



Taylors Fire & Sewer District

Annual Report

December 1, 2010 – June 30, 2011

and

July 1, 2011 – June 30, 2012

Introduction & Overview

On December 4, 2010, Taylors Fire & Sewer District mourned the loss of Kelly Tucker, Director of Sewer Services. Due to the untimely death of Kelly, Taylors Fire & Sewer District Commissioners went through 109 resumes before finding Samantha Bartow. On February 28, 2011 Samantha Bartow started work as the Director of Sewer Services. Ms. Bartow was formerly employed at Renewable Water Resources for 15 years in the Collection System Department.

Taylors mourns loss of sewer director

Kelly Tucker died Dec. 4 at age 51

By Anna Lee
GREATER GREER NEWS
zlee@greenvillanews.com

Flags were flown at half staff last week in front of the Taylors Fire and Sewer District office as friends and family mourned the sudden loss of Kelly Tucker, director of sewer services, single mother, traffic director, avid reader, firecracker.

Tucker was 51 years old when she died Dec. 4 at Greenville Memorial Hospital.

She left behind two teenage daughters, Alice and Jennifer, and a family of sewer district employees who knew her as "mama."

"Kelly called all of her sewer employees her guys, and she treated them like family. She treated us all like family," said Violet Shehan, district receptionist and Tucker's former assistant.

"She had a very outgoing personality but she was very straightforward, very fair. She didn't put up with a lot of junk."

And the men in the sewer department admired and respected her for that.

"They would call her at night, and she would go out and flag traffic at 12 o'clock at night if her boys needed her," Shehan said.

William Ables, known as

Red, was Tucker's foreman and operations coordinator. Ables saw a different side of her, saw her as someone who went the extra mile to help those in need.

"We had one employee with a 10-year-old son who had leukemia. Kelly went way out of her way with everything to try and help with that youngin'. She let him do extra things in the evenings so he would get paid with all the time he had to be out to see his son," Ables said.

Prior to working in Taylors, Tucker was the city codes inspector for Fountain Inn and the public works coordinator for the Greenville County Rede-



Kelly Tucker

velopment Authority. She was known to stand up for Taylors and other special purpose districts.

"She was a firecracker," Shehan said. "I don't know what we're going to do here. She was the sewer department. She was the life of it, and she's really going to be missed."

A memorial service was held Dec. 8 in the downtown chapel at Thomas McAfee Funeral Home.

Memorials may be

made to the Kelly Tucker Memorial Fund (FBO Alice and Jennifer Tucker c/o Greer State Bank, 3317 Wade Hampton Blvd., Taylors, SC 29687, or St. Jude Children's Research Hospital, 501 St. Jude Place, Memphis, TN 38105.

New sewer director to start in Taylors

By Anna Lee
GREATER GREER NEWS
zlee@greenvillanews.com

Taylors Fire and Sewer District commissioners went through 109 resumes before finding Samantha Bartow.

On Feb. 28, Bartow will officially start work as the district's new director of sewer services, a position left open since the death of Kelly Tucker in December.

Bartow was formerly employed at Renewable Water Resources for 15 years, where she worked in the collection system department.

She is a member of the Water Environment Association of South Carolina and the Five S Society, or Select Society of Sanitary Sludge Shovelers.

Inductees who have made a significant contribution to the sewer indus-



GEORGE GARDNER / Staff
Samantha Bartow is Taylors' new sewer director.

try receive a gold pin in the shape of a round-nose shovel, and Bartow wears hers proudly.

"She has the same background and a lot of similarities as Kelly," said Commissioner Gilbert Rivers.

"The timing couldn't have been better," he said. "We feel very, very good that we were able to convince her to come and stay with us."

New sewer director joins Taylors district

By Anna Lee
STAFF WRITER
zlee@greenvillanews.com

TAYLORS — Samantha Bartow comes from a long line of public servants.

Formerly employed at Renewable Water Resources for 15 years, Bartow has joined the Taylors Fire and Sewer District as its new director of sewer services.

She is a member of the Water Environment Association of South Carolina and the national Five S Society, or Select Society of Sanitary Sludge Shovelers. Inductees who have made a significant contribution to the sewer industry receive



Bartow

a gold pin in the shape of a round-nose shovel, and

Bartow wears hers proudly.

Public

service

runs in Bartow's family. Her father is retired from law enforcement; her uncle works in the sanitation department for Anderson County.

"And here I am in the sewer. It's a family thing," she said.

District commissioners welcomed Bartow to her

new office this week, where she quickly got down to business when reports came of a sewer overflow.

"The timing couldn't have been better," said Commissioner Gilbert Rivers.

Bartow fills the position left open since the death of Kelly Tucker in December.

"She has the same background and a lot of similarities as Kelly, who we were so fond of. We feel very, very good that we were able to convince her to come and stay with us," Rivers said.

Taylor's Fire & Sewer District and ReWa's intergovernmental agreement was signed on March 7, 2007 by Kelly Tucker and Ray Orvin. After doing some research on the intergovernmental agreement it was noted that the report was due on December 1, 2007. The reports would run from December 1st to November 30th of the following year. After going through the 2007, 2008, 2009 and 2010 reports, Ms. Bartow set up a meeting with Mr. Orvin, Executive Director and Mrs. Flax, Customer Service / Contract Manager to discuss the timeline. During this meeting Ms. Bartow asked if Taylor's Fire & Sewer District's report could change the dates of the agreement so it could run on fiscal year. Taylor's fiscal year is July 1st to June 30th. This change was requested due to how Taylor's reports their financials. Mr. Orvin granted Ms. Bartow to change Taylor's report to fiscal year. Since this change was done last year it was also agreed that this year Taylor's Fire & Sewer District would turn in a report for December 1, 2010 to June 30, 2012 to incorporate the new reporting period. From this point forward Taylor's Fire & Sewer District reports will run on fiscal year reporting.

Samantha Bartow

From: Stacey Flax <staceyg@re-wa.org>
Sent: Thursday, October 27, 2011 12:17 PM
To: 'taylorsewer@bellsouth.net'; Lance Roddy
Subject: Re: Annual Report

Thanks, Samantha!! Works for us!

From: Samantha Bartow <taylorsewer@bellsouth.net>
To: Lance Roddy
Cc: Stacey Flax
Sent: Thu Oct 27 12:08:57 2011
Subject: RE: Annual Report

Lance,

I had a meeting with Ray Orvin and Stacey and stated that I wanted to change our dates so we could run on fiscal year. Currently ours (Taylor's) is to be turned in December. Since I requested this change earlier in the year because of our financial reports. I was granted by Ray that I could change ours to fiscal year. I would like to be able to turn our reports in after our fiscal year ends (June 30th). It would be nice that while we are preparing for the presentation that we could submit our report then at the annual meeting. It would make sense that would be the time frame. Since our was changed you will get a report for Taylor's for December 2010 to June 2012 in one report.

So my preference is to turn it in at the Mid-September annual meeting.

Thanks,
Samantha



Samantha E. Bartow
Director of Sewer Services

3335 Wade Hampton Blvd.
Taylors, SC 29687

taylorsewer@bellsouth.net
864-244-5896 phone
864-292-4975 fax

Work Plan Updates

Vehicles Purchases

Purchase Date	Equipment	Cost
1-27-2012	2012 Freightliner Vac-Con Truck	\$303,274.50
11-3-2010	2011 Chevrolet Silverado L. S. Pickup	\$21,512.00
6-1-2009	2009 Ford Super Duty F250 Service Truck	\$25,274.92
8-27-2008	2009 International Durastar Dump Truck	\$59,673.94
10-30-2006	2007 Ford Ranger Pick Up 4x4	\$15,030.75
10-30-2006	2007 Ford Ranger Pick Up 4x2	\$10,126.75
7-12-2002	2002 Freightliner TV Van with Cues K2 Camera System	\$161,670.00
4-26-2002	2002 Ford Super Duty F350 XL	\$27,102.00
12-14-2005	1997 Chevrolet C6500 Dump Truck	\$11,500.00
5-18-2010	2010 Ford Crown Vic	\$22,042.68

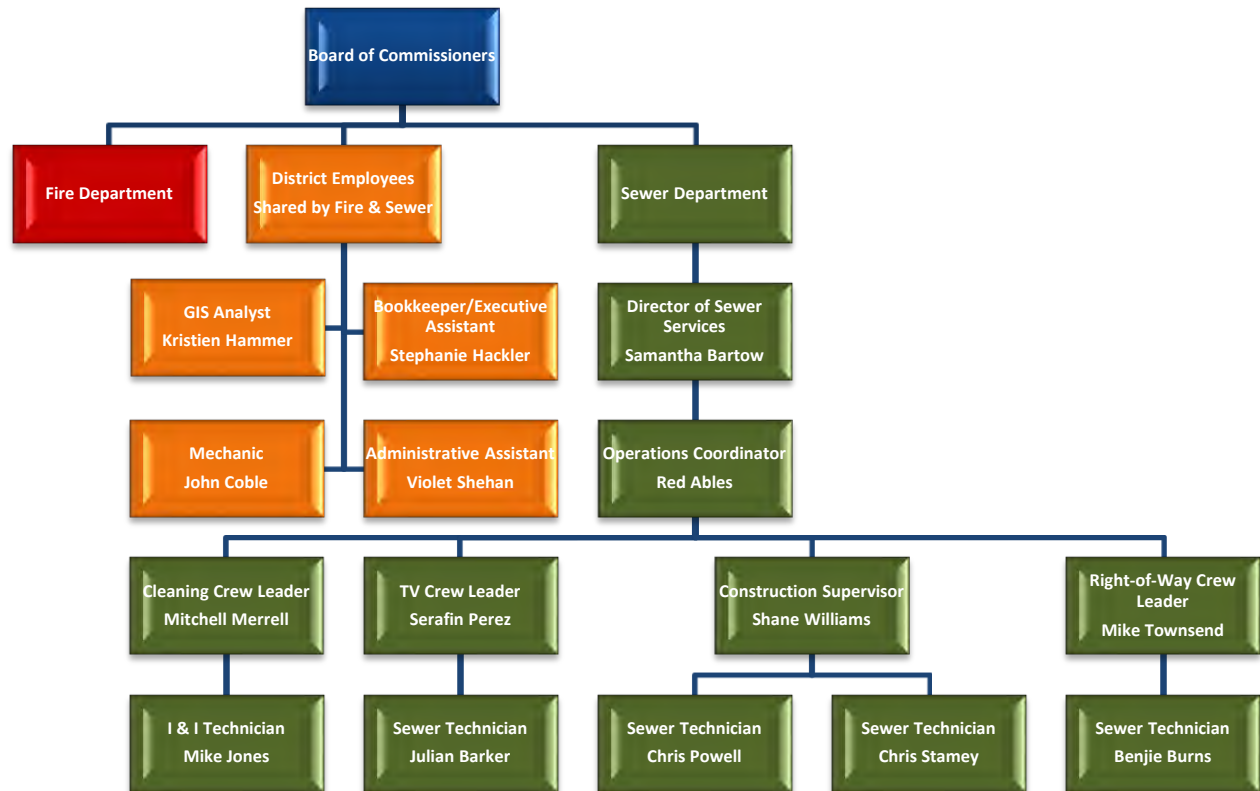
Equipment Purchases

Purchase Date	Equipment	Cost
5-1-2011	2002 Haulmark Trailer for Patch Repair includes: 10 Marker Cones Porter-Cable Compressor Power House Generator 36" Fan 10'x10' Canopy 1 – 8' Repair Bladder 36 – Connector Rods for Bladder	\$1,800.00
8-2-2002	2002 John Deere 310 S.G. Backhoe w Cab	\$43,300.00
9-17-2008	D&E Dual Axle Trailer	\$1,669.50
6-23-2008	Bobcat 2200 ATV	\$8,655.20
5-19-2008	with Cues K2 Camera System & Honda Generator	\$65,500.00
8-19-2005	2005 6415 John Deere Tractor w Cab V.M.C. Sidearm Mower	\$65,653.43
9-29-2008	Woods 8' Bushhog	\$5,000.00
6-30-2007	2007 Hudson 10 Ton Trailer	\$7,070.20
5-28-1998	1998 Bobcat 873 Turbo Skid-Steer Loader	\$26,446.00
6-30-2007	Kobelco C.S. 80 Mini Excavator	\$78,595.00
8-17-2005	Godwin By-Pass Pump C.D. 100	\$19,142.55
9-9-2008	Sidekick Easement Machine	\$23,677.47
5-18-2011	Bulldog Jetter Machine 3000 psi	\$39,008.00
	Mi-T-M 1000 psi Steam & Pressure Washer	

Purchase Date	Equipment	Cost
	Stone Cement Mixer 655 P.M.	\$3,000.00
1-1-1986	1986 Ingersol-Rand Air Compressor (pull behind)	\$6,000.00
11-6-2009	Gossen Straw Blower for ROWs	\$1,200.00
11-13-2009	Carlton 2518 14" Chipper	\$44,201.62
	F.C.P. Tripod F.C.P. Fall Protection Cable F.C.P. Winch with Fall Protection	
	Hurco Smoke Machine	\$2,500.00
	Hurco Ventilator Machine	
	Hobart Ironman Welder 250 Wire-Welder	\$2,000.00
3-16-2001	Rhino Ditch Box Hyd. 6'x8'	\$6,632.45
11-29-2005	2 – G.M.E. Manual Trench Boxes with End Plates	\$5,479.14
2-20-2007	Stanley Hyd. Power Unit with Misc. Tools	\$7,575.75
	3 – Flo-Dar Flow Monitors	
	7 – Hach Sigma 910 Flow Monitors	
3-8-2010	Insight / Vision Push Camera	\$7,791.00
8-14-1996	950 Sigma Rain Gauge	\$595.00

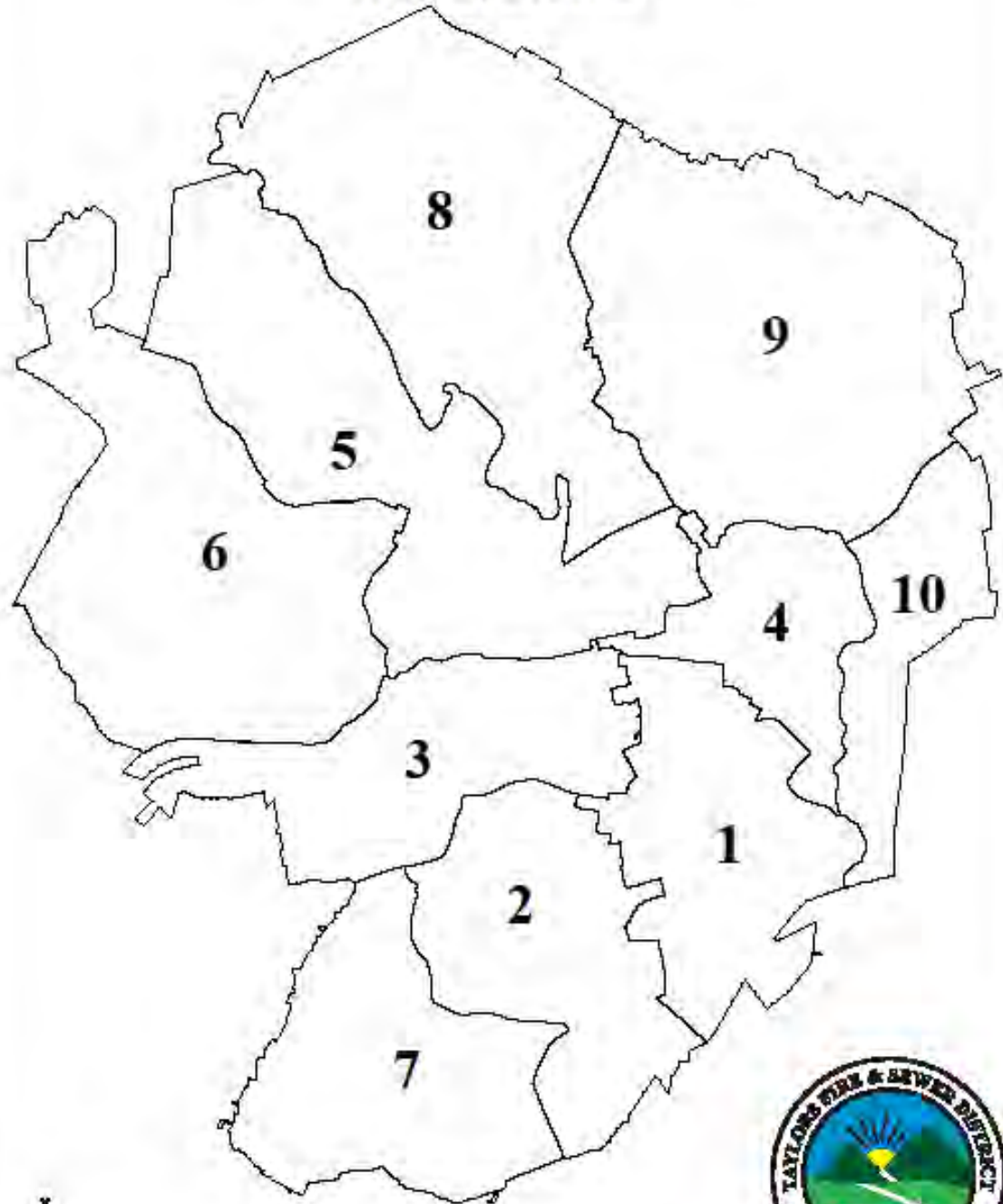
Taylors Fire & Sewer District

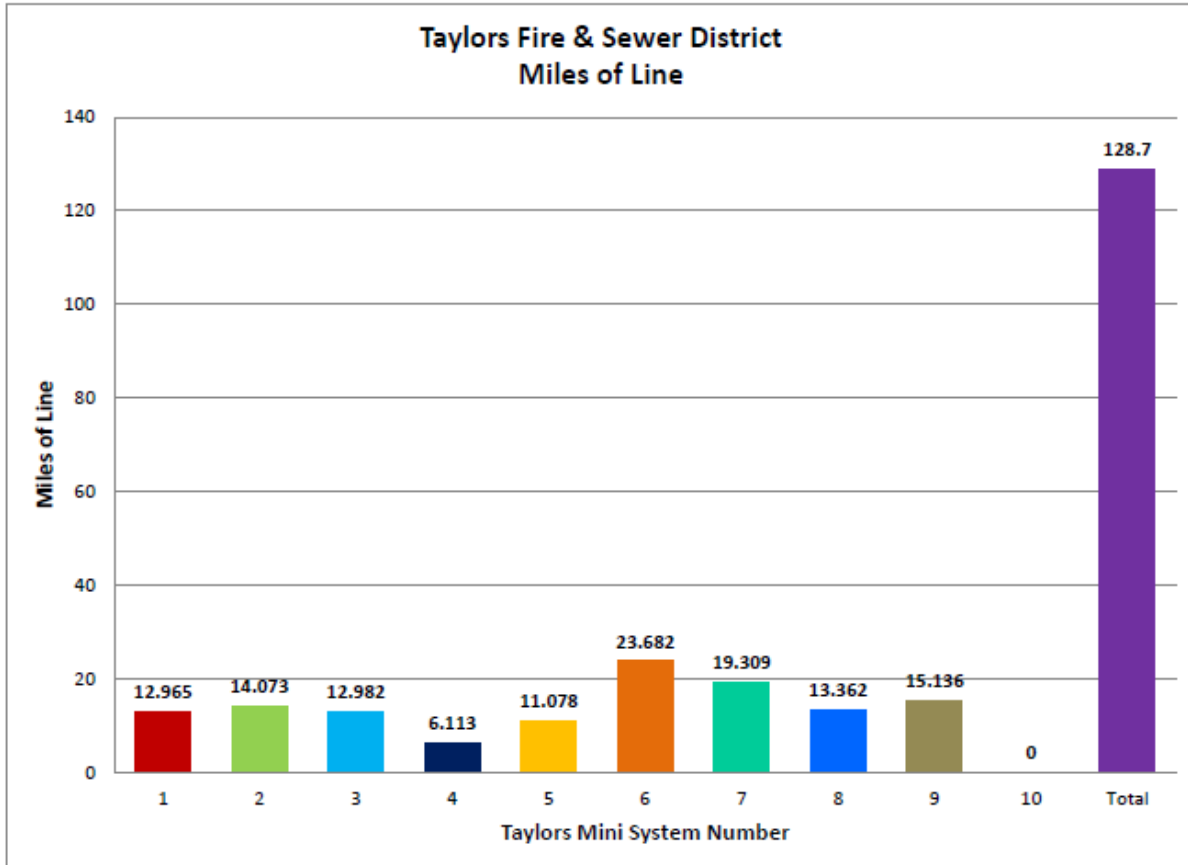
Organizational Chart



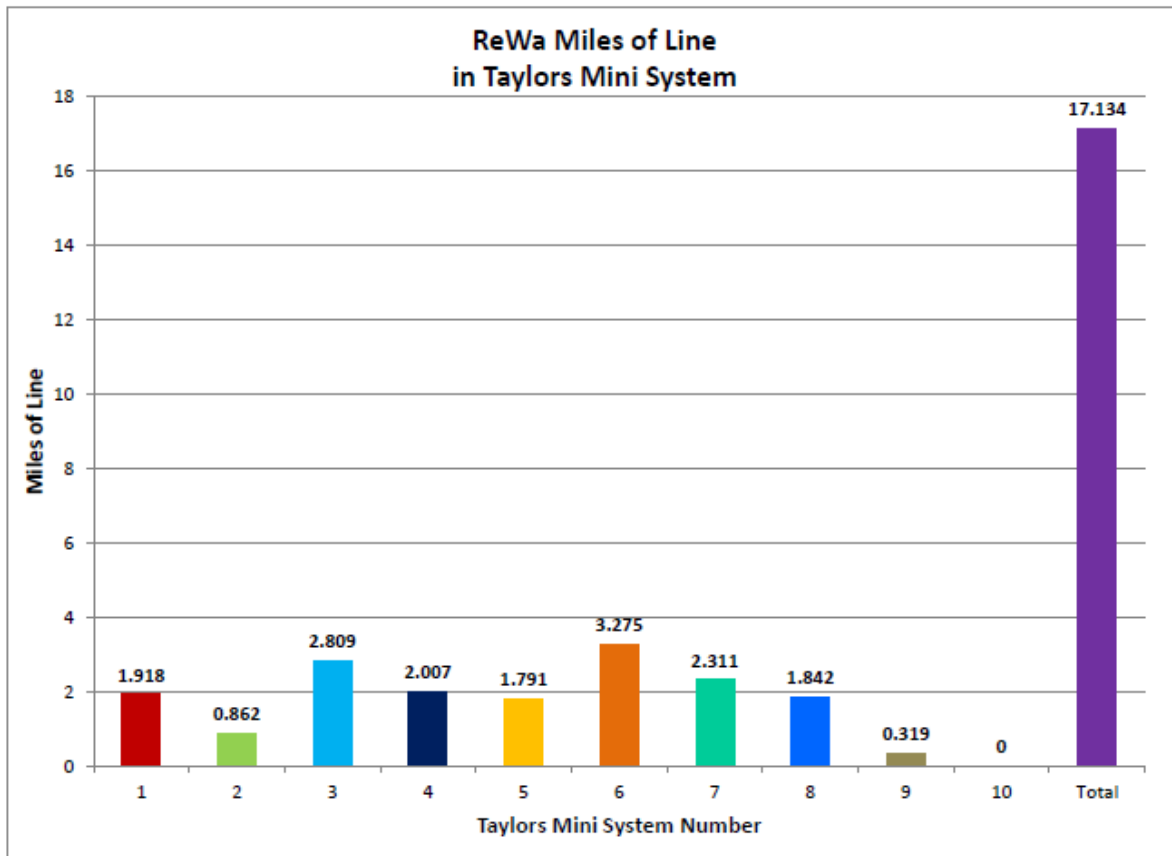
Over the last few years the District has added employees. Taylors Fire & Sewer District has three classifications for employees: Fire Department Personnel, Sewer Department Personnel and District Administration Personnel. District Administration Personnel work for both the Sewer and Fire Departments, which reports to the Director of Sewer Services and Fire Chief. The Sewer Department has changed responsibilities for Crews; each Crew now has a Crew Leader and/or Supervisor to report to. Due to limited size of each crew, each employee is cross trained in other fields so as to add more manpower to either crew as required by the nature of the project.

Taylor's Sewer District Minisystems



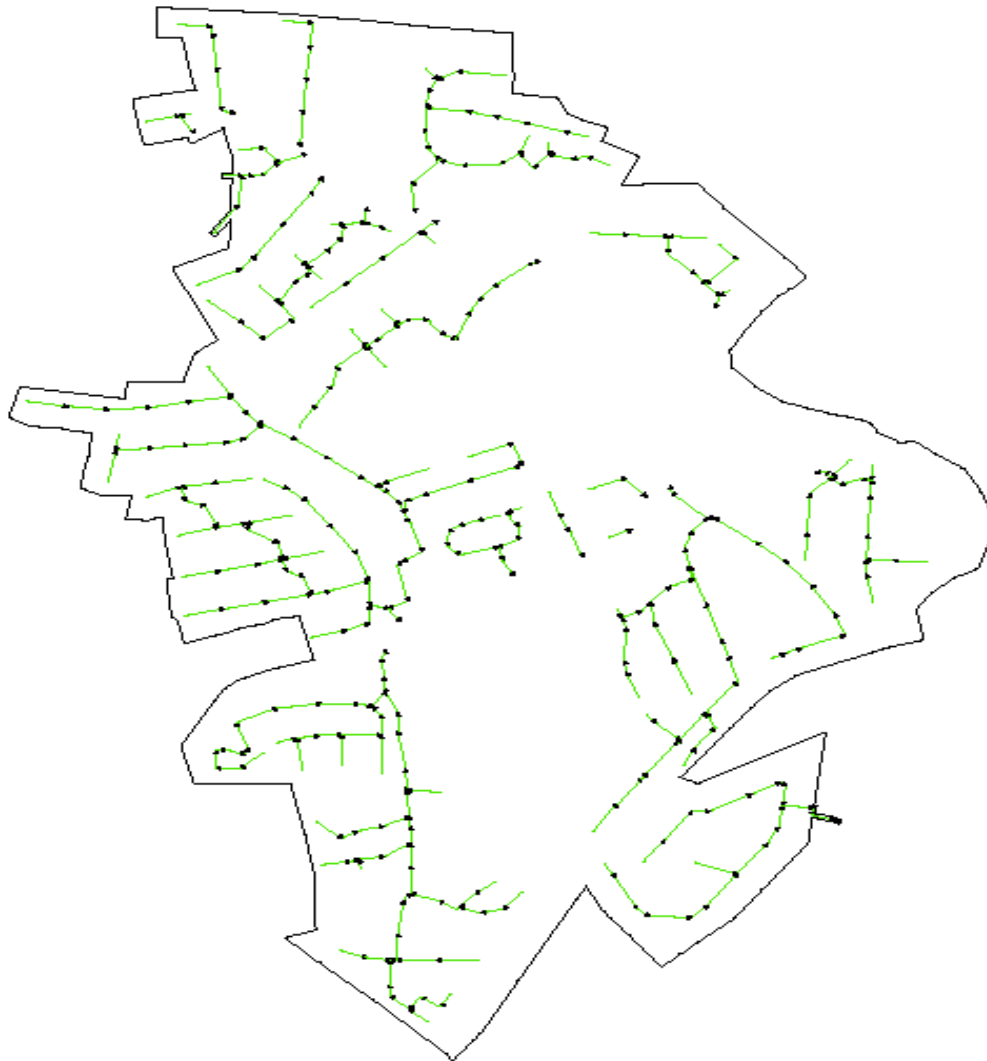


Taylor's Mini System #	Taylor's Miles of Line
1	12.965
2	14.073
3	12.982
4	6.113
5	11.078
6	23.682
7	19.309
8	13.362
9	15.136
10	0
Total:	128.7



Taylors Mini System #	ReWa Miles of Line
1	1.918
2	0.862
3	2.809
4	2.007
5	1.791
6	3.275
7	2.311
8	1.842
9	0.319
10	0
Total:	17.134

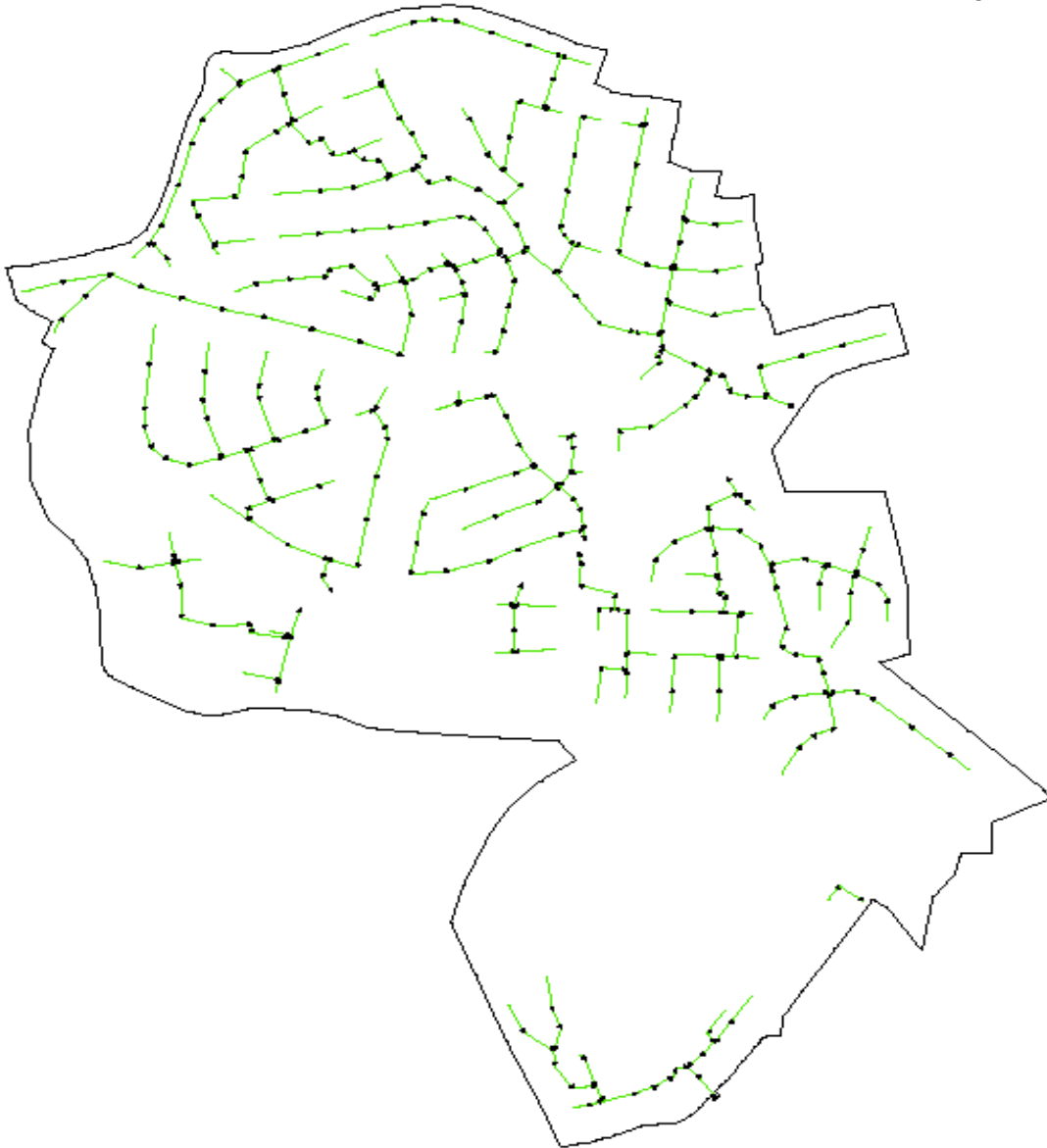
Taylor's Sewer District Minisystem 1



Mini System #1

Number of Miles of Collection Lines:	12.965
Number of Miles of ReWa Trunk Lines:	1.918
Number of Connection to ReWa Trunk Lines:	17

Taylor's Sewer District Minisystem 2



Mini System #2

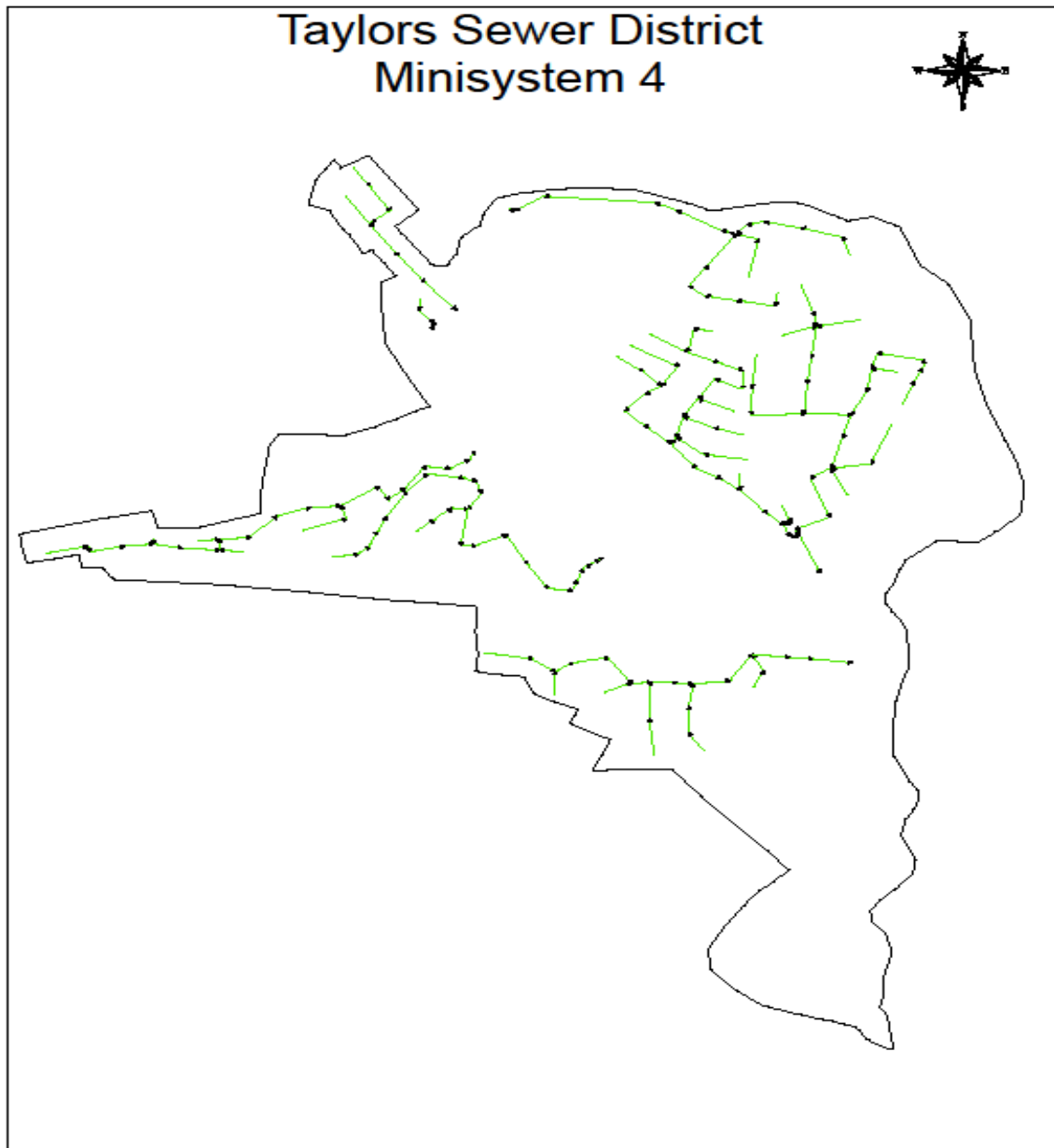
Number of Miles of Collection Lines:	14.073
Number of Miles of ReWa Trunk Lines:	0.862
Number of Connection to ReWa Trunk Lines:	7
Number of Connection to Metro Lines:	2

Taylor's Sewer District Minisystem 3



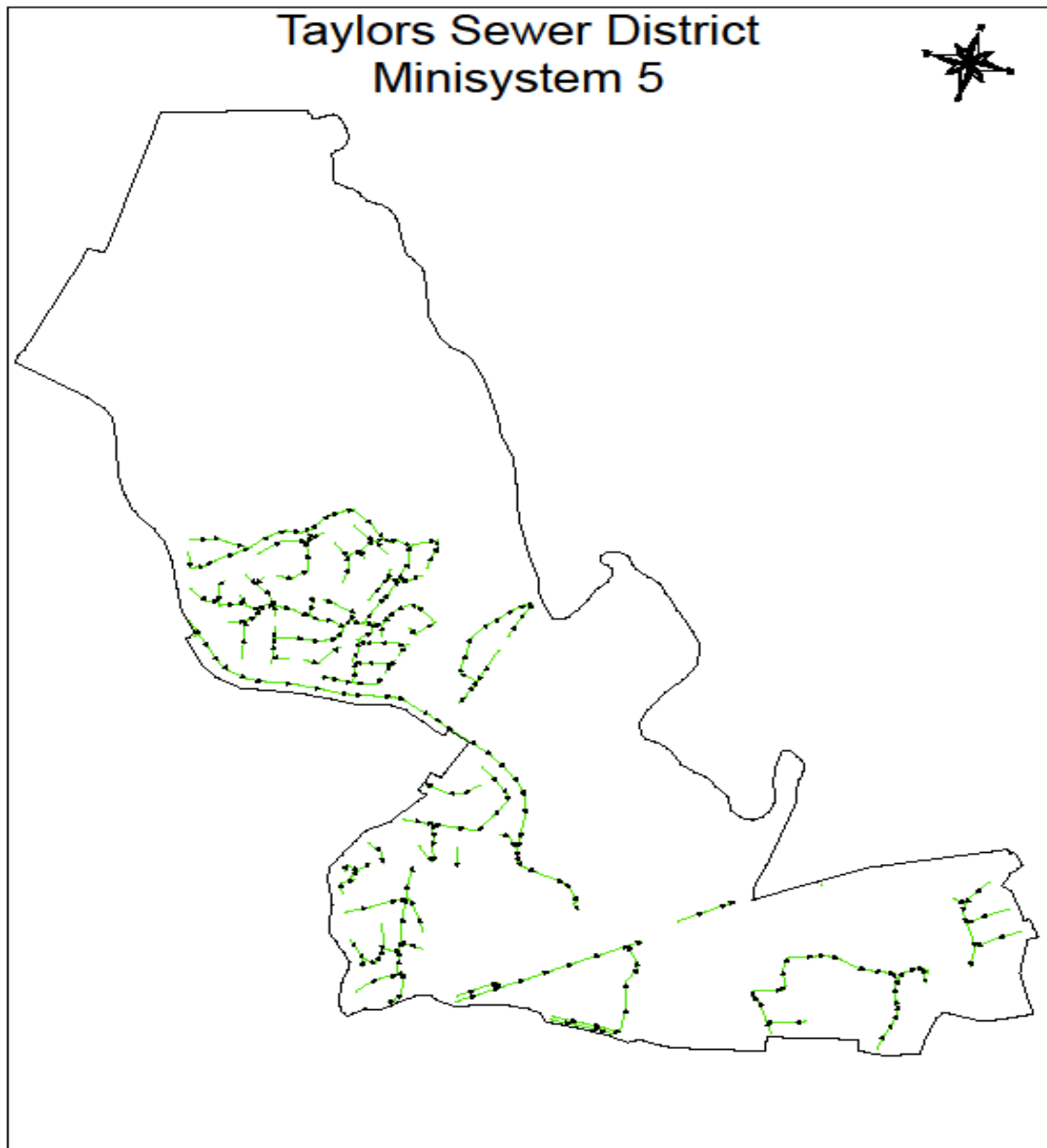
Mini System #3

Number of Miles of Collection Lines:	12.982
Number of Miles of ReWa Trunk Lines:	2.809
Number of Connection to ReWa Trunk Lines:	33



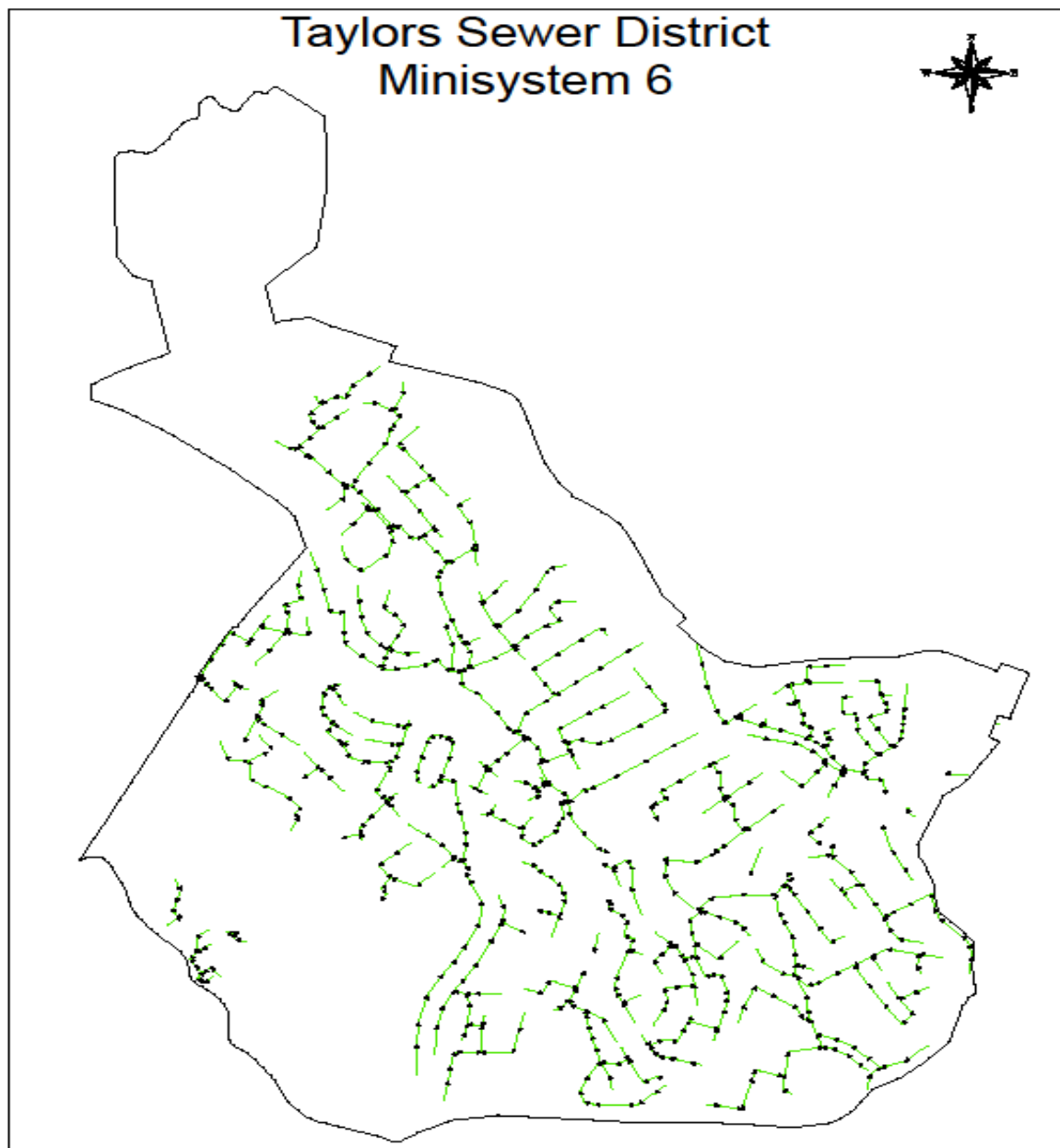
Mini System #4

Number of Miles of Collection Lines:	6.113
Number of Miles of ReWa Trunk Lines:	2.007
Number of Connection to ReWa Trunk Lines:	8



Mini System #5

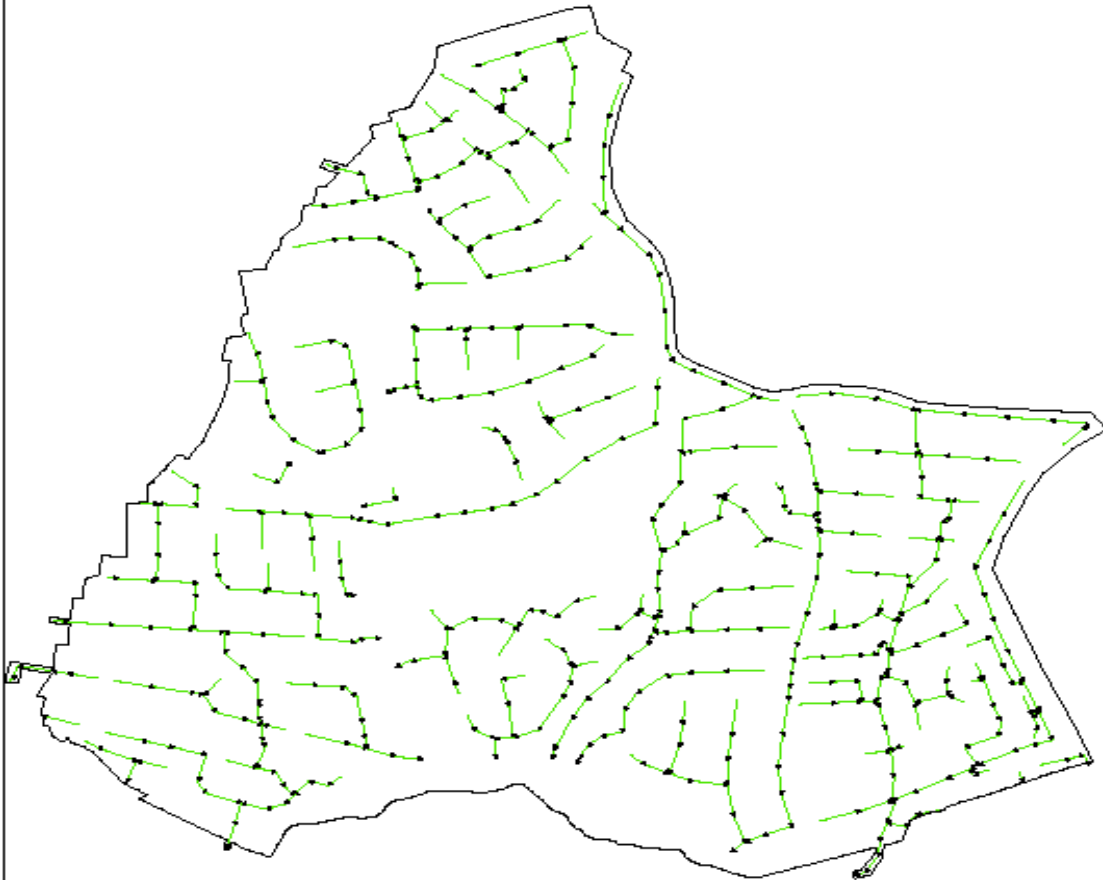
Number of Miles of Collection Lines:	11.078
Number of Miles of ReWa Trunk Lines:	1.791
Number of Connection to ReWa Trunk Lines:	11



Mini System #6

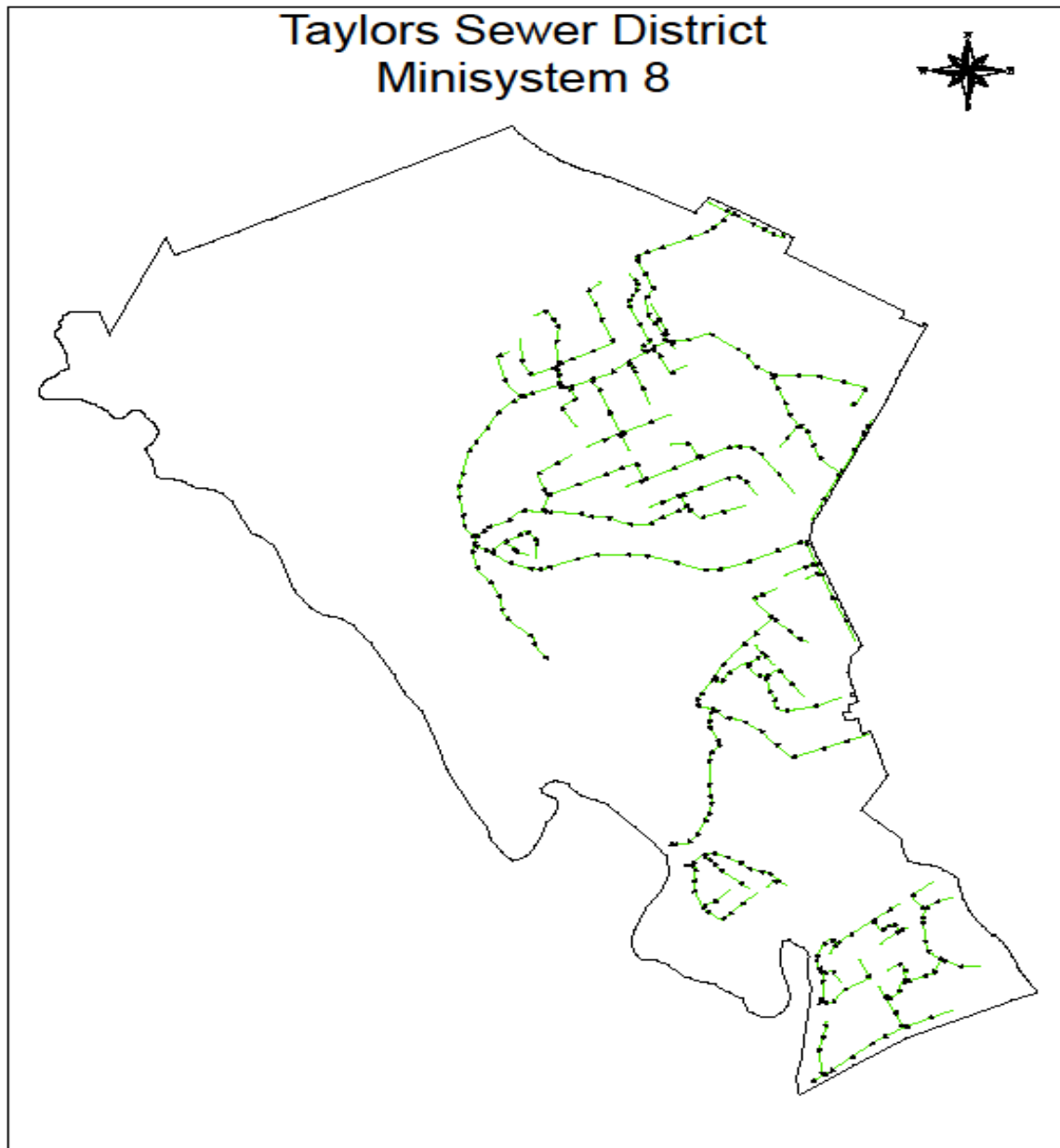
Number of Miles of Collection Lines:	23.682
Number of Miles of ReWa Trunk Lines:	3.275
Number of Connection to ReWa Trunk Lines:	30

Taylor's Sewer District Minisystem 7



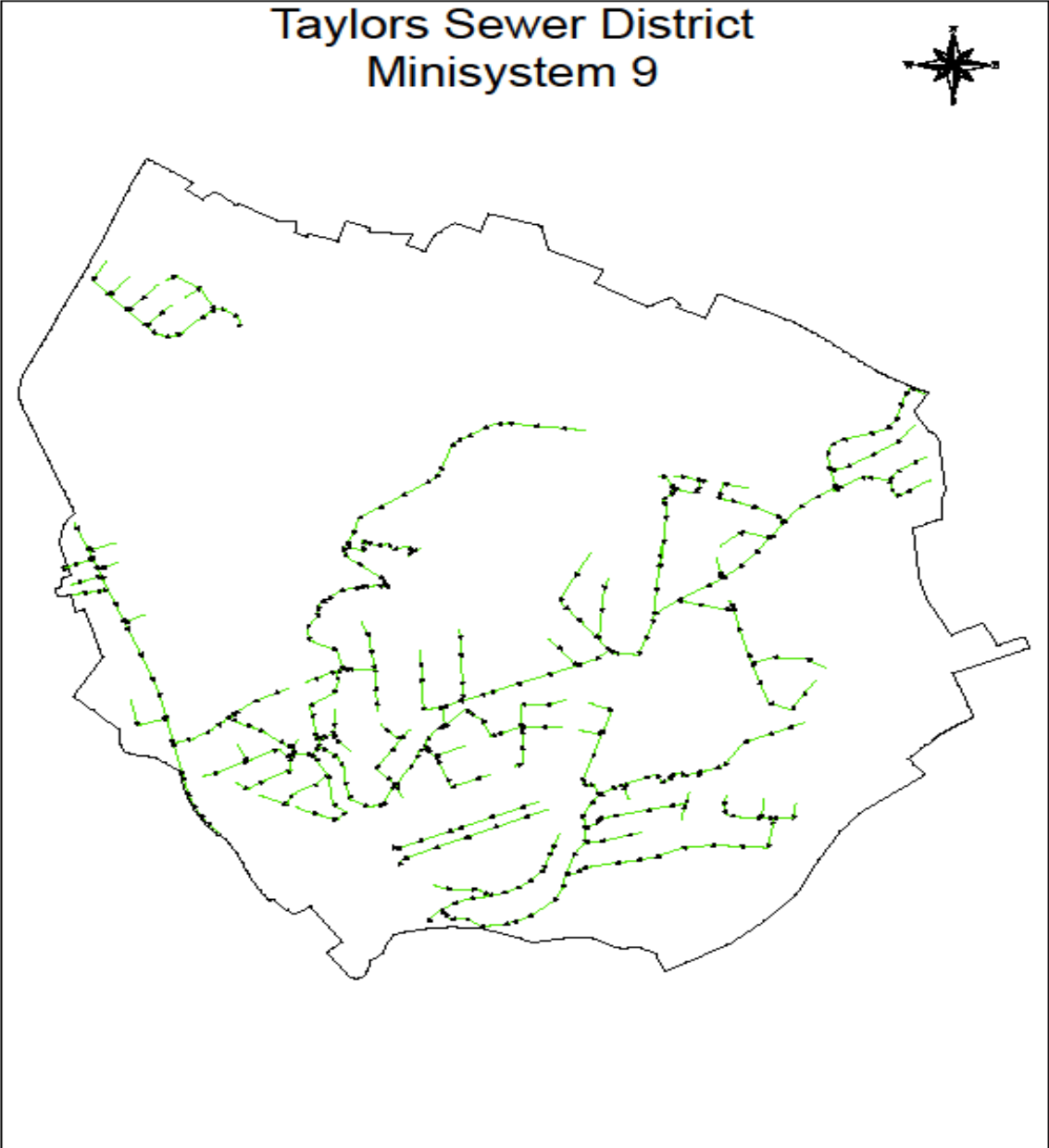
Mini System #7

Number of Miles of Collection Lines:	19.309
Number of Miles of ReWa Trunk Lines:	2.311
Number of Connection to ReWa Trunk Lines:	27



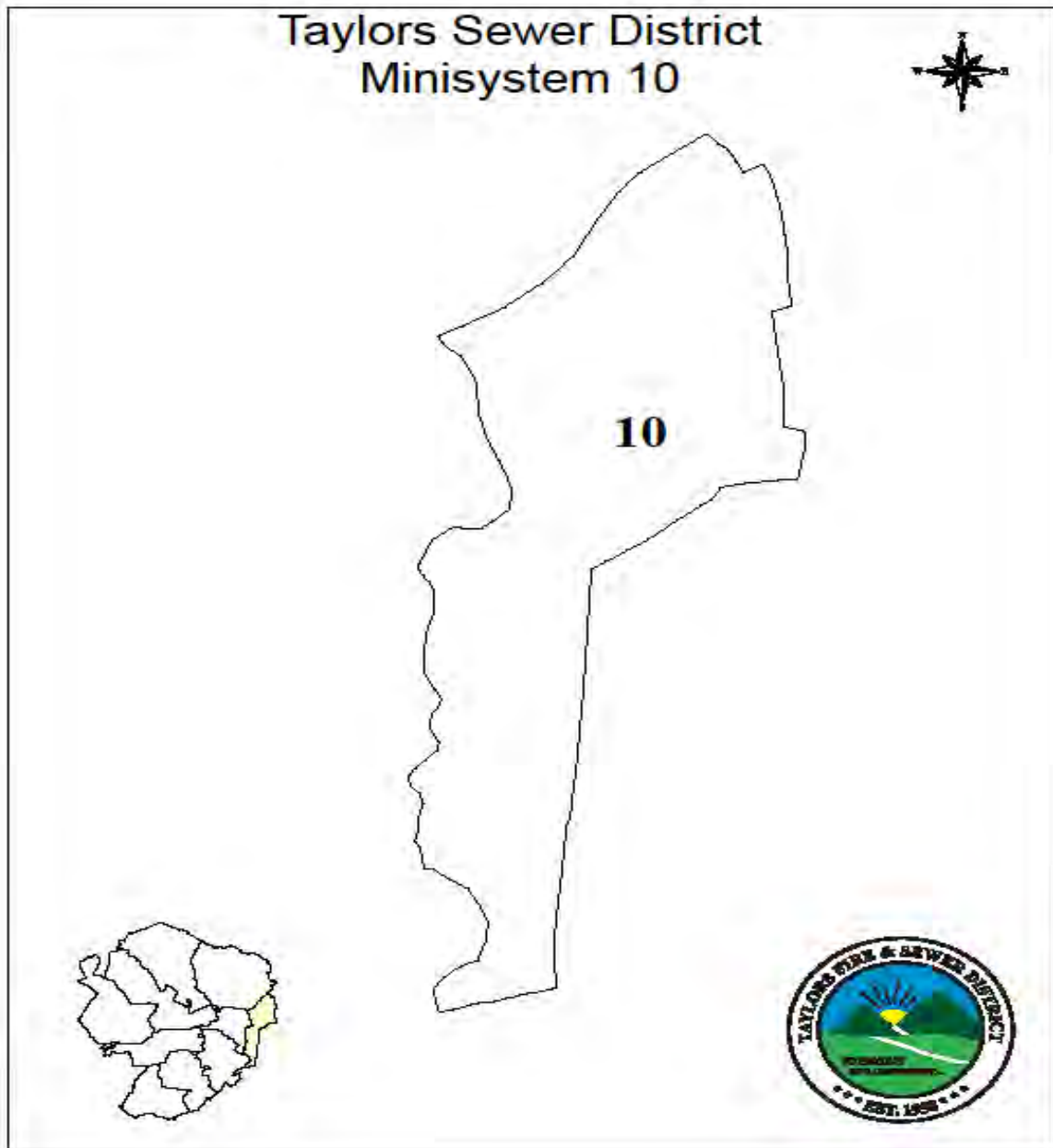
Mini System #8

Number of Miles of Collection Lines:	13.362
Number of Miles of ReWa Trunk Lines:	1.842
Number of Connection to ReWa Trunk Lines:	5



Mini System #9










Number of Miles of Collection Lines:	15.136
Number of Miles of ReWa Trunk Lines:	0.319
Number of Connection to ReWa Trunk Lines:	5



Mini System #10

Number of Miles of Collection Lines:	0
Number of Miles of ReWa Trunk Lines:	0
Number of Connection to ReWa Trunk Lines:	0

SSE/TV & Cleaning Timeline

Mini System	12-1-06 to 11-30-07	12-1-07 to 11-30-08	12-1-08 to 11-30-09	12-1-09 to 11-30-10	12-1-10 to 11-30-11	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
1															
2															
3															
4															
5															
6															
7															
8															
9															
10	Septic Tanks														

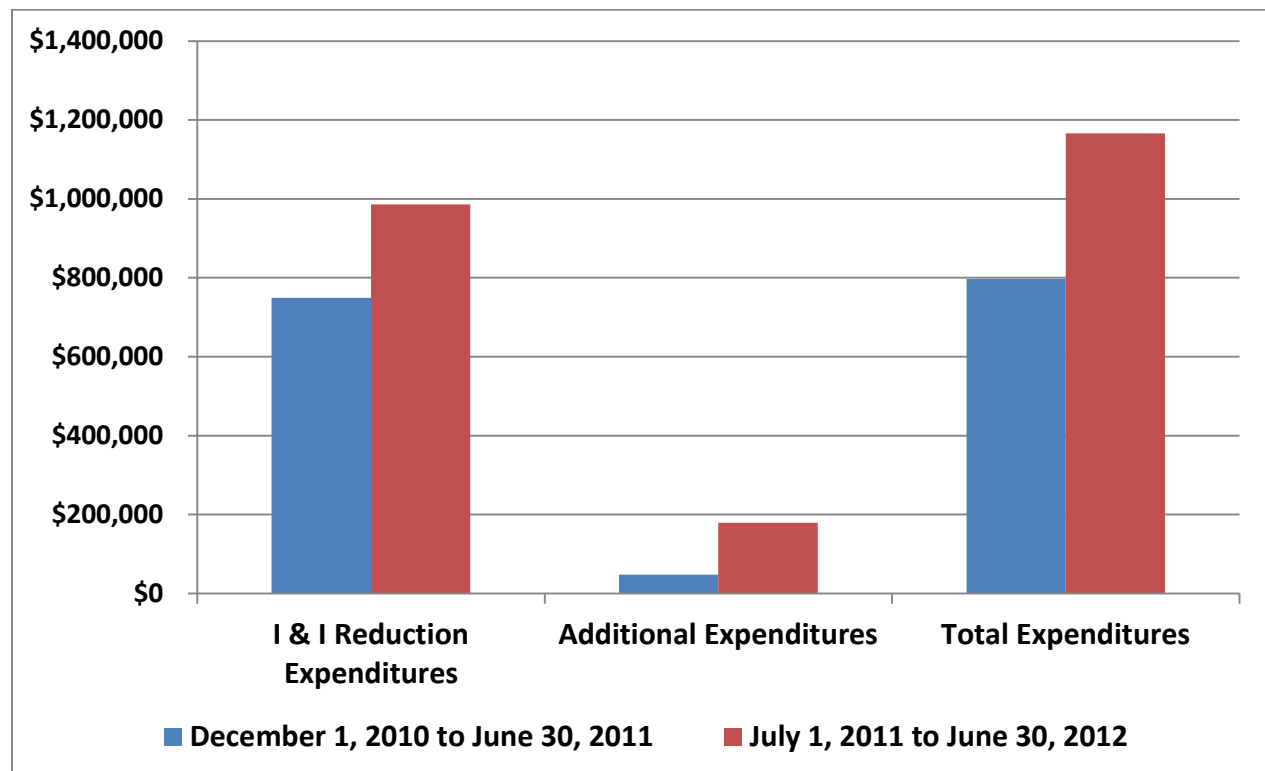
Current Year (December 1, 2010 to June 30, 2012)

Financial Report

According to the budget profile for December 1, 2010 through June 30, 2011, Taylors Fire & Sewer District spent \$797,106 on the reduction of inflow and infiltration (I&I).

According to the budget profile for July 1, 2011 through June 30, 2012, Taylors Fire & Sewer District spent \$1,166,084 on the reduction of inflow and infiltration (I&I).

<i>I & I Reduction Expenditures:</i>	
December 1, 2010 to June 30, 2011	\$749,058
July 1, 2011 to June 30, 2012	\$986,502
<i>Additional Expenditures:</i>	
December 1, 2010 to June 30, 2011	\$48,048
July 1, 2011 to June 30, 2012	\$179,582
<i>Total Expenditures:</i>	
December 1, 2010 to June 30, 2011	\$797,106
July 1, 2011 to June 30, 2012	\$1,166,084



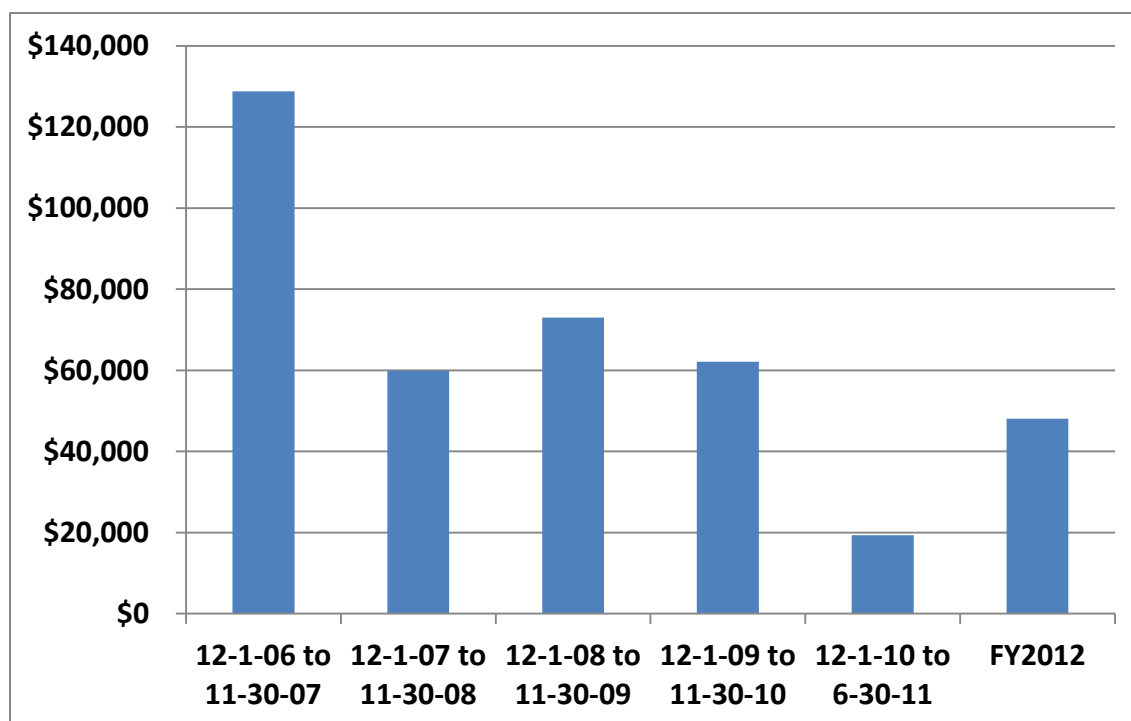
The Additional Expenditures listed above include such items as Taylors Fire & Sewer District Shared Overhead, Facilities/Utilities, Pump Station, Septic Tank Repair/Maintenance, Professional Services, and Capital Expenditures. All items the District must cover in order to serve our residents.

Taylors Fire & Sewer District uses a combination of methods to ensure and maintain the integrity of our system. Duke Root Control, Insituform CIPP, and SpectraShield Liner Systems are frequent contractors for specific projects.

Taylors Fire & Sewer District has also implemented the use of higher regulations and standards for new construction. Each site is required to seal manholes with either a Uniband or Flex Seal prior to backfilling. The entire project is monitored by Engineers representing Taylors Fire & Sewer District as well as District staff during construction in an effort to minimize and/or eliminate the amount of I&I that enters the system.

Over the past years the slowing economy has had a direct effect on our permit income. Over the last few years we have seen a steady decline.

<i>12-1-06 to 11-30-07</i>	<i>12-1-07 to 11-30-08</i>	<i>12-1-08 to 11-30-09</i>	<i>12-1-09 to 11-30-10</i>	<i>12-1-10 to 6-30-11</i>	<i>FY2012</i>
\$128,800	\$59,900	\$72,975	\$62,100	\$19,375	\$48,100



Even though the District has steadily increased the tax millage rates each year, the funds have been offset by the decrease in fair market values. During 2007, the Board of Commissioners approved the institution of a user fee, however postponed the implementation. In 2009, the Board of Commissioners felt that the time had come to enact this fee in order to keep on schedule with the major repairs above and beyond regular maintenance of the sewer system.

The challenge was to set the fees low enough as to not create further financial burden on our residents and still be able to fund the improvements to our capital assets. The 2009 Board of Commissioners set the following fee schedule with the stipulation that it apply to all properties connected to our sewer system.

User Fees:

Residential Unit:	\$20
Homestead Exempt:	\$10
Business / Commercial:	\$50
Church (No Daily Activities):	\$50
Church (Daily Activities):	\$100
School:	\$200
Industry:	\$250

Taylors Fire and Sewer District
Summary of Expenditures on Sewer Services
December 1, 2010 - June 30, 2011

I & I REDUCTION EXPENDITURES

GIS/Technology	\$9,892	
Maintenance - Equipment	\$162,614	
Personnel/Training/Safety	\$322,284	
Maintenance - Contract Services	\$254,268	
Total I & I Expenditures	\$749,058	94%

ADDITIONAL EXPENDITURES

TFSD Shared Overhead	\$0	
Facilities/Utilities	\$14,836	
Pump Station	\$16,703	
Septic Tank Repair/Maintenance	\$1,875	
Professional Services	\$14,634	
Capital Expenditures	\$0	
Total Additional Expenditures	\$48,048	6%

Total Expenditures	\$797,106
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Taylors Fire and Sewer District
Summary of Expenditures on Sewer Services
July 1, 2011 - June 30, 2012

I & I REDUCTION EXPENDITURES

GIS/Technology	\$2,531	
Maintenance - Equipment	\$101,423	
Personnel/Training/Safety	\$539,349	
Maintenance - Contract Services	\$323,895	
R&M Building and Grounds (ROW's, etc)	\$19,304	
Total I & I Expenditures	\$986,502	85%

ADDITIONAL EXPENDITURES

TFSD Shared Overhead	\$131,657	
Facilities/Utilities	\$22,128	
Pump Station	\$3,280	
Septic Tank Repair/Maintenance	\$4,445	
Professional Services	\$13,560	
Capital Expenditures	\$4,512	
Total Additional Expenditures	\$179,582	15%

Total Expenditures	\$1,166,084
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Taylors Fire & Sewer District Finance Summary

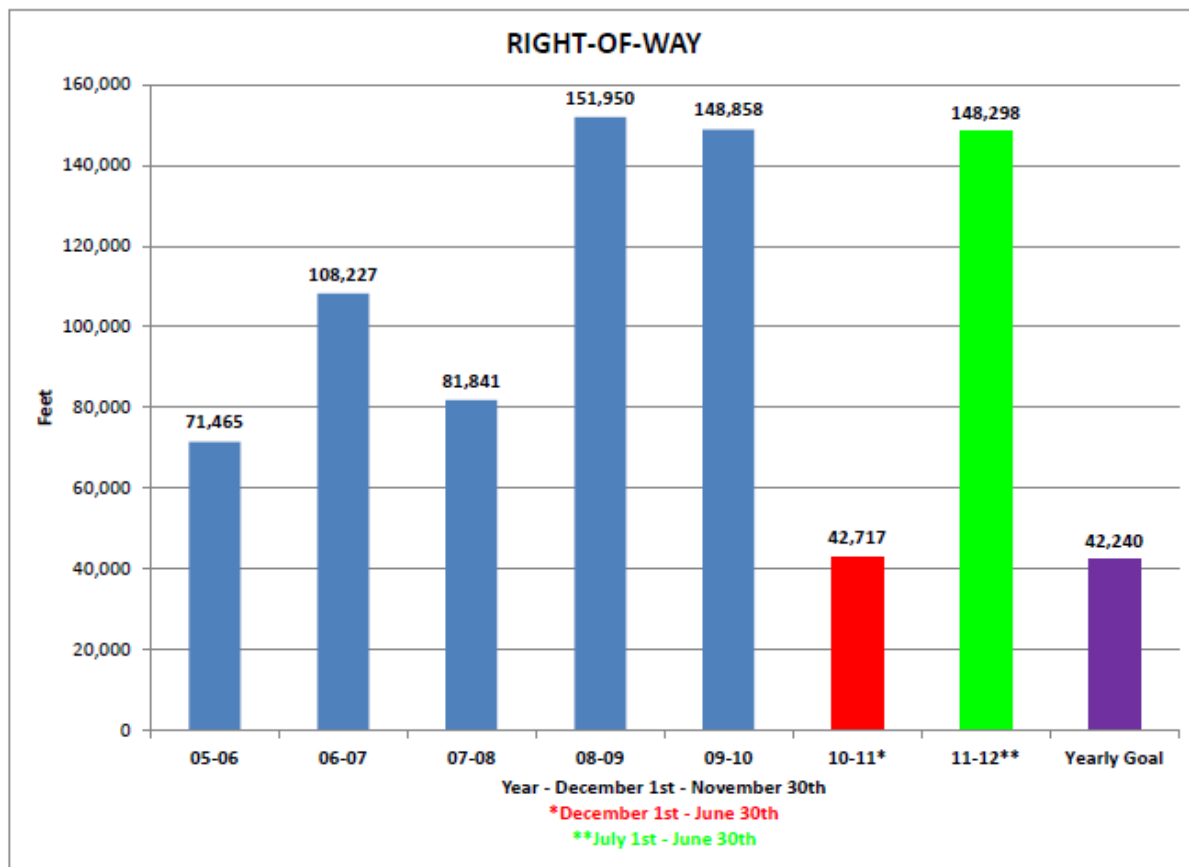
YEAR - December 1st - November 30th *December 1st - June 30th **July 1st - June 30th	GIS / TECHNOLOGY	MAINTENANCE - EQUIPMENT	PERSONNEL / TRAINING / SAFETY	MAINTENANCE - CONTRACT SERVICES	R&M BUILDINGS & GROUNDS / UTILITIES	PUMP STATION	SEPTIC TANK REPAIR / MAINTENANCE	PROFESSIONAL SERVICES / CAPITAL EXPENDITURES	TFSD SHARED OVERHEAD	TOTALS EXPENDITURES
06-07	\$ 4,779	\$ 272,571	\$ 446,747	\$ 168,009	\$ 19,725	\$ 11,358	\$ 4,069	\$ 89,666	\$ 0	\$ 1,016,924
07-08	\$ 12,317	\$ 296,105	\$ 537,089	\$ 185,437	\$ 24,016	\$ 27,192	\$ 3,543	\$ 12,387	\$ 0	\$ 1,098,086
08-09	\$ 5,443	\$ 218,553	\$ 516,702	\$ 76,954	\$ 36,437	\$ 17,624	\$ 3,880	\$ 17,149	\$ 0	\$ 892,742
09-10	\$ 11,612	\$ 265,113	\$ 537,383	\$ 208,140	\$ 20,487	\$ 37,676	\$ 3,250	\$ 16,292	\$ 0	\$ 1,099,953
10-11*	\$ 9,892	\$ 162,614	\$ 322,284	\$ 254,268	\$ 14,836	\$ 16,703	\$ 1,875	\$ 14,634	\$ 0	\$ 797,106
11-12**	\$ 2,531	\$ 101,423	\$ 539,349	\$ 323,895	\$ 41,432	\$ 3,280	\$ 4,445	\$ 18,072	\$ 131,657	\$ 1,166,084

Operations & Maintenance

Tailors Fire & Sewer District Work Order Summary

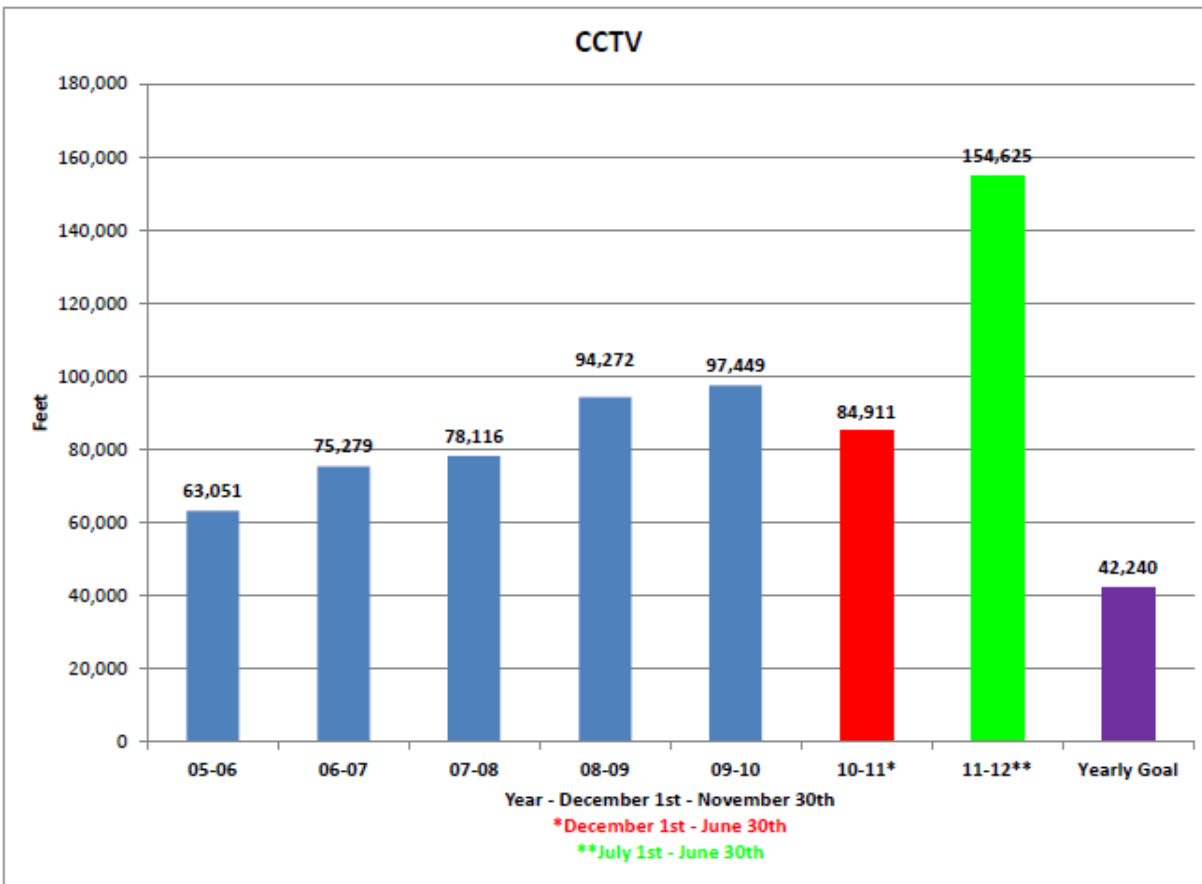
YEAR - December 1st - November 30th	RIGHT-OF-WAY	CCTV	REPAIR/REPLACE	CLEANING	ROOT REMOVAL	SEPTIC TANKS	MANHOLE INSPECTION	MANHOLE REPAIR	SMOKE TESTING	ROOT CONTROL
05-06	71,465	63,051	1,403	73,141	10,011	23	306	45	51,954	4,646
06-07	108,227	75,279	1,653	135,152	10,673	38	307	112	63,440	0
07-08	81,841	78,116	2,066	53,617	8,884	28	428	113	55,846	10,626
08-09	151,950	94,272	7,034	96,013	4,787	17	304	254	47,256	11,813
09-10	148,858	97,449	6,112	136,881	7,598	12	329	234	55,501	8,783
10-11*	42,717	84,911	3,760	103,543	7,558	0	128	45	4,346	11,207
11-12**	148,298	154,625	7,465	236,912	22,075	0	590	166	10,826	18,214
Total	753,356	647,703	29,493	835,259	71,586	118	2,392	969	289,169	65,289
Goal	278,080	278,080	278,080	278,080	278,080	118	1,975	278,080	278,080	5%
%Above Goal	202%	157%	236%	236%	236%	25%	25%	25%	25%	5%

Right-of-Way Maintenance:



Per our agreement with ReWa, Taylors Fire & Sewer District will be working and/or inspecting at least 8 miles or 42,240 L.F. per year of right-of-way maintenance. As the chart above demonstrates we have exceeded our yearly goal. 2005 to 2010 (indicated by the blue column) were reported from December 1st to November 30th. 2010 to 2011 (indicated by the red column) was reported from December 1st to June 30th. 2011 to 2012 (indicated by the green column) was reported based off of Taylors' fiscal year, July 1st to June 30th, and will be reported as such going forward. Our yearly goal is indicated in purple.

CCTV:



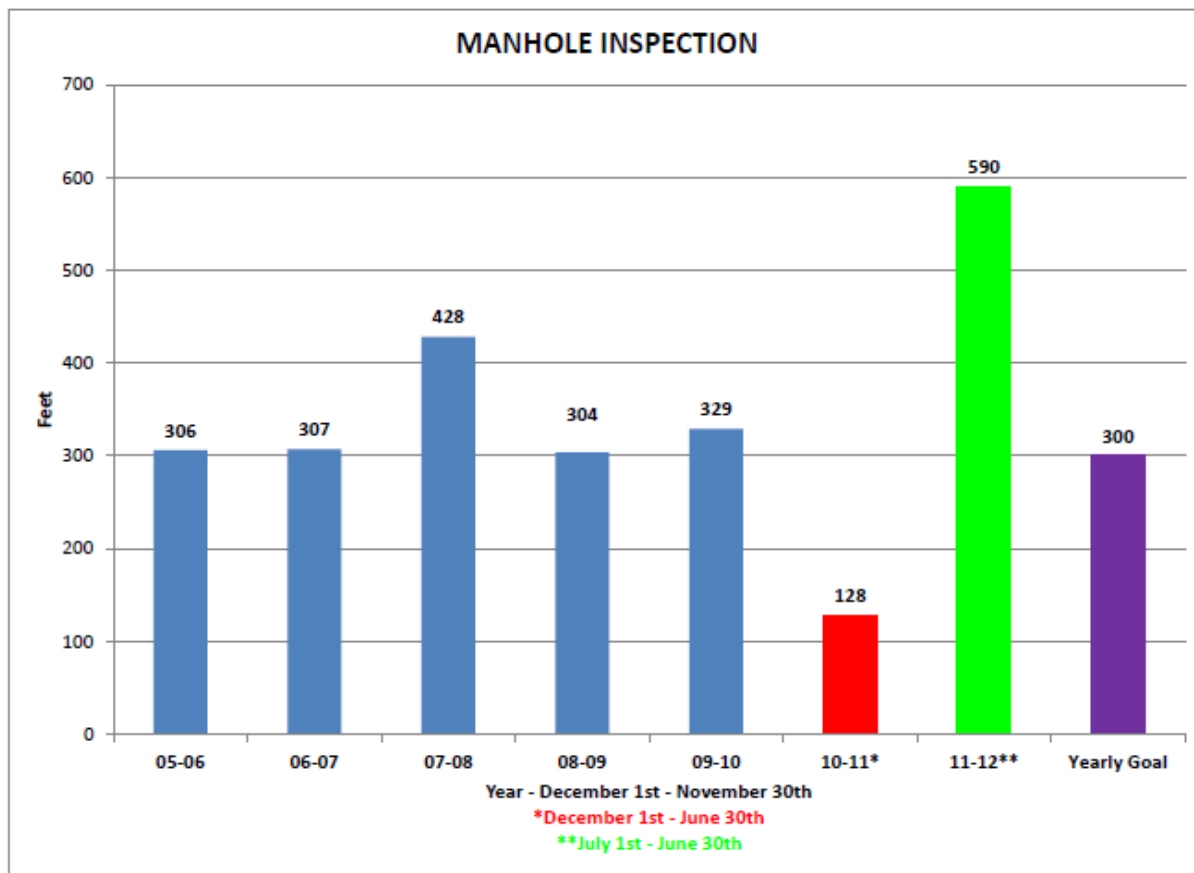
Per our agreement with ReWa, Taylors Fire & Sewer District will be working and/or inspecting at least 8 miles or 42,240 L.F. per year of CCTV. As the chart above demonstrates we have exceeded our yearly goal. 2005 to 2010 (indicated by the blue column) were reported from December 1st to November 30th. 2010 to 2011 (indicated by the red column) was reported from December 1st to June 30th. 2011 to 2012 (indicated by the green column) was reported based off of Taylors' fiscal year, July 1st to June 30th, and will be reported as such going forward. Our yearly goal is indicated in purple.

Cleaning Maintenance:



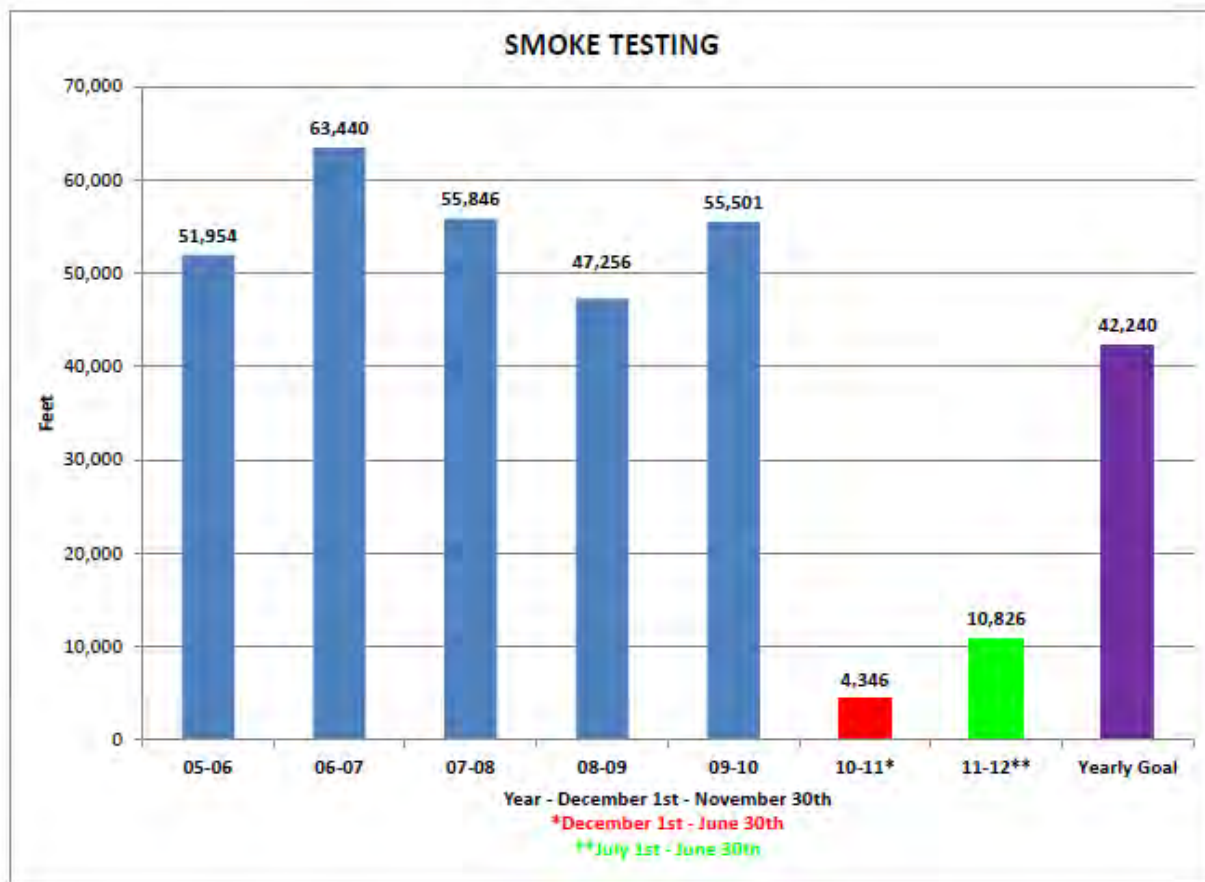
Per our agreement with ReWa, Taylors Fire & Sewer District will be working and/or inspecting at least 8 miles or 42,240 L.F. per year of cleaning maintenance. As the chart above demonstrates we have exceeded our yearly goal. 2005 to 2010 (indicated by the blue column) were reported from December 1st to November 30th. 2010 to 2011 (indicated by the red column) was reported from December 1st to June 30th. 2011 to 2012 (indicated by the green column) was reported based off of Taylors' fiscal year, July 1st to June 30th, and will be reported as such going forward. Our yearly goal is indicated in purple.

Manhole Inspections:



Per our agreement with ReWa, Taylors Fire & Sewer District will be working and/or inspecting at least 300 manholes per year. As the chart above demonstrates we have exceeded our yearly goal in 2011 to 2012. 2005 to 2010 (indicated by the blue column) were reported from December 1st to November 30th. 2010 to 2011 (indicated by the red column) was reported from December 1st to June 30th. 2011 to 2012 (indicated by the green column) was reported based off of Taylors' fiscal year, July 1st to June 30th, and will be reported as such going forward. Our yearly goal is indicated in purple. Due to this time frame of only 7 months in 2010 to 2011 were not able to reach the goal of 300. We were able to exceed in 2011 to 2012 to make up for not meeting the goal from the previous time frame.

Smoke Testing:



Per our agreement with ReWa, Taylors Fire & Sewer District will be working and/or inspecting at least 8 miles or 42,240 L.F per year of smoke testing. As the chart above demonstrates we have not met our yearly goal in 2011 to 2012. In March 2011, Taylors Fire & Sewer District received a complaint from a citizen in the District about our smoke testing. Due to a potential law suit, Taylors Fire & Sewer District lawyers advised us to not do any smoke testing until the issue is resolved. As you can see from the chart above we were only able to do minimal smoke testing for the last year. This issue seems to be resolved for now so we can get back to our smoke testing schedule. 2005 to 2010 (indicated by the blue column) were reported from December 1st to November 30th. 2010 to 2011 (indicated by the red column) was reported from December 1st to June 30th. 2011 to 2012 (indicated by the green column) was reported based off of Taylors' fiscal year, July 1st to June 30th, and will be reported as such going forward. Our yearly goal is indicated in purple.

Flow Monitoring:

The Board of Commissioners decided to contract with The Clearwater Group to provide flow monitoring services. After the preliminary review and evaluation of the data, it became apparent that Taylors had a problem with the flow monitor data gathered. It seems that a large segment of our mains do not have enough flow to obtain an accurate measurement.

Attached is the report from The Clearwater Group.

Summary

Taylors Fire & Sewer District is steadily moving forward and quickly becoming one of the leaders in the local sewer industry. From innovative methodologies to plain old common sense and ingenuity, Taylors has risen to and exceeded the challenge of not only reducing inflow and infiltration but setting a higher standard for others to follow.

The staff has excelled in training opportunities. All of the employees of Taylors Fire & Sewer District's Sewer Department, with the exception of one new employee, are currently certified Wastewater Collection System Operators. One District Administration employee is also a certified Wastewater Collection System Operator.

Certification's: Number of Employees & Certification's
Wastewater Collection System Operators: A's <u>2</u> B's <u>2</u> C's <u>3</u> D's <u>4</u>
Biological Wastewater Operator Trainee: <u>1</u>
Nassco's PACP (Pipeline Assessment Certification Program) and MACP (Manhole Assessment Certification Program) Certified – <u>4</u>

Taylors Fire & Sewer District employees are not only dedicated to their positions with the organization, but are also very involved in the Water Environment Association of South Carolina and the Water Environment Federation. Our Director of Sewer Services is Past Chair of the Blue Ridge Foothills District. She is currently the Vice Chair of the Voluntary Certification Committee and serves on many other committees with the Water Environment Association of South Carolina.

The implementation of a User Fee has been designated for the major capital improvements to ensure the funds needed are available as we continue to not only maintain the integrity of our sewer system, but also expand our services to meet the growth of the Taylors area. We continue to become more creative and seek out alternative avenues to make each investment the most economically feasible.

It continues to be the mission of Taylors Fire & Sewer District, to not only improve the quality of life for our residents, but to also be the best stewards of their tax dollars as humanly possible. We believe our records speak for themselves as we consistently exceed our established goals while remaining within, and often below, the confines of our budget.

Taylors Fire and Sewer District

Flow Monitoring Report

Prepared by

The Clearwater Group, Inc.

August 23, 2012

Introduction

Taylors Fire and Sewer District (“Taylors”) has been performing significant investigation and rehabilitation of its sewer system over the last decade. Included in this report are a series of documents that summarize the flow monitoring and Inflow and Infiltration (“I/I”) status of various portions of the Taylors sewer system for the period December 2010 through June 2012.

Flow Monitoring

Flow monitoring of 22.2 miles of gravity sewer lines in the Taylors system is documented in this report. This represents approximately 15% of the Taylors collection system. Sigma 910 and FloDar Flowmeters owned and maintained by Taylors were used to monitor flow.

Table 1 contains a brief description of the portions of the system flow monitored during the time period December 2010 through June 2012.

Table 1 Areas of the Taylors System Flow Monitored

Mini-System	Metered Manhole Number	Street Location	Feet of Pipe	Miles of Pipe
6	MH 6-274D	Wintergreen Ln	5,014	0.9
6	MH 6-192	Wood Heights Rd ROW	38,665	7.3
6	MH 6-552	Tanner Rd	2,639	0.5
6	MH 6-028	Old Mill Rd	11,578	2.2
6	MH 6-330	Stalling Rd	4,342	0.8
6	MH 6-107	Bellview Dr ROW	21,770	4.1
2	MH 2-008	Creighton Dr	34,037	6.4
Total Miles				22.2

Results

Table 2 contains the results of flow monitoring as compared to the Babbitt equation calculated peaking factor. Supporting calculations and documentation for flow monitoring are provided for each manhole as Appendix A.

The 12.8 mile portion of the monitored system, associated with MH 6-274D, MH 6-192, MH 6-552 and MH 6-107, were found to meet the Babbitt peaking factor with regards to Inflow.

For the remaining portions monitored, the allowable Babbitt peaking factor was met for smaller or less intense rainfall events, but the Babbitt was slightly exceeded for certain rainfall conditions. Further investigation of inflow sources in these areas needs to be performed and these sources eliminated to complete work in these sections.

MH 6-274D Wintergreen Lane – This 0.9 mile residential and commercial portion of the Taylors system appears to be in good condition. The wet weather flow Peaking Factor (PF) was well below the allowable Babbitt PF. No further action is needed in this portion of the system at this time.

MH 6-192 Wood Heights Rd – This 7.3 mile residential portion of the Taylors system appears to be in good condition. The wet weather flow Peaking Factor (PF) was well below the allowable Babbitt PF. No further action is needed in this portion of the system at this time.

MH 6-552 Tanner Rd – This 0.5 mile portion of the Taylors system contains both residential and commercial/industrial sources. It appears to be in good condition. The wet weather flow Peaking Factor was below the allowable Babbitt PF or the allowable EPA excessive infiltration rate. This was a short section of pipe to monitor and the average daily flow is very low due to the commercial/industrial input along with a small residential population. This very low average daily flow caused the Babbitt PF to be slightly exceeded during one of the three storm events, but because it was still significantly lower in comparison to the EPA excessive I&I values, this portion of the system is considered to not have excessive I&I. No further action is needed in this portion of the system at this time.

MH 6-107 Bellview Dr – This 4.1 mile residential portion of the Taylors system appears to be in good condition. The wet weather Peaking Factor was well below the allowable Babbitt PF. No further action is needed in this portion of the system at this time.

MH 6-028 Old Mill Rd – This 2.2 mile portion of the Taylors system contains primarily residential input. It met the Babbitt PF for both a small storm event and a substantially larger rainfall event. However the PF increased slightly above the allowable PF for an intense 1.53” rainfall event. Thus, there appears to still be one or more significant openings in the system, most likely broken cleanouts or manhole covers, which leak significantly when standing water occurs. This area should be re-smoked to identify and correct these likely Inflow sources.

MH 6-330 Stalling Rd – This 0.8 mile residential portion of the Taylors system met the Babbitt PF for a small storm event, however for larger events, e.g. 1.53” and above, the PF increased

substantially and exceeded the allowable Babbitt. Some rehab work has been completed in this area, but there appears to still be several significant openings in the system, most likely broken cleanouts or manhole covers, which leak significantly when standing water occurs. This area should be re-smoked to identify and correct these likely Inflow sources.

MH 2-008 Creighton Dr ROW – This 6.4 mile primarily residential portion of the Taylors system meets the Babbitt PF for smaller storm events, however for one larger event, e.g. a 2.36” rainfall, the PF increased to a level just slightly above the allowable Babbitt PF. Thus, there appears to be one or more significant openings in the system, most likely broken cleanouts or manhole covers, which leak significantly when standing water occurs. This area should be re-smoked to identify and correct these likely Inflow sources.

Table 2. Flow Monitoring Summary

Project	Meter Location MH #	Rain Event Dates	Rainfall Totals	Peaking Factor (PF)	Babbitt Allowable	PF Below Babbitt Y/N	Comments
Mini-System 6	MH 6-274D Wintergreen Lane	Apr 16, 2011	1.46	8.3	8.6	Y ¹	¹ This short section of pipe has very low avg daily flow due to commercial businesses connected in this area and a small residential population.
5,014'		May 25, 2011	1.14	1.5	8.6	Y	
0.9 mi		July 25, 2011	1.12	1.6	8.6	Y	
Mini-System 6	MH 6-192 Wood Heights Rd ROW	Nov 30, 2010	2.36	2.9	5.5	Y	
38,665'		Feb 1, 2011	1.21	5.3	5.5	Y	
7.3 mi		Feb 28, 2011	1.02	2.8	5.5	Y	
Mini-System 6	MH 6-552 Tanner Rd	Apr 15, 2011	1.46	10.0	8.8	Y ¹	¹ This short section of pipe has very low avg daily flow due commercial/industrial connections and a small residential population. This low avg daily flow distorts the peak factor.
2,639'		May 26, 2011	1.14	5.7	8.8	Y	
0.5 mi		July 25, 2011	1.12	2.0	8.8	Y	
Mini-System 6	MH 6-028 Old Mill Rd	Nov 30, 2010	2.36	3.9	6.8	Y	
11,578'		Feb 1, 2011	1.23	3.1	6.8	Y	
2.2 mi		Feb 4, 2011	1.53	7.2	6.8	N	

Project	Meter Location MH #	Rain Event Dates	Rainfall Totals	Peaking Factor (PF)	Babbitt Allowable	PF Below Babbitt Y/N	Comments
Mini-System 6	MH 6-330 Stalling Rd	Nov 30, 2010	2.36	7.1	6.6	N	
4,342'		Feb 1, 2011	1.12	4.2	6.6	Y	
0.8 mi		Feb 4, 2011	1.53	8.9	6.6	N	
Mini-System 6	MH 6-107 Bellview Dr ROW	Nov 30, 2010	2.36	5.0	5.0	Y	
21,770'		Feb 1, 2011	1.23	3.8	5.0	Y	
4.1 mi		Feb 28, 2011	1.02	3.2	5.0	Y	
Mini-System 2	MH 2-008 Creighton Dr ROW	Nov 30, 2010	2.36	5.3	4.8	N	
34,037'		Feb 1, 2011	1.23	2.8	4.8	Y	
6.4 mi		Feb 4, 2011	1.53	4.2	4.8	Y	

Conclusions

Flow monitoring of 22.2 miles, approximately 15%, of gravity sewer lines in the Taylors system was completed during the period of December 2010 through July 2011. Approximately 12.8 miles of this portion measured was found to meet peak flow standards and requires no further study or rehabilitation work at this time. Some of the system measured, approximately 9.4 miles, is close to the Babbitt allowable Peak Flow and will likely require identification and repair of only a few Inflow sources.

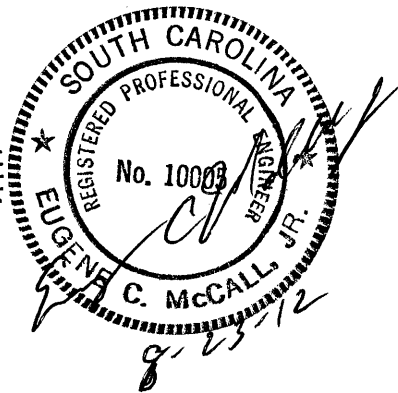
Respectfully submitted,



The Clearwater Group, Inc.

Eugene C. McCall, Jr., Ph.D., P.E., J.D.

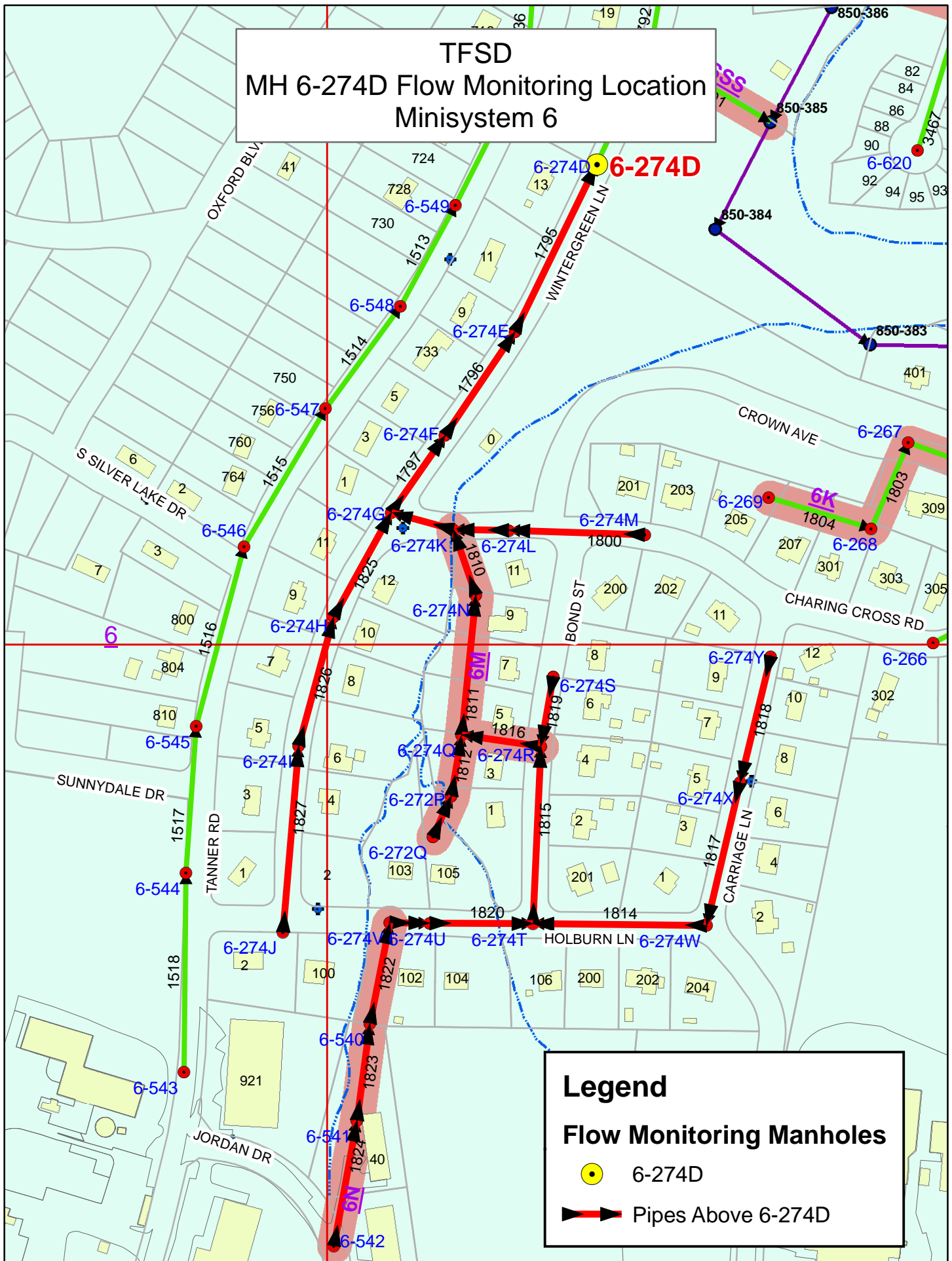
President



APPENDIX A – Location Map, Dry Weather, and Wet Weather flow data and calculations

MH 6-274D

TFSD
MH 6-274D Flow Monitoring Location
Minisystem 6



MH 6-274D
 Plan All Ect 1
 April 15, 2011

Taylors Fire & Sewer Flow Meter Data Sheet

System Data

Meter Location: <u>6-274D</u>	Pipe Size (in.): <u>8</u>
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Inch-Miles of Sewer Upstream of Meter						
Pipe Size (in.)	Length (ft.)	Inch-Miles		Pipe Size (in.)	Length (ft.)	Inch-Miles
8	5,014	7.60		24		0.00
10		0.00		27		0.00
12		0.00		30		0.00
14		0.00		36		0.00
15		0.00		42		0.00
16		0.00		48		0.00
18		0.00		54		0.00
20		0.00		60		0.00
21		0.00		72		0.00
Total =						7.60

Dry Weather Flow

Average Daily Flow calculated from the following dates: From: <u>05/20/11</u> To: <u>05/25/11</u>	Avg. Daily Flowrate = <u>4,000</u> gpd Avg. Flow Depth = <u>0.400</u> inches Peak Hourly Flowrate = <u>15,000</u> gpd Peak Factor = <u>3.75</u>
---	--

Notes: _____

Completed By: EC Adell Date: 2-5-2012

- computer calculated (formula)

Taylors Fire & Sewer Flow Meter Data Sheet

Rainfall and I/I Event Duration

Rainfall: Start: 4/15/11 21:15 End: 4/16/11 12:30
Max. 24-hour Total: 1.46 in. Storm Total: 1.46 in.
I/I Event: Start: 4/15/11 20:15 End: 4/21/11 0:00

Dates and times that rainfall and I/I begin and end.

Wet Weather Event - I/I Analysis

Peak Flow Depth = 1.4 inches

I/I Event Duration = 123 hours

☐ Manhole Surcharged (Level exceeded pipe dia.)

I/I Volume = 41,000 gallons

Peak Hourly Flowrate = 33,000 gpd

Inflow and Infiltration Breakdown (optional)

Avg. Dry Weather Flow = 4,000 gpd

Dry Weather Infiltration = 1,000 gpd

Peak Factor = 8.25

Rainfall Induced Infiltration = 5,000 gpd

Avg. Wet Weather Flow = 11,000 gpd

Total Infiltration = 6,000 gpd

Avg. I/I Flow = 8,000 gpd

Infiltration Rate = 789 gpd/idm

Inch-Diameter Miles = 7.60 idm

Inflow = 2,000 gpd

I/I Rate = 1,053 gpd/idm

Inflow Rate = 263 gpd/idm

Notes:

Completed By EC Miller

Date: 2-5-2012

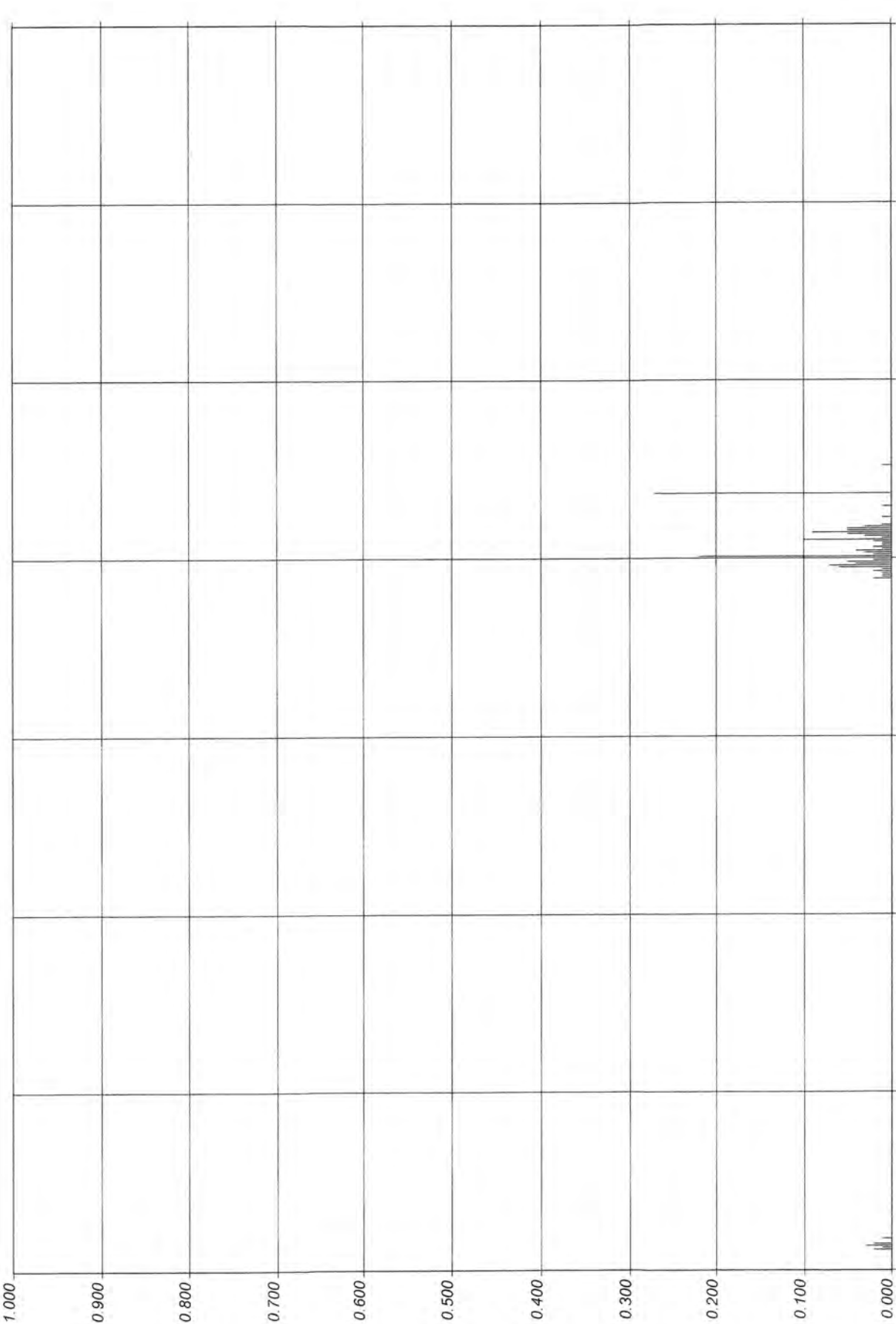
 - computer calculated (formula)

Rain 4/16/11

Site Id: 00000000 File name: 00000000.000

Graph span: 1 week

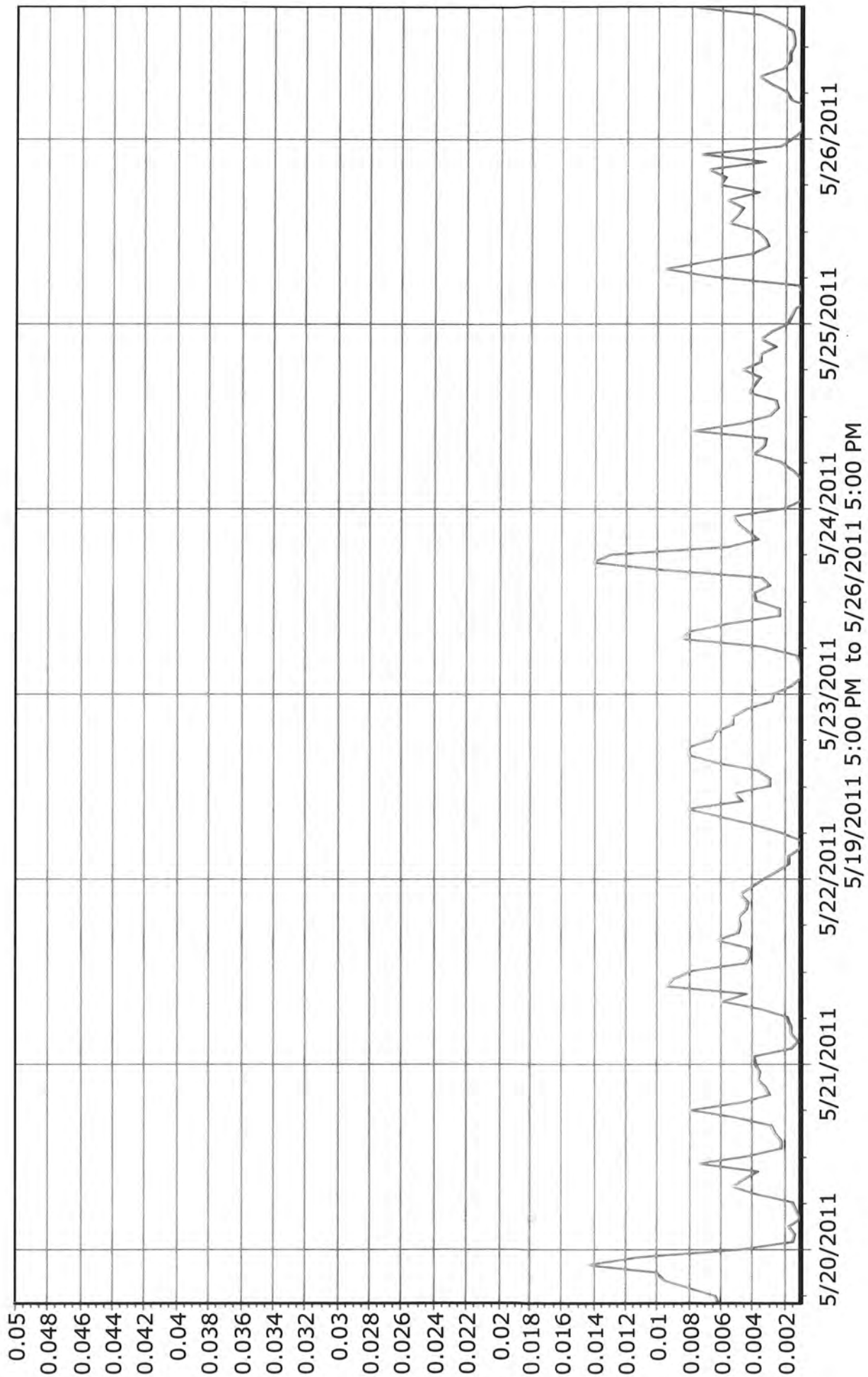
Rain (in.)



6-274D

Dry Weather Flow May. 2011

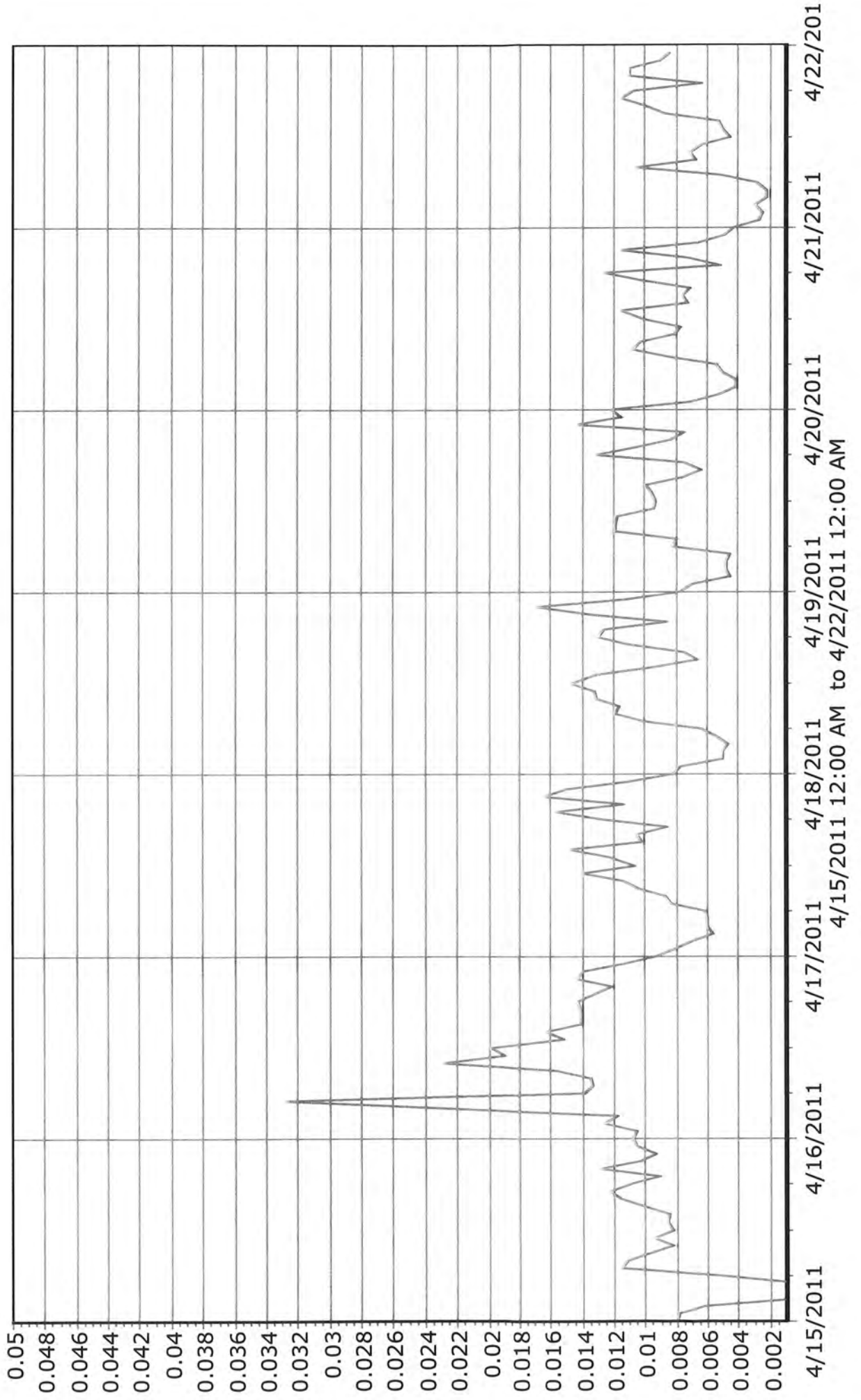
— Flow (mgd)



6-274D

Wet Weather Event 4/16/11

— Flow (mgd)



Taylors Fire & Sewer Flow Meter Data Sheet

MH 6-274D
Re: All Event 2
May 26, 2011

System Data

Meter Location: <u>6-274D</u>	Pipe Size (in.): <u>8</u>
-------------------------------	---------------------------

Inch-Miles of Sewer Upstream of Meter						
Pipe Size (in.)	Length (ft.)	Inch-Miles		Pipe Size (in.)	Length (ft.)	Inch-Miles
8	5,014	7.60		24		0.00
10		0.00		27		0.00
12		0.00		30		0.00
14		0.00		36		0.00
15		0.00		42		0.00
16		0.00		48		0.00
18		0.00		54		0.00
20		0.00		60		0.00
21		0.00		72		0.00
Total =						7.60

Dry Weather Flow

<p>Average Daily Flow calculated from the following dates:</p> <p>From: <u>05/20/11</u></p> <p>To: <u>05/25/11</u></p>	<p>Avg. Daily Flowrate = <u>4,000</u> gpd</p> <p>Avg. Flow Depth = <u>0.400</u> inches</p> <p>Peak Hourly Flowrate = <u>15,000</u> gpd</p> <p>Peak Factor = <u>3.75</u></p>
--	---

Notes: _____

Completed By: EC Mella

Date: 2-5-2012

- computer calculated (formula)

Taylor's Fire & Sewer Flow Meter Data Sheet

Rainfall and I/I Event Duration

Rainfall: Start: 5/26/11 18:45 End: 5/27/11 12:15

Max. 24-hour Total: 1.14 in. Storm Total: 1.14 in.

I/I Event: Start: 5/26/11 17:45 End: 5/28/11 0:00

Dates and times that rainfall and I/I begin and end.

Wet Weather Event - I/I Analysis

Peak Flow Depth = 0.6 inches

I/I Event Duration = 30 hours

☐ Manhole Surcharged (Level exceeded pipe dia.)

I/I Volume = 0 gallons

Peak Hourly Flowrate = 6,000 gpd

Inflow and Infiltration Breakdown (optional)

Avg. Dry Weather Flow = 4,000 gpd

Dry Weather Infiltration = 0 gpd

Peak Factor = 1.50

Rainfall Induced Infiltration = 0 gpd

Avg. Wet Weather Flow = 4,000 gpd

Total Infiltration = 0 gpd

Avg. I/I Flow = 0 gpd

Infiltration Rate = 0 gpd/idm

Inch-Diameter Miles = 7.60 idm

Inflow = 0 gpd

I/I Rate = 0 gpd/idm

Inflow Rate = 0 gpd/idm

Notes:

Completed By ES Hall

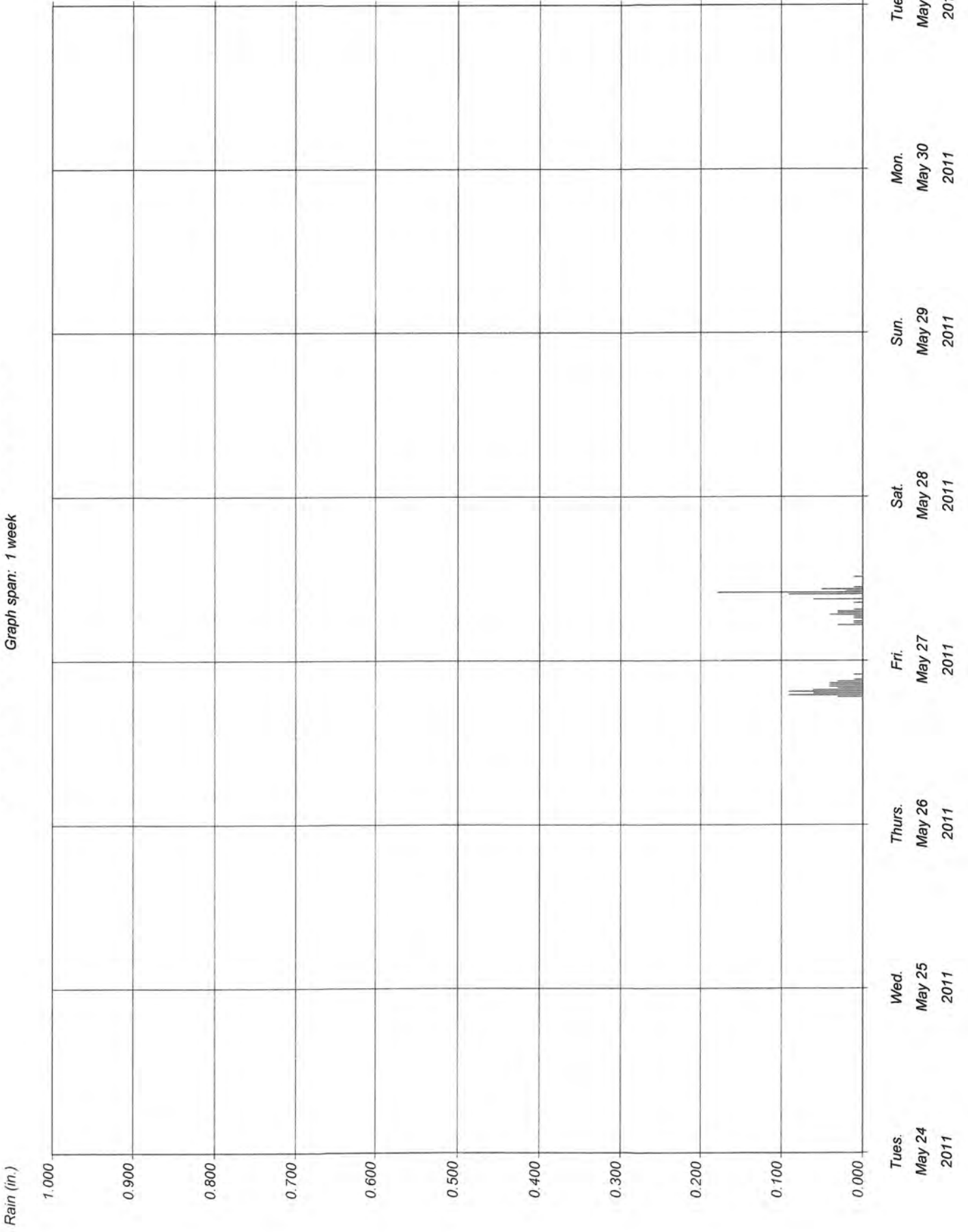
Date: 2-5-2012

 - computer calculated (formula)

Rain 5/26/11

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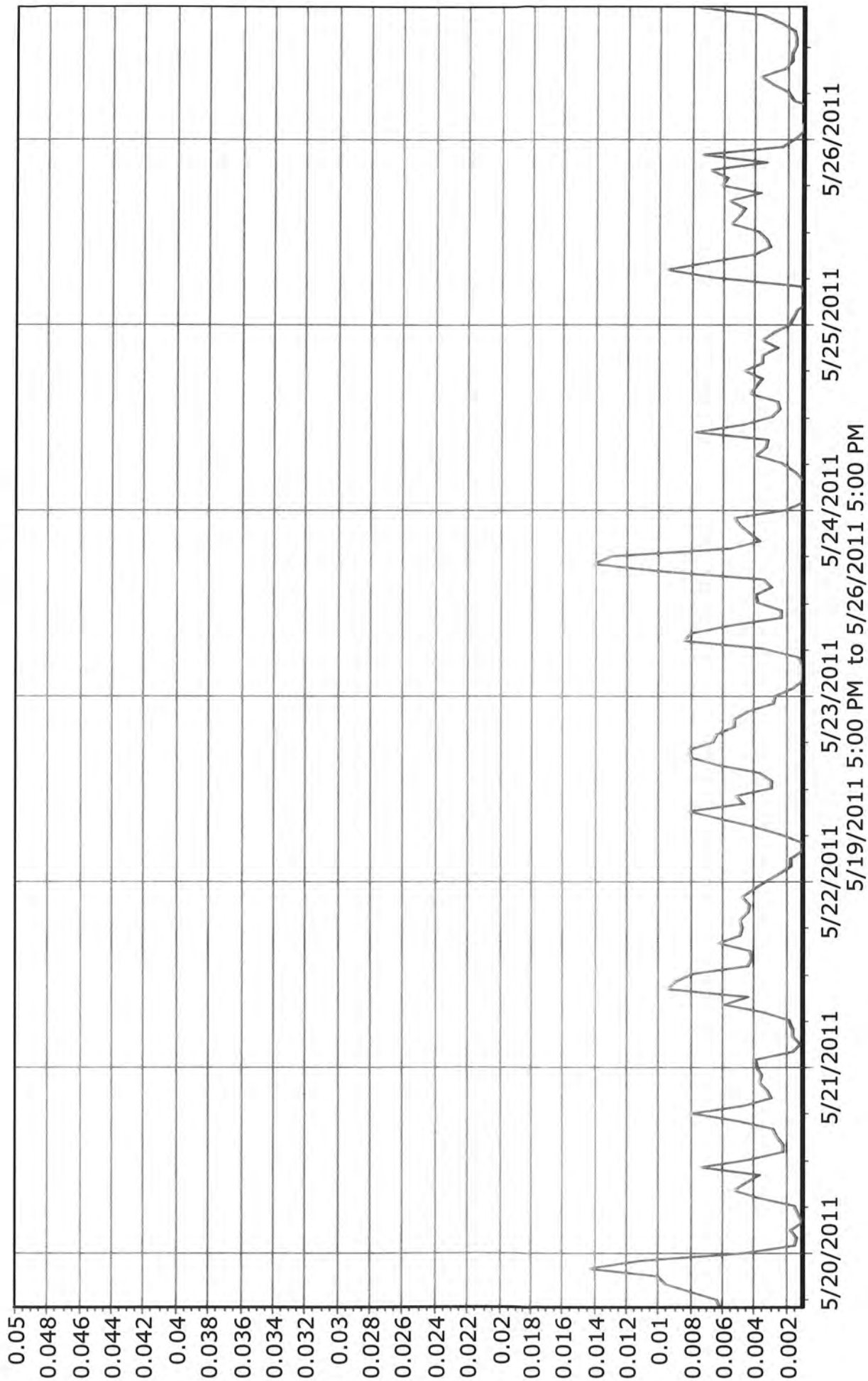
Graph span: 1 week



6-274D

Dry Weather Flow May. 2011

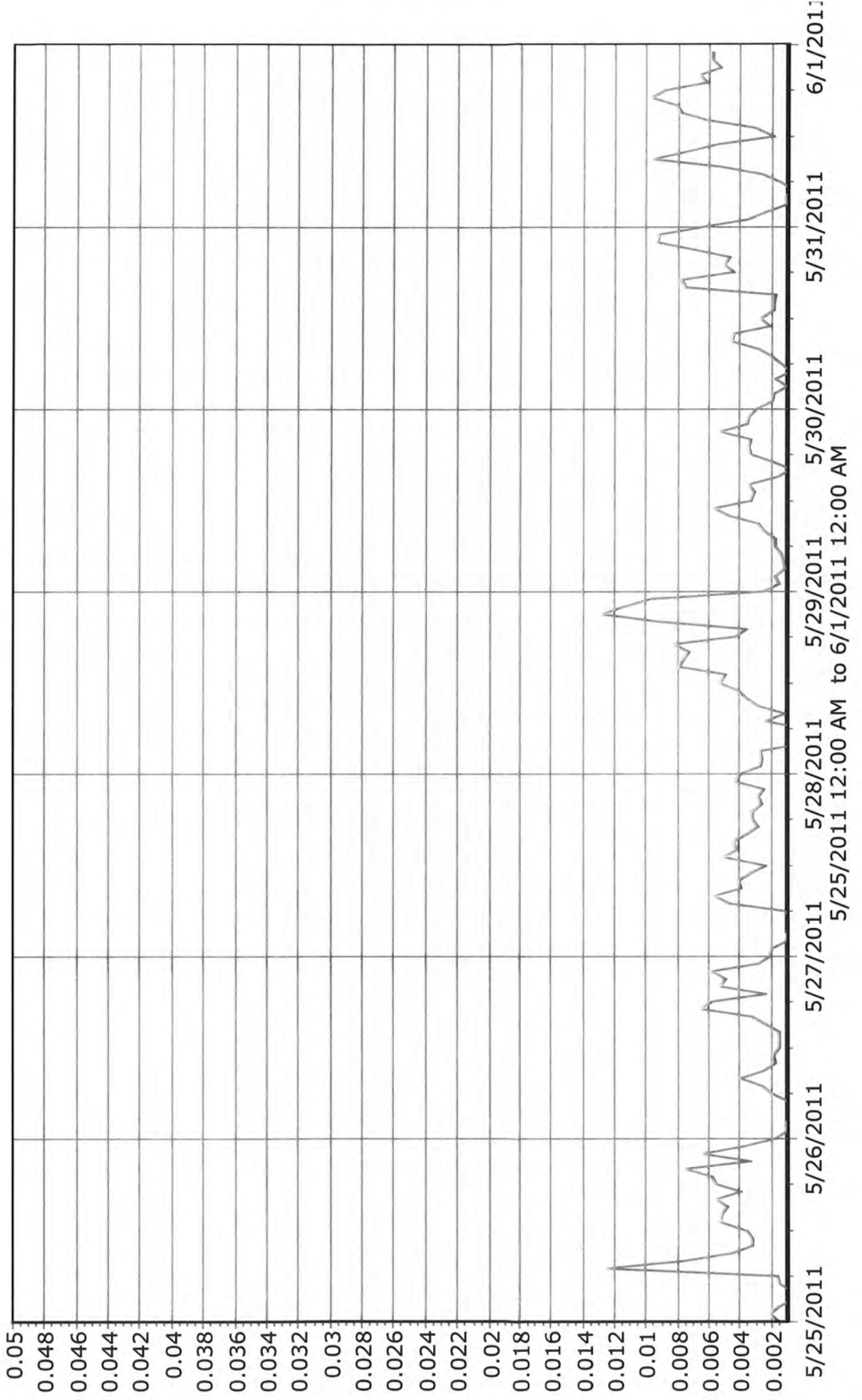
— Flow (mgd)



6-274D

Wet Weather Event 5/26/11

— Flow (mgd)



Taylors Fire & Sewer Flow Meter Data Sheet

*MH 6-274D
Reinforced
July 25, 2012*

System Data

Meter Location: 6-274D

Pipe Size (in.): 8

Inch-Miles of Sewer Upstream of Meter						
Pipe Size (in.)	Length (ft.)	Inch-Miles		Pipe Size (in.)	Length (ft.)	Inch-Miles
8	5,014	7.60		24		0.00
10		0.00		27		0.00
12		0.00		30		0.00
14		0.00		36		0.00
15		0.00		42		0.00
16		0.00		48		0.00
18		0.00		54		0.00
20		0.00		60		0.00
21		0.00		72		0.00
Total =						7.60

Dry Weather Flow

<p>Average Daily Flow calculated from the following dates:</p> <p>From: <u>06/27/11</u></p> <p>To: <u>07/02/11</u></p>	<p>Avg. Daily Flowrate = <u>5,000</u> gpd</p> <p>Avg. Flow Depth = <u>0.500</u> inches</p> <p>Peak Hourly Flowrate = <u>12,000</u> gpd</p> <p>Peak Factor = <u>2.40</u></p>
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Notes: _____

Completed By: ECM

Date: 8-12-12

 - computer calculated (formula)

Taylors Fire & Sewer Flow Meter Data Sheet

Rainfall and I/I Event Duration

Rainfall:	Start: <u>7/25/11 14:15</u>	End: <u>7/25/11 20:45</u>
	Max. 24-hour Total: <u>1.12 in.</u>	Storm Total: <u>1.12 in.</u>
I/I Event:	Start: <u>7/25/11 13:15</u>	End: <u>7/26/11 0:00</u>
Dates and times that rainfall and I/I begin and end.		

Wet Weather Event - I/I Analysis

Peak Flow Depth = <u>0.7</u> inches	I/I Event Duration = <u>11</u> hours
<input type="checkbox"/> Manhole Surcharged (Level exceeded pipe dia.)	I/I Volume = <u>0</u> gallons
Peak Hourly Flowrate = <u>8,000</u> gpd	<u>Inflow and Infiltration Breakdown (optional)</u>
Avg. Dry Weather Flow = <u>5,000</u> gpd	Dry Weather Infiltration = <u>0</u> gpd
Peak Factor = <u>1.60</u>	Rainfall Induced Infiltration = <u>0</u> gpd
Avg. Wet Weather Flow = <u>5,000</u> gpd	Total Infiltration = <u>0</u> gpd
Avg. I/I Flow = <u>0</u> gpd	Infiltration Rate = <u>0</u> gpd/idm
Inch-Diameter Miles = <u>7.60</u> idm	Inflow = <u>0</u> gpd
I/I Rate = <u>0</u> gpd/idm	Inflow Rate = <u>0</u> gpd/idm

Notes: _____

Completed By EC Hall

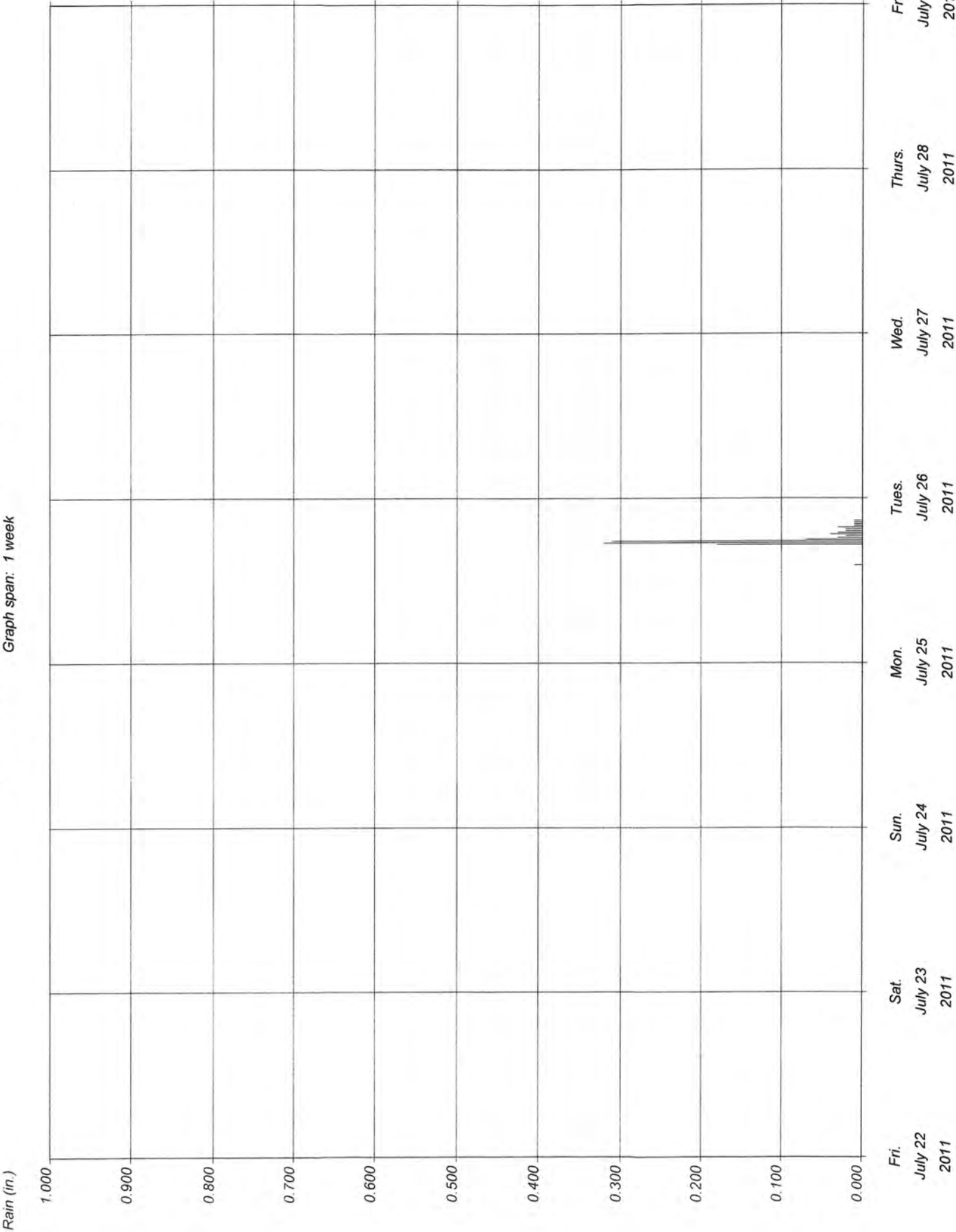
Date: 8-12-12

 - computer calculated (formula)

Rain 7/25/11

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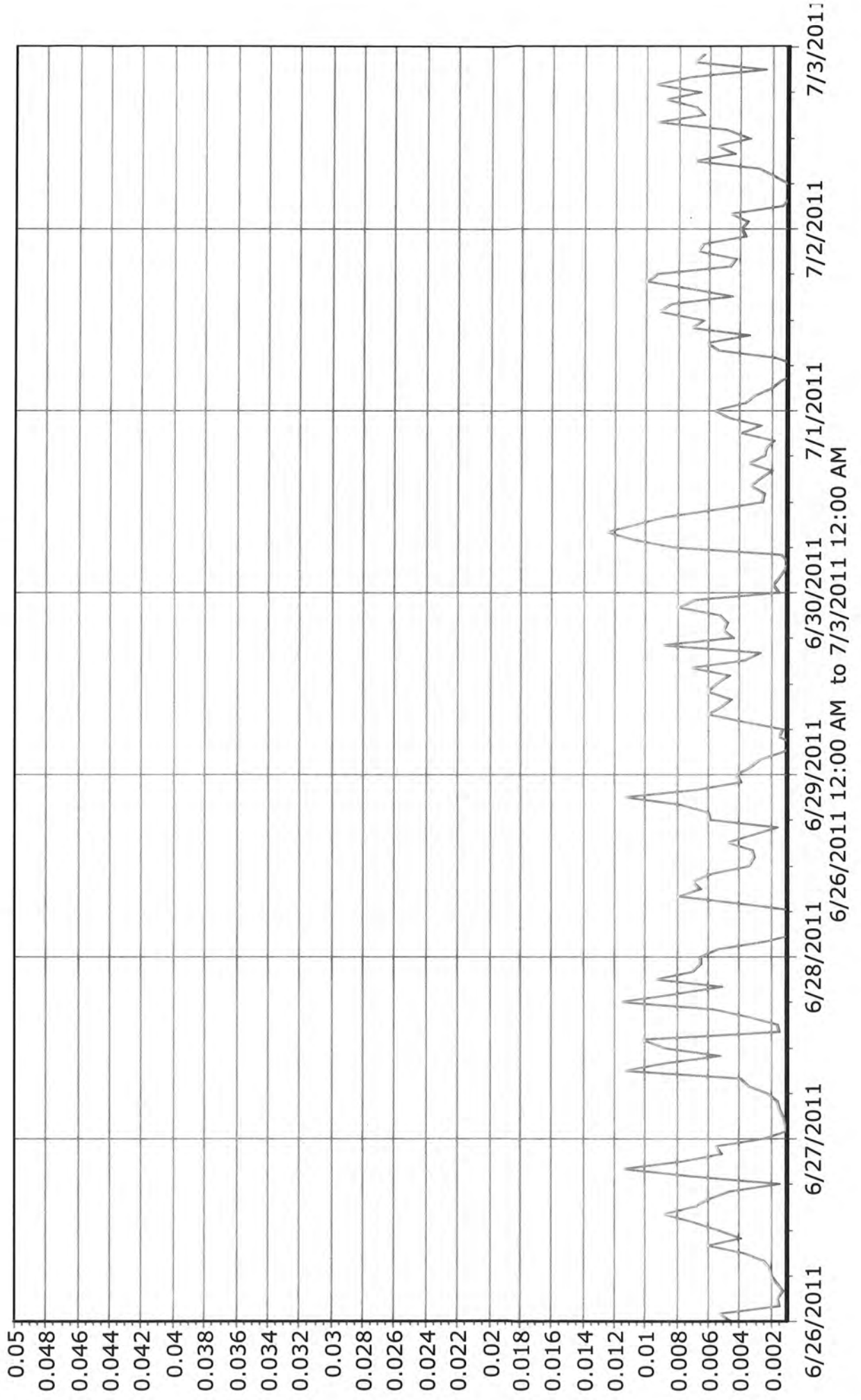
Graph span: 1 week



6-274D

Dry Weather Flow 6/27/11 to 7/2/11

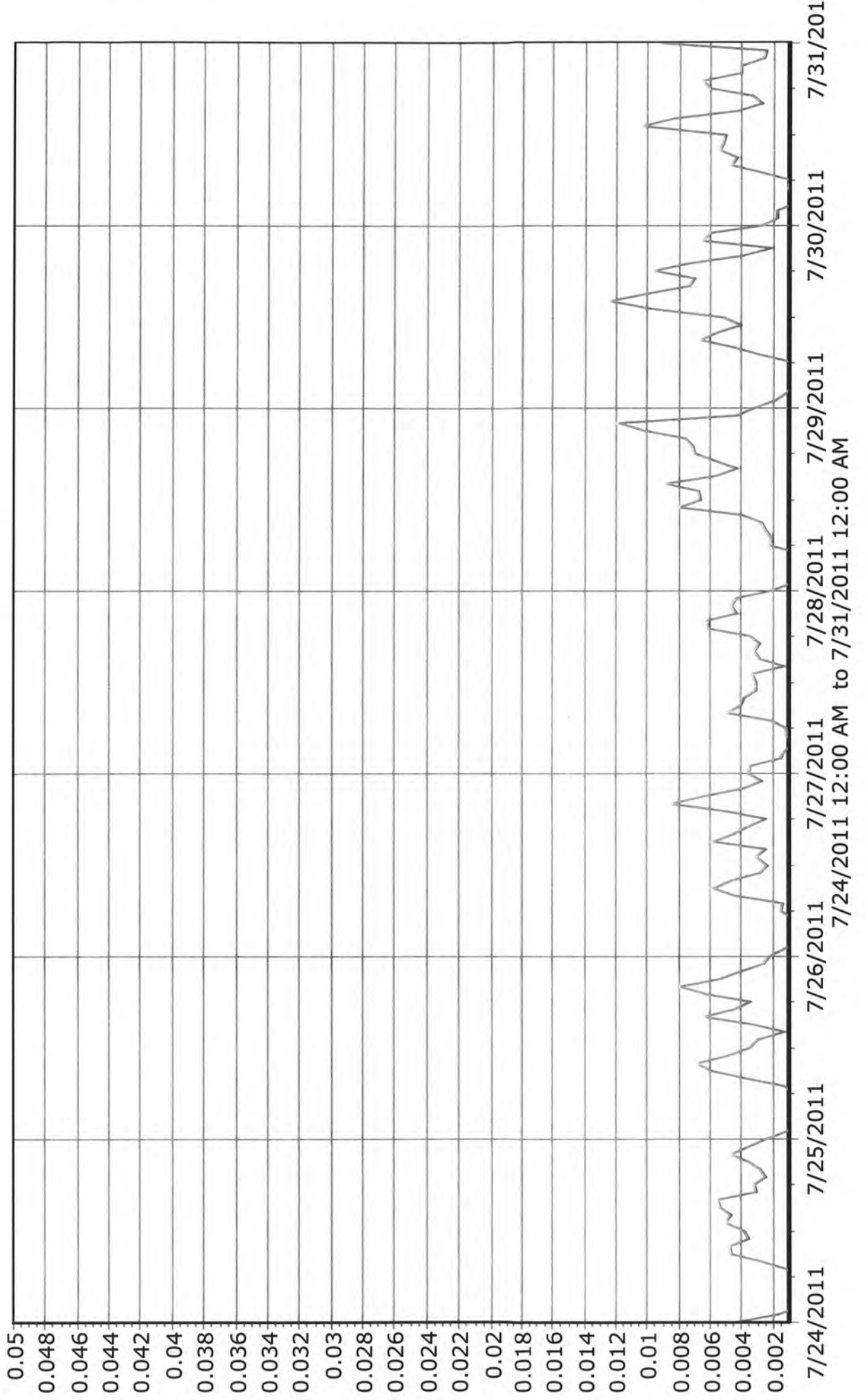
— Flow (mgd)



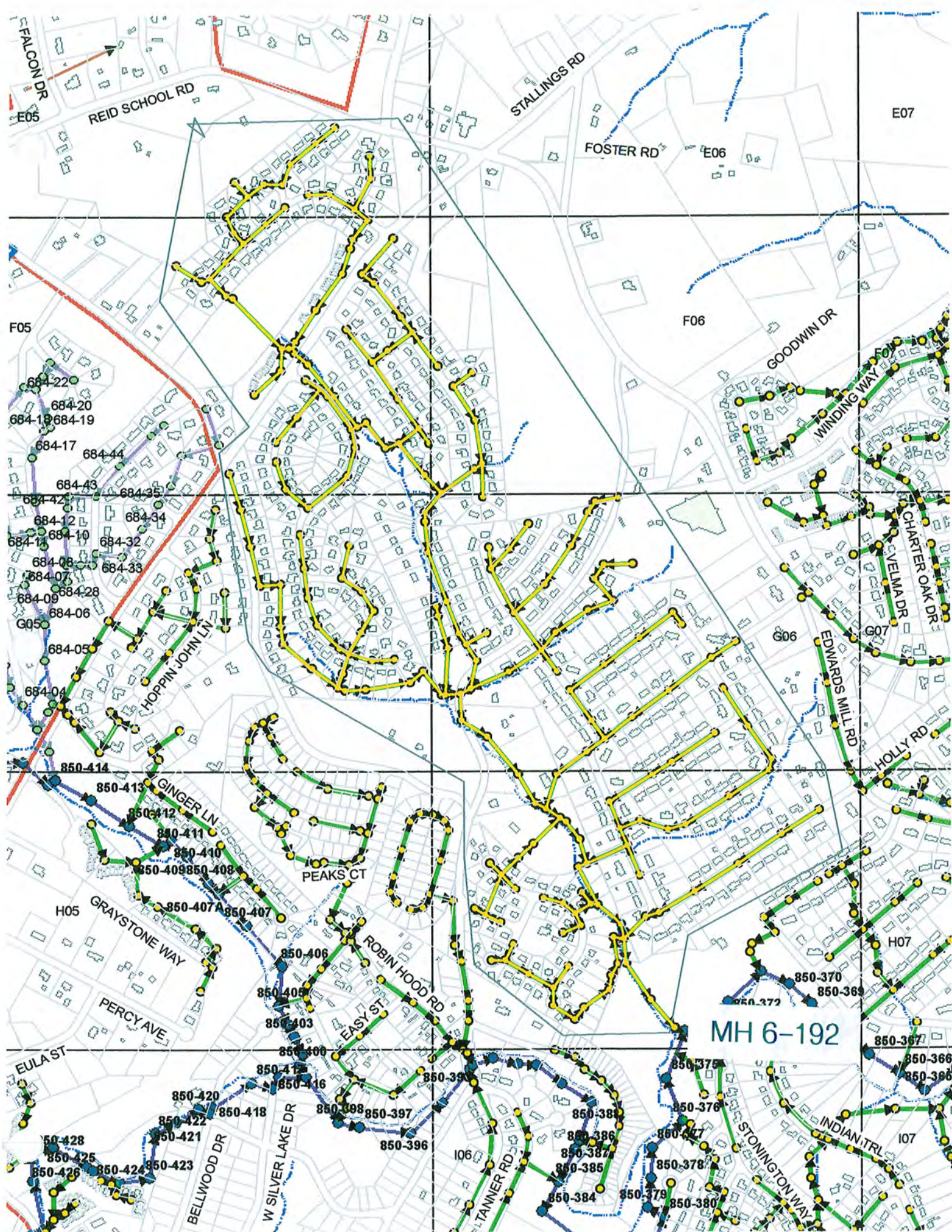
6-274D

Wet Weather Event 7/25/11

— Flow (mgd)



MH 6-192



M14 6-192
Run 11 Feet 1
Nov 30, 2010

Taylors Fire & Sewer Flow Meter Data Sheet

System Data

Meter Location: <u>6-192</u>	Pipe Size (in.): <u>8</u>
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Inch-Miles of Sewer Upstream of Meter						
Pipe Size (in.)	Length (ft.)	Inch-Miles		Pipe Size (in.)	Length (ft.)	Inch-Miles
8	38,665	58.58		24		0.00
10		0.00		27		0.00
12		0.00		30		0.00
14		0.00		36		0.00
15		0.00		42		0.00
16		0.00		48		0.00
18		0.00		54		0.00
20		0.00		60		0.00
21		0.00		72		0.00
Total =						58.58


Dry Weather Flow

<p>Average Daily Flow calculated from the following dates:</p> <p>From: <u>12/06/10</u></p> <p>To: <u>12/11/10</u></p>	<p>Avg. Daily Flowrate = <u>60,000</u> gpd</p> <p>Avg. Flow Depth = <u>1.500</u> inches</p> <p>Peak Hourly Flowrate = <u>133,000</u> gpd</p> <p>Peak Factor = <u>2.22</u></p>
--	---

Notes:

Completed By: E. C. McAll

Date: 2-5-2012

 - computer calculated (formula)

Taylor's Fire & Sewer Flow Meter Data Sheet

Rainfall and I/I Event Duration

Rainfall: Start: 11/30/10 1:00 End: 12/1/10 1:00

Max. 24-hour Total: 2.36 in. Storm Total: 2.36 in.

I/I Event: Start: 11/30/10 0:00 End: 12/4/10 0:00

Dates and times that rainfall and I/I begin and end.

Wet Weather Event - I/I Analysis

Peak Flow Depth = 2.6 inches

I/I Event Duration = 96 hours

☐ Manhole Surcharged (Level exceeded pipe dia.)

I/I Volume = 124,000 gallons

Peak Hourly Flowrate = 172,000 gpd

Inflow and Infiltration Breakdown (optional)

Avg. Dry Weather Flow = 60,000 gpd

Dry Weather Infiltration = 18,000 gpd

Peak Factor = 2.87

Rainfall Induced Infiltration = 3,000 gpd

Avg. Wet Weather Flow = 73,000 gpd

Total Infiltration = 21,000 gpd

Avg. I/I Flow = 31,000 gpd

Infiltration Rate = 358 gpd/idm

Inch-Diameter Miles = 58.58 idm

Inflow = 10,000 gpd

I/I Rate = 529 gpd/idm

Inflow Rate = 171 gpd/idm

Notes:

Completed By EC McCall

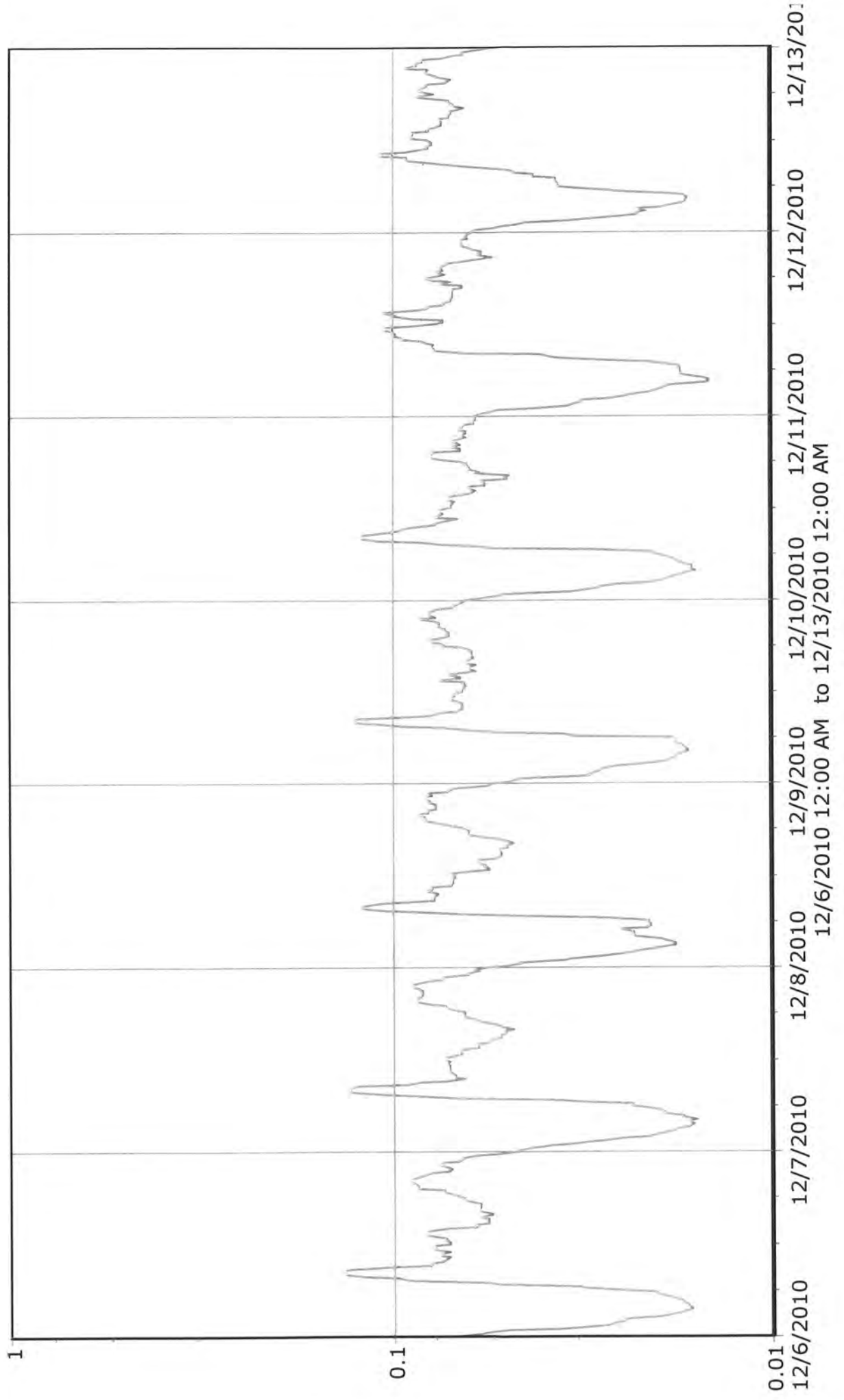
Date: 2-5-2012

 - computer calculated (formula)

6-192

Dry Weather Flow Dec. 2010

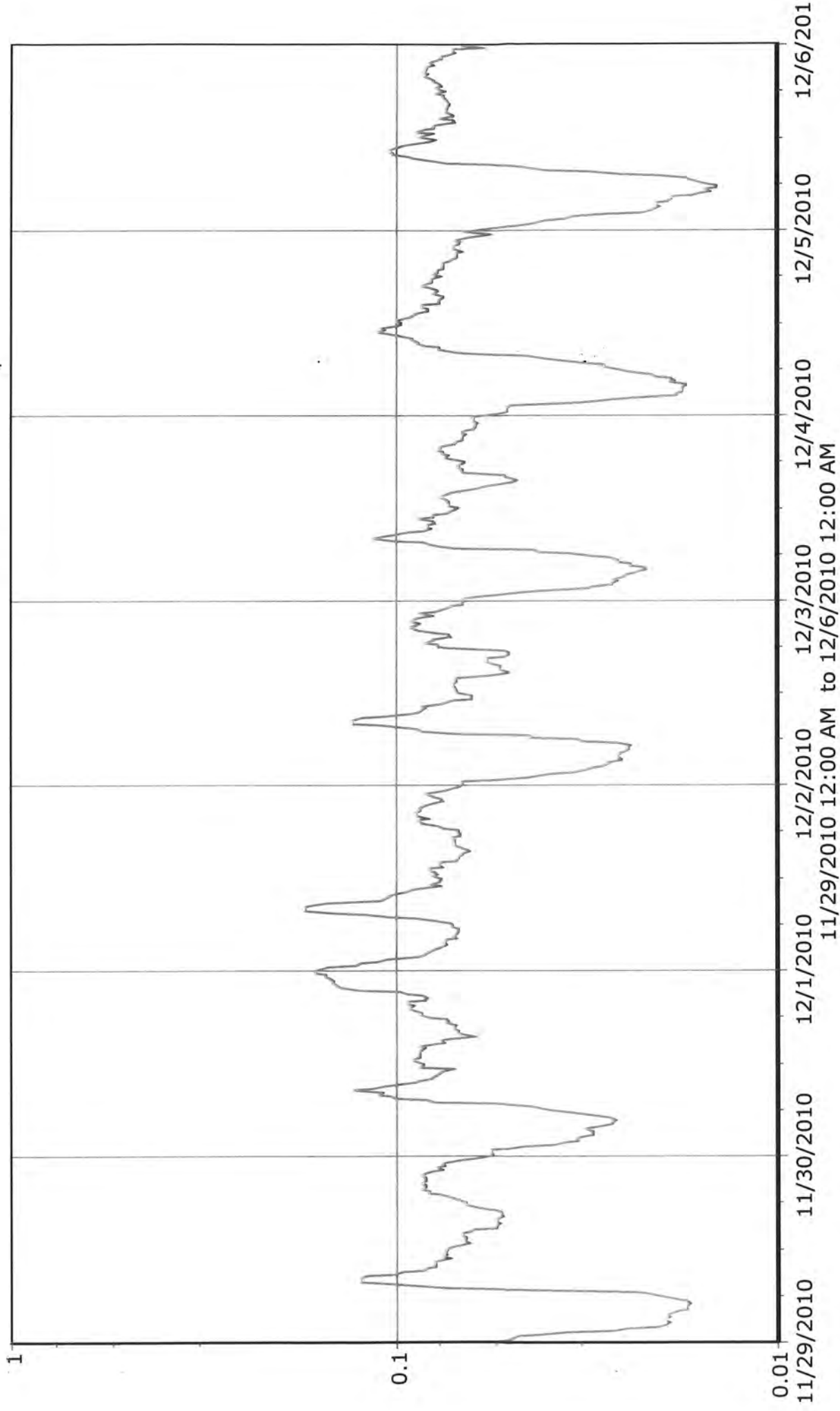
— Flow (mgd)



6-192

Wet Weather Event 11-30-10

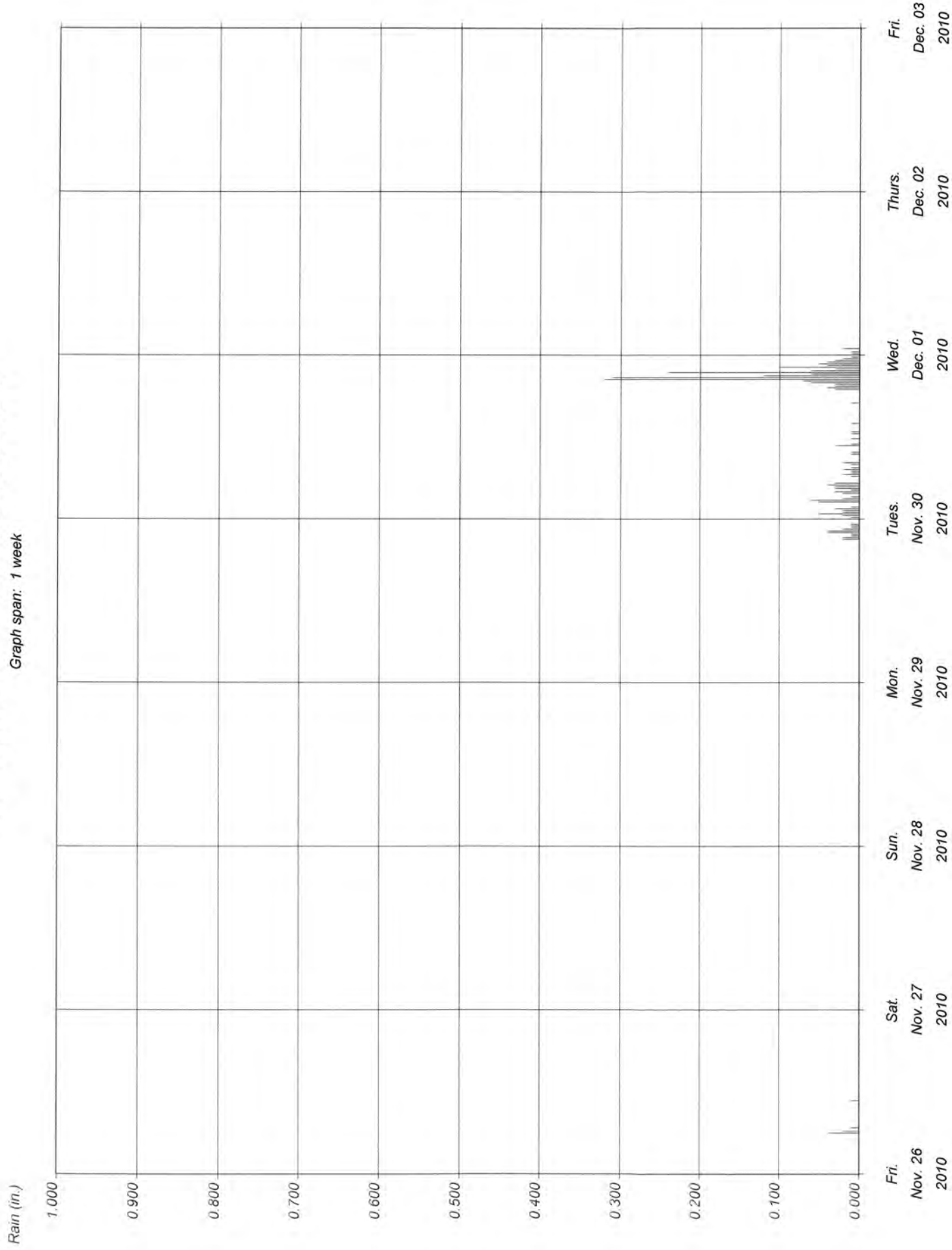
— Flow (mgd)



6-192 Rain 11/30/10

Site Id: 00000000 File name: 00000000.000

Graph span: 1 week



MH 6-192
Run All Kent 2
February 1, 2011

Taylor's Fire & Sewer Flow Meter Data Sheet

System Data

Meter Location:	<u>6-192</u>	Pipe Size (in.):	<u>8</u>
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Inch-Miles of Sewer Upstream of Meter						
Pipe Size (in.)	Length (ft.)	Inch-Miles		Pipe Size (in.)	Length (ft.)	Inch-Miles
8	38,665	58.58		24		0.00
10		0.00		27		0.00
12		0.00		30		0.00
14		0.00		36		0.00
15		0.00		42		0.00
16		0.00		48		0.00
18		0.00		54		0.00
20		0.00		60		0.00
21		0.00		72		0.00
Total =						58.58

Dry Weather Flow

Average Daily Flow calculated from the following dates: From: <u>01/20/11</u> To: <u>01/25/11</u>	Avg. Daily Flowrate = <u>57,000</u> gpd Avg. Flow Depth = <u>1.600</u> inches Peak Hourly Flowrate = <u>118,000</u> gpd Peak Factor = <u>2.07</u>
---	--

Notes:

Completed By: EC Miller

Date: 2-5-2012

 - computer calculated (formula)

Taylor's Fire & Sewer Flow Meter Data Sheet

Rainfall and I/I Event Duration

Rainfall: Start: 2/1/11 7:15 End: 2/2/11 0:30

Max. 24-hour Total: 1.21 in. Storm Total: 2.97 in.

I/I Event: Start: 2/1/11 6:15 End: 2/13/11 0:00

Dates and times that rainfall and I/I begin and end.

Wet Weather Event - I/I Analysis

Peak Flow Depth = 3.4 inches

I/I Event Duration = 281 hours

☐ Manhole Surcharged (Level exceeded pipe dia.)

I/I Volume = 491,750 gallons

Peak Hourly Flowrate = 300,000 gpd

Inflow and Infiltration Breakdown (optional)

Avg. Dry Weather Flow = 57,000 gpd

Dry Weather Infiltration = 19,000 gpd

Peak Factor = 5.26

Rainfall Induced Infiltration = 9,000 gpd

Avg. Wet Weather Flow = 80,000 gpd

Total Infiltration = 28,000 gpd

Avg. I/I Flow = 42,000 gpd

Infiltration Rate = 478 gpd/idm

Inch-Diameter Miles = 58.58 idm

Inflow = 14,000 gpd


I/I Rate = 717 gpd/idm

Inflow Rate = 239 gpd/idm

Notes:

Completed By EC Mall

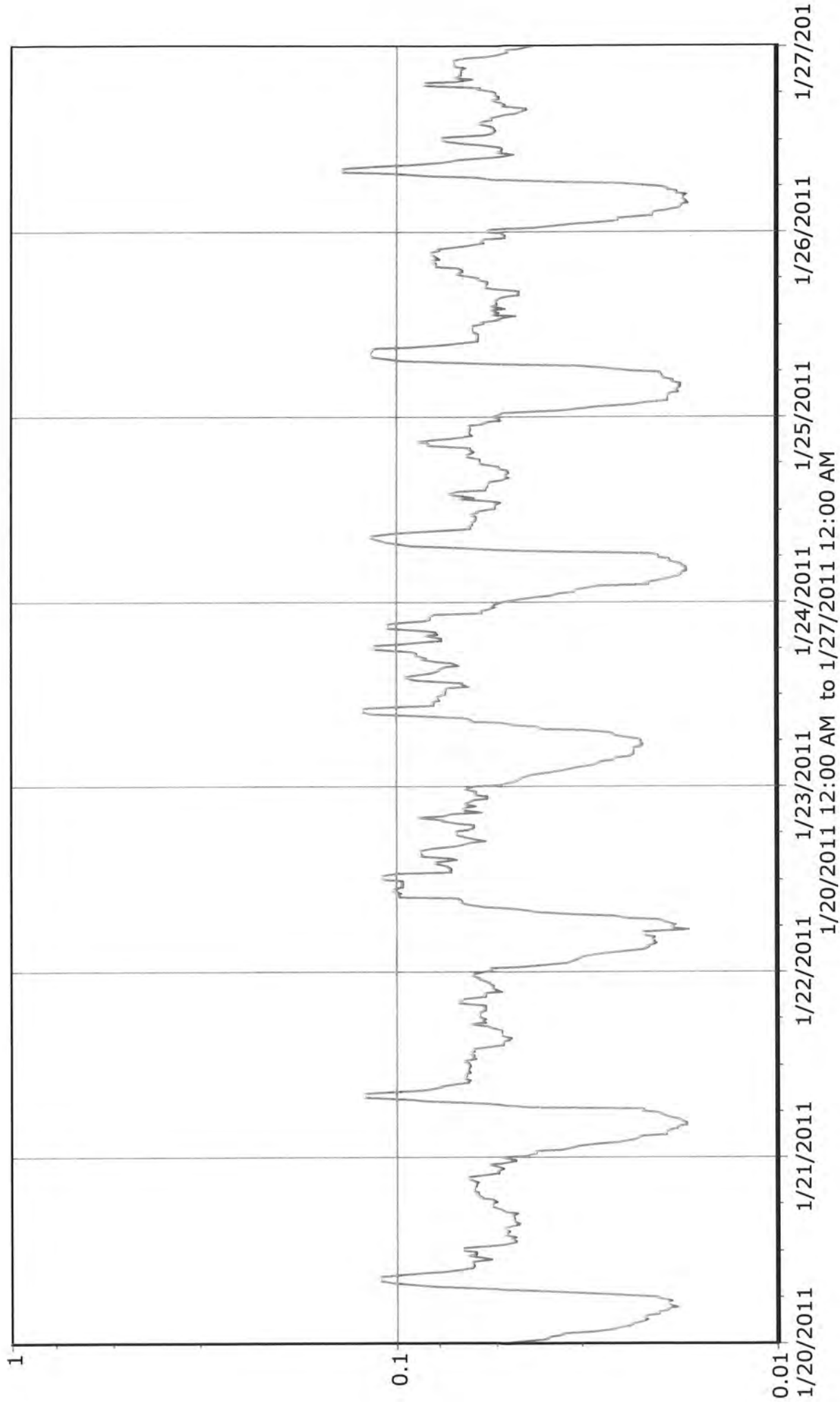
Date: 2-5-2012

 - computer calculated (formula)

6-192

Dry Weather Flow Jan. 2011

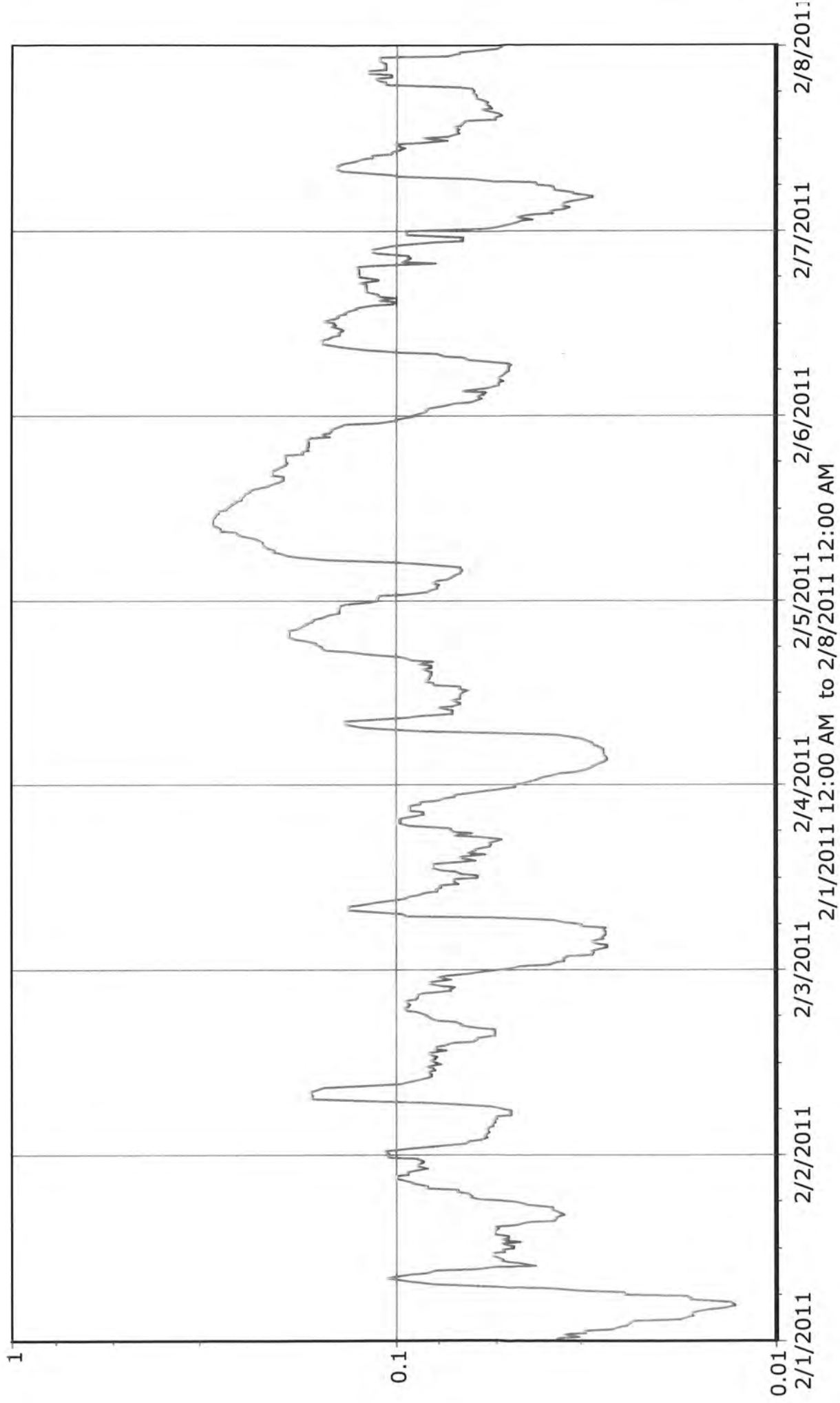
— Flow (mgd)



6-192

Wet Weather Event 2-1-11

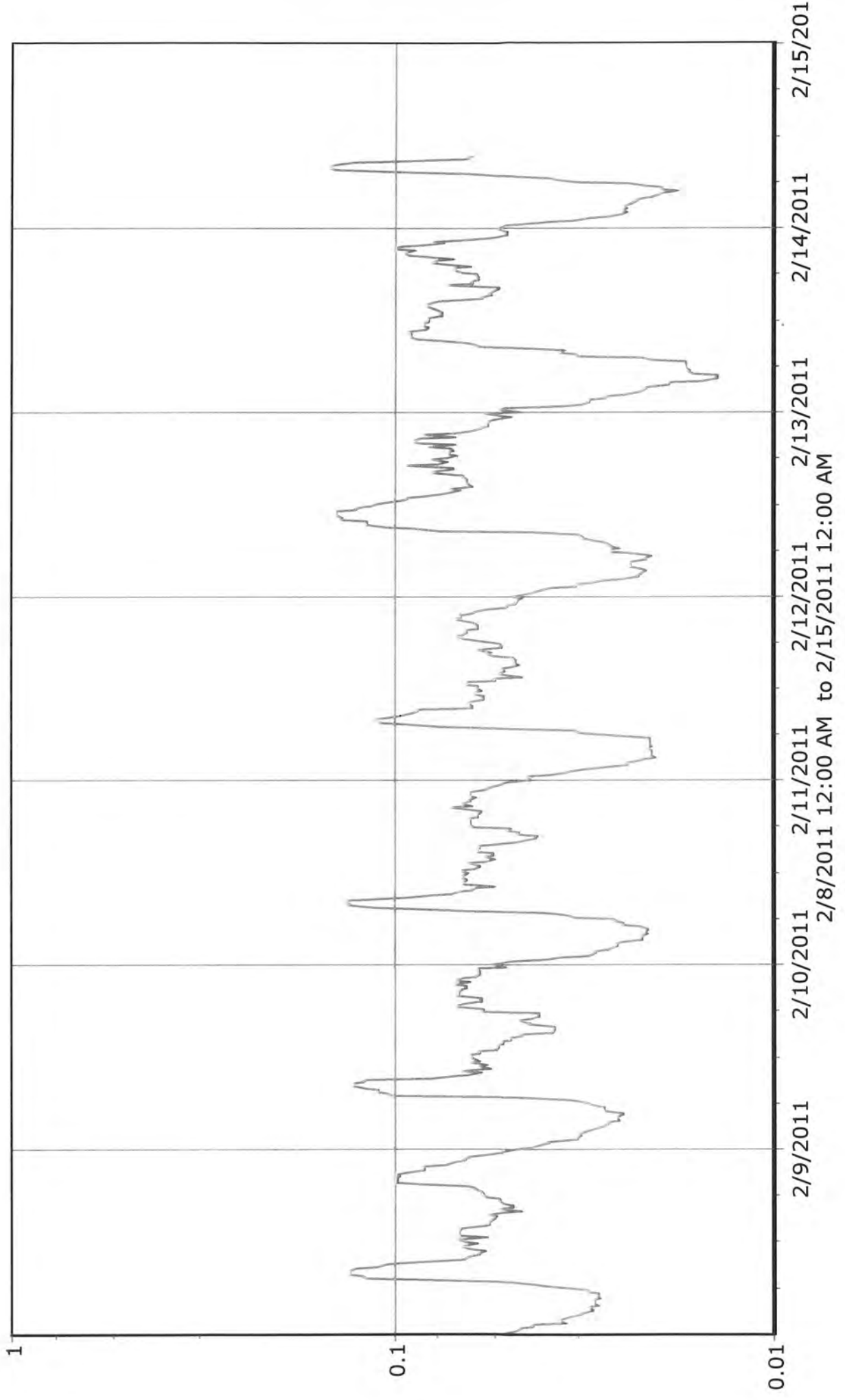
— Flow (mgd)



6-192

Wet Weather Event 2-1-11

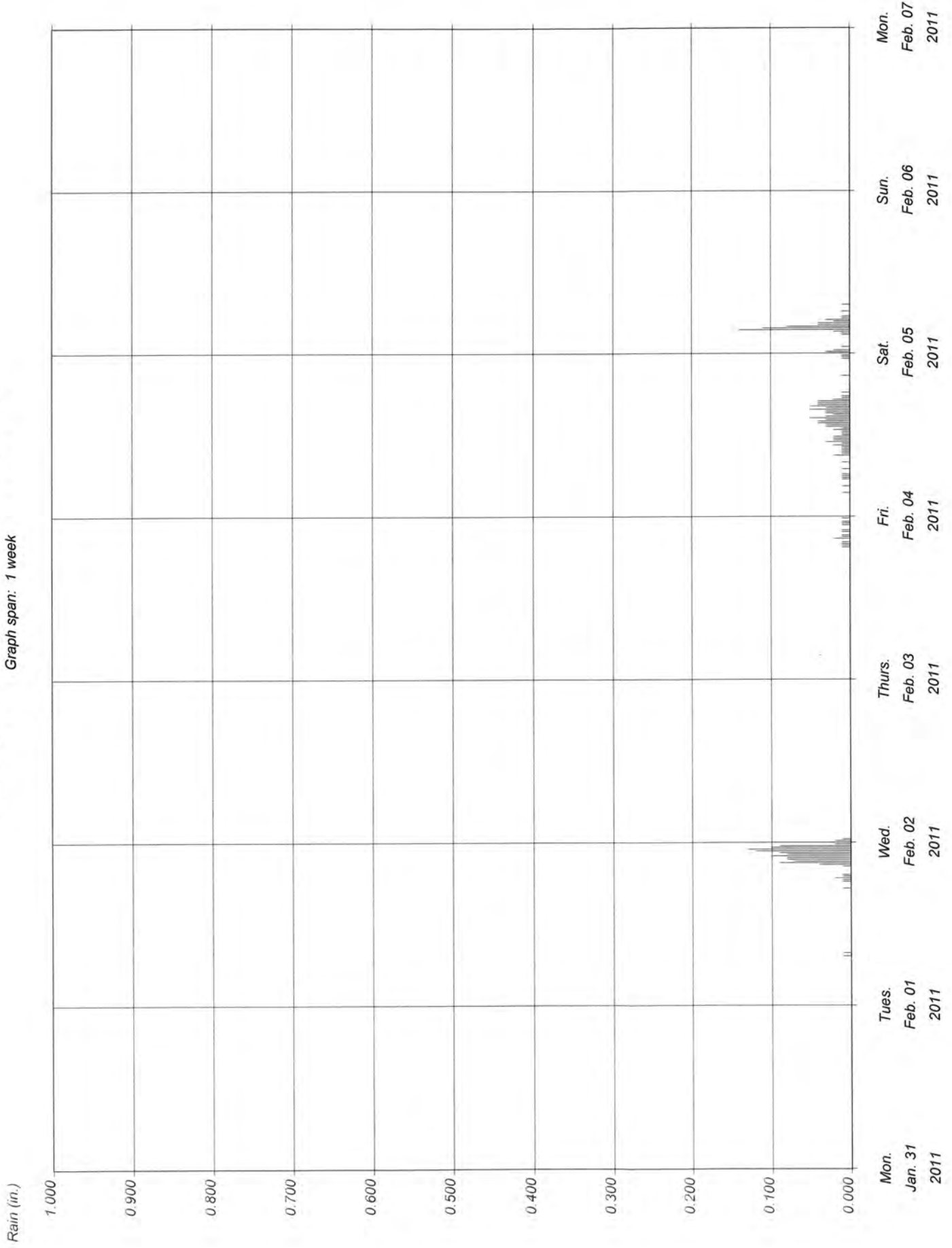
— Flow (mgd)



6-192 Rain 2/1/11

Site Id: 00000000 File name: 00000000.000

Graph span: 1 week



MI 6-192
Rainfall Event
February 28, 2011

Taylor's Fire & Sewer Flow Meter Data Sheet

System Data

Meter Location: <u>6-192</u>	Pipe Size (in.): <u>8</u>
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Inch-Miles of Sewer Upstream of Meter						
Pipe Size (in.)	Length (ft.)	Inch-Miles		Pipe Size (in.)	Length (ft.)	Inch-Miles
8	38,665	58.58		24		0.00
10		0.00		27		0.00
12		0.00		30		0.00
14		0.00		36		0.00
15		0.00		42		0.00
16		0.00		48		0.00
18		0.00		54		0.00
20		0.00		60		0.00
21		0.00		72		0.00
Total =						58.58

Dry Weather Flow

<p>Average Daily Flow calculated from the following dates:</p> <p>From: <u>01/20/11</u></p> <p>To: <u>01/25/11</u></p>	<p>Avg. Daily Flowrate = <u>57,000</u> gpd</p> <p>Avg. Flow Depth = <u>1.600</u> inches</p> <p>Peak Hourly Flowrate = <u>118,000</u> gpd</p> <p>Peak Factor = <u>2.07</u></p>
--	---

Notes: _____

Completed By: EC Hall Date: 2-5-2012

 - computer calculated (formula)

Taylor's Fire & Sewer Flow Meter Data Sheet

Rainfall and I/I Event Duration

Rainfall: Start: 2/28/11 17:30 End: 2/28/11 19:45
Max. 24-hour Total: 1.02 in. Storm Total: 1.02 in.
I/I Event: Start: 2/28/11 16:30 End: 3/4/11 0:00

Dates and times that rainfall and I/I begin and end.


Wet Weather Event - I/I Analysis

Peak Flow Depth = 2.5 inches I/I Event Duration = 68 hours
☐ Manhole Surcharged (Level exceeded pipe dia.) I/I Volume = 90,667 gallons
Peak Hourly Flowrate = 162,000 gpd Inflow and Infiltration Breakdown (optional)
Avg. Dry Weather Flow = 57,000 gpd Dry Weather Infiltration = 19,000 gpd
Peak Factor = 2.84 Rainfall Induced Infiltration = 9,000 gpd
Avg. Wet Weather Flow = 70,000 gpd Total Infiltration = 28,000 gpd
Avg. I/I Flow = 32,000 gpd Infiltration Rate = 478 gpd/idm
Inch-Diameter Miles = 58.58 idm Inflow = 4,000 gpd
I/I Rate = 546 gpd/idm Inflow Rate = 68 gpd/idm

Notes: _____

Completed By EC McAll

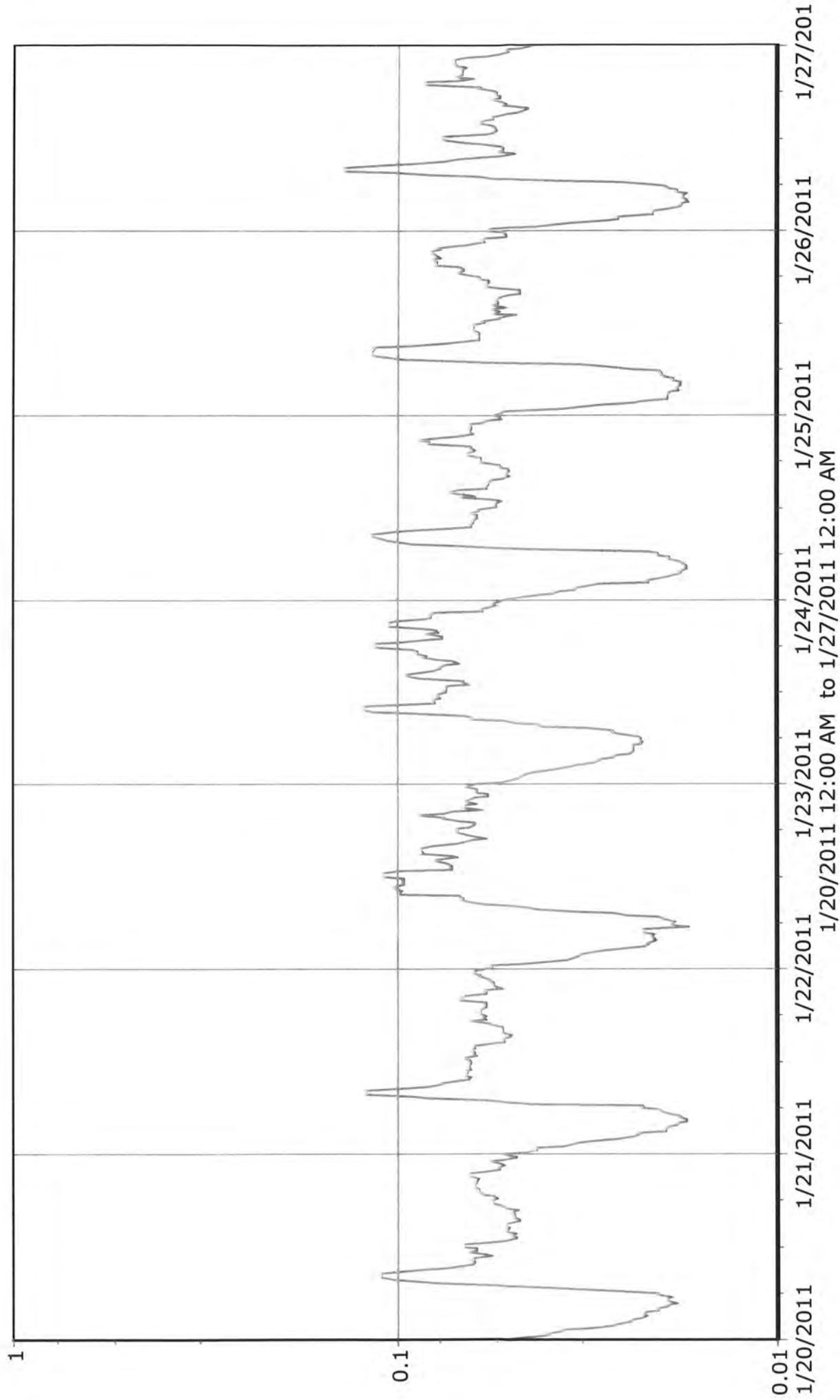
Date: 2-5-2012

 - computer calculated (formula)

6-192

Dry Weather Flow Jan. 2011

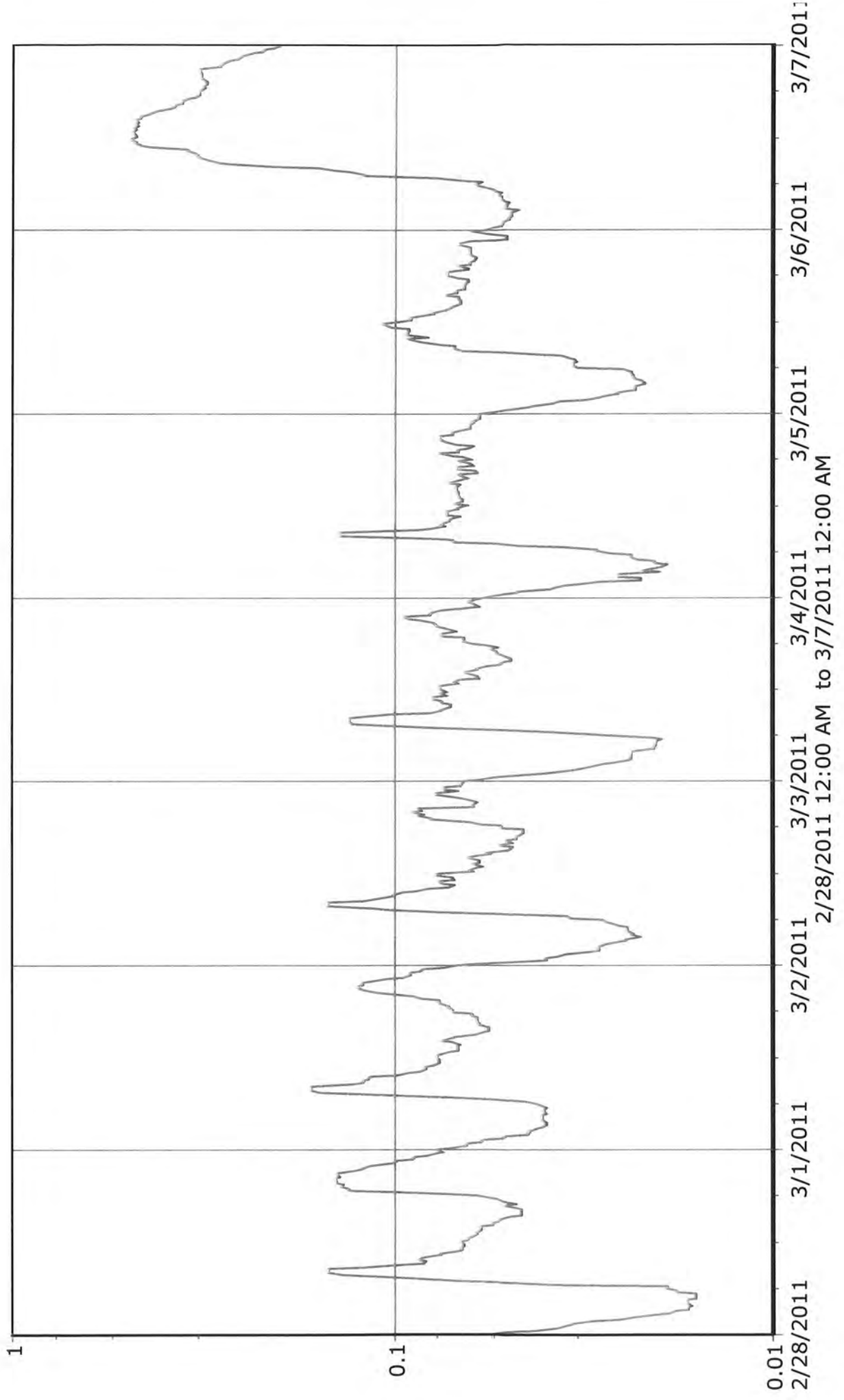
— Flow (mgd)



6-192

Wet Weather Event 2-28-11

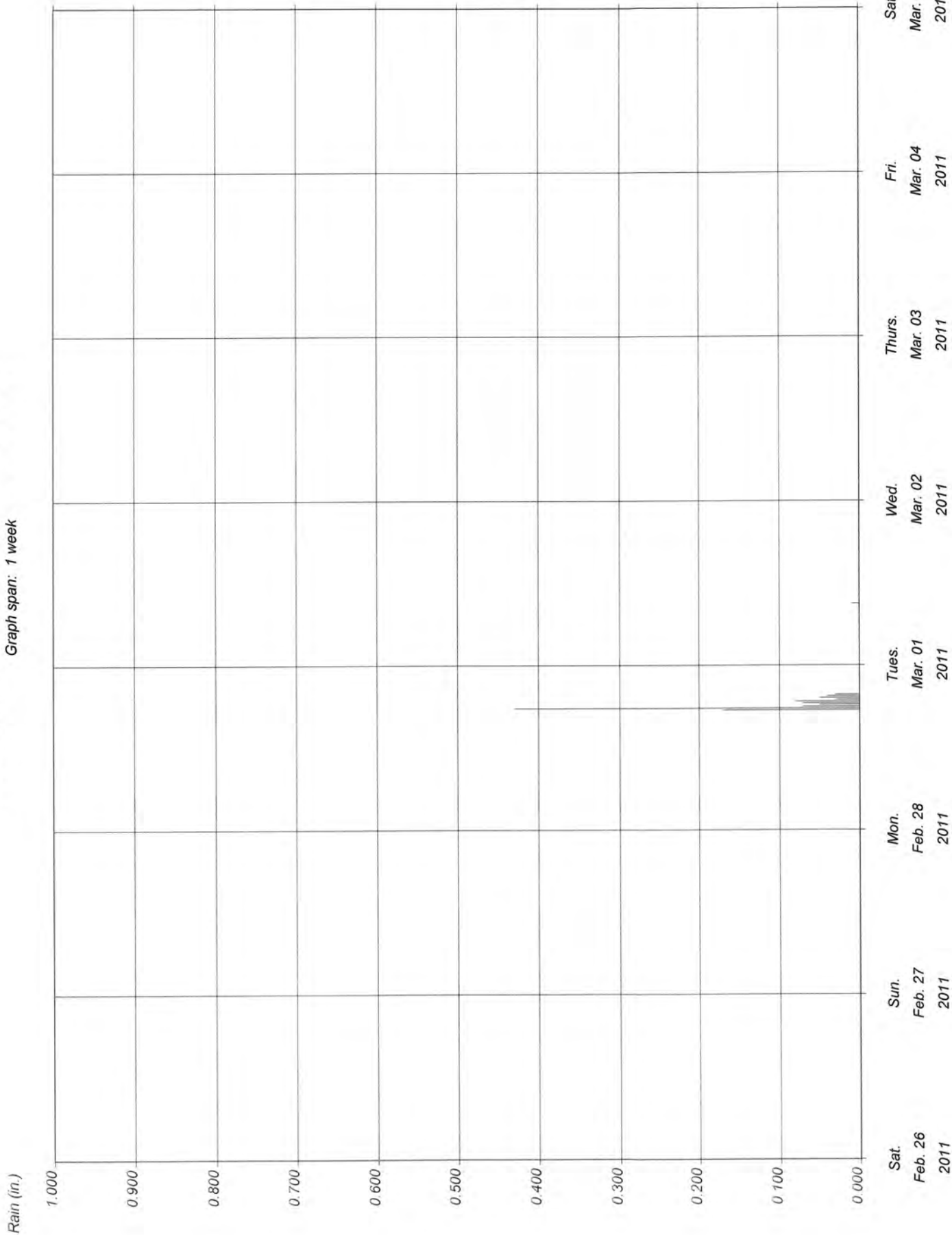
— Flow (mgd)



6-192 Rain 2/28/11

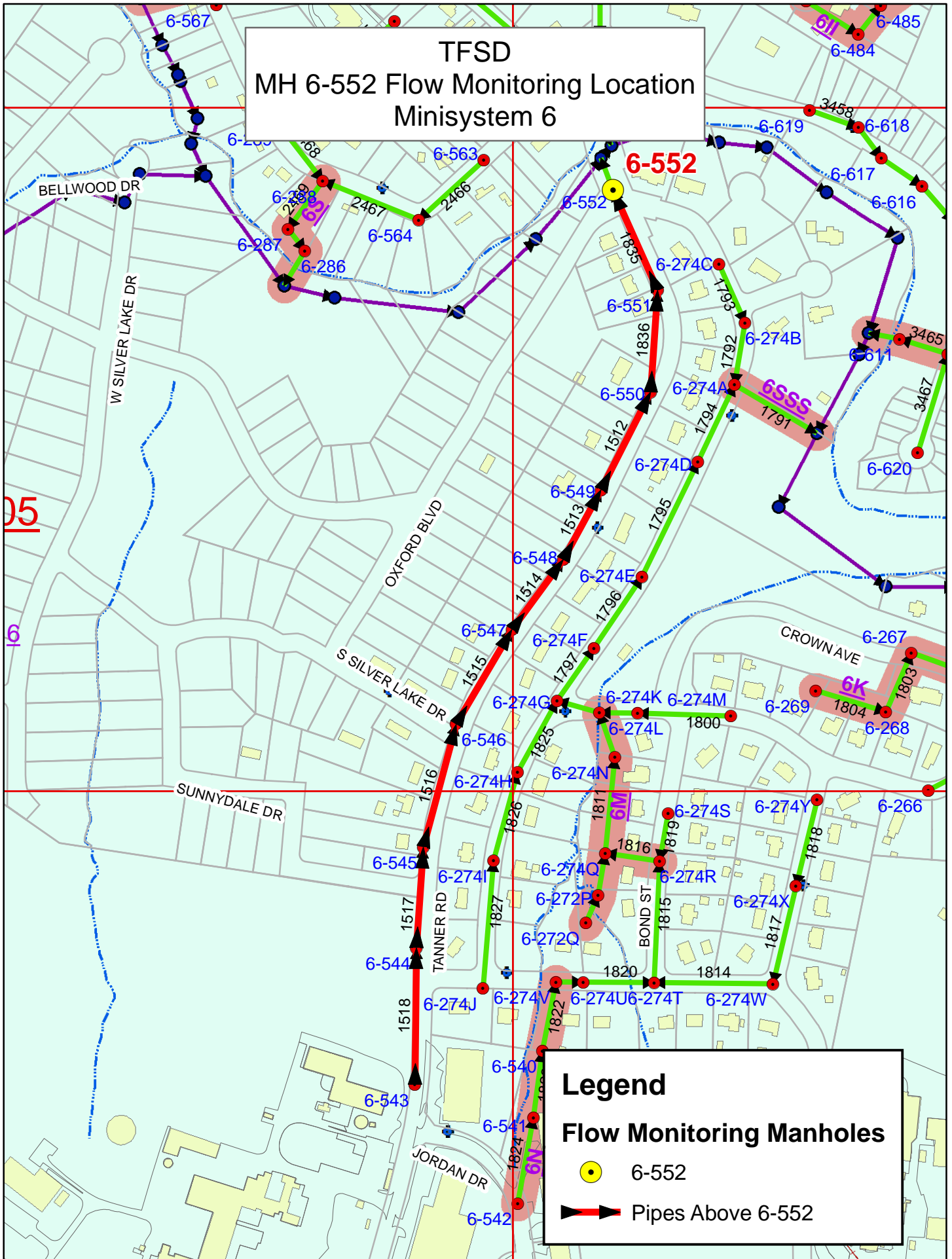
Site Id: 00000000 File name: 00000000.000

Graph span: 1 week



MH 6-552

TFSD
MH 6-552 Flow Monitoring Location
Minisystem 6



Legend

Flow Monitoring Manholes

6-552

Pipes Above 6-552

MH 6-552
 Rainfall Event 1
 April 15, 2011

Taylors Fire & Sewer Flow Meter Data Sheet

System Data

Meter Location: <u>6-552</u>	Pipe Size (in.): <u>8</u>
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Inch-Miles of Sewer Upstream of Meter						
Pipe Size (in.)	Length (ft.)	Inch-Miles		Pipe Size (in.)	Length (ft.)	Inch-Miles
8	2,639	4.00		24		0.00
10		0.00		27		0.00
12		0.00		30		0.00
14		0.00		36		0.00
15		0.00		42		0.00
16		0.00		48		0.00
18		0.00		54		0.00
20		0.00		60		0.00
21		0.00		72		0.00
Total =						4.00

Dry Weather Flow

Average Daily Flow calculated from the following dates: From: <u>05/20/11</u> To: <u>05/25/11</u>	Avg. Daily Flowrate = <u>3,000</u> gpd Avg. Flow Depth = <u>0.280</u> inches Peak Hourly Flowrate = <u>9,000</u> gpd Peak Factor = <u>3.00</u>
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Notes: _____

Completed By: EC Mallett

Date: 2-5-2012

 - computer calculated (formula)

Taylors Fire & Sewer Flow Meter Data Sheet

Rainfall and I/I Event Duration

Rainfall:	Start: <u>4/15/11 21:15</u>	End: <u>4/16/11 12:30</u>
	Max. 24-hour Total: <u>1.46 in.</u>	Storm Total: <u>1.46 in.</u>
I/I Event:	Start: <u>4/15/11 20:15</u>	End: <u>4/18/11 0:00</u>
Dates and times that rainfall and I/I begin and end.		

Wet Weather Event - I/I Analysis

Peak Flow Depth = <u>0.8</u> inches	I/I Event Duration = <u>51</u> hours
<input type="checkbox"/> Manhole Surcharged (Level exceeded pipe dia.)	I/I Volume = <u>19,125</u> gallons
Peak Hourly Flowrate = <u>30,000</u> gpd	<u>Inflow and Infiltration Breakdown (optional)</u>
Avg. Dry Weather Flow = <u>3,000</u> gpd	Dry Weather Infiltration = <u>2,000</u> gpd
Peak Factor = <u>10.00</u>	Rainfall Induced Infiltration = <u>2,000</u> gpd
Avg. Wet Weather Flow = <u>10,000</u> gpd	Total Infiltration = <u>4,000</u> gpd
Avg. I/I Flow = <u>9,000</u> gpd	Infiltration Rate = <u>1,000</u> gpd/idm
Inch-Diameter Miles = <u>4.00</u> idm	Inflow = <u>5,000</u> gpd
I/I Rate = <u>2,250</u> gpd/idm	Inflow Rate = <u>1,250</u> gpd/idm

Notes: _____

Completed By

EJC/MLW

Date:

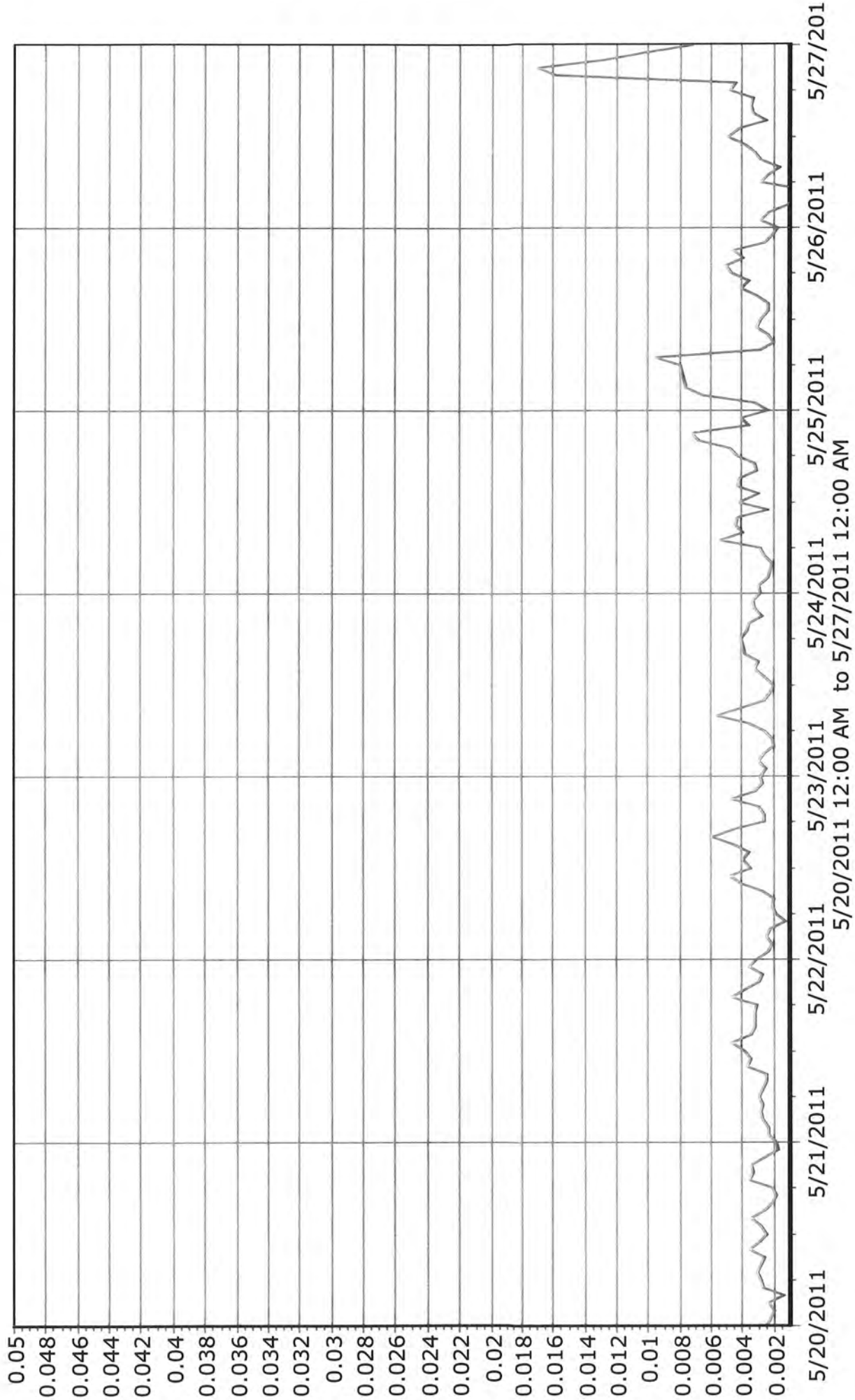
2-5-2012

 - computer calculated (formula)

6-552

Dry Weather Flow May. 2011

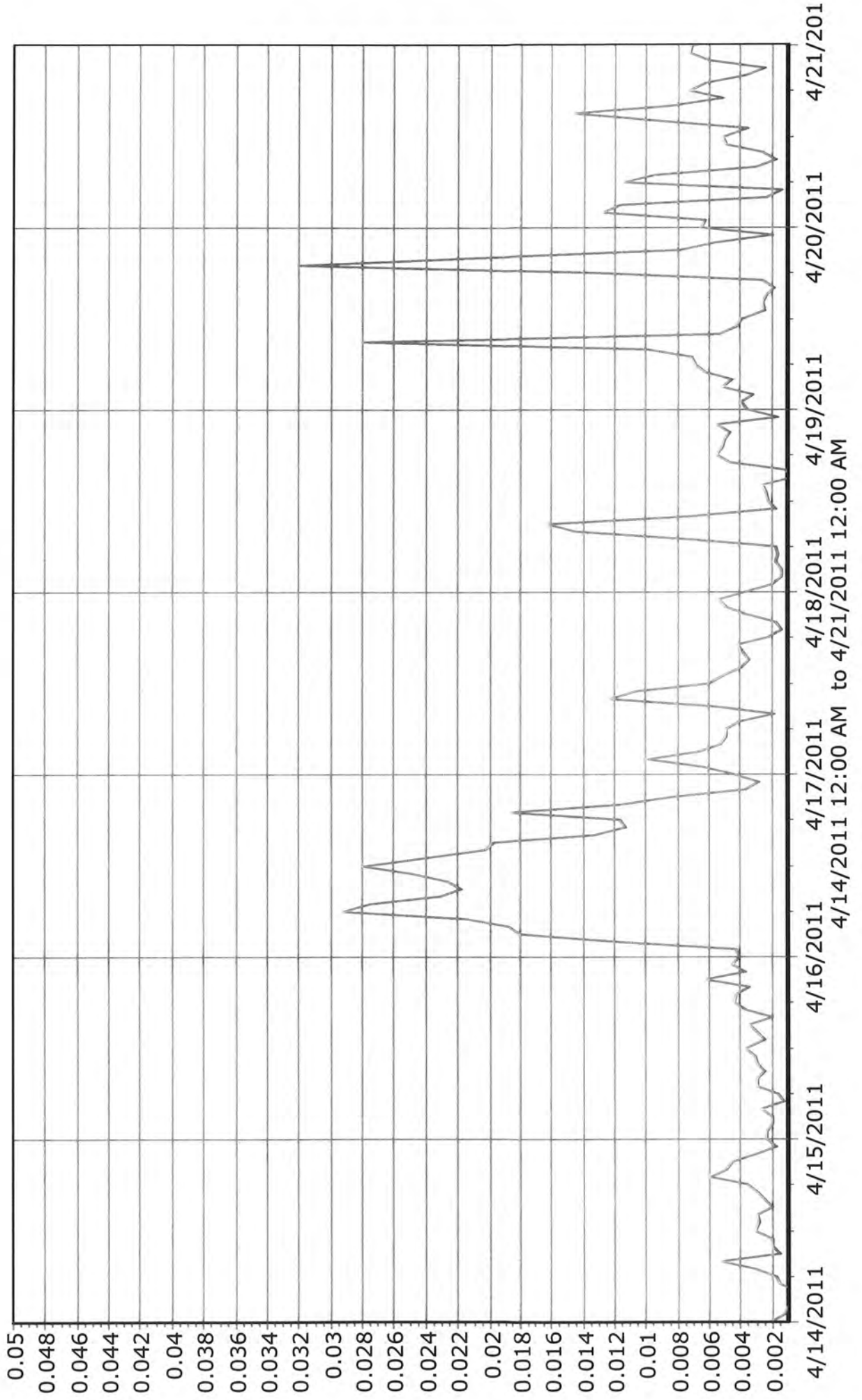
— Flow (mgd)



6-552

Wet Weather Event 4/16/11

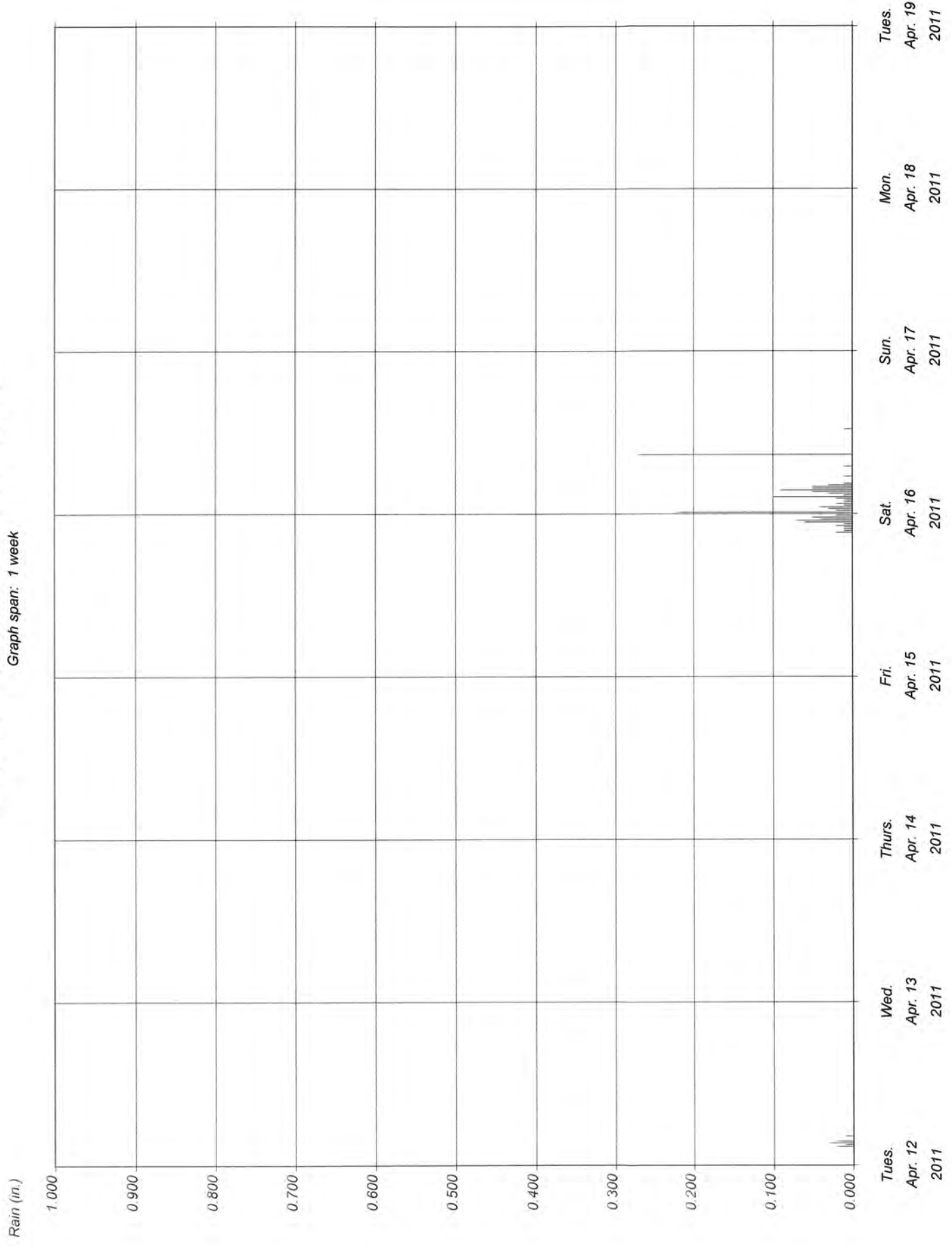
— Flow (mgd)



Rain 4/16/11

Site Id: 00000000 File name: 00000000.000

Graph span: 1 week



Taylors Fire & Sewer Flow Meter Data Sheet

*MH 6-552
Pain Hill Event 2
May 26, 2011*

System Data

Meter Location: <u>6-552</u>	Pipe Size (in.): <u>8</u>
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Inch-Miles of Sewer Upstream of Meter						
Pipe Size (in.)	Length (ft.)	Inch-Miles		Pipe Size (in.)	Length (ft.)	Inch-Miles
8	2,639	4.00		24		0.00
10		0.00		27		0.00
12		0.00		30		0.00
14		0.00		36		0.00
15		0.00		42		0.00
16		0.00		48		0.00
18		0.00		54		0.00
20		0.00		60		0.00
21		0.00		72		0.00
Total =						4.00

Dry Weather Flow

Average Daily Flow calculated from the following dates: From: <u>05/20/11</u> To: <u>05/25/11</u>	Avg. Daily Flowrate = <u>3,000</u> gpd Avg. Flow Depth = <u>0.280</u> inches Peak Hourly Flowrate = <u>9,000</u> gpd Peak Factor = <u>3.00</u>
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Notes: _____

Completed By: EC Mella

Date: 8-5-2012

[REDACTED] - computer calculated (formula)

Taylor's Fire & Sewer Flow Meter Data Sheet

Rainfall and I/I Event Duration

Rainfall: Start: 5/26/11 18:45 End: 5/27/11 12:15
Max. 24-hour Total: 1.14 in. Storm Total: 1.14 in.
I/I Event: Start: 5/26/11 17:45 End: 5/28/11 0:00

Dates and times that rainfall and I/I begin and end.

Wet Weather Event - I/I Analysis

Peak Flow Depth = 0.8 inches

I/I Event Duration = 30 hours

☐ Manhole Surcharged (Level exceeded pipe dia.)

I/I Volume = 7,500 gallons

Peak Hourly Flowrate = 17,000 gpd

Inflow and Infiltration Breakdown (optional)

Avg. Dry Weather Flow = 3,000 gpd

Dry Weather Infiltration = 2,000 gpd

Peak Factor = 5.67

Rainfall Induced Infiltration = 2,000 gpd

Avg. Wet Weather Flow = 7,000 gpd

Total Infiltration = 4,000 gpd

Avg. I/I Flow = 6,000 gpd

Infiltration Rate = 1,000 gpd/idm

Inch-Diameter Miles = 4.00 idm

Inflow = 2,000 gpd


I/I Rate = 1,500 gpd/idm

Inflow Rate = 500 gpd/idm

Notes:

Completed By EC MJA

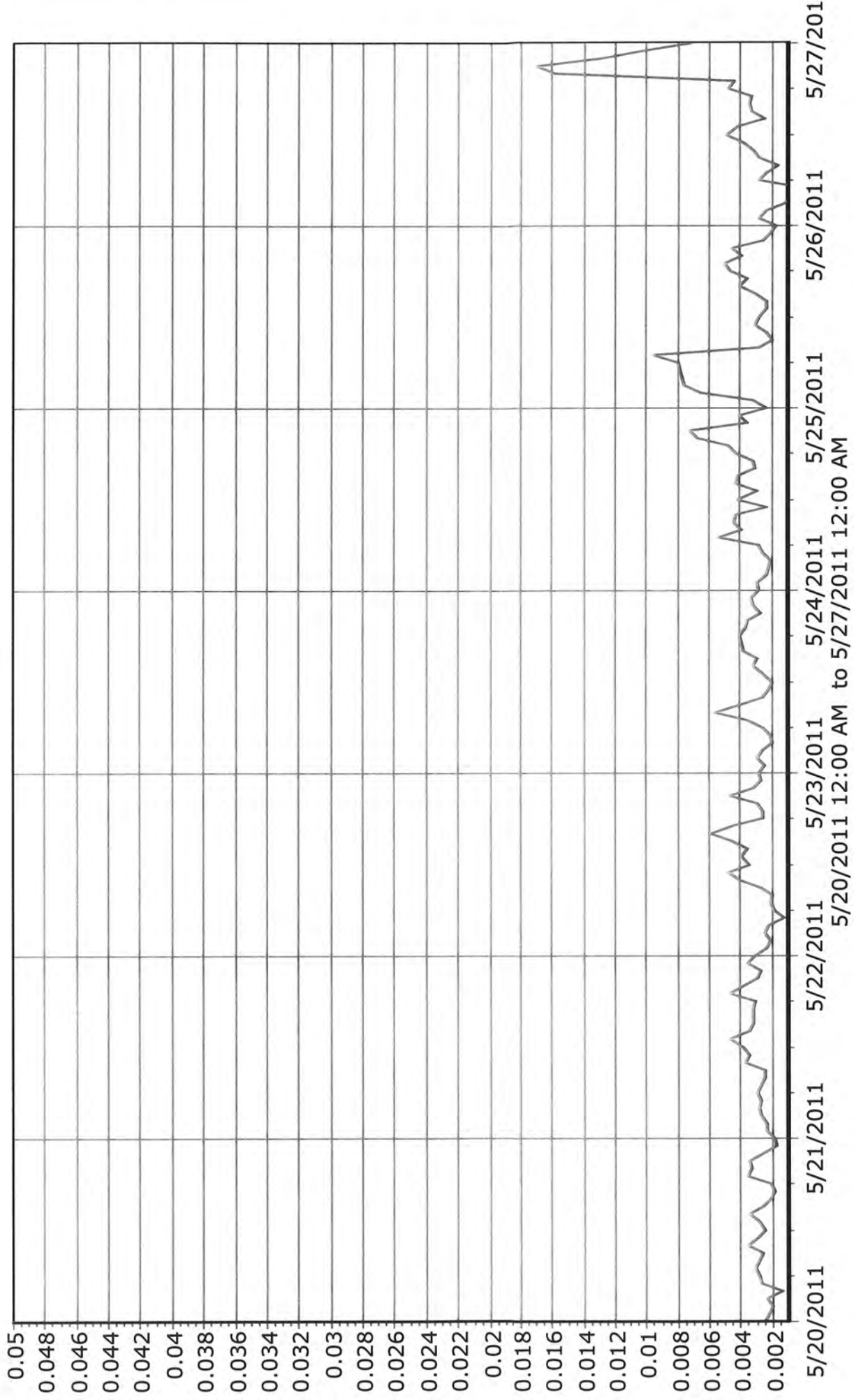
Date: 2-5-2012

 - computer calculated (formula)

6-552

Dry Weather Flow May. 2011

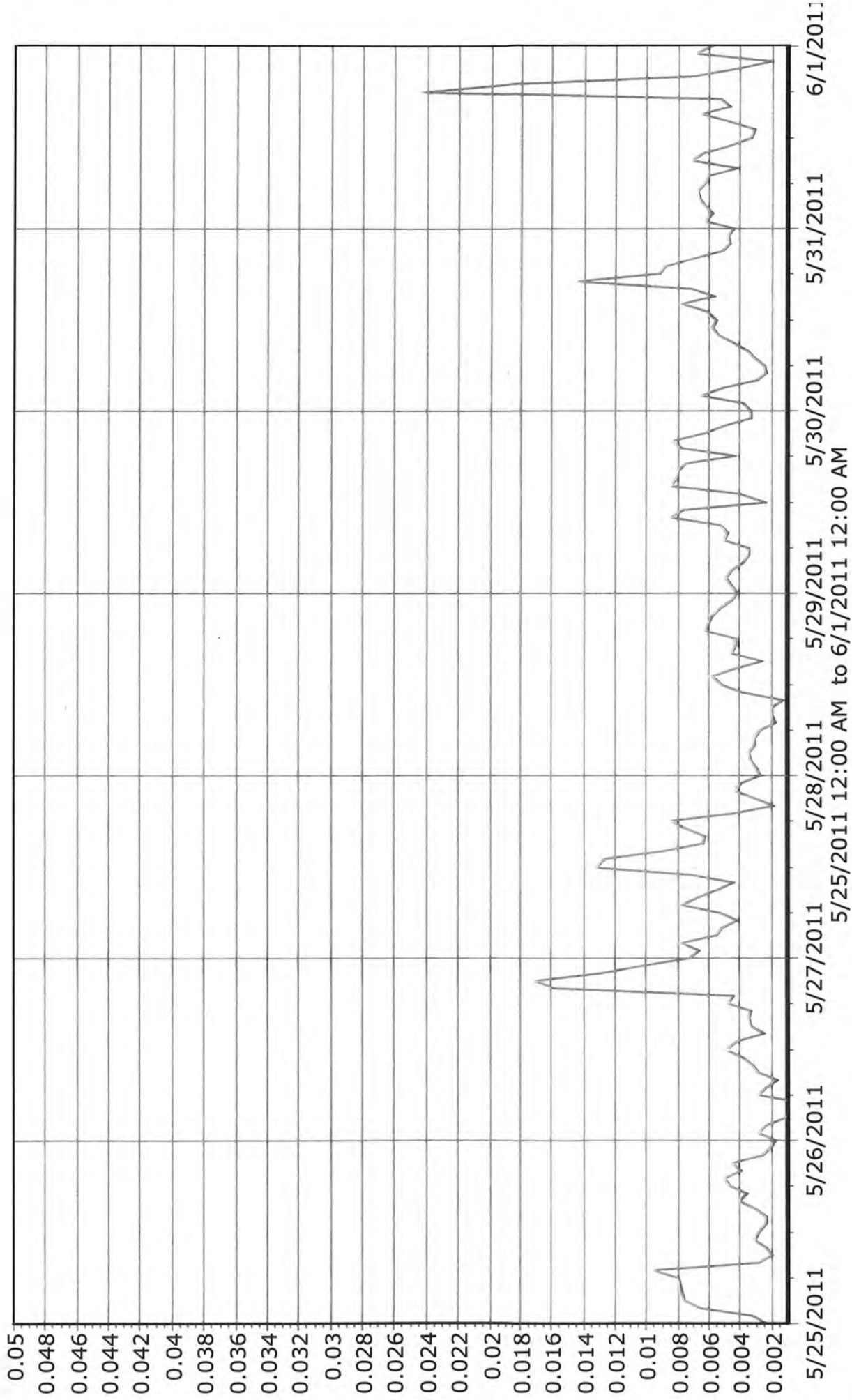
— Flow (mgd)



6-552

Wet Weather Event 5/26/11

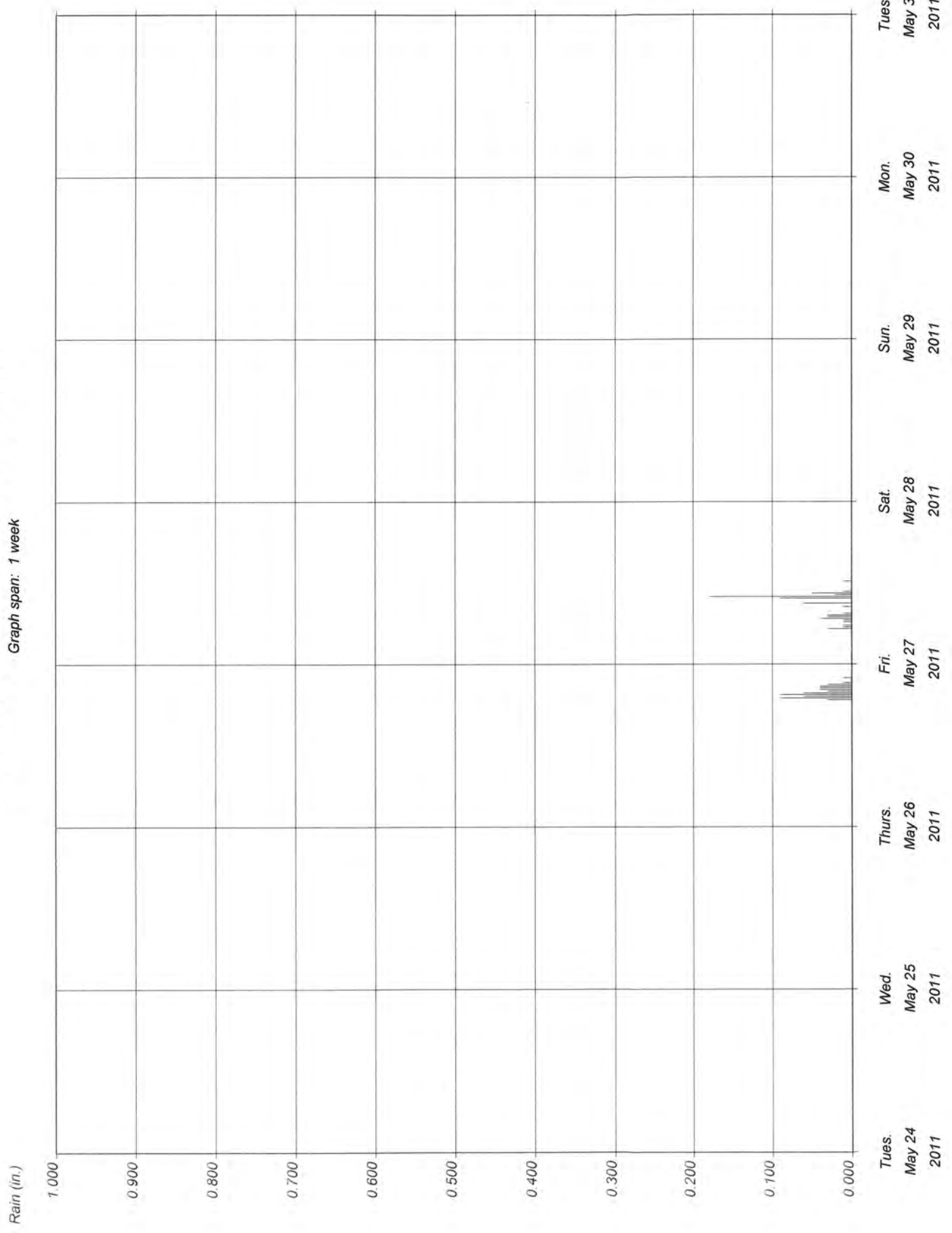
— Flow (mgd)



Rain 5/26/11

Site Id: 00000000 File name: 00000000.000

Graph span: 1 week



Taylors Fire & Sewer Flow Meter Data Sheet

*MH 6-552
Rawl/Event 3
July 25, 2011*

System Data

Meter Location: <u>6-552</u>	Pipe Size (in.): <u>8</u>
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Inch-Miles of Sewer Upstream of Meter						
Pipe Size (in.)	Length (ft.)	Inch-Miles		Pipe Size (in.)	Length (ft.)	Inch-Miles
8	2,639	4.00		24		0.00
10		0.00		27		0.00
12		0.00		30		0.00
14		0.00		36		0.00
15		0.00		42		0.00
16		0.00		48		0.00
18		0.00		54		0.00
20		0.00		60		0.00
21		0.00		72		0.00
Total =						4.00

Dry Weather Flow

Average Daily Flow calculated from the following dates: From: <u>06/27/11</u> To: <u>07/02/11</u>	Avg. Daily Flowrate = <u>4,000</u> gpd Avg. Flow Depth = <u>0.320</u> inches Peak Hourly Flowrate = <u>23,000</u> gpd Peak Factor = <u>5.75</u>
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Notes: _____

Completed By: EC Hall Date: 2-5-2012

- computer calculated (formula)

Taylors Fire & Sewer Flow Meter Data Sheet

Rainfall and I/I Event Duration

Rainfall:	Start: <u>7/25/11 14:15</u>	End: <u>7/25/11 20:45</u>
	Max. 24-hour Total: <u>1.12 in.</u>	Storm Total: <u>1.12 in.</u>
I/I Event:	Start: <u>7/25/11 13:15</u>	End: <u>7/26/11 5:00</u>
Dates and times that rainfall and I/I begin and end.		

Wet Weather Event - I/I Analysis

Peak Flow Depth = <u>0.4</u> inches	I/I Event Duration = <u>15</u> hours
<input type="checkbox"/> Manhole Surcharged (Level exceeded pipe dia.)	I/I Volume = <u>1,250</u> gallons
Peak Hourly Flowrate = <u>8,000</u> gpd	<u>Inflow and Infiltration Breakdown (optional)</u>
Avg. Dry Weather Flow = <u>4,000</u> gpd	Dry Weather Infiltration = <u>2,000</u> gpd
Peak Factor = <u>2.00</u>	Rainfall Induced Infiltration = <u>0</u> gpd
Avg. Wet Weather Flow = <u>4,000</u> gpd	Total Infiltration = <u>2,000</u> gpd
Avg. I/I Flow = <u>2,000</u> gpd	Infiltration Rate = <u>500</u> gpd/idm
Inch-Diameter Miles = <u>4.00</u> idm	Inflow = <u>0</u> gpd
I/I Rate = <u>500</u> gpd/idm	Inflow Rate = <u>0</u> gpd/idm

Notes: _____

Completed By EC Mell

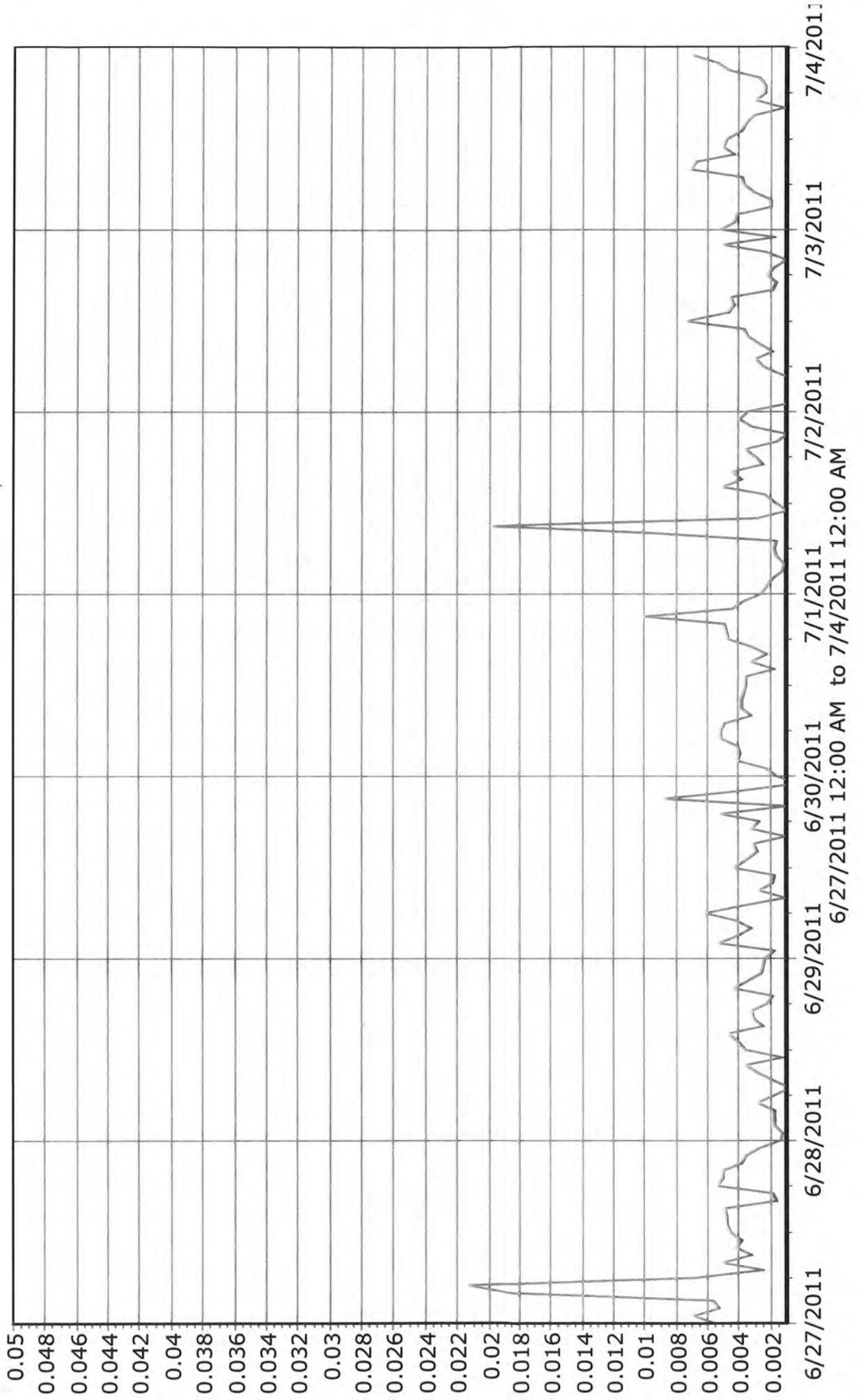
Date: 2-5-2012

[REDACTED] - computer calculated (formula)

6-552

Dry Weather Flow 6/27/11 to 7/1/11

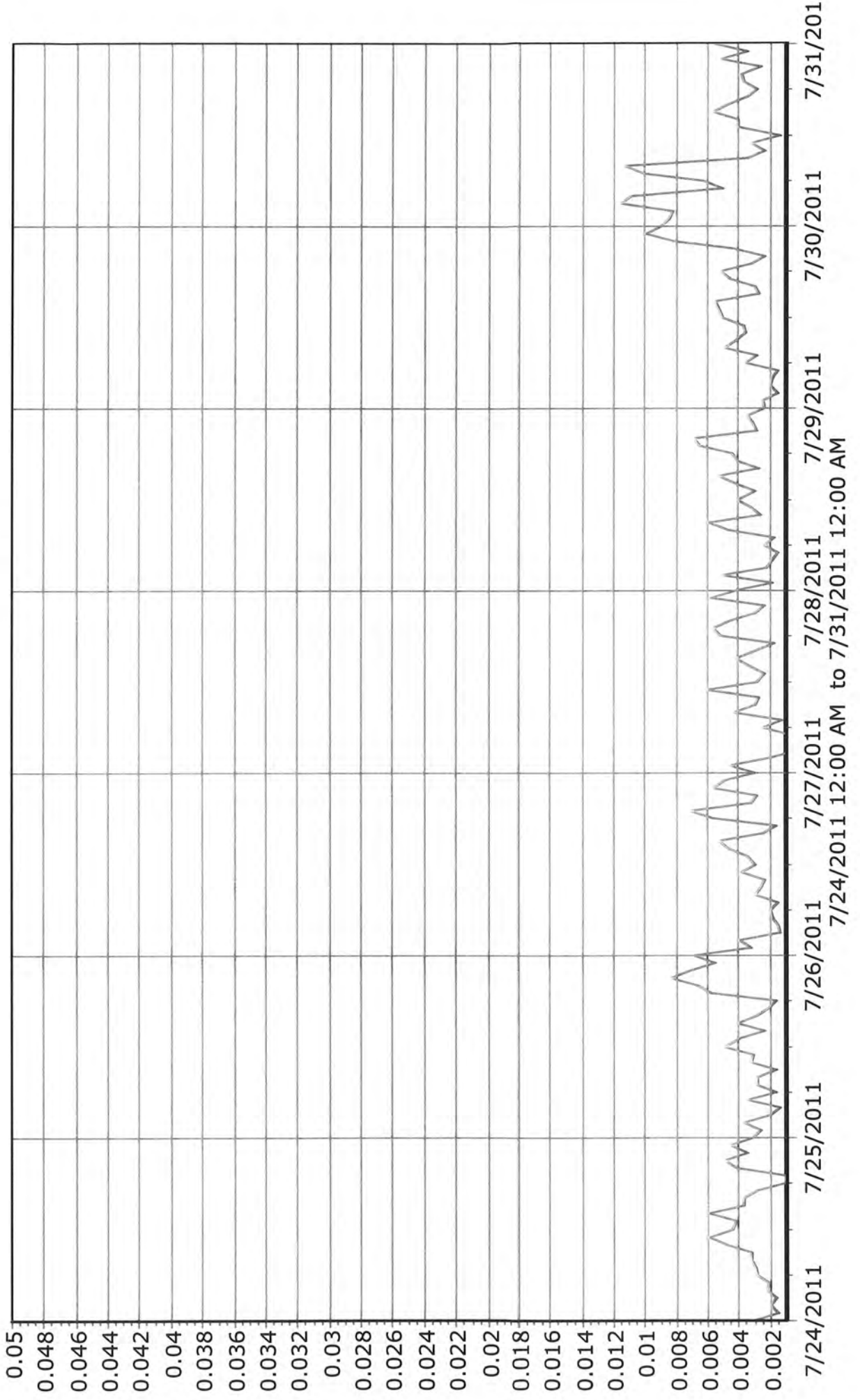
— Flow (mgd)



6-552

Wet Weather Event 7/25/11

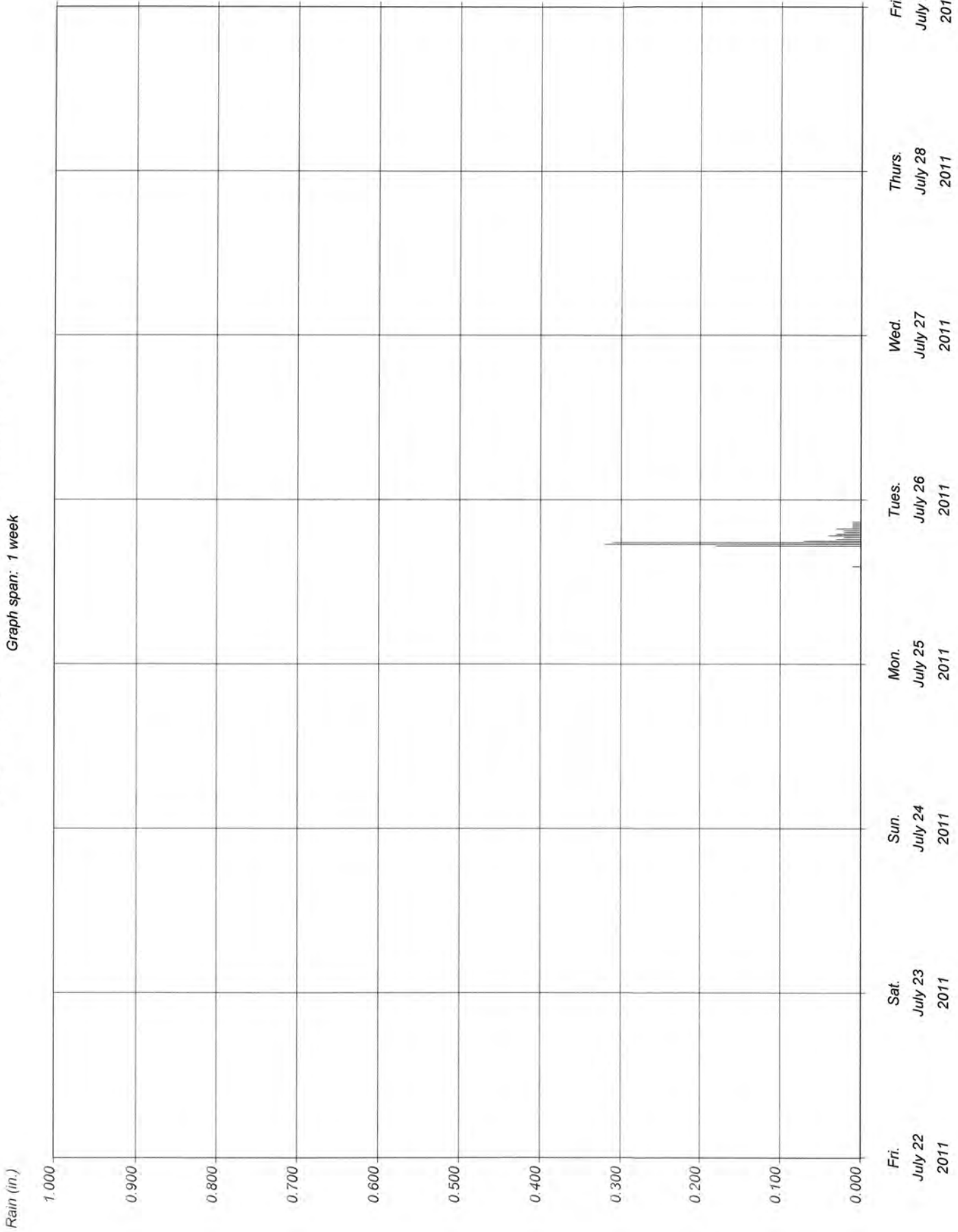
— Flow (mgd)



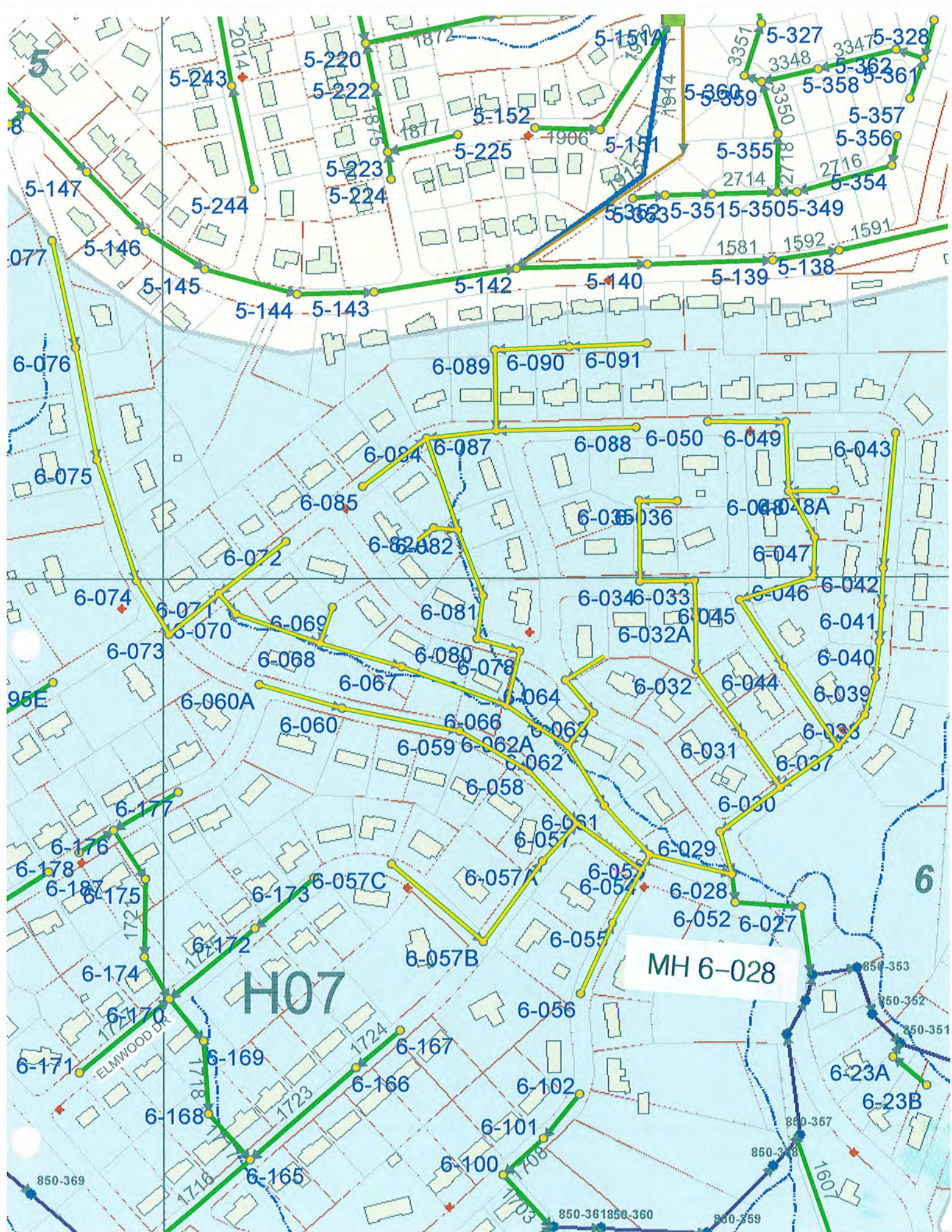
Rain 7/25/11

Site Id: 00000000 File name: 00000000.000

Graph span: 1 week



MH 6-028



Taylors Fire & Sewer Flow Meter Data Sheet

MH 6-028
Basin All Event 1
Nov 30, 2010

System Data

Meter Location 6-028

Pipe Size (in.): 8

Inch-Miles of Sewer Upstream of Meter						
Pipe Size (in.)	Length (ft.)	Inch-Miles		Pipe Size (in.)	Length (ft.)	Inch-Miles
8	11,587	17.56		24		0.00
10		0.00		27		0.00
12		0.00		30		0.00
14		0.00		36		0.00
15		0.00		42		0.00
16		0.00		48		0.00
18		0.00		54		0.00
20		0.00		60		0.00
21		0.00		72		0.00
Total =						17.56

Dry Weather Flow

<p>Average Daily Flow calculated from the following dates:</p> <p>From: <u>11/08/10</u></p> <p>To: <u>11/13/10</u></p>	<p>Avg. Daily Flowrate = <u>13000.000</u> gpd</p> <p>Avg. Flow Depth = <u>1.500</u> inches</p> <p>Peak Hourly Flowrate = <u>28000.000</u> gpd</p> <p>Peak Factor = <u>2.15</u></p>
--	--

Notes: _____

Completed By: Ec Mall

Date: 2-5-2012

 - computer calculated (formula)

Taylor's Fire & Sewer Flow Meter Data Sheet

Rainfall and I/I Event Duration

Rainfall: Start: 11/30/2010 1:00 End: 12/1/2010 1:00

Max. 24-hour Total: 2.36 in. Storm Total: 2.36 in.

I/I Event: Start: 11/30/2010 0:00 End: 12/2/2010 3:00

Dates and times that rainfall and I/I begin and end.

Wet Weather Event - I/I Analysis

Peak Flow Depth = 2.4 inches

I/I Event Duration = 51 hours

☐ Manhole Surcharged (Level exceeded pipe dia.)

I/I Volume = 19,125 gallons

Peak Hourly Flowrate = 51,000 gpd

Inflow and Infiltration Breakdown (optional)

Avg. Dry Weather Flow = 13,000 gpd

Dry Weather Infiltration = 5,000 gpd

Peak Factor = 3.92

Rainfall Induced Infiltration = 4,000 gpd

Avg. Wet Weather Flow = 22,000 gpd

Total Infiltration = 9,000 gpd

Avg. I/I Flow = 9,000 gpd

Infiltration Rate = 513 gpd/idm

Inch-Diameter Miles = 17.56 idm

Inflow = 0 gpd

I/I Rate = 513 gpd/idm

Inflow Rate = 0 gpd/idm

Notes:

Completed By: EC McCall

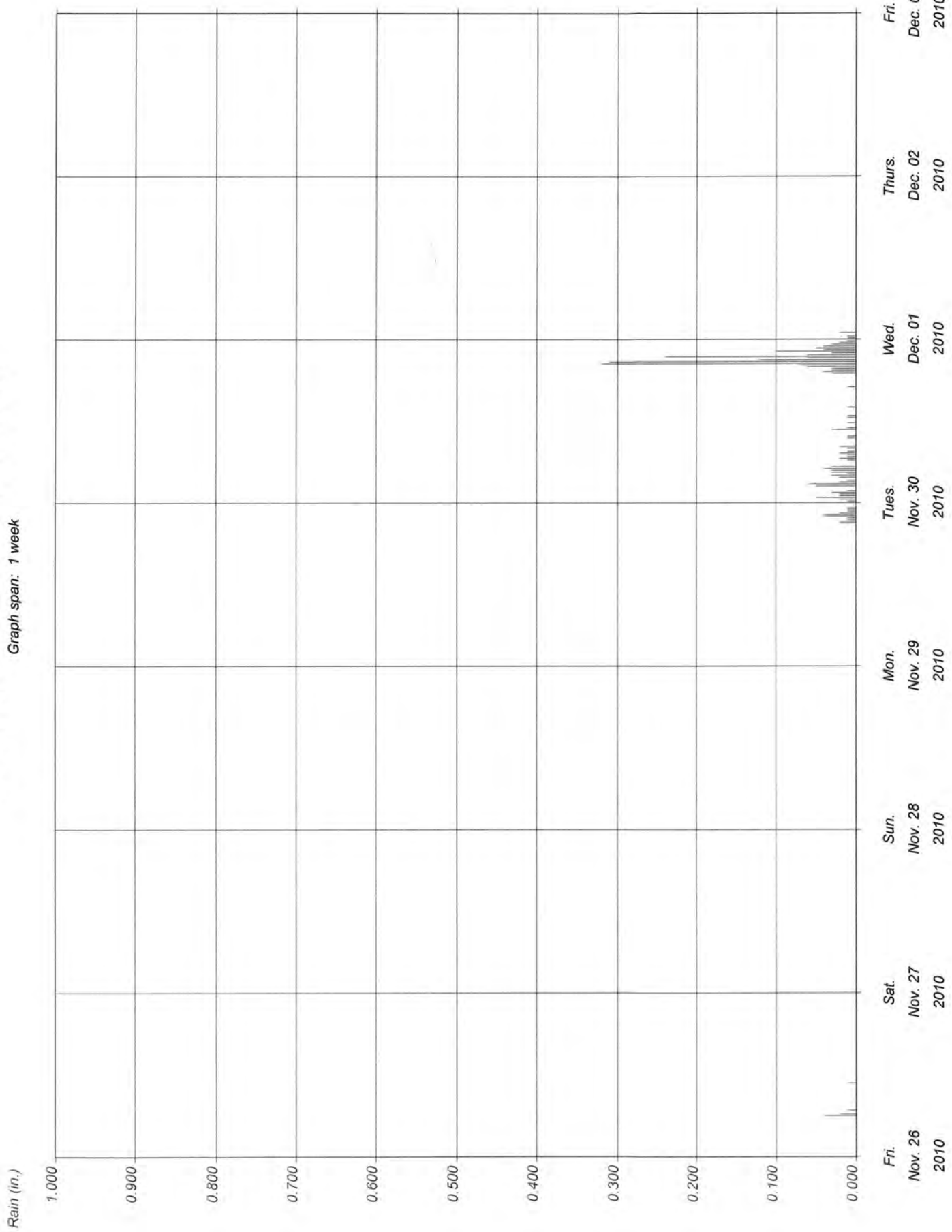
Date: 2-5-2012

 - computer calculated (formula)

6-028 Rain 11/30/10

Site Id: 00000000 File name: 00000000.000

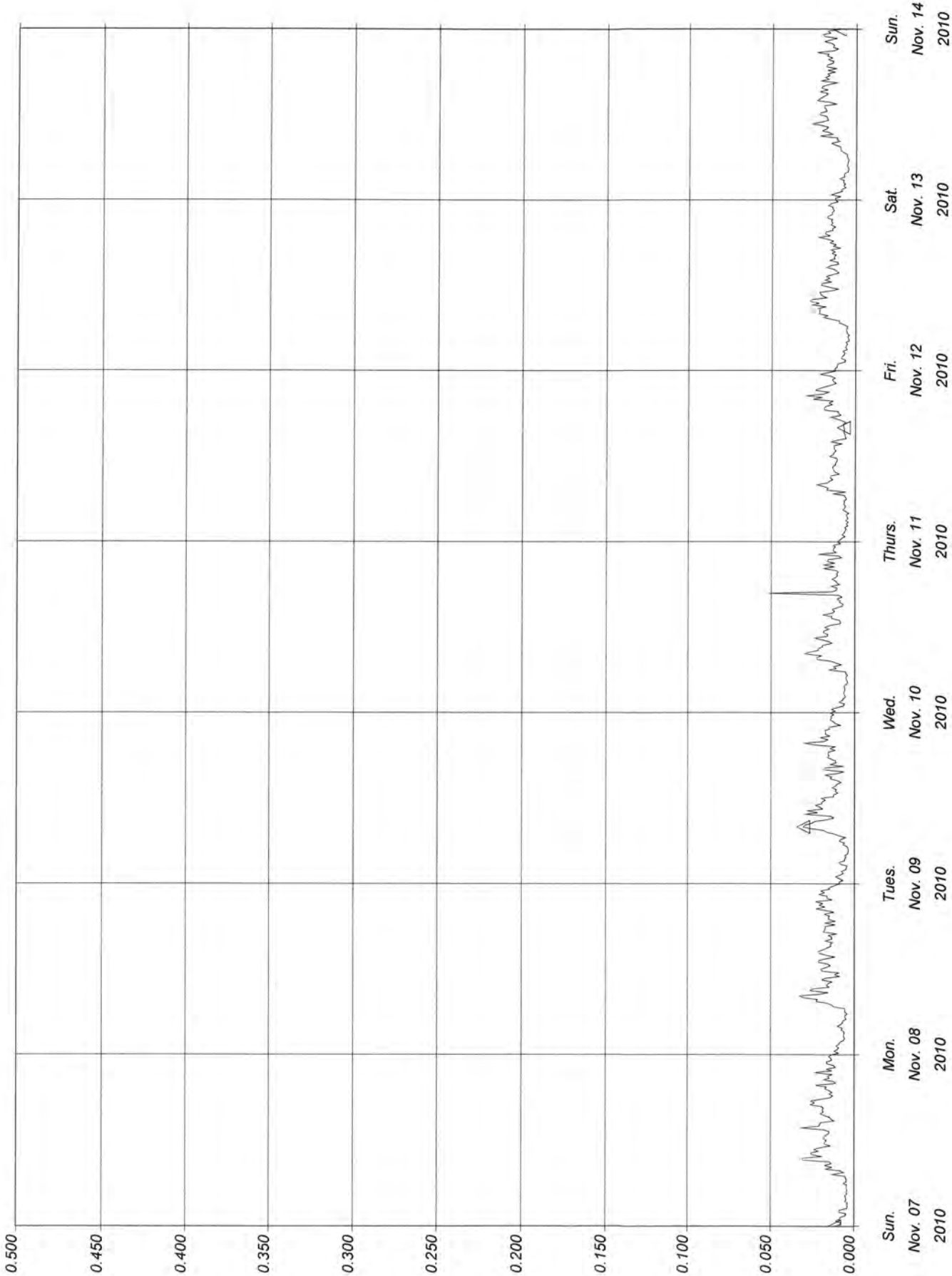
Graph span: 1 week



6-028 Dry Weather Flow Nov. 2010
Site Id: 00006028 File name: 00006028.000

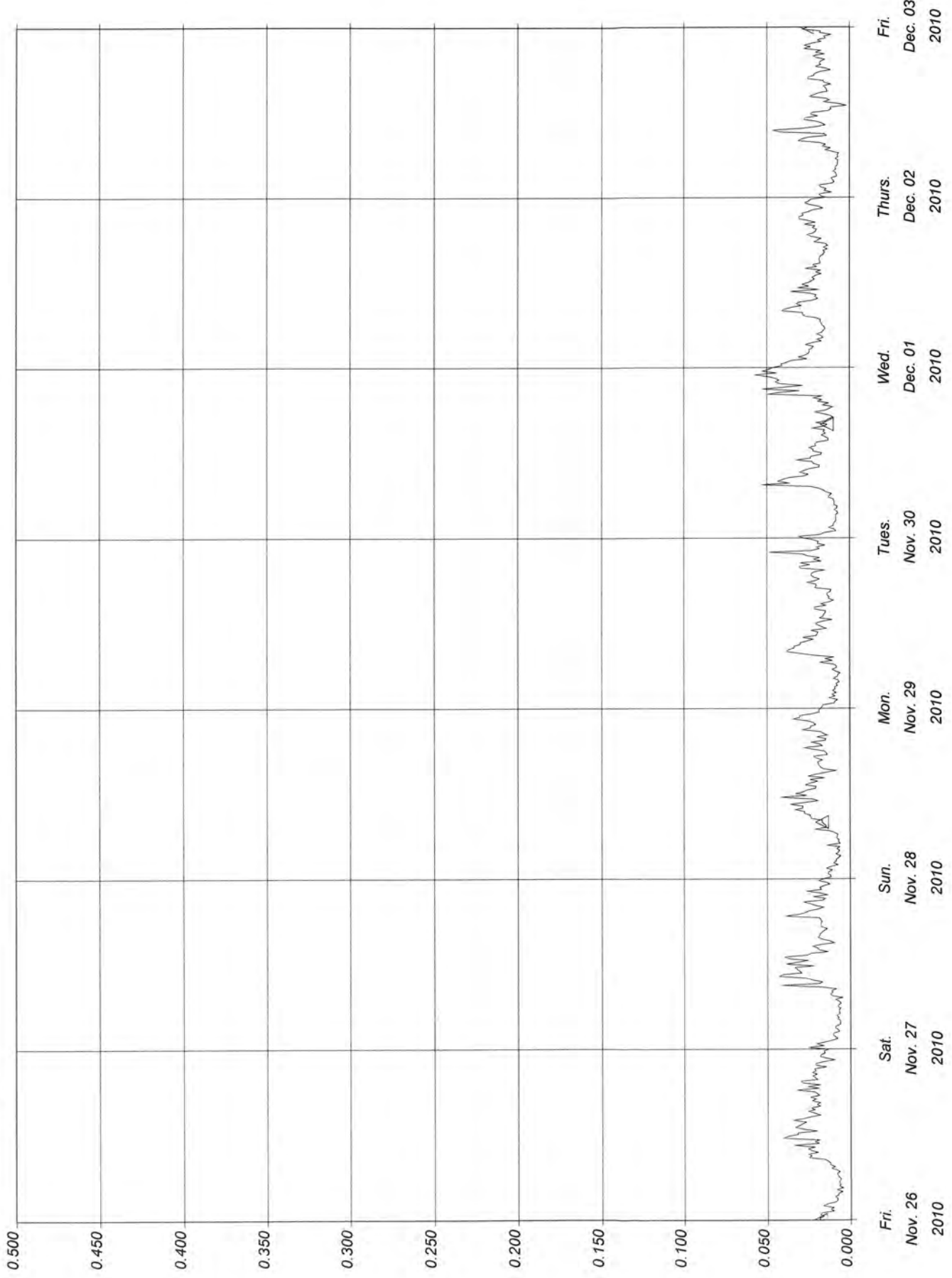
Graph span: 1 week

△ Flow 1 (mgd)



Graph span: 1 week

△ Flow 1 (mgd)



Taylors Fire & Sewer Flow Meter Data Sheet

6-028
Rainfall Event 2
Feb 1, 2011

System Data

Meter Location <u>6-028</u>	Pipe Size (in.): <u>8</u>
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Inch-Miles of Sewer Upstream of Meter						
Pipe Size (in.)	Length (ft.)	Inch-Miles		Pipe Size (in.)	Length (ft.)	Inch-Miles
8	11,587	17.56		24		0.00
10		0.00		27		0.00
12		0.00		30		0.00
14		0.00		36		0.00
15		0.00		42		0.00
16		0.00		48		0.00
18		0.00		54		0.00
20		0.00		60		0.00
21		0.00		72		0.00
Total =						17.56

Dry Weather Flow

<p>Average Daily Flow calculated from the following dates:</p> <p>From: <u>02/10/11</u></p> <p>To: <u>02/15/11</u></p>	<p>Avg. Daily Flowrate = <u>17000.000</u> gpd</p> <p>Avg. Flow Depth = <u>1.600</u> inches</p> <p>Peak Hourly Flowrate = <u>40000.000</u> gpd</p> <p>Peak Factor = <u>2.35</u></p>
--	--

Notes: _____

Completed By: Ec Mella

Date: 2-5-2012

 - computer calculated (formula)

Taylors Fire & Sewer Flow Meter Data Sheet

Rainfall and I/I Event Duration

Rainfall:	Start: <u>2/1/2011 7:15</u>	End: <u>2/2/2011 12:30</u>
	Max. 24-hour Total: <u>1.23</u> in.	Storm Total: <u>1.23</u> in.
I/I Event:	Start: <u>2/1/2011 6:15</u>	End: <u>2/3/2011 3:00</u>

Dates and times that rainfall and I/I begin and end.

Wet Weather Event - I/I Analysis

Peak Flow Depth = <u>2.3</u> inches	I/I Event Duration = <u>45</u> hours
<input type="checkbox"/> Manhole Surcharged (Level exceeded pipe dia.)	I/I Volume = <u>13,125</u> gallons
Peak Hourly Flowrate = <u>52,000</u> gpd	<u>Inflow and Iniltration Breakdown (optional)</u>
Avg. Dry Weather Flow = <u>17,000</u> gpd	Dry Weather Infiltration = <u>5,000</u> gpd
Peak Factor = <u>3.06</u>	Rainfall Induced Infiltration = <u>2,000</u> gpd
Avg. Wet Weather Flow = <u>24,000</u> gpd	Total Infiltration = <u>7,000</u> gpd
Avg. I/I Flow = <u>7,000</u> gpd	Infiltration Rate = <u>399</u> gpd/idm
Inch-Diameter Miles = <u>17.56</u> idm	Inflow = <u>0</u> gpd
I/I Rate = <u>399</u> gpd/idm	Inflow Rate = <u>0</u> gpd/idm

Notes: _____

Completed By: EC M. L. L.

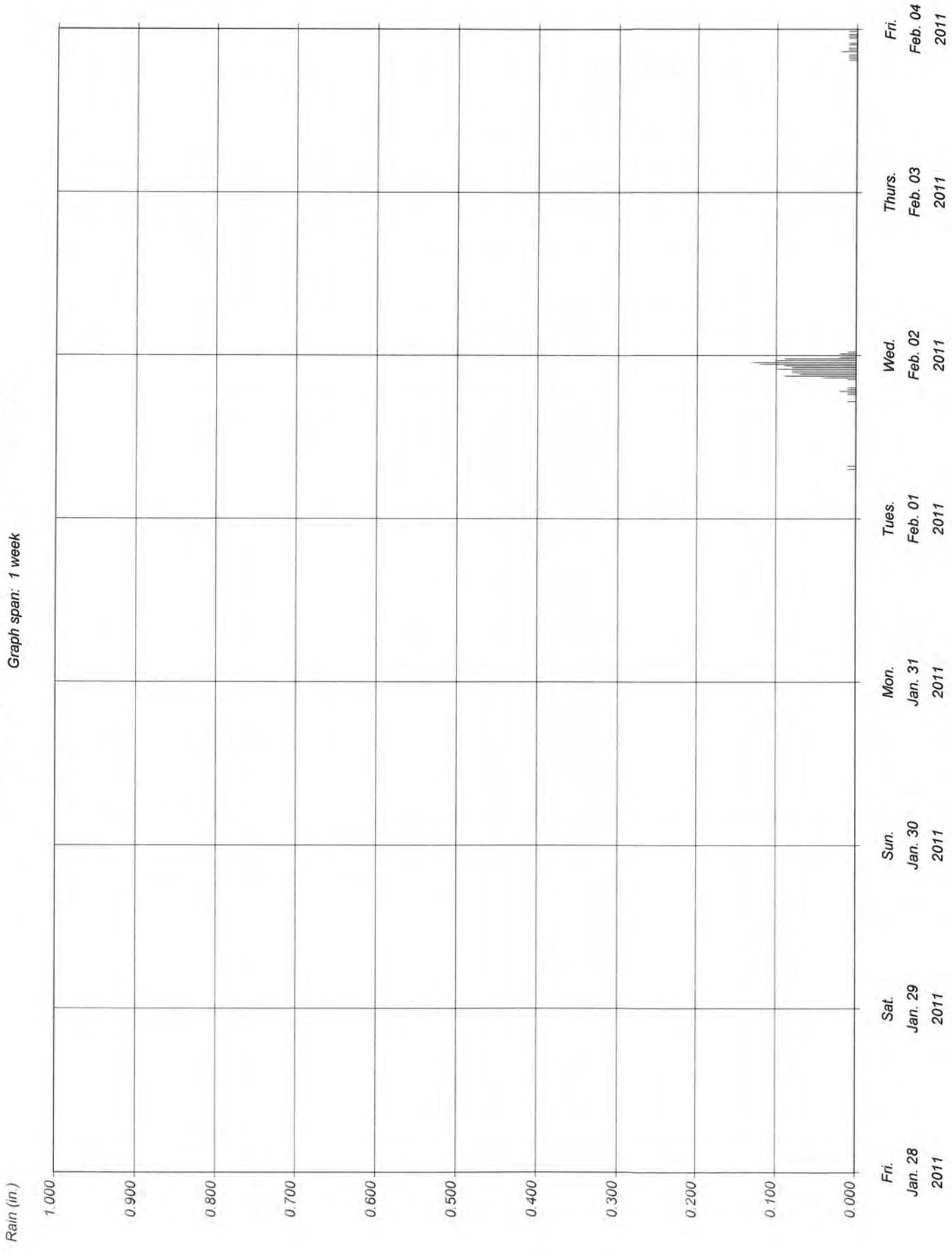
Date: 2-5-2012

 - computer calculated (formula)

6-028 Rain 2/1/11

Site Id: 00000000 File name: 00000000.000

Graph span: 1 week

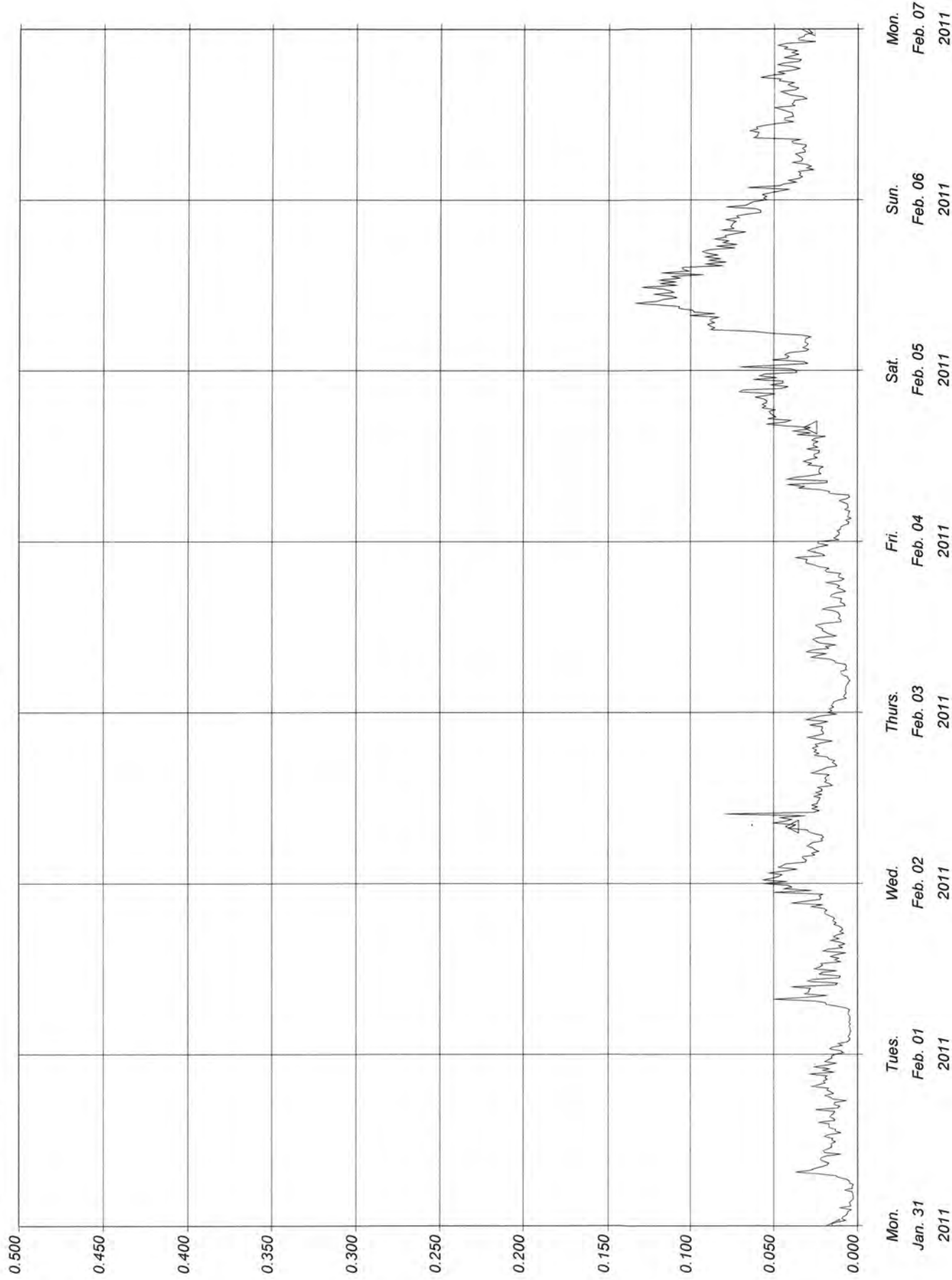


6-028 Wet Weather Event 2/1/11

Site Id: 00006028 File name: 00006028.000

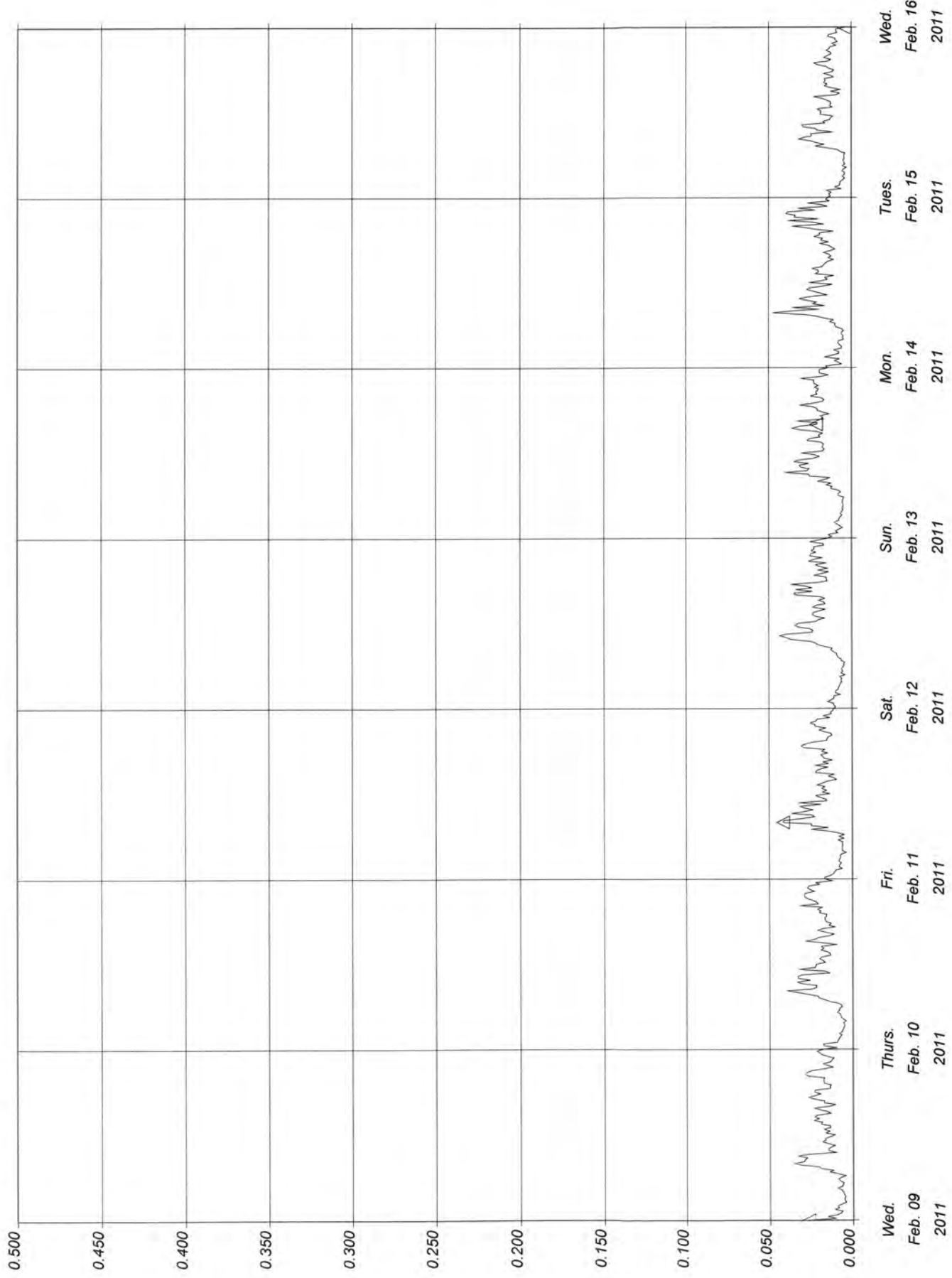
Graph span: 1 week

△ Flow 1 (mgd)



Graph span: 1 week

△ Flow 1 (mgd)



Taylors Fire & Sewer Flow Meter Data Sheet

MH 6-028
Point #11 Event 3
Feb 4, 2011

System Data

Meter Location <u>6-028</u>	Pipe Size (in.): <u>8</u>
-----------------------------	---------------------------

Inch-Miles of Sewer Upstream of Meter						
Pipe Size (in.)	Length (ft.)	Inch-Miles		Pipe Size (in.)	Length (ft.)	Inch-Miles
8	11,587	17.56		24		0.00
10		0.00		27		0.00
12		0.00		30		0.00
14		0.00		36		0.00
15		0.00		42		0.00
16		0.00		48		0.00
18		0.00		54		0.00
20		0.00		60		0.00
21		0.00		72		0.00
Total =						17.56

Dry Weather Flow

<p>Average Daily Flow calculated from the following dates:</p> <p>From: <u>02/10/11</u></p> <p>To: <u>02/15/11</u></p>	<p>Avg. Daily Flowrate = <u>17000.000</u> gpd</p> <p>Avg. Flow Depth = <u>1.600</u> inches</p> <p>Peak Hourly Flowrate = <u>40000.000</u> gpd</p> <p>Peak Factor = <u>2.35</u></p>
--	--

Notes: _____

Completed By: EC M. M.

Date: 2-5-2012

- computer calculated (formula)

Taylor's Fire & Sewer Flow Meter Data Sheet

Rainfall and I/I Event Duration

Rainfall: Start: 2/4/2011 7:15 End: 2/5/2011 7:15

Max. 24-hour Total: 1.53 in. Storm Total: 1.53 in.

I/I Event: Start: 2/4/2011 6:15 End: 2/8/2011 0:00

Dates and times that rainfall and I/I begin and end.

Wet Weather Event - I/I Analysis

Peak Flow Depth = 3.7 inches

I/I Event Duration = 95 hours

☐ Manhole Surcharged (Level exceeded pipe dia.)

I/I Volume = 118,750 gallons

Peak Hourly Flowrate = 122,000 gpd

Inflow and Infiltration Breakdown (optional)

Avg. Dry Weather Flow = 17,000 gpd

Dry Weather Infiltration = 6,000 gpd

Peak Factor = 7.18

Rainfall Induced Infiltration = 16,000 gpd

Avg. Wet Weather Flow = 47,000 gpd

Total Infiltration = 22,000 gpd

Avg. I/I Flow = 30,000 gpd

Infiltration Rate = 1,253 gpd/idm

Inch-Diameter Miles = 17.56 idm

Inflow = 8,000 gpd

I/I Rate = 1,708 gpd/idm

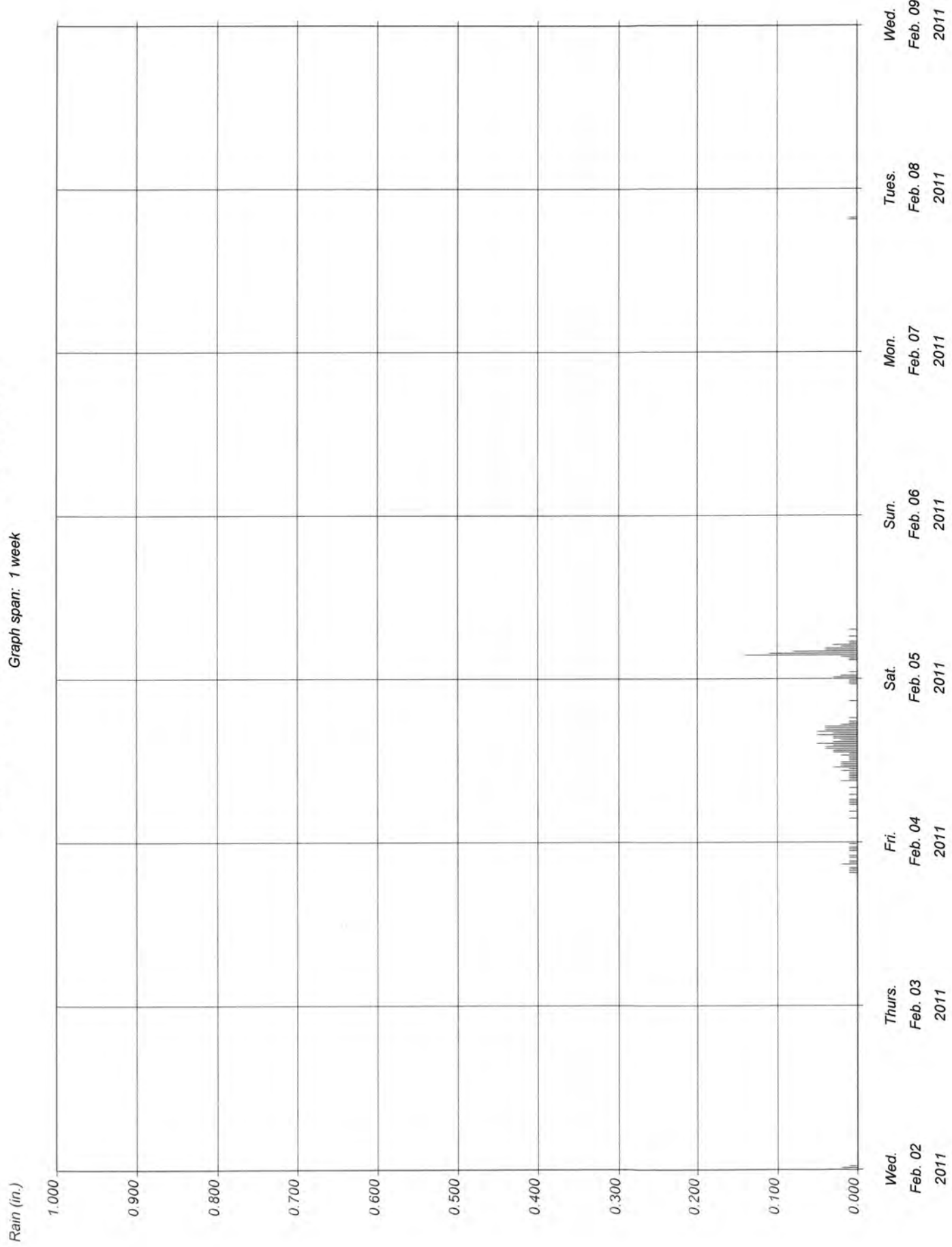
Inflow Rate = 456 gpd/idm

Notes: _____

Completed By: EC M. LA

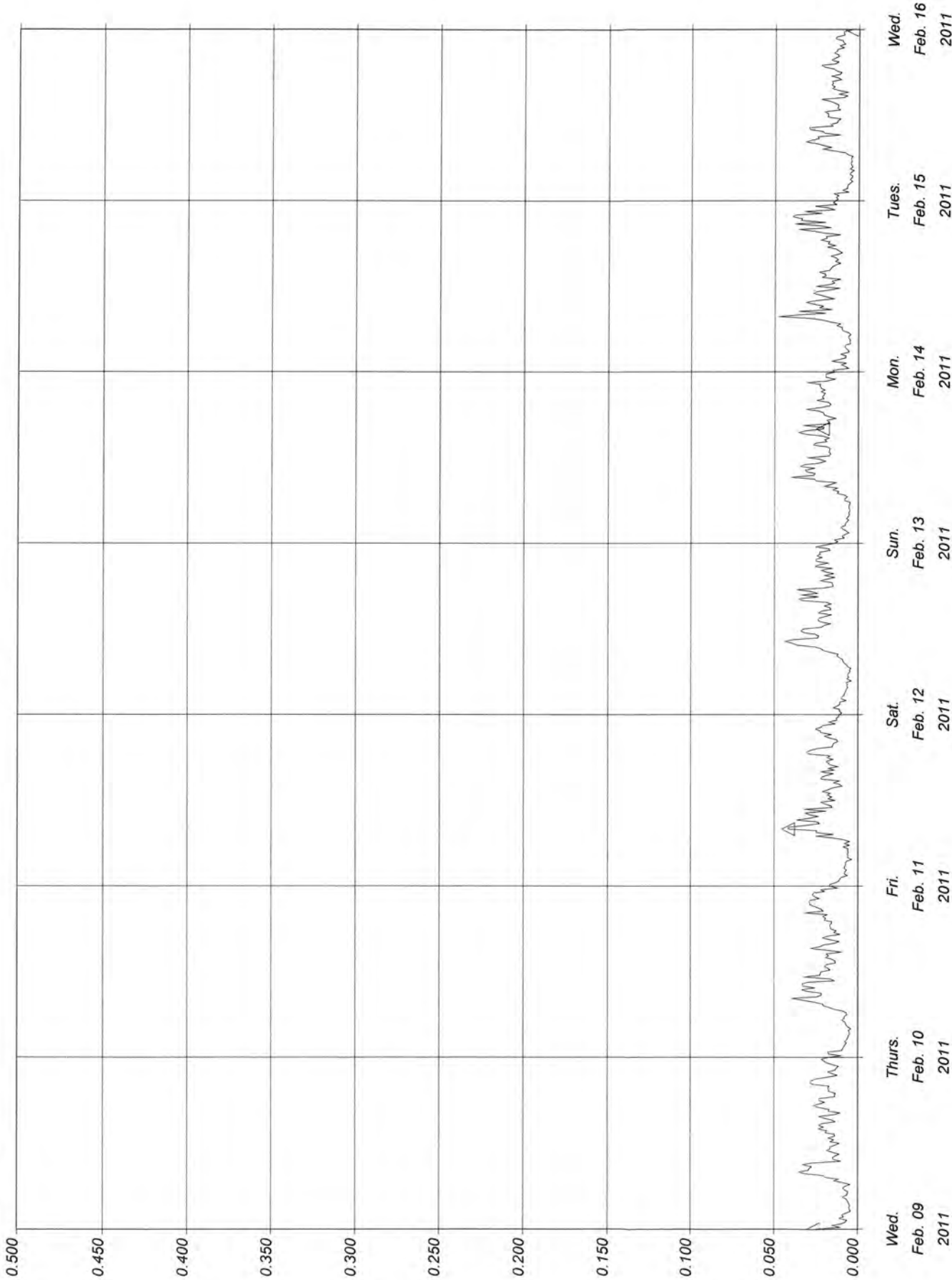
Date: 2-5-2012

 - computer calculated (formula)



Graph span: 1 week

△ Flow 1 (mgd)

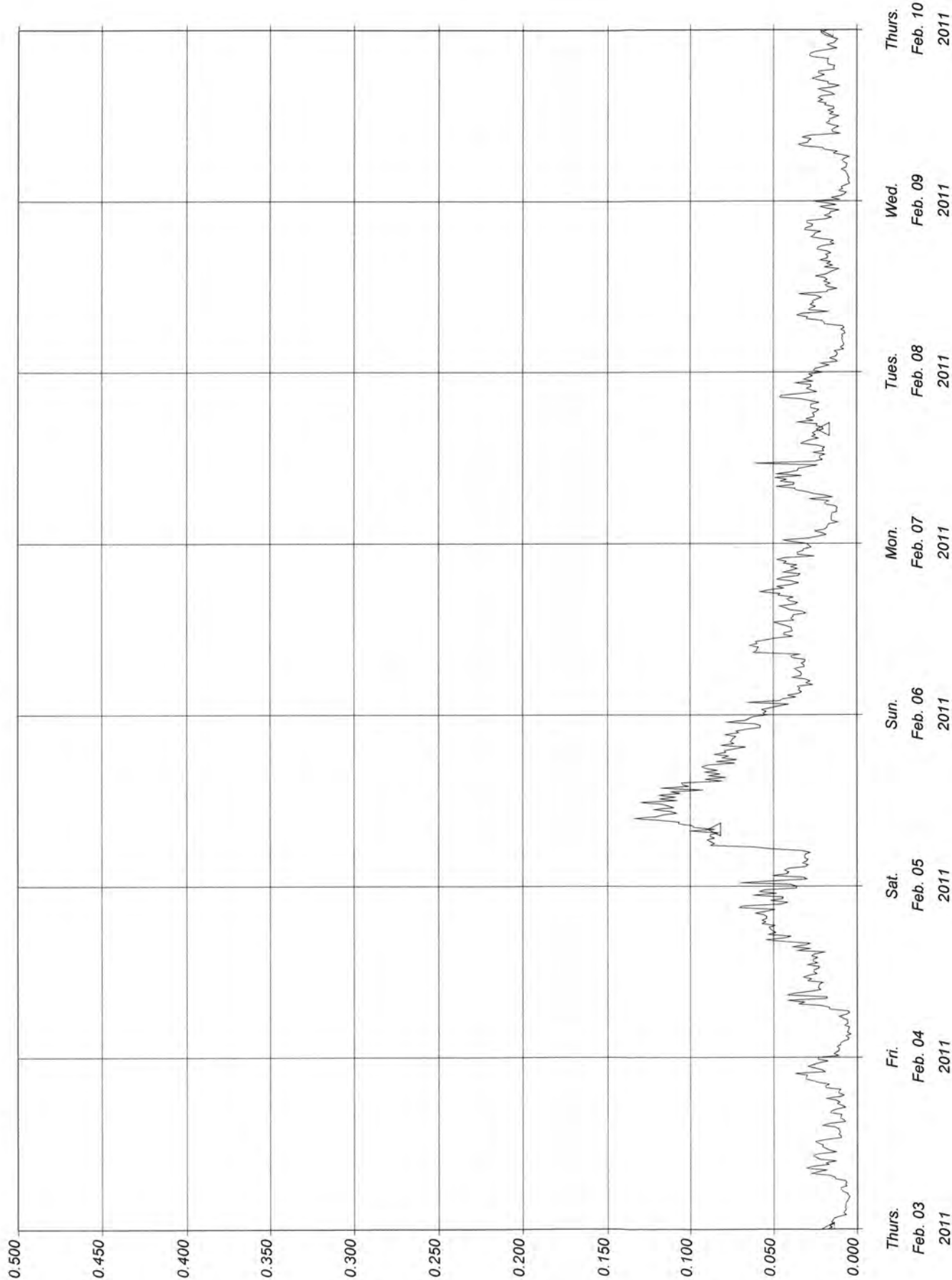


6-028 Wet Weather Event 2/4/11

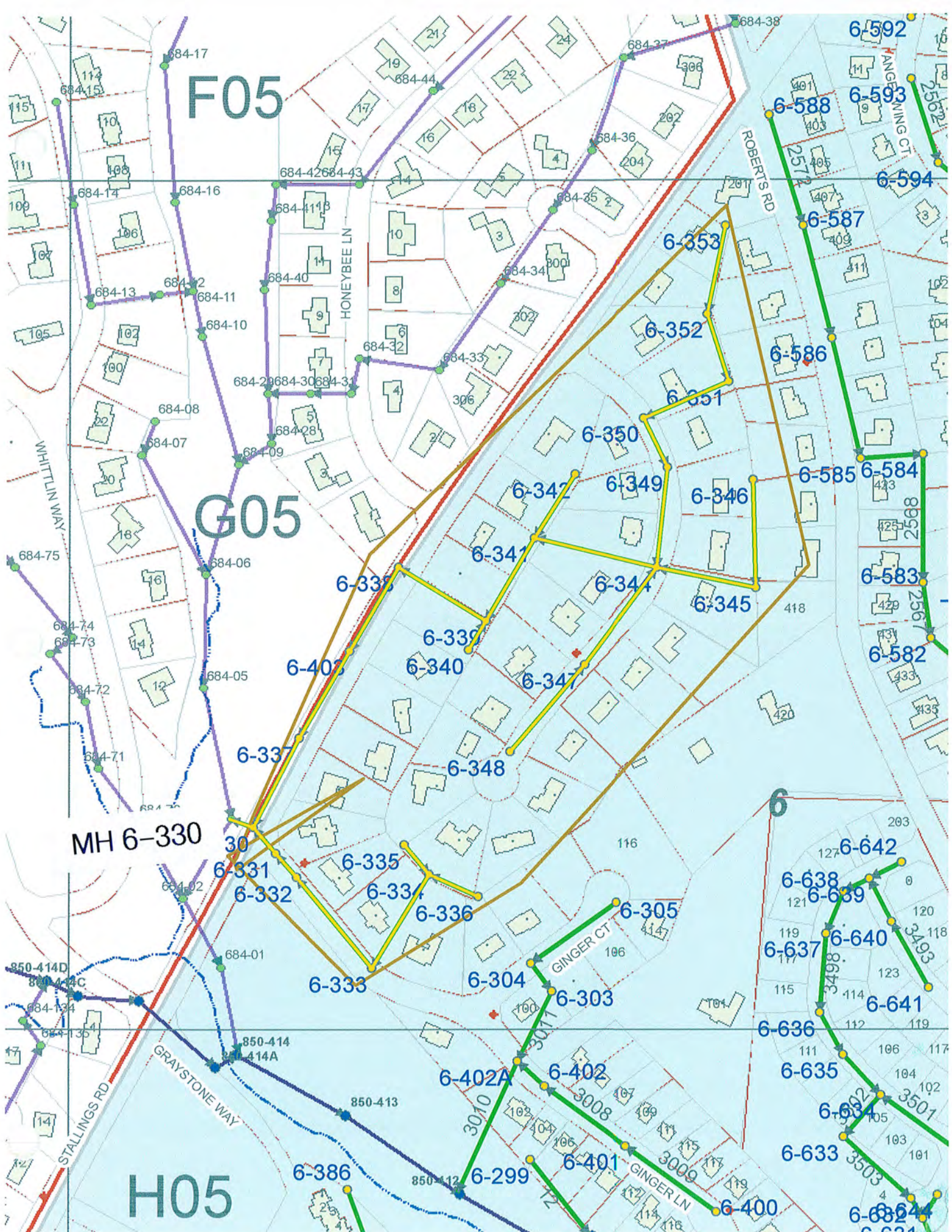
Site Id: 00006028 File name: 00006028.000

Graph span: 1 week

△ Flow 1 (mgd)



MH 6-330



MH 6-330
Rain All Event
Nov 30, 2010

Taylor's Fire & Sewer Flow Meter Data Sheet

System Data

Meter Location 6-330

Pipe Size (in.): 8

Inch-Miles of Sewer Upstream of Meter						
Pipe Size (in.)	Length (ft.)	Inch-Miles		Pipe Size (in.)	Length (ft.)	Inch-Miles
8	4,342	6.58		24		0.00
10		0.00		27		0.00
12		0.00		30		0.00
14		0.00		36		0.00
15		0.00		42		0.00
16		0.00		48		0.00
18		0.00		54		0.00
20		0.00		60		0.00
21		0.00		72		0.00
Total =						6.58


Dry Weather Flow

Average Daily Flow calculated from the following dates: From: <u>11/08/10</u> To: <u>11/13/10</u>	Avg. Daily Flowrate = <u>21000.000</u> gpd Avg. Flow Depth = <u>0.900</u> inches Peak Hourly Flowrate = <u>110000.000</u> gpd Peak Factor = <u>5.24</u>
---	--

Notes:

Completed By: EC Mella

Date: 2-5-2012

 - computer calculated (formula)

Taylor's Fire & Sewer Flow Meter Data Sheet

Rainfall and I/I Event Duration

Rainfall: Start: 11/30/2010 1:00 End: 12/1/2010 1:00

Max. 24-hour Total: 2.36 in. Storm Total: 2.36 in.

I/I Event: Start: 11/30/2010 0:00 End: 12/3/2010 1:00

Dates and times that rainfall and I/I begin and end.

Wet Weather Event - I/I Analysis

Peak Flow Depth = 1.8 inches

I/I Event Duration = 73 hours

☐ Manhole Surcharged (Level exceeded pipe dia.)

I/I Volume = 79,083 gallons

Peak Hourly Flowrate = 148,000 gpd

Inflow and Infiltration Breakdown (optional)

Avg. Dry Weather Flow = 21,000 gpd

Dry Weather Infiltration = 3,000 gpd

Peak Factor = 7.05

Rainfall Induced Infiltration = 13,000 gpd

Avg. Wet Weather Flow = 47,000 gpd

Total Infiltration = 16,000 gpd

Avg. I/I Flow = 26,000 gpd

Infiltration Rate = 911 gpd/idm

Inch-Diameter Miles = 17.56 idm

Inflow = 10,000 gpd


I/I Rate = 1,481 gpd/idm

Inflow Rate = 569 gpd/idm

Notes:

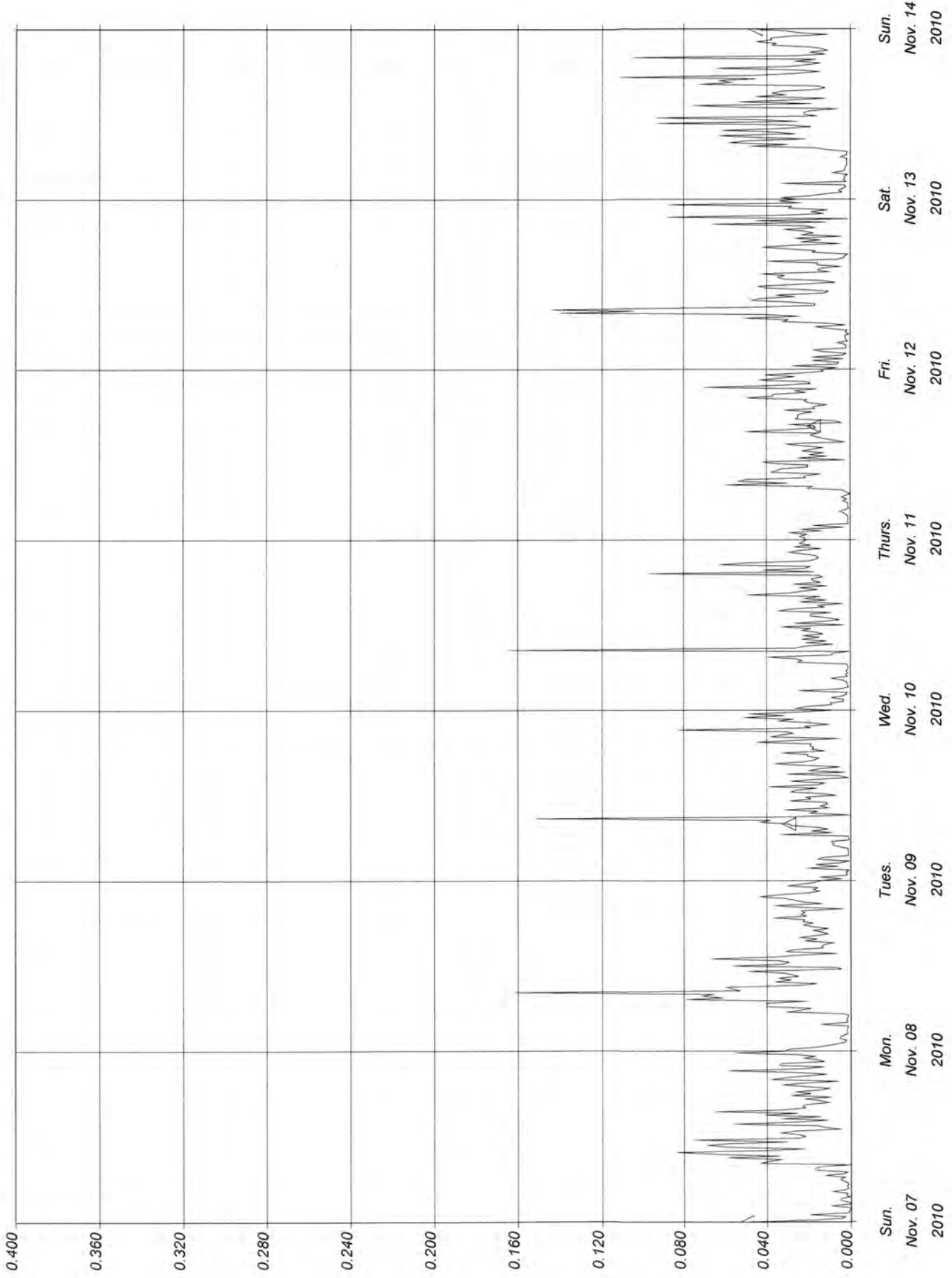
Completed By: EC McMillan

Date: 2-5-2012

 - computer calculated (formula)

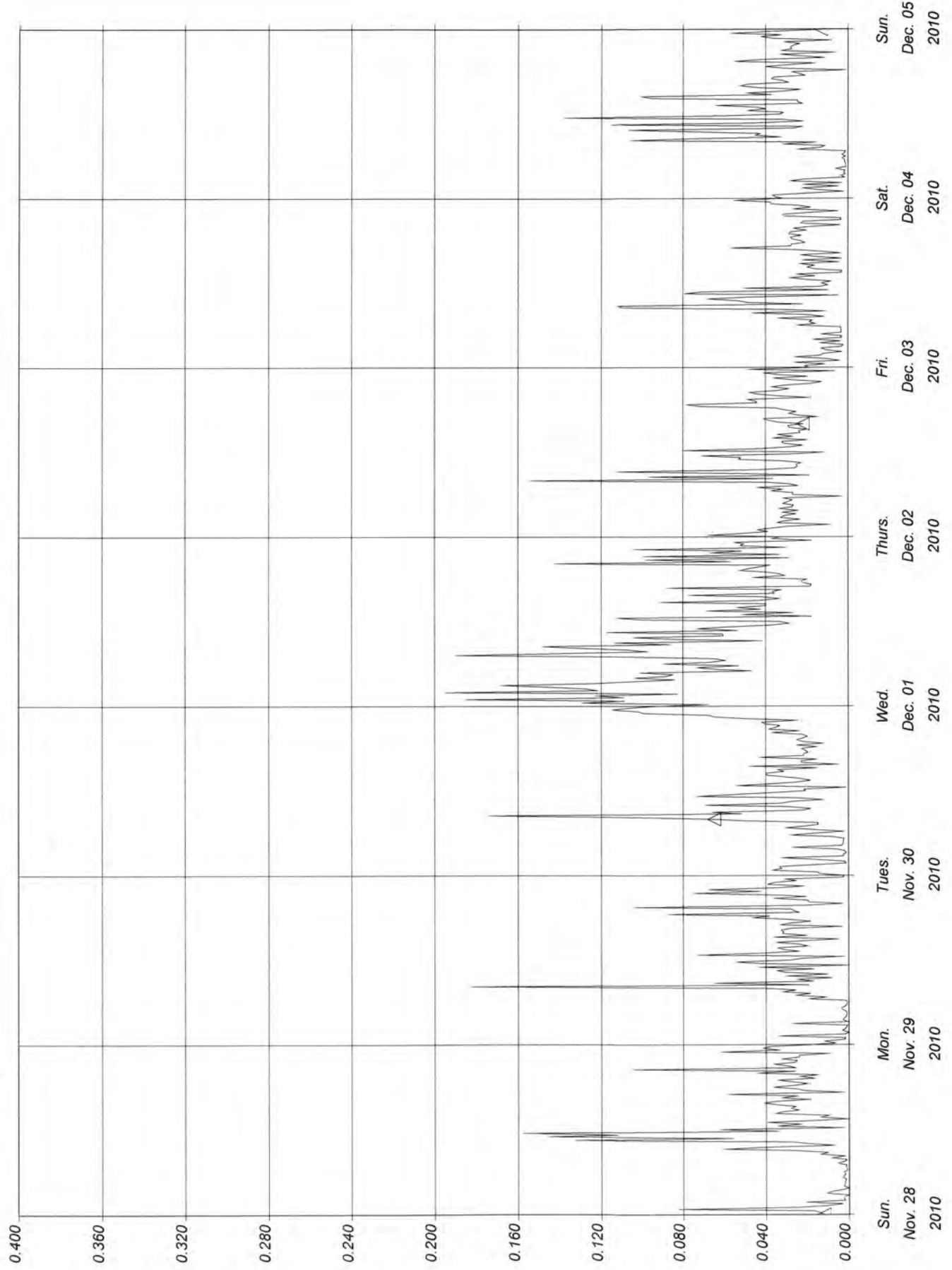
Graph span: 1 week

△ Flow 1 (mgd)



Graph span: 1 week

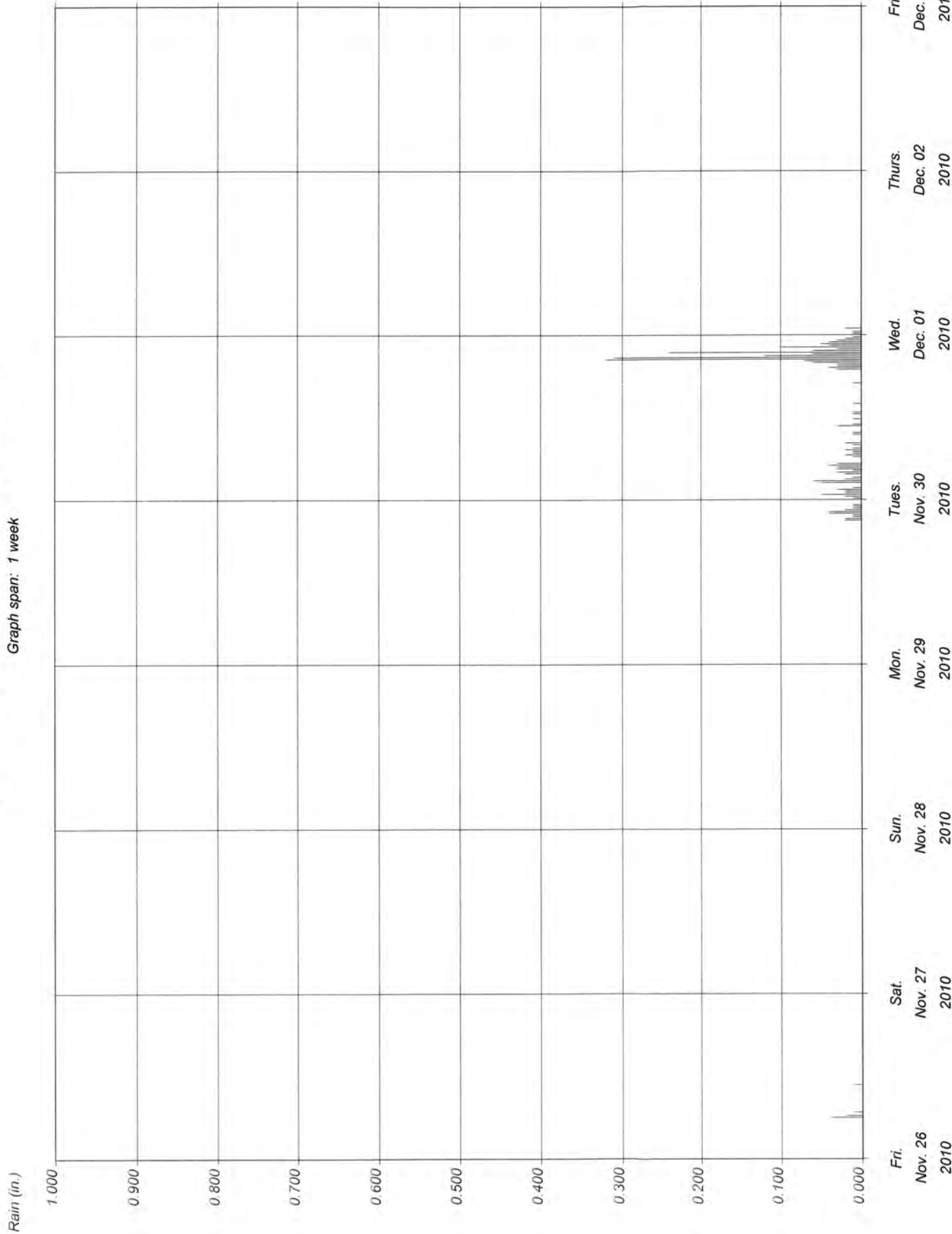
△ Flow 1 (mgd)



6-330 Rain 11/30/10

Site Id: 00000000 File name: 00000000.000

Graph span: 1 week



Taylors Fire & Sewer Flow Meter Data Sheet

MH 6-330
Rainfall Event 2
Feb 1, 2011

System Data

Meter Location <u>6-330</u>	Pipe Size (in.): <u>8</u>
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Inch-Miles of Sewer Upstream of Meter						
Pipe Size (in.)	Length (ft.)	Inch-Miles		Pipe Size (in.)	Length (ft.)	Inch-Miles
8	4,342	6.58		24		0.00
10		0.00		27		0.00
12		0.00		30		0.00
14		0.00		36		0.00
15		0.00		42		0.00
16		0.00		48		0.00
18		0.00		54		0.00
20		0.00		60		0.00
21		0.00		72		0.00
Total =						6.58

Dry Weather Flow

Average Daily Flow calculated from the following dates: From: <u>02/10/11</u> To: <u>02/15/10</u>	Avg. Daily Flowrate = <u>17000.000</u> gpd Avg. Flow Depth = <u>0.800</u> inches Peak Hourly Flowrate = <u>52000.000</u> gpd Peak Factor = <u>3.06</u>
---	---

Notes: _____

Completed By: E C McIlw

Date: 2-5-2012

- computer calculated (formula)

Taylor's Fire & Sewer Flow Meter Data Sheet

Rainfall and I/I Event Duration

Rainfall: Start: 2/1/2011 7:15 End: 2/2/2011 12:30

Max. 24-hour Total: 1.23 in. Storm Total: 1.23 in.

I/I Event: Start: 2/1/2011 6:15 End: 2/4/2011 0:00

Dates and times that rainfall and I/I begin and end.

Wet Weather Event - I/I Analysis

Peak Flow Depth = 1.5 inches

I/I Event Duration = 65 hours

☐ Manhole Surcharged (Level exceeded pipe dia.)

I/I Volume = 29,792 gallons

Peak Hourly Flowrate = 71,000 gpd

Inflow and Infiltration Breakdown (optional)

Avg. Dry Weather Flow = 17,000 gpd

Dry Weather Infiltration = 2,000 gpd

Peak Factor = 4.18

Rainfall Induced Infiltration = 7,000 gpd

Avg. Wet Weather Flow = 28,000 gpd

Total Infiltration = 9,000 gpd

Avg. I/I Flow = 11,000 gpd

Infiltration Rate = 513 gpd/idm

Inch-Diameter Miles = 17.56 idm

Inflow = 2,000 gpd


I/I Rate = 626 gpd/idm

Inflow Rate = 114 gpd/idm

Notes:

Completed By: EC Hall

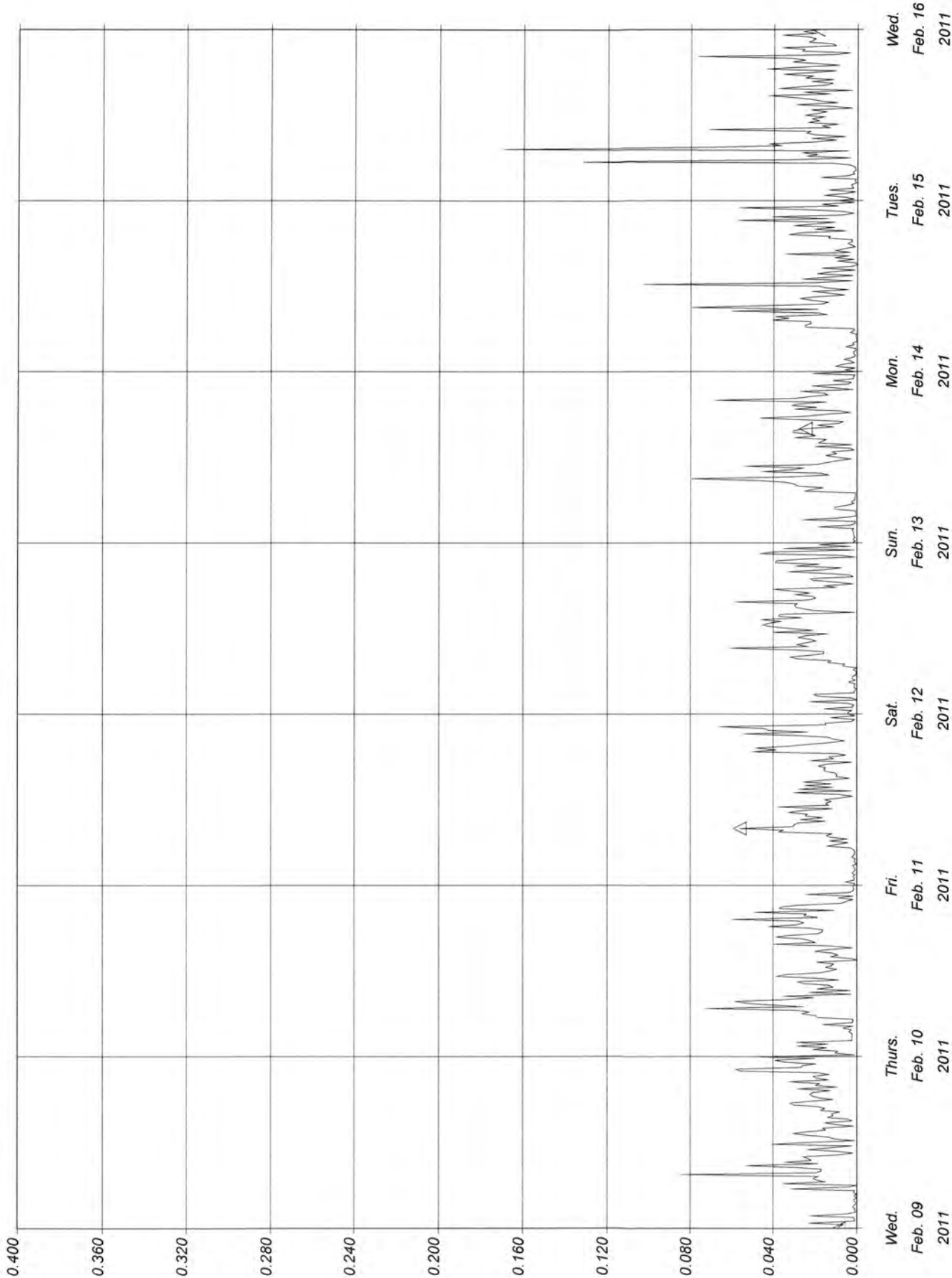
Date: 2-5-2012

 - computer calculated (formula)

6-330 Dry Weather Flow Feb. 2011
Site Id: 00006330 File name: 00006330.000

Graph span: 1 week

△ Flow 1 (mgd)

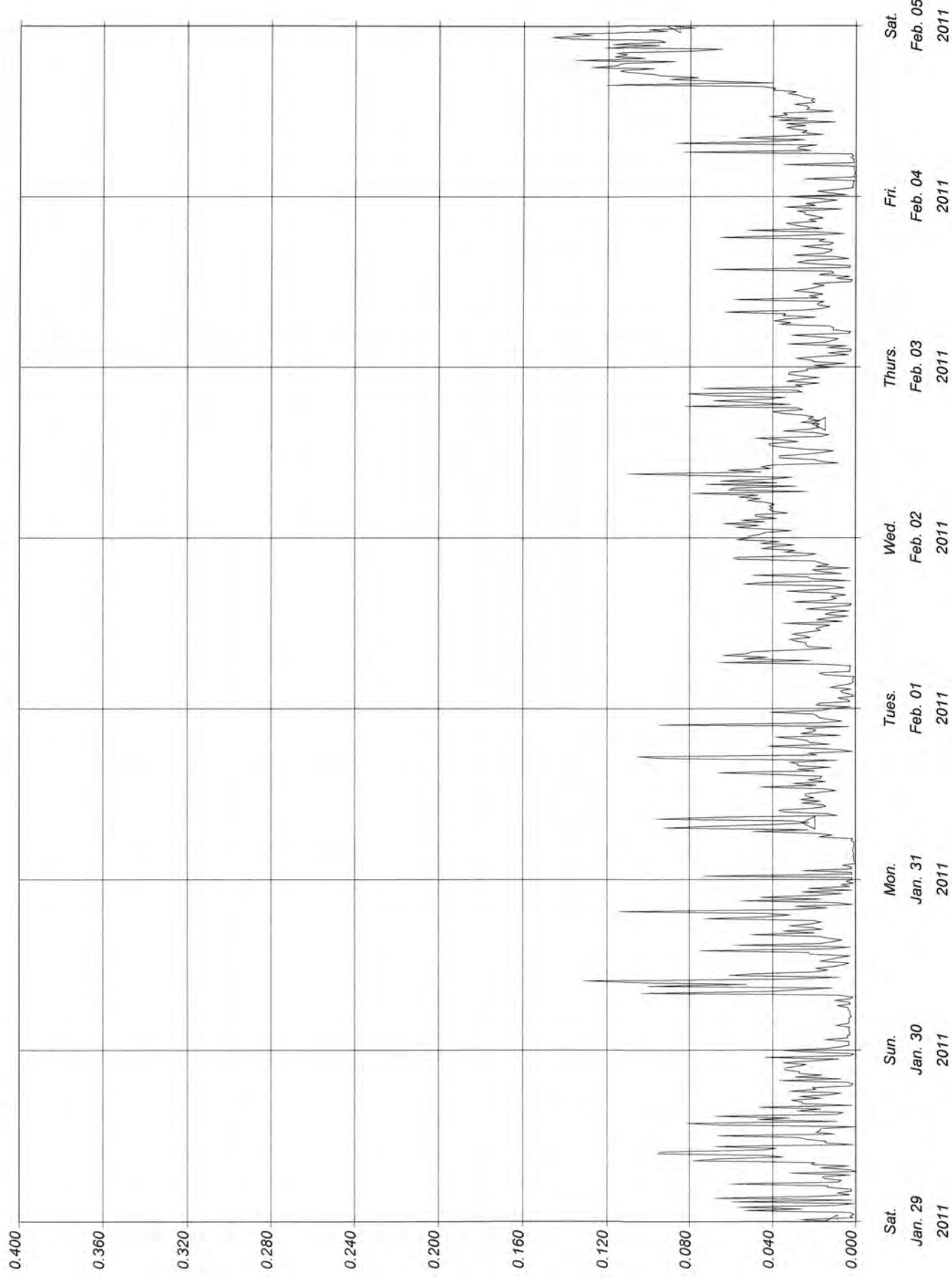


6-330 Wet Weather Event 2/1/11

Site Id: 00006330 File name: 00006330.000

Graph span: 1 week

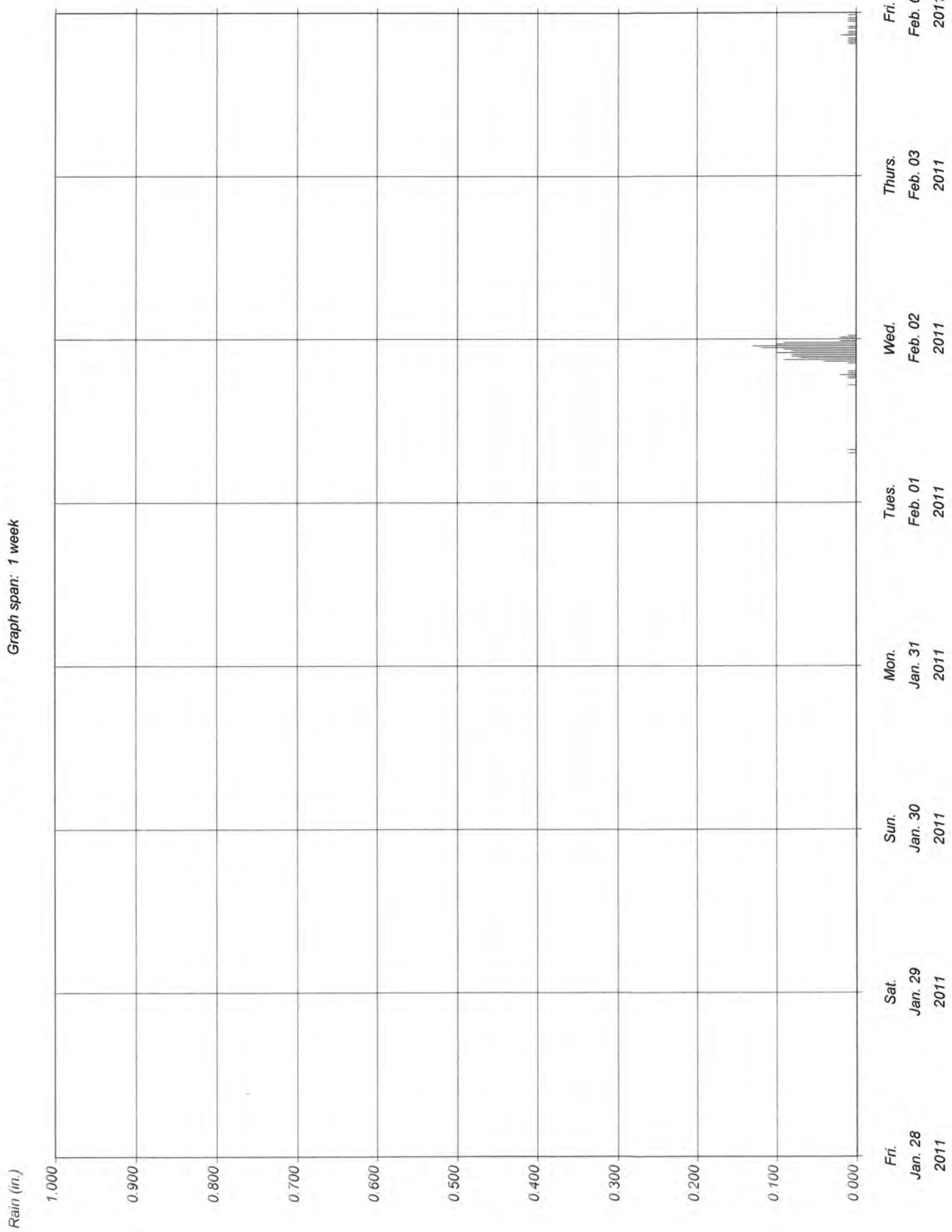
△ Flow 1 (mgd)



6-330 Rain 2/1/11

Site Id: 00000000 File name: 00000000.000

Graph span: 1 week



Taylors Fire & Sewer Flow Meter Data Sheet

*MH 6-330
Rainfall Event 3
Feb 4, 2011*

System Data

Meter Location 6-330

Pipe Size (in.): 8

Inch-Miles of Sewer Upstream of Meter						
Pipe Size (in.)	Length (ft.)	Inch-Miles		Pipe Size (in.)	Length (ft.)	Inch-Miles
8	4,342	6.58		24		0.00
10		0.00		27		0.00
12		0.00		30		0.00
14		0.00		36		0.00
15		0.00		42		0.00
16		0.00		48		0.00
18		0.00		54		0.00
20		0.00		60		0.00
21		0.00		72		0.00
Total =						6.58

Dry Weather Flow

<p>Average Daily Flow calculated from the following dates:</p> <p>From: <u>02/10/11</u></p> <p>To: <u>02/15/10</u></p>	<p>Avg. Daily Flowrate = <u>17000.000</u> gpd</p> <p>Avg. Flow Depth = <u>0.800</u> inches</p> <p>Peak Hourly Flowrate = <u>52000.000</u> gpd</p> <p>Peak Factor = <u>3.06</u></p>
--	--

Notes:

Completed By: Ec Mall

Date: 2-5-2012

 - computer calculated (formula)

Taylor's Fire & Sewer Flow Meter Data Sheet

Rainfall and I/I Event Duration

Rainfall: Start: 2/4/2011 7:15 End: 2/5/2011 7:15

Max. 24-hour Total: 1.53 in. Storm Total: 1.53 in.

I/I Event: Start: 2/4/2011 6:15 End: 2/8/2011 0:00

Dates and times that rainfall and I/I begin and end.

Wet Weather Event - I/I Analysis

Peak Flow Depth = 1.9 inches

I/I Event Duration = 89 hours

☐ Manhole Surcharged (Level exceeded pipe dia.)

I/I Volume = 163,167 gallons

Peak Hourly Flowrate = 151,000 gpd

Inflow and Infiltration Breakdown (optional)

Avg. Dry Weather Flow = 17,000 gpd

Dry Weather Infiltration = 2,000 gpd

Peak Factor = 8.88

Rainfall Induced Infiltration = 21,000 gpd

Avg. Wet Weather Flow = 61,000 gpd

Total Infiltration = 23,000 gpd

Avg. I/I Flow = 44,000 gpd

Infiltration Rate = 1,310 gpd/idm

Inch-Diameter Miles = 17.56 idm

Inflow = 21,000 gpd


I/I Rate = 2,506 gpd/idm

Inflow Rate = 1,196 gpd/idm

Notes:

Completed By: E C McMillan

Date: 2-5-2012

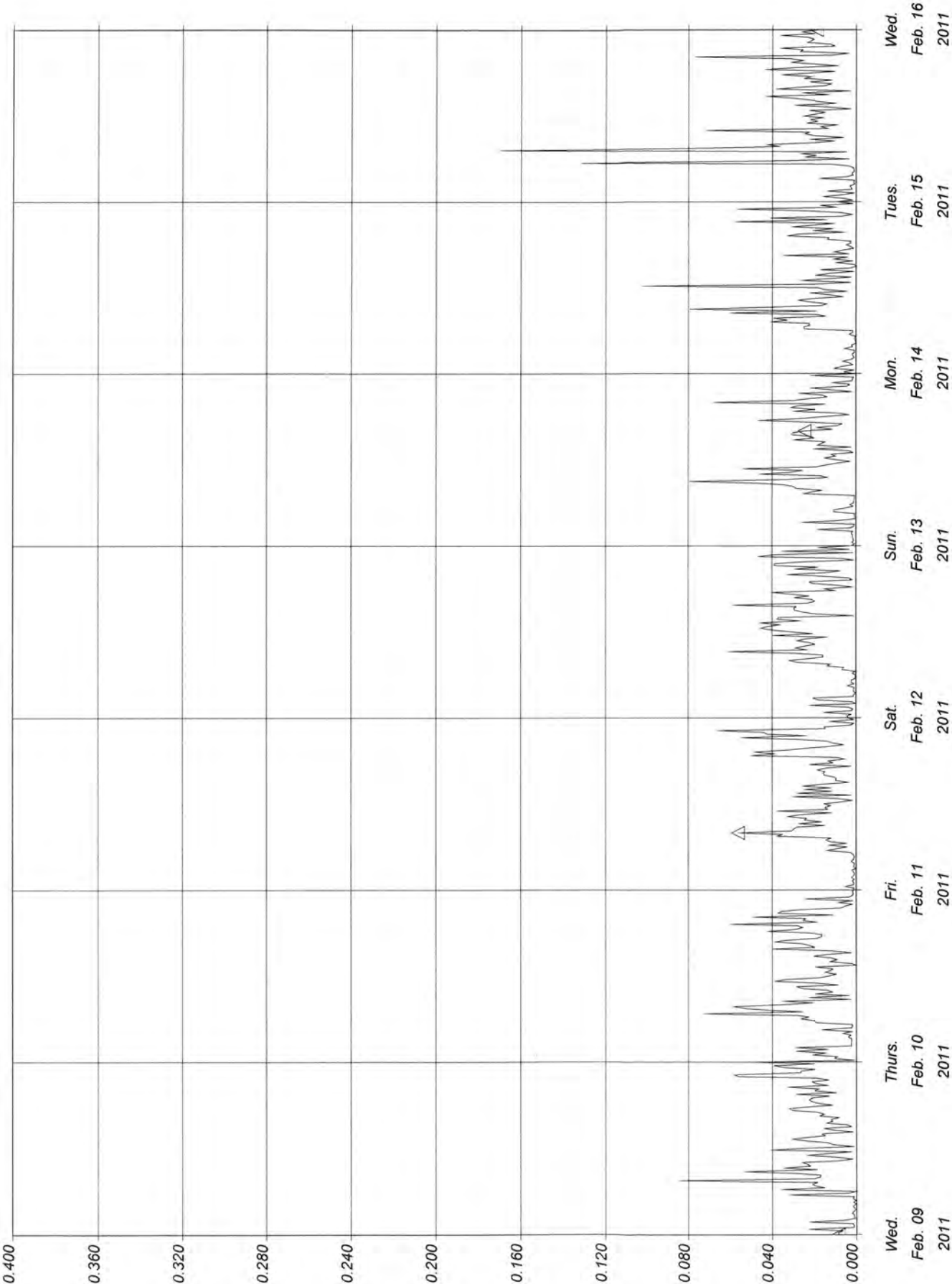
 - computer calculated (formula)

6-330 Dry Weather Flow Feb. 2011

Site Id: 00006330 File name: 00006330.000

Graph span: 1 week

△ Flow 1 (mgd)

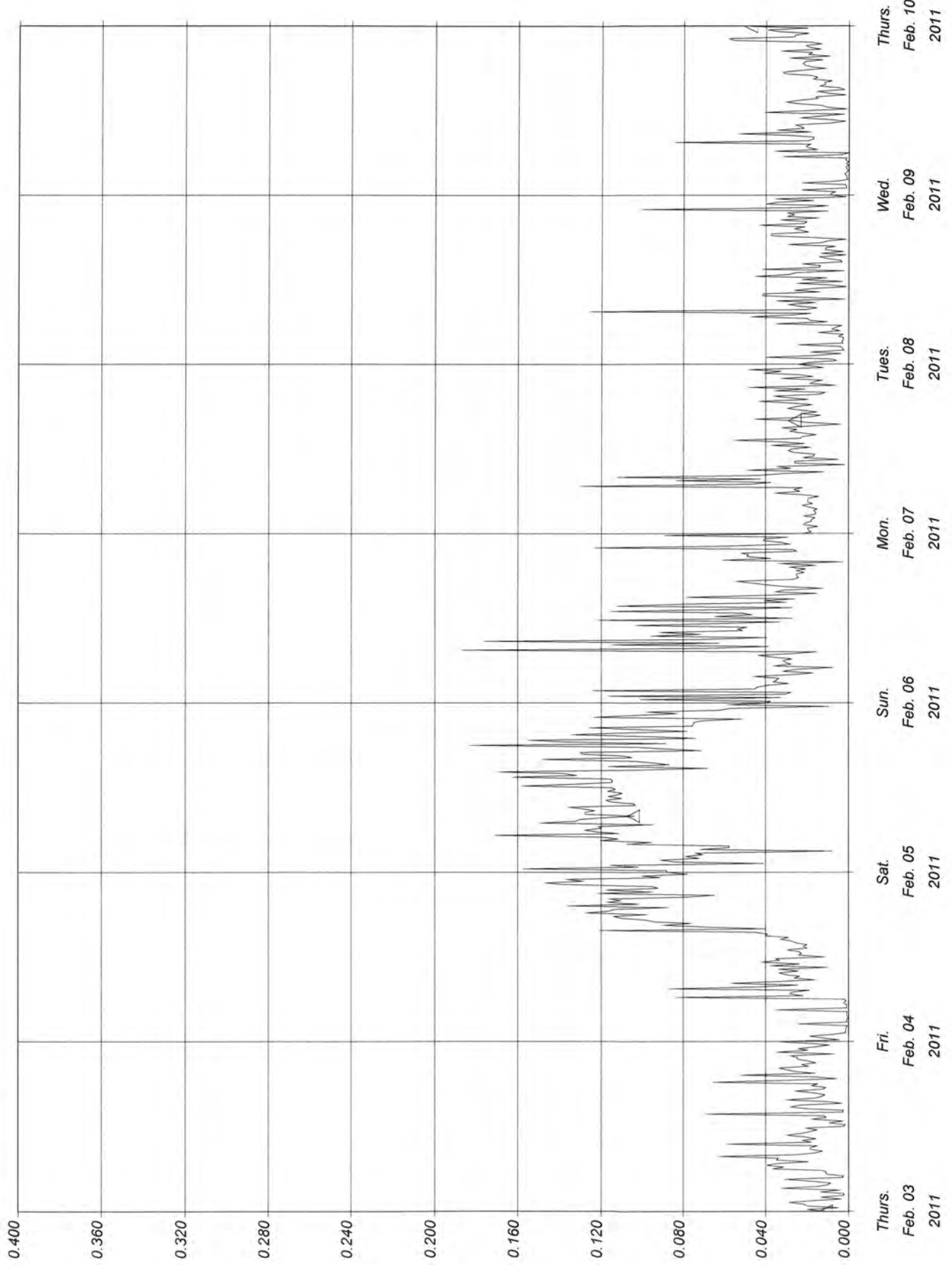


6-330 Wet Weather Event 2/4/11

Site Id: 00006330 File name: 00006330.000

Graph span: 1 week

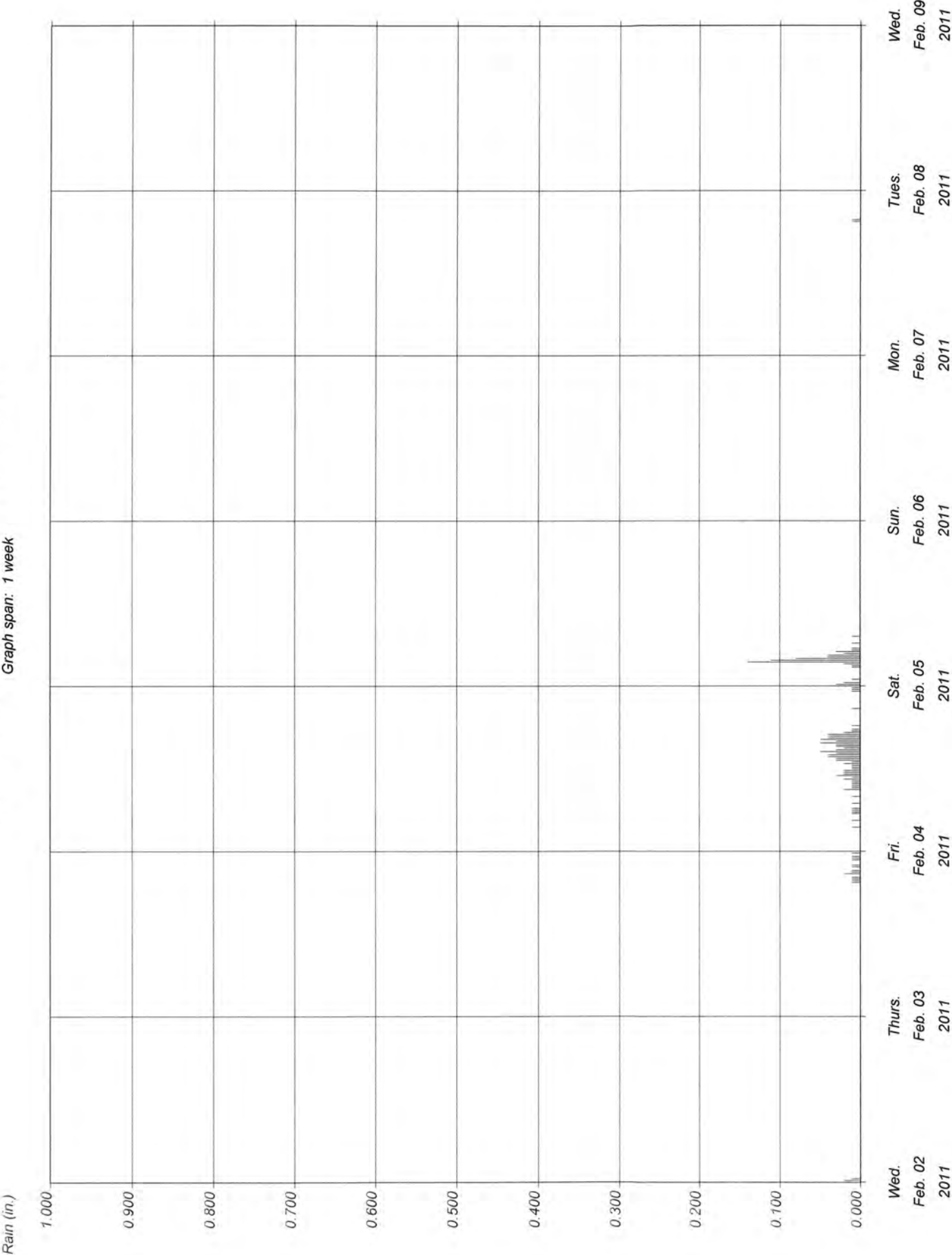
△ Flow 1 (mgd)



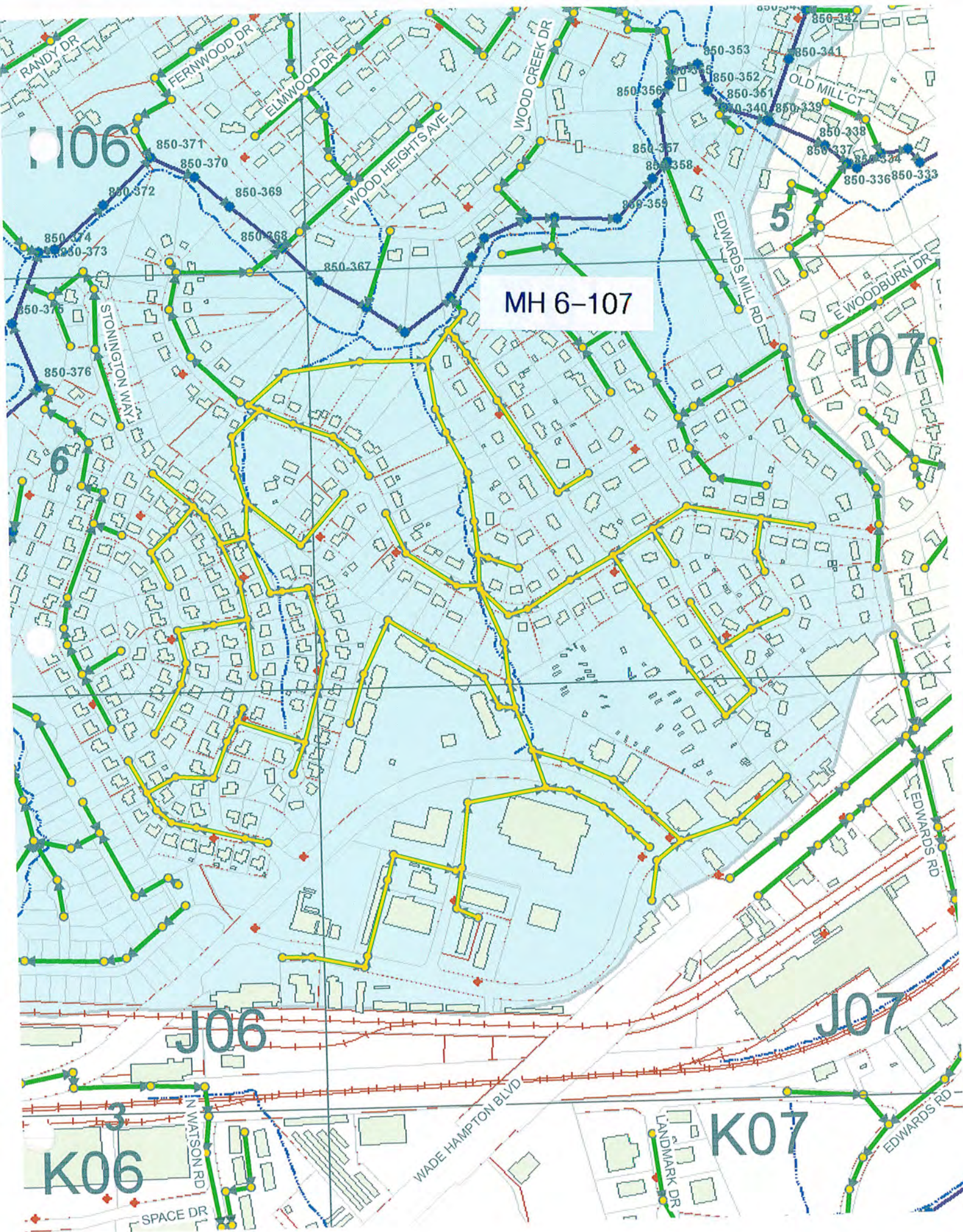
6-330 Rain 2/4/11

Site Id: 00000000 File name: 00000000.000

Graph span: 1 week



MH 6-107



MH 6-107
Rain Fall Event 1
Nov 30, 2010

Taylors Fire & Sewer Flow Meter Data Sheet

System Data

Meter Location <u>6-107</u>	Pipe Size (in.): <u>8</u>
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Inch-Miles of Sewer Upstream of Meter						
Pipe Size (in.)	Length (ft.)	Inch-Miles		Pipe Size (in.)	Length (ft.)	Inch-Miles
8	21,770	32.98		24		0.00
10		0.00		27		0.00
12		0.00		30		0.00
14		0.00		36		0.00
15		0.00		42		0.00
16		0.00		48		0.00
18		0.00		54		0.00
20		0.00		60		0.00
21		0.00		72		0.00
Total =						32.98

Dry Weather Flow

<p>Average Daily Flow calculated from the following dates:</p> <p>From: <u>11/08/10</u></p> <p>To: <u>11/13/10</u></p>	<p>Avg. Daily Flowrate = <u>111000.000</u> gpd</p> <p>Avg. Flow Depth = <u>2.400</u> inches</p> <p>Peak Hourly Flowrate = <u>194000.000</u> gpd</p> <p>Peak Factor = <u>1.75</u></p>
--	--

Notes: _____

Completed By: E C McAll

Date: 2-5-2012

- computer calculated (formula)

Taylor's Fire & Sewer Flow Meter Data Sheet

Rainfall and I/I Event Duration

Rainfall: Start: 11/30/2010 1:00 End: 12/1/2010 1:00

Max. 24-hour Total: 2.36 in. Storm Total: 2.36 in.

I/I Event: Start: 11/30/2010 0:00 End: 12/3/2010 5:00

Dates and times that rainfall and I/I begin and end.

Wet Weather Event - I/I Analysis

Peak Flow Depth = 4.9 inches

I/I Event Duration = 77 hours

☐ Manhole Surcharged (Level exceeded pipe dia.)

I/I Volume = 137,958 gallons

Peak Hourly Flowrate = 550,000 gpd

Inflow and Infiltration Breakdown (optional)

Avg. Dry Weather Flow = 111,000 gpd

Dry Weather Infiltration = 43,000 gpd

Peak Factor = 4.95

Rainfall Induced Infiltration = 0 gpd

Avg. Wet Weather Flow = 154,000 gpd

Total Infiltration = 43,000 gpd

Avg. I/I Flow = 43,000 gpd

Infiltration Rate = 1,304 gpd/idm

Inch-Diameter Miles = 32.98 idm

Inflow = 0 gpd

I/I Rate = 1,304 gpd/idm

Inflow Rate = 0 gpd/idm

Notes:

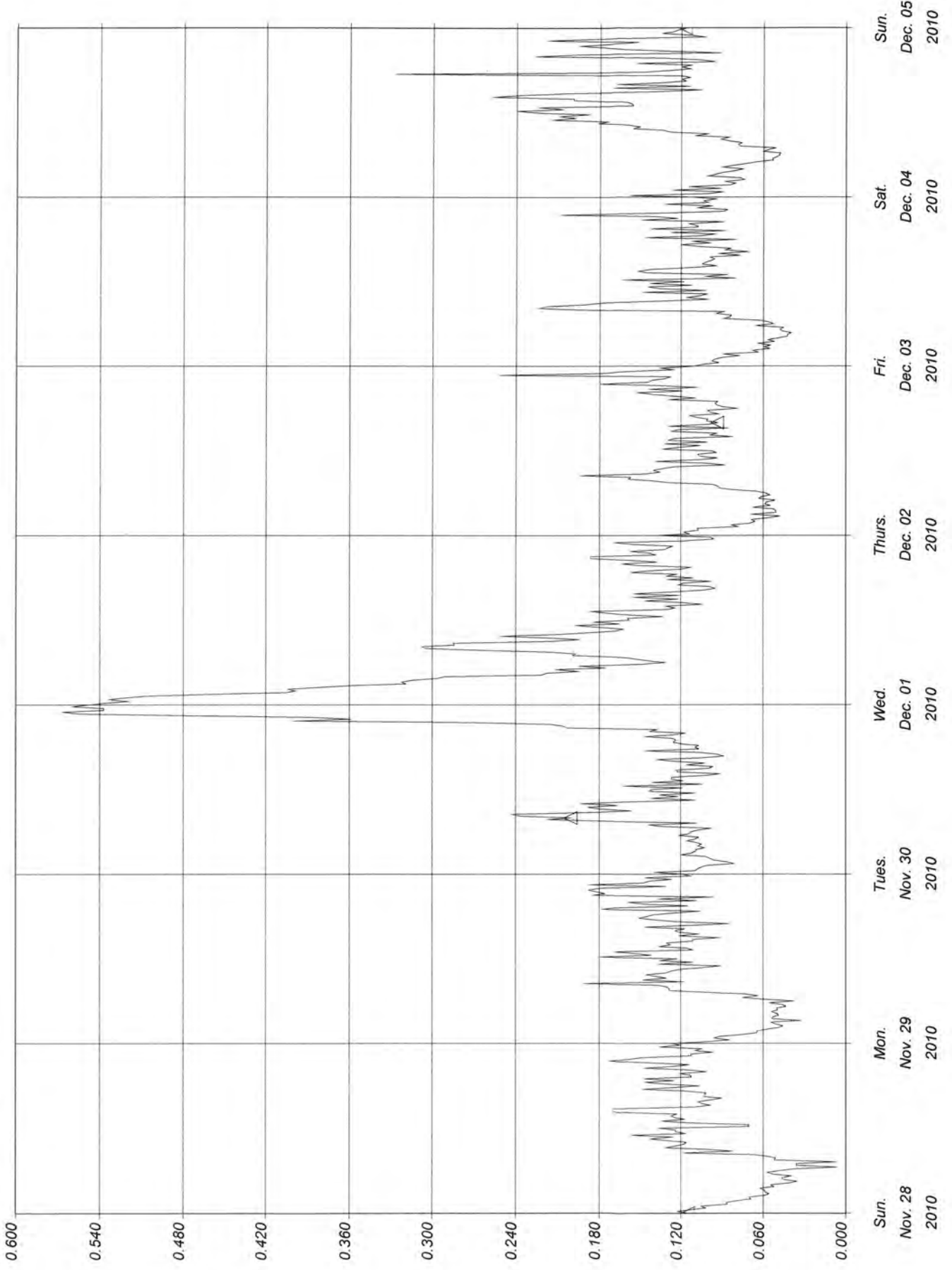
Completed By: EC Hall

Date: 2-5-2012

 - computer calculated (formula)

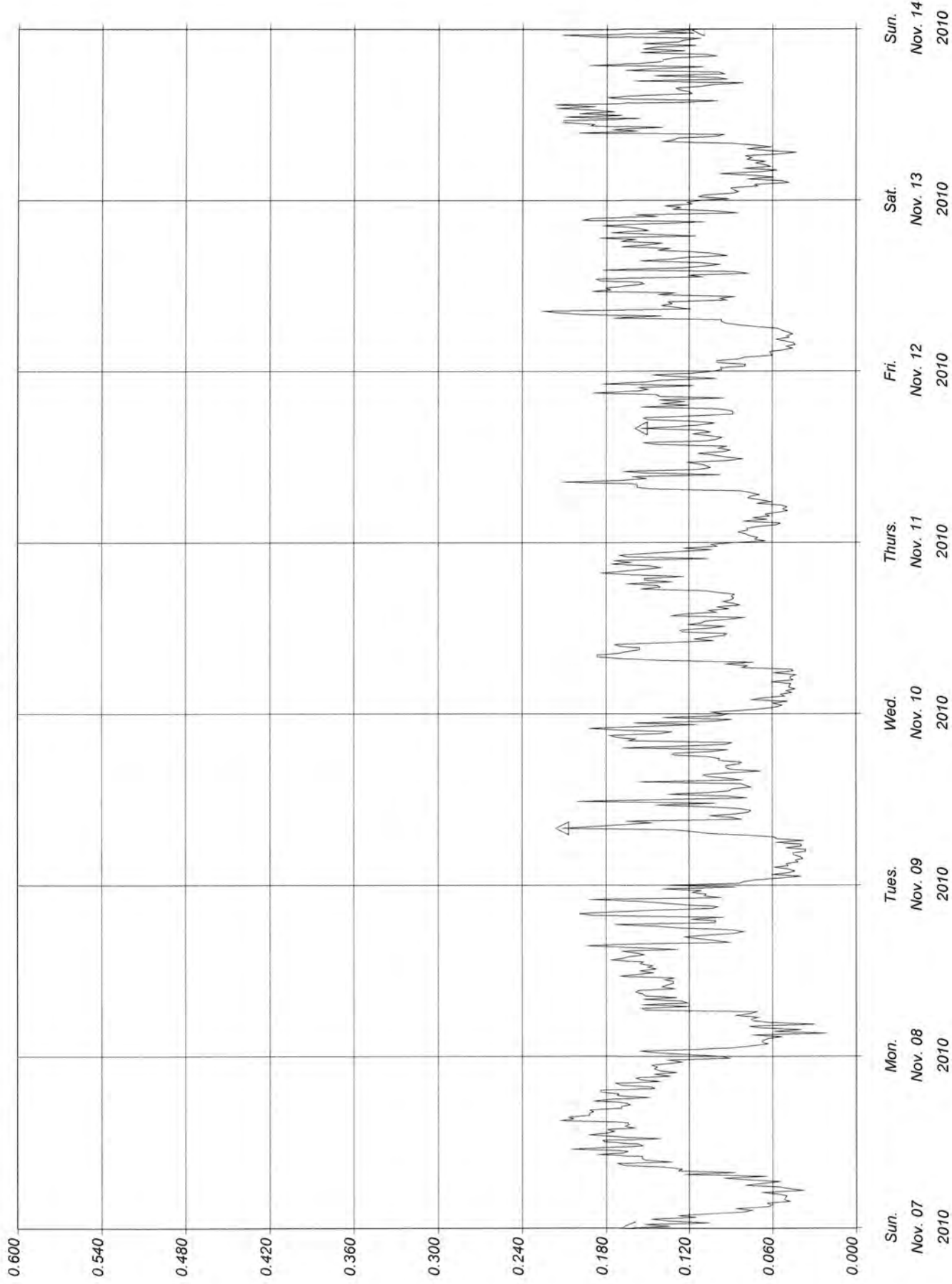
△ Flow 1 (mgd)

Graph span: 1 week



Graph span: 1 week

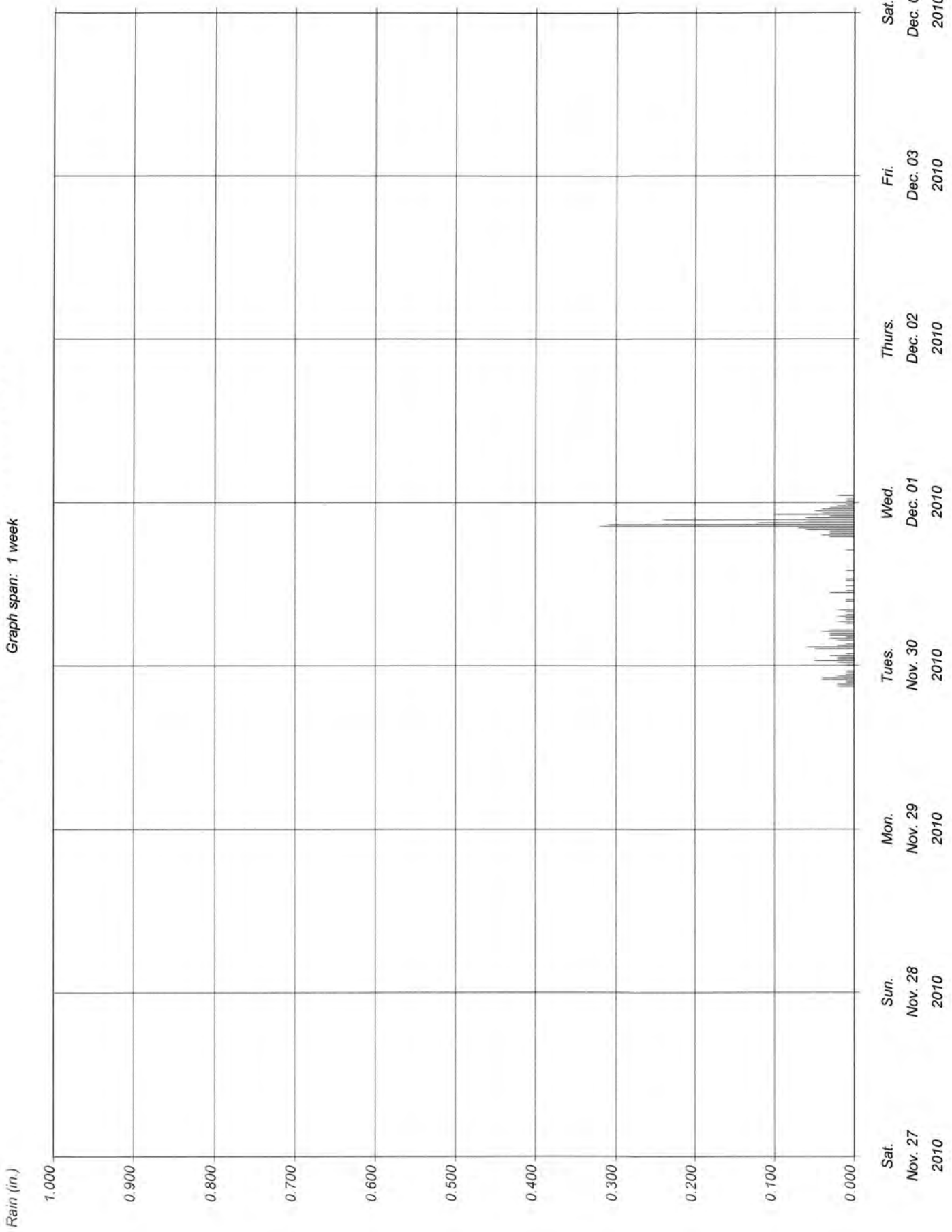
△ Flow 1 (mgd)



6-107 Rain 11/30/10

Site Id: 00000000 File name: 00000000.000

Graph span: 1 week



MH 6-107
Rainfall Event 2
Feb 1, 2012

Taylor's Fire & Sewer Flow Meter Data Sheet

System Data

Meter Location 6-107

Pipe Size (in.): 8

Inch-Miles of Sewer Upstream of Meter						
Pipe Size (in.)	Length (ft.)	Inch-Miles		Pipe Size (in.)	Length (ft.)	Inch-Miles
8	21,770	32.98		24		0.00
10		0.00		27		0.00
12		0.00		30		0.00
14		0.00		36		0.00
15		0.00		42		0.00
16		0.00		48		0.00
18		0.00		54		0.00
20		0.00		60		0.00
21		0.00		72		0.00
Total =						32.98

Dry Weather Flow

Average Daily Flow calculated from the
following dates:

From: 02/14/11

To: 02/19/11

Avg. Daily Flowrate = 90000.000 gpd

Avg. Flow Depth = 2.100 inches

Peak Hourly Flowrate = 164000.000 gpd

Peak Factor = 1.82

Notes:

Completed By: EC McCall

Date: 2-5-2012

- computer calculated (formula)

Taylor's Fire & Sewer Flow Meter Data Sheet

Rainfall and I/I Event Duration

Rainfall: Start: 2/1/2011 7:15 End: 2/2/2011 12:30

Max. 24-hour Total: 1.23 in. Storm Total: 1.23 in.

I/I Event: Start: 2/1/2011 6:15 End: 2/4/2011 3:00

Dates and times that rainfall and I/I begin and end.

Wet Weather Event - I/I Analysis

Peak Flow Depth = 4.0 inches

I/I Event Duration = 68 hours

☐ Manhole Surcharged (Level exceeded pipe dia.)

I/I Volume = 82,167 gallons

Peak Hourly Flowrate = 342,000 gpd

Inflow and Infiltration Breakdown (optional)

Avg. Dry Weather Flow = 90,000 gpd

Dry Weather Infiltration = 29,000 gpd

Peak Factor = 3.80

Rainfall Induced Infiltration = 0 gpd

Avg. Wet Weather Flow = 119,000 gpd

Total Infiltration = 29,000 gpd

Avg. I/I Flow = 29,000 gpd

Infiltration Rate = 879 gpd/idm

Inch-Diameter Miles = 32.98 idm

Inflow = 0 gpd

I/I Rate = 879 gpd/idm

Inflow Rate = 0 gpd/idm

Notes:

Completed By: Er McEl

Date: 2-5-2012

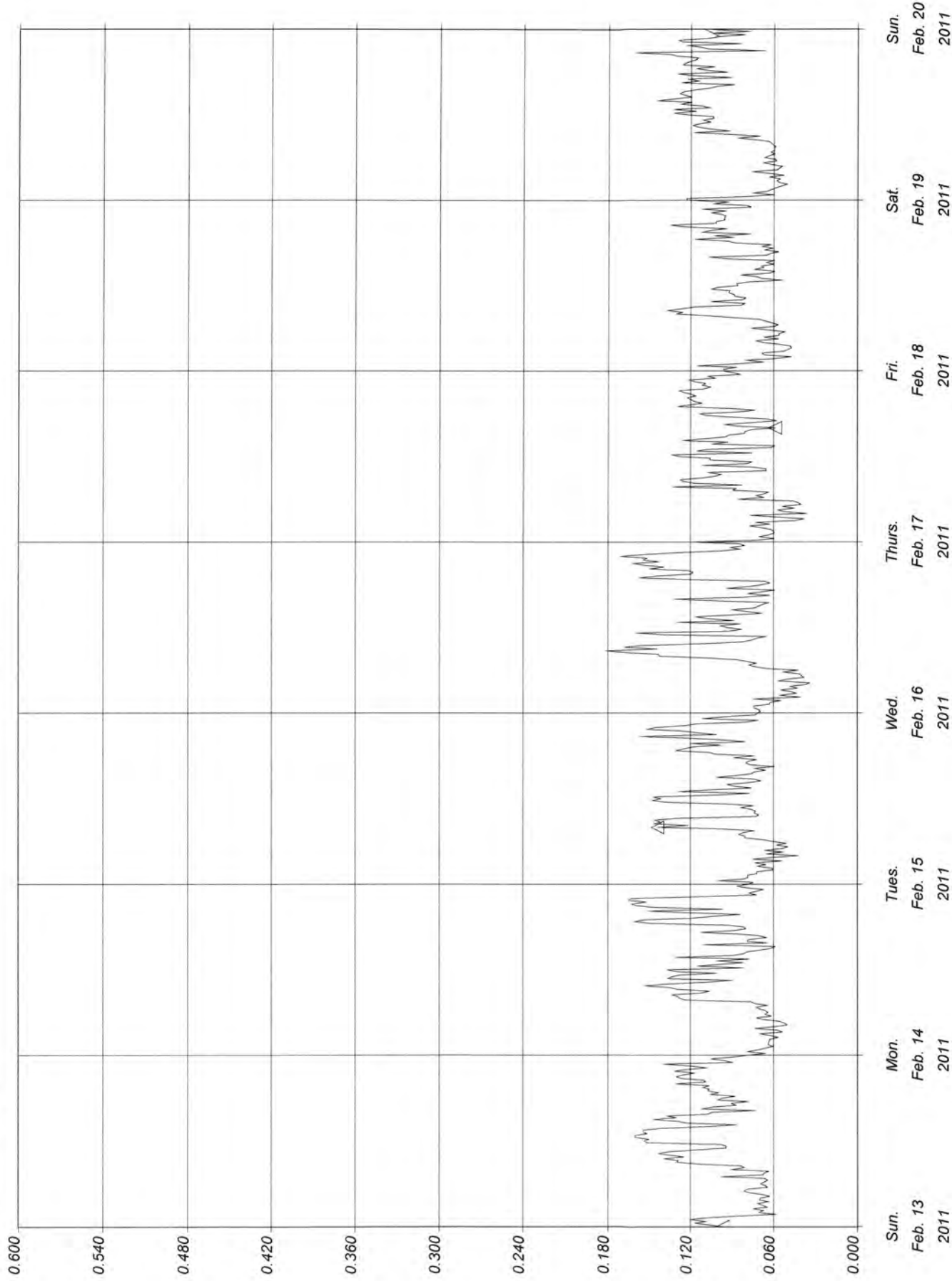
 - computer calculated (formula)

6-107 Dry Weather Flow Feb. 2011

Site Id: 00006107 File name: 00006107.000

Graph span: 1 week

△ Flow 1 (mgd)

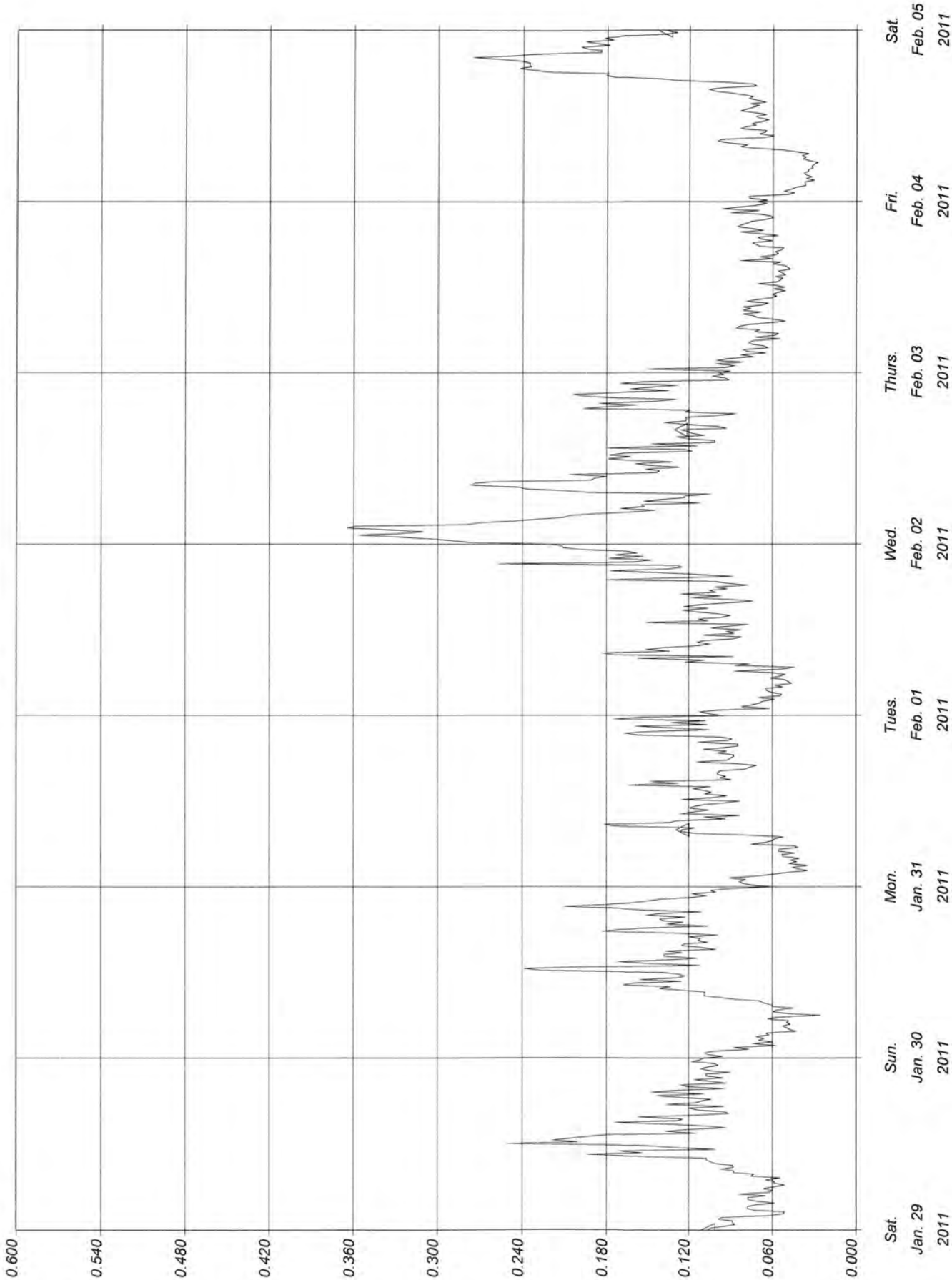


6-107 Wet Weather Event 2/1/11

Site Id: 00006107 File name: 00006107.000

Graph span: 1 week

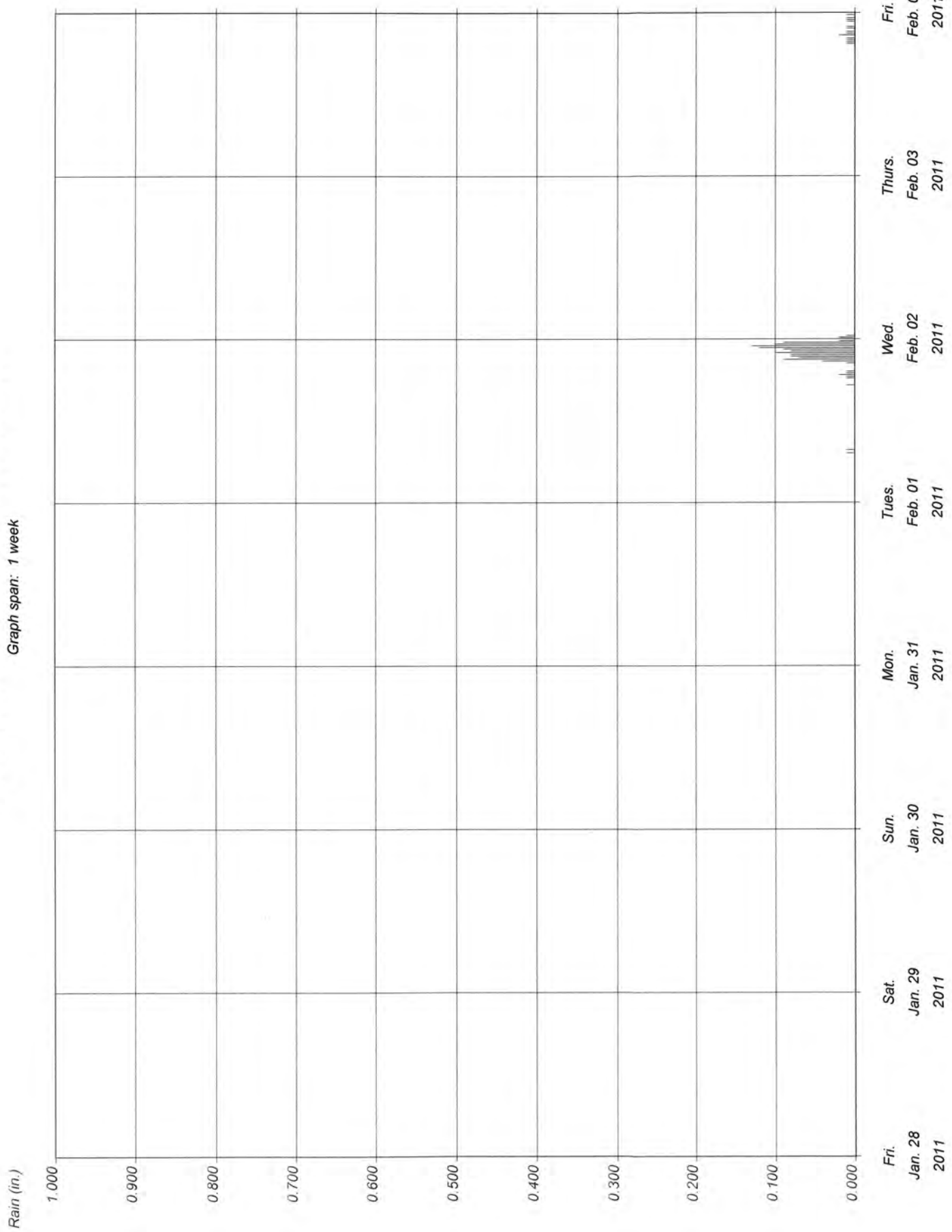
△ Flow 1 (mgd)



6-107 Rain 2/1/11

Site Id: 00000000 File name: 00000000.000

Graph span: 1 week



MH 6-107
Rainfall Event 3
Feb 28, 2011

Taylor's Fire & Sewer Flow Meter Data Sheet

System Data

Meter Location 6-107

Pipe Size (in.): 8

Inch-Miles of Sewer Upstream of Meter						
Pipe Size (in.)	Length (ft.)	Inch-Miles		Pipe Size (in.)	Length (ft.)	Inch-Miles
8	21,770	32.98		24		0.00
10		0.00		27		0.00
12		0.00		30		0.00
14		0.00		36		0.00
15		0.00		42		0.00
16		0.00		48		0.00
18		0.00		54		0.00
20		0.00		60		0.00
21		0.00		72		0.00
Total =						32.98

Dry Weather Flow

Average Daily Flow calculated from the following dates: From: <u>02/14/11</u> To: <u>02/19/11</u>	Avg. Daily Flowrate = <u>90000.000</u> gpd Avg. Flow Depth = <u>2.100</u> inches Peak Hourly Flowrate = <u>164000.000</u> gpd Peak Factor = <u>1.82</u>
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Notes: _____

Completed By: EC McCall

Date: 2-5-2012

 - computer calculated (formula)

Taylor's Fire & Sewer Flow Meter Data Sheet

Rainfall and I/I Event Duration

Rainfall: Start: 2/28/2011 17:30 End: 2/28/2011 19:45

Max. 24-hour Total: 1.02 in. Storm Total: 1.02 in.

I/I Event: Start: 2/28/2011 16:30 End: 3/2/2011 3:00

Dates and times that rainfall and I/I begin and end.

Wet Weather Event - I/I Analysis

Peak Flow Depth = 3.6 inches

I/I Event Duration = 34 hours

☐ Manhole Surcharged (Level exceeded pipe dia.)

I/I Volume = 56,667 gallons

Peak Hourly Flowrate = 287,000 gpd

Inflow and Infiltration Breakdown (optional)

Avg. Dry Weather Flow = 90,000 gpd

Dry Weather Infiltration = 40,000 gpd

Peak Factor = 3.19

Rainfall Induced Infiltration = 0 gpd

Avg. Wet Weather Flow = 130,000 gpd

Total Infiltration = 40,000 gpd

Avg. I/I Flow = 40,000 gpd

Infiltration Rate = 1,213 gpd/idm

Inch-Diameter Miles = 32.98 idm

Inflow = 0 gpd


I/I Rate = 1,213 gpd/idm

Inflow Rate = 0 gpd/idm

Notes: _____

Completed By: EC Mdl

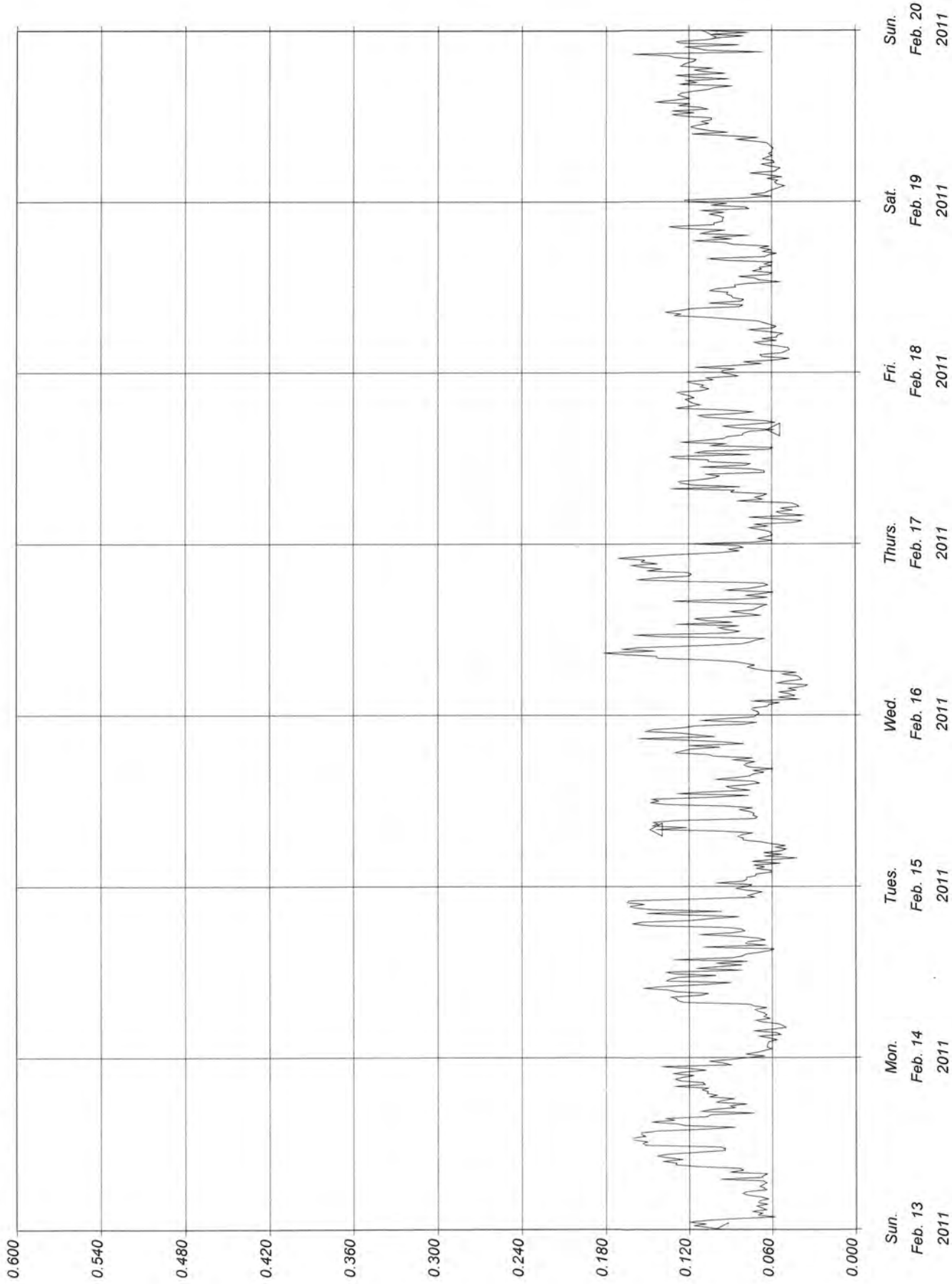
Date: 2-5-2012

 - computer calculated (formula)

6-107 Dry Weather Flow Feb. 2011
Site Id: 00006107 File name: 00006107.000

Graph span: 1 week

△ Flow 1 (mgd)

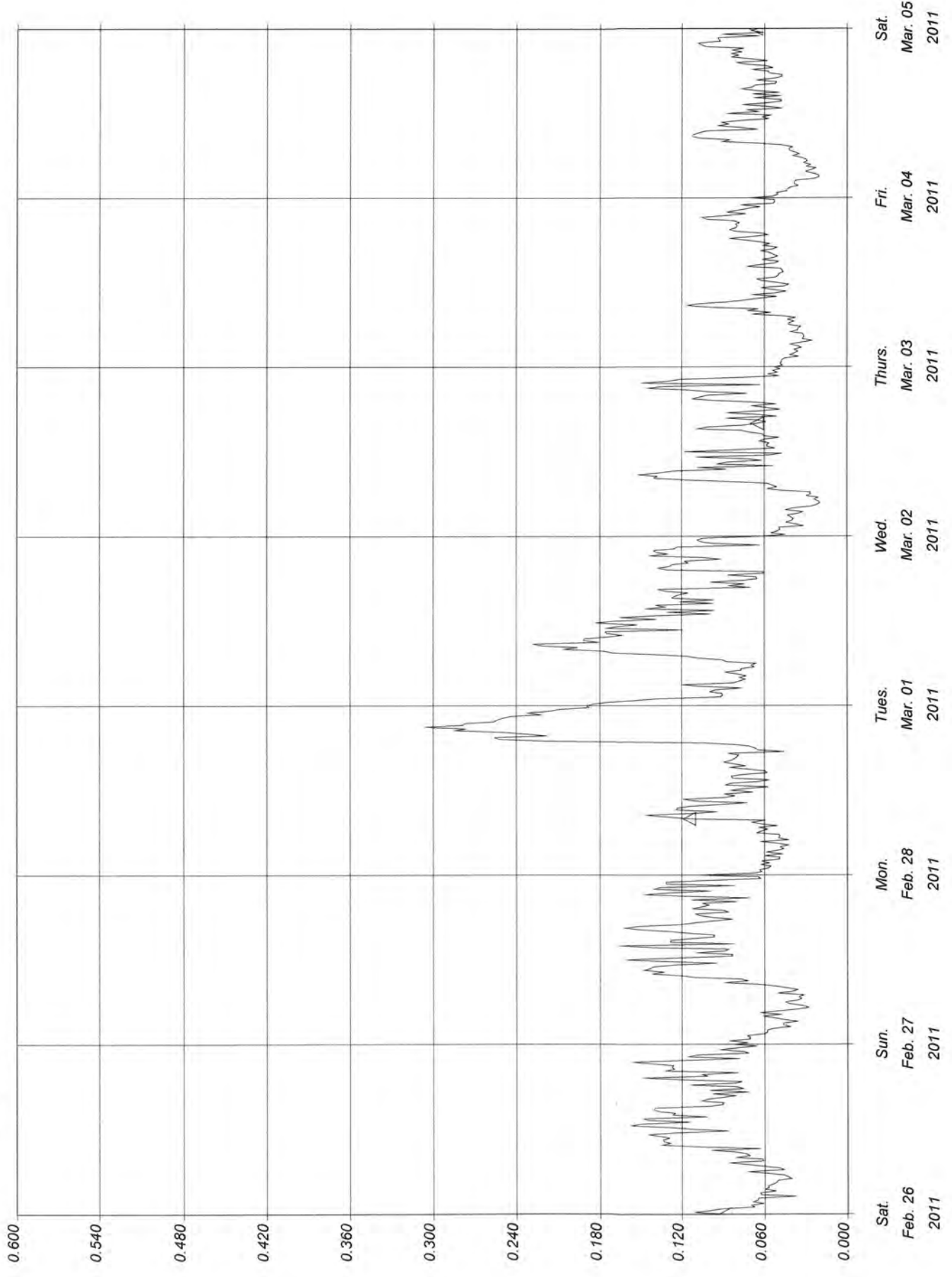


6-107 Wet Weather Event 2/28/11

Site Id: 00006107 File name: 00006107.000

△ Flow 1 (mgd)

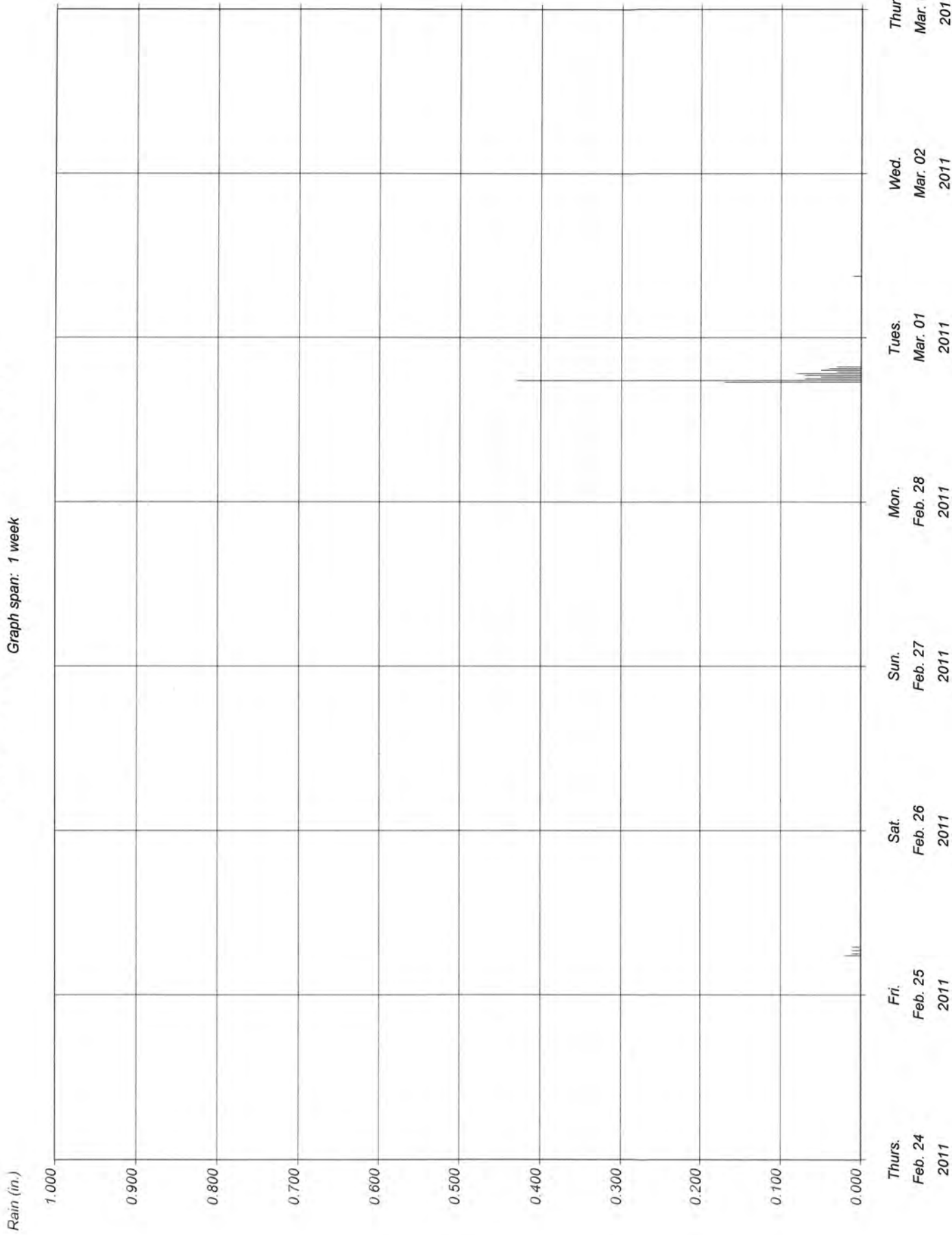
Graph span: 1 week



6-107 Rain 2/28/11

Site Id: 00000000 File name: 00000000.000

Graph span: 1 week



MH 2-008

Taylors Fire & Sewer Flow Meter Data Sheet

*MH 2-008
Rainfall Event
Nov 30, 2010*

System Data

Meter Location: <u>2-008</u>	Pipe Size (in.): <u>8</u>
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Inch-Miles of Sewer Upstream of Meter						
Pipe Size (in.)	Length (ft.)	Inch-Miles		Pipe Size (in.)	Length (ft.)	Inch-Miles
8	34,037	51.57		24		0.00
10		0.00		27		0.00
12		0.00		30		0.00
14		0.00		36		0.00
15		0.00		42		0.00
16		0.00		48		0.00
18		0.00		54		0.00
20		0.00		60		0.00
21		0.00		72		0.00
Total =						51.57

Dry Weather Flow

<p>Average Daily Flow calculated from the following dates:</p> <p>From: <u>12/06/10</u></p> <p>To: <u>12/11/10</u></p>	<p>Avg. Daily Flowrate = <u>118,000</u> gpd</p> <p>Avg. Flow Depth = <u>2.000</u> inches</p> <p>Peak Hourly Flowrate = <u>179,000</u> gpd</p> <p>Peak Factor = <u>1.52</u></p>
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Notes: _____

Completed By: EE Hall

Date: 2-5-2012

- computer calculated (formula)

Taylors Fire & Sewer Flow Meter Data Sheet

Rainfall and I/I Event Duration

Rainfall: Start: 11/30/10 1:00 End: 12/1/10 1:00
Max. 24-hour Total: 2.36 in. Storm Total: 2.36 in.
I/I Event: Start: 11/30/10 0:00 End: 12/5/10 0:00

Dates and times that rainfall and I/I begin and end.

Wet Weather Event - I/I Analysis

Peak Flow Depth = 4.9 inches

I/I Event Duration = 120 hours

☐ Manhole Surcharged (Level exceeded pipe dia.)

I/I Volume = 615,000 gallons

Peak Hourly Flowrate = 626,000 gpd

Inflow and Infiltration Breakdown (optional)

Avg. Dry Weather Flow = 118,000 gpd

Dry Weather Infiltration = 65,000 gpd

Peak Factor = 5.31

Rainfall Induced Infiltration = 17,000 gpd

Avg. Wet Weather Flow = 176,000 gpd

Total Infiltration = 82,000 gpd

Avg. I/I Flow = 123,000 gpd

Infiltration Rate = 1,590 gpd/idm

Inch-Diameter Miles = 51.57 idm

Inflow = 41,000 gpd


I/I Rate = 2,385 gpd/idm

Inflow Rate = 795 gpd/idm

Notes:

Completed By E C McAll

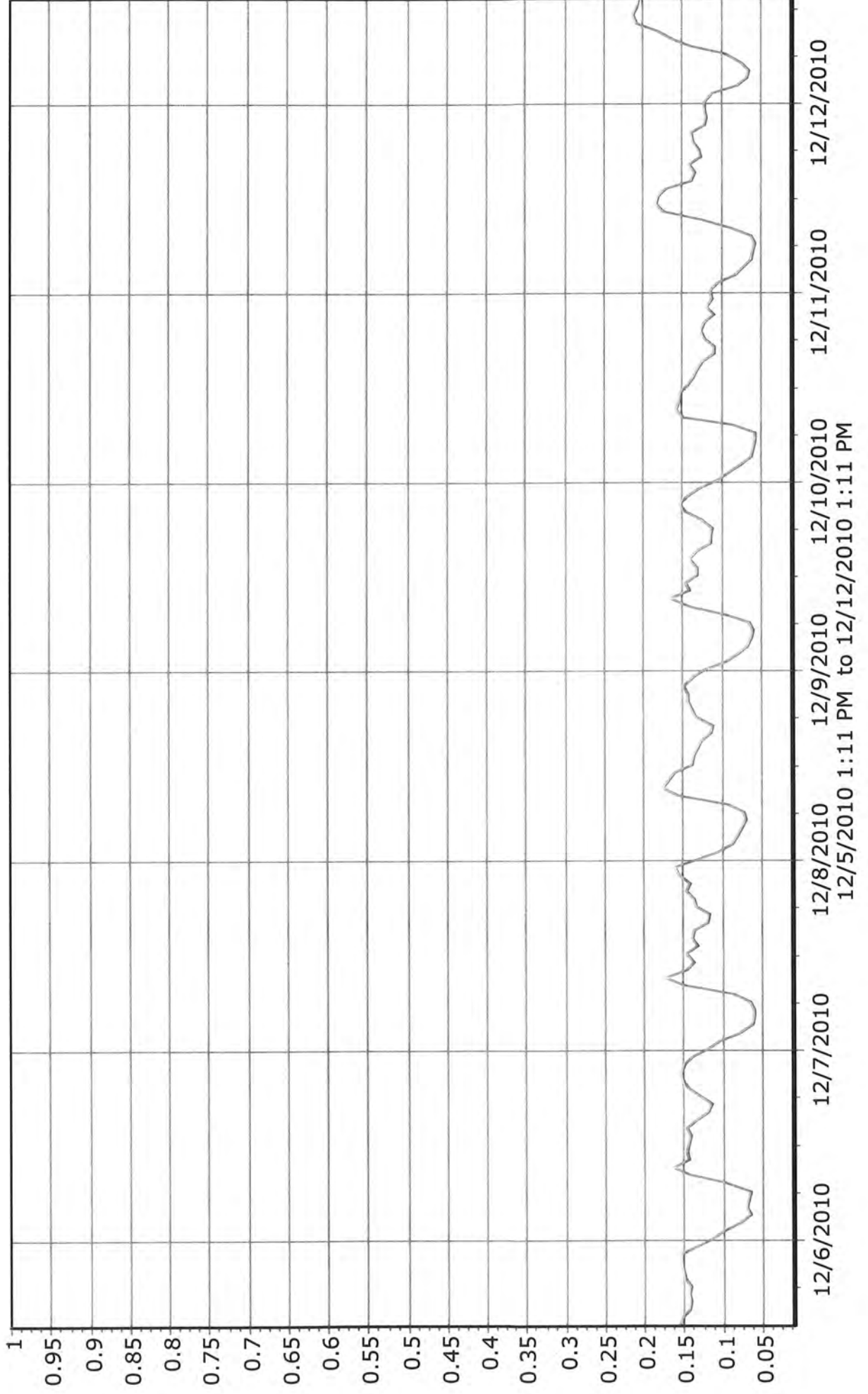
Date: 2-5-2012

 - computer calculated (formula)

2-008

Dry Weather Flow Dec. 2010

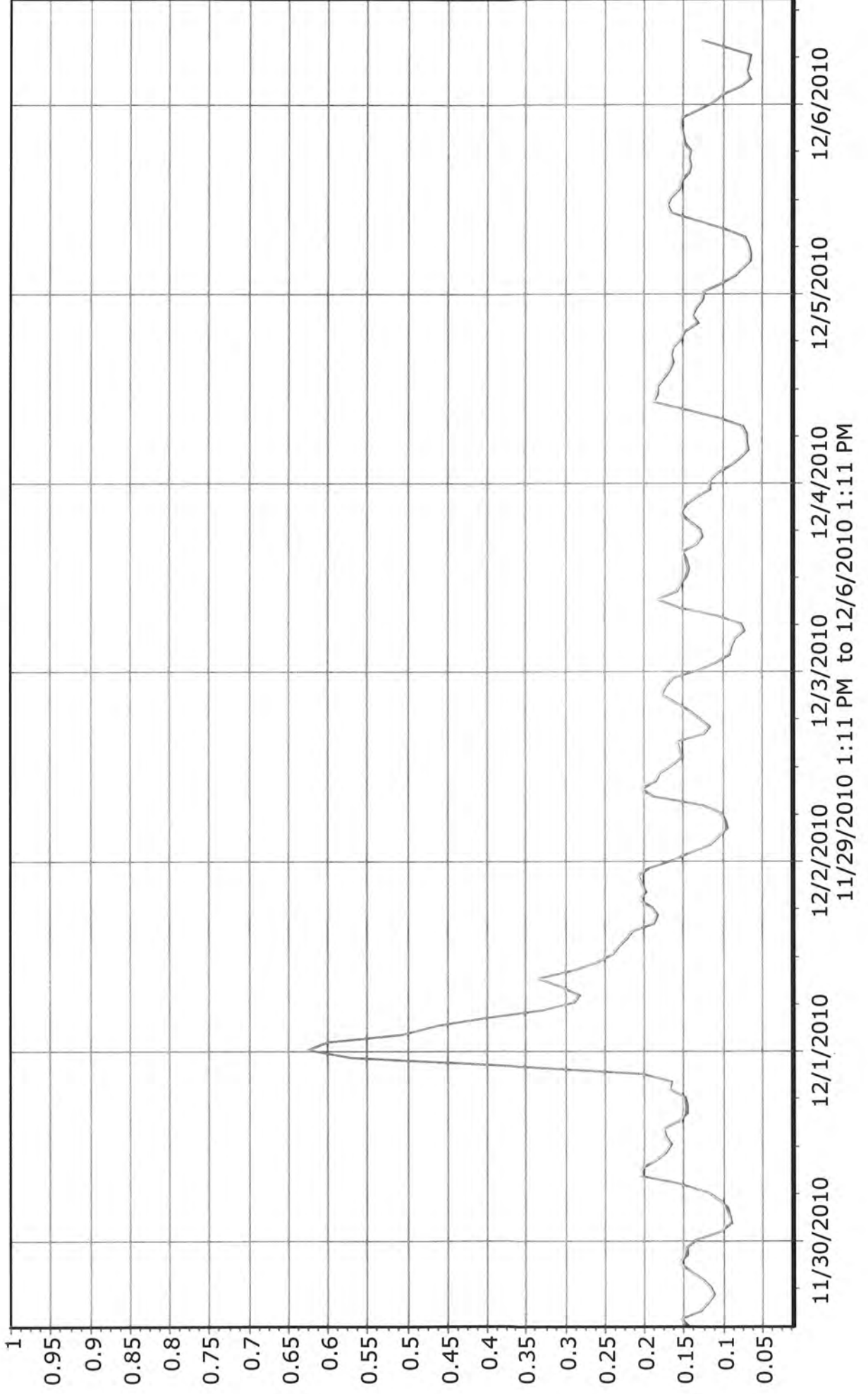
— Flow (mgd)



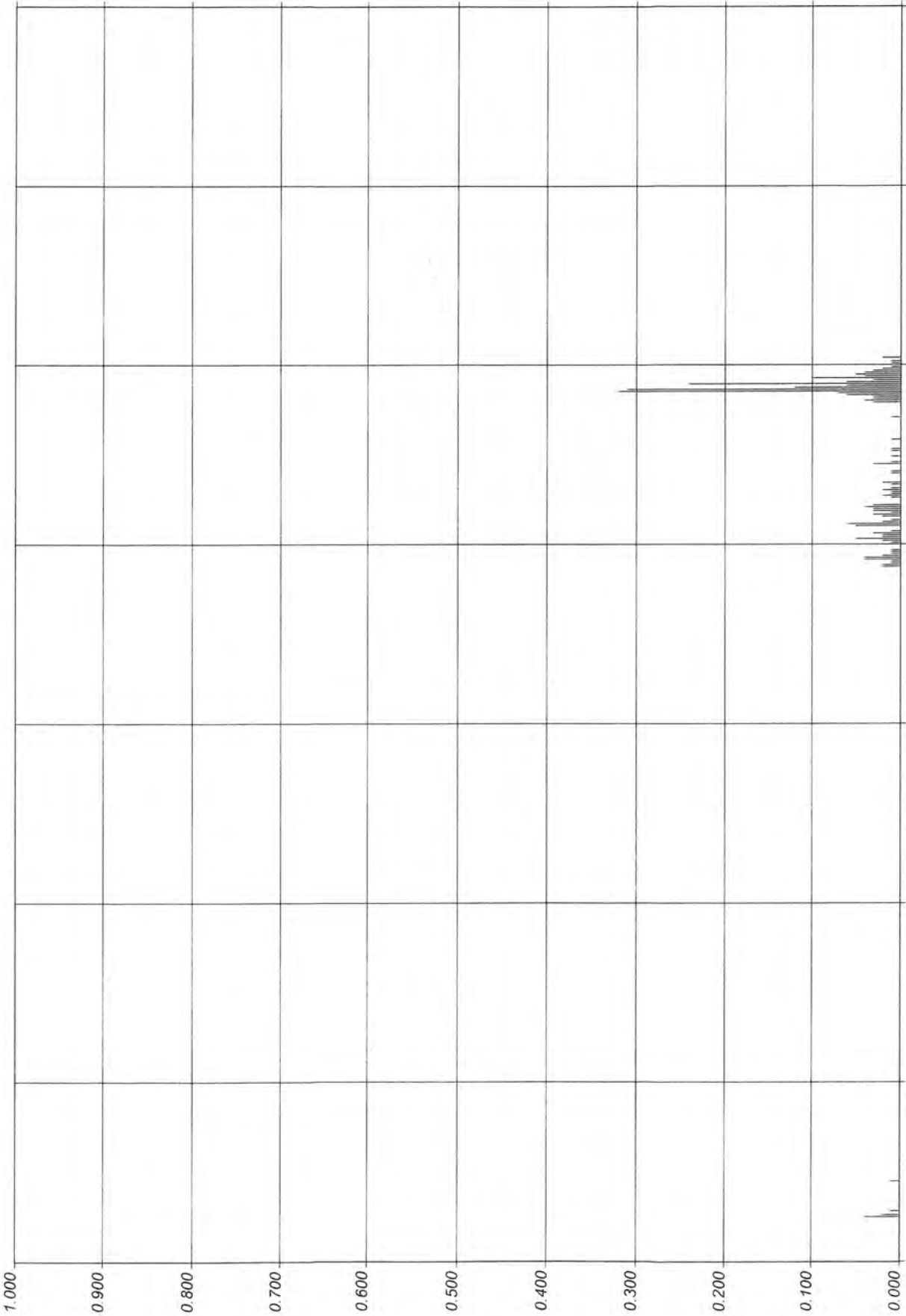
2-008

wet Weather Event 11/30/10

— Flow (mgd)



Rain (in.)



M# 2-008
Re. All Kent 2
Feb 1, 2011

Taylor's Fire & Sewer Flow Meter Data Sheet

System Data

Meter Location: <u>2-008</u>	Pipe Size (in.): <u>8</u>
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Inch-Miles of Sewer Upstream of Meter						
Pipe Size (in.)	Length (ft.)	Inch-Miles		Pipe Size (in.)	Length (ft.)	Inch-Miles
8	34,037	51.57		24		0.00
10		0.00		27		0.00
12		0.00		30		0.00
14		0.00		36		0.00
15		0.00		42		0.00
16		0.00		48		0.00
18		0.00		54		0.00
20		0.00		60		0.00
21		0.00		72		0.00
Total =						51.57


Dry Weather Flow

Average Daily Flow calculated from the following dates: From: <u>02/10/11</u> To: <u>02/15/11</u>	Avg. Daily Flowrate = <u>138,000</u> gpd Avg. Flow Depth = <u>2.200</u> inches Peak Hourly Flowrate = <u>222,000</u> gpd Peak Factor = <u>1.61</u>
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Notes: _____

Completed By: EC Mallett

Date: 2-5-2012

 - computer calculated (formula)

Taylors Fire & Sewer Flow Meter Data Sheet

Rainfall and I/I Event Duration

Rainfall: Start: 2/1/11 7:15 End: 2/2/11 0:30
Max. 24-hour Total: 1.23 in. Storm Total: 1.23 in.
I/I Event: Start: 2/1/11 6:15 End: 2/4/11 0:00

Dates and times that rainfall and I/I begin and end.

Wet Weather Event - I/I Analysis

Peak Flow Depth = 3.9 inches

I/I Event Duration = 66 hours

☐ Manhole Surcharged (Level exceeded pipe dia.)

I/I Volume = 288,750 gallons

Peak Hourly Flowrate = 385,000 gpd

Inflow and Infiltration Breakdown (optional)

Avg. Dry Weather Flow = 138,000 gpd

Dry Weather Infiltration = 76,000 gpd

Peak Factor = 2.79

Rainfall Induced Infiltration = 29,000 gpd

Avg. Wet Weather Flow = 167,000 gpd

Total Infiltration = 105,000 gpd

Avg. I/I Flow = 105,000 gpd

Infiltration Rate = 2,036 gpd/idm

Inch-Diameter Miles = 51.57 idm

Inflow = 0 gpd


I/I Rate = 2,036 gpd/idm

Inflow Rate = 0 gpd/idm

Notes:

Completed By E.C. McCall

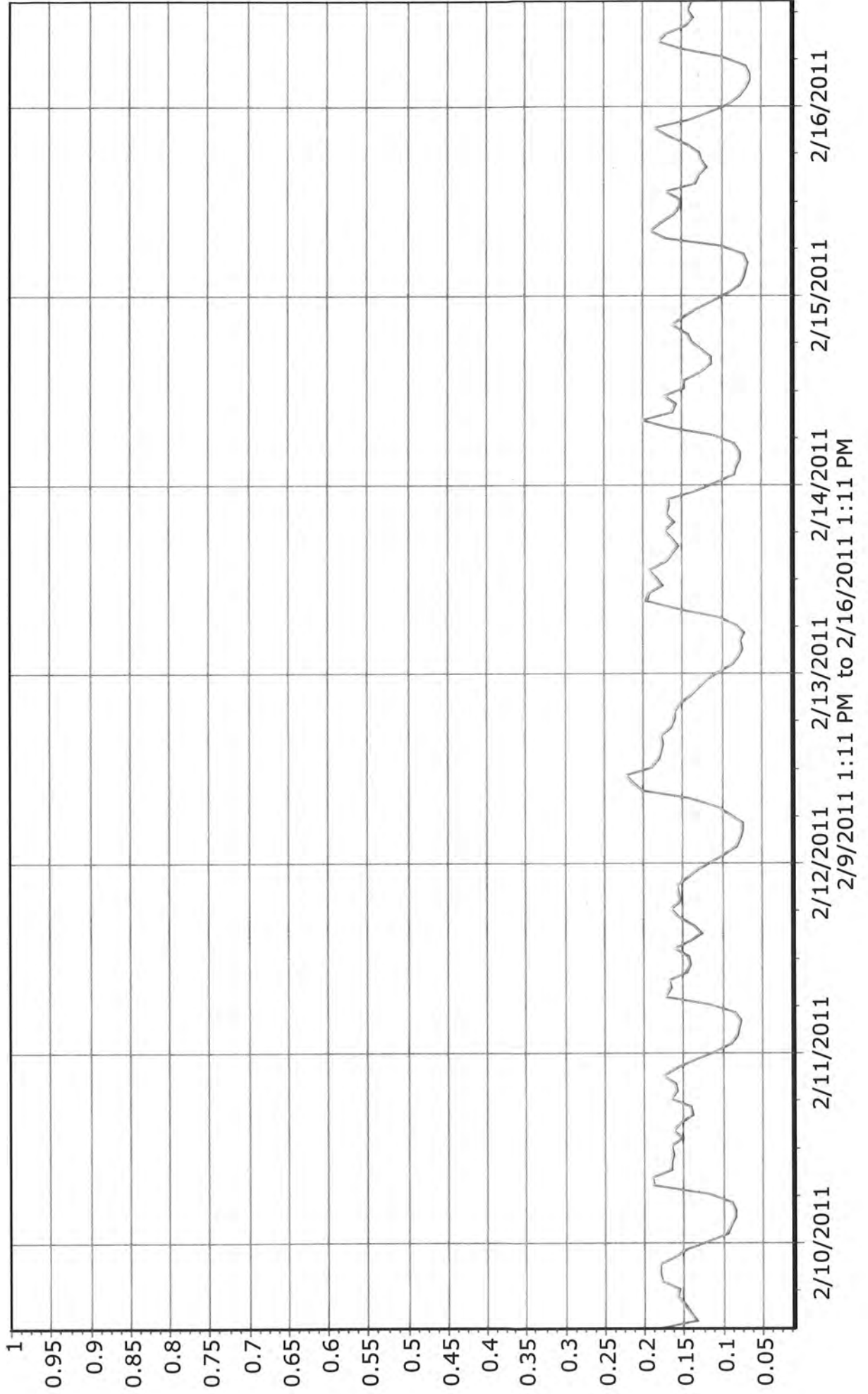
Date: 2-5-2012

 - computer calculated (formula)

2-008

Dry Weather Flow Feb. 2011

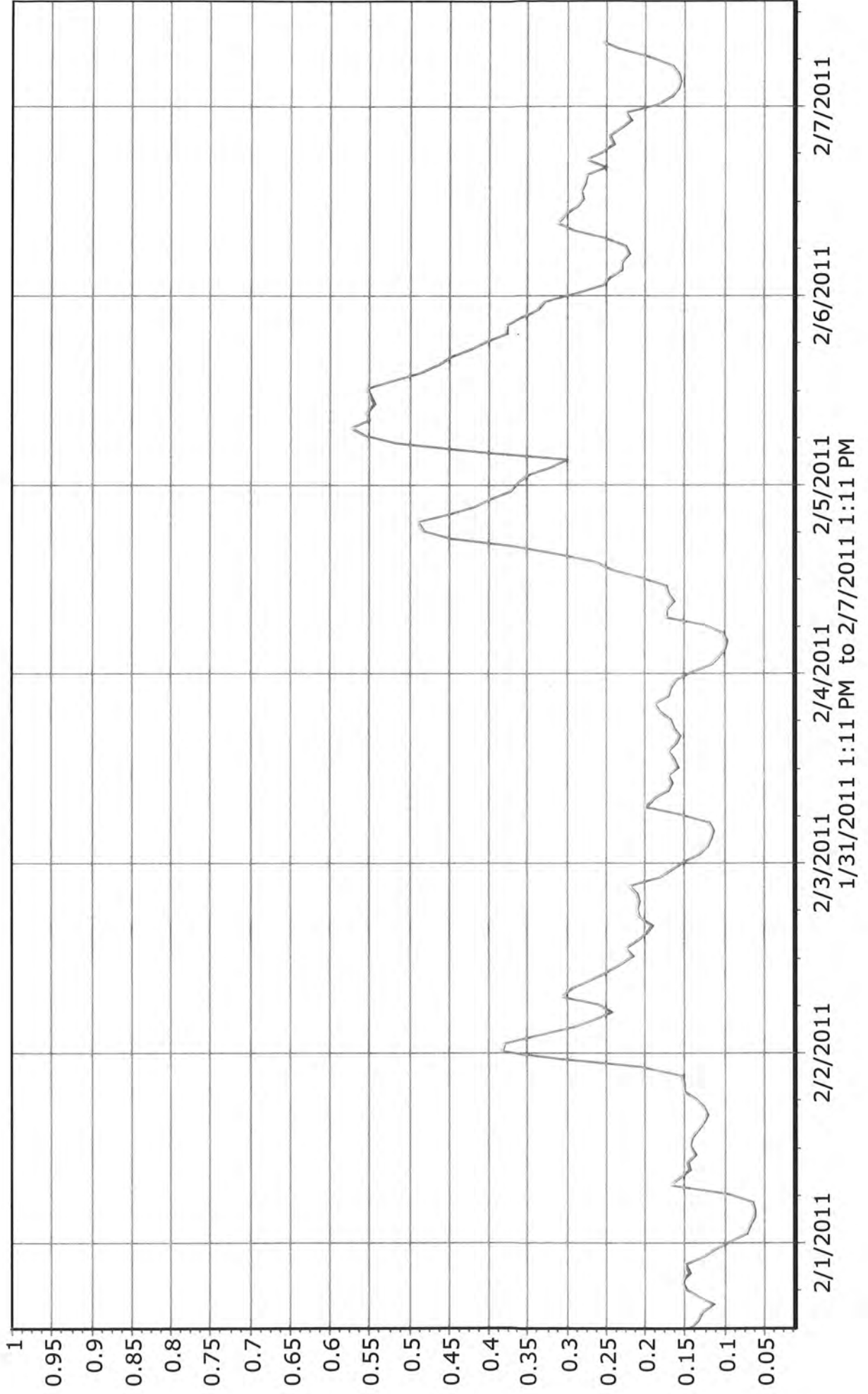
— Flow (mgd)

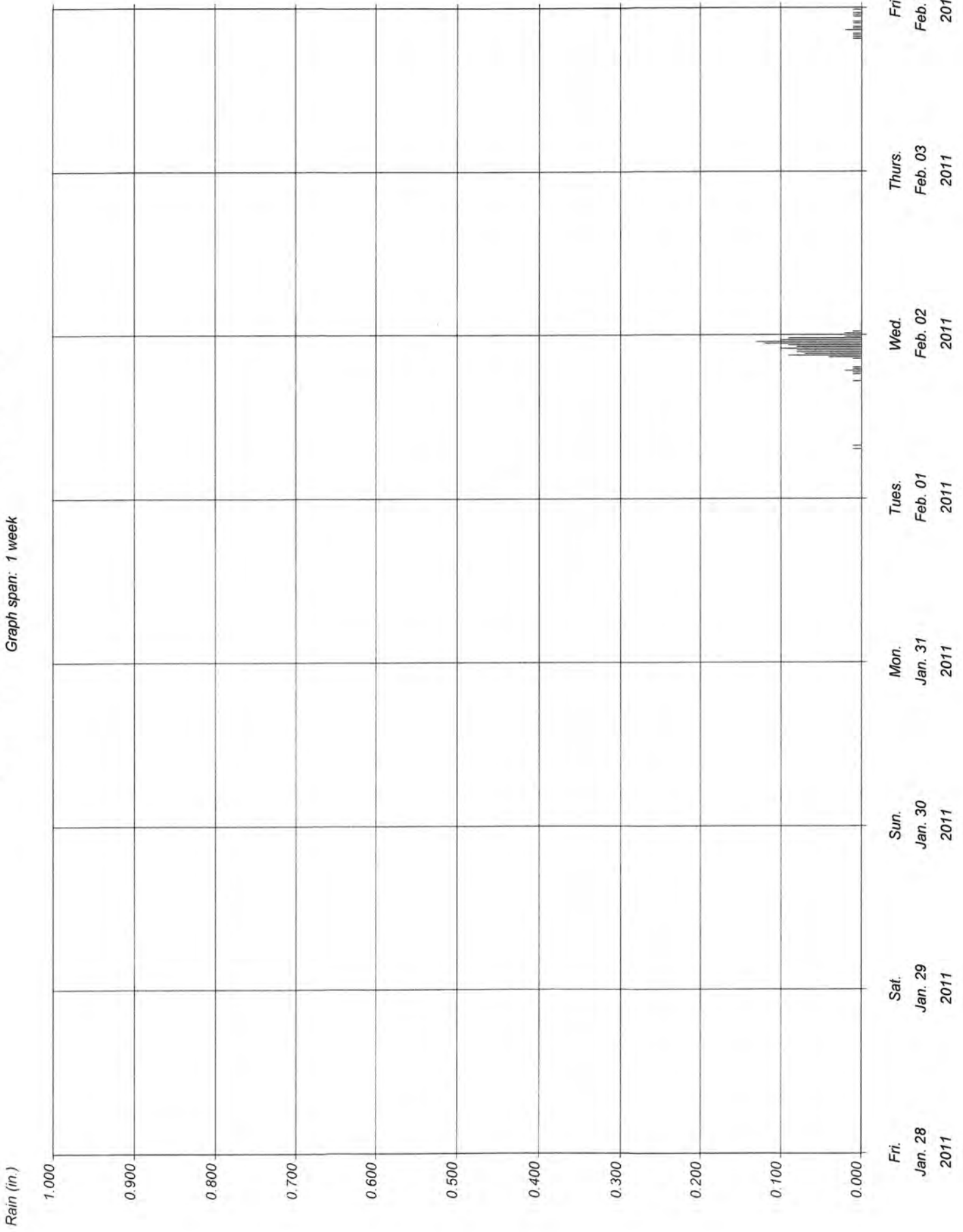


2-008

Wet Weather Event 2/1/11

— Flow (mgd)





Taylors Fire & Sewer Flow Meter Data Sheet

*MT 2-008
Rain All East 3
Feb 4, 2011*

System Data

Meter Location: <u>2-008</u>	Pipe Size (in.): <u>8</u>
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Inch-Miles of Sewer Upstream of Meter						
Pipe Size (in.)	Length (ft.)	Inch-Miles		Pipe Size (in.)	Length (ft.)	Inch-Miles
8	34,037	51.57		24		0.00
10		0.00		27		0.00
12		0.00		30		0.00
14		0.00		36		0.00
15		0.00		42		0.00
16		0.00		48		0.00
18		0.00		54		0.00
20		0.00		60		0.00
21		0.00		72		0.00
Total =						51.57

Dry Weather Flow

<p>Average Daily Flow calculated from the following dates:</p> <p>From: <u>02/10/11</u></p> <p>To: <u>02/15/11</u></p>	<p>Avg. Daily Flowrate = <u>138,000</u> gpd</p> <p>Avg. Flow Depth = <u>2.200</u> inches</p> <p>Peak Hourly Flowrate = <u>222,000</u> gpd</p> <p>Peak Factor = <u>1.61</u></p>
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Notes: _____

Completed By: EC Mella

Date: 2-5-2012

[REDACTED] - computer calculated (formula)

Taylor's Fire & Sewer Flow Meter Data Sheet

Rainfall and I/I Event Duration

Rainfall: Start: 2/4/11 7:15 End: 2/5/11 7:15
Max. 24-hour Total: 1.53 in. Storm Total: 1.53 in.
I/I Event: Start: 2/4/11 6:15 End: 2/9/11 0:00

Dates and times that rainfall and I/I begin and end.

Wet Weather Event - I/I Analysis

Peak Flow Depth = 4.8 inches

I/I Event Duration = 108 hours

☐ Manhole Surcharged (Level exceeded pipe dia.)

I/I Volume = 945,000 gallons

Peak Hourly Flowrate = 579,000 gpd

Inflow and Infiltration Breakdown (optional)

Avg. Dry Weather Flow = 138,000 gpd

Dry Weather Infiltration = 76,000 gpd

Peak Factor = 4.20

Rainfall Induced Infiltration = 65,000 gpd

Avg. Wet Weather Flow = 272,000 gpd

Total Infiltration = 141,000 gpd

Avg. I/I Flow = 210,000 gpd

Infiltration Rate = 2,734 gpd/idm

Inch-Diameter Miles = 51.57 idm

Inflow = 69,000 gpd


I/I Rate = 4,072 gpd/idm

Inflow Rate = 1,338 gpd/idm

Notes:

Completed By EC Mall

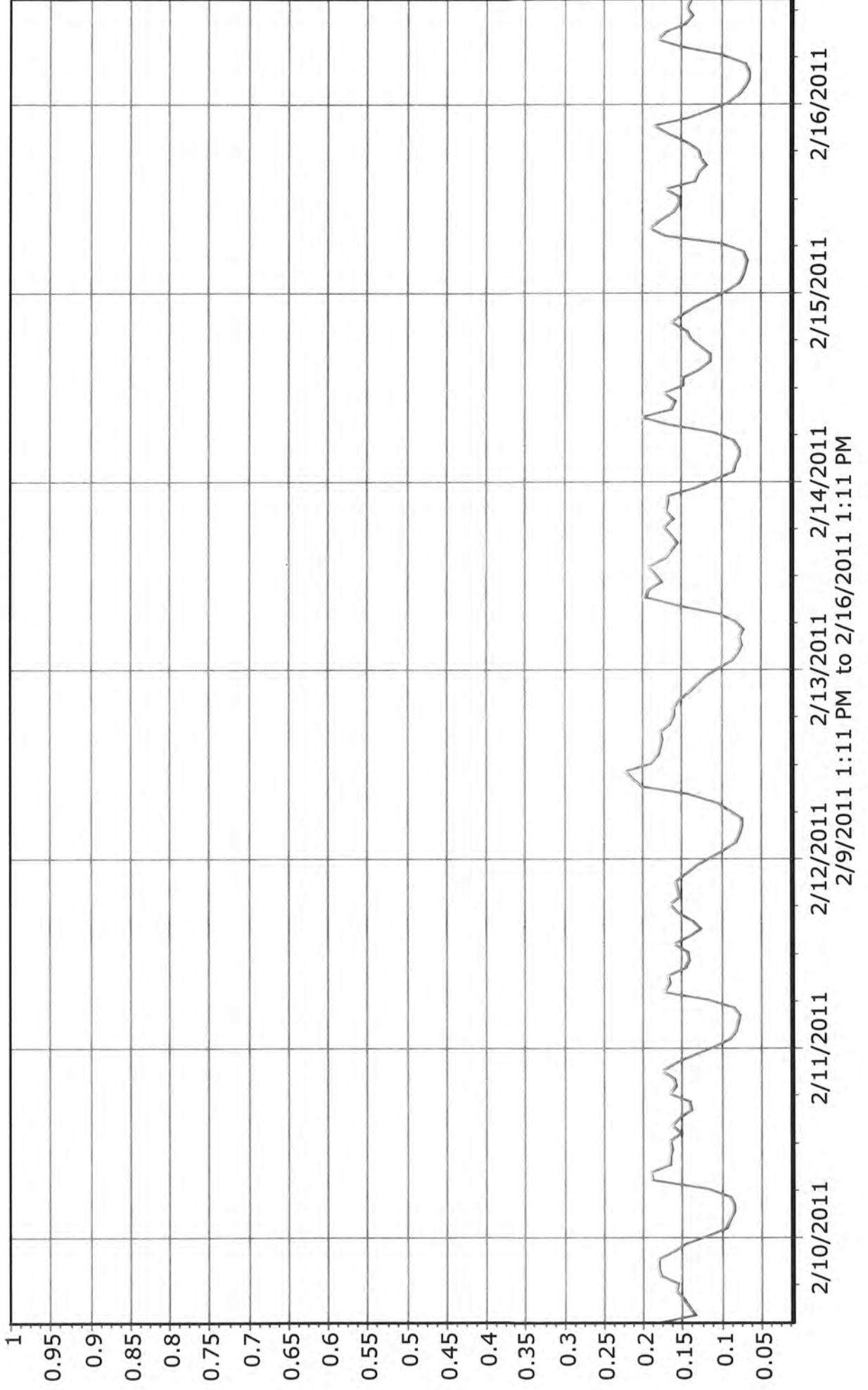
Date: 2-5-2012

 - computer calculated (formula)

2-008

Dry Weather Flow Feb. 2011

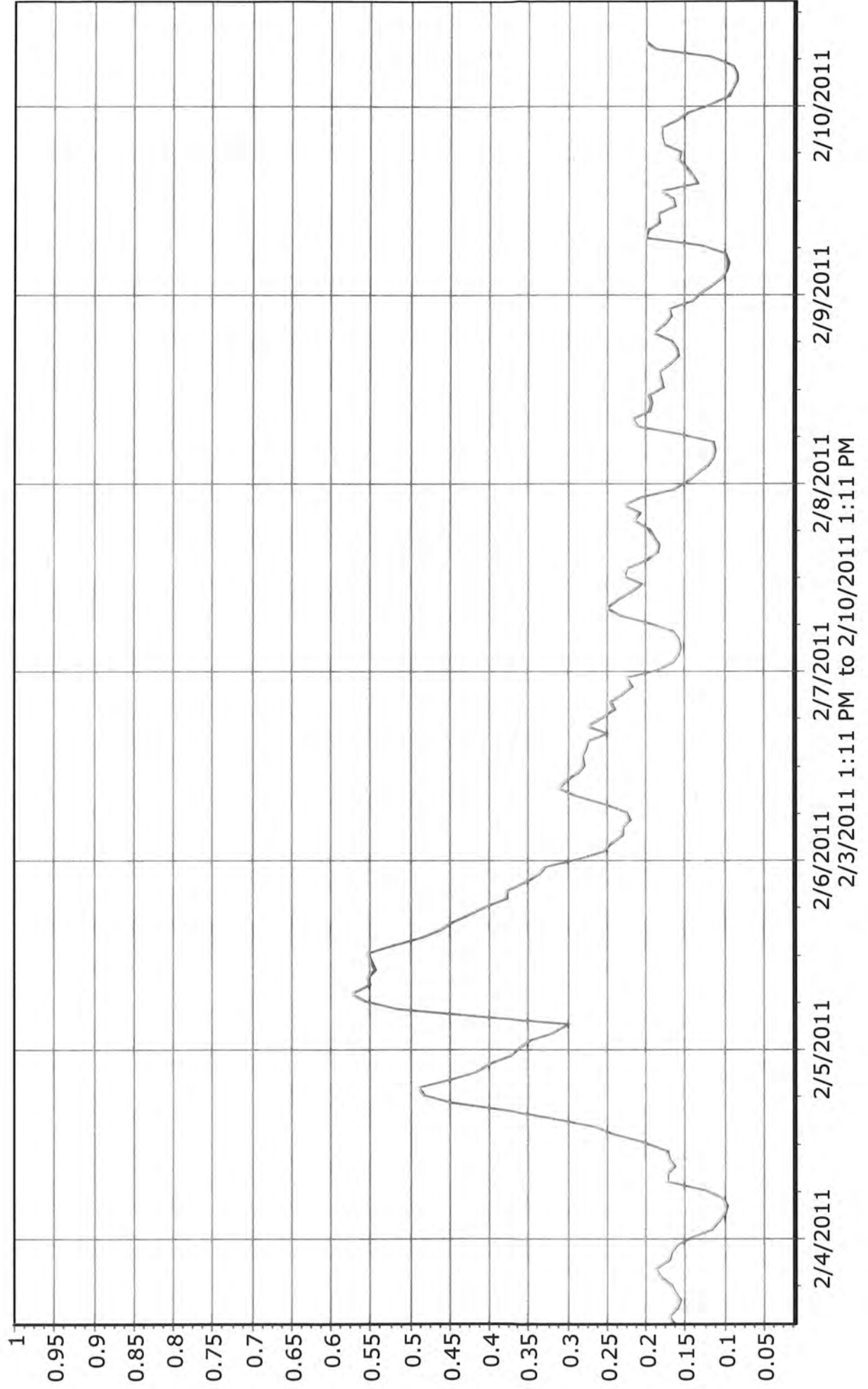
— Flow (mgd)



2-008

Wet Weather Event 2/4/11

— Flow (mgd)



Graph span: 1 week

