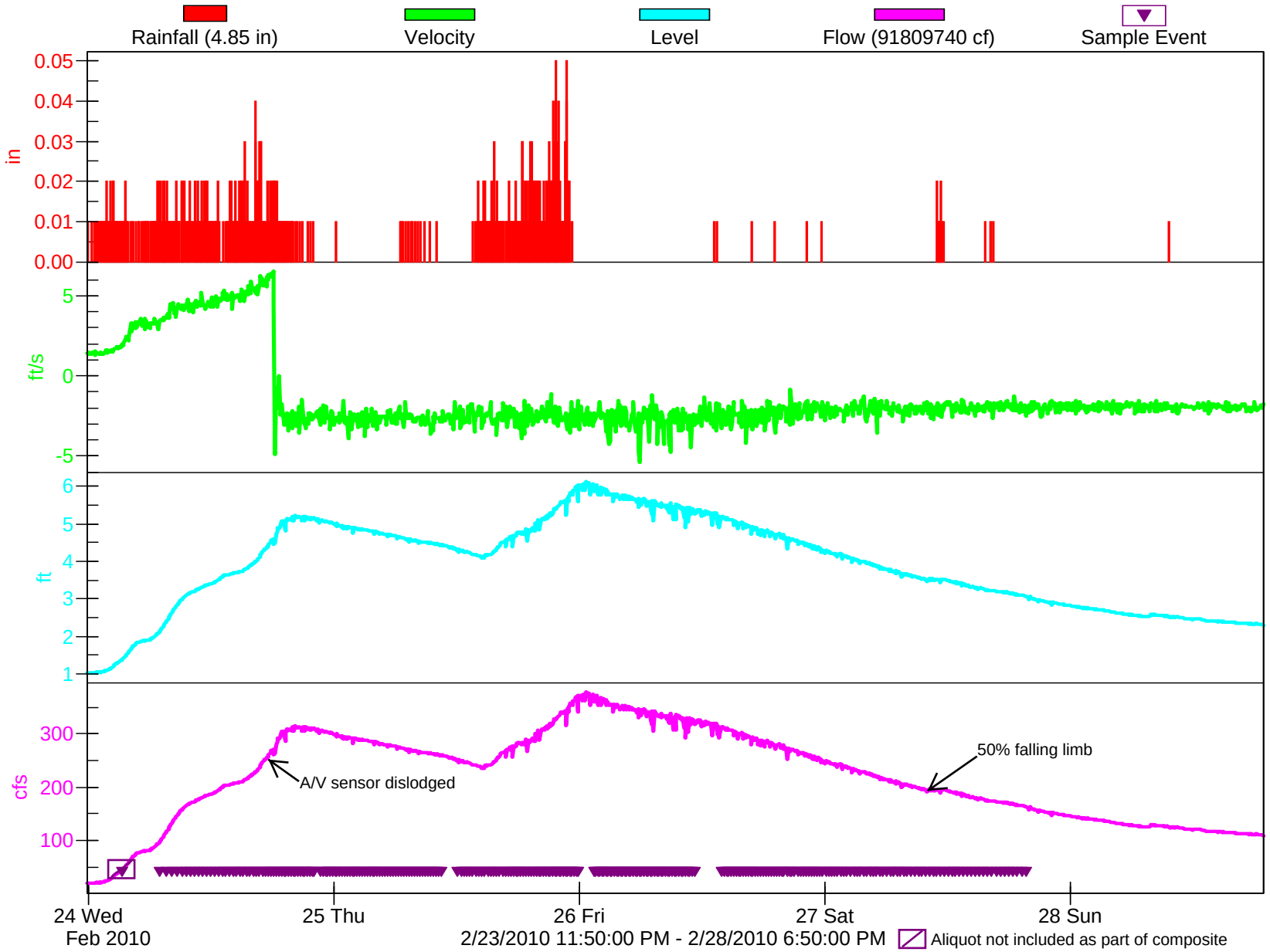
Flowlink 5



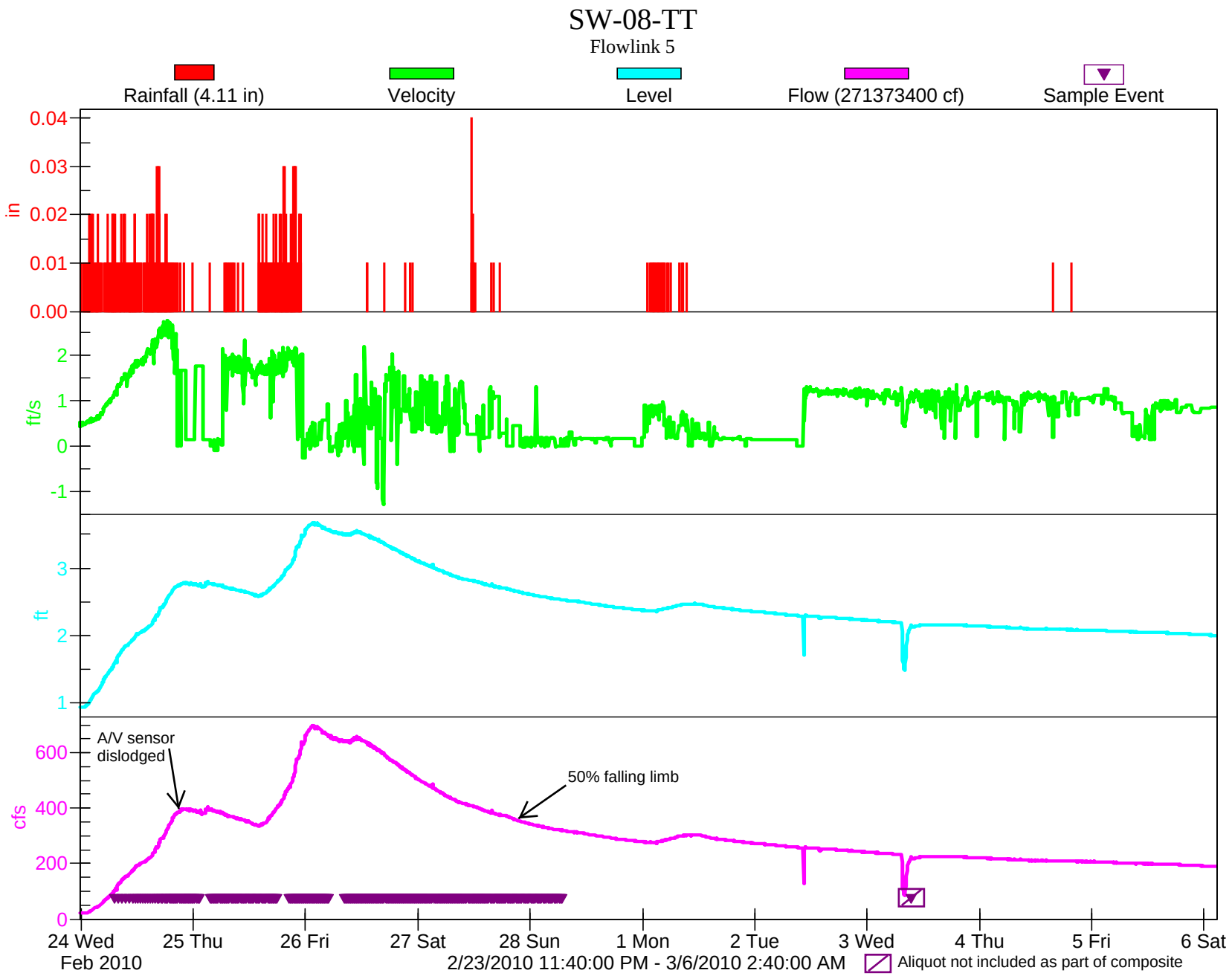
- Stage is relative to the sensor elevation.
- Flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report. New rating curves are being developed which may change the flow estimates for these stations.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-07-TT

Flowlink 5



- Stage is relative to the sensor elevation.
- Flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report. New rating curves are being developed which may change the flow estimates for these stations.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.



- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

Storm Narrative

February 25-27, 2010

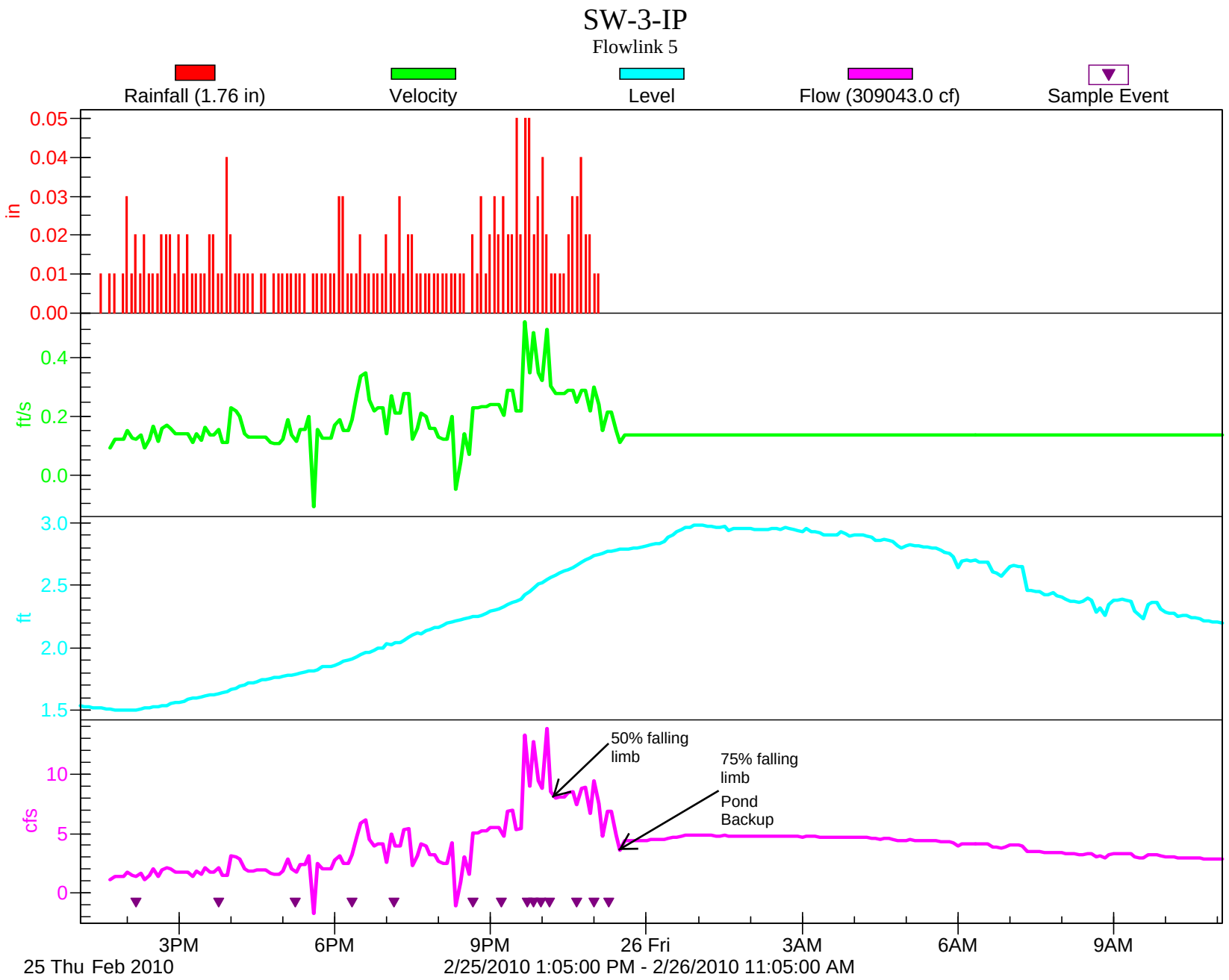
Sampling at all but one of the stations (SW-3-IP) was terminated after 75% of the falling limb had been reached and all samples were included in composites because flow at 75% of the falling limb was re-calculated after the sample processing had already been completed.

- SW-2-IP:
  - Aliquots not collected between approximately 6:41 am and 9:26 am on 2/26 due to delays in changing out rosettes
  - Nineteen aliquots were collected after 75% of the falling limb was reached and were included in composite
- SW-3-IP:
  - Pond backup occurred at approximately 11:30 pm on 2/25
- SW-01-TT:
  - A/V sensor became dislodged at approximately 10:15 pm on 2/25; subsequent velocity and stage (and hence flow) data do not represent actual conditions; sampling was terminated based on flow estimated from staff gauge readings
  - Three aliquots (#24, 25, and 26) were not collected during repairs to tubing connections, and are not shown on the hydrograph
- SW-02-TT:
  - Aliquots not collected between approximately 10:34 am and 12:17 pm on 2/26 due to delays in changing out rosettes
  - Seventeen aliquots were collected after 75% of the falling limb was reached and were included in composite
- SW-04-TT:
  - Aliquots not collected between approximately 10:24 am and 11:49 am on 2/26 due to delays in changing out rosettes
  - Sixteen aliquots were collected after 75% of the falling limb was reached and were included in composite
- SW-03-TT:
  - Aliquots not collected between approximately 11:24 am and 12:40 am on 2/26 due to delays in changing out rosettes
  - Seven aliquots were collected after 75% of the falling limb was reached and were included in composite

SW-2-IP

Flowlink 5

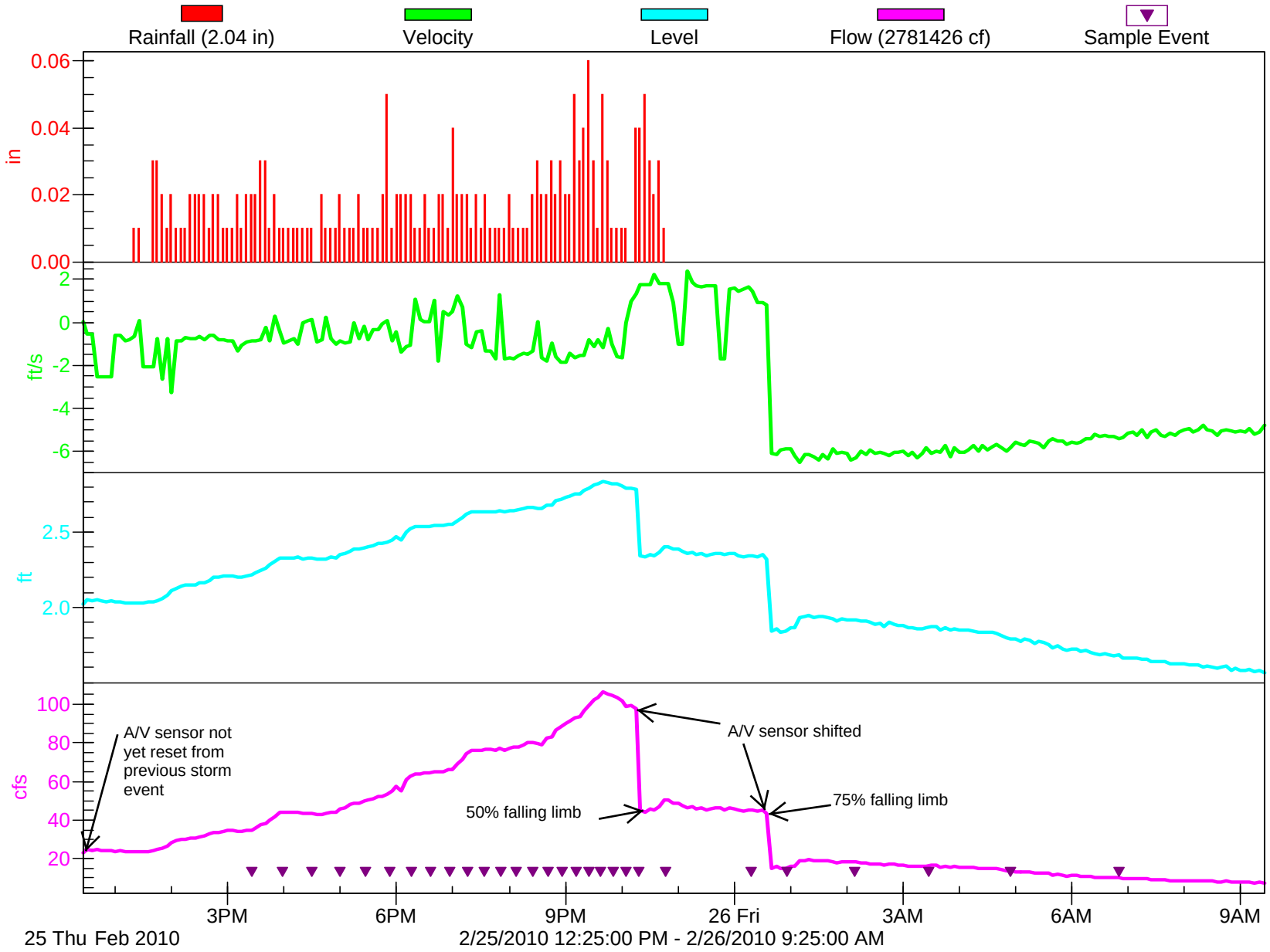
- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.



- Stage is relative to the sensor elevation.
- Flow shown was estimated based on level and velocity.
- Sampling terminated when forward velocity no longer detected; hydrograph extended beyond termination of sampling to show pond backup.

SW-01-TT

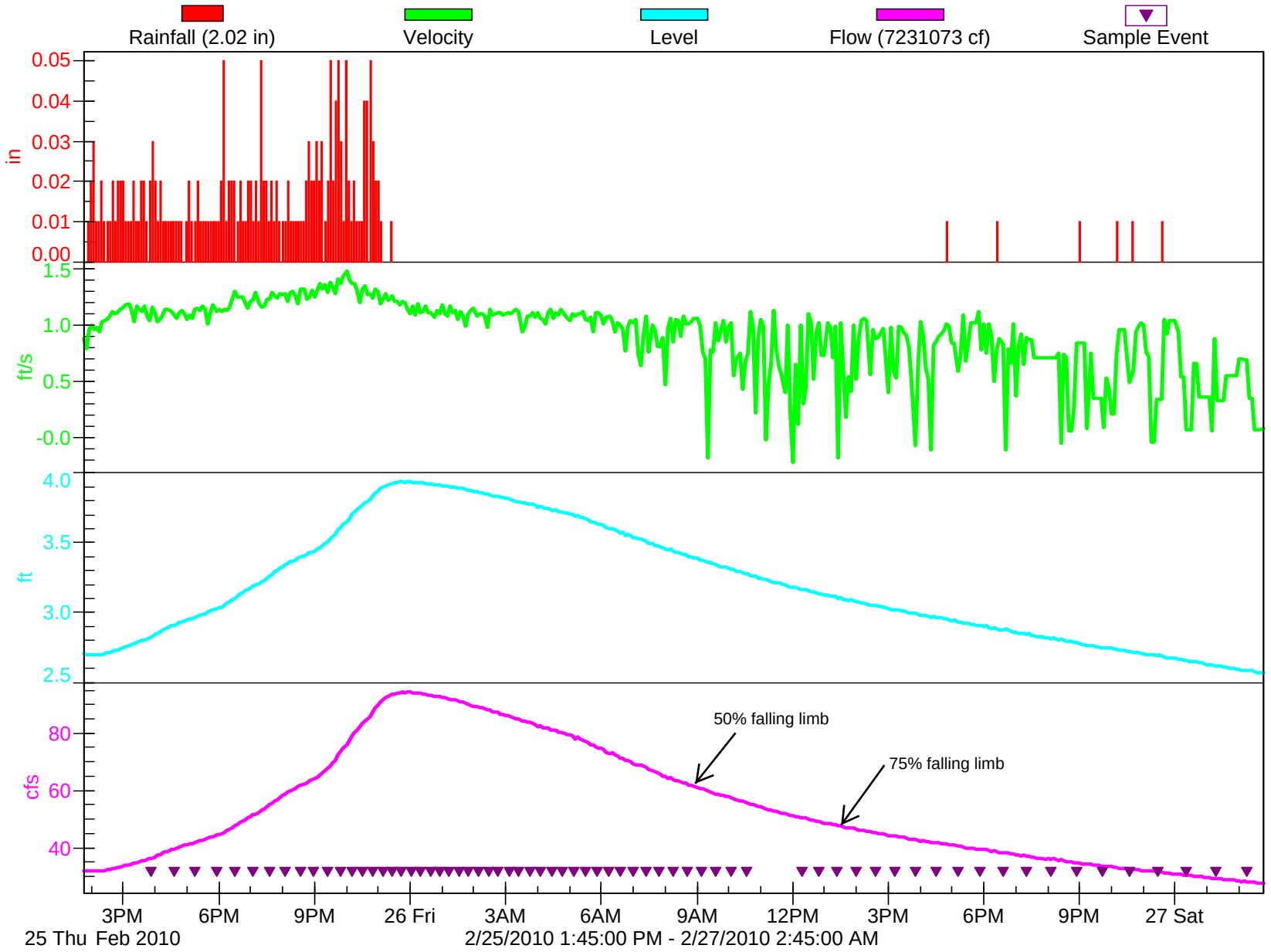
Flowlink 5



- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-02-TT

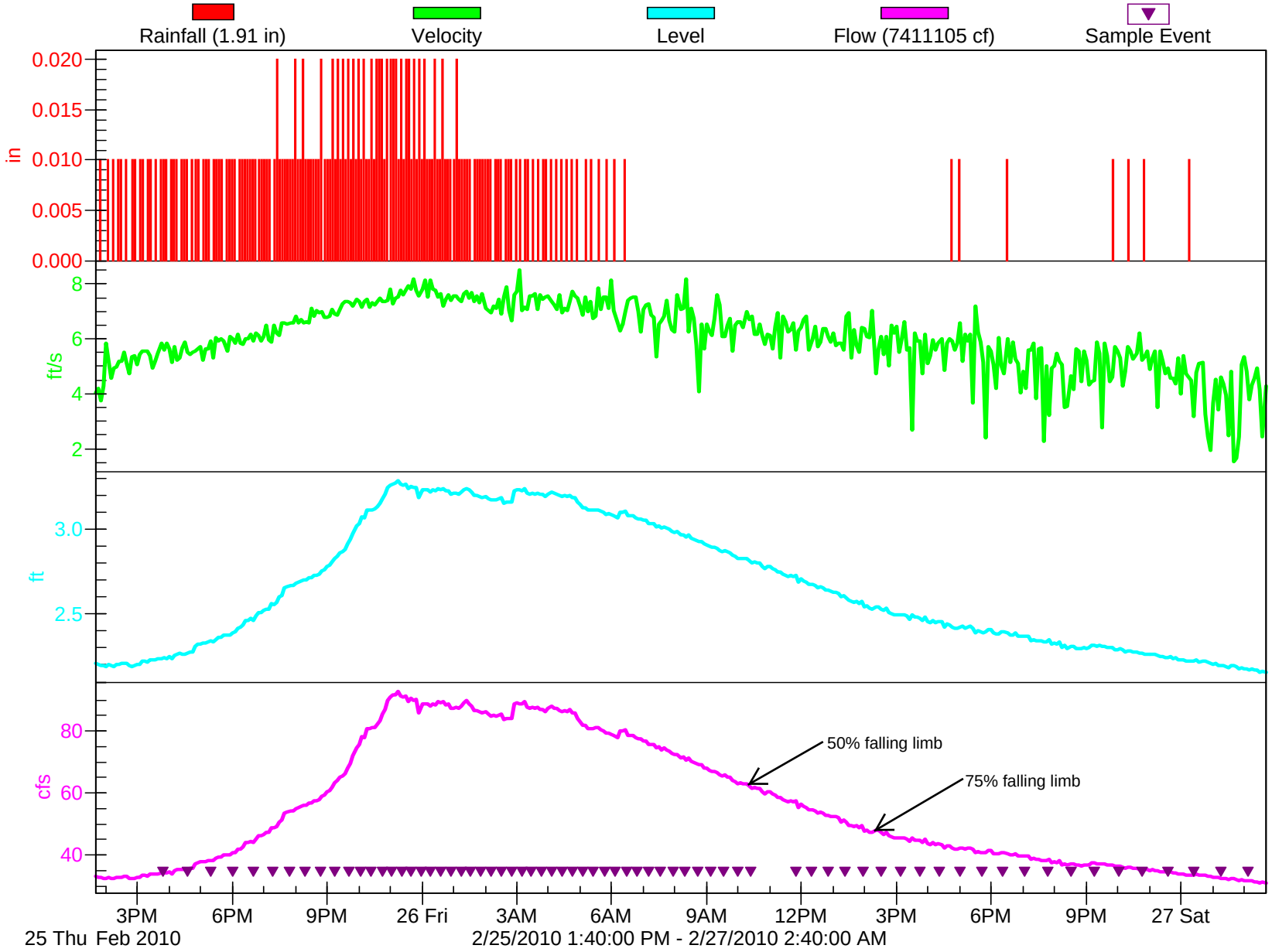
Flowlink 5



- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-04-TT

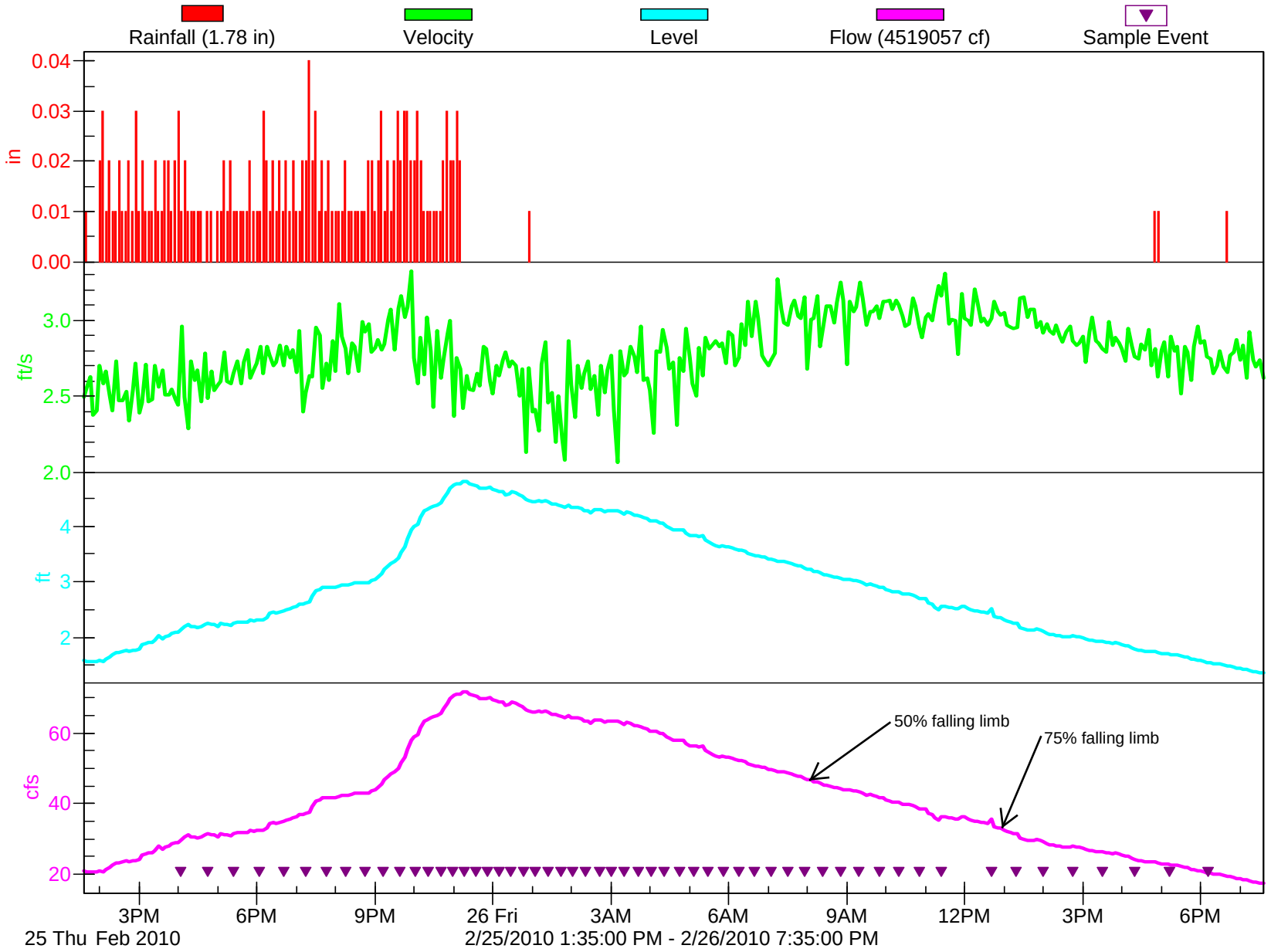
Flowlink 5



- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-03-TT

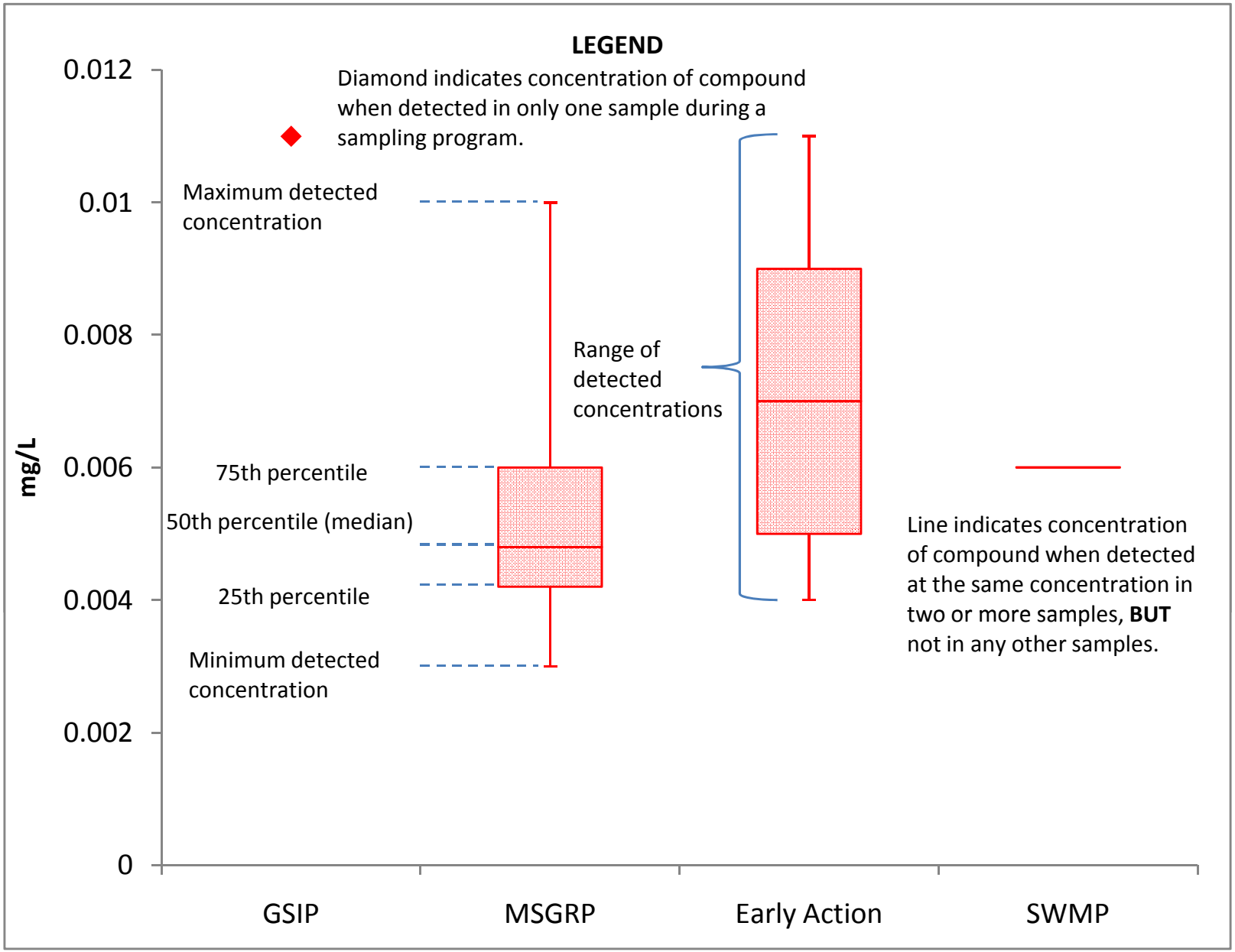
Flowlink 5

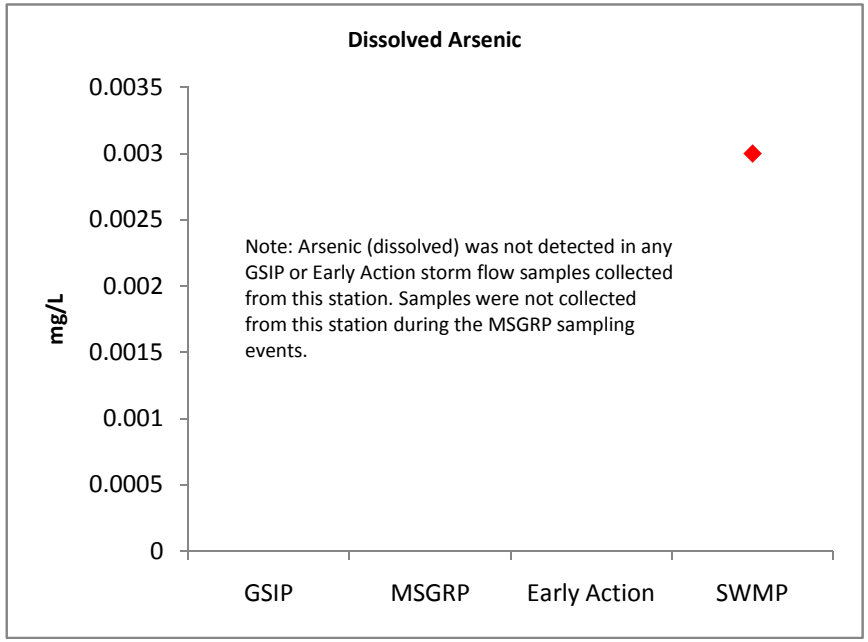


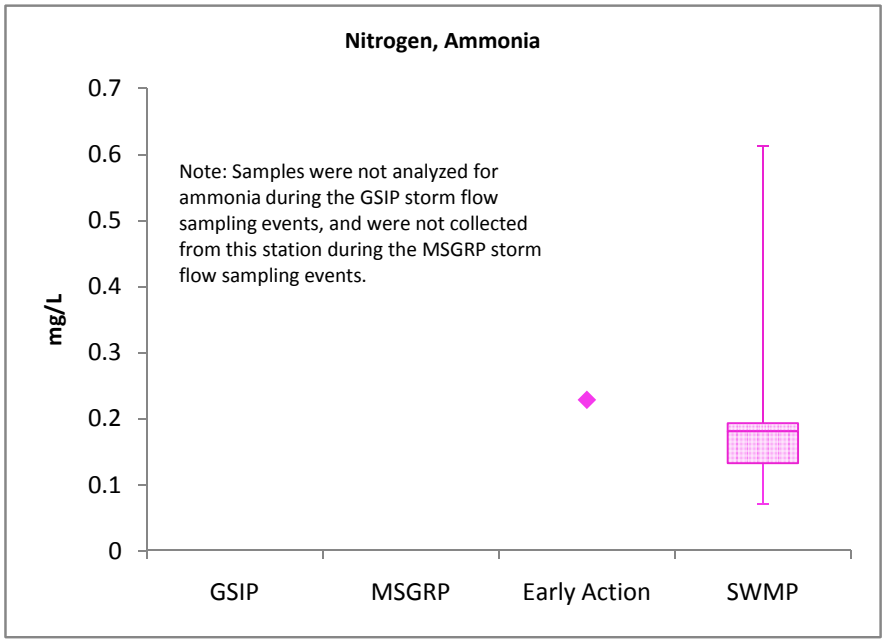
- Stage is relative to sensor elevation.
- Flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report. New rating curves are being developed which may change the flow estimates for these stations.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

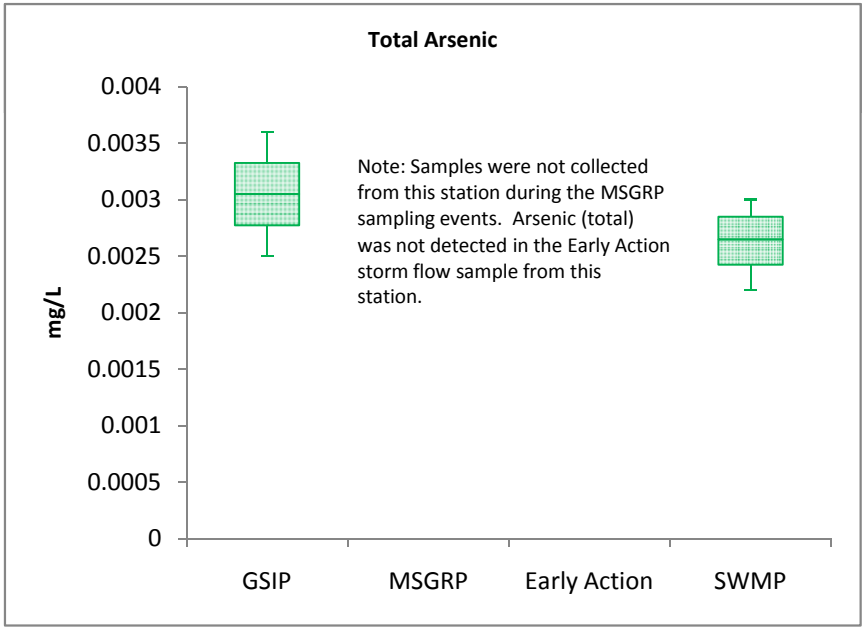
APPENDIX B

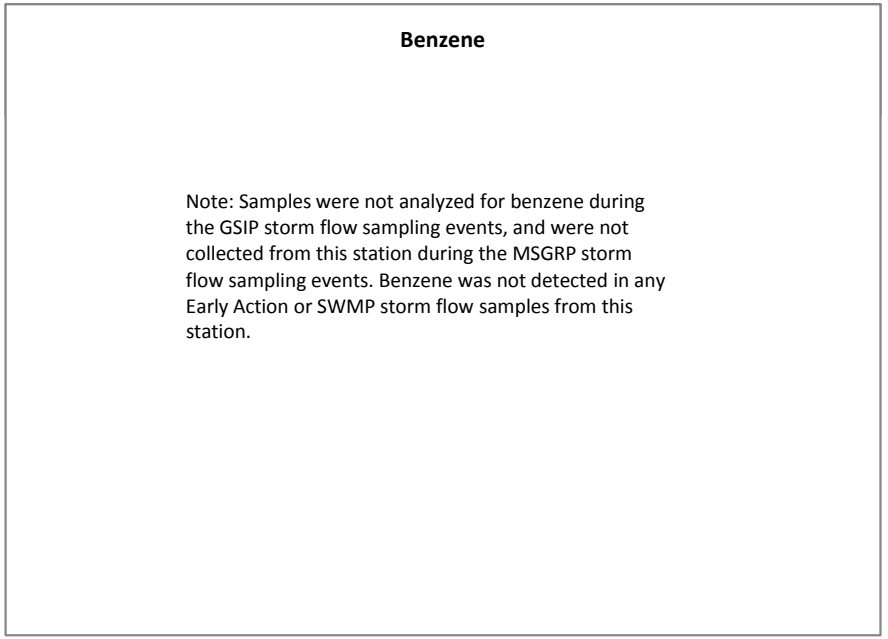
Storm Sampling Box-Whisker Plots

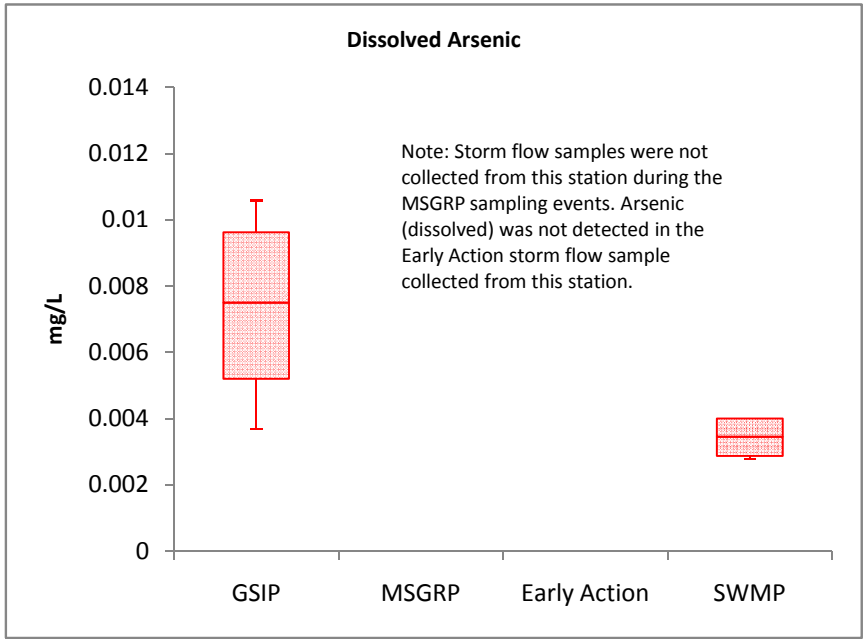

LEGEND
Diamond indicates concentration of compound when detected in only one sample during a sampling program.
Maximum detected concentration
Range of detected concentrations
75th percentile
50th percentile (median)
25th percentile
Minimum detected concentration
Line indicates concentration of compound when detected at the same concentration in two or more samples, BUT not in any other samples.
mg/L
0.012
0.01
0.008
0.006
0.004
0.002
0
GSIP
MSGRP
Early Action
SWMP

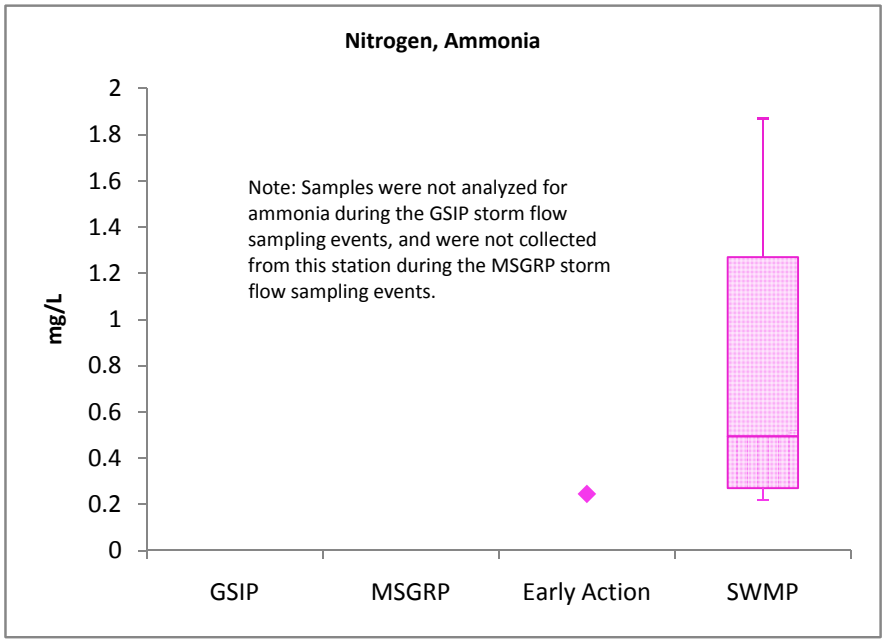

Dissolved Arsenic
0.0035
0.003
0.0025
0.002
0.0015
0.001
0.0005
0
mg/L
Note: Arsenic (dissolved) was not detected in any GSIP or Early Action storm flow samples collected from this station. Samples were not collected from this station during the MSGRP sampling events.
GSIP
MSGRP
Early Action
SWMP

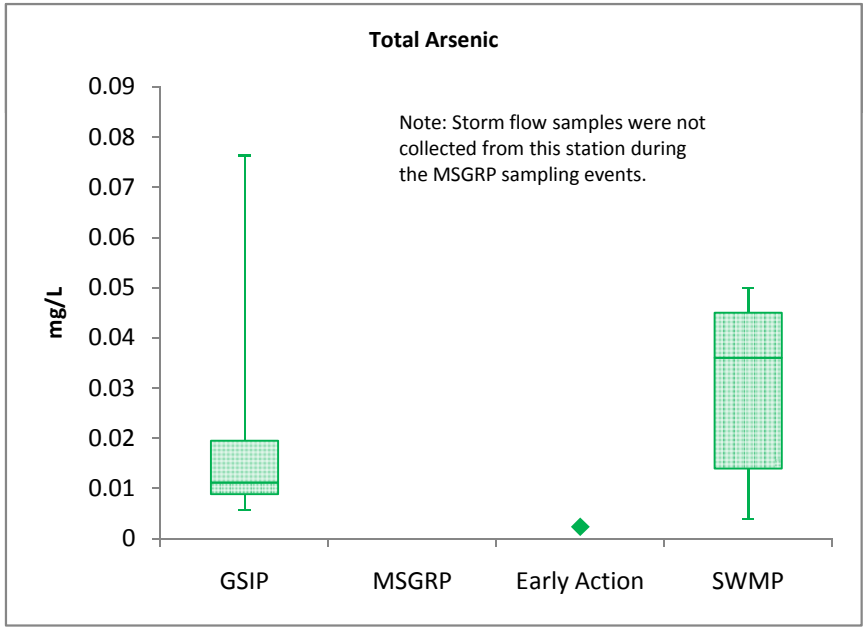

Nitrogen, Ammonia
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
mg/L
Note: Samples were not analyzed for ammonia during the GSIP storm flow sampling events, and were not collected from this station during the MSGRP storm flow sampling events.
GSIP
MSGRP
Early Action
SWMP

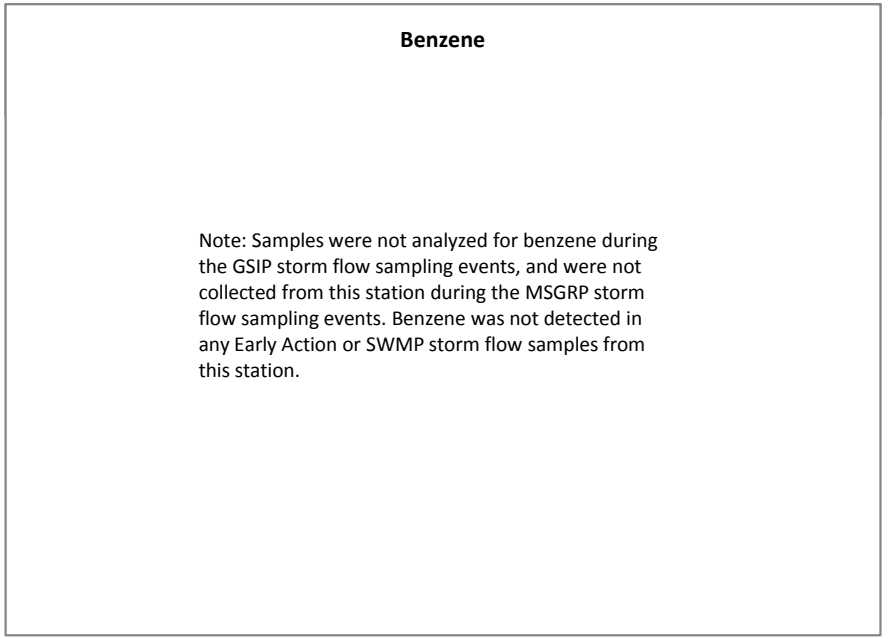

Total Arsenic
0.004
0.0035
0.003
0.0025
0.002
0.0015
0.001
0.0005
0
mg/L
Note: Samples were not collected from this station during the MSGRP sampling events. Arsenic (total) was not detected in the Early Action storm flow sample from this station.
GSIP
MSGRP
Early Action
SWMP


Benzene
Note: Samples were not analyzed for benzene during the GSIP storm flow sampling events, and were not collected from this station during the MSGRP storm flow sampling events. Benzene was not detected in any Early Action or SWMP storm flow samples from this station.


Dissolved Arsenic
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
mg/L
Note: Storm flow samples were not collected from this station during the MSGRP sampling events. Arsenic (dissolved) was not detected in the Early Action storm flow sample collected from this station.
GSIP
MSGRP
Early Action
SWMP


Nitrogen, Ammonia
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
mg/L
Note: Samples were not analyzed for ammonia during the GSIP storm flow sampling events, and were not collected from this station during the MSGRP storm flow sampling events.
GSIP
MSGRP
Early Action
SWMP

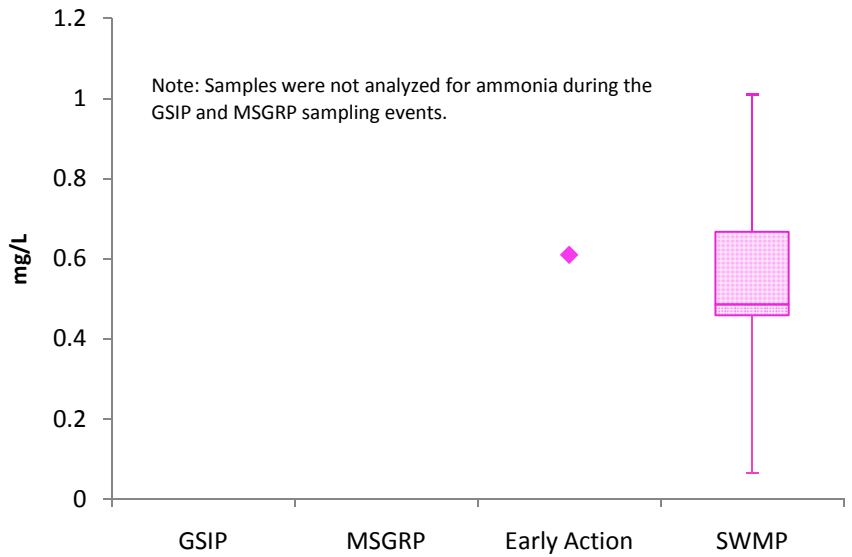

Total Arsenic
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
mg/L
Note: Storm flow samples were not collected from this station during the MSGRP sampling events.
GSIP
MSGRP
Early Action
SWMP


Benzene
Note: Samples were not analyzed for benzene during the GSIP storm flow sampling events, and were not collected from this station during the MSGRP storm flow sampling events. Benzene was not detected in any Early Action or SWMP storm flow samples from this station.

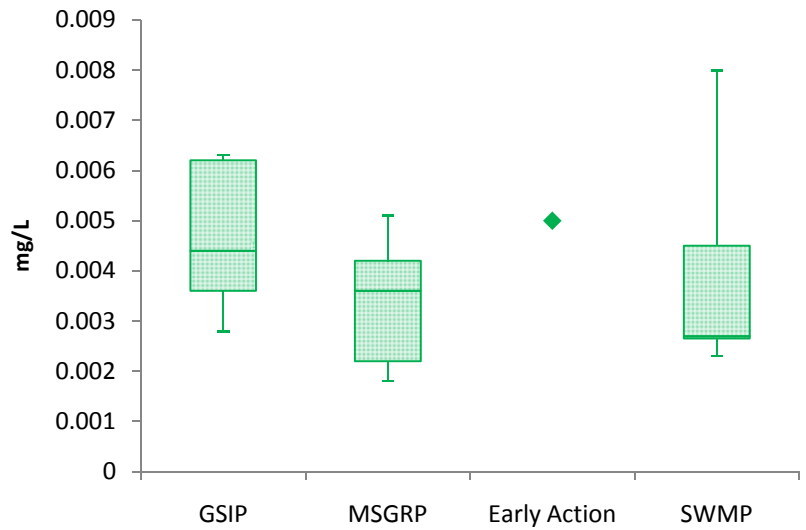
Dissolved Arsenic

Note: Arsenic (dissolved) was not detected in any GSIP, MSGRP, Early Action or SWMP storm flow samples from this station.

Nitrogen, Ammonia

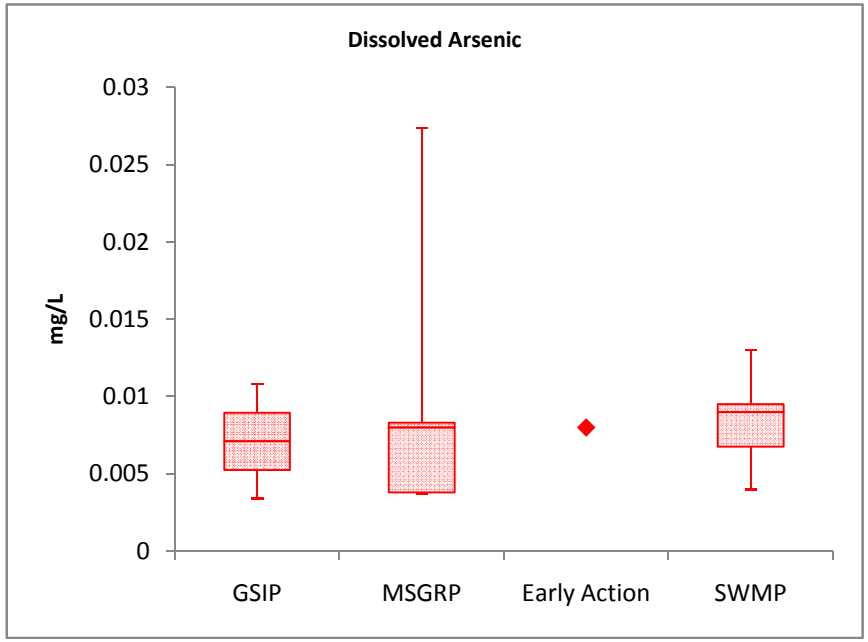


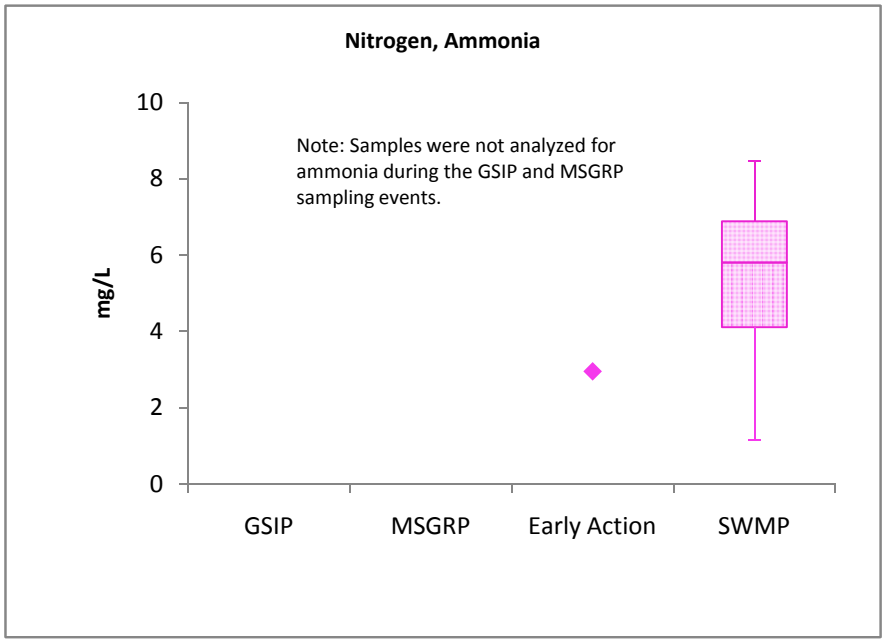
Total Arsenic

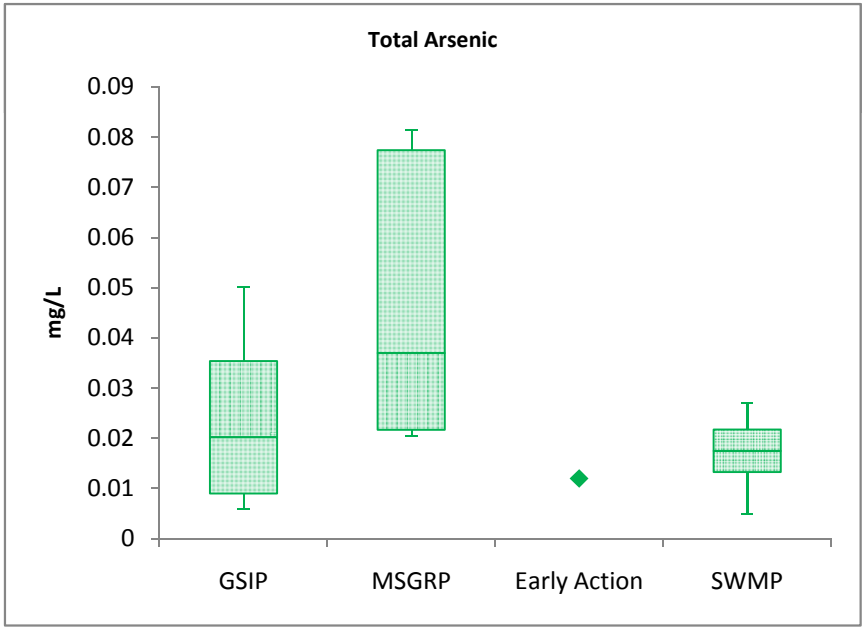


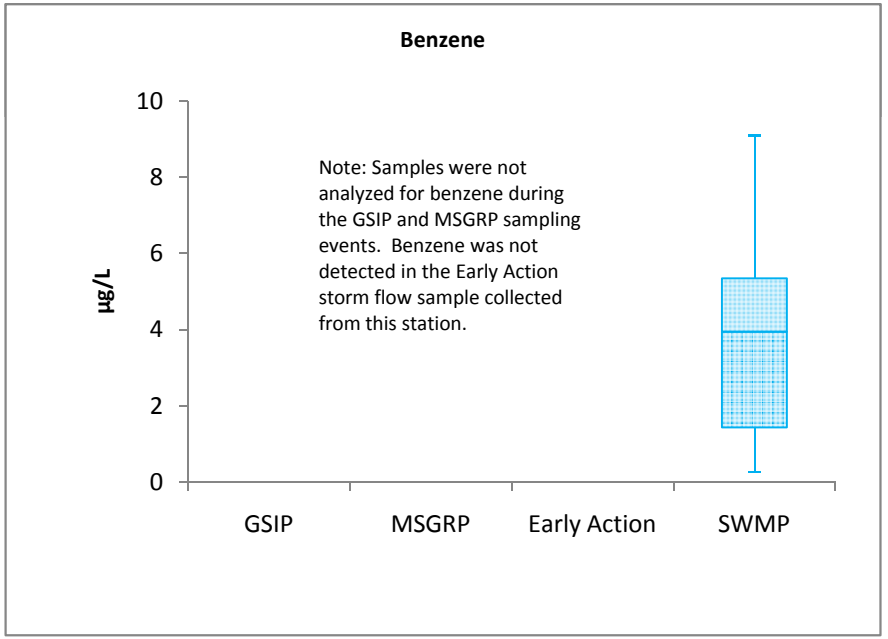
Benzene

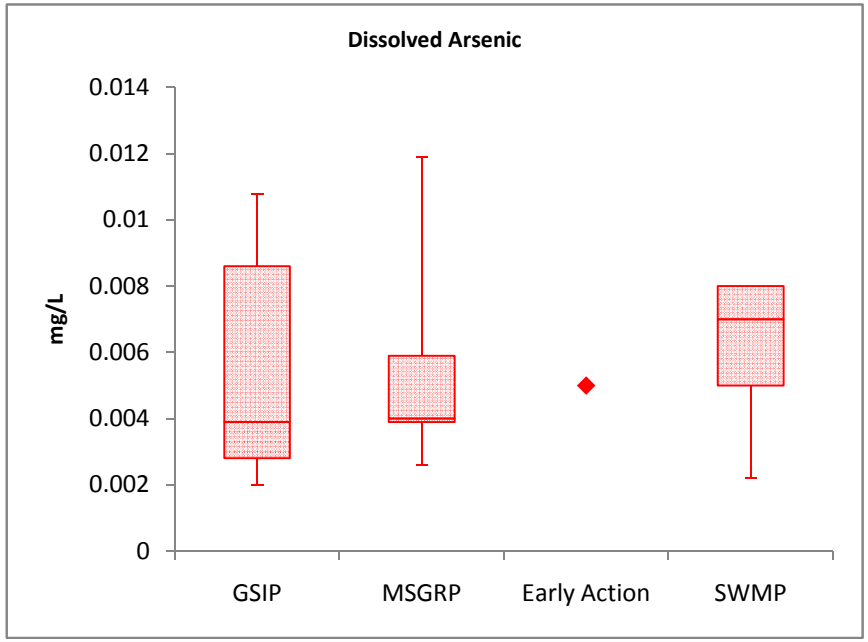
Note: Samples were not analyzed for benzene during the GSIP and MSGRP sampling events, and benzene was not detected in any Early Action or SWMP storm flow samples from this station.

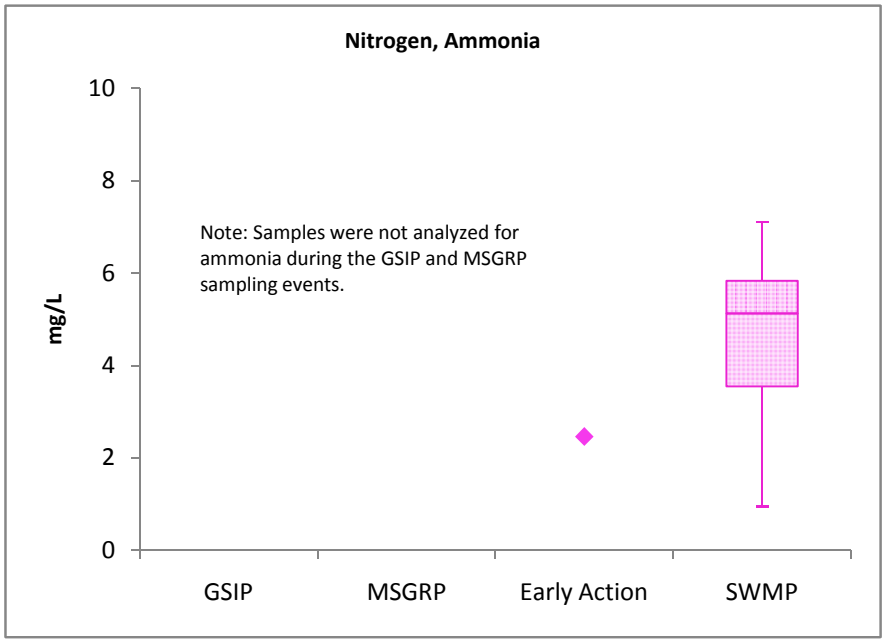

Dissolved Arsenic
mg/L
0.03
0.025
0.02
0.015
0.01
0.005
0
GSIP
MSGRP
Early Action
SWMP

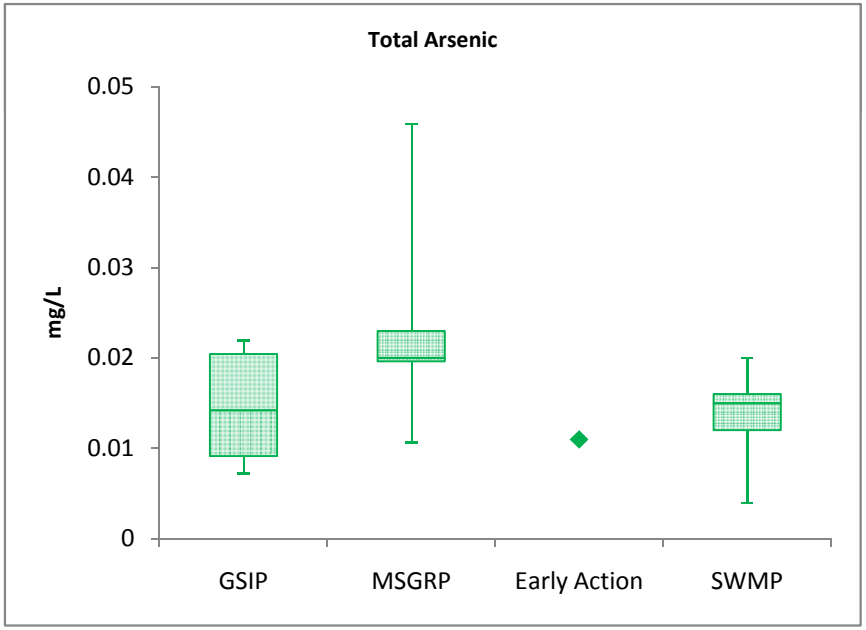

Nitrogen, Ammonia
mg/L
10
8
6
4
2
0
Note: Samples were not analyzed for ammonia during the GSIP and MSGRP sampling events.
GSIP
MSGRP
Early Action
SWMP

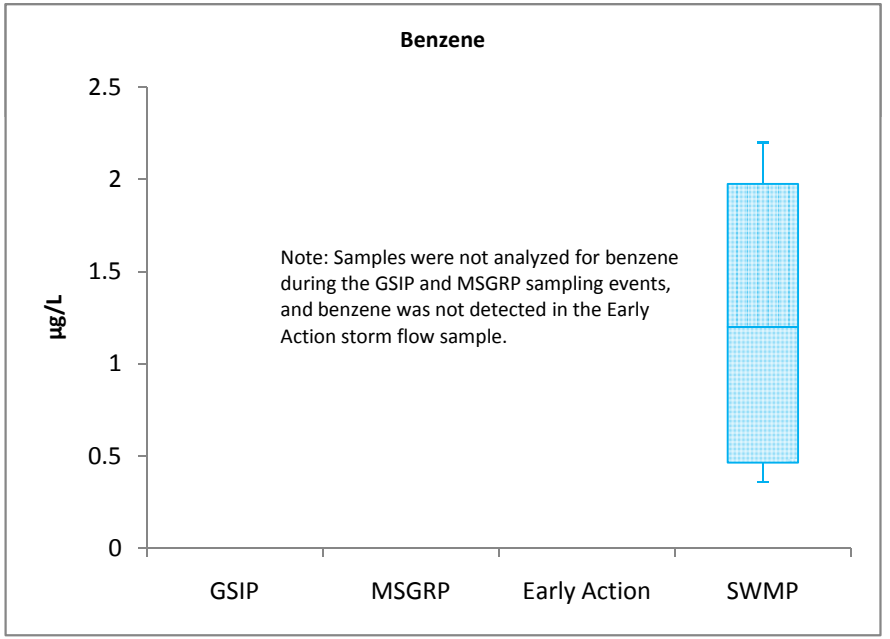

Total Arsenic
mg/L
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
GSIP
MSGRP
Early Action
SWMP

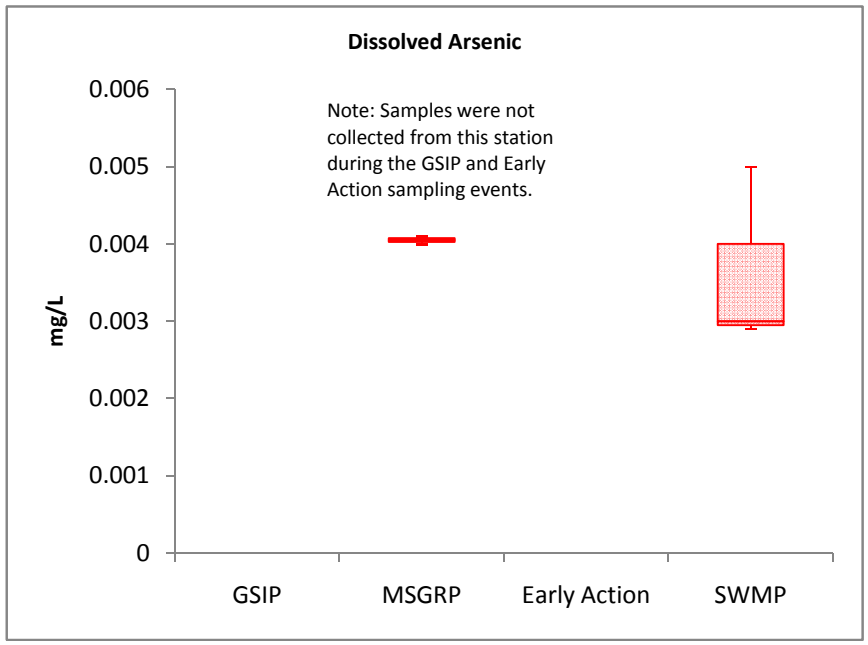

Benzene
µg/L
10
8
6
4
2
0
Note: Samples were not analyzed for benzene during the GSIP and MSGRP sampling events. Benzene was not detected in the Early Action storm flow sample collected from this station.
GSIP
MSGRP
Early Action
SWMP

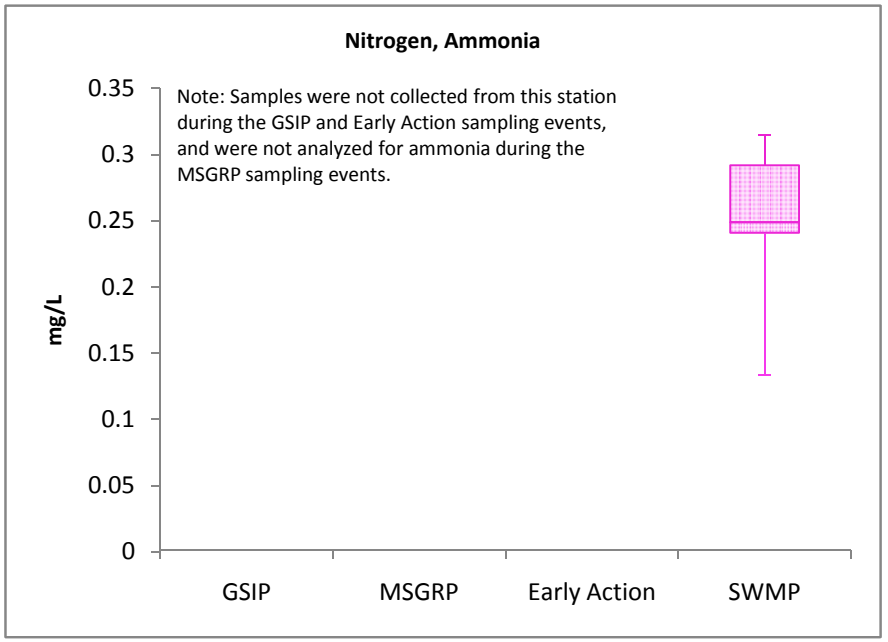

Dissolved Arsenic
mg/L
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
GSIP
MSGRP
Early Action
SWMP

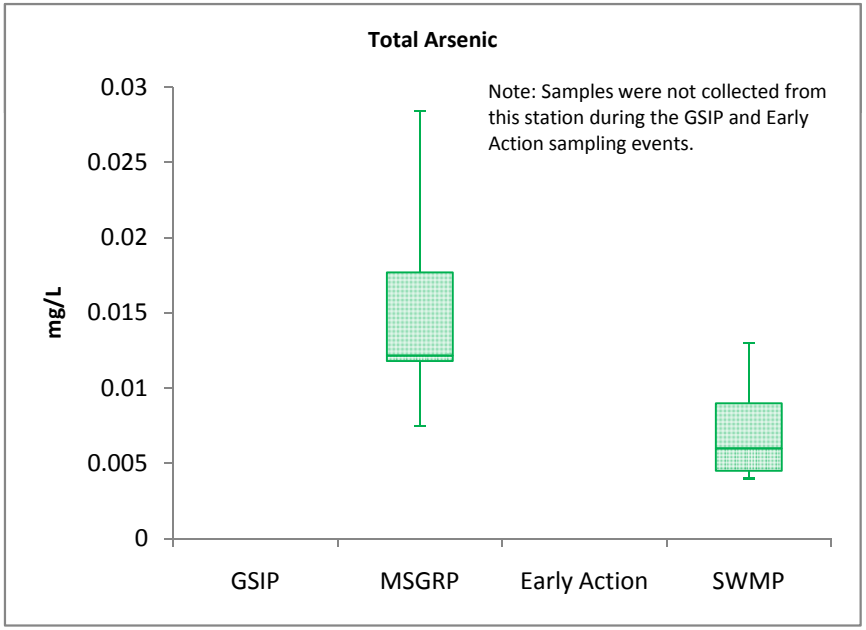

Nitrogen, Ammonia
mg/L
10
8
6
4
2
0
Note: Samples were not analyzed for ammonia during the GSIP and MSGRP sampling events.
GSIP
MSGRP
Early Action
SWMP


Total Arsenic
mg/L
0.05
0.04
0.03
0.02
0.01
0
GSIP
MSGRP
Early Action
SWMP

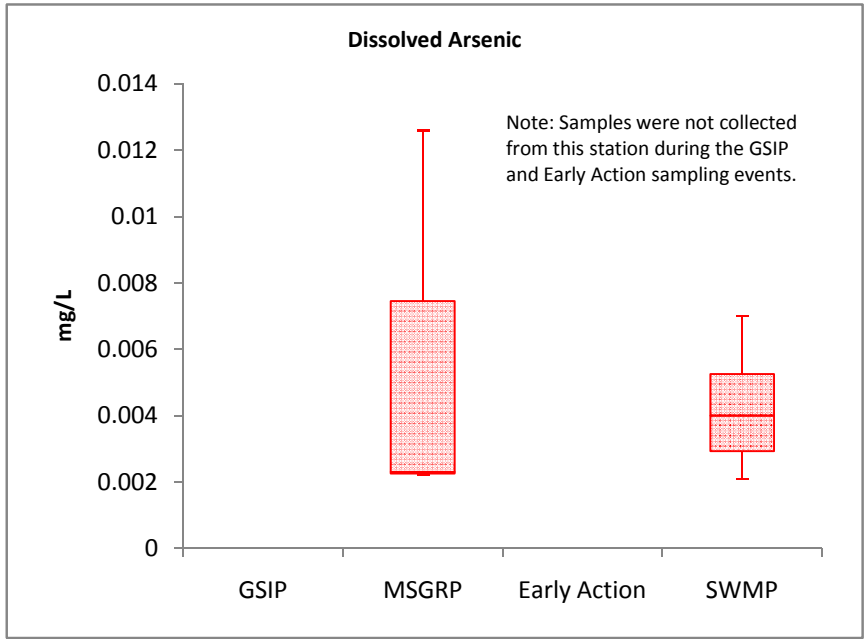

Benzene
µg/L
2.5
2
1.5
1
0.5
0
Note: Samples were not analyzed for benzene during the GSIP and MSGRP sampling events, and benzene was not detected in the Early Action storm flow sample.
GSIP
MSGRP
Early Action
SWMP

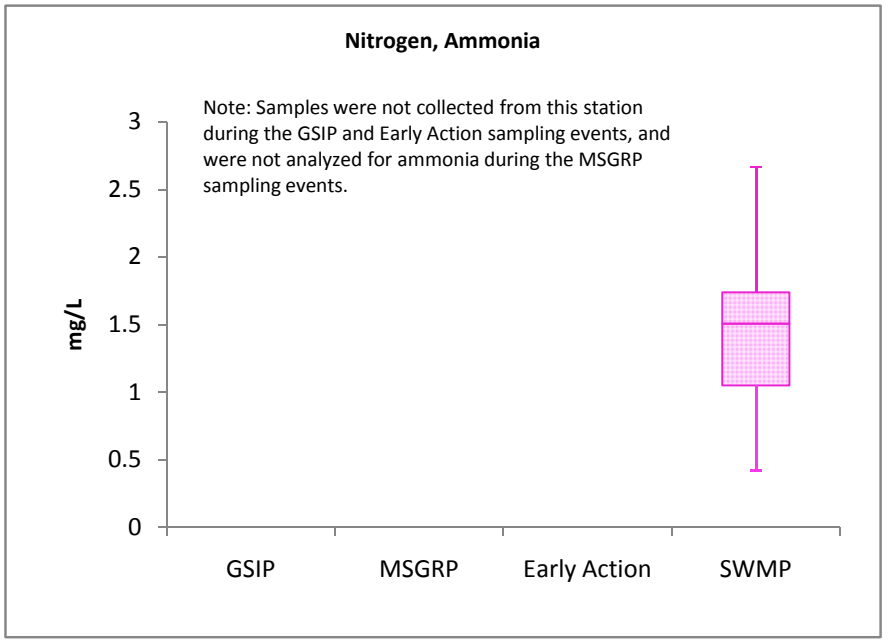


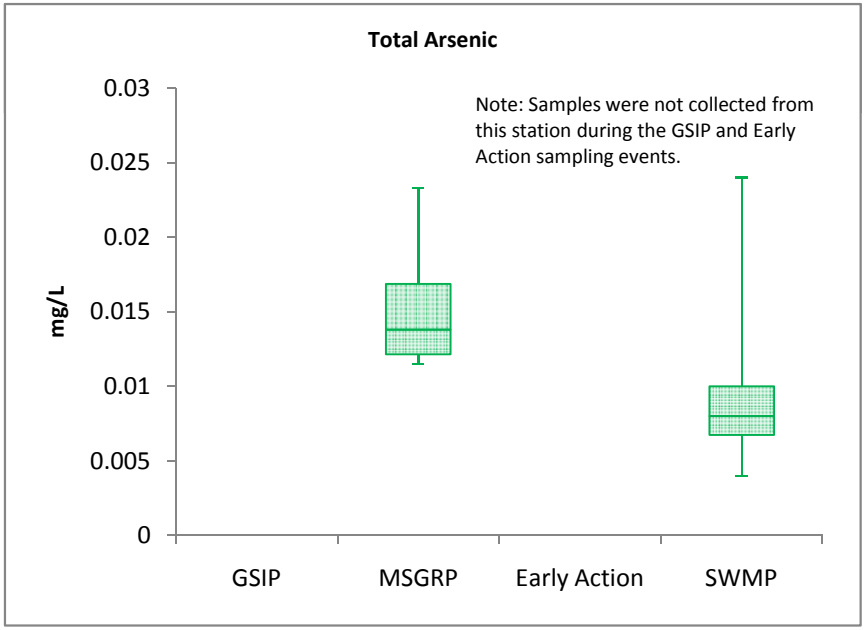




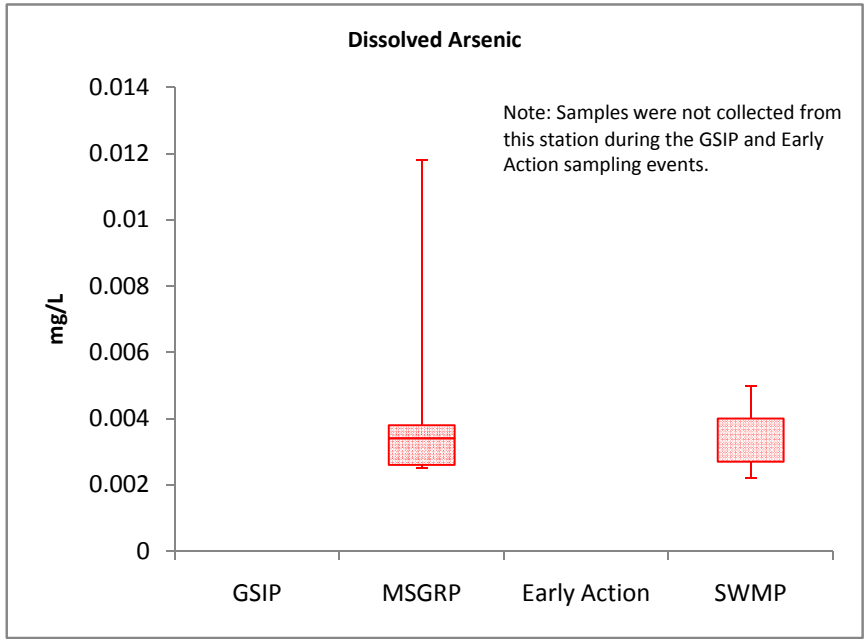
Note: Samples were not collected from this station during the GSIP and Early Action sampling events, and were not analyzed for benzene during the MSGRP sampling events. Benzene was not detected in any SWMP storm flow samples collected from this station.

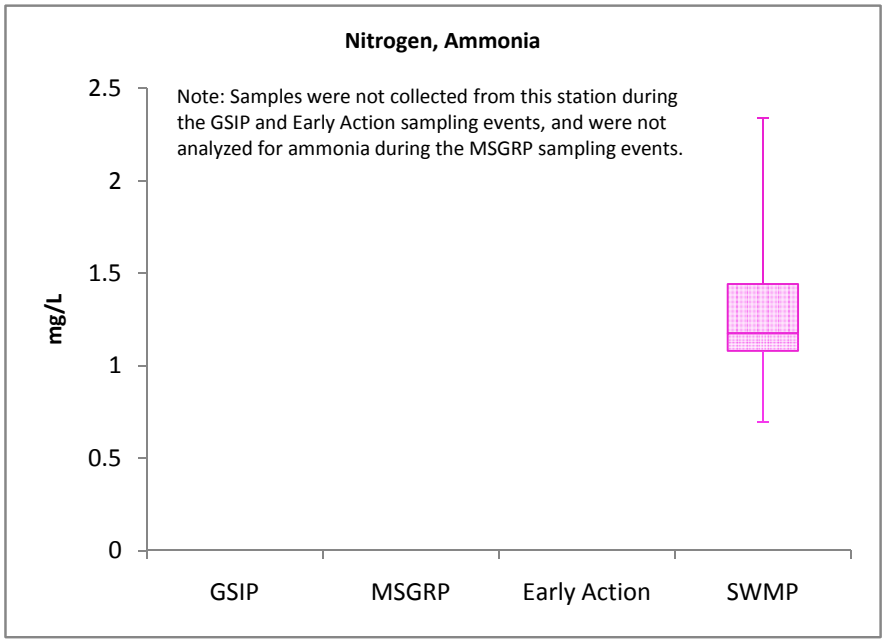


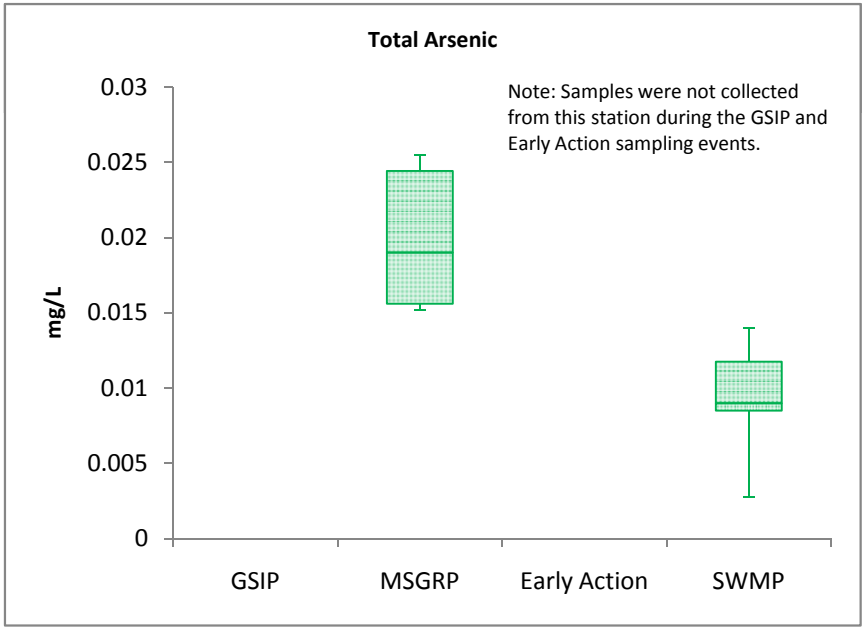




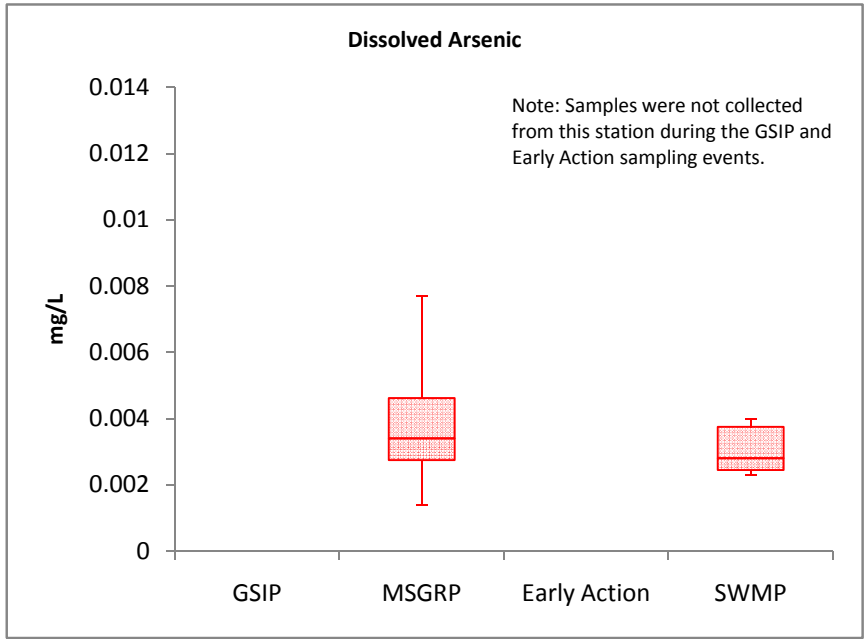
Note: Samples were not collected from this station during the GSIP and Early Action sampling events, and were not analyzed for benzene during the MSGRP sampling events. Benzene was not detected in any SWMP storm flow samples from this station.

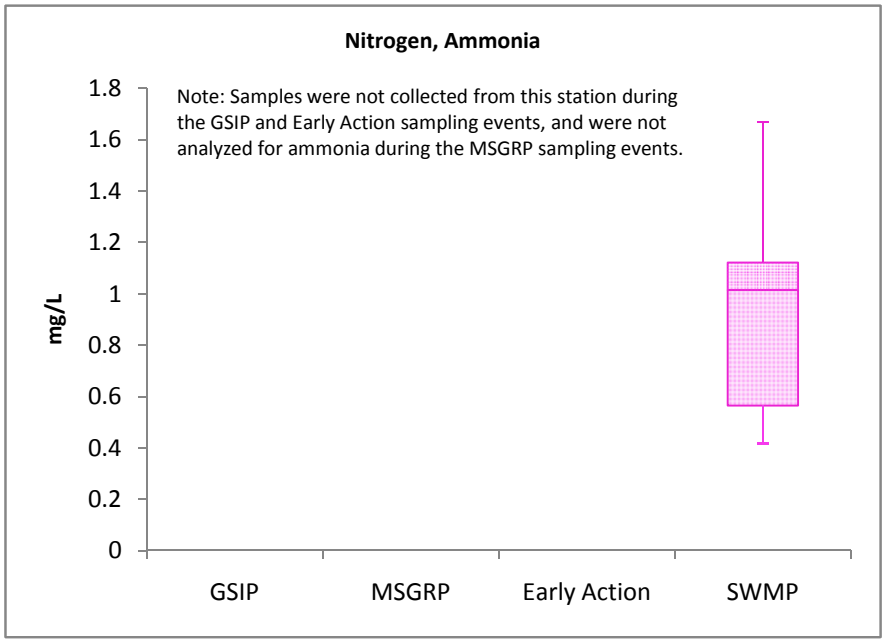


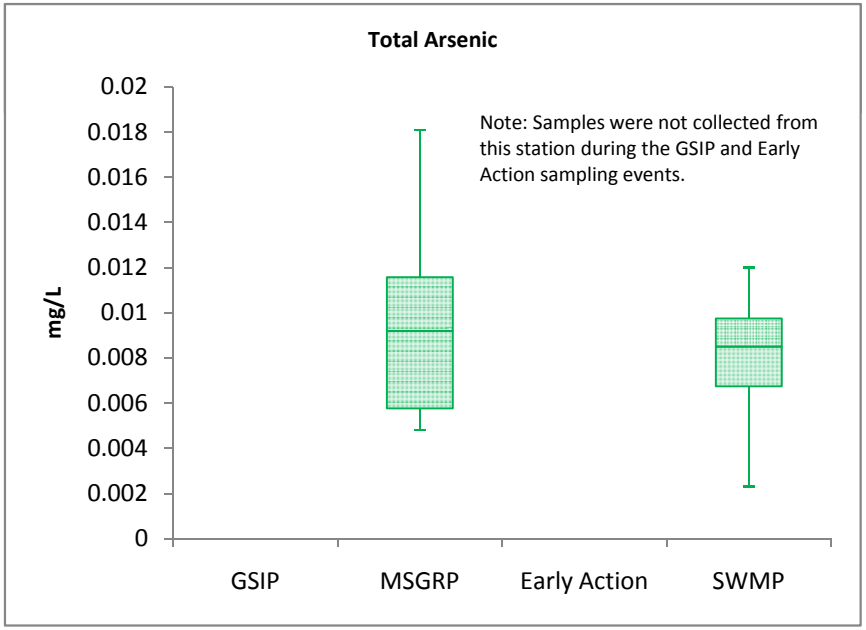




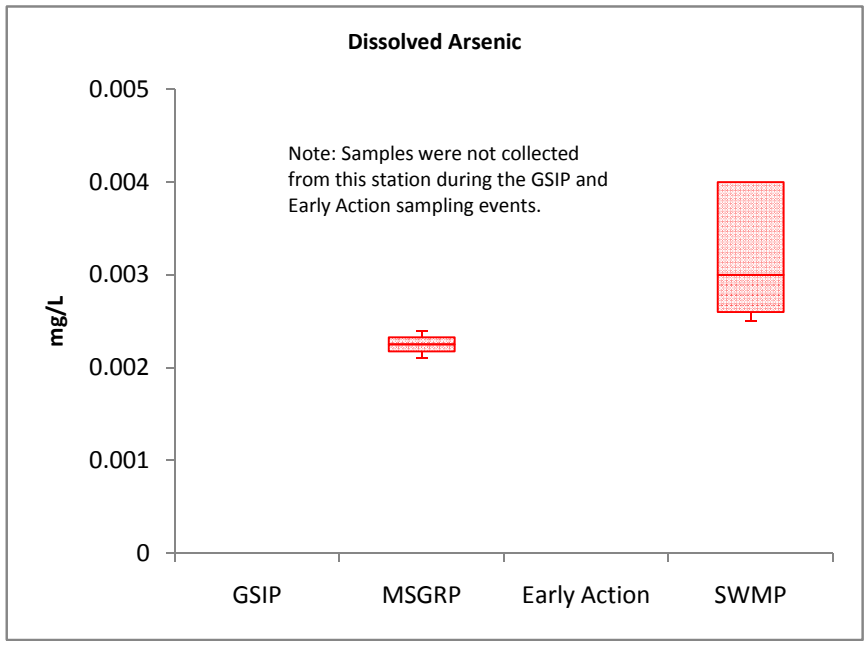
Note: Samples were not collected from this station during the GSIP and Early Action sampling events, and were not analyzed for benzene during the MSGRP sampling events. Benzene was not detected in any SWMP storm flow samples from this station.

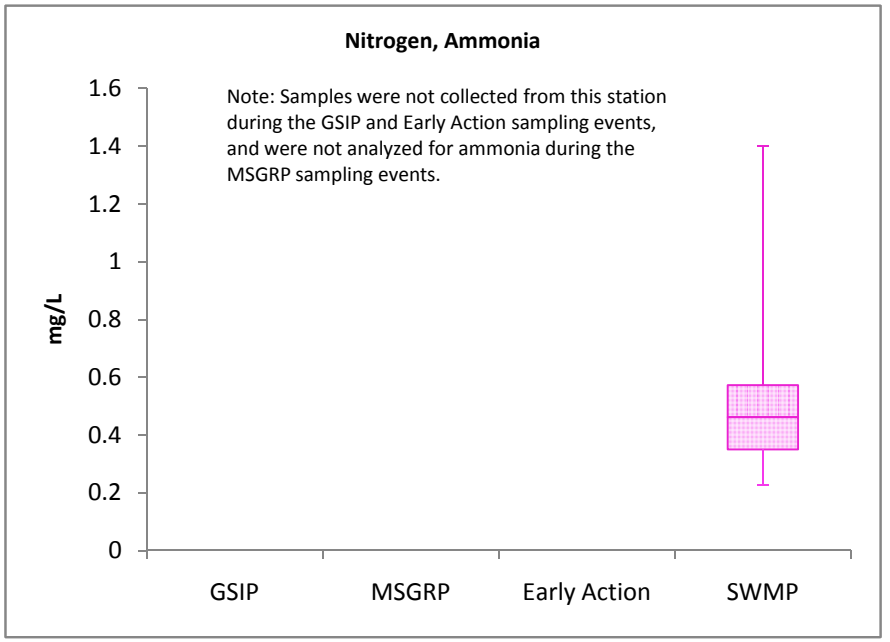


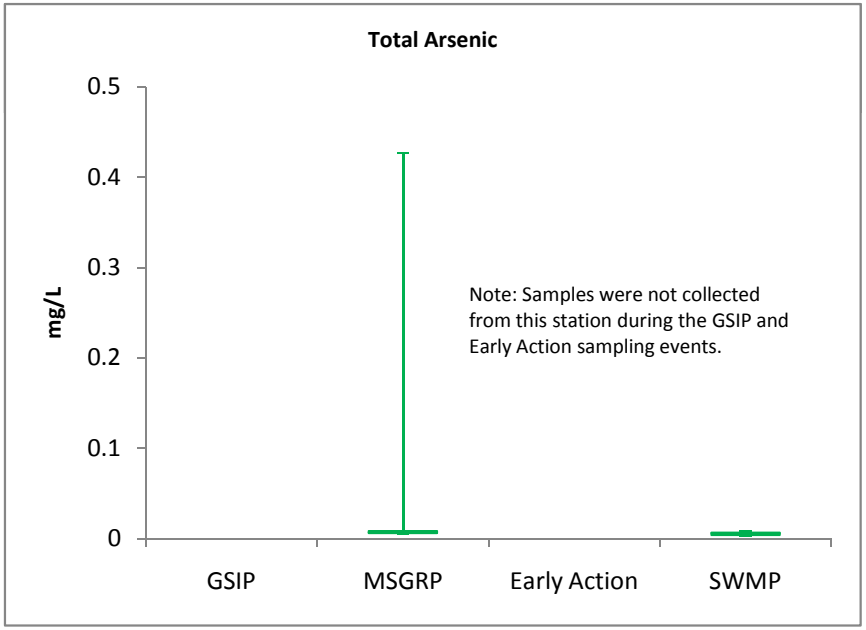




Note: Samples were not collected from this station during the GSIP and Early Action sampling events. Samples were not analyzed for benzene during the MSGRP sampling events. Benzene was not detected in any SWMP storm flow samples from this station.







Note: Samples were not collected from this station during the GSIP and Early Action sampling events, and were not analyzed for benzene during the MSGRP sampling events. Benzene was not detected in any SWMP storm flow samples from this station.