



# Stormwater Utility at Work

## Bi-Annual Report

**Fiscal Year 2014-2015, July-December 2014.**

Stormwater is the #1 source of water pollution in North Carolina and the United States. Storm drains carry untreated water directly to our rivers and streams. In an effort to restore and preserve the integrity of our nation's waters, the federal government requires the City of Asheville and all similarly-sized U.S. cities that own and maintain storm drain systems to establish and implement stormwater programs that reduce water pollution. The City's stormwater program, established by the federal government's Clean Water Act (CWA), is dedicated to implementing broad-based watershed strategies to reduce water pollution. These strategies include: maintaining and improving the public storm drain system, enforcing stormwater and erosion standards related to post-construction and (re)construction activities, mitigating flood impacts, preventing illegal dumping in the storm drain system, and educating the public about stormwater issues. The Stormwater Division is also responsible for the installation, maintenance, repair and revitalization of the storm drainage systems, catch basins, pipes, etc., within the city's streets, rights-of-ways and dedicated stormwater easements. The City works closely with the US Army Corps of Engineers (USACE), NC Department of Environment and Natural Resources (NCDENR), US Environmental Protection Agency (EPA), NC Department of Transportation (NCDOT), Buncombe County Government, along with many others in regard to stormwater and flood mitigation projects.

This report details the work undertaken by the Stormwater Division, July 2014 to Dec 2014, in each of the 5 sections of the stormwater program: Capital Improvement Projects, Professional Services, In-house Construction & Maintenance, Internal Operations, and Flood Mitigation Projects. Also included is a table that lists individual projects, descriptions, cost and status of work in each of these 5 sections and a map that displays where these projects are taking place throughout the city. While this report is comprehensive, it in no way is inclusive of all the work performed by staff such as staff time involved with the individual projects, responding to citizens queries, site visits for drainage complaints, minor maintenance repairs, etc.

### Capital Improvement Projects

The City of Asheville has been actively partnering with groups such as the Clean Water Management Trust Fund, NCDOT, NC Division of Water Resources (NCDWR), GoldenLEAF Foundation, US Economic Development Administration (EDA), and the USACE on various capital improvement projects throughout

the city. In addition to stormwater related activities, these projects include aspects that demonstrate opportunities where partnering on larger scale projects achieves both stormwater quality and quantity improvements as well as flood mitigation and multimodal transportation improvements in our great city. Two such projects currently under construction are the Lake Craig/Azalea Road Project and the Craven Street Improvement Project. The Lake Craig/Azalea Road Project is part of a larger flood mitigation project within the Swannanoa River Watershed and is referenced in the flood mitigation section of this report.

The Craven Street Improvement Project, partnered with the Economic Development Administration, GoldenLeaf Foundation, and the Clean Water Management Trust Fund, will provide multimodal transportation improvements to the area. Pedestrian facilities including a greenway and sidewalk are included in this project scope. A low impact parking area and bike lanes will be included to provide an opportunity for the public to enjoy the River Arts District. This project will also provide water quality benefits as a result of the stream restoration and several stormwater control measures being constructed on the site. The project, currently under construction, is expected to be completed by December 2015. It will provide improved access to the New Belgium Brewery, a new facility locating to the area that will supply 150 jobs in the community.

Capital Improvement Projects also include a number of smaller projects that are typically too large to construct with in-house resources. The Westwood Road project involved the installation of a storm drainage system and curb and gutter. Construction for this project was completed in December.

Due to heavy rains in 2013, the recently constructed Dingle Creek Wetland inlet control structure and other areas of the wetland were damaged. Repairs to the wetland are expected this summer.

The design for the Morris Street Drainage Improvement Project is underway. This project will include green infrastructure and a new conveyance system. Also, solicitation for bids will be forthcoming for the Westover Drive project which will provide a new conveyance system along a section of this roadway.

## **Professional Services**

The Stormwater Division is excited about entering into a contract with Brown and Caldwell for a city-wide assessment of our stormwater system. This assessment will evaluate the problem areas of our stormwater infrastructure, develop project concepts targeted towards alleviating those problems, and will produce a 10-year Capital Improvement Plan (CIP) list with prioritized projects for future implementation to address the City's most critical issues and improve our aging infrastructure. The assessment will also produce a long-term watershed study list to provide the City with a plan for future watershed master planning efforts. The entire study is expected to take 12-18 months to complete but a 2-year CIP will be delivered prior to the next fiscal year.

McGill Associates currently has the on-call contract for professional services for local stormwater projects. The on-call contract allows the City to accomplish more complex projects especially during periods when staff workloads increase. McGill has designed stormwater improvements for the Westwood Road and Westover Drive projects. McGill, partnered with Equinox, will also be designing the project along Morris Street. The design for repairs needed to the Dingle Creek Wetland will also be included in McGill's on-call contract.

The City also works with professional teams of consultants on the larger Capital Improvement Projects. McGill Associates, Equinox, Dewberry, Schnabel Engineering, Wolf Creek Engineering, Bunnell-Lammons Engineering (BLE), and LandDesign make up the team for the Lake Craig/Azalea Road Project. Most of the same members (McGill, Equinox, Dewberry, and BLE) are also teamed together for the design and coordination phase of the Biltmore Avenue Bridge Flood Mitigation Project. Similarly, the City is working with the ColeJennest and Stone team on the Craven Street Project. The local partners on that project are Mattern and Craig, Equinox, ECS, and Wolf Creek.

### **In-house Construction & Maintenance**

Stormwater crews are constantly working on our aging infrastructure. The crews work diligently on maintaining our system and ensuring the traveling public is safe. Included in these activities are ongoing maintenance of our drainage structures, replacement of failed lids and grates, and pipe replacements due to failure of material such as corrugated metal pipe or terracotta pipe. The crews are currently focusing on preventative maintenance activities such as inspecting infrastructure and performing additional ditching work which is essential to protecting the City's roadways by conveying stormwater in ditches instead of on the roadways.

#### **Pinecroft Road**



**Collapsed road**



**Bringing in headwall**



**Finished headwall and pipe**

#### **Caledonia Road**



**Installation of new pipe**



**Installation of new pipe**



**Finished installation and erosion control**

## Ditching Operations



Clearing ditch lines



Finished ditch line with seed and straw

The Stormwater crews also perform street sweeping operations to remove debris from the roadway and prevent it from entering the storm drains. The Public Works Department maintains about 410 miles of roadways. Our three street sweepers clean all of the roadways with curb and gutter approximately 2 times per year. They have swept 1,739 lane miles in the last six months.

The City also maintains two vacuum (Vac-Con) trucks. These trucks are responsible for cleaning the storm drainage system. The trucks have cleaned and inspected 3,877 drains in the last six months and, on average, are able to vacuum out each drainage system about two times per year.

Through these efforts, a total of 548 tons of material was removed and prevented from entering our drainage system and waterways during this time.



Vacuum truck



Street sweeper

## Internal Operations

From time to time, it is necessary to purchase additional equipment or replacement equipment in order to provide improved service, sustain current levels of services, or to comply with safety requirements. The purchase of a new street sweeper replaced an older model in order to sustain our current level of service for street sweeping. The purchase of two new trailers was necessary to comply with safety requirements when hauling large equipment.

State legislation (SL 2013-407) now mandates that stormwater infrastructure within the City limits installed after October 1, 2014, must be located. As a result, it was necessary for a new position to be created within the Stormwater Division; a Utility Locator position was added to fulfill these requirements.

The Stormwater Division also pays for services provided directly to our Division by other City divisions and departments. The Utility Cut Program, in the Public Works' Streets Division, is reimbursed for the cost of repairing the roadways that are open cut with the installation of stormwater infrastructure. The Stormwater Division also reimburses internal departments such as Human Resources, Information Technology, Legal, and Finance, for their support services to our Division.

### **Flood Mitigation Projects**

The City is actively partnering with the USACE and the NCDWR on the ongoing flood mitigation study located within the Swannanoa River Watershed. This study will identify measures to reduce flood damages and risk of economic losses related to flooding in the Swannanoa Valley and the Biltmore Village area. The USACE is anticipating a draft report with recommendations to be available in 2015. Our partnership with the other agencies, including NCDOT, will explore the implementation of the mitigation efforts recommended in the study which includes the potential construction of major projects including: Lake Craig/Azalea Road stream and dam rehabilitation, improvements to the stream's approach and exit from the Biltmore Avenue Bridge, and a potential dry dam located at Warren Wilson College.

The Lake Craig/Azalea Road stream and dam rehabilitation project will be conducted in two phases of design and construction. Phase I involves roadway widening to include bike lanes and sidewalks to provide safety for the traveling public, a new bridge and roadway to relieve pressure on the existing Azalea Road, relocating and restoring a portion of the Swannanoa River below the existing Gashes Creek Bridge, removal of fill from the floodplain to establish a new floodplain bench, restoring and stabilizing highly eroded river banks, several stormwater quality devices that treat the stormwater before leaving the site, and a water line to provide water to the Soccer Complex. Phase II involves the design and rehabilitation of the Lake Craig Dam. The City is in construction with Phase I of this project and is expected to be complete by spring 2015.

#### **Lake Craig / Azalea Road Project**



**New bridge**



**Stormwater quality devices**



**Relocation of the Swannanoa River**

The Biltmore Avenue Bridge provides access across the Swannanoa River in the Biltmore Village Community. Fill material in the floodplain immediately upstream and downstream of the bridge

restricts the flow of water in the river during large storm events. The City is currently in the design stage of the Biltmore Avenue Bridge Project. This project involves hydrologic and hydraulic modeling to determine impacts of improvements, removal of the existing fill and construction of a floodplain bench to reduce water surface elevations and bank erosion, roadway modifications for Swannanoa River Road, modifications of the existing parking lots, a retaining wall, and possible utility relocations. The continued coordination with the USACE is critical in these efforts for both projects. The team of McGill Associates is assisting the City with the coordination and design of these projects.

### **Additional Achievements**

We are proud to announce some of our last bi-annual achievements for July – December 2014

- 10% flood insurance reduction by becoming members of the Community Rating System (CRS)
- Completion of Westwood Road storm drainage improvements
- Completed FEMA funded repairs (from 2013 rain events)
- Ongoing partnerships with CWMTF for the Craven Street project
- Continuing to conduct educational tours to inform the public
- 27,500 informational letters sent to residents
- 13 volunteers stenciled awareness messages on 200 storm drains downtown
- Mailed letters to 195 parcels requesting updated BMP Inspection Reports
- Stopped illicit discharge from leaving 10 sites

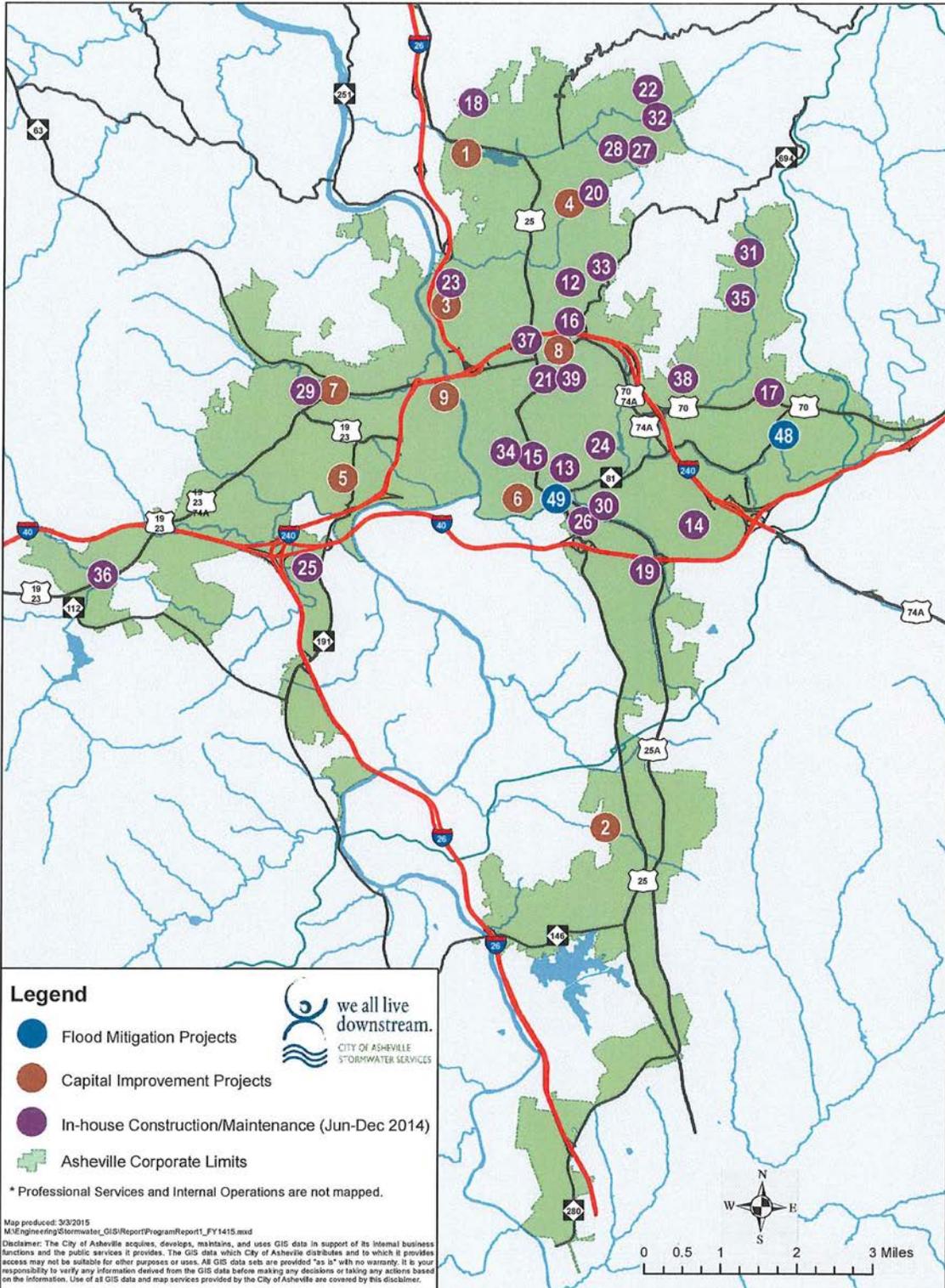
Please see the attached spreadsheet for more specific information.

To find more information about the stormwater program, visit our website at <http://www.ashevillenc.gov/Departments/StormwaterServicesUtility.aspx>



# Stormwater Utility at Work

## Projects in Fiscal Year 2014 - 2015\*



**Public Works Stormwater Program**

#	Project Name	Project Description	Project Status	Stormwater Dollars		Stormwater Amount	* Notes
				Appropriated	Stormwater Amount YTD	Encumbered	
<b>Capital Improvement Projects</b>							
1	Westwood Road	Abandon existing failing drainage system, place curb and gutter as necessary and install approximately 990 lf of storm drainage	Project Complete * Final walk through: 12/10/14 Scheduled completion date: 12/16/14	\$352,147.00	\$221,335.45	\$130,811.55	Includes final invoice not yet paid.
2	Dingle Creek Wetland	Repair of inlet control structure at constructed stormwater wetland	Scoping phase (part of on-call contract) Scheduled construction date: Spring 2015	\$30,000.00 TBD			Estimated engineering and construction cost is \$150,000.
3	Westover Drive	Install storm drainage and curb as necessary	Design Phase - Working on encroachment agreement w/ NCDOT (part of on-call contract) Scheduled construction date: Spring 2015	\$24,750.00	\$21,345.89	\$3,404.11	Estimated construction cost is \$345,600.
4	Maplewood Road	Repair existing failing drainage system	Scoping phase (part of on-call contract) Scheduled construction date: Spring 2015				
5	Morris Street / W. Asheville Park	Install approximately 1600 lf of new drainage infrastructure from Brevard Rd. to W. Asheville Park, includes water quality features	Scoping phase (part of on-call contract) Scheduled construction date: Spring 2015	\$40,000.00 TBD			Estimated Estimated construction cost is \$550,000.
6	Victoria Road	Provide bank stabilization from stormwater runoff overtopping roadway and destabilizing embankment.	Scoping and design phase Scheduled construction date: Spring 2015	\$20,380.00 TBD			Does not include cost for construction administration. Estimated construction cost is \$300,000.
7	Smith Mill Creek	Provide water quality and flood control measures from Patten Ave to Druid Dr. - Partner with NCDOT & RiverLink	RFQ: Spring 2015				
8	Charlotte/College Street	Abandon existing failing drainage system, reroute and replace storm drainage. This is a partnership project with Pulliam Spake, LLC.	Developer is scheduling work. Anticipated completion date: January 2015	\$245,002.50		\$245,002.50	Approved by council Public Private partnership
9	Craven Street	In coordination with New Belgium Brewing Company, the widening of Craven Street from Haywood Road to the Craven Street bridge with bike lanes, sidewalk and stormwater improvements including culvert replacement under Craven St. is necessary. Also, water quality measures are to be constructed for the basin draining from Haywood Road including wetlands and stream mitigation. A low impact development parking lot to the north of the site and a greenway along the north-east side of the property is also included.	Design phase and construction administration. Under construction - Arch culvert is installed and Craven St. is now open to local traffic between Haywood Rd. and Waynesville Ave. Due to work taking place between Waynesville Ave. and Hazel Mill Rd., this section of Craven St. will remain closed until spring. The reconfiguration of Hazel Mill Rd. and Emma Rd. is complete and is currently open to traffic. The rough grading for the greenway is talking place with the sewer line completed in this section. The fill for the LID parking lot is continuing to be placed and should be completed by January. The water line construction is ongoing and expected to be completed prior to spring. *	\$206,811.00 \$496,357.09	\$137,290.26	\$69,520.74 \$496,357.09	Total budgeted amount for project is \$6,901,570.66. Total stormwater funds \$1,181,075.91. This includes funding grants from Economic Development Administration and Clean Water Management Trust Fund totaling \$684,718.82 for stormwater improvements.
<b>Total</b>				<b>\$1,415,447.59</b>	<b>\$379,971.60</b>	<b>\$945,095.99</b>	
<b>Professional Services</b>							
10	On-Call Services	Professional civil engineering services on an "on-call" basis	See projects above: Westwood, Dingle Creek Wetland, Westover, Maplewood Road, and Morris Street / W. Asheville Park	\$214,000.00	\$83,046.65	\$130,953.35	Original contract (6/14/13) was for \$89,000. Renewed contract on 10/14/14 for an additional \$125,000 for a total contract amount of \$214,000. Contract includes design, permitting, bidding/award, and construction administration.
11	City Wide Drainage Assessment	Assessment of the public drainage structures within the city limits to include an evaluation of the hydraulic capacity of the systems, upgrades to systems, priority list of capital improvement projects, watershed assessment priorities, and GIS information where needed.	Submittals for RFQs received 10/23/14 Interviews to be held 12/11/14 Consultant selection in January 2015	\$550,000.00	TBD	TBD	Anticipated council approval in January
<b>Total</b>				<b>\$764,000.00</b>	<b>\$83,046.65</b>	<b>\$130,953.35</b>	

**Public Works Stormwater Program**

#	Project Name	Project Description	Project Status	Stormwater Dollars Appropriated	Stormwater Amount YTD		Stormwater Amount Encumbered	* Notes
					Stormwater	Asphalt		
<b>In-house Construction / Maintenance (6/14 to 12/4/14)</b>								
12	Sunset Parkway	Retaining wall removal and headwall replacement	Complete		\$12,143.00			
13	Caledonia Road	Pipe replacement (sinkhole)	Complete		\$17,170.00	\$10,701.03		
14	Liberty Street	Pipe replacement (sinkhole)	Complete		\$6,554.00	\$2,738.04		
15	Victoria Road	Pipe replacement	Complete		\$5,345.00	\$3,716.29		
16	Furman Avenue	Pipe replacement (sinkhole)	Complete		\$17,576.00	\$15,341.68		
17	Governors View	Pipe replacement (sinkhole)	Complete		\$10,153.00			
18	Reynolds Mtn.	Road shoulder repair, pipe installation, shot rock placement	Complete		\$1,914.00			
19	Caribou Road	Pipe replacement (sinkhole)	Complete		\$10,769.00	\$5,111.71		
20	S. Griffin Boulevard	Pipe replacement	Complete		\$24,863.00	\$24,782.83		
21	Water Dept. Parking Lot	Pipe replacement (sinkhole)	Complete		\$24,748.00	\$27,837.04		
22	Blackoak Road	Pipe replacement	Complete		\$7,523.00	\$9,926.95		
23	Hibritten Circle	Pipe replacement, shot rock placement	Complete		\$7,214.00			
24	Lakewood Road	Spillway construction/restoration	Complete		\$4,793.00			
25	E. Oakview Road	Spillway construction/restoration, pipe repair	Complete		\$11,328.00			
26	London Road	Pipe replacement	Complete		\$6,582.00	not billed yet		
27	Asbury Road	Asphalt ditch installation	Complete		\$5,762.00			
28	Valley Lane	Pipe replacement (sinkhole)	Complete		\$9,755.00	\$12,659.00		
29	Providence Road	Spillway construction/restoration (w/ concrete)	Complete		\$3,684.00			
30	Fairview Road	Ditching and shoulder repair	Complete		\$7,793.00	\$5,208.00		
31	Haw Creek Circle	Ditching and shoulder repair	Complete		\$4,363.00			
32	Pinecroft Road	Ditching and culvert replacement	Complete		\$12,266.00			
33	Cherokee Road to Bluebrair	Ditching and shoulder repair	Complete		\$6,763.00			
34	Water St.	Pipe replacement	Complete		\$10,653.00	not billed yet		
35	Rhodendron Pl.	Pipe replacement	Complete		\$4,274.00	not billed yet		
36	Brookside Circle / Moody Ave	Ditching	Complete		\$2,525.00			
37	N. Lexington Ave.	Sinkhole repair	Complete		\$5,202.00	not billed yet		
38	Waters Rd.	Installed drainage system in street for spring water	Complete					
39	Curve St.	Install drainage system for water ponding in street	In progress					
40	Sweeping trucks		1,739 lane miles swept		\$228,449.10			
41	Vac-Con trucks		3877 drains cleaned / inspected		\$103,551.70			
42	Debris Removal		548 tons		\$23,564.00			
<b>Total</b>					\$597,279.80	\$118,022.57		
						<b>\$715,302.37</b>		Some projects started FY14 and finished FY15. This list does not include minor maintenance repairs.

**Public Works Stormwater Program**

#	Project Name	Project Description	Project Status	Stormwater Dollars		Stormwater Amount	* Notes
				Appropriated	Stormwater Amount YTD	Encumbered	
<b>Internal Operations</b>							
43	Equipment Purchases	Street Sweeper 2 Lucon Trailer	Purchased Purchased	\$424,593.00	\$219,599.00 \$40,612.00	\$164,382.00	Includes tax, tag, and title. Includes tax, tag, and title.
44	Utility Locator	New position required by State legislation which mandates stormwater infrastructure be located.	Employee began work as Stormwater Locator on 12/8/14.	\$34,600.00	\$8,010.00	\$26,590.00	Estimated amounts include yearly salary and benefits plus items needed to perform duties (computer, phone, equipment, etc.) starting 12/8/14. No new vehicle cost because an existing vehicle is being used.
45	Utility Cut Program	Repair of roadways by program staff when roads are open cut to allow for utility installation (Stormwater, Water, PSNC, and MSD).		\$125,000.00	\$118,022.57	\$6,977.43	
46	Governance	Support from internal department services (HR, IT, City Manager office, Legal, Finance, etc.)		\$599,788.00	\$249,907.50	\$349,880.50	Amount spent to date is from July to November.
<b>Total</b>				<b>\$1,183,981.00</b>	<b>\$636,151.07</b>	<b>\$547,829.93</b>	
<b>TOTAL from Stormwater Fund</b>				<b>\$3,363,428.59</b>	<b>\$1,793,125.80</b>	<b>\$1,623,879.27</b>	Amounts spent to date may be slightly off due to the point in time the data was requested.

#	Project Name	Project Description	Project Status	Stormwater Dollars		Stormwater Amount	* Notes
				Appropriated	Stormwater Amount YTD	Encumbered	
<b>Flood Mitigation Projects (Separate because of funding sources)</b>							
47	Swannanoa River Flood Mitigation	The City of Asheville partnering with the Corps of Engineers and the Division of Water Resources are performing a study throughout the Swannanoa Watershed for flood mitigation projects. This study is ongoing and it is anticipated that the Corps will be at a draft report by the fall of 2015. This partnership will look at the implementation of projects such as the rehabilitation of the Lake Craig Dam and also the Biltmore Ave. Bridge Flood Mitigation Project.	The Swannanoa Flood Mitigation study is continuing, the City working with the Corps are continuing key conversation with partners such as Warren Wilson College on these very important projects. The Corps anticipates a draft feasibility report finalized by the fall of 2015.				Project began in 2009 with USACE and continues. Staff is currently working through flood mitigation options. This project utilized SB 7 funds from the State.
48	Lake Craig / Azalea Road	Provide riparian corridor protection, stream restoration, aquatic habitat and water quality improvements, and flood damage reductions by relocating and restoring a portion of the Swannanoa River, restoring and stabilizing highly eroded river banks, constructing a new floodplain bench with wetlands, and removing fill material from the floodplain. Project also includes roadway improvements through the construction of a new bridge and roadway to relieve pressure on the existing Azalea Road, this new traffic pattern will include one way pairs and also bike lanes and pedestrian facilities. A much needed water line was added to provide water to the Soccer Complex.	Substantial completion February 2015.		\$495,371.57 (Senate Bill 7) \$1,883,724.24 (Sullivan's Act) \$399,879.85 (Water)		Total contract amount is \$4,124,110.75. Senate Bill 7 amount spent to date is \$495,371.57. Considerable amount of staff time is not included.
49	Biltmore Avenue Bridge	Partnering with the USACE and the Division of Water Resources on the flood mitigation study of the Swannanoa watershed to remove fill that has been previously placed in the area. This project will reduce the flood level in areas up to 0.5 feet.	The project is currently in the design and coordination state. Staff continues to work with the Corps of Engineers as well as other local partners including NCDOT on this project. SB 7 funds have been provided for the Engineering services (design and permitting, bidding and award, and construction administration) and property acquisitions for this project. The construction of the project will take place after the final feasibility report from the Corps is approved.	\$750,000.00	\$42,520.00	\$707,480.00	\$750,000 was received from Senate Bill 7 for engineering services (\$297,000) and property acquisition. Construction will be at a future date but estimated to be approximately \$2 million.
<b>Total</b>				<b>\$750,000.00</b>	<b>\$2,821,495.66</b>		