865.328.3138
www.LJA.com
265 Brookview Centre Way, Suite 504, Knoxville, Tennessee 37919

August 26, 2026

Mr. Chad Austin, PE
Assistant Utility Director
City of Kingsport
1113 Konnarock Road
Kingsport, Tennessee 37664

RE: Engineering Services as Related to the Lincoln Street Flow Monitoring Study Kingsport, Tennessee 37664 LJA Proposal No. 20260818

Dear Mr. Austin,

LJA Engineering, Inc. ("LJA") is pleased to provide this proposal for engineering services associated with Lincoln Street Flow Monitoring Study. This task order is made pursuant to the terms and conditions of the Professional Services Agreement ("PSA") entered into on November 28, 2022, by and between LJA Engineering, Inc and City of Kingsport ("Client").

Background

LJA staff has coordinated with the Client for flow monitoring within a portion of sanitary sewer system identified as the Lincoln Street Area (Exhibit A) within the Madd Branch Basin outlining the proposed flow monitoring basins.

The Scope of Services would be similar to each of the previous flow monitoring studies conducted within portions of the collection system by LJA and are described in detail below.

Scope of Services

1.0 Mobilization, Site Location, Installation & Field Coordination

- LJA staff has coordinated with the Client to identify the proposed flow monitoring basins. LJA staff will coordinate with the subcontractor to confirm proposed monitoring sites in which to install flow monitoring equipment that will provide the information needed to determine the volume of increase during wet weather events. LJA staff and subcontractor will perform site investigations in the field to verify that proper hydraulics exists to yield acceptable flow monitoring results. LJA will also investigate adjacent manholes in order to identify the most suitable monitoring locations. LJA will provide the Client installation information once all meters have been installed. LJA will communicate with the Client during the installation process as necessary to obtain information and/or verify details.

2.0 Flow Monitoring & Rain Gauge Operation & Maintenance

- LJA staff will coordinate with subcontractor to perform required operation and maintenance on the installed equipment. It is anticipated that fourteen (14) gravity meters and two (2) rain gauge will be utilized for a period of up to 90 calendar days to verify flow and rain quantities, respectively. Should it become necessary to increase the monitoring time in the absence of wet weather, LJA staff will coordinate with the Client and present a contract addendum for approval prior to the end of the 90-day study period.

- Field calibrations will be performed as needed along with all spare parts and equipment necessary to maintain the equipment once installed. (Note: Exact flow monitoring locations will be determined at the time the agreement is authorized and include some coordination of details with the Client and subcontractor.)
- LJA will utilize the ISCO Model 2150 area-velocity flow monitor to measure flow on all gravity sites and the ISCO Model 674 rain gauge tipping bucket to record rainfall. Flow depths and velocities will be independently measured and recorded on a 5-minute or 15-minute interval. Flow quantities will be calculated using the area-velocity relationship. LJA will maintain properly licensed software required to collect data and service all monitoring equipment throughout the duration of the project. LJA will facilitate field work utilizing a subcontractor with trained field crews to service the equipment as directed by the data analyst. LJA will proactively review each site for potential downtime (battery voltage, etc.). Independent field confirmation techniques shall be utilized as needed to verify depth and velocity.

3.0 Management, Engineering, Report, and Final Data Submittal

- Once all data is collected, LJA staff will finalize data to ensure accuracy. Basic deliverables will be submitted to the Client as part of the final technical memorandum and will include monthly hydrographs and listings for depth, velocity, flow, and rain (Exhibit B). LJA staff will evaluate the flow data during both “dry” and wet weather periods to determine the extent of I/I volume observed during associated rain events. (Note: Given the meters will likely be installed during a wintertime season, true “dry” weather conditions will not exist and will therefore be analyzed based on relative conditions.) A technical memorandum will be prepared to summarize the findings by completing a rain-dependent inflow & infiltration (RDII) analysis incorporating associated graphs, figures, tables, and narrative (Exhibit C). LJA will present these results to the Client in person with supporting documentation provided electronically in PDF format.

Client’s Responsibilities

Client shall be responsible for the following items:

- Provide assistance in locating and accessing the strategic manholes identified for monitoring sites.
- Provide coordination with property owners to access manholes as needed.
- Provide assistance in accessing a secure location suitable for rain gauge installation.
- Providing updated GIS layers and associated information required to complete the assessment and final memorandum.

Compensation

We propose to provide the specific services described above to be billed as follows:

Item No.	Description	Units	Unit Cost	Total
1a	Mobilization/Site Location/Installation/Field Coordination	14	$ 2,900.00	$ 40,600.00
1b	Mobilization/Rain Gauge Installation	2	$ 1,150.00	$ 2,300.00
2a	Meter Operation & Maintenance	1,260	$ 55.00	$ 69,300.00
2b	Rain Gauge Operation & Maintenance	90	$ 11.50	$ 1,035.00
3	Management/Engineering Reporting/Final Data Submittal	LS	$ 48,510.00	$ 48,510.00
	TOTAL			**$ 161,745.00**

*NOTE: Weekly extensions can be provided at the unit rates above as needed and authorized via contract addendum. Additional fees may be required for the final reporting and deliverables.

Any work not authorized within three (3) months of the date of this agreement will be subject to renegotiations based on current rates.

Schedule

LJA staff will coordinate with the subcontractor for installation of the flow meters once seasonal wet weather begins upon receiving authorization to proceed. It is anticipated this will be December 2026/January 2027 to ensure wet weather data is collected. The final report will be ready to present approximately 45 days following the last day of metering.

Reimbursables and additional services

Included in the above fees are reimbursable expenses incurred on the project's behalf, including mileage, printing, plotting, photocopies, reproduction, express mail, and/or courier services. Any regulatory agency review fees associated with plan reviews shall be the responsibility of the Client. Reimbursable expenses will be billed at cost plus ten percent (10%). LJA will bill monthly for all work performed and expenses incurred on the project's behalf. Unpaid invoices after thirty (30) days will accrue service charges at 1-1/2% per month and include any costs of collections and reasonable attorney's fees.

Authorization

If this proposal meets with your approval, your signature below will be sufficient authorization for LJA to commence the stated work as indicated in the above Scope of Services.

We appreciate the opportunity to submit this proposal and look forward to working with you on this project. If you have any questions, please contact me at 931.273.8999.

Sincerely,

Travis E. Wilson, PE
Vice President

TEW

Attachments

CITY OF KINGSPORT

By:_____

Name:_____

Title:_____

Date:_____

Exhibit A
Flow Monitoring Basins

City of Kingsport

Lincoln St Flow Monitoring Map

Legend

- Lincoln St Trunkline Flow Basins

7590_9
5130_12
7759_9
7801_9
8092_12
8225_3
8535_1
15570_3
8623_9
8699_12
8187_1
8521_9
15107_1
11093_3

Lincoln St Trunkline

Basin Name	Basin Net Footage
5130_12	5,475
7590_9	8,646
7759_9	14,277
7801_9	11,243
8092_12	11,808
8187_1	14,428
8225_3	8,762
8521_9	6,297
8535_1	12,884
8623_9	8,925
8699_12	12,362
11093_3 (PS)	13,592
15107_1	14,939
15570_3	10,064

N

1 inch = 1,250 feet

0 500 1,000 1,500 2,000 Feet

DATE:
8/27/2026

Exhibit A

KINGSPORT TENNESSEE

LJA ENGINEERING

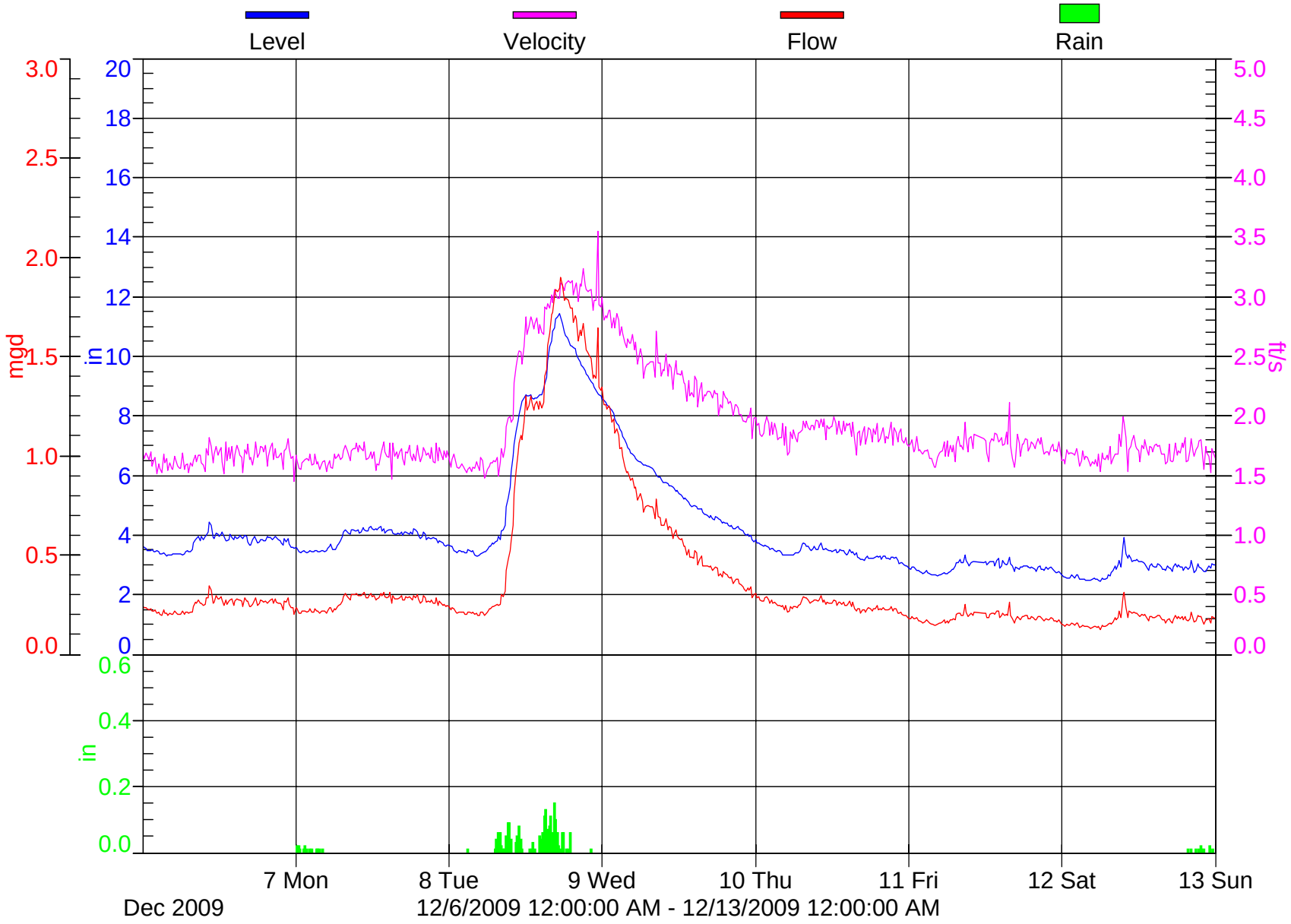
LJA Engineering | 1111 N. Northshore, Suite N-800 Knoxville, TN 37919 | www.lja.com

REFERENCE:
GIS BASE LAYERS WERE OBTAINED FROM THE CITY OF KINGSPORT GIS DEPARTMENT AND ESRI. THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. ALL FEATURE LOCATIONS DISPLAYED ARE APPROXIMATED. THEY ARE NOT BASED ON CIVIL SURVEY INFORMATION, UNLESS STATED OTHERWISE.

Exhibit B
Standard Flow Monitoring Deliverables

Weekly Depth, Velocity, Flow

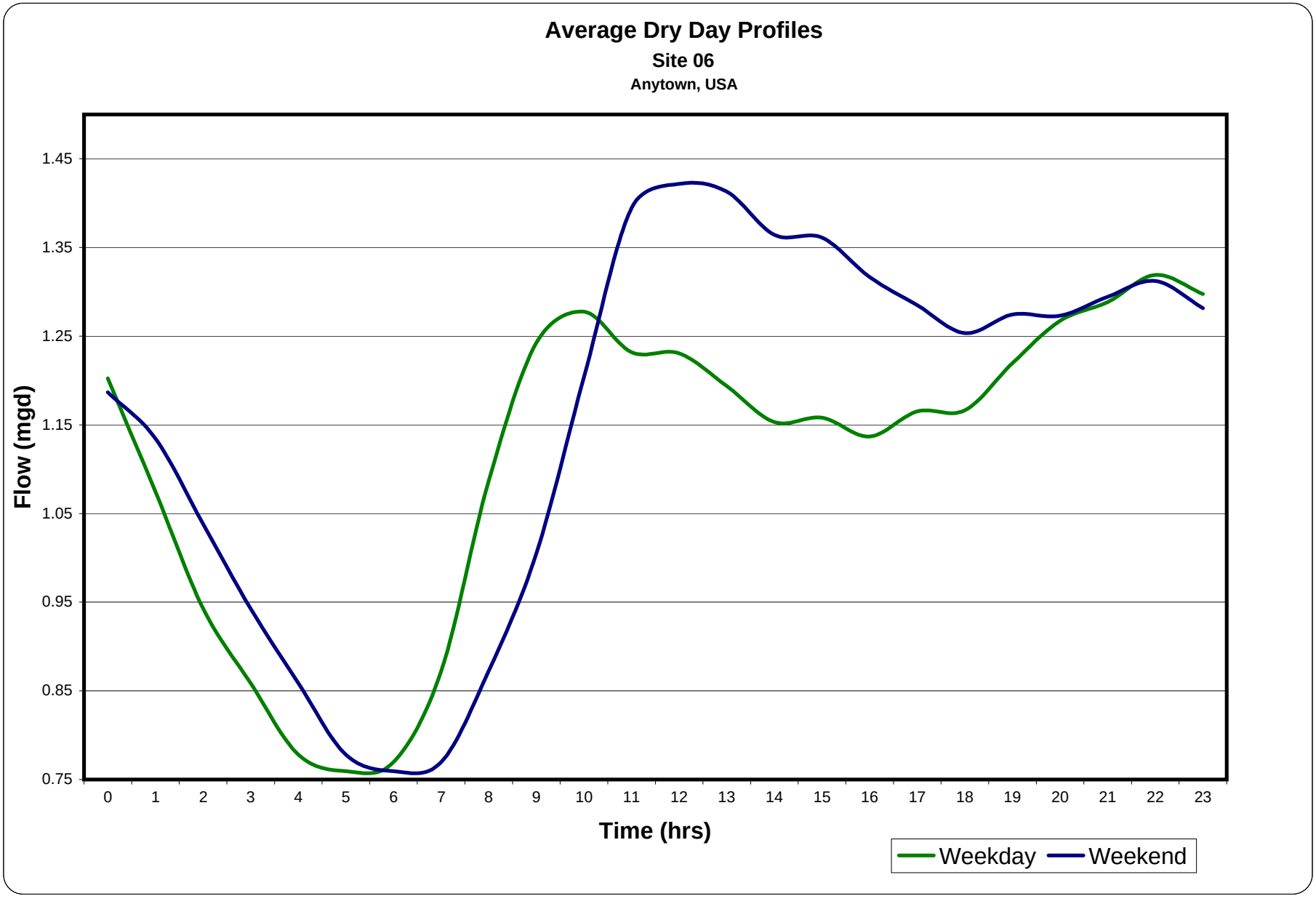
14.25" Diameter Round Pipe



BB1087 Hourly Data Min/Max Depth, Velocity, and Flow
8.00" Diameter Pipe

Date/Time	Minimum Level (in)	Maximum Level (in)	Minimum Velocity (ft/s)	Maximum Velocity (ft/s)	Minimum Flow (mgd)	Maximum Flow (mgd)	Summary Rainfall (in)
4/26/2007 12:00:00 AM	1.2	2.4	0.3	0.6	0.010	0.028	0.42
4/27/2007 12:00:00 AM	1.2	2.4	0.3	0.5	0.011	0.022	0.00
4/28/2007 12:00:00 AM	1.2	2.4	0.3	0.6	0.009	0.025	0.17
4/29/2007 12:00:00 AM	1.2	2.4	0.3	0.4	0.010	0.015	0.00
4/30/2007 12:00:00 AM	1.2	2.4	0.3	0.5	0.011	0.025	0.00
5/1/2007 12:00:00 AM	1.2	2.4	0.3	0.5	0.010	0.021	0.00
5/2/2007 12:00:00 AM	1.2	2.4	0.3	0.5	0.011	0.023	0.14
5/3/2007 12:00:00 AM	1.2	2.4	0.3	0.5	0.012	0.027	0.01
5/4/2007 12:00:00 AM	1.2	2.4	0.3	0.5	0.011	0.024	0.42
5/5/2007 12:00:00 AM	1.2	6.0	0.4	0.8	0.015	0.118	0.61
5/6/2007 12:00:00 AM	2.4	2.4	0.4	0.5	0.018	0.024	0.00
5/7/2007 12:00:00 AM	2.4	2.4	0.4	0.6	0.017	0.029	0.00
5/8/2007 12:00:00 AM	2.4	2.4	0.4	0.5	0.015	0.029	0.00
5/9/2007 12:00:00 AM	2.4	2.4	0.3	0.5	0.014	0.028	0.00
5/10/2007 12:00:00 AM	2.4	2.4	0.3	0.5	0.015	0.037	0.00
5/11/2007 12:00:00 AM	2.4	52.8	0.3	0.7	0.022	0.156	0.29
5/12/2007 12:00:00 AM	2.4	3.6	0.5	0.7	0.038	0.073	0.00
5/13/2007 12:00:00 AM	2.4	2.4	0.4	0.5	0.031	0.041	0.00
5/14/2007 12:00:00 AM	2.4	3.6	0.4	0.5	0.027	0.045	0.00
5/15/2007 12:00:00 AM	2.4	3.6	0.4	0.6	0.025	0.048	0.10
5/16/2007 12:00:00 AM	2.4	3.6	0.3	0.6	0.025	0.054	0.36
5/17/2007 12:00:00 AM	2.4	3.6	0.4	0.5	0.026	0.042	0.00
5/18/2007 12:00:00 AM	2.4	3.6	0.3	0.4	0.023	0.036	0.00
5/19/2007 12:00:00 AM	2.4	2.4	0.3	0.3	0.019	0.024	0.00
5/20/2007 12:00:00 AM	2.4	2.4	0.3	0.3	0.017	0.022	0.00
5/21/2007 12:00:00 AM	2.4	3.6	0.3	0.4	0.019	0.032	0.00
5/22/2007 12:00:00 AM	2.4	3.6	0.2	0.4	0.016	0.036	0.00
5/23/2007 12:00:00 AM	2.4	3.6	0.3	0.4	0.017	0.034	0.00
5/24/2007 12:00:00 AM	2.4	3.6	0.3	0.4	0.017	0.033	0.00
5/25/2007 12:00:00 AM	2.4	3.6	0.3	0.4	0.017	0.032	0.00
5/26/2007 12:00:00 AM	2.4	2.4	0.3	0.3	0.017	0.021	0.00
5/27/2007 12:00:00 AM	2.4	2.4	0.2	0.3	0.015	0.021	0.00
5/28/2007 12:00:00 AM	2.4	3.6	0.3	0.4	0.017	0.031	0.00
5/29/2007 12:00:00 AM	2.4	3.6	0.2	0.5	0.014	0.034	0.00
5/30/2007 12:00:00 AM	2.4	2.4	0.2	0.4	0.012	0.026	0.00
5/31/2007 12:00:00 AM	2.4	3.6	0.3	0.5	0.015	0.035	0.00
6/1/2007 12:00:00 AM	2.4	2.4	0.3	0.4	0.014	0.032	0.00
6/2/2007 12:00:00 AM	2.4	2.4	0.3	0.4	0.013	0.022	0.00
6/3/2007 12:00:00 AM	2.4	2.4	0.3	0.4	0.016	0.023	0.00
6/4/2007 12:00:00 AM	2.4	2.4	0.3	0.7	0.015	0.048	0.02
6/5/2007 12:00:00 AM	2.4	2.4	0.3	0.5	0.014	0.033	0.00
6/6/2007 12:00:00 AM	2.4	2.4	0.3	0.5	0.012	0.031	0.00
6/7/2007 12:00:00 AM	2.4	2.4	0.3	0.5	0.015	0.031	0.00

Exhibit C
Example RDII Analysis Graphs & Figures

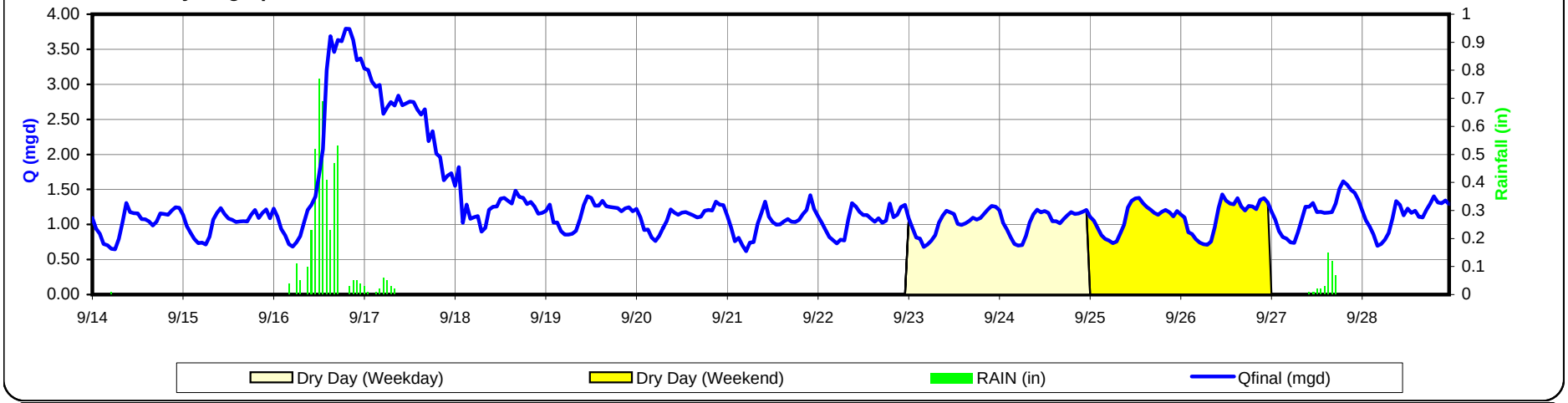

Average Dry Day Profiles
Site 06
Anytown, USA
Flow (mgd)
1.45
1.35
1.25
1.15
1.05
0.95
0.85
0.75
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Time (hrs)
Weekday
Weekend

Monthly Flow Charts

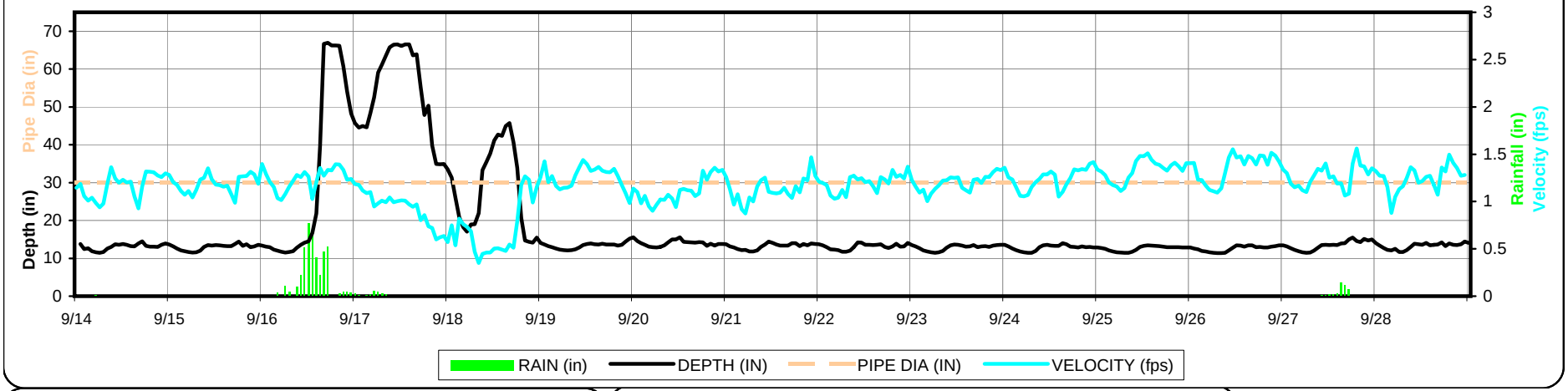
Monitor: MP06 **Pipe Dia:** 30 in **Date Range:** 09/14/04 to 10/13/04

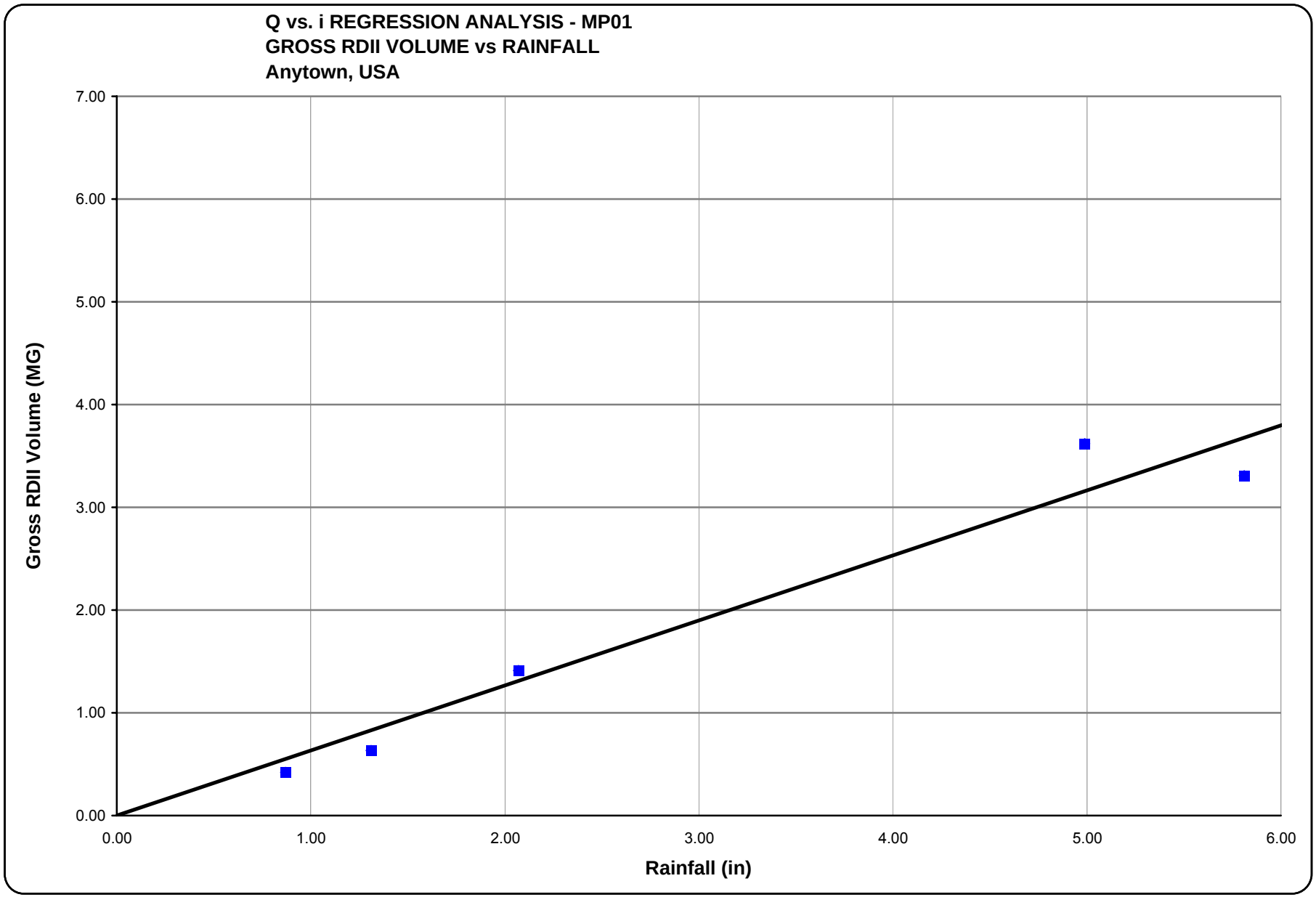
Location: Off of Kingsbridge Dr

Flow Hydrograph



Depth-Velocity Hydrograph




Q vs. i REGRESSION ANALYSIS - MP01
GROSS RDII VOLUME vs RAINFALL
Anytown, USA
Gross RDII Volume (MG)
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0.00
1.00
2.00
3.00
4.00
5.00
6.00
Rainfall (in)

TEMPORARY FLOW MONITORING STUDY
STORM SUMMARY TABLE

Monitor Name: **MP06**
Project Name: Anytown, USA
Monitoring Period: 14-Sep-04 to 8-Nov-04

Storm Analysis Summary

Date	Day of Week	Rainfall Start Date	Rainfall Start Time	Rainfall (inches)	Gross RDII Volume (MG)	Peak Hourly Rainfall (inches)	Gross Peak Flow (MGD)	Gross Peak RDII (MGD)
16-Sep-04	Thu	16-Sep	9:00	4.35	1.90	0.77	3.79	2.57
19-Oct-04	Tue	19-Oct	10:00	2.56	0.61	0.64	3.49	2.27
2-Nov-04	Tue	2-Nov	18:00	1.35	0.57	0.56	2.91	1.63
4-Nov-04	Thu	4-Nov	3:00	1.11	0.93	0.52	3.23	2.41

Average Dry Weather Flow (MGD):	1.11
Peak Dry Weather Flow (MGD):	1.32
Minimum Dry Weather Flow (MGD)	0.76

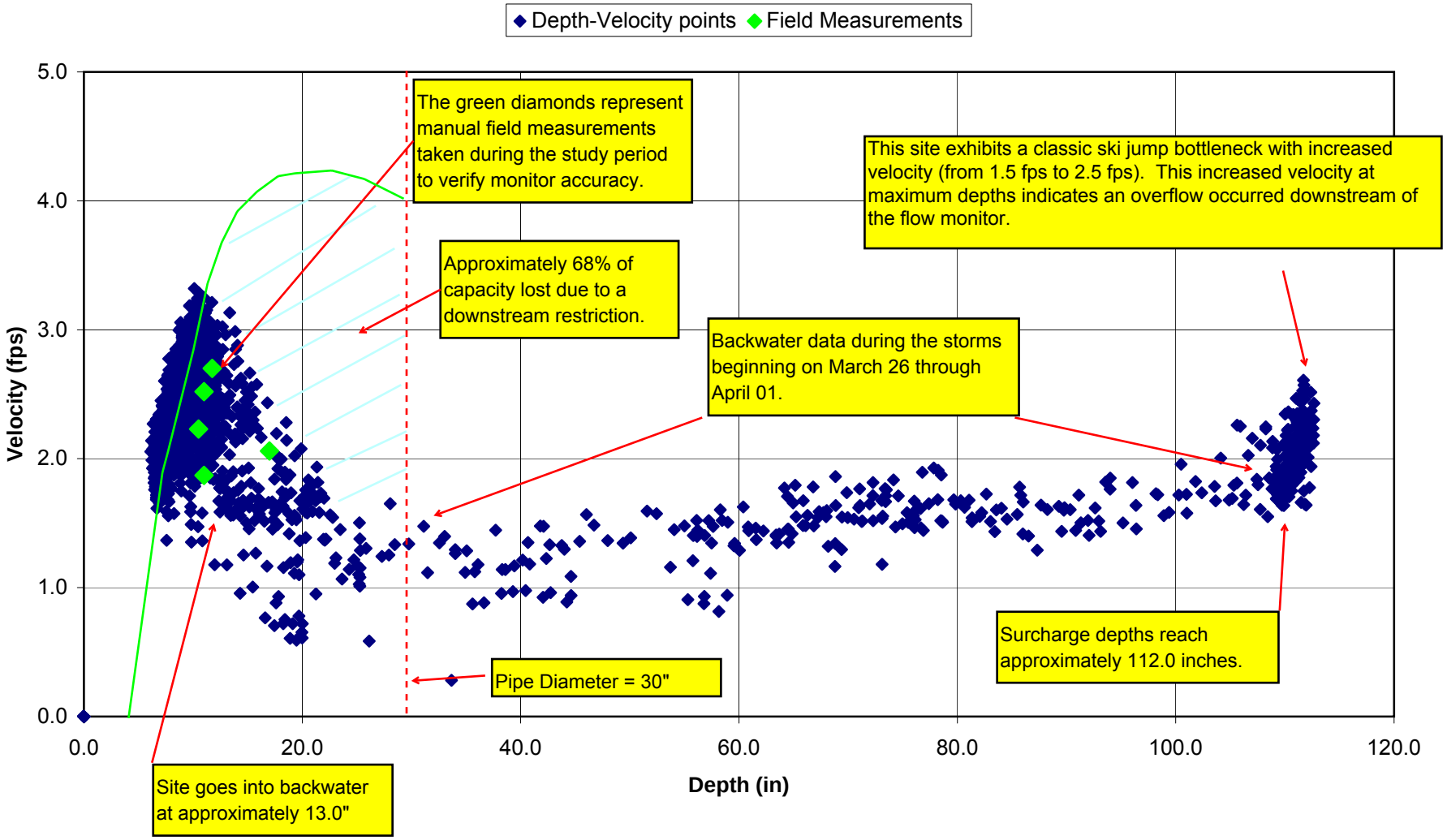
Linear Regression Summary

	Slope	y-intercept	r
Gross RDII Volume (MG) vs. 24-hr Rainfall (in)	0.34	0.20	0.94
Gross Peak RDII Volume (MG) vs. 24-hr Rainfall (in)	0.16	1.84	0.92

Projected Gross RDII Volume Summary

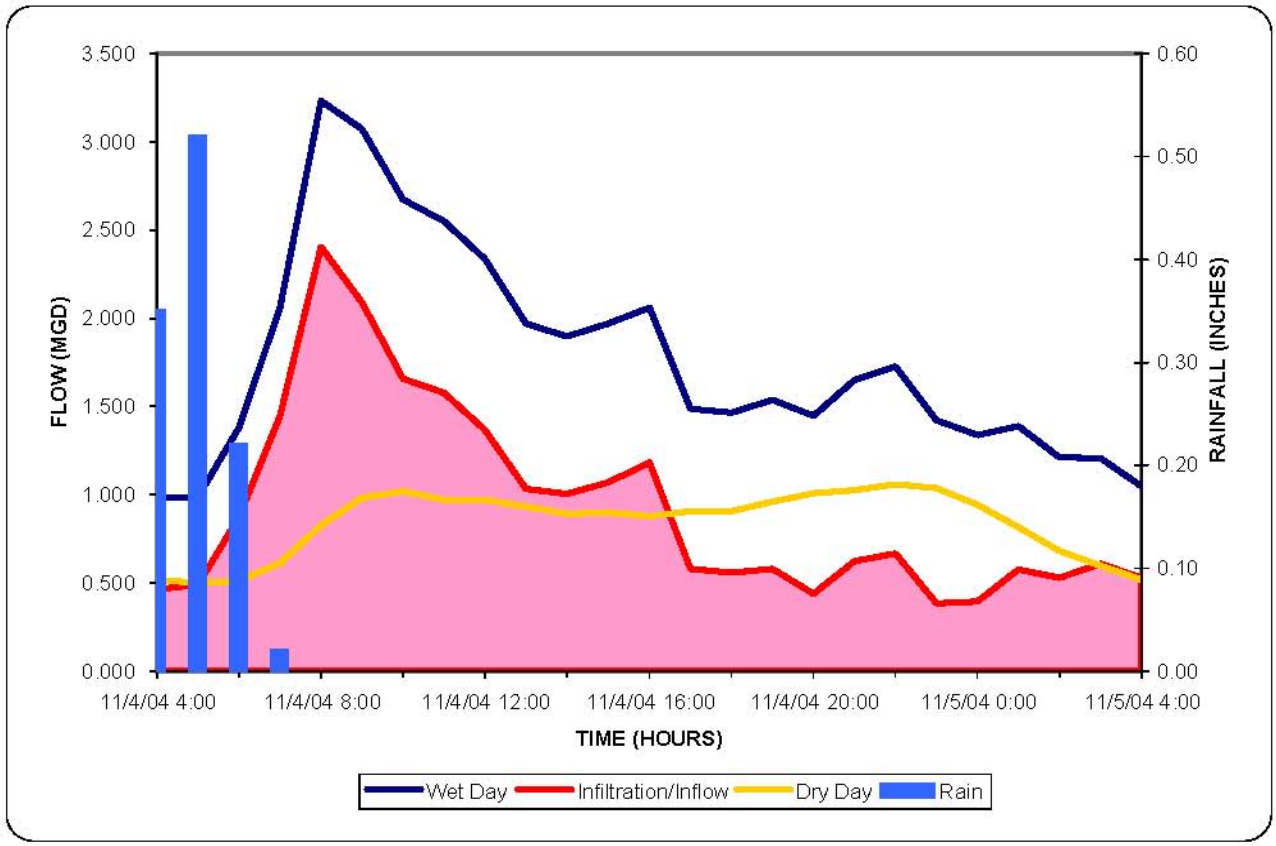
Design Storm	RDII Volume (MG)	Peak Hour RDII Volume (MG)
1.0 in.	1.55	1.98
2.0 in.	1.89	2.19
3.0 in.	2.55	2.79
5.0 in.	3.25	3.78

Site MP01
Depth-Velocity Scattergraph
Data period: 03-03-05 through 04-27-05



FLOW MONITOR ANALYSIS
STORM DATA

Monitor Name:	MP06	Day of Week:	Thursday
Storm date:	04-Nov-04	Total Rainfall:	1.11 Inches
Rain Start Hour:	04-Nov-04 03:00	Rainfall Duration (hr):	4



24-hour Storm Period Summary

Average Dry Day Flow (MGD)	**1.11**
Gross Flow (MGD)	**1.76**
Gross Peak Flow (MGD)	**3.23**
Peak Hourly Rain (in)	**0.52**
Gross RDII Volume (MG)	**0.93**
Gross Peak RDII (MGD)	**2.41**

Storm Summary Table
24 - Hour Storm Period

Monitor Name: **MP01** Closest Rain Gauge: **RG01**
Drainage Basin: Basin 34

Storm Date	Storm #	Storm Start Time	Rainfall (inches)	Gross RDII Volume (MG)	Peak Hourly Rainfall (inches)	Gross Peak Hourly Flow (MGD)	Gross Peak Hourly RDII (MG)
28-May-09	Storm 1	6:00	1.44	0.198	0.73	0.733	0.686
17-Jun-09	Storm 2	7:00	0.44	0.008	0.28	0.123	0.074
24-Jun-09	Storm 3	15:00	0.97	0.010	0.57	0.154	0.115
28-Jun-09	Storm 4	8:00	0.78	0.014	0.41	0.148	0.105
6-Jul-09	Storm 5	1:00	1.49	0.034	0.60	0.275	0.237
15-Jul-09	Storm 6	7:00	1.18	0.014	0.54	0.194	0.158
17-Jul-09	Storm 7	14:00	0.99	0.018	0.98	0.241	0.191
22-Jul-09	Storm 8	11:00	0.82	0.009	0.32	0.174	0.121
30-Jul-09	Storm 9	3:00	0.67	0.025	0.17	0.189	0.133

Average Dry Weather Flow (MGD): 0.035
Peak Hourly Dry Weather Flow (MGD): 0.044
Minimum Hourly Dry Weather Flow (MGD): 0.021