



**September 1, 2013
FLASH FLOOD EVENT**

INVESTIGATION REPORT



***Prepared by Vincent Roy
November 16, 2013***

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 9/1/2013 Flashflood / List of Impacts

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 2009 – 2013 Needham Precipitation Data

Introduction

On Sunday, September 1st of the 2013 Labor Day weekend, Needham and the surrounding region experienced a significant weather event. At approximately 8:57am, Needham DPW received a National Weather Service severe alert declaring a Flash Flood Warning for this area until 12pm EDT. The weather reports from the local media on the prior day and Sunday morning had indicated potential localized severe storm activity, with no specific locations identified. For approximately a 3 hour period Needham experienced extended periods of torrential rainfall.

Needham DPW crews were contacted and responded in a timely manner to begin investigating and addressing flooding locations. The severe storm exited the area by noon time and the DPW crews remained on duty for the remainder of the day. The Assistant Town Manager was contacted and informed of the situation and kept apprized of the event throughout the day.

The following Tuesday morning a full report was communicated to the Town Manager. Also, beginning Tuesday the Town Hall and DPW began receiving numerous calls and emails to report damage caused by severe flooding. After personally witnessing the extensive damage and hearing from several concerned citizens and business owners, the Board of Selectmen acting through the Town Manager tasked the Director of Public Works Richard Merson to conduct an investigation and report back to the Selectmen.

The intent of this report is to serve as a tool for identifying actions for potential improvements to the Town's stormwater system. The report will also be used by the DPW to develop a more comprehensive approach for improvements to be made within the DPW Operating Budget and the Capital Improvement Plan. Likely improvements will be in the form of immediate corrective actions; work requiring minor engineering, design, and funding identification; or work requiring more significant engineering study. Plans for addressing the long-term solutions as identified in the investigation study will be incorporated into the Capital Improvement Plan. The recommendations in this report do not guarantee that flooding may never occur, but may lessen the impacts of future rain events.

Recap of the Event

Needham and the surrounding region experienced a quick developing and localized severe electrical storm and flash flooding conditions during the morning of Sunday, September 1, 2013. Similar conditions were experienced in various locations throughout the New England Region during the prior two day period and the following two day period. Weather forecasts concerning timing of these storms and the exact locations and rainfall amounts were not available before hand.

A flash flood warning was extended later that morning for parts of Massachusetts until 4:45 p.m. that day. The National Weather Service in Taunton issued a flash flood warning for southeastern Middlesex County, Suffolk County and northern Norfolk County until Sunday afternoon. A warning for southeastern Hampden County and southwestern Worcester County was issued until 4:45 p.m. but was canceled as the Weather Service reported heavy rain ended shortly before 3 p.m.

The heavy rains, torrential at times, occurred over approximately a three hour period beginning around 8:30 AM and continued until sometime between 11:00 – 11:30 AM. Unconfirmed reports put the rainfall total in the 3+ inches range (one report on TV had 5.74 inches at a location in Natick). The impact of the heavy rainfall during a short period of time included extended periods of high intensity rainfall amounts upon the storm drain system causing system surcharging and eventually street flooding. The brooks and streams were all observed to be swelled and overtopping of the banks was prevalent. The heavy rain in the area caused major traffic problems. Route 128 was closed in both directions between Route 9 and near Highland Avenue. Numerous road closures due to water inundating roadways, with several cars stuck in flood waters were reported throughout the area.

The DPW either observed or received reports of flooding on private property. In many instances this private property flooding was caused by the system surcharge conditions and overwhelmed water courses.

Among locations observed and responded to by DPW staff or reported by the Police and Fire Departments are the following:

- Route 128/I-95 near Highland Ave
- Highland Ave @ Mellen St
- Highland Ave @ Memorial Park
- Highland Ave @ Great Plain Ave & Dedham Ave
- Great Plain Ave @ Chestnut St & Chapel St
- Lincoln St @ School St
- Lincoln St @ Garfield St
- Great Plain Ave @ Abbott St
- Dedham Ave @ South St
- Dedham Ave @ DPW/PSAB driveway
- Rosemary St @ Hillside Ave & Rosemary Lake
- Hunnewell St – Grasmere Rd Area (Rear)
- Sargent St – Washington Ave (Rear)
- #115 Hunting Rd (Rear)
- Hazel La @ Woodbine Cir.

Debris was observed at several of these locations. Street sweeping and general clean-up were scheduled for Monday evening, early Tuesday morning and during the daytime on Tuesday.

In addition Parks & Forestry crews responded to a handful of locations to address tree issues. Power outages were experienced in various locations due primarily to lightning strikes. Among the locations damaged or affected by lightning strikes were the traffic signals at Chestnut St @ High Rock St, Chestnut St @ South St and Great Plain Ave @ Greendale Ave. The on-call Traffic Signal contractor responded within an hour and restored function to at least 2 of the 3 locations. Water and Sewer personnel also investigated the areas reported to determine if blocked catch basins, collapsed or obstructed drain pipes existed. As of the time of this report no deficiencies have been identified.

A preliminary report of the initial findings of the investigations was provided by Richard Merson, Director of DPW to the Selectmen at their meeting of September 10, 2013. As a result of this, it was determined that each of the affected parties would be contacted and offered an opportunity to meet with Town DPW officials on site to discuss their damages.

1.0 Findings

1.1 Investigation

As of the date of this report, there have been 88 flooding locations recorded regarding the September 1st flash flood event. Preparations for the individual property owner meetings required resources from the Engineering Division to provide area mapping and "as-built" drawings of the stormwater system. Simultaneously, Water & Sewer crews extended their inspections further downstream looking for deficiencies, and failures such as collapsed pipes and other potential. The inspections determined the heavy rains actually cleaned and flushed the system.

Meetings were conducted with each of the affected parties by members of the DPW. Each team was headed by key a spokesperson; Richard Merson, Director of Public Works, Anthony DelGaizo,

Town Engineer, and Robert Lewis, Assistant Director of Public Works. They were supported by either Vincent Roy, Water & Sewer Superintendent, Chris Seariac, Asst. Water & Sewer Superintendent, or Thomas Ryder, Assistant Town Engineer.

The results of these investigations are contained in Appendix A. The investigation consisted of logging both residential and business locations into a data base, meeting with the impacted party, and categorizing the issues. The data base consist of the addresses, contact persons, phone numbers, types of flooding, comments by both the affected parties and the Town, date of inspections, category number, and a completed section.

The recorded issues have been broken down into three categories of remediation or improvement, but are not prioritized within each category.

- Category I – Short term solutions that can be made within the current fiscal year's operating budget of the Water and Sewer Division. These modifications do not require the assistance of other Divisions' within the DPW. The work mainly consists of improving existing catch basins and adding curb inlets to allow better drainage collection of these areas.
- Category II - Short term solutions that can be made with operating budget funds involving the efforts of two or more Divisions. This effort requires coordination between the Divisions as to the schedule of completing a recommended improvement. In addition to adding inlets to the drainage system, this work could also include re-shaping of road surfaces and/or installing berms/aprons to redirect stormwater runoff away from private property. It could also involve piping modifications for more efficient flow.
- Category III – Long term improvements involving a more comprehensive investigation that will be incorporated into the Capital Improvement Plan.

1.2 Causes of Flooding

The flooding that occurred was mainly due to the Municipal Storm Water System receiving water runoff beyond its design capacity. Other factors that contributed to flooding are as follows;

- Insufficient inlet capacity to the drainage system
- Poorly located inlets (catch basins)
- Insufficient pipe capacity in segments of the system
- Inefficiencies within the piping network
- Surcharging/ reverse flow within the system/water coming up through the basins
- Berm Controls/ improper grading
- Styles of buildings(i.e. garage under construction)
- Loss of pervious area (i.e. trees, vegetation)

1.3 Types of Flooding

- Ponding - flooding that can happen in low areas and in relatively flat areas. Rain water falling in an area is normally stored in the ground, in ponds or lakes, or is drained away, or pumped out. When more rainwater enters a drain system than can be stored, or can discharge from the system, flooding occurs. In this case, excessive rain not obstructed drain systems is the source of the flood.
- Floodway - is the channel of a watercourse that carries the water downstream. In the portions of the down stream area which collects the tributary drainage the collective volume exceeds their bank capacity and the water overtops the banks and expands

laterally. In developed areas these watercourses have been piped and routed through existing streets or through easements. When drainage systems surcharge water will seek an alternative pathway. In several instances during this storm the floodway traveled over and through private property while continuing its way downstream. The DPW has collected photographs and video clips documenting these occurrences. This floodway washed through backyards damaging private property and/or entered houses and businesses.

2.0 Flooding Incidents and Impacts

2.1. Summary

During the three hour period of September 1st, Needham residents experienced an intense rainfall (discussed above) resulting in the flooding of 88 residential and commercial properties throughout the community reported to the DPW. Of the 88 complaints, 49 streets recorded flooding impacts. 19 of the streets listed had 2 or more properties impacted. The investigation also revealed 26 garages that were constructed below the elevation of the centerline of the roadway were subject to flooding.

Listed below are the streets identified with three or more properties impacted:

1. Jarvis Circle	12	homes	impacted
2. Hazel Lane.....	5	"	"
3. Highland Ave.....	4	"	"
4. Beaufort Ave.....	3	"	"
5. Highgate St.....	3	"	"
6. Lindbergh Ave.....	3	"	"
7. Valley Road.....	3	"	"
8. Wilshire Park.....	3	"	"
9. Woodbine Circle....	3	"	"

The Categories break down as follows:

- 24 properties involve Category I type modifications
- 35 properties involve Category II type improvements
- 29 properties involve Category III type improvements

The DPW began almost immediately addressing Category I items throughout Town.

3.0 Next Steps

The next steps following this report will be for DPW to prioritize the elements within each category and continue implementation of Category I items. Category II items will require some engineering, design and cost estimation. Depending on cost estimates as many improvements that can be accommodated will be scheduled to do. In the interim, the DPW is seeking residents' assistance to help the DPW crews by keeping catch basin grates clean or reporting deficiencies to the Public Works Administrative Office.

Category III items will be reviewed and compared with studies previously completed. Locations that have not been previously studied will be recommended for study. Locations that have been previously studied will be re-examined to determine whether additional study will be required.

Presently within the Capital Improvement Plan the DPW annually submits a public works infrastructure item which contains a component for drainage capacity improvements. This component will be evaluated and projects prioritized as needed.

In addition there is a separate capital request to undertake a Watershed Management Study. This type of study will break the four main watersheds within the Town into several sub-watersheds which can be evaluated in greater detail for potential capacity improvements or run-off reduction opportunities, as well as water quality improvements.

Finally the DPW is seeking to begin discussion among certain departments regarding methods to address the decreased area of pervious ground surface as a result of new or re-development throughout Town. The decrease in pervious surface reduces the amount of rainfall that soaks into the ground and therefore increases the amount of run-off flowing to the drainage system

St #	ADDRESS	PHONE NUMBER	TYPE OF WORK	DATE RECEIVED	MEETING DATE & TIME	REMARKS	COMMENTS	TOWN RESPONSE	Inspected and Added comments	Priority of Action	Complete
7	ARDMORE RD	Pam Gold 617.968.4932 email pamslevegreg@comcast.net, Steve Gold's email: info@goldlandscaping.com Attorney's name: Allan Altman of Altman & Altman	FLOODING	9/1/2013	9/23/13 10:30-12 (Tony/Chris w/ Pam) 9/30/13 10-12 Bob, Tony, Vinny, Tobin meet with S. Gold & Attorney Alan Altman			Install double catch basin grate at driveway. Install curb inlets and double catch basin grates at Ardmore and Grasmere Roads. (CS)	pipes clear	2	
85	AVALON RD	617-817-4086 maryamshomalidmd@gmail.com	FLOODING	11/12/2013	11/21/13 12:15-12:45 (Bob/Chris)	MARY SHOMALI					
36	BEAUFORT AVE	NONE	FLOODING	9/10/2013	9/19/13 10:30-12 (Rick/Tom) not scheduled officially - they attended 46 Beaufort meeting	GEORGE HOLLAND	CAME TO ENG TOM RYDER CAN (MEET WITH ALL TOGETHER)	Beaufort/Hazleton Ave Drainage Meeting Attendance: From DPW- Tom Ryder, Rick Merson; Residents- Eileen Fox (46 Beaufort), Mike Moore (40 Beaufort), George Holland (36 Beaufort), Kathryn (25 Hazleton), Rose Stark (31 Hazleton) and others. 9/19/13 Residents Report • During certain storm events, stormwater pools in front of 31 Hazleton. Stormwater eventually overtops roadway berm floods into garage. Water then flows like a river between houses at 25 and 31 Hazleton Ave. overflows a pool at 36 Beaufort, then continues into the back yards of 40 and 46 Beaufort Ave. Backyards flood water enters the basements through the window boxes. • Existing town drain pipe and manholes are located on the other side of 31 Hazleton Ave., easement also cuts through to 40 and 46 Beaufort Ave. During the storm manhole covers popped off due to stormwater surcharge. • Typically this has not been a problem in the past, but the residents are starting to notice the occurrence is starting to trend with 2 events in the past 2 years. • Residents question whether development has caused drains not able handle flow; Highgate and Helen Road stormwater flows may contribute to the flooding issues. • Residents request the town's expertise for each individual property on mitigating stormwater flows. • Residents are seeking solutions within their properties. One resident suggested the neighbors to share in constructing a wall along the backyards in order to dam and slowly release detained stormwater. • 46 Beaufort Ave has 4 sumps in their house with 8 sump pumps. • Stormwater eventually discharges from the backyard of 46 Beaufort Ave into the street DPW Observations • Evidence that stormwater backs up into driveway of 31 Hazleton Ave. • 40 and 46 Beaufort Ave are lower lying areas with a bowl like shape in back yard. It is apparent that these areas receive stormwater. • By visual observation Hazleton Ave roadway has a minimal crown and appears that stormwater from the street is funneled towards the catchbasin in front of 25 Hazleton. Follow up draft recommendations: • Sidewalks and drive way berms are candidate for being raised; • Check into adding more catchbasins within roadway to collect more water within the road. Check for re-crown of road. • Investigate the size and slope of the drainage pipes in the road and through the easement. Determine if a size increase/pipe lengthen/ and or slope changes are warranted. • Check down stream discharge location at Harris Ave for discharge issues.	pipe clear	3	
40	BEAUFORT AVE	508-326-7278	FLOODING	9/10/2013	9/19/13 10:30-12 (Rick/Tom) not scheduled officially - they attended 46 Beaufort meeting	MIKE MOORE	CAME TO ENG TOM RYDER CAN (MEET WITH ALL TOGETHER)	Beaufort/Hazleton Ave Drainage Meeting Attendance: From DPW- Tom Ryder, Rick Merson; Residents- Eileen Fox (46 Beaufort), Mike Moore (40 Beaufort), George Holland (36 Beaufort), Kathryn (25 Hazleton), Rose Stark (31 Hazleton) and others. 9/19/13 Residents Report • During certain storm events, stormwater pools in front of 31 Hazleton. Stormwater eventually overtops roadway berm floods into garage. Water then flows like a river between houses at 25 and 31 Hazleton Ave. overflows a pool at 36 Beaufort, then continues into the back yards of 40 and 46 Beaufort Ave. Backyards flood water enters the basements through the window boxes. • Existing town drain pipe and manholes are located on the other side of 31 Hazleton Ave., easement also cuts through to 40 and 46 Beaufort Ave. During the storm manhole covers popped off due to stormwater surcharge. • Typically this has not been a problem in the past, but the residents are starting to notice the occurrence is starting to trend with 2 events in the past 2 years. • Residents question whether development has caused drains not able handle flow; Highgate and Helen Road stormwater flows may contribute to the flooding issues. • Residents request the town's expertise for each individual property on mitigating stormwater flows. • Residents are seeking solutions within their properties. One resident suggested the neighbors to share in constructing a wall along the backyards in order to dam and slowly release detained stormwater. • 46 Beaufort Ave has 4 sumps in their house with 8 sump pumps. • Stormwater eventually discharges from the backyard of 46 Beaufort Ave into the street DPW Observations • Evidence that stormwater backs up into driveway of 31 Hazleton Ave. • 40 and 46 Beaufort Ave are lower lying areas with a bowl like shape in back yard. It is apparent that these areas receive stormwater. • By visual observation Hazleton Ave roadway has a minimal crown and appears that stormwater from the street is funneled towards the catchbasin in front of 25 Hazleton. Follow up draft recommendations: • Sidewalks and drive way berms are candidate for being raised; • Check into adding more catchbasins within roadway to collect more water within the road. Check for re-crown of road. • Investigate the size and slope of the drainage pipes in the road and through the easement. Determine if a size increase/pipe lengthen/ and or slope changes are warranted. • Check down stream discharge location at Harris Ave for discharge issues.	pipe clear	3	

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46	BEAUFORT AVE	781-433-0271 cell: 781-820-3505 fox57@comcast.net	FLOODING	9/10/2013	9/19/13 10:30-12 (Rick/Tom)	EILEEN FOX	CAME TO ENG TOM RYDER CAN (MEET WITH ALL TOGETHER)	Beaufort/Hazellon Ave Drainage Meeting Attendance: From DPW- Tom Ryder, Rick Merson; Residents- Eileen Fox (46 Beaufort), Mike Moore (40 Beaufort), George Holland (36 Beaufort), Kathryn (25 Hazellon), Rose Stark (31 Hazellon) and others. 9/19/13 Residents Report • During certain storm events, stormwater pools in front of 31 Hazellon. Stormwater eventually overtops roadway berm floods into garage. Water then flows like a river between houses at 25 and 31 Hazellon Ave, overflows a pool at 36 Beaufort, then continues into the back yards of 40 and 46 Beaufort Ave. Backyards flood water enters the basements through the window boxes. • Existing town drain pipe and manholes are located on the other side of 31 Hazellon Ave., easement also cuts through to 40 and 46 Beaufort Ave. During the storm manhole covers popped off due to stormwater surcharge. • Typically this has not been a problem in the past, but the residents are starting to notice the occurrence is starting to trend with 2 events in the past 2 years. • Residents question whether development has caused drains not able handle flow; Highgate and Helen Road stormwater flows may contribute to the flooding issues. • Residents request the town's expertise for each individual property on mitigating stormwater flows. • Residents are seeking solutions within their properties. One resident suggested the neighbors to share in constructing a wall along the backyards in order to dam and slowly release detained stormwater. • 46 Beaufort Ave has 4 sumps in their house with 8 sump pumps. • Stormwater eventually discharges from the backyard of 46 Beaufort Ave into the street DPW Observations • Evidence that stormwater backs up into driveway of 31 Hazellon Ave. • 40 and 46 Beaufort Ave are lower lying areas with a bowl like shape in back yard. It is apparent that these areas receive stormwater. • By visual observation Hazellon Ave roadway has a minimal crown and appears that stormwater from the street is funneled towards the catchbasin in front of 25 Hazellon. Follow up draft recommendations: • Sidewalks and drive way berms are candidate for being raised; • Check into adding more catchbasins within roadway to collect more water within the road. Check for re-crown of road. • Investigate the size and slope of the drainage pipes in the road and through the easement. Determine if a size increase/pipe lengthen/ and or slope changes are warranted. • Check down stream discharge location at Harris Ave for discharge issues.	pipe clear	3	
20	BRENTWOOD CIR						sink hole in yard form hole in drain pipe			2	
120	BROOKSIDE RD	NONE	FLOODING	9/1/2013		BONNIE & FRANKLIN GOLD	FLOODING AND NEEDS TO BE SWEEPED		catch basin clear, needs berm	1	9/5/2013
40	BURNSIDE RD	CONTACT INFO ?	FLOODING	9/1/2013	9/16/13 2-3:30 (Tony/Chris)		EMAIL AND VIDEO SENT TO DPW - I DO NOT HAVE THE CONTACT INFO (CHRIS S)	From: Anthony DelGaizo Sent: Monday, September 16, 2013 4:39 PM To: Chris Searlac Cc: Tom Sarno; Thomas Ryder; Dave Kelly; Paul Ciesluk Subject: Actions Taken - Meeting with Robin Grace - 40 Burnside Road Chris, Tom, Dave, Paul Actions to take: 1. Survey back of driveway and sidewalk in vicinity of driveway and compare to gutter grades 2. Change drain manhole cover to catch basin frame and grate halfway between Burnside/Concord intersection and Bennington/Concord intersection 3. Inspect and change catch basin single frame and grate at Hoover and Burnside intersection into double frame and grate with double curb inlet	all clear, bottom of big hill	2	Work completed by Water & Sewer Division 10/16/13
177	CENTRAL AVE	781.444.9564 lynandjan@hotmail.com	FLOODING	9/16/2013	9/24/13 10:30-12 (Tony/Chris)	FRANK SORRENTINO		Install 2 double catch basin grates and curb inlets. (CS)		2	
764	CENTRAL AVE	781-444-4167 jackrsavage@gmail.com	FLOODING	9/20/2013	10/4/13 9-10:30 (Rick/Chris)	BARBARA DELUCA		Open discharge from Shirley Road goes across private property to Central Ave. We need to camera pipe from Central Ave at the inlet to the discharge past West Street. Need further clarification from Rick on notes. (Chris)		1 and 3	
150	COUNTRY WAY	781-444-6063 gmorris150@aol.com	FLOODING	9/1/2013	10/8/13 3:30-5 (Bob/Vinny)	GREGORY MCSWEENEY	CATCH BASIN AND GRADING QUESTION 781-223-2469	Flooding occurred in yard and small portion of garage due to water run off from neighbor at 156 Country Way. Advised home owner to re-grade backyard to prevent ponding and allow water to flow naturally toward wetland area. The Town will install a double catch basin in between the two driveways up on top of the road. (V. Roy)	catch basin clear	3	
57	CRAWFORD ST	781-444-7847 no email	FLOODING	9/23/2013	10/4/13 2-3:30 (Bob/Chris)	BILL FALLON (Negoshian Rug Co)		Need to clean catch basin on 128 side of fence and camera line going down Crawford to manhole at corner of Crawford and 128		1	
86	DAMON RD	617-913-0603 smelkonian@bostonmortgagesolutions.com	FLOODING	9/20/2013	9/25/13 2-3:30 (Bob/Vinny)	SAMUEL MELKONIAN		86 Damon Rd.—A small amount of water entered into the garage from street being flooded. Drainage system working at full capacity. Told homeowner that the Town will further inspect the drainage system and install a larger catch basin grate in street. Road needs to be re-graded to allow water to run down past the area. (VR)		1 and 3	

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435	DEDHAM AVE	603-568-9589 ows@rathlaw.com	FLOODING	9/20/2013	9/25/13 3:30-5 (Bob/Vinny)	OLIVER STALTER	<p>From: "Oliver W. Stalter" <ows@rathlaw.com> Date: 09/27/2013 8:31 AM (GMT-05:00) To: Robert Lewis <RLewis@needhamma.gov>, Vincent Roy <vroy@needhamma.gov> Subject: 435 Dedham Avenue Drainage Issues</p> <p>Robert and Vincent Thanks for meeting at our house on Wednesday afternoon, September 25th. I think there are three follow-up items.</p> <p>1) Drain ditch that parallels Dedham Ave was overflowing and sending water on to Dedham avenue. After we spoke I looked more closely at the ditch and noticed that it is blocked about 100 feet before it gets to the corner of the DPW garage building. The ditch turns into a culvert for a short distance and the upgrade side of the culvert is blocked with branches and leaves. This could be easily fixed by a couple of men in an hour or so and should be a priority.</p> <p>2) No berm along Dedham avenue on the upgrade side before our driveway. This is causing flooding into our driveway and side yard. (I will forward video in separate email.) Follow up would be loam and/or berm along road above our drive way.</p> <p>3) Back up from Alder Brook. DPW checks periodically and removes obstructions but this has not been done for quite a while. Vincent will follow-up.</p> <p>All of these are impacted by drainage from a wide area of town and are relatively easy items for DPW to follow up on. I appreciate your visiting with us. Woody Stalter</p>	435 Dedham Ave. No flooding in the home, homeowner experienced flooding in yard from street run off and drainage system working at full capacity. Town will raise berm to the right side of the drive way to alleviate the issue. (VR)	More of a highway issue to raise the berm to the right of the driveway	2	
49	EATON RD	781-444-4214 rose@hluska.net	FLOODING	9/1/2013	10/7/13 9-10:30 (Bob/Chris)	ROSE HLUSKA	FLOODING		steep driveway	2	
110	EVELYN RD	617-868-9531 cmc1448@aol.com	FLOODING	9/16/2013	9/23/13 2-3:30 (Rick/Tom)	CAROLYN CONNOLLY		<p>Manning Drainage Meeting</p> <p>Attendance: From DPW- Tom Ryder, Rick Merson; Resident- Carolyn Connolly (110 Evelyn) 9/23/13</p> <p>Residents Report:</p> <ul style="list-style-type: none"> • Notice during some rain events that the basement carpet is wet. • Recent remodel of basement approximately 1-year ago. • Neighbor has high groundwater concerns. • No issues in garage with stormwater. <p>DPW Observations:</p> <ul style="list-style-type: none"> • Property is level, roof runoff likely is retained on site eventually to drain towards foundation. • No evidence of surface flooding, most likely due to high groundwater or water downward movement through the ground. <p>Follow up draft recommendations:</p> <ul style="list-style-type: none"> • Property may be a candidate for small diameter storm drain. Resident should investigate a future connection; • Resident should check roof leaders to make sure roof runoff is directed away from the new basement addition. 			
116	FOREST STREET		FLOODING		9/16/13 3:30-5:00 (Bob/Tom)			<p>Forest Street Drainage Meeting</p> <p>Attendance: From DPW- Tom Ryder, Bob Lewis Residents- John Washek (132 Forest Street), Judith Mamoir (116 Forest Street) 9/16/13</p> <p>Residents Report</p> <ul style="list-style-type: none"> • During certain storm events, stormwater over tops driveway berms on Forest Street and water flows down driveways of 132 and 116 Forest Street; also through an existing drainage and sewer easement/ROW. Stormwater floods the back yards and the nearby tennis court. • Resident at 116 Forest Street driveway is at low point and floods, water enters garage during larger storm events. Some storage items in garage were damaged due to water damage. • Stormwater by passes catch basin in front of driveway; • Flooding is causing erosion on the private property; <p>DPW Observations</p> <ul style="list-style-type: none"> • Storm damage consisted of erosion in back yard for properties at 132 Forest Street; Water stains approximately 2 feet above grade at garage door at 116 Forest Street. • Driveway at 116 has low point with no outlet except for a drywell. • The existing drainage system in Forest Street flows through pipe network and down an easement at 132 Forest Street. A ~15" pipe outlets behinds the property into a channel. The pipe is currently halfway submerged. • Several pictures of the site were taken. • Observation that yard waste debris collection from abutting neighbors is located within the low lying areas. • Catch basin in front of driveway at 132 Forest has a sluiceway with a 6" pipe outlet. <p>Follow up draft recommendations:</p> <ul style="list-style-type: none"> • Increase the 6" sluiceway outlet to a 12" (min). • Check into adding more catchbasins within roadway to collect more water within the road. Check if driveway berm may be raised at the road. • Residents should clear the backyard areas from their yard waste to allow flow to the existing channelized areas. • Investigate the size and slope of the pipe through the easement. Determine if a size increase/ pipe lengthen/ and or slope changes are warranted. • Investigate a cleaning of brooks and culvert option for the channelized area down stream of discharge pipe. 		2	

September 1, 2013 Flash Flood / List of Impacted

St #	ADDRESS	PHONE NUMBER	TYPE OF WORK	DATE RECEIVED	MEETING DATE & TIME	REMARKS	COMMENTS	TOWN RESPONSE	Inspected and Added comments	Priority of Action	Complete
132	FOREST ST		FLOODING	9/1/2013	9/16/13 3:30-5:00 (Bob/Tom)	JOHN WASHEK	<p>Hello Vincent, I would like to meet with you at my property to show the damage from street sewer water crossing my property. Appears neighbor had 2-3 ft. of town water in her garage and basement. An "Act of God" occurrences do not include poor Town engineering, sewer planning, sewer management or now Town overall management of proper improvement fundings.</p> <p>When towns are well managed and controls in place; an "Act of God" is managed well. The tax revenue is in place to assure this. If a tax payer in one location of Needham experiences adverse sewer conditions while another area of Needham does not due to geography; then going forward taxes need to be evaluated to include deductions to the tax rate for areas where the Town chooses not to improve or address flawed engineering and planning. I will address at a later date after my discussions with you. I want to assure I provide you as a new Superintendent of sewers an adequate time of evaluation of the issue.</p> <p>I have discussed many occasions prior with Bob Lewis and Chris Seariac. I see situation we will discuss in great detail is worsening rather than improving. Chris told me today that it was an "Act of God" the storm experiences this past week...poor engineering and planning and budgeting by your dept and the Town is NOT an Act of God ; but an act of ineffective representation of Town management. I understand you are now in charge and I would like to speak and discuss the situation with you personally before I raise again to the Selectmen and Town manager and legal counsel. I was told many years ago by Bob Lewis that the existing conditions are not adequate and was on lists of improvements. I would like to meet and discuss greater details before we move to next level of correspondence. When can we meet at my property at your convenience ? Do we need to invite Kate ? If so; I will let you do so. usually 11-2pm windows work for me at lunch time or late afternoon after 4 pm. I look forward to discussing a final resolution. John Washek</p>	<p>Forest Street Drainage Meeting Attendance: From DPW- Tom Ryder, Bob Lewis Residents- John Washek (132 Forest Street), Judith Mamoir (116 Forest Street) 9/16/13</p> <p>Residents Report</p> <ul style="list-style-type: none"> • During certain storm events, stormwater over tops driveway berms on Forest Street and water flows down driveways of 132 and 116 Forest Street; also through an existing drainage and sewer easement/ROW. Stormwater floods the back yards and the nearby tennis court. • Resident at 116 Forest Street driveway is at low point and floods, water enters garage during larger storm events. Some storage items in garage were damaged due to water damage. • Stormwater by passes catch basin in front of driveway; • Flooding is causing erosion on the private property; <p>DPW Observations</p> <ul style="list-style-type: none"> • Storm damage consisted of erosion in back yard for properties at 132 Forest Street; Water stains approximately 2 feet above grade at garage door at 116 Forest Street. • Driveway at 116 has low point with no outlet except for a drywell. • The existing drainage system in Forest Street flows through pipe network and down an easement at 132 Forest Street. A -15" pipe outlets behinds the property into a channel. The pipe is currently halfway submerged. • Several pictures of the site were taken. • Observation that yard waste debris collection from abutting neighbors is located within the low lying areas. • Catch basin in front of driveway at 132 Forest has a sluiceway with a 6" pipe outlet. <p>Follow up draft recommendations:</p> <ul style="list-style-type: none"> • Increase the 6" sluiceway outlet to a 12" (min). • Check into adding more catchbasins within roadway to collect more water within the road. Check if driveway berm may be raised at the road. • Residents should clear the backyard areas from their yard waste to allow flow to the existing channelized areas. • Investigate the size and slope of the pipe through the easement. Determine if a size increase/ pipe lengthen/ and or slope changes are warranted. • Investigate a cleaning of brooks and culvert option for the channelized area down stream of discharge pipe. 	camera, lines clear	2	
121	GRANT ST	781-453-1972 cell 617-272-5115	FLOODING	11/8/2013	11/8/13 10:30-11:30 (Bob/Chris)	JOHN BERGERON					
176	GREENDALE AVE	cell 617-721-0785, home 781-444-4641, email garykaufmanrealtor@gmail.com	FLOODING	9/24/2013	10/1/13 10:30-12 (Rick/Chris)	GARY KAUFMAN				3	
241	GREENDALE AVE	781-400-1966 pbuttner@comcast.net	FLOODING	9/20/2013	9/30/13 2-2:30 (Rick/Chris)	PATRICIA BUTTNER		Surface water from higher elevations flooding backyard during major events. Homeowner is asking for advice on fixes she could do to help issue. (CS)			
91	GROSVENOR RD	781.449.8891 kjsokolosky@yahoo.com	FLOODING	9/17/2013	9/24/13 9-10:30 (Rick/Tom)	CAROLYN SOKOLOSKY				3	
101	GROSVENOR RD	781-449-3213 Morris.Porter@gmail.com	FLOODING	9/1/2013	9/19/13 9-10:30 (Rick/Tom)	MORRIS PORTER	RECEIVED FROM TONY	<p>Grosvenor Street Drainage Meeting Attendance: From DPW- Tom Ryder, Rick Merson; Residents- Morris Porter (101 Grosvenor)</p> <p>9/19/13</p> <p>Resident Report</p> <ul style="list-style-type: none"> • During certain storm events, stormwater floods Broad Meadow School ball field, over tops berm at ball field and floods resident's backyard. • Water level was approximately 3 feet high in driveway last storm. • The house driveway is a drive under with two catch basins connected at the low point. Water that accumulates in the driveway enters the catch basins. One catch basin has a pump that discharges stormwater into a 1,000 gallon cistern that overflows into the town's drain. • The area flooding frequency is approximately every 1-1/2 years. Damage has been limited to the outside walkout area; storm doors pretty much were water tight. Detached garage was flooded fortunately car was on a lift so escaped water damage. <p>DPW Observations</p> <ul style="list-style-type: none"> • Evidence that stormwater fills up the driveway. • Broad Meadow ball field is known to detain stormwater. Several areas drains are located in the baseball field. Drains may only have a 6" drainage pipe network. • There is of an unknown origin a 6" pipe constructed through the berm at the ball field. • The DPW may have record drawings of the drainage system for the recent reconstruction of the school. • Drainage from this area flows through an easement at 101 Grosvenor down the road through another easement on Grosvenor and into the railroad tracks. <p>Follow up draft recommendations:</p> <ul style="list-style-type: none"> • Investigate Broad Meadow School's drainage collection design and calculations. • Check elevations of the area the detains water. • Investigate the size and slope of the drainage pipes in the ball field and through the easement. Determine if a size increase/ pipe lengthen/ and or slope changes are warranted. • Check down stream discharge location at the railroad tracks for discharge issues. 	pipe clear	3	

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27	HAZEL LANE	781-444-8965			9/23/13 9-10:30 (Rick/Tom) not scheduled officially - they attended 34 Hazel Lane meeting	ANTHONY CELLUCCI		Hazel Lane Drainage Meeting Attendance: From DPW- Tom Ryder, Rick Merson; Resident- Rick Fleck (34 Hazel Lane) Tony (27 Hazel Lane) 9/23/13 <u>Residents Report:</u> • During certain storm events, stormwater pools in front of 34 Hazel. Stormwater eventually enter driveway into garage and floods basement. • Storm drains could not keep up with flow. Has video of water flowing from Greendale like a water fall down to Woodbine then to Hazel lane eventually the roadway in front and his house becomes a detention basin. Stormwater flow may have passed through 50-58 Woodbine from 128 Greendale Ave. • Previous resident (2006) had flooding issues, but did not disclose information. Resident has had flooding 4 times in the past 4 years. Resident has approximately \$17,000 in damage inside house with a vehicle still in shop. • Residents questions whether development has caused drains not able handle flow; Cites recent development on Pandolf Lane. <u>DPW Observations:</u> • Evidence of water damage within the house basement; • Visually the property is at a low point on Hazel Lane. A drainage easement crosses the neighboring property at 28 Hazel Lane and 129 Hunting Ave. Drainage eventually discharges to 128 ROW. • By visual observation 128 Greendale Ave has a long driveway pointing towards 50 Woodbine that could receive stormwater flow from the upper Street such as Bennington. <u>Follow up draft recommendations:</u> • Check drain in the driveway of 34 Hazel Lane • Check into adding more catchbasins within roadway to collect more water within the road at Hazel, Greendale, and Bennington. • Investigate the size and slope of the drainage pipes in the road and through the easement. Determine if a size increase/pipe lengthen/ and or slope changes are warranted. Check discharge locations at 128 ROW		3	
34	HAZEL LANE	anna.yu@fmr.com	FLOODING	9/1/2013	9/23/13 9-10:30 (Rick/Tom)	ANNA YU & RICK FLECK	I want to reach out to you to let you know that our house got flooded again on the morning of Sunday, 9/1. The flash flood also affected other neighbors on Hazel Lane, although we got the worst of it at 34 Hazel Lane because of our downward sloping driveway. We had about 3 feet of water in our garage and about 1 foot in the finished basement. The fire department came to pump us out. There was essentially a lake on Hazel Lane, and I want to ask what we can do to prevent this from happening going forward. You were a terrific help to us last time we flooded, 2 years ago, when you helped implement the changes on Hunting Road and opened up several storm drains. The neighbors said the improvements made with the curbing on Hunting Lane helped divert the water out of our neighborhood. The water seemed to have come from Greendale Ave this time. I am forwarding you a video clip that a neighbor sent us, which showed water flowing down from Greendale to Woodbine Circle (I'll get you the number of that house), as well as a picture of our house on Sunday morning. It looked like a waterfall, and that water came into Hazel Lane, overwhelming the drains. I have talked to several neighbors, and this is what they think. 1) The water from Greendale Ave was nothing they have seen before. We are not sure if there was some work done on Greendale that might have diverted the water to our cul-de-sac. 2) There was a development on Pandolf Lane several years ago, and many neighbors informed us that the developer, Petrini Construction, connected the drain from Pandolf Lane to ours on Woodbine Circle, Fay Lane and Hazel Lane. We are not sure if the design might have been faulty from the beginning. 3) Tony Cellucci, our neighbor across the street who is also a retired engineer, showed us some drainage design plans that he obtained. He said that there are 2 24" pipes going into the catch basin in our area, but only 1 12" line coming out. There is obviously a capacity issue with the pipes, especially if the drains from Pandolf Road is connected to our neighborhood. On top of that, we are also getting water from Greendale. I know that several of my neighbors have had conversations with you or the Town in the past - the Gordons on 105 Woodbine Circle, the Macy's on Woodbine Circle, and Tony Cellucci on Hazel Lane. Our neighborhood has had water problems - many homes on Fay Lane were flooded several years ago. We would like a long-term solution to this problem. (continued)	Hazel Lane Drainage Meeting Attendance: From DPW- Tom Ryder, Rick Merson; Resident- Rick Fleck (34 Hazel Lane) Tony (27 Hazel Lane) 9/23/13 <u>Residents Report:</u> • During certain storm events, stormwater pools in front of 34 Hazel. Stormwater eventually enters driveway into garage and floods basement. • Storm drains could not keep up with flow. Has video of water flowing from Greendale like a water fall down to Woodbine then to Hazel Lane eventually the roadway in front and his house becomes a detention basin. Stormwater flow may have passed through 50-58 Woodbine from 128 Greendale Ave. • Previous resident (2006) had flooding issues, but did not disclose information. Resident has had flooding 4 times in the past 4 years. Resident has approximately \$17,000 in damage inside house with a vehicle still in shop. • Residents question whether development has caused drains not able to handle flow; Cites recent development on Pandolf Lane. <u>DPW Observations:</u> • Evidence of water damage within the house basement; • Visually the property is at a low point on Hazel Lane. A drainage easement crosses the neighboring property at 28 Hazel Lane and 129 Hunting Ave. Drainage eventually discharges to 128 ROW. • By visual observation 128 Greendale Ave has a long driveway pointing towards 50 Woodbine that could receive stormwater flow from the upper Street such as Bennington. <u>Follow up draft recommendations:</u> • Check drain in the driveway of 34 Hazel Lane • Check into adding more catchbasins within roadway to collect more water within the road at Hazel, Greendale, and Bennington. • Investigate the size and slope of the drainage pipes in the road and through the easement. Determine if a size increase/pipe lengthen and or slope changes are warranted. Check discharge locations at 128 ROW	lines clear	3	
34	HAZEL LANE	continued to record homeowner's comments		9/1/2013	9/23/13 9-10:30 (Rick/Tom)	ANNA YU & RICK FLECK	Home to us is a sacred place where you are supposed to feel safe. My 2 kids are freaked out by the flood, and my husband and I are pretty depressed about the whole situation and we don't feel safe. This had a significant impact on our psyche. We incurred about \$13k in total loss during the last flood (\$4k for personal material loss and \$9k for construction and remediation expense) which was not paid for by the insurance company. Under the IRS rules for personal casualty, we weren't able to deduct any of these losses on our tax returns either. We are paying for everything out of pocket, and this is a financial drain for us. We just learned from our insurance company today that they are also not covering it this time either. The value of my home has been severely compromised as a result of the water problem - we have been flooded 2 years out of the 7 years we have lived here. We have been actively looking into buying another house over the past year. The flooding only accelerates our need to find another home, and I am sure we are going to take a loss on it. Other neighbors who have experienced water problems might also see a similar impact to their home value if they were to sell their houses. At this point, we would like to sell our house and would also like to know if the town is going to fix the drainage problem and will compensate us for the loss of property value due to the problems with the storm drain system. Sincerely, Anna Yu & Rick Fleck 34 Hazel Lane			3	
15	HAZEL LANE	781-444-8872 g.rosengard@easternbank.com	FLOODING	10/24/2013 email from Kate to Rick	11/8/13 9:30-10:30 (Bob/Chris)	GLEN ROSENGARD					

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32	HAZEL LANE	anna.yu@mr.com	FLOODING	9/1/2013	9/23/13 9-10:30 (Rick/Tom)	ANNA YU & RICK FLECK	Request additional catch basins on Jarvis Circle. Contact me if you want additional information such as video	<p>Attendance From DPW- Tom Ryder, Rick Merson; Resident- Rick Fleck (34 Hazel Lane) Tony (27 Hazel Lane)</p> <p>Residents Report:</p> <ul style="list-style-type: none"> • During certain storm events, stormwater pools in front of 34 Hazel. Stormwater eventually enter driveway into garage and floods basement. • Storm drains could not keep up with flow. Has video of water flowing from Greendale like a water fall down to Woodbine then to Hazel lane eventually the roadway in front and his house becomes a detention basin. Stormwater flow may have passed through 50-58 Woodbine from 128 Greendale Ave. • Previous resident (2006) had flooding issues, but did not disclose information. Resident has had flooding 4 times in the past 4 years. Resident has approximately \$17,000 in damage inside house with a vehicle still in shop. • Residents questions whether development has caused drains not able handle flow; Cites recent development on Pandolf Lane. <p>DPW Observations:</p> <ul style="list-style-type: none"> • Evidence of water damage within the house basement; • Visually the property is at a low point on Hazel Lane. A drainage easement crosses the neighboring property at 28 Hazel Lane and 129 Hunting Ave. Drainage eventually discharges to 128 ROW. • By visual observation 128 Greendale Ave has a long driveway pointing towards 50 Woodbine that could receive stormwater flow from the upper Street such as Bennington. <p>Follow up draft recommendations:</p> <ul style="list-style-type: none"> • Check drain in the driveway of 34 Hazel Lane • Check into adding more catchbasins within roadway to collect more water within the road at Hazel, Greendale, and Bennington. • Investigate the size and slope of the drainage pipes in the road and through the easement. Determine if a size increase/ pipe lengthen/ and or slope changes are warranted. Check discharge locations at 128 ROW 	lines clear		
25	HAZELTON ST	781-444-2199 cfshanahan@gmail.com	FLOODING	9/10/2013	9/19/13 10:30-12 (Rick/Tom)	KATHY SHANAHAN	CAME TO ENG TOM RYDER CAN (MEET WITH ALL TOGETHER)	<p>Beaufort/Hazelton Ave Drainage Meeting Attendance: From DPW- Tom Ryder, Rick Merson; Residents- Eileen Fox (46 Beaufort), Mike Moore (40 Beaufort), George Holland (36 Beaufort), Kathryn (25 Hazelton), Rose Stark (31 Hazelton) and others. 9/19/13</p> <p>Residents Report</p> <ul style="list-style-type: none"> • During certain storm events, stormwater pools in front of 31 Hazelton. Stormwater eventually overtops roadway berm floods into garage. Water then flows like a river between houses at 25 and 31 Hazelton Ave. overflows a pool at 36 Beaufort, then continues into the back yards of 40 and 46 Beaufort Ave. Backyards flood water enters the basements through the window boxes. • Existing town drain pipe and manholes are located on the other side of 31 Hazelton ave., easement also cuts through to 40 and 46 Beaufort Ave. During the storm manhole covers popped off due to stormwater surcharge. • Typically this has not been a problem in the past, but the residents are starting to notice the occurrence is starting to trend with 2 events in the past 2 years. • Residents question whether development has caused drains not able handle flow; Highgate and Helen Road stormwater flows may contribute to the flooding issues. • Residents request the town's expertise for each individual property on mitigating stormwater flows. • Residents are seeking solutions within their properties. One resident suggested the neighbors to share in constructing a wall along the backyards in order to dam and slowly release detained stormwater. • 46 Beaufort Ave has 4 sumps in their house with 8 sump pumps. • Stormwater eventually discharges from the backyard of 46 Beaufort Ave into the street <p>DPW Observations</p> <ul style="list-style-type: none"> • Evidence that stormwater backs up into driveway of 31 Hazelton Ave. • 40 and 46 Beaufort Ave are lower lying areas with a bowl like shape in back yard. It is apparent that these areas receive stormwater. • By visual observation Hazelton Ave roadway has a minimal crown and appears that stormwater from the street is funneled towards the catchbasin in front of 25 Hazelton. <p>Follow up draft recommendations:</p> <ul style="list-style-type: none"> • Sidewalks and drive way berms are candidate for being raised; • Check into adding more catchbasins within roadway to collect more water within the road. Check for re-crown of road. • Investigate the size and slope of the drainage pipes in the road and through the easement. Determine if a size increase/pipe lengthen/ and or slope changes are warranted. • Check down stream discharge location at Harris Ave for discharge issues. 		3	

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31	HAZELTON ST		FLOODING		9/19/13 10:30-12 (Rick/Tom) not scheduled officially - they attended 46 Beaufort meeting			<p>Beaufort/Hazleton Ave Drainage Meeting Attendance: From DPW- Tom Ryder, Rick Merson. Residents- Eileen Fox (46 Beaufort), Mike Moore (40 Beaufort), George Holland (36 Beaufort), Kathryn (25 Hazleton), Rose Stark (31 Hazleton) and others. 9/19/13</p> <p>Residents Report</p> <ul style="list-style-type: none"> • During certain storm events, stormwater pools in front of 31 Hazleton. Stormwater eventually overtops roadway berm floods into garage. Water then flows like a river between houses at 25 and 31 Hazleton Ave. overflows a pool at 36 Beaufort, then continues into the back yards of 40 and 46 Beaufort Ave. Backyards flood water enters the basements through the window boxes. • Existing town drain pipe and manholes are located on the other side of 31 Hazleton ave., easement also cuts through to 40 and 46 Beaufort Ave. During the storm manhole covers popped off due to stormwater surcharge. • Typically this has not been a problem in the past, but the residents are starting to notice the occurrence is starting to trend with 2 events in the past 2 years. • Residents question whether development has caused drains not able handle flow; Highgate and Helen Road stormwater flows may contribute to the flooding issues. • Residents request the town's expertise for each individual property on mitigating stormwater flows. • Residents are seeking solutions within their properties. One resident suggested the neighbors to share in constructing a wall along the backyards in order to dam and slowly release detained stormwater. • 46 Beaufort Ave has 4 sumps in their house with 8 sump pumps. • Stormwater eventually discharges from the backyard of 46 Beaufort Ave into the street <p>DPW Observations</p> <ul style="list-style-type: none"> • Evidence that stormwater backs up into driveway of 31 Hazleton Ave. • 40 and 46 Beaufort Ave are lower lying areas with a bowl like shape in back yard. It is apparent that these areas receive stormwater. • By visual observation Hazleton Ave roadway has a minimal crown and appears that stormwater from the street is funneled towards the catchbasin in front of 25 Hazleton. <p>Follow up draft recommendations:</p> <ul style="list-style-type: none"> • Sidewalks and drive way berms are candidate for being raised; • Check into adding more catchbasins within roadway to collect more water within the road. Check for re-crown of road. • Investigate the size and slope of the drainage pipes in the road and through the easement. Determine if a size increase/pipe lengthen/ and or slope changes are warranted. • Check down stream discharge location at Harris Ave for discharge issues. 		3	
118	HIGHGATE ST		FLOODING					install double catch basin grates at adjacent intersection. Also install curb inlets where possible. (CS)		2	
144	HIGHGATE ST	781-400-5727	FLOODING	9/20/2013	9/23/13 9-10:30 (Tony/Chris)	ALANA BEBER (She will attend the meeting at 7 Woodledge Rd)		install double catch basin grates at adjacent intersection. Also install curb inlets where possible. (CS)		2	
187	HIGHGATE ST						drain pipe in need of replacement/ compromised in a few different areas			2	
22 ?	HIGHLAND AVE						flooding Panera Bread parking lot area			2	
1000	HIGHLAND AVE		FLOODING	9/1/2013			<p>Attached you will see a picture of Highland Ave. taken today. The mess (bark mulch from 1000 Highland Ave.) in the photo is the result of the heavy rain Needham suffered on Sunday morning. Please arrange to have the sweeper run thru the area either tonight or early tomorrow morning before cars park. You will also have to arrange for someone to sweep and shovel the sidewalk/s area. The photo only depicts 1 side of the street, both sides of the roadway need to be thoroughly cleaned.</p> <p>As a result of the mulch clogging the catchbasins on Highland Ave., Trader Joe's, CVS suffered extensive basement flooding forcing some business's to close. I suspect that much of the mulch washed down the catchbasins in the area. Please have all the catchbasins cleaned on Highland Ave. between Morton Street and West Street. Plus, flush the drain system up and down stream of effected area. To the best of my recollection, there are 2 drainage systems in the area effected. Please checkout the entire area.</p>	cleaned and flushed, lines are clear		3	
1032	HIGHLAND AVE	781.444.8599 gwakim1064@gmail.com	FLOODING	9/18/2013		GEORGE WAKIM	lost business due to flooding and redirection of traffic, town pumps not working, property flooded			3	
1211	HIGHLAND AVE	jmecagni@yahoo.com	FLOODING	10/23/2013 - email from P. Carey to R. Merson	11/7/13 3:00-4:00 PM (Bob/Vinny)	JOSEPH MECAGNI, President, Knights of Columbus				4	
7	HILLSIDE AVE	617-777-3682	FLOODING	9/20/2013	10/10/13 9-10:30 (Bob/Joe Hobbs)	HEATHER YOUNTZ					

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38	HUNNEWELL ST	617-905-6090, 781-444-2780, 617-905-6501	FLOODING	9/1/2013	9/17/13 9-10:30 (Bob/Tom)	DREW ZALKIND	FLOODING	Hunnewell Street Drainage Meeting Attendance: From DPW- Tom Ryder, Bob Lewis Residents- Drew Zaikind (38 Hunnewell) 9/17/13 Resident Report • During certain storm events, stormwater over tops neighbor's driveway berm at on Hunnewell Street and water flows down driveway into backyard. • Backyard area is at a low point; during the last storm water backed up into the patio to the house. The stormwater eventually discharges to a nearby drain on the neighboring property. DPW Observations • Evidence that stormwater backup to the house in the back yard. • Neighboring driveway visually sloped towards the back yard low point. • The existing drainage system in area receives stormwater discharge from Ardmore, Lakin and Grasmere Road. An easement carries drainage through several properties on Hunnewell, collects additional stormwater on Hunnewell and eventually discharges to Wellesley water lands near Briarwood Circle. • DPW has a draft proposed relief drain through a proposed easement on Hunnewell designed approximately 6-7 years ago. Follow up draft recommendations: • Driveways are candidate for raising driveway berms • Check into adding more catchbasins within roadway to collect more water within the road. • Investigate the size and slope of the pipe through the easement and drainage in the roadway. Determine if a size increase/ pipe lengthen/ and or slope changes are warranted. Check if draft relief drainage plan can be considered an option. • Check down stream discharge location at the Wellesley water lands for discharge issues.	lines clear	2	
115	HUNTING RD		FLOODING	9/4/2013		BORIS SUPIN	perform maintenance of drainage system in Town easement behind his house. Claims no cleaning has been done in this line since being installed 2 years ago.		culvert open, lines clear		
18	JARVIS CIR	617-584-8596	FLOODING	9/9/2013	9/19/13 9-10:30 (Tony/vinny)	TODD HARGRAVES	HEAVY FLOODING ON STREET - WANTS MEETING	18 Jarvis Circle— Flooded garage caused by flooding in the street. Drainage system working at full capacity. Advised homeowner to inspect and clean drainage system in front of his garage and re-slope the area next to the garage to allow water to flow past the garage toward the back yard. The Water and Sewer Division will further inspect the municipal drain and install a double catch basin with curb inlet to the basin nearest the fire hydrant. (VR)		2	
24	JARVIS CIR	781-449-4094	FLOODING	9/4/2013	9/23/13 3:30-5 (Tony/Chris) & 10/22/13 9:30-10	LOUIS SYATT	FLOODING ON CORNER OF JARVIS THINKS OUTLET PIPE IS TOO SMALL	Install double catch basin grates at adjacent intersection. (CS)		2	
32	JARVIS CIR		FLOODING	9/1/2013		PATRICK HANNON	FLOODING			2	
54	JARVIS CIR	NONE	FLOODING	9/3/2013		DANIEL MAZZA	FLOODING			2	
56	JARVIS CIR	617-823-4360 617-697-4604 gaurie_ca@yahoo.com	FLOODING	9/1/2013	9/27/13 3-3:30 (Bob/Chris)	PRASHANT & GAURIE PANDEY	The storm drain in front of our house overflowed on Sunday 9/1 during the storm. Our whole street was flooded and none of the drains seemed to be working. I have noticed that during a single storm that the drains' water level seems very high. We feel that someone needs to come out and take a look at these drains and potentially clean them out to ensure that water is carried away properly. Our garage was completely flooded and some items were damaged/ruined. We were only 1 inch away from our finished basement from being flooded. The new townhouses on our street had their basements flooded completely. Please let me know what can be done about this.	Change 2 drain manhole covers into catch basin frames on Nardone Road. Install curb inlets at intersection of Nardone Road and Jarvis Circle. (CS)		2	
61	JARVIS CIR	617-598-6119	FLOODING	9/1/2013		JENNIFER BANNON	I live on Jarvis Circle and I am concerned about the Streets Lack of drainage, the rain this past weekend created a river down the street- I have never seen anything like it. I know the Road will be paved later this month and I hope that proper drainage will be installed. Thank you, Jennifer Bannon			2	
62	JARVIS CIR	609-651-0658	FLOODING	9/1/2013		CARRIE DANDY	Due to the inability of the town's drainage system, the rains of September 1 caused a backlog and the deluge spilled over in our street and driveway and into our home, where almost a foot of water accumulated. There needs to be additional drains added to Jarvis and Nardone street. I understand Jarvis is to be repaved in September- hoping accommodations can be made to drainage system at that time to ensure deluge like this will not occur again.	Change 2 drain manhole covers into catch basin frames on Nardone Road. Install curb inlets at intersection of Nardone Road and Jarvis Circle. Check (camera) pipe in easement, clean catch basins and pipe as needed. (CS)	flushed and camera, lines clear	2	
72	JARVIS CIR	THOMASDEJAGER@GMAIL.COM	FLOODING	9/5/2013	9/19/13 10:30-12 (Tony/vinny)	THOMAS DEJAGER	HEAVY FLOODING ON STREET - WANTS MEETING	72 Jarvis Circle—Flooded garage caused by the proximity of the garage opening being below grade. The Town will further inspect the area system for possible obstructions. Will install double catch basin in the area if the system has enough capacity. (VR)		2	
74	JARVIS CIR		FLOODING	9/26/2013		BARRY LEVINE	74 Jarvis Cir - Barry Levine: Moved in July 2012 then 3 months later had sewer back-up allegedly caused by baby wipes. Mr. Levine called 9/26/13 @ 1:15pm and spoke with Judy.			2	
94	JARVIS CIR	781-444-7275, cell 781-915-8019 email sapphyr@aol.com	FLOODING	9/27/2013	10/1/13 9-10:30 (Rick/Chris)	LAINY ALPERT		Check (camera) pipe in easement, clean catch basins and pipe as needed. (CS)		2	
	JARVIS CIR	781-844-3186	FLOODING	9/1/2013		RON LOPEZ	FLOODING	IN PERSON BOB L		2	
7	JULIA RD		FLOODING	9/1/2013			During Sunday's rain storm (9/1/2013), flooding occurred in front & behind 11 Julia Road. Please clear out drains, catch basins in front and easement located behind 11 Julia Road.	Camera pipe in easement, clean catch basins and pipe as needed. (CS)	lines clear, catch basin clear	1	
11	JULIA RD	cell 781.786.1190 home 781.455.6625 email: fsalof@verizon.net	FLOODING	9/4/2013	9/19/13 9-10:30 (Bob/Chris)	ROBERT & FRADA SALO	flooding occurred in front & behind 11 Julia Road. Please clear out drains, catch basins in front and easement located behind 11 Julia Road.	Camera pipe in easement, clean catch basins and pipe as needed. (CS)	lines clear, catch basin clear	1	

September 1, 2013 Flash Flood / List of Impacted

St #	ADDRESS	PHONE NUMBER	TYPE OF WORK	DATE RECEIVED	MEETING DATE & TIME	REMARKS	COMMENTS	TOWN RESPONSE	Inspected and Added comments	Priority of Action	Complete
18	KENT RD	NONE	FLOODING	9/1/2013		TOM MARCUCELLI	CLEAN-OUT DEBRIS IN CATCH BASIN at dead-end of street - causing flooding at 18 Kent Rd		lines clear		
56	LANTERN LANE		FLOODING	9/29/2013		DAVID TOCCI	added per RPM			3	
146	LINCOLN ST	781-455-8331	FLOODING	9/1/2013	9/23/13 9-10:30 (Bob/Vinny)	JOY & STEVE SMITH	FLOODING	146 Lincoln St. A small amount of water in basement. The entire road turned into a river. Drainage system working at full capacity. This entire area needs further investigation. Homeowner advised to build up apron to the driveway to prevent street runoff from entering his property. (VR)		3	
71	LINDBERGH AVE	617-855-3520 work, cell 781-801-3624 email dmatteodo@aol.com	FLOODING	9/24/2013	10/4/13 9:30-10:30 (Rick/Chris)	DAVID MATTEODO		investigate 12" clay pipe from Catch Basin in Lindberg going into property at 71 Lindberg(no record of pipe or easement found)			
109	LINDBERGH AVE	781-455-0949 deddy@davededdy.com	FLOODING	10/1/2013	10/8/13 2-3:30 (Bob/Vinny)	DAVID EDDY		Flooded (3 inches of water) basement caused by run off from neighbor up gradient of his home. Suggested that home rally the neighborhood for petitioning the BOS on regulating stormwater run off from residential property. Also suggested that homeowner installs an additional sump pump and connects it to the municipal stormwater system. (V. Roy)			
172	LINDBERGH AVE	781-455-0941	FLOODING	9/19/2013	9/23/13 3:30-5 (Rick/Tom)	LORI HALL	Flooding in back yard and garage from drain				
146	MANNING ST	781-449-6230 email kathy.voss@verizon.net	FLOODING	9/27/2013	10/1/13 10:30-12 (Bob/Vinny)	KATHY VOSS					
191	MANNING ST	781-433-9886	FLOODING	9/1/2013	9/23/13 10:30-12 (Rick/Tom)	JANE & GARY BOWES	FLOODING	Manning Drainage Meeting Attendance: From DPW- Tom Ryder, Rick Merson; Resident- Jane Bowse (191 Manning) 9/23/13 Residents Report: • During certain storm events, stormwater becomes like a river down the street, flows over the sidewalk then down the driveway into their garage. • Residents bailed water out of garage. Escaped serious damage to the inside of their home. DPW Observations: • Location is in a low area at the base, the driveway is a drive under with a catch basin no known outlet. • Stormwater could be coming from James, or Lindberg Ave. Follow up draft recommendations: • Check drain in the driveway of 191 Manning • Check into adding more catchbasins within roadway to collect more water within the road at James, Lindberg, and Manning. • Investigate drain capacity on Manning.	catch basin clear		
237	MARKED TREE RD	781-453-9009 call 781-405-6261 demaio44@earthlink.net	FLOODING	11/8/2013	11/12/13 2-2:45 (Bob/Vinny)	LAURA DEMAIO	3 storm drains can't handle water from storms. Water came over berm, down driveway and into garage.				
81	NARDONE RD		FLOODING	9/1/2013	9/20/13 9-10:30 (Tony/Chris)		As you have no doubt been made aware homes in my neighborhood flooded yet again on Sunday. We bought this home 18 months ago and so far have had two serious floods. On Sunday we had a foot of water in our garage and basement. We have lost so much stuff including things that can't be replaced such as photos of our children. So far we have spent over a \$1,000 in clean up and that does not include expensive items that were destroyed. We even had everything in large plastic containers but due to the amount of water they all fell over. The town knows we have a problem with the drainage for Nardone and Jarvis and we need to know what the town is going to do to help the situation. We are about to pay a lot more money to have all the dry wall and insulation replaced. How do we know this is not going to happen again, in fact, if nothing is done with the drains of course it is going to happen again. We pay taxes in the knowledge that our property is protected by a good drainage system. The street floods so quickly that it is obvious there is a serious problem with the drainage system. I look forward to hearing your response. Julie Adams	Change 2 drain manhole covers into catch basin frames on Nardone Road. Install curb inlets at intersection of Nardone Road and Jarvis Circle. (CS)	pipes clear, shallow basin	2	
83	NARDONE RD	860-833-5609	FLOODING	9/1/2013		RACHEL BLACK	FLOODING	Change 2 drain manhole covers into catch basin frames on Nardone Road. Install curb inlets at intersection of Nardone Road and Jarvis Circle. (CS)	pipes clear, shallow basin	2	
	NEWMAN SCHOOL	PUBLIC FACILITIES	FLOODING	9/1/2013		JOHN POPER	RUN OFF CONCERNS AT NEWMAN SCHOOL		pipe clear, steep driveway		
87	PLEASANT RD	781-682-0500	FLOODING	9/1/2013		BARBARA BELKIN	FLOODING		clear lines		
108	PLYMOUTH RD	781-449-1148	FLOODING	11/8/2013	no meeting necessary	GAIL DEMPSEY	Wants to be on record for storm damage.				
80	RICHARD RD	NONE	PUDDLING	9/8/2013		Lee & Lynn Feignbaum will call back beginning of Oct.	PUDDLING IN STREET AFTER RAIN EVENTS		camera and flushed clear		
5	SACHEM RD	781-449-7251, cell 617-512-4177 email: mdsaipe@rcn.com	FLOODING	9/24/2013	10/1/13 9-10:30 (Bob/Vinny)	MICHELLE SAIPE		5 Sachem Rd. No flooding in the home, front yard flooded from street being flooded and drainage system working at full capacity. Told homeowner the Town would further inspect the area drainage system and install a double catch basin if there is sufficient capacity. (VR)		2	
27	SARGENT ST		FLOODING						clear lines		
55	SARGENT ST	781.400.1491 michael_r_green@hotmail.com	FLOODING	9/17/2013	9/23/13 10:30-12 (Bob/Vinny)	MICHAEL GREEN		55 Sargent St. Very small amount of water in basement. Backyard flooding from neighbor's yard. No problem from the street. Note that homeowner has sump pump that discharges toward the street. Advised homeowner to hire a contractor to connect sump pump discharge to the storm drain system. (VR)			

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St #	ADDRESS	PHONE NUMBER	TYPE OF WORK	DATE RECEIVED	MEETING DATE & TIME	REMARKS	COMMENTS	TOWN RESPONSE	Inspected and Added comments	Priority of Action	Complete
14	SOUTH ST	781-444-7992	FLOODING	9/6/2013		MARY MAUGHN	DRAIN OVERFLOWING IN STREET AND FLOODING IN BACK YARD. 9/16/13 Mary called DPW -She will contact DPW once her neighbors confirm their medical appts - they would like to meet as a group.		clear lines		
221	VALLEY RD	781-444-2748	FLOODING	9/3/2013	10/7/13 10:30-12 (Bob/Vinny)	LORRAINE & MAURICE MEDOFF	petition rec'd 9/16	Flooded garages caused by flooding in the street. Drainage system working at full capacity. Advised homeowners to petition the state to ensure the state drain on Great Plain Ave near 128 has sufficient capacity. The Water and Sewer Division will further inspect the municipal drain and clear the Town R.O.W that enters into the state retention area. (V. ROY)		1 & 3	
222	VALLEY RD	781-444-5696 email tuyenhnguyen@verizon.net	FLOODING	9/3/2013	10/7/13 10:30-12 (Bob/Vinny)	LAN & TUYEN NGUYAN	petition rec'd 9/16	Flooded garages caused by flooding in the street. Drainage system working at full capacity. Advised homeowners to petition the state to ensure the state drain on Great Plain Ave near 128 has sufficient capacity. The Water and Sewer Division will further inspect the municipal drain and clear the Town R.O.W that enters into the state retention area. (V. ROY)		1 & 3	
242	VALLEY RD	781-449-9884	FLOODING	9/3/2013	10/7/13 10:30-12 (Bob/Vinny)	JANE SILVERMAN	petition rec'd 9/16	Flooded garages caused by flooding in the street. Drainage system working at full capacity. Advised homeowners to petition the state to ensure the state drain on Great Plain Ave near 128 has sufficient capacity. The Water and Sewer Division will further inspect the municipal drain and clear the Town R.O.W that enters into the state retention area. (V. ROY)		1 & 3	
13	WARREN ST	781-449-1247 benpar3@verizon.net	FLOODING	9/1/2013	9/23/13 2-3:30 (Tony/Chris)	BEN PARENTEAU	Rick, Bob, Tony and Vin need to sit and discuss this issue.	Take shots on grades at sidewalk and driveway apron. Possible build up or investigate the possibility of installing backflow valve at Warren down from Kingsbury Street. (CS)	pipe clear	3	
27	WASHINGTON AVE	781-449-9447	FLOODING	9/1/2013	9/17/13 2-3:30 (Bob/Tom)	ANNE CIMINI ascimini@comcast.net	I was hoping to make an appt with you regarding the flooding from the sewers in our neighborhood that for the fourth time has totaled the lower have of our home and car. Please contact me back.....the sewers should not be doing this...I am desparate. Thank you, Anne Cimini	Washington Street Drainage Meeting Attendance: From DPW- Tom Ryder, Bob Lewis Residents- Ann Cimino (27 Washington) 9/17/13 Resident Report <ul style="list-style-type: none"> • During certain storm events, stormwater floods road, over tops owner's driveway and water flows down driveway into garage. Pictures provided by email. • Stormwater flows from the Sargent Street direction, overtops the catch basin (surcharges) in front of the neighboring property and down the driveway. Properties closer to Great Plain Avenue are not affected by the floods. • The resident has had extensive damage when stormwater over tops their drive way; estimating about \$70,000 for last storm. Three vehicles parked in the driveway or in their garage were "totaled" over the last two years. Third major flooding in their house over last two years. • The house driveway is a drive under with a catch basin at the low point. Water that flows down the driveway enters the catch basin then discharges into a sump inside the garage. Two (1/2 Hp pumps?) discharge stormwater into the town's drain that is runs through their backyard. • Resident questions whether development has caused drains not able handle flow; nearby development may contributed flow due to it being a recent tear down and raising the elevation. • Resident has contacted someone to check their pumps for size increase, and to construct a water tight garage door. DPW Observations <ul style="list-style-type: none"> • Evidence that stormwater fills up the driveway. The vehicle parked in driveway has water marks above the steering column. Water may have filled more than 5-feet within driveway. • When they purchased the house most of the elaborate drainage system was in place. A drainage pipe network runs under the basement slab and discharges water to the sump (with pumps) located in the garage. The entire basement floors consist of tiles to reduce the amount of water damage. • Washington Ave already has a drain, a relief drain, and an additional drain through easements. • Discharge of stormwater from this area is located at Harris Ave and eventually flows to the Dedham Ave Reservoir. Follow up draft recommendations: <ul style="list-style-type: none"> • Sidewalks and drive way berms are candidate for being raised; • Check into adding more catchbasins within roadway to collect more water within the road. • Investigate the size and slope of the drainage pipes in the road and through the easement. Determine if a size increase/ pipe lengthen/ and or slope changes are warranted. • Check down stream discharge location at Harris Ave for discharge issues. 	sluiceway - small pipes into larger lines are clear	2	
239	WASHINGTON AVE	781-449-9447	FLOODING	9/1/2013			As you have no doubt been made aware homes in my neighborhood flooded yet again on Sunday. We bought this home 18 months ago and so far have had two serious floods. On Sunday we had a foot of water in our garage and basement. We have lost so much stuff including things that can't be replaced such as photos of our children. So far we have spent over a \$1,000 in clean up and that does not include expensive items that were destroyed. We even had everything in large plastic containers but due to the amount of water they all fell over. The town knows we have a problem with the drainage for Nardone and Jarvis and we need to know what the town is going to do to help the situation. We are about to pay a lot more money to have all the dry wall and insulation replaced. How do we know this is not going to happen again, in fact, if nothing is done with the drains of course it is going to happen again. We pay taxes in the knowledge that our property is protected by a good drainage system. The street floods so quickly that it is obvious there is a serious problem with the drainage system. I look forward to hearing your response. Julie Adams				
77	WAYNE RD	781-444-2564	FLOODING	9/1/2013	9/19/13 10:30-12 (Bob/Chris)	MS. HORATISIS	FLOODING	Check easement outlet	line clear	1	

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St #	ADDRESS	PHONE NUMBER	TYPE OF WORK	DATE RECEIVED	MEETING DATE & TIME	REMARKS	COMMENTS	TOWN RESPONSE	Inspected and Added comments	Priority of Action	Complete
8	WILSHIRE PK	781-234-8503 marsco999@yahoo.com	FLOODING	10/23/2013	10/30/2013 4:30-5 (Bob/Vinny)	MARCIA SKOWCROFT				2	
14	WILSHIRE PK	781-444-3182 debbietwatters@gmail.com	FLOODING	9/10/2013	9/23/13 4:30-5 (Bob/Vinny)	DEBBIE WATTERS	RECEIVED FROM TONY D		sleep driveway, private basin		
20	WILSHIRE PK	781-449-7976 HOFFMANSEAL@EARTHLINK.NET	FLOODING	9/20/2013	10/8/2013 9-10:30 (Bob/Vinny)	WILLIAM WALL	wanted record of their flooding to be in database	4 inches of water flooded the basement from extreme run off on Great Plain Ave. Advised homeowner to purchase matting that is designed to prevent water from entering door ways. The Town will verify that the drain system is properly clear of any obstructions. (V. Roy)			
131	WINDING RIVER RD	781-235-2941 rsreisman@aol.com	FLOODING	10/24/2013	11/4/2013 10-10:30AM (Bob/Vinny/Chris)	MARIA REISMAN	From: Joe Hobbs Sent: Thursday, October 24, 2013 1:29 PM To: Chris Seariac Cc: Thomas Ryder; Anthony DelGaizo; Vincent Roy Subject: 131 Winding River Rd Hi Chris, Jess Delaney came in to the counter today on behalf of a resident @ 131 Winding River Rd. The flooding event from September caused damage and they hired Jess Delaney to do some work on their property to help with future storms. Her name is Maria Reisman and he did not have a number for her. The request was could the town take a look at the area and potentially do something to prevent a future flooding problem. I will try to track down a number for you. I told him I would give the info to the Water/Sewer division for review.				
22	WINFIELD ST	cell 339-927-4251 dsmth500@verizon.net	FLOODING	11/12/2013	no meeting necessary	DAVID SMITH	will send email to V. Roy or R. Lewis describing damage from 9/1/13 flooding				
14	WOODBINE CIR	781.444.2823 no email	FLOODING		10/1/13 2-3:30 (Bob/Vinny)	DANIEL WEENER	Dan Weener called about an easement that runs through his property (he believes sewer). During storm it was bubbling over and left behind an approx. 5 inch depression. Would someone please call him to set up a time to look at this? He can be reached at 781-444-2823.	14 Woodbine Circle—very little water in basement that came in near right front corner. Also experienced flooding in backyard from drainage system on Greendale Ave being at capacity. Town will clean up debris from run-off in back yard. (VR)	filled in depression, pipes clear	1	Work completed by Water & Sewer Division 10/16/13
158	WOODBINE CIR	781-444-5719	FLOODING	9/1/2013		ARLENE WEINSTEIN	FLOODING				
162	WOODBINE CIR	CONTACT INFO ?	FLOODING	9/1/2013							
7	WOODLEDGE RD	617.970.5670 brzozowskaferandez@gmail.com	FLOODING	9/1/2013	9/23/13 9-10:30 (Tony/Chris)	BEATA BRZOZOWSKA	FLOODING AT INTERSECTION WOODLEDGE AND HIGHGATE Hello Mr Handel I am very pleased to have run into you at the health club today. Attached is a photo of our intersection of woodledge and highgate roads in Needham. Our home is to the right of the telephone pole and all you can see is our deck and how the yard is completely underwater. The water table gets very high and water comes in from the ground. The pumps work overtime and cannot keep up with the poor drainage on the street. We keep the drains clear of leaves and debris. The surrounding houses all ended up with water in their basements. It would be greatly appreciated if you could help us with this problem. Sincerely, Beata Fernandez	Install double catch basin grates at adjacent intersection. Also install curb inlets where possible. (CS)	lines clear	2	

2009 Precipitation Totals

Day	January	Jan-Snow	February	Feb-Snow	March	March-Snow	April	May	June	July	August	September	October	November	December	Dec-Snow
1							0.1			0.53				0.09		
2										1.36					1.01	
3			0.29	3.5	0.98	10	0.7	0.01		0.02			0.98			
4								0.01							0.65	3"
5	0.05						1.24	0.35	0.01							
6					0.09			0.02		1.35			0.5			
7	1.27	1.5							0.13							
8					0.66	2		0.23	0.08				0.26		1.33	3"
9							0.35				0.08					
10					0.18		0.37		0.67		0.16	0.67				
11	0.53	5	0.15						1.13		0.09	1.42				
12													0.25		0.77	
13														2.65		
14								0.1	0.45				0.27	0.03		
15									0.03							
16								0.1		0.16						
17							0.05						1.04			
18	0.62	8	0.43	2	0.07				0.74						0.65	12"
19	0.33	6							0.07					0.51		
20									0.4	1.9						
21							0.5		0.41		0.37					
22			0.81	Trace			0.6		0.17				0.25	0.23		
23							0.31	0.2					1.03			
24								0.6								
25									0.1							
26					0.28				0.18	0.05				0.02		
27			0.11					0.15				0.4	0.12	0.72	0.55	
28	1.45	4.5			0.69			0.03	0.28		1.64	0.55	0.8		0.1	
29					0.25			0.28								
30								0.1	0.2	0.44				0.23		2"
31	4.25	25"	1.79	5.5"	3.2	12"	4.22	2.79	4.25	7.37	2.36	3.04	5.52	4.48	5.19	20"
Total	4.25	25"	1.79	5.5"	3.2	12"	4.22	2.79	4.25	7.37	2.36	3.04	5.52	4.48	5.19	20"

Month	Total
January	4.25
February	1.79
March	5.5
April	4.22
May	2.79
June	4.25
July	7.37
August	2.36
September	3.04
October	5.52
November	4.48
December	5.19
2009	48.46

2010 Precipitation Totals

Day	January	Jan-Snow	February	Feb-Snow	March	Mar-Snow	April	May	June	July	August	September	October	November	December	Dec-Snow
1					0.21	Trace			0.66		0.06		0.84		0.61	
2	0.2	4"										0.62				
3	0.36	6"	0.06	0.5"				0.03	0.13				0.48	1.24		
4					0.13	Trace			0.74		1.5		0.34			
5									0.54				1.13			
6																
7								0.95				0.26		1.35		
8	Trace								0.28		0.09			0.24		
9			0.19				1.13		0.07	1.35				0.03		
10				2"	0.04										0.1	
11									0.27	Trace				2.15		
12					2.45				0.16	0.16		0.03				
13					2.68				0.02	0.07			1.88		0.02	Trace
14					1.27			0.07			0.22					
15							0.47			0.2						
16			0.51				0.11									
17							0.16	1.45						0.95		
18	1.78	4"						0.16								
19	0.4	1"														
20									0.37							
21										0.01			0.05		0.15	2"
22							0.05			0.47	0.78				0.36	3"
23			1.31		1.55				0.12	0.13	0.73					
24	0.02		1.17		0.41				0.13		1.3		0.01			
25	1.52		1.77								1.57					
26			0.12		0.25		0.12									
27			0.07	Trace			0.17	0.24				0.2				
28	0.11						0.12					1.1				
29					3.1			0.13		0.18						
30					2.2											
31	4.38	15"	5.2	7.5"	14.33	Trace	2.33	3.03	3.33	2.57	6.25	2.56	4.91	3.97	4.62	21"
Total																

Month	Total
January	4.38
February	5.2
March	14.33
April	2.33
May	3.03
June	3.33
July	2.57
August	6.25
September	2.56
October	4.91
November	3.97
December	4.62
2010	57.48

2011 Precipitation Totals

Day	January	Jan-Snow	February	Feb-Snow	March	Mar-Snow	April	Aprl-Snow	May	June	July	August	September	October	Oct-Snow	November	December	Dec-Snow
1			0.5	8			0.8	1.5		0.8		0.35		0.19				
2	0.12		0.92	4										0.03				
3							0.4		0.51					1.06				
4			0.3				0.14							0.01				
5									0.01		0.01	1.98	1.28				0.20	
6									0.93			0.06	0.66				2.67	
7					0.82							2.00	1.71					
8	0.07	1	0.31	0.5						0.74	0.64					0.97		
9																		
10					0.59		0.02		0.08	1.16								
11										0.42	0.38			1.24				
12	1.69	16					1.38					0.21		0.84				
13												1.36						
14									0.64							0.9		
15							0.35		0.03							0.16		
16							1.16		0.45	0.07								
17									0.24		0.02							
18	1.16	4	0.09				0.17		0.27			0.52	0.19	1.94				
19	0.1	trace							0.01					0.02				
20									0.02			0.27						
21	0.48	6	0.05	0.5	0.36					1.28						1.55		
22									0.04	0.52	0.22							
23							0.54			0.08	0.02							
24					0.01		0.01			0.65	0.23	0.15						
25	0.08	1.5	1.85								0.02							
26							0.02					2.62		0.03				
27	0.86	12	0.4	3								2.54		1.12				
28			0.79				0.01			0.1			1.57	1.24	3"			
29														0.26				
30																		
31			5.21	18"	2.85		4.99	1.5"	3.23	5.44	1.56	12.06	6.75	7.71	3"	4.56		4.30
Total	4.58	40.5"				0.5"												

Month	Total
January	4.58
February	5.21
March	2.85
April	4.99
May	3.23
June	5.44
July	1.56
August	12.06
September	6.75
October	7.71
November	4.56
December	4.30
2011	63.26

Hurricane Irene

2012 Precipitation Totals

Day	January	Jan-Snow	Feb	Feb-Snow	March	Mar-Snow	April	April-Snow	May	June	July	Aug	Sept	October	Nov	Nov-Snow	Dec	Dec-Snow
1	0.03				0.66		0.22		0.88	0.01		0.28		0.10			0.01	
2									0.07	0.66	0.06			0.05				
3					0.05				0.03	0.04	0.60		0.51				0.02	
4										0.02		0.16	0.82	0.05				
5										0.02				0.02				
6									0.07	0.65				0.13	0.49	3.5		
7									0.19				0.49					
8					0.04				1.62			0.79		0.04			0.24	
9									0.08					0.19			0.10	
10																		
11			0.07	T			0.10							0.02				
12	1.44									0.62					0.08			
13	0.03				0.16				0.74	0.03				0.12				
14									0.52			1.08	0.22					
15						0.04								0.22			0.50	
16																	0.74	
17	0.29	3"	0.10								2.07	0.22	1.56				0.22	
18														1.36				
19																		
20	0.08	2.5"										0.01					0.92	
21	0.22	4"								0.40			0.10					
22								2.84	0.38	0.52	0.11							
23	0.13				0.01		0.82		0.24									
24			0.67							0.84							0.02	T
25											0.01						1.50	T
26	0.54														0.1	0.5		
27	0.66				0.06						1.44	0.19						
28			0.46							0.04			0.90	2.37			0.53	9"
29				2"									0.41	1.27				
30					0.10						0.45							
31					0.06													
Total	3.42	9"	1.30	2"	1.18	0	4.00	0	4.82	3.85	4.72	3.03	4.81	5.94	0.67	4	5.91	9"

Month	Total
January	3.42
February	1.30
March	1.18
April	4.00
May	4.82
June	3.85
July	4.72
August	3.03
September	4.81
October	5.94
November	0.67
December	5.91
2012	43.65

2013 Precipitation Totals

Day	January	Jan-Snow	Feb	Feb-Snow	March	Mar-Snow	April	April-Snow	May	June	July	Aug	Sept	October	Nov	Nov-Snow	Dec	Dec-Snow	
1							0.08				0.01		2.58		0.16				
2										0.53		0.15							
3			0.01	T	0.01									0.58					
4			0.04										0.06						
5					0.2					3.84				0.28					
6														0.05	0.26				
7			1.85	27"	1.52	18"			0.20			0.14							
8							0.09		0.29			1.38							
9							0.13			1.30	0.06		0.05	0.02					
10			0.27				0.35			0.26	0.31								
11	0.16				0.48		0.61		0.06		0.03				0.16				
12	0.02									1.92									
13										0.21									
14									0.01										
15																			
16	0.45	3"								0.43									
17			0.18							0.82				0.03					
18																			
19			0.35		1.16														
20	0.03	T							0.48										
21																			
22													0.48						
23			0.23	T			0.13		0.20		1.49								
24			0.86	23					0.19	0.05	0.07								
25							0.03		1.00		1.58								
26									0.20		0.17			0.02					
27			1.5							0.30		0.12							
28	0.20	1"							1.10	0.02									
29	0.09										0.36			0.02					
30										0.02									
31	0.65	4"	5.29	32"	3.44	18"	1.42	0	3.73	9.70	4.08	1.79	4.08	1.00	0.58	4	0.00	9"	
Total	1.60																		

Month	Total
January	1.60
February	5.29
March	3.44
April	1.42
May	3.73
June	9.70
July	4.08
August	1.79
September	4.08
October	1.00
November	0.58
December	0.00
2012	36.71