City of O'Fallon

Stormwater Annual Report-MS4s

June 13, 2014
Through
June 12, 2015

This is the annual stormwater report for O'Fallon's Stormwater General Operating Permit MO-RO40039, with an original issue date of April 23, 2003, which provides updates to our current five (5) year SWMP that is in place to implement and maintain the six (6) minimum control measures to ensure full compliance with the permit issuance for Small Municipal Separate Storm Sewer System regulations.

This report covers the reporting period for June 13, 2014 to June 12, 2015

Introduction

The City of O'Fallon has maintained a positive approach towards compliance with all aspects of the NPDES Phase II Permit requirements since the inception of the program in 2003 and as stated in our most current submitted Stormwater Management Plan (SWMP). We have continued to make improvements and changes to our SWMP, ordinances and policies to make adjustments, trained our employees, educated the public and will continue these efforts to strive to improve the water quality and address water quantity issues as well in our community. The City of O'Fallon website contains valuable information relating to public education, permit applications, reference guides, and ordinance information. We continue to encourage the general public, builders, developers, etc. to visit the site at http://www.ofallon.mo.us and/or contact staff with any questions that they may have.

We have begun implementation of our five year SWMP for years 2013-2018. This report is a result of our successes and challenges since the program was implemented in 2003. The plans implementation process proposed is a direct reflection of growth in the program and the direction that it will go.

This reporting cycle will encompass the dates June 13, 2014 - June 12, 2015 as requested by the Missouri Department of Natural Resources. The MCM Individual Responsibility information has been updated as well as the goals for each of the six MCMs. See **Appendix L** for implementation of the most recent SWMP 2013-2018 Operation Plan for each MCM.

MCM 1-Public Education and Outreach

1. Implementation Status

General Summary

The City of O'Fallon, Missouri has implemented items which provide educational opportunities for the public and outreach documents for the citizens of O'Fallon. **Ten (10)** continuing education sessions were held with a total of **372** residents/employees educated. See **Appendix A** for further detail.

Program Elements Changed or Refined Since Previous Report

Due to the continued success of Public Works Day, the City has continued to hold this event annually and Stormwater continues to participate. Unfortunately, this year the event was rained out and not rescheduled. It will be held again next year. Rather than have to borrow the Enviroscape from The Missouri Department of Conservation, the City chose to purchase one at the end of 2014 and has utilized it to demonstrate how pollutants travel into the storm sewer system and eventually natural waterways in classrooms and plan to continue to utilize it at Public Works Day. Informational brochures, trinkets, and an educational display were used to educate the public about the importance of keeping our storm sewer system, creeks and stream clean. We have also included our Missouri Stream Trash Queen with our display to promote the Stream Trash to Art program and as an educational tool for keeping pollutants out of streams.

In order to promote recycling and bring to attention the over use of plastic water bottles and the harm that they can inflict on the environment, we planned to offer bird feeders made from plastic water bottles at the Public Works Day event. This will be an activity where participants will fill pre-drilled water bottles with bird seed using a pencil for a perch and take them home for use in their yards. Since the event was canceled, we plan to distribute them next year.

Each year, there will be revisions, additions or removal of completed goals. This will also be provided in updated copies of the Operation Plan for each MCM. See **Appendix L** for further information.

Status of Measurable Goals

Goal 1: Public Information via Hard Copy and Internet: Ongoing

This goal continues to be ongoing since we are constantly reviewing existing material for improvements and look to provide new information we receive or create to local residents, business owners and contractors. There are also several free informational brochures available at City Hall and on the internet for use. A Homeowner's Guide for Creek and Shoreline Maintenance was created and has been approved for public use. Copies of educational information for the general public as well as recommendations on how to handle drainage issues are utilized on a regular basis. We also continue to update our Stormwater website with information. The most recent addition is a page dedicated to information regarding "Rain Events, Flooding and Flash Flooding" and can be viewed at: http://www.ofallon.mo.us/rain-events-flooding-and-flash-flooding-information. See **Appendix B** for further information.

Goal 2: Public Education: Ongoing
The City continues to hold environmental education sessions to inform the public about the importance of pollution prevention and its effects. We continue to present information to the public, staff and city representatives at City Council, Planning and Zoning and the Public Works Commission meetings throughout the year. These meetings are recorded and televised on our local access cable channel. We also utilize our Enviroscape and Project Wet Activities as well with students in school to give them more hands on learning and understanding.

The City is adding several weather stations to help us better track storms and rainfall data. These weather stations are also available to the public and can be accessed on line at the Weather Underground website.

Goal 3: Rain Garden/Rain Barrel/Native Landscape Workshop: Ongoing
Increase awareness of stormwater benefit from installation of rain garden, rain barrel or native landscape. This goal will be ongoing and occurring a minimum of once a year at the City's Public Works Day event. Rain Barrel handouts have been distributed on a regular basis. A sump pump discharge to rain garden model is being constructed to encourage residents to utilize rain gardens to handle sump pump discharge and keep it out of floor drains and other potential nuisance areas. See to **Appendix E** for further information.

A rainwater harvest system was installed at the Public Works and Street Department buildings in spring and summer of 2014 to collect part of the roof runoff. These systems are being used to provide water to landscaping, boot washing, filling of concrete saw tanks, etc. A solar powered pump system has also been added to assist with watering landscaping at the Public Works building.

Goal 4: Educational Signage for Native Landscape and Rain Gardens: In progress 10% complete
Installation of educational signage at various native landscapes and rain gardens throughout the City limits. Currently have an educational sign located at the Renaud Spirit Center Rain Garden. The rest of the signs are in design concept phase, but placed on hold due to lack of available funding and installation of the other City-wide identification signs. Once the other sign installations are completed, we can make sure our signs are in line with the other city-wide identification sign requirements and move forward with a request to finish design and begin to install them throughout the City as long as budget funds are approved.

2. Overall Compliance with Permit Conditions

The City of O'Fallon continues to work towards compliance with its Public Education and Outreach with a public education program which will continue to distribute educational materials and conduct outreach activities. Educational resources are constantly being reviewed and updated as new information arises and expansion of those resources has continued with development and publishing of the Stormwater Management Website, additional brochures, door hangers and increased efforts to educate the public. Staff continues to attend several workshops to increase their knowledge of NPDES regulations, BMP's, Post Construction Methods, Webcasts, and stormwater pollution awareness as well. It is getting harder and harder to visit schools and perform stormwater education due to state educational requirements. Schools are only allowing us limited access to students usually before or after school to meet with individual clubs which have much smaller groups. A few high schools have us come in for environmental science class and we continue to encourage them to have us frequently. We have also proposed assistance with an educational environmental project on the school site to promote green infrastructure and water quality. We will continue to utilize Project Wet, Wild and Learning Tree education programs. The Stormwater Coordinator is certified to instruct in all three programs and continues to educate the school district that these programs are certified by the Missouri Department of Education for use in the classroom; therefore substitution of these program activities can be justified for use in the classroom.

3. Results of Information Collected and Analyzed

Public Education has continued in schools and at public meetings. Tracking information has been established so we can evaluate our successes and re-examine failures. We have seen continued increases in requests for education and outreach materials and training sessions since the inception of the program. The Ft. Zumwalt school district utilizes us, but again with more educational constraints, we have been requested less often during class time, but continue to participate in before/after school club activities. See **Appendices A and B** for tracking information and samples of informational outreach materials.

4. Brief Summary of Activities Next Reporting Period

During the next reporting period, continued expansion and updating of education and outreach materials will occur.

5. Proposed Changes to Public Education and Outreach Area

A new SWMP has been submitted for years 2013-2018 which has included new and/or revised goals. For the next reporting cycle we will continue our public education in the schools, public meetings, homeowners associations, website, City Newsletter articles, and cable channel promotion of events.

6. Statement, Relying on Other Governmental Entity

Not applicable

7. Summary of Inspections and Formal Enforcement Actions

Not Applicable

MCM 2-Public Participation/Involvement

1. Implementation Status

General Summary

For this reporting period, the Public Participation Program has continued under the title of the "Stormwater Awareness Campaign" which utilizes volunteers to address storm drain marking and pollution prevention awareness. We sponsor/coordinate creek clean-ups on Earth Day, Make A Difference Day, and Join Hands Day which are all national volunteer service days. We partner with the surrounding municipalities, Greenway Network, Wal-Mart and a few other organizations for the annual Mission Clean Stream creek clean-up event. We also work with subdivisions, business and private organizations to organize private creek clean up events. **8 tons** of trash was removed along with 67 tires from local streams for this reporting period and **190** storm drains were marked with metal "Dump No Waste Drains to Stream" markers. See **Appendix C & D** for more information.

Utilization of the City cable channel, electronic email notifications, Stormwater Website, Volunteer Services Website, Greenway Network Website, local newspapers and citizen "word of mouth" for promotion of this program also assisted us in getting this program started and promoted stormwater pollution prevention.

Program Elements Changed or Refined Since Previous Report

Public Participation and Involvement and Public Education and Outreach have continued to grow since the inception of the program.

The Stormwater Department continues to have a very good relationship with the Public Relations Department as well as local newspapers. They have been very good about promoting events and distributing stormwater information to the public via informational articles and when announcing upcoming events.

We continue to have residents/groups volunteer their time to perform storm drain marking throughout the year due their concern over the environment. They also participate in our Volunteer events for Stormwater Awareness Campaign and act as crew leaders. Permanent storm drain markers made of stainless steel have continued to be utilized in the place of painting with stencils. Individual families and groups take on specific tasks or assignments as well. See **Appendix C** for tracking information.

We have had several subdivisions host their own private creek clean up events and we continue to provide assistance with supplies, organization, and debris hauling.

Status of Measurable Goals

Goal 1: Stormwater Advisory Panel: Ongoing
Continue to build and maintain public participation and involvement as well as raise citizen awareness for water quality with utilization of the Public Works Commission as our Stormwater Advisory Panel. We will continue to maintain and get input for water quality, regulations and permit activities or changes, as well as program updates and stormwater improvement.

Goal 2: Public Participation Volunteer Events: Ongoing
Continue to increase public awareness to improve water quality as well as prevent illicit discharges by involving the general public as volunteers in our Public Works Day event, creek clean ups, storm drain marking events.

We have a rain garden installed at our Street Department as well as some regular and native landscaped beds. We utilize volunteers to assist with planting and maintenance of these landscapes. A "master gardener" helps to head up this wonderful volunteer group.

Goal 3: Rain Barrel Program: New Goal 2013-2018 SWMP
We will encourage the installation of rain barrels by citizens as a means of stormwater quality and quantity benefits. This will be accomplished by educating the public on the benefits of installing rain barrels and getting them involved with volunteer installation to prevent increased runoff. We have had funds approved to install some on our own municipal properties. Our goal is to create a public rain barrel program similar to the one utilized by other MS4s as funds are allowed. If budget constraints continue, then we will continue to encourage residents through public education and handout information. Two rain water harvesting systems have been installed at City owned facilities. One is located at the Public Works Building and one at the Street Department. Rainwater is harvested to rinse work

boots and water landscaping using a modified pump and soaker hose at the Public Works facility. Rainwater is harvested and utilized to water a rain garden, landscape and fill concrete saws at the Street Department.

Goal 4: Riparian Corridor Restoration: New Goal 2013-2018 SWMP

We continue to recommend/installation of trees, shrubs and native plants to restore a riparian corridor along a local stream to prevent flooding, improve water quality and assist in prevention of creek bank erosion. We continue to educate, increase public awareness and encourage use of these techniques to the public on stormwater quality and flood prevention benefits by re-establishing a riparian corridor.

A few subdivisions have worked with us and utilized the Forest ReLeaf program to plant trees and shrubs along creek banks to protect them from further erosion and repair the lost riparian corridor.

We also encourage the use of native shrubs, trees and plants for our Community Cost Share Program creek bank stabilization projects to assist with prevention of further creek bank erosion and to re-introduce the riparian corridor.

2. Overall Compliance with Permit Conditions

The City of O'Fallon is complying with permit conditions relating to Public Participation and Involvement. The Public Works Commission acts as the stormwater advisory committee to help educate City Administration and other city residents on the Stormwater Management Program. This commission is a volunteer position appointed by City council. In the absence of the Public Works Commission however, residents can still utilize the "Citizen's Comment" and "Public Hearing" portion of the City Council and Planning and Zoning meetings.

Whenever a development is proposed in the City, public hearings are held at the Planning and Zoning meetings. The Planning and Zoning commission is a volunteer board whose members are appointed by City Council. The Planning and Zoning Commission will review and approve all developments coming into the City. They include in their discussion stormwater and other issues prior to approving the developments. Once approved, their recommendation goes to City Council for final passage where residents have another opportunity to provide questions or comments during a "Public Hearing" regarding the development.

The City also continues to partner with Greenway Network and several other St. Charles County municipalities for the "Mission Clean Stream" annual event and conduct other City Volunteer events that address stormwater pollution prevention. These events involve creek and road-side cleanups. See **Appendix D** for further details.

3. Results of Information Collected and Analyzed, if any

Investigations of stormwater concerns received from City's "Citizen First Center" webpage and hotline, resident or other City department totaled:

June 13, 2014-June 12, 2015

Received:

Stormwater Maintenance:	347
Stormwater Management:	182
Total:	**529**

Completed:

Stormwater Maintenance:	237
Stormwater Management:	158
Total:	**395**

Please see **Appendix F.** for further information

4. Brief Summary of Activities for next Reporting Period

Currently, much of the storm drains throughout the City have been stenciled for the City with paint. However, the paint only lasts a few years and requires re-touching, so we have converted to using permanent stainless steel markers. During the next reporting period the City of O'Fallon is planning to continue the volunteer storm drain marking project utilizing the stainless steel storm drain markers in place of paint as well as continue creek clean-ups. We have 1,000 storm drain markers ready to be placed. We will include print ads in the City of O'Fallon Newsletter that goes out quarterly to all residents to draw attention to stormwater.

We will also continue our City requirements for developers to install the storm drain markers with new development. They can utilize the stainless steel storm drain markers, use pre-cast messages or manhole lids imprinted with no dumping identification.

There are no significant changes or additions to existing goals for the next reporting period and we will continue to increase awareness to pollution prevention and increase our participation in volunteers.

5. Proposed Changes to this Public participation/Involvement Program Area

There are no changes proposed to this area of the program for this reporting period.

6. Statement, Relying on Other Governmental Entity

Not applicable

7. Inspection Summary and Formal Enforcement Actions

Not applicable

MCM 3-Illicit Discharge Detection and Elimination

1. Implementation Status

General Summary

The City of O'Fallon continues refining its Illicit Discharge Detection and Elimination Program.

The GIS mapping division continues to map all recently constructed stormwater piping and continue to add the older portions as well. Currently, we have approximately **234** miles of storm sewer lines and **38** box culvert infrastructure mapped throughout City limits. See **Appendix G** for map copies.

The City has in place a Stormwater Quality Management and Illicit Discharge Ordinance which prohibits non-storm water discharges into the O'Fallon MS4. This ordinance was passed by City Council and enacted on October 24, 2006 and continues to be utilized. There are also several other ordinances relating to property management (nuisance) that cover illicit discharges as well as an ordinance section for the Police Department with relation to dumping materials into storm sewers, right of way, etc.

The City of O'Fallon Water/Sewer Department monitors all commercial industrial waste permits in its district area within the City. The department continues to jointly educate public employees, businesses and the general public on the hazards and environmental concerns associated with any illegal discharges or the improper disposal of wastes.

Concerns are mostly addressed on a reported basis at this time. All of the detention basins currently mapped and major outfalls have been inventoried and inspected since the revision of the reporting requirements was last reported. (See **Appendix G** for general map) With only one designated employee, it is difficult to monitor all outfalls throughout the entire city limits each year. After a re-organization in the fall of 2013, Stormwater Management Coordinator was moved back under the Public Works – from Engineering to Project Management Department which has no extra staff available for assistance. We have utilized volunteers to help update our maps by providing data entry for a now computerized inspection form that is associated with our GIS mapping system.

In 2012, an IDDE Policy/Manual was approved and implementation has begun. See **Appendix I** for a copy.

Construction sites are monitored more closely by Construction Inspection and Building Inspectors as well as the Stormwater Management Coordinator. Steps were taken to free up more time for the Stormwater Management Coordinator to evaluate and map all outfalls as required by the program. With the completion of the IDDE manual, the Stormwater Management Coordinator has continued a formal inspection program for inventory and inspection of detention/retention basins and outfall/discharge pipes.

The City has a "sump pump discharge" section as part of the Nuisance Code currently in place to decrease the amount of sump discharge to City streets. This ordinance requires homeowners to remove their sump discharge from the front of the property by at least ten feet so that it can spread out and soak in prior to discharging onto City streets. The other option is to discharge it to the rear of the property in the drainage swale by using overland flow away from the foundation of the home to again spread it out and soak it in. Discharging of down spouts and sump pumps to rain gardens and other bioretention or native landscape practices are encouraged. If there is too much discharge that causes a nuisance or long term standing water, connection to the storm drain is then encouraged to decrease the over saturation, property damage and removal of the nuisance complaint.

Program Elements Changed or Refined Since Previous Report

There were a total of zero **(0)** Illicit Discharges reported for from June 13, 2014 through June 12, 2015. A sample report is being included for reference. See **Appendix H.**

The City has implemented a plan to continue to inspect detention/retention basins as well as outfalls for the next reporting period.

The Illicit Discharge Detection and Elimination Program manual has been approved and implementation has begun. This manual will be available to all supervisors to distribute and inform their employees. If training is required and they need assistance they will contact the Stormwater Management Coordinator. This will include inspection of outfalls. See **Appendix I.**

Status of Measurable Goals

Goal 1: Storm Sewer System Mapping-Ongoing

Develop and maintain storm system inventory that locates outfalls including detention/retention basins, pipes, ditches, flood control facilities and post construction best management practices. The activities included in this goal are to scan all subdivision records so that they are readily accessible and can be entered into the current storm sewer map. We will continue to update new developments as they are constructed. We also continue to add existing developments manually with the help of site visits and aerial images to expand the map. Private storm systems are being identified by utilizing a different color than public storm systems on map as well to better identify the storm sewer system throughout the City. We have also incorporated our inventory/inspections with the map. Although not available to the public, we can see in-house the most recent information relating to inventory/inspection of detention/retention basins, outfalls. A screenshot of the map is included with **Appendix G.**

Goal 2: Private Sewer Treatment Systems (Septic)-Ongoing

Develop and maintain a list of addresses and parcel ID's as available for all private sewer treatment systems and develop a map of on-site sewage disposal systems in the City. This will be coordinated through Water/Sewer and GIS.

Goal 3: IDDE Manual and Screen Outfalls: Ongoing

Implementation of policy/manual will continue to decrease illicit discharges by visual screening of outfalls and discharge pipes throughout City limits. Initial screening has for all City accepted outfall pipes was completed in 2014 for existing developments

Goal 4: Pet Waste Stations: Ongoing

Continue to install pet waste stations to prevent pet waste dumping and improve water quality. We will continue to install stations throughout city-owned properties where pet waste deposit is a concern. There is at least one station on all City parks and others have been added on an as-needed basis. Parks continues to request replacement bags and new stations as they need them. We multiple have pet waste stations installed in all current City parks.

Goal 5: Municipal Recycling Program: Ongoing

Continue our single stream recycling program to decrease the amount of waste placed in landfills to improve the water quality of the environment. The City has a Green Council that heads our recycling efforts. This council is made up of volunteer residents and employees of our Environmental Services Department. Our recycling numbers for this reporting period are as follows:

Recycle Tonnage Master	2013	2014	2015
Jan	597	570	631
Feb	445	432	465
Mar	507	500	571
Apr	650	632	623
May	657	609	563
June	572	580	
Jul	599	630	
Aug	605	562	
Sept	509	570	
Oct	599	608	
Nov	541	532	
Dec	645	708	
Total Tons	6925	6933	2853
Avg	577	578	571

Goal 6: Stream Water Quality Monitoring: New Goal SWMP 2013-2018

As part of the IDDE Manual/Program implementation, inventory of all discharge pipes and outfalls to streams are to be visually inspected each year and water quality monitored by testing should a concern for an IDDE be present. All inventory along with concerns will be tracked. This is new goal established as part of the 2013-2018 NPDES SWMP submission. With the increasing number of outfalls and lack of staff numbers to keep up, this will be done as often as possible. It is our goal to have the complete City inventoried and on a GIS map in the upcoming SWMP reporting period 2013-2018 with the exception for new developments. We plan to utilize volunteers or college interns to complete some of the tasks related to this goal as approved and available.

Goal 7: Watershed Management Plan: New Goal SWMP 2013-2018

Hire a consultant to evaluate the entire City watershed or smaller portions of watersheds or areas throughout the City to provide hydraulic information, centralized areas of concerns; miles of stream, 303(d) impaired streams, etc. to better manage water quality and quantity in City limits. This is a new goal and its success will depend upon funding approval by City Council. We will propose to begin to investigate and get this goal off of the ground in mid-2015. Funds were not approved for this goal for 2015. We will continue to request funds at the 2016 budget submission.

2. Overall Compliance with Permit Conditions

The City of O'Fallon, Missouri is complying with permit conditions relating to Illicit Discharge Detection and Elimination. Our GIS stormwater map is being updated continuously to show stormwater discharge points in the City of O'Fallon. This map currently shows all new or recent developments and a portion of existing older developments. Currently, we have approximately **234** miles of storm sewer infrastructure mapped throughout City limits.

Along with the ordinance, the City has created documents that are given to residents and subdivision homeowner's associations. We include pool companies, subdivision associations and homeowner's when applying for permits for installing pools. These are also issued when a concern is reported. Subdivisions, homeowners associations or management companies are also issued these documents when contacted regarding discharges of pool water. See **Appendix B**

An Illicit Discharge Detection and Elimination Program manual has been completed and has been implemented. Training to employees regarding IDDE is continuous throughout the year. We have a more formalized training program that is mentioned in MCM 6-Pollution Prevention and Municipal Good Housekeeping.

We continue to monitor our current Stormwater Quality Management and Illicit Discharge Control ordinance for potential revisions to improve its effectiveness in deterring or removing illicit discharge concerns throughout the City.

3. Results of Information Collected and Analyzed, if any

During this reporting period a total of five hundred twenty nine **(529)** stormwater concerns or inquiries were reported and responded to. Of those five hundred twenty nine **(529)**, three hundred ninety five **(395)** were completed. Of these inquiries reported, zero **(0)** resulted in an illicit discharge which is a decrease from the last reporting period due to re-classifying what is deemed an "illicit discharge" as well as increasing enforcement. The vast majority of the concerns received were maintenance issues pertaining mostly to sink holes near the inlet or missing lids. A total of in **22,214** feet of lines were checked and cleaned from June 1, 2014 through June 1, 2015. Inspections are performed with crews dedicated to stormwater maintenance with emphasis on removing accumulated debris and making repairs to infrastructure in an on-going fashion. Though we have increased staff by two, increased reported concerns and special storm projects have caused the maintenance crew not to be able to check as many feet of lines or structures as in the previous years.

Several other municipalities have requested copies of our current ordinance(s) relating to illicit discharges to alter to fit their municipality.

Along with our Illicit Discharge Ordinance (405.245), our Nuisance code (220.020) has also been revised to assist with controlling illicit discharges. Copies of both ordinances have been submitted with previous reports and can be found electronically on the City website at http://www.ofallon.mo.us then click Municipal Code which is located at the bottom of the web page..

4. Brief Summary of Activities for next Reporting Period

Activities for the next reporting cycle will include, continued investigation of stormwater concerns reported to the Stormwater Management Program via, Citizen's First Center, City Website and the Stormwater Management Coordinator, as well as other departments. We will continue to inspect, repair and remove any accumulated debris that is found during inspection of the stormwater pipelines as routine preventative maintenance. We will continue to look at our ordinance and ways in which to improve on it. Work will continue to update the GIS stormwater mapping. Ongoing training of our employees within departments such as: Building, Construction

Inspection, Streets, Neighborhood Preservation, Parks and Recreation, etc. will continue to keep them abreast of maintaining our stormwater system efficiently and help prevent illicit discharge acts. With enactment of the ordinance, we have had more enforcement of these discharges and are able to keep the system as clean as possible.

Our Citizen First Center now includes a mobile app that resident can download to their android phones to report concerns to the City from anywhere. Citizen First Center can be viewed at http://www.ofallon.mo.us/citizens-first-center.

The Illicit Discharge Detection and Elimination Program manual has been completed and implemented.

5. Proposed Changes to this Illicit Discharge Detection and Elimination Program Area

The main goal for next reporting period is to continue to improve our existing program. We will continue to educate the public on the importance of prohibiting Illicit Discharges and re-enforce to them that this is not an acceptable practice and that they are enforceable by the City. The Stormwater Management Coordinator and Construction Inspection Inspectors are to complete this task so that funds can be utilized elsewhere in the Stormwater Management budget to better assist the residents and address more capital improvement projects. The inspections began late 2011 with a completion date of the end of 2014. These inspections will now continue to be ongoing for each of the existing infrastructure and addition of new infrastructure as the City continues to grow.

6. Statement, Relying on Other Governmental Entity

Not applicable

7. Inspection Summary and Formal Enforcement Actions

529 concerns were reported with **395** completed for this reporting period.
22,214 feet of stormwater lines were inspected during this reporting period.
0 illicit discharges were discovered for this reporting period in comparison to **5** last reporting period.

MCM 4-Construction Site Runoff Control

1. Implementation Status

General Summary

O'Fallon has been compliant with the implementation of construction site runoff controls by means of regulatory requirements and on-site inspections. Ordinances have been put in place with regards to Erosion and Storm Water Run-Off Control, Illicit Discharges and Grading **(See Appendix M)**. There are also measures in place that require developers to submit plans for approval prior to construction which encompasses the completion of a grading plan checklist and application approval form. Copies of these documents have also been submitted with previous reports and can be found electronically on the City website at http://www.ofallon.mo.us then click Municipal Code which is located at the bottom of the web page. Contractors are required to follow St. Charles County Soil and Water Conservation District Erosion (NRCS) and Sediment Control Guidelines. We also reference the MDNR "Protecting Water Quality Manual" and "Missouri Guide to Green Infrastructure" as a guide for site runoff control as well to engineers, developers and contractors.

Our Grading Plan and Construction Plan Process further enforce proper erosion and sediment control and grading operations. Under the grading operations, it requires that erosion and sediment control plans be implemented prior to grading operations beginning, erosion and sediment control measures be implemented per SWPPP and corrected within 48 hours after a ½ inch rain event. It also states that graded areas shall be seeded and mulched within fourteen (14) days of stopping land disturbance activities and vegetative growth established within six weeks of stopping grading work on the project. The growth established shall be sufficient to prevent erosion and the standard shall be as required by EPA and MDNR (70% coverage per sq. ft).

If a contractor is non-compliant in a request to correct improper construction site runoff control, then a summons to appear in court may be issued or a stop work order may placed by until the situation is corrected. Initially, Construction Inspectors or Building Inspectors will work with the contractor/developer to get items corrected. If they do not cooperate or the situation is not corrected, then it is referred to the Stormwater Management Coordinator for further action and a monetary fine may be sought/applied. This is referenced in section 405.100, and 405.070 of the O'Fallon Municipal Code. Copies of these ordinances have been submitted with previous reports and can be found electronically on the City website at http://www.ofallon.mo.us then click Municipal Code which is located at the bottom of the web page. See **Appendix M** for more information.

There is also an ordinance requiring developers to maintain detention/retention basins prior to escrow being released and it being turned over to the Homeowner's Association. Ordinance Section 405.240 Stormwater Detention (f) states that an inspector will perform an inspection and each property owner has the responsibility and duty to properly operate and maintain any stormwater management system which has not been accepted by the City. Upon release, responsibility shall be vested in the trustees of the subdivision. Penalties can be assessed for not maintaining the basin. Copies of this ordinance have been submitted with previous reports and can be found electronically on the City website at http://www.ofallon.mo.us then click Municipal Code which is located at the bottom of the web page.

Other processes that need mentioned prior to construction commencing are that there are several plan review and planning and zoning processes that developers and builders must go through. All developments must be approved by the Planning and Zoning Commission via the site plan approval and preliminary plat approval. Copies of checklists have been submitted with previous reports and explain in detail what must be submitted and fees that are incurred. The developer/builder then submits their plans to the Engineering Department for review and approval of their project. The project cannot move forward until Engineering Plan Review gives final approval that all City Ordinances are met. Once plans are approved, a pre-construction meeting is scheduled with all necessary parties prior to construction beginning. In this meeting erosion and sediment control requirements are reviewed and need for compliance is emphasized.

Program Elements Changed or Refined Since Previous Report

The City has increased its awareness of construction site runoff controls. Water quality monitoring testing equipment has been purchased and used by Stormwater Management Coordinator for field testing for turbidity and TSS at construction sites as needed for suspected ordinance violations. The Stormwater Quality Management and Illicit Discharge Ordinance and Grading Plan and Construction Plan Process Ordinance are established and in place for enforcement. Copies of such ordinances have all been submitted with previous reports and can be found electronically on the City website at http://www.ofallon.mo.us then click Municipal Code which is located at the bottom of the web page.

We have continued requesting a weekly Land Disturbance Checklist (see **Appendix M**) from sites as well as performing our visual inspections and their SWPPP requirements. Pre-Construction site meetings are also conducted with the Builder/Developer with Construction Inspection and Stormwater Management to go over plans and Erosion and Sediment Control.

The Stormwater Management Coordinator is also a Certified Erosion, Sediment and Stormwater Inspector (CESSWI) and Certified MS4 Specialist (CMS4S).

Status of Measurable Goals

Goal 1: Construction Site Inspections-Ongoing

Ensure construction sites are inspected to ensure compliance with approved plans and SWPPP. Currently the Construction Inspectors, Building Inspectors and Stormwater Management Coordinator, perform site inspections both randomly and scheduled to determine overall how the developer and builder compliance rates in following and maintaining construction site runoff controls. They are making sure that the "Construction Plan Requirements" pertaining to subdivision and land developments ordinance 5384, Title IV, Land Use, Section 405.100 are being followed and enforced. This ordinance sets requirements for submitting and following grading plans including cross-sections and contour sheets. Plans must be approved prior to the start of any grading and all other applicable permits from other governing agencies such as MDNR, St. Charles County, or EPA must be received prior to any work performed. Copies of such ordinance have been submitted with previous reports and can be found electronically on the City website at http://www.ofallon.mo.us then click Municipal Code which is located at the bottom of the web page.

The Grading Plan Application and Checklist has been developed and implemented and requires sediment and erosion controls as established by the St. Charles Soil and Water Conservation District, Protecting Water Quality Guidance Manual and City Ordinances. Additionally, grading plan review and development checklists are in use so that developers and contractors are aware and know which requirements to follow. Copies of such documents have been submitted with previous reports and can be found electronically on the City website at http://www.ofallon.mo.us then click Municipal Code which is located at the bottom of the web page.

On subdivision developments, developers are to place monies in an escrow account to help assure all work is completed satisfactory and according to approved plans. The Grading Plan and Construction Plan Process ordinance also requires an "Improvement Installation or Performance Guarantee". These ordinances contain a breakdown of the escrow procedures. Also, escrows for grading permits are required prior to release for grading activities.

Total Construction Inspection Inspections for this reporting period:
Avg. 33-Active sites (decreased from last reporting period)
Avg. 20-Semi Active sites (increased from last reporting period)
Avg. 8-Inactive sites (decreased from last reporting period)
A total of 198 Excavation Permits were issued for this reporting period. (Increase from last reporting period)

Inspections are performed 3-5 times per week for active and semi-active sites and 1 time per week for inactive sites.

Building Inspections/Permits for this reporting period:
Inspections totaled **8,350** and Permits totaled **3,598** for this reporting period. (Increase from last reporting period)

Goal 2: Site Plan Review Procedures-Ongoing

Review the process for pre-construction SWPPP plan review for all residential and commercial projects that disturb one or more acres. We will continue to review existing procedures and track the number of site plans reviewed.

Goal 3: Construction Site Water Quality Monitoring: New Goal SWMP 2013-2018

Implement process and procedures for water quality monitoring on sites that are adjacent to streams. This is a new goal being implemented with the NPDES 2013-2018 SWMP. The goal is to have the contractors monitor and provide results to the City, but have been unsuccessful at getting this implemented yet. This goal may need to be revised in the future.

Goal 4: Enforcement Procedures: Ongoing

Enforce City Regulations. We will continue to enforce City ordinances and state/federal regulations for all construction activity that disturbs one or more acres. As part of the approval process, the City will not issue approval on construction plans until all state permit requirements such as land disturbance and SWPPP are approved and provided to the City. Modify existing policy/ordinance to better define proper disposal of construction waste and include increased enforcement. This will continue to be an ongoing process.

2. Overall Compliance with Permit Conditions

O'Fallon is in general compliance with permit conditions relating to construction site runoff controls. We continue to enforce the ordinance and regulatory mechanisms, including fines and/or civil penalties that provide the ability to regulate stormwater runoff from construction sites. O'Fallon maintains inspection procedures and maintains these records in an orderly manner. Construction Inspectors, Building Inspector's and the Stormwater Management Coordinator will continue to make random and scheduled inspections of construction sites to determine overall compliance of our construction site runoff BMP's, regulations, and ordinances.

3. Results of Information Collected and Analyzed

Nothing to report at this time.

4. Brief Summary of Activities Next Reporting Period

We will continue to monitor and address Construction Site Runoff Control. Ongoing training for new and current employees on current and new BMP measures will continue.

The Stormwater Management Coordinator has retained certification requirements for CESSWI Certification received in 2009 and CMS4S Certification received in 2011.

5. Proposed Changes to Construction Site Runoff

We will continue to encourage "First Flush" detention/filtration, better sedimentation and erosion control BMP's. We will continue to be stringent on post grading, seeding, and mulching in our efforts to improve the stormwater quality.

We will continue to address construction site runoff in more of the post construction site approach so that Stormwater quality can be addressed as well as quantity in addressing sedimentation and erosion control efforts.

6. Statement Relying on Other Governmental Entity

Not applicable.

7. Summary of Inspections and Formal Enforcement Actions

Each new development approved by the City of O'Fallon undergoes various plan review states and inspections during the entire development process beginning with grading and ending with a final inspection prior to release of escrow funds. Improvements or changes required by the City are enforced when necessary through the building permit process also.

Building Department Inspections totaled **8,350** and Permits totaled **3,598** for this reporting period.
Construction Inspection performed site inspections **3-5 times per week** for capital improvement projects, active and semi-active sites and **once a week** for in-active sites for this reporting period.

MCM -Post-Construction Runoff Control

1. Implementation Status

General Summary

Various BMP's are used to control siltation and erosion of development areas until such time as vegetation can be re-established. The City of O'Fallon requires all developments to meet stormwater detention or retention requirements to help minimize the impacts of flooding, post-construction runoff, including runoff from increased impervious areas created by development.

On January 14, 2008 City Council approved an Ordinance requiring Stormwater Quality Post Construction BMP measures. Copies of this ordinance have been submitted with previous reports and can be found electronically on the City website at http://www.ofallon.mo.us then click Municipal Code which is located at the bottom of the web page. (See **Appendix M)**.

On March 3, 2009, Procedures for Post Construction BMP Maintenance Agreement and an Agreement were put in place and are continued to be utilized. These procedures do require that the agreement be recorded and provide a contact to the City. (See **Appendix M)**

Program Elements Changed or Refined Since Previous Report

We have continued requesting more stringent erosion and sediment controls for construction site runoff control and are requiring engineering firms and developers to think outside of the box within the guidelines of our current city ordinances to allow for more of these types of developments and BMP usages.

Section 400.170 of the City Municipal Code entails a section for "*Environmental protection planned developments"* which is an alternative to standard planned unit development or other types of development**.** The purpose of these developments are for a residential, commercial, office, high-tech or industrial site that must, to the satisfaction of the City Council, provide for the permanent protection and preservation of the natural features and environmentally sensitive areas of the site. Copies of this ordinance have been submitted with previous reports and can be found electronically on the City website at http://www.ofallon.mo.us then click Municipal Code which is located at the bottom of the web page.

In 2007, the City drafted an ordinance adding a new section to the Stormwater Quality Management and Illicit Discharge control Requirements addressing Best Management Practices for Post Construction and was passed in January, 2008 and remains in effect today. This new section requires new development and redevelopment to address both water quantity and water quality. In this ordinance, requirements for creek bank setback was added Post Construction Water quality requirements addressing impervious cover, BMP, offsite drainage, and extended detention are all included. A maintenance agreement has been in place since March, 2009 and is being utilized as part of the plan approval process. (See **Appendix M).** We also reference the MDNR "Missouri Guide to Green Infrastructure" as a guide for post construction runoff control as well to engineers, developers and contractors.

Promotion of stormwater ponds, wetlands, infiltration practices and open channel practices are all part of this ordinance. The City worked together with the Home Builders Association for several months to put this ordinance together. It was presented to the City's Planning and Zoning Commission for approval in December, 2007 and then passed by City Council January 14, 2008.

Several rain gardens, drop inlets, sand filters and other methods of post construction have begun to be utilized throughout the City. We have developed a tracking mechanism (database) so we know where they are. To date, they have been installed primarily on commercial properties. **See Appendix K**

The City has two rain gardens currently. The first rain garden is a cost share project that was installed at the Renaud Spirit Center, recreation center as an educational tool to promote them in 2007. This rain garden is managed by our City landscape crew. A resident donated a bench adjacent to the rain garden in honor of their daughter that residents use to sit and enjoy the rain garden.

The second rain garden was completed in April, 2009 at the Street Department. The Street Department rain garden recently underwent 5-year maintenance to re-establish plants, replace soil medium and add fresh mulch. The Street Department rain garden was installed in lieu of stormwater infrastructure to capture and treat runoff from the parking lot and building. The rain garden has been a good site to test salt tolerance of plants as this lot has the potential for the highest instance of salt use due to snow removal operations being headquartered here.

The Street Department installed a Snout drop inlet filter several years ago as a demonstration project in their parking lot to help decrease pollutant loads to the stormwater system. It continues to be maintained by their department and is working well.

In 2014, a rain water harvesting system was installed at the Street Department which consists of a 500 gallon tank and an additional 200 gallon tank. The Street Department has begun recycling rainwater to use in equipment such as their concrete saw to conserve water sources and water the rain garden and landscape as necessary.

The Street Department has also converted quite a bit of their landscape with native plantings. The rain garden and landscape beds are maintained by volunteer "master gardener/naturalists"

A grassy paver parking lot extension has been added to our Veteran's Memorial Site in 2009 and continues to be utilized for overflow parking.

A pervious paver crosswalk was added in the City's parking lot in front of the entrance as a demonstration project to encourage use of alternative stormwater BMP's in 2007.

A bioretention swale in a parking lot addition at Westhoff Park was constructed in 2012. There are also several areas and landscape beds consist of native landscaping in other parks throughout the City.

A Rainwater harvesting collection was installed at the Public Works Facility in 2014. A portion of the roof runoff is captured in 2-150 gallon tanks. This rainwater is being utilized to water landscaping and other uses such as tool and boot washing. A solar battery operated pump has also been installed to assist with the use of watering the landscape which consists of mostly of native plants.

Commercial Developers, Builders and Residents are encouraged to install native landscape, rain gardens and rain barrels as well as infiltration trenches to address grading and drainage concern in their yards rather than install hard armor solutions.

The City funds the Stormwater Program by a Parks/Stormwater Sales Tax Fund that was established in 2008. Sales tax revenue is divided between Parks and Stormwater. The portion of funds approved for Stormwater are utilized to operate the program, pay staff, purchase equipment and correct stormwater concerns that qualify for full funding by the City per the approved "Stormwater Policy" that was implemented in 2011 (see **Appendix N**). If a concern is accepted as a fully funded Capital Improvement Project, it is placed on our "Stormwater Priority List" and listed via a ranking and rating system. The concern with the highest ranking points and priority level are listed first. This list is updated continuously with the addition of new stormwater projects and removal of projects that have been completed. Post Construction BMP's are always recommended and considered as part of the projects completed.

A Community Cost Share or 50/50 cost sharing program has also been developed and implemented in 2012 to assist residents with funding stormwater issues that do not qualify for full City funding assistance as per parameters set in the "Stormwater Assistance Policy" (see **Appendix N**). This program offers a 50 percent cost share reimbursement from the City to residential property owners once the project is completed for projects that do not use the "Rock" portion of the program in which the City provides recycled concrete that is broken in to rip rap sized rock that can be utilized for minor creek erosion projects. The City delivers the recycled concrete to the front yard and the homeowner is responsible for placement of such rock. The homeowner accepts that the delivery of the recycled concrete accounts for 50 percent of the cost of the "Rock" program and no other funds are reimbursed to the homeowner with the "Rock" portion of the program. With all projects completed as part of the 50/50 program, the City accepts no responsibility for the work done; agreements made with contractors, contractor warranty and no easement agreements with the City are completed.

Status of Measurable Goals

Goal 1: Ordinance or Other Regulatory Mechanism: Ongoing
Adopt/revise ordinance addressing stormwater runoff from new development/redevelopment projects disturbing one more acres. We have a current ordinance in place; however, we will continue to look at ways to improve it as necessary. We will look toward including more detailed information regarding redevelopment projects and continue to educate the development community.

Goal 2: Post Construction Requirements: Ongoing
We will adopt/revise our current post construction stormwater management requirements as per MDNR/EPA general construction permit. We will continue to evaluate and review BMP's and alternatives. A database has been developed to track BMP installation throughout the City and will continue to be updated and revised as necessary.

Goal 3: Site Plan Review Procedures: Ongoing
We will continue to adopt/revise our current policies that requires construction stormwater management per MDNR/EPA general construction permit. We will continue to evaluate and review our procedures, educate the development community on changes as they occur to make the process flow more smoothly. Emphasis will continue to promote post construction practices.

Goal 4: Site Inspection Procedures: Ongoing
All post construction (structural and non-structural) BMPs will be inspected prior to acceptance of the project by the City to ensure BMP's are installed and functioning properly. We will develop and implement an inspection schedule over the next five year reporting period 2013-2018. We have a BMP database for tracking of BMPs that has been implemented to track installation, maintenance and inspection.

Goal 5: Long-Term O&M Plans/Agreement: Ongoing
All sites will have an O&M plan for their post construction BMP's. We will adopt requirements for all projects and report number of sites with agreements. This was completed initially in 2008 and has been reviewed for improvements and increased ability to enforce. This goal will be ongoing as we continue to review and update/revise our post construction ordinance as necessary for improvements/changes. A database has been developed to track BMP installation throughout the City and will continue to be updated and revised as necessary. We have begun receiving some annual inspection reports from property owners for their BMP's as per the BMP Maintenance Agreement that is signed and recorded with St. Charles County.

2. Overall Compliance with Permit Conditions

The City of O'Fallon has regulatory requirements in place to help ensure a reduction of pollutants associated with the post-construction stormwater runoffs and has identified BMP's to help reduce stormwater quantity, erosion and siltation. A full site review is conducted as part of the pre-construction approval. There is an escrow release procedure to ensure that BMP's are installed correctly and vegetation is established prior to the escrow monies being released. We also require monitoring of detention/retention basins to ensure proper function and maintenance is kept up through our Neighborhood Preservation Department and Stormwater Management. We ensure that the responsible parties are doing their part in this maintenance requirement.

As a condition of approval through the Planning and Zoning Commission, the City requires Phase II Post Construction BMP's for all sites as a "Condition of Approval". An example of such has been submitted with previous reports.

Plan review continues to recommend post construction methods for projects coming into the City as well as for capital improvement projects funded by the City.

Changes to our detention basin requirements for 2006 has also occurred to address "first flush" rainfall. Previously, concrete swales were required in all detention basins this has been removed and changed vegetated swales to better address this. A copy of this ordinance has been provided in previous reports. We also work with homeowners associations and property owners with retrofit recommendations to existing detention and retention ponds to make them more post construction/environmentally friendly with regard to stormwater quality when requested. We communicate frequently with the NRCS and MDC with regard to potential grant monies to assist these property owners with more native solutions for retrofits.

Stormwater Management Coordinator and other City Staff attended several seminars and webinars this reporting period to refresh, increase knowledge and obtain PDH's for our current certifications.

3. Results of Information Collected and Analyzed

Nothing to report at this time.

4. Brief Summary of Activities Next Reporting Period

For the next reporting period, the City plans to continue to conduct site review, and look into more efficient and effective ways to prevent post construction runoff. We will compare impervious and non-impervious developments and the information gathered will hopefully assist us in updating the listing of BMP's that would be allowed. We will continue enforcing our BMP ordinance.

5. Proposed Changes to Post Construction Runoff

Continue to look at zoning regulations and more environmental friendly development strategies for better water quality and quantity controls. Increased involvement with Planning and Zoning, Engineering and Stormwater as well as continue to educate Public Works Commission, City Council, Engineers, Builders and Developers.

6. Statement Relying on Other Governmental Entity

Not applicable.

7. Summary of Inspections and Formal Enforcement Actions

Upon the developer's request for occupancy, a final inspection is performed to see that all requirements set forth by the City of O'Fallon have been met. Also, at the time the developer requests escrow monies released, an inspection is performed to ensure that proper post construction run off BMP's have been met, installed properly and proper vegetation established. No escrow monies are released for unsatisfactory inspections. If the developer does not perform necessary corrections, O'Fallon has the legal authority to perform those repairs or cause those repairs to be completed to its satisfaction.

MCM 6-Pollution Prevention and Good Housekeeping

1. Implementation Status

General Summary

During this reporting period, O'Fallon Water/Sewer at the Water Treatment Plant and Waste Water Treatment Plant has addressed pollution prevention and good housekeeping on a continual basis and since MDNR placed Oil and Grease permit limits onto our effluent discharge NPDES permit. They have also begun to enforce removal sump discharge to floor drains to prevent increased potential for Infiltration and Inflow (INI) into the sanitary system. An education campaign regarding use of "flushable wipes" has also been started and presented to the Public Works Commission in June, 2014.

The City of O'Fallon Street Department swept **1,345.28** miles of City streets for this reporting period. This routine street sweeping program as part of its good housekeeping efforts to protect the environment will continue. The street sweeper is manned and operated by the Street Department employees experienced in its operations and helps prevent floatables from reaching the storm sewers, creeks, streams and rivers. A new more efficient street sweeper was purchased in 2013. A "Dustless Slurry Vac" from Dustless Technologies has been purchased as well to vacuum up saw cut slurry instead of washing it down the street curb for other collection methods.

Any fluids from motor vehicles fixed at the city repair sheds are captured and hauled off for recycling. Most vehicles are washed at a commercial car wash and not onsite.

The City Street Department has improved their erosion and sediment control practices for street repairs.

The Landscape Department has continued to use less pesticides and fertilizers.

A "Municipal Pollution Prevention and Good Housekeeping Guidance Document of Best Management Practices" has been approved and implemented. A copy of this document has been distributed to all supervisors and is available to all employees.

A "Stormwater Pollution Prevention Plan" (SWPPP) template for all required facilities has been created and distributed to supervisors for completion and a copy held on file by the Stormwater Management Coordinator. This document was created and implemented as a result of a Target Audit by MDNR of MCM 6 that occurred in 2012.

Program Elements Changed or Refined Since Previous Report

There are no significant changes to this MCM. We continue to utilize our Pollution Prevention/Good Housekeeping for Municipal Operations Guidance and require SWPPPs for City owned facilities with annual inspection reporting. We continuously evaluate better ways to implement BMPs and good housekeeping practices to increase stormwater quality and set a good example for the public. We also continue annual employee training with regard to improved pollution prevention and municipal good housekeeping practices.

Status of Measurable Goals

Goal 1: Employee Training: Ongoing
Continue to train key staff on issues related to MS4 permit in general, possible emphasis on MCM 3 and 6. Implementation of our MCM 6 guide has occurred. In-house training via video, power point, articles and staff training sessions will continue.

Goal 2: MS4 Maintenance: Ongoing
Maintain ongoing scheduled maintenance. Continue current schedule for inspecting and cleaning storm structure. Summarize maintenance activities in annual report.

529 concerns were reported with **395** completed for this reporting period.
22,214 feet of stormwater lines were inspected during this reporting period.
1,345.28 miles of streets were swept.

Fleet maintenance recycles used oil and antifreeze as well as properly stores chemicals utilized at these facilities.

SWPPP documents have been developed and a template distributed to all facilities necessary. A general template for all facilities has been created so that we remain consistent across the board. Each department affected has been met with independently to better tailor their document. They continue their formal inspection process.

Goal 3: Road Salt: Ongoing

Properly apply salt in a way that minimizes over-usage. The Street Department Director is responsible for implementation of this goal. The department constantly reviews ways that snow and ice operations are handled. They continue to research and implement ways to improve on snow removal with use of less chemical where possible. Beet juice has been incorporated and utilized over the last several years as part of our snow removal operations. They present the snow and ice operations to the Public Works Commission every year and to City Council when requested. This will remain an ongoing goal.

Goal 4: Disposal of Wastes

The goal is to properly manage and dispose of waste. We will continue to expand, develop and implement proper waste disposal practices. This will be an ongoing goal as more waste has become recyclable. We have implemented a recycled concrete program as part of our Community Cost Share/Stormwater Assistance Policy in which we offer it as rip rap for creek bank stabilization for residents that qualify per program guide lines of our Stormwater Assistance Policy free of charge. This keeps this material out of landfills. See **Appendix N.**

Goal 5: MS4 funding Mechanism: Ongoing

We will continue to evaluate and recommend/revise funding mechanism to support program requirements as required by EPA. We are currently funded by a park/stormwater sales tax in which council determines every budget year the amount of funds that will be appropriated to stormwater. No general funds are allocated to the stormwater budget. This goal will investigate different types of funding mechanisms outside of the parks/stormwater sales tax. Once we have prepared alternatives we will present to City council and request implementation.

2. Overall Compliance with Permit Conditions

The City of O'Fallon is complying with permit conditions by developing and implementing programs to reduce and prevent pollutant runoff from municipal operations. Although we do have a formal document in place, we also continue to have both formal and informal measures in place to perform Pollution and Good Housekeeping. For example, each facility performs a visual inspection and performs trash pickup and debris removal on a regular to daily basis. Employee training has continued on regular basis.

Our Street Department has also installed a rain garden and Snout storm sewer inlet filter to assist with maintenance on their lot. They also continue to operate a street sweeping program.

The Public Works Facility and Street Department have installed a Rainwater Harvesting System to capture partial roof runoff.

We continue to evaluate and improve our salt storage for snow removal operations. We have a salt dome building, a covered area, and tarps and bins in place over our outside storage which is monitored and maintained on a regular basis. Our binned salt storage area at the Street Department is converted to store other materials during non-winter months. The rest of the salt materials are stored in a salt dome or covered area to keep it contained and prevents excess runoff.

3. Results of Information Collected and Analyzed

For this reporting period, a total of **1,345.28** miles of streets and highways were swept and cleaned by the Street Department. A total of **22,214** feet of stormwater lines were inspected during this reporting period.

4. Brief Summary of Activities Next Reporting Period

We will continue to strengthen and fine tune our "Stormwater Pollution Prevention Plan" by utilizing the "Municipal Pollution Prevention and Good Housekeeping Guidance Document of Best Management Practices". Ongoing and annual training for new and current employees on pollution prevention measures will continue. Pollution Prevention and Good Housekeeping Plan will continue to be addressed with emphasis on salt storage, equipment maintenance, street sweeping, pipe and culvert cleaning, recycling and disposal guidelines.

5. Proposed Changes to Pollution Prevention/Good Housekeeping

As stated previous a guidance document for municipality pollution prevention/good housekeeping best management techniques has been developed, approved and implemented. The document has been provided to all departments for training and facility implementation. We have finalized training and implementation of a SWPPP for each City facility. See **Appendix J.**

6. Statement Relying on Other Governmental Entity

Not applicable.

7. Summary of Inspections and Formal Enforcement Actions

Pollution prevention and good housekeeping measures are one function of each of our employees' job. This is a daily, ongoing routine and employees are reminded to be aware of our own operation and maintenance practices to help and ensure a reduction in the amounts and types of wastes that collect on our streets, parking lots, and maintenance areas. City staff also maintains compliance with contractors and developers sites by the enforcement of existing codes and ordinances that assist with prevention.

Listing of Appendices

A. Training Tracking and Public Outreach and Education Information
B. Resident Handout Examples
C. Storm Drain Marking
D. Creek Clean-Up Information
E. Rain Garden and Rain Barrel Brochures
F. Reports Stormwater Concerns June 12, 2014 to June 13, 2015
G. GIS Maps
H. Illicit Discharge Report- June12, 2013 to June 13, 2014 (Sample)
I. Illicit Discharge Detection and Elimination Program Manual
J. Pollution Prevention/Good Housekeeping for Municipal Operations SWPPP Site Example and Inspection
K. BMP Tracking Database (Sample Entry)
L. Stormwater Management Operation Plan for MCM's 1-6 for 2013-2018 Permit Cycle and SWMP Org Chart
M. Ordinance 405.100, 405.070, Weekly Land Disturbance Checklist, 405.245, 405.247, BMP Agreement Example
N. Stormwater Policy and Stormwater Assistance Program (SWAP)

Stormwater Annual Report--Exhibit A

Stormwater Education Tracking-June 13, 2014-June 12, 2015

# of Participants	Date Completed	Location of Training	Type of Activity/Training
15	6/18/14	Public Works Commission	Stormwater Program annual update and drainage concern education
30	7/10/14	City Council Workshop	Stormwater Program annual update and drainage concern education
150	9/17/15	MWEA Stormwater Conference	Helped organize and conduct this event as part of the MWEA Watershed Committee
12	9/3/14	Ft Zumwalt North High School Stream Team Club	Stormwater Education and instruction for water quality monitoring for an upcoming projec
75	10/10/14	Ft Zumwalt North High School AP-Biology	Stormwater Education and pollution prevention activity (Project Wet)
12	1/15/15	O'Fallon Planning and Zoning Commission	Stormwater Pollution prevention educational video
25	2/18/15	Pheasant Point Elementary Earth Club	Enviroscape and Stormwater Pollution Prevention Education
30	4/2/15	Envirothon Competition	Stormwater and Environment Protection Education
20	4/20/15	Ostmann Elementary	Stormwater Pollution Education-Incredible Journey
3	4/20/15	Lindenwood Students	Guest speaker for Lindenwood students-NPDES regulations
372 Participants	**event**	**Totals**	

Using Compost for Lawns

To decrease Fertilizer and Pesticide Use

Why use Compost on your Lawn?

Lawn Treated with Compost

Compost is a great way to nourish roots and make a lawn stronger and greener. If you just spread compost on the surface, then ½ inch is about all you need at one time without harming the grass. But you will get much better results if you aerate the lawn first and get the compost down where it will do the most good.

The best way to do this is with a core aerator, which peppers the lawn with 2-3-inch-deep holes so air and nutrients can reach the roots. You can rent one and do the work yourself or turn it over to a lawn pro.

It is recommended that the best time to perform this type of work is in the fall. Aerating any earlier in the year may encourage weeds to get a head start.

Lawn Before and After Compost

Here are the recommended steps:

Step 1: Determine the Need for Lawn Aeration

If you have noticed that your turfgrass isn't looking its best or that water has difficulty penetrating through the soil surface, it may be time to aerate your lawn. Clay soils and lawns that bear heavy foot and vehicle traffic are especially notorious for needing aeration as they become compacted over time. Using a shovel, dig a square-foot section of grass about six inches deep and examine. If the grass roots don't extend further than two inches deep into the soil, your lawn would benefit from aeration.

Note: Don't aerate a lawn that has been seeded or sodded within one year of planting.

Step 2: Prepare the Lawn for Aeration

Water the lawn thoroughly one to two days prior to aerating your lawn. Apply at least 1" of water to the grass; this can be measured by placing an empty tuna can in the middle of the watering zone. If the can is full, then 1" of water has been applied to the grass. Watering the lawn will help the aerator penetrate the soil and pull out soil cores much more easily. Flag irrigation heads and other hidden objects in the lawn so that you will avoid them when operating the aerator over this area. If you do not have an irrigation system, use a garden hose and sprinkler to water the lawn.

Note: Depending on your climate, the best time of the year to aerate cool-season grass, such as fescue, bluegrass or rye, is in August through October when the grass is breaking its dormancy and begins the period of active growth; the best time to aerate warm-season grass, such as Bermuda, Zoysia or St. Augustine, is April through June.

Step 3: Aerate the Lawn

Run the core aerator over the lawn in a pattern that covers the area only once about 2-3 inches deep. If you yard is very compacted, you may need to aerate deeper which may require the service of a lawn pro unless you can rent equipment that will go deep enough (approx. 6 inches).

Note: A mechanical core aerator is the best equipment to use for aeration. The tines on this type of machine are hollow on the inside so that they pull soil cores out of the earth. Other aerators such as those with spikes don't work as well and may actually further compact soils. You can rent core aerators from most garden centers. Read the operator's manual carefully prior to use.

Step 4: Apply Compost the Aerated Lawn

The soil cores can be left on the ground after aeration and allowed to decompose. Or, rake them into piles and throw in the compost bin. However, this isn't necessary as it should take about two to four weeks for the soil cores to break down naturally. Sprinkle ½ inch of compost (sand or peat moss can be used instead of compost) over the lawn and work it with a rake (leaf rake recommended) to fill in the holes.

Note: After aeration, apply grass seed and fertilizer to lawns as this is an ideal time to do so. Finally, give your lawn a good watering to work the compost down into the holes.

Using Rock-filled Trenches

To convey and infiltrate storm water

Why use a rock-filled infiltration trench?

Rock-filled trenches can hold and slowly infiltrate roof, sump pump or driveway runoff as well as areas where runoff stands for long periods in locations that are too narrow for a rain garden, such as in-between houses, next to driveways or in back yard drainage areas. Rain gardens are better where there's room, because the plants and compost-amended soil in them clean runoff while enhancing your property's landscape.

Rock filled trenches can also be used in place of a piped under drain system to help alleviate areas where standing water or saturation occurs for long periods (longer than 48 hrs). They can be covered by turf or decorative rock and incorporated to your property as a landscape feature.

- Shallow ***infiltration trenches*** (up to 12-24 inches deep) can slowly convey runoff along a shallow slope or drainage swale, away from buildings to a better discharge location such as a rain garden or a large landscape area with deep, compost-amended soil.

- Deeper ***infiltration trenches*** (greater than 24 inches deep) can hold a lot of water from big storms in the spaces between the rocks until it filters into the soil.

Where to use a rock-filled trench

- **Don't install any infiltration measure within 500 feet of steep slopes or landslide-prone areas**. Check your address with the steep slope and known landslide-prone

- **Don't locate over underground utilities or major tree roots**.
- **Shallow conveyance trenches** should collect water from roofs, driveways, or patios and carry that water away from buildings and your neighbors' property, at no more than a 15% slope (1 foot drop in 7 feet). (Slopes greater than 4% require check dams.)
- **Locate deeper infiltration trenches** at least 5 feet away from your side and back property lines, and **at least 10 feet away from any building**. If you or a neighbor have a basement deeper than 5 feet underground, add 2 feet more setback (to that 10 ft. minimum) for each foot the basement extends deeper than 5 feet.
- For infiltration trenches deeper than 24 inches, consult an Engineer.

Non-Turf Infiltration Trench

This shallow **conveyance trench** is letting water soak into the soil, while it carries excess from big storms to a pipe running under the sidewalk, to a street drain.

Deeper, larger **infiltration trenches** are used on fairly level sites to hold roof or driveway runoff until it can all soak into the soil. A "rain garden" may be a better solution for many sites – see the Rain Garden fact sheet on the RainWise website below to compare, and consider what works best for your yard.

Hire professional assistance if needed, to advise you or to do the work.

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Getting started on rock-filled conveyance or infiltration trenches

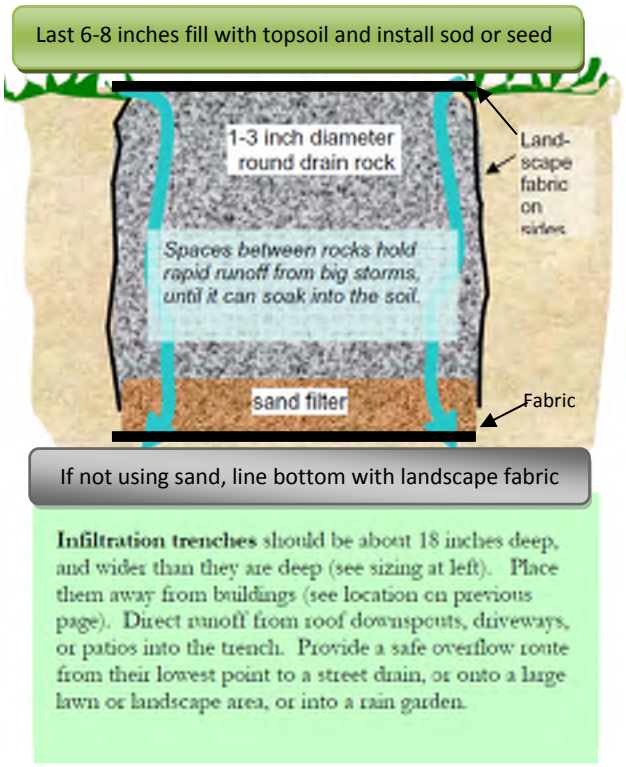
- **Determine where the water will flow.** Use a level or a running hose to determine which way the ground slopes from a driveway, roof downspout, sump pump or area with standing water or saturation you want to infiltrate into the trench.
- **Determine the size needed For Shallower Trenches (12-24 inches deep with minimum width of 1 foot).** Shallower conveyance trenches can be whatever width and length is needed to slowly carry runoff to a safe overflow area: to a storm drain, to a large lawn or landscape area, or to a rain garden or "dry well"
- **Determine the size needed For Deeper Trenches (>24 inches with minimum width of 1 foot).** To handle 98% of the annual runoff on soils with low infiltration rates (0.25 inches per hour), infiltration trenches (18 inches deep) need to have a top area that is 27% of the contributing area. For instance, if a downspout collects water from a 20 x 25 roof area that equals 500 square feet. 500 sq. ft. x 0.27 (27%) = 135 square feet. Consult an engineer for more sizing information, or if uncertain about the suitability of your site. .

Installing the trench

- **Dig the trench, and line sides with non-woven filter fabric** to keep dirt outside from moving in and clogging the rock spaces.
- **For a Turf Infiltration Trench, fill the trench to top or 6 to 8 inches from top with 1 to 3 inch diameter "clean rock".** Line the bottom of the trench with sand or landscape fabric, install 1-3 inch rock, place more fabric on top of rock before you fill the rest with soil and vegetate with sod or seed. (See diagram)
- **For a Non-Turf Infiltration trench, fill the trench to the top 6-8 inches and install larger** "decorative" or "clean rock" that is a mixture of 4-8 inch in diameter. Line the bottom of the trench with sand or landscape fabric, fill with 1-3 inch diameter rock to 6-8 inches, then top off with larger rock. (See diagram and photo)
- **Direct driveway, sump pump, downspout runoff, etc. to trench.** A perforated pipe running from the downspout or sump pipe through the upper layer of rock is one way to spread flow along the length of the trench.
- **Be sure to provide for a safe overflow route** from the lowest point on the trench to a large lawn or landscape area, "dry well" or a rain garden or storm drain without flooding your neighbor's property.

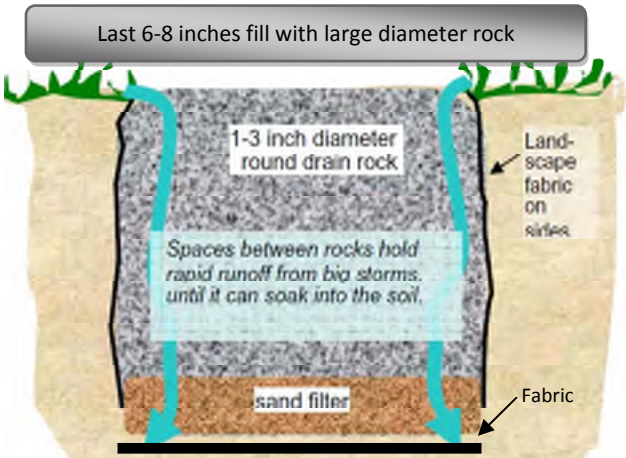
Suggested Private Drain System

Turf Covered Infiltration Trench



Infiltration trenches should be about 18 inches deep, and wider than they are deep (see sizing at left). Place them away from buildings (see location on previous page). Direct runoff from roof downspouts, driveways, or patios into the trench. Provide a safe overflow route from their lowest point to a street drain, or onto a large lawn or landscape area, or into a rain garden.

Non-Turf Infiltration Trench



Infiltration trenches should be about 18 inches deep, and wider than they are deep (see sizing at left). Place them away from buildings (see location on previous page). Direct runoff from roof downspouts, driveways, or patios into the trench. Provide a safe overflow route from their lowest point to a street drain, or onto a large lawn or landscape area, or into a rain garden.

Using Under Drain System

To convey and infiltrate storm water

Why use an under drain system?

These systems can hold and/or slowly infiltrate roof, sump pump or driveway runoff as well as areas where runoff stands for long periods in locations that are too narrow for a rain garden, such as in-between houses, next to driveways or in back yard drainage areas. Rain gardens are better where there's room, because the plants and compost-amended soil in them clean runoff while enhancing your property's landscape.

Under drain systems can also be used in place of rock filled trench drain systems to help alleviate areas where standing water or saturation occurs for long periods (longer than 48 hrs). They can be covered by turf or decorative rock, incorporated to your property as a landscape feature or directed to a nearby storm drain.

Where to use an Under Drain system

- **Don't install any infiltration measure within 500 feet of steep slopes or landslide-prone areas**. Check your address with the steep slope and known landslide-prone
- **Don't locate over underground utilities or major tree roots**.
- **These systems** should collect water from roofs, sump pumps, driveways, or patios and carry that water away from buildings and your neighbors' property, at no more than a 15% slope (1 foot drop in 7 feet). (Slopes greater than 4% require check dams.)
- **Located** at least 5 feet away from your side and back property lines, and **at least 5-10 feet away from any building**.
- For systems deeper than 24 inches, consult an Engineer.

Getting started on rock-filled conveyance or infiltration trenches

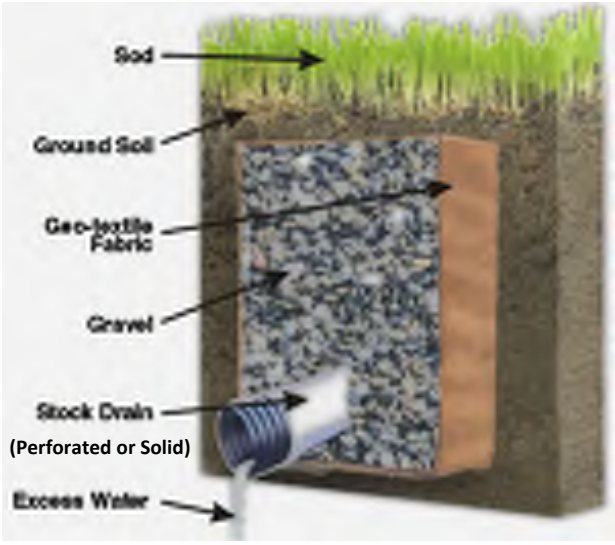
- **Determine where the water will flow.** Use a level or a running hose to determine which way the ground slopes from a driveway, roof downspout, sump pump or area with standing water or saturation you want to infiltrate into the system.
- **Determine the size of pipe diameter needed** to slowly carry runoff to a safe overflow area: to a storm drain, to a large lawn or landscape area, or to a rain garden or "dry well". The most popular pipe sizes tend to be 4-6inches in diameter.
- **Determine the size needed For Deeper Trenches (>24 inches deep)** Consult an engineer for sizing information, or if uncertain about the suitability of your site. .

Suggested Private Drain System

Example-Grated System

-Install filter fabric and rock before pipe
-If perforated pipe used, preferred method is to install sock over pipe

Installation Diagrams-No Grates



Installing the trench

- **Choose type of under drain material you want to use.** There are many products on the market, a few examples are PVC, drain tile, perforated drain tile, socked perforated drain tile, Hydraway (perimeter/subsurface drain product)
- **Dig the trench, and line sides with non-woven filter fabric** to keep dirt outside from moving in and clogging the rock spaces.
- **Line the trench bottom with 1 inch washed gravel fill or "clean rock".** Line the bottom of the trench landscape fabric, install more rock and a final layer of filter fabric then fill the last 6-8 inches with soil and vegetate with sod or seed. (See diagram page 1)
- **For a grated system,** the installation is the same as for non-grated however you will have to install the grates and connect to the system at your designated spots. (See photo on right)
- **Direct driveway, sump pump, downspout runoff, etc. to trench.**
- **Be sure to provide for a safe overflow route** from the lowest point on the trench to a large lawn or landscape area, "dry well", storm drain or a rain garden without flooding your neighbor's property.

Non-Turf Under Drain System

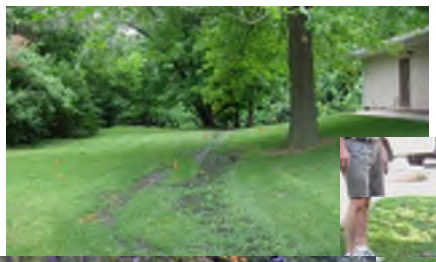
-Installed same as previous, only rock in placed on top of surface instead of

Installing A Subsurface Drain System

(Information Provided from Hydraway Drainage Systems)

- **Locate area that tends to gather water.** Map a drainage route for water to exit if covering a larger area, it is best to arrange an alternating arrow pattern.
- **Contact local utility providers** to ensure that not utility lines or pipes will not be compromised (call 1-800-dig-rite in Missouri)
- **Map a drainage route**, and then dig the linear trench along the path to allow proper drainage. The trench can be as narrow as 3" and up to 9 ft deep. It is recommended to save the dug grass patches in good condition or use a sod cutter to cover the fill after installation is complete.
- **Place material in the center of the trench,** stand upright (make sure spacing is even on the sides).
- **Cover with backfill consisting of sand and pea gravel blend.** Be sure to cover all sides but make sure to leave enough room on the top for some soil and grass removed

Subsurface Drain System



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2014

Property Owner's Guide to Creek and Shoreline Maintenance

City of O'Fallon

This guide for homeowners of creekside property is intended to serve as a reference for helping homeowners understand what living next to a creek means, as well as provide recommendations for preserving healthy banks along creeks and streams flowing through their property.

Disclaimer: Every effort has been made to ensure that the information contained in this guide is accurate. The City of O'Fallon assumes no responsibility and disclaims any liability for any injury or damage resulting from the use of any specified product or information.

Michele Gremminger
City of O'Fallon
05/19/2014

Why are the creeks in our City valuable?

- The many waterways that flow through O'Fallon make up a natural storm drain system for our City, collecting rainwater, ice and snowmelt runoff.
- They also provide habitat corridors for wildlife and a host of aesthetic benefits. Our creeks are an irreplaceable natural resource and vital part of the lives of all the people and animals that live within the watershed.
- A degraded, eroding creekside can cause serious property damage and even decrease property values, while a healthy creek can maintain and even increase property values.
- Stormwater is not treated or filtered water. Therefore, any pollutants that are carried into City storm drains remain there. In other words, what goes down the drain flows directly into local creeks.
- **FACT:** The stormwater that leaves our City ultimately enters the Mississippi River, where it flows into the Gulf of Mexico. Any pollutants carried from our City can affect everyone downstream and ultimately the ocean.
- Here are a few terms that may help you understand the information that follows in this guide:
  - A tributary is a creek that flows into a larger creek or other body of water. Many tributaries start as runoff from storm sewer discharge pipes that were installed to funnel runoff downhill and into the nearest stream.
  - The "main channel" is the deepest or central part of a creek bed through which the main current flows.
  - Streams or creeks with continuous, year round flow are classified as "perennial."
  - Streams or creeks classified as "intermittent" are those which hold water during wet the portions of the year and may dry out during the summer.
  - Streams or creeks are termed "ephemeral" if they only flow during and shortly after rainfall or other precipitation, drying out afterwards. They are dry most of the year.

What are riparian zones, corridors or buffers?

- A riparian zone or corridor is a vegetated area or "buffer strip" of plants near a stream. It is usually forested, which helps to shade and partly protect streams from the impact of adjacent land uses. A healthy riparian zone plays a key role in increasing the water quality in associated streams and rivers, and providing environmental benefits. With the decline of many aquatic ecosystems due to agricultural production and urban land development, it has become a common conservation practice to protect and/or re-establish riparian zones to increase water quality, provide flood control and reduce water pollution.

What exactly is erosion?

- Erosion is a natural process. When flowing water meets bare or unprotected soil, some of that soil gets carried away by the force of the flowing water, causing loss of top soil and with it, valuable nutrients.
- The roots of trees, shrubs and plants growing along creek banks help to retain and stabilize creek bank soil, keeping it in place and making the area less susceptible to erosion.
- Erosion is a natural action of all creeks, healthy or unhealthy. In stable, mostly undeveloped watersheds, erosion is slow.
- In unstable and urban watersheds, the high rate and force of water passing through the watershed is beyond the natural capacity of local creeks to prevent serious erosion. O'Fallon has experienced explosive development and almost all creeks that travel through our City limits are now classified as "urbanized" creeks.
- Peak flows also have increased the size of our creeks, which means that they can carry a greater volume and velocity of water, causing increased erosion of creek banks throughout City limits.
- High flow rates, even from a single intense rainfall, can make significant changes in a creek bank on your property.
- Even creek channels that have been stable for years may change if there's an increase in water volume, and runoff affecting upstream changes to creek channels also may cause serious erosion to creek banks that had been stable for years. Years ago, it was a common practice for farmers to "straighten" natural creeks. Some of the erosion that we see throughout the City today stems from these older practices.
- Creeks are constantly changing. They naturally adjust to increased volume and velocity by down-cutting the channel bed and becoming deeper, or "incising" to adjust to the amount of flow and then "meandering" or cutting curves into the creek banks, which slows the flow down. This natural behavior is typical of all creeks and even larger waterways.
- That is why lining creek channels with concrete and using rock with concrete on top of it are no longer recommended to correct creek erosion. Research has shown that these practices can, in some instances, increase upstream and downstream erosion and could cause other channel instabilities.
- "Slow it down, spread it out and soak it in" is the preferred way to address storm water runoff as it drains into creeks. We no longer pipe everything. When runoff is piped, it has the potential to increase the velocity of water flowing into creeks, causing more erosion and channeling more pollutants into our waterways. When we slow it down, spread it out and soak it in, we're using natural processes that improve water quality by filtering runoff (rain and snowmelt) naturally through plants and soil. Along the way, we're preventing or lessening erosion by cutting down on the amount and velocity of water flowing into creeks.
- Barren slopes and improper construction in riparian corridors and upland zones can contribute to bank instability. Instability, in turn can lead to bank failure and introduce large volumes of sediment (rock, sand and soil) into the creeks. As this sediment fills in the creek bed, it reduces the storage volume of water, diminishing the creek's ability to perform the down-cutting process that would enable the creek to adjust for increased flows. This, in turn, can cause the creek to carry higher levels of water, leading to increased flooding and loss of creekside vegetation, a repetitive cycle which ultimately results in bank failures. A majority of creek bank health falls upon the creekside homeowner, who must break this cycle by keeping the banks as stable as possible.

- Bank erosion generally occurs as the result of stream flow impacting the base or "toe" of an unprotected slope. When the bank slope readjusts as its base continues to be washed away, cracks often become evident at the top of the bank as soil begins to peel away.
- Severe erosion is accompanied by bank instability and ultimately bank collapse. Very steep banks are especially vulnerable to active erosion of the bank, which may break away and fall into the creek. You may hear the terms "bank failure or bank slump" utilized when this occurs.
- The dumping of grass clippings, bush clippings, leaves and tree branches on banks interferes with stabilization efforts, because the clippings can smother existing plants, causing them to die. Once they die, their root structure is no longer viable and no longer capable of holding the soil, which then becomes bare and unstable. **This practice is against City ordinance and can be a ticketable offense in which fines can be assessed (Ordinance section 405.245).**
- Below are examples of good creekside habitat and stewardship:


Why me, the creekside property owner? Why am I responsible for maintenance?

- Most creeks are not owned by the City, and therefore are not the City's to maintain. If there's a question of ownership, a proper survey of the parcel can determine who owns the property through which a creek flows.
- Creekside property, in most cases, utilizes the creek's centerline as the property line. If the creek flows between two private properties, each property owner usually assumes the responsibility for maintenance up to the middle of the channel, unless a professional survey states otherwise.
- Some properties completely contain the creek within the yard, with the property owner responsible for creek banks lying on both sides.
- Some residential subdivisions have creek areas included as part of the common ground. Creek maintenance then becomes the responsibility of the subdivision's Homeowners Association.
- Some creeks may appear to be completely off of your property, yet may still be part of your private property. Despite the perception that a fence at the top of a creek bank defines a property line, a professional survey of the property parcel may find otherwise, with responsibility for the maintenance of the creek falling on the official property owner. A proper survey of the parcel in question determines the final owner of the property through which a creek flows.
- By ordinance, you and your neighbors along on both sides of the creek share responsibility for maintaining the banks with healthy riparian corridor vegetation. By keeping up with this,

you can help prevent erosion, avoid flood loss and property damage, you also can help preserve our community's water quality, improve wildlife habitat and provide an important benefit to everyone in the community.

- Some residential subdivisions have their creek areas included as part of the common ground. In that case, creek maintenance then becomes the responsibility of the subdivision's Homeowners Association.
- Most of the creeks flowing through the City are under the jurisdiction of the US Army Corps of Engineers (USACE), which is the regulating authority for jurisdictional waterways per federal regulations. If a creek is designated as a "blue line" on a topographical map, then special requirements may be required before you can perform any non-routine maintenance to a creek. Routine maintenance, such as tree removal or picking up trash, is classified as routine maintenance. An example of non-routine maintenance would be a creek bank stabilization project to repair the creek bank. Should you want to perform non-routine maintenance, there could be a formal permitting process that must be met by the USACE and or other required state or federal agencies. It is recommended that you discuss this with the City prior to moving forward.

FACT: When most of our older, existing subdivisions were developed, the City ordinance at that time utilized a creek bank setback of "30 feet from the centerline of the creek for the building line," which in most cases means that the creek traveling through the property is part of that parcel unless designated otherwise. Another example of designation would be an adjoining property-owner parcel, or subdivision common ground.

How Do I Prevent Erosion From Occurring?

- Check banks regularly for signs of erosion and address problems as they arise; do not wait for issues to get ahead of you.
- Avoid cutting down trees along the creek, because tree roots stabilize the bank itself. For the same reason, avoid removing native vegetation along the bank.
- Stabilize banks by planting trees, shrubs and flowers that are native to Missouri. Native plants growing within a riparian corridor help to retain soil, so it is recommended to plant bare areas with natives as quickly as possible.
- It's important to avoid planting non-native plants, because they can become invasive, taking over native woodland and wetlands. For example, bush honeysuckle, which is from Asia, is a hardy, invasive species that is seen spreading throughout the City and state, ruining woodlands. It is very difficult to eradicate. Although the pretty white flowers smell good and red berries are eaten by wildlife, the plant out-competes native trees and flowers. Birds, for example, need insect larvae like caterpillars to feed their young. Caterpillars for their part, can *only* live on native plants. No species of caterpillar or insect larvae can eat bush honeysuckle.

- There are many ways to remove bush honeysuckle, but most require the assistance of chemicals. We recommend researching the Internet to find the best method for eliminating invasives from your creek bank. A good source of reference is the Missouri Department of Conservation at http://mdc.mo.gov/your-property/problem-plants-and-animals/invasive-plants/bush-honeysuckles-control.

- In times of flooding, vegetated creek banks may help protect your property from eroding and flooding by slowing the flow of runoff into the creek, decreasing the abrasiveness of the quickly-flowing water. Vegetation also helps check upstream runoff by keeping the amount of runoff from overflowing creek banks and onto private property beyond the floodway/floodplain.
- **Well-vegetated creek banks can protect against erosion by:**
  - Providing roots that bind soil in place. Plant leaves also lessen the impact of falling rain drops, helping to keep soil particles in place.
  - Slowing the velocity of runoff.
  - Filtering soil out of runoff, keeping it out of creek channels.
  - Permitting water to infiltrate or filter into the soil, which also helps to remove pollutants and decrease volume.
  - Protecting creek banks from undercutting or slumping.
- **Never throw brush, grass clippings, pruning, leaves or other landscape materials onto the creek bank.**
  - Yard clippings can smother and kill plants growing along the bank. Without the roots of thriving vegetation to hold the soil in place, banks will become bare and may fail.
  - Clippings can also be carried into the creek by wind or rain and create a blockage downstream, causing erosion.
  - When these materials get into waterways and break down, they can contribute to decreased water quality by increasing nitrogen and phosphorous which can, in turn, encourage algae blooms that remove oxygen from the water, negatively affecting aquatic life.
  - **This practice is against City ordinance and can be a ticketable offense in which fines can be assessed (Ordinance section 405.245).**
- **Manage debris accumulation**
  - Accumulation of some natural materials in the creek and along the banks may create food and shelter for fish and wildlife. However, excessive debris could cause blockages and compromise the creek's ability to effectively carry stormwater. This can increase flooding and erosion.

  - Routinely check and remove fallen trees, branches, limbs and brush as well as trash, litter and other unwanted unnatural objects from your creek.
  - Use caution in removing tires and other items deeply buried in the creek bed or banks. Removing them may cause more disturbance and damage to the creek than if they are left in place. They may also be very heavy. Footing is usually unstable and with the additional weight of the object, be aware of potential safety concerns that can increase the difficulty in removing items as well as cause injury. Consult a professional for the best advice when removing large items such as tires.
  - Should you want to clean a creek of unwanted trash and debris on a section beyond your property, the City offers multiple volunteering events in the spring and fall that can assist you in getting this task completed. For more information, check the City's

Volunteer Services webpage at www.ofallon.mo.us/volunteer or contact the department at volunteer@ofallon.mo.us.

- We also assist with organizing subdivision creek cleanups. These are usually organized by the subdivision homeowners' association. For more information, contact Volunteer Services (above) or Stormwater Management at www.ofallon.mo.us/stormwater-management.

How Can I Protect The Portion Of The Creek That Runs Through My Property?

Control runoff by:

- Minimizing paved areas. Impervious (non-porous) concrete driveways, walkways and patios increase the amount and velocity of water that flows into creeks. Instead, build wooden decks, brick or stone patios, and use gravel, paving stones or concrete blocks to allow water to penetrate soil.
- Manage roof runoff in a way that protects your creek banks. For example, discharge pipes should not be allowed to drape down the creek bank. Either place the pipe at the flow level of the creek, or end the pipe several feet away from the top of the bank to allow runoff to soak into the soil instead of draining directly to the creek.
- Another method is to send the discharge into a flower bed or gravel to slow it down and allow it to soak in so that not all of the discharge reaches the creek itself. This practice will reduce erosion by decreasing the force of water against bare soil.
- Keep banks vegetated by planting or maintaining trees, shrubs, flowers and grasses which will help keep soil in place. Tree and plant canopies protect the soil from erosion by intercepting rainfall, decreasing the impact and percentage of raindrops directly hitting the earth. Also, native vegetation needs less water to survive and more easily adapts to flood conditions. In sum, plant growth serves to dissipate the energy, decrease the velocity and deflect the flow of runoff away from the bank, reducing the potential for transferring erosion problems to new locations.
- It is difficult to support vegetation on an eroding bank. Experts recommend that the area be temporarily stabilized with turf reinforcement mats (TRM) or other types of man-made materials designed to protect the surface until proper vegetation can be established. These TRMs are woven netting made of either synthetic or natural materials that are stapled onto the soil to hold them in place, and which will biodegrade over time.
- Preserve a "buffer strip" of dense natural vegetation at least 5-10 feet from the top of the bank, and do not mow up to the edge of the creek.
- Beware of planting shallow-rooted invasive plants (like bush honeysuckle) that will not effectively maintain creek stabilization and that can force out native plants. Whenever possible, it is recommended to remove invasive plants and replace them with beneficial native Missouri trees, shrubs and flowers.
- Get expert technical advice before attempting the vegetation of a creek bank if you are not well-acquainted with native Missouri plants, shrubs or trees that are beneficial to creek bank stabilization.
- There are many Internet reference resources and contractors that can assist you with choosing the correct plants for your site. Should you need assistance with

finding resources, please contact the City's Stormwater Management Coordinator at 636-240-2000.

- If your creek bank is steep and there is sufficient space between the top of the banks and your backyard, consider diminishing the bank's steepness by increasing the slope prior to trying to stabilizing the area or planting vegetation.
- If the creek is located in the common ground for the subdivision, it is recommended that the subdivision put together an inspection program to provide for creek bank maintenance. Depending on the state of the creek bank, homeowners may be able to provide the maintenance, or a contractor's help may be required.
- Be careful when placing rock on the creek bank to correct creek bank erosion. Usually very large rocks, called "rip rap" or "revetment rock," are utilized for creek bank stabilization. Be careful not to use rocks that are the wrong size or too small, as they are likely to wash away.
- Make sure to follow manufacturer's directions in applying chemicals to control vegetation, and keep in mind that healthy vegetation is the key to protecting your creek bank.

Frequently Asked Questions:

Subdivision detention or retention basins are designed to capture and slowly release stormwater while holding back pollutants such as sediment, debris and trash.

Who is responsible for construction and maintenance?

During development, developers have designated responsibility for proper construction and maintenance. After all stormwater infrastructure is in place and escrow is released, the maintenance responsibilities transfer to the homeowners associations (HOA). This maintenance includes but is not limited to, removal of debris built up, trash and excess sediment or silt. The City maintains the structures leading to the basin.

How often should a basin be mowed?

If all turf grass, then it should be kept at 8" in height or less. If your basin is or has been converted to a conservation area or mitigation area, then your mowing requirements may be different. We suggest calling the Stormwater Dept to discuss a mowing schedule for natives, conservation or mitigation areas.

Is the basin supposed to hold water?

Yes, basins are designed to hold large amounts of water and allow the water level to decrease slowly to protect downstream waterways and properties.

Why is the lake/pond full of mud?

If you have a lake/pond in your subdivision, it is probably a retention pond. It is designed to remain "wet" and its job is to capture and release stormwater slowly while trapping sediment. Over time, these basins fill up with silt/ sediment and require maintenance such as dredging to remain functional and prevent pollution.

Published by
City of O'Fallon, Missouri

Citizen's Guide
Retention Pond & Detention Basin Maintenance

Detention Basin

Retention Pond

DETENTION BASIN MAINTENANCE

(DRY BASIN)

Operation & Maintenance

- Should not only occur when a complaint is received
- Should be both “preventive” and “corrective”

Maintenance Problems & How Often To Address

- Grass and Weed Growth
  As needed
- Sedimentation
  Bi-Annually or as needed
- Bank Deterioration
  Bi-Annually or as needed
- Mosquito Control
  As needed
- Outlet Stoppage
  Bi-Annually or as needed
- Concrete Swale Maintenance
  Bi-Annually or as needed
- Standing Water or Soggy
  Monthly or 72 hours after rain
- Pollution/Trash/Debris
  Monthly or 72 hours after rain
- Algal or Fungal Growth
  As needed
- Outfall Structure
  Bi-Annually or as needed
- Safety Device Maintenance
  Bi-Annually or as needed

RETENTION BASIN MAINTENANCE

(WET BASIN)

Operation & Maintenance

- Should not only occur when a complaint is received
- Should be both “preventive” and “corrective”

Maintenance Problems & How Often To Address

- Grass and Weed Growth
  As needed
- Sedimentation
  Every 5-10 Years
- Bank Deterioration
  Bi-Annually or as needed when volume has become reduced (roughly 15-20% of the basin)
- Mosquito Control
  As needed
- Aquatic Plants
  Nuisance Plants-Early spring and late fall
- Pollution/Trash/Debris
  Monthly or as needed
- Algae Growth
  As needed (do not fertilize close to banks)
- Outfall Blockage
  Bi-Annually or as needed
- Safety Device Maintenance
  Bi-Annually or as needed

Report all dumping or hazardous waste spillage concerns immediately to:
City of O’Fallon Stormwater Management Coordinator at
(636) 240-2000
Missouri Department of Natural Resources at
(314) 416-2960

How is Stormwater Affected by the Steps Required?

These are recommendations made in order to protect our stormwater quality throughout the City limits.

These requirements fall under our NPDES Phase II Stormwater Permit requirements for Pollution Prevention and Municipal Good Housekeeping.

Not following these requirements, will result in pollution of our local waterways. Unlike water treated by sanitary sewer operations, water that goes directly into storm sewers is not treated prior to entering the local waterway, i.e. creek/stream, lake or retention pond.

- This water eventually becomes our drinking water and the more polluted it is, the more expensive it is to treat causing your water utility bill to increase.
- Chlorine as well as other pollutants, directly enters the waters that are used for recreational purposes such as fishing, boating, swimming.
- Polluted water that directly enters the local waterways can kill fish and important vegetation in the water or along the banks. These nutrients and wildlife are vital to the survival of the local waterways.

For further questions regarding these requirements or other related stormwater inquiries, please contact:

City of O'Fallon

Stormwater Management Coordinator
100 N. Main St
O'Fallon MO 63366

Phone: 636.240.2000
E-mail: stormwater@ofallon.mo.us

City of O'Fallon

STORMWATER MANAGEMENT

POOL INSTALLATION AND GRADING GUIDE FOR STORMWATER MANAGEMENT

TEL: 636.240.2000

Recommendations for Installing Swimming Pools & Spas

WHAT DO I NEED TO DO BEFORE I INSTALL MY POOL/SPA?

- A permit application must be completed, reviewed and approved by the Building Department.
- Fencing and other regulations will also be required with application.
- Be conscious of placement of discharge pipes or other.
- **Obtain a copy of pool/spa discharge guidelines.**
- City approval does not constitute subdivision approval. The City recommends you contact your homeowner's association trustees in your subdivision for any subdivision requirements.

GRADING-DRAINAGE AREA

Installation of a pool and some spas affects the existing drainage area where stormwater and irrigation water flows.

It is very important to incorporate adjustments for this prior to installing your pool/spa. It should be part of the plan ahead of the permit application.

- Obtain a copy of the drainage area or grading plan for your lot and neighboring properties prior to installation of your pool.
- Look at the existing conditions of your yard and neighboring properties for changes to the original grading/drainage area by items such as patio addition, landscaping features, swing sets, etc.
- Discuss with a professional the best placement of your pool/spa as it is not permitted to alter the flow of water to or from adjacent properties.
- **Erosion and sediment control practices are required and if not followed and violations occur, they will be prosecuted to the full extent of the law which may result in fines up to a maximum of $500.00 per day and/or 90 days in jail.**

OTHER THINGS YOU SHOULD KNOW

- Pools/Spas, equipment and or decks shall not encroach into the approved side and rear yard property lines (discuss with the Building Dept.).
- Shall not cross into any easements.
- Overhead power lines must be accounted for and procedures followed as stated by the Building Department.
- Pools/spas have discharge guidelines that must be followed in order to protect water quality and prevent nuisance for neighboring properties.
- Make sure that you follow the City Building Department codes and requirements.

Enjoy your Pool/Spa!

Example Rain Garden Plants

Arrowhead
Sagittaria latifolia
(1-3' High, Blooms: July-Sept.)

Bottlebrush sedge
Carex hystericina
(1-3' High, Blooms: May-July)

Cardinal flower
Lobelia cardinalis
(2-4' High, Blooms: July-Sept.)

Culver's root
Veronicastrum virginicum
(3-5' High, Blooms: July-Aug.)

False Dragon's Head
Physostegia virginiana
(1-4' High, Blooms: July-Sept.)

Fox sedge
Carex vulpinoidea
(1-3' High, Blooms: June-Aug.)

Golden Alexander
Zizia aurea
(1-2' High, Blooms: May-June)

Great blue lobelia
Lobelia siphilitica
(1-4' High, Blooms: Aug-Sept.)

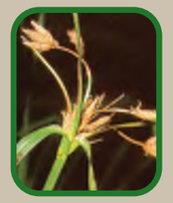
Green bulrush
Scirpus atrovirens
(2-4' High, Blooms: May-July)

Purple prairie clover
Dalea purpurea
(1-2' High, Blooms: June-Aug.)

Mountain mint
Pycnanthemum virginianum
(1-4' High, Blooms: July-Sept.)

New England aster
Aster novae-angliae
(1-4' High, Blooms: Aug.-Oct.)

Prairie blazing star
Liatris pycnostachya
(2-4' High, Blooms: July-Sept.)



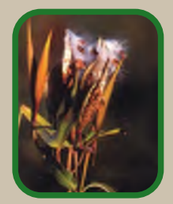
River bulrush
Scirpus fluviatilis
(3-5' High, Blooms: June-Aug.)

Dogtooth Daisy
Helenium autumnale
(2-4' High, Blooms: Aug.-Oct.)

Soft-stemmed bulrush
Scirpus validus
(3-9' High, Blooms: May-July)

Spotted Joe-pye
Eupatorium maculatum
(2-5' High, Blooms: July-Sept.)

Stiff goldenrod
Solidago rigida
(1-4' High, Blooms: July-Oct.)



Red milkweed
Asclepias incarnata
(2-4' High, Blooms: July-Aug.)

Sweet flag
Acorus calamus
(1-3' High, Blooms: May-June)

Torrey's rush
Juncus torreyi
(1-3' High, Blooms: June-July)

Water plantain
Alisma subcordatum
(1-3' High, Blooms: June-Sept.)

Wild bergamot
Monarda fistulosa
(2-4' High, Blooms: July-Aug.)

Wild blue flag iris
iris virginica shrevei
(1-3' High, Blooms: May-July)

Want more information?

Taylor Creek Restoration Nurseries
Brodhead, WI • 608.897.8641
www.appliedeco.com/tcrn/

Spring Lake Restoration Nurseries
Prior Lake, MN • 952.447.1919
www.appliedeco.com/slrn/

For more information on Native Landscape Design, contact Applied Ecological Services:
608.897.8641 • www.appliedeco.com/NLD.cfm

For more details on Rain Garden construction, go to: www.dnr.state.wi.us/org/water/wm/dsfm/shore/raingarden.htm.

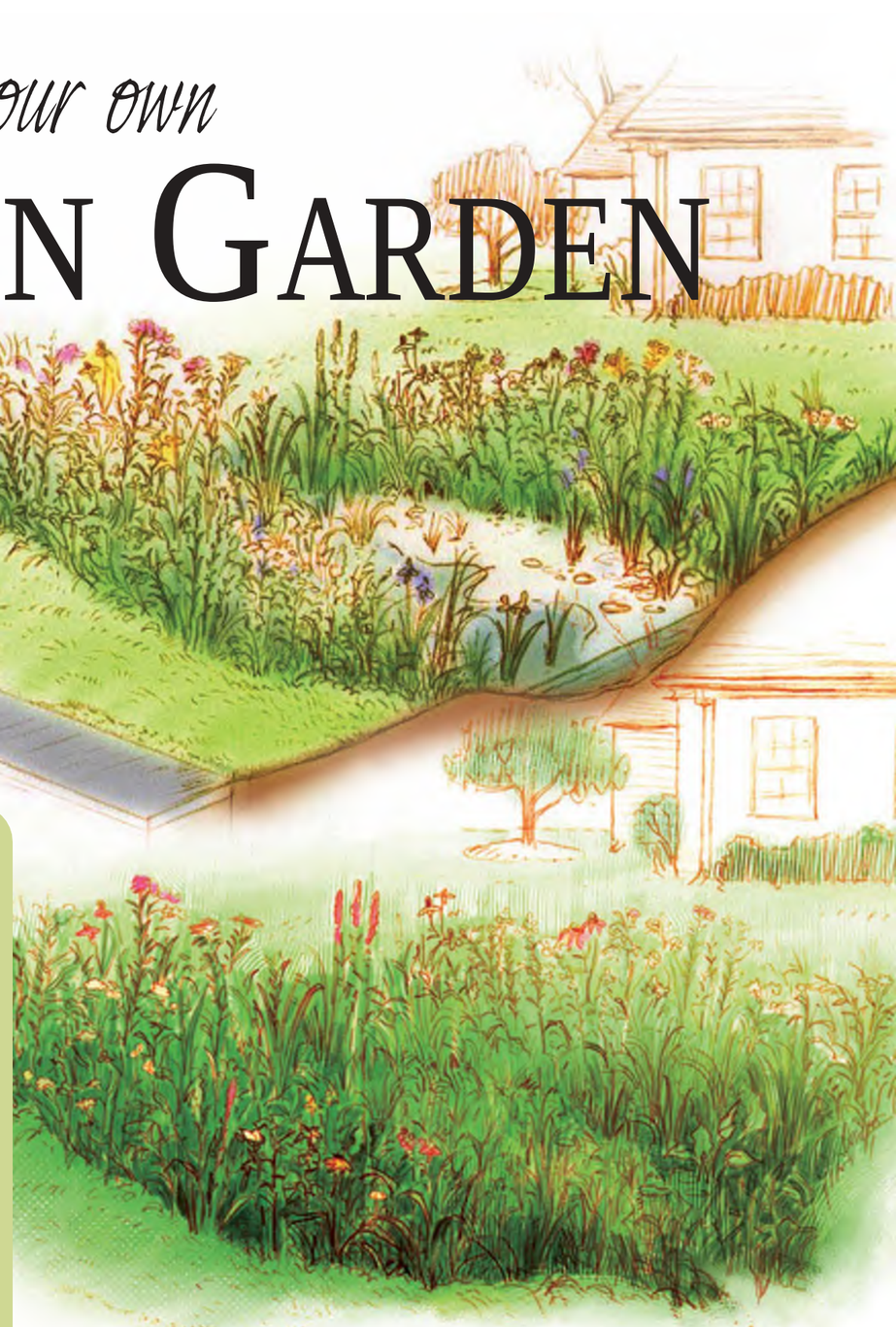
Taylor Creek Restoration Nurseries, *Spring Lake Restoration Nurseries* and *Native Landscapes by AES* are divisions of Applied Ecological Services, Inc., 17921 Smith Road, Brodhead, WI 53520. Visit us at **www.appliedeco.com**.

Build your own

Rain Garden

What is a Rain Garden?

A "Rain Garden" is simply a shallow depression in your yard that's planted with native wetland or wet prairie wildflowers and grasses.



Trust the experts!
Authentic native plants and seed

Perennial Garden Design Sheet #1

Rain Garden Design

What is a Rain Garden?

A Rain Garden is simply a shallow depression in your yard that is planted with native wetland or wet prairie wildflowers and grasses. It is designed to naturally collect water that runs off from your roof or is discharged from your sump pump. Rain Gardens are gaining popularity for three reasons:

1. Rain Gardens make good use of stormwater runoff, conserving precious water supplies and helping protect water quality in downstream lakes and streams.

2. Rain Gardens are planted with beautiful, hardy, low-maintenance native perennial plants.

3. Rain Gardens provide food and shelter for birds, butterflies and beneficial insects, such as mosquito-devouring dragonflies!

DRAGONFLY SEAL OF APPROVAL

Simple, Straightforward Construction

It's not complicated. Just follow these easy steps:

1. Dig a shallow depression with a level bottom, as large in circumference as you'd like.

2. Direct your downspout or sump pump outlet to your Rain Garden, either by digging a shallow swale—a linear depression designed to channel water—or by routing it through a buried 4" PVC pipe.

3. Plant the native plants recommended in this design sheet.

4. Water your planting every other day for the first few weeks, until plants are growing and well-established.

Once your native Rain Garden plants are established, they'll thrive well without additional watering. Fertilizers are not necessary.

Location, Location, Location

Pick a naturally low spot in your yard—at least 10 feet from your house—and direct water from your downspout or sump pump into it. Full sun is best, but make sure the site gets at least a half-day of sunlight.

During heavy rains, your rain garden may fill up and overflow. Make sure this overflow drainage follows the drainage pattern originally designed for your lot. Test this by filling your depression with a garden hose and watching the overflow. If needed, dig a shallow swale to direct overflow water toward the street, road or other downhill areas away from buildings.

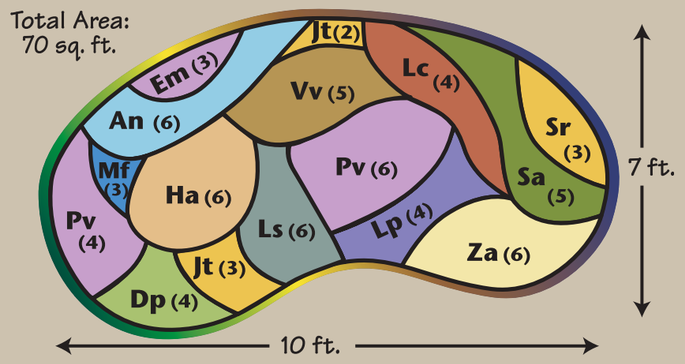
Digging In

A depression of two to six inches will suffice. Slope the sides gradually from the edge to the level bottom. Deeper rain gardens in heavy clay soils will hold water longer. Test this with a garden hose. French drains can be installed to aid infiltration.

More Tips

- Hand weed biweekly until native plants are established.
- Avoid using lawn fertilizers near the Rain Garden. Fertilizers will stimulate weed competition without benefitting your native plants.
- Don't worry about mosquitoes. Most rain gardens will not hold water long enough for mosquitoes to reproduce. Even so, dragonflies, swallows and other natural control processes will keep them in check.
- Come spring, mow and remove dead vegetation. Or simply burn it off if your fire department regulations allow it. Native plants thrive under fire management.
- Place natural rocks, bird houses, a bench or garden ornaments in and around your Rain Garden—be creative! You'll learn and have fun in designing your own backyard landscape.
- Add plenty of native sedges and grasses to physically support taller species and provide a visually textured background that ties the garden together.

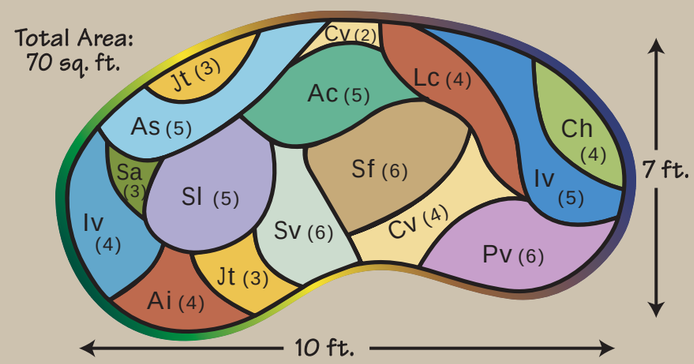
Example Rain Garden for Well-Drained to Sandy Soils



Abbrev.	Common Name	Species Name	No. of Plants	Shopping List
An	New England aster	*Aster novae-angliae*	6	☐
Dp	Purple prairie clover	*Dalea purpurea*	4	☐
Em	Spotted Joe-Pye	*Eupatorium maculatum*	3	☐
Ha	Dogtooth Daisy	*Helenium autumnale*	6	☐
Jt	Torrey's rush	*Juncus torreyi*	5	☐
Lp	Prairie blazing star	*Liatris pycnostachya*	4	☐
Lc	Cardinal flower	*Lobelia cardinalis*	4	☐
Ls	Great blue lobelia	*Lobelia siphilitica*	6	☐
Mf	Wild bergamot	*Monarda fistulosa*	3	☐
Pv	Mountain mint	*Pycanthemum virginianum*	10	☐
Sa	Green bulrush	*scirpus atrovirens*	5	☐
Sr	Stiff goldenrod	*Solidago rigida*	3	☐
Vv	Culver's root	*Veronicastrum virginicum*	5	☐
Za	Golden Alexander	*Zizia aurea*	6	☐
		Total Plants Needed	**70**	

These designs are examples only. Please contact our nurseries for additional recommended species. With information on your region and site conditions, we can tailor the species selections with suggestions that are most appropriate for your rain garden.

Example Rain Garden for Clay Soils



Abbrev.	Common Name	Species Name	No. of Plants	Shopping List
Ac	Sweet flag	*Acorus calamus*	5	☐
Ai	Red milkweed	*Asclepias incarnata*	4	☐
As	Water plantain	*Alisma subcordatum*	5	☐
Ch	Bottle brush sedge	*Carex hystricina*	4	☐
Cv	Fox sedge	*Carex vulpinoidea*	6	☐
Iv	Wild blue flag iris	*Iris virginica shrevei*	9	☐
Jt	Torrey's rush	*Juncus torreyi*	6	☐
Lc	Cardinal flower	*Lobelia cardinalis*	4	☐
Pv	False dragon's head	*Physostegia virginiana*	6	☐
Sl	Arrowhead	*Sagittaria latifolia*	5	☐
Sa	Green bulrush	*Scirpus atrovirens*	3	☐
Sf	River bulrush	*Scirpus fluviatilis*	6	☐
Sv	Soft-stemmed bulrush	*Scirpus validus*	6	☐
		Total Plants Needed	**69**	

Annual Stormwater Report--Exhibit C

Storm Drain Marking-June 13, 2014 to June 12, 2015

Date	Volunteers	#Inlets	#Door Hangers	# Brochures	#Surveys	Descriptions
10/25/14	9	190				Forest Park/Willow Run-Make A Difference day
Total	**9**	**190**	**0**	**0**	**0**	

*Brochures were related to storm drain stenciling activities compliments of Missouri Stream Team
*Surveys were created by students and compiled for math project at their school
*Door Hangers were from EPA and relating to general water pollution prevention

Annual Stormwater Report--Exhibit D

Creek Cleanup Projects-June 13, 2014 to June 12, 2015

Date	# Volunteers	Tons	Location		
10/25/14	150		Make A Difference Day	Creek cleanups	
4/11/15	186	8	Mission Clean Stream (63 tires)	Creek cleanups	
5/2/15	3		Parkview-private clean up (4 tires)	Subdivision Creek Clean Up	
5/9/15	10		Homefield-private clean up	Subdivision Lake and Common Ground	
Total	**349**	**8**			

(Feet calculated via GIS map ruler)

FAQ's:

Do I have to do it JUST like this?
No. This can be used as a guideline. Holes may be put in whatever location works best for your house. Or other changes can be made as you prefer.

Can I paint it?
Yes, barrels can be painted using spray paint designed for adhering to plastic such as Krylon Plastic Fusion or Rust-Oleum Plastic Primer. You can also be creative with your rain barrel by building a structure around it, or perhaps some fencing that ivy or other climbing plants can attach to making it a natural "screen."

How can I increase the water pressure?
Rain barrels rely on gravity for pressure so the higher the rain barrel is raised, the more pressure it has. For watering gardens, attaching a soaker hose works wonderfully.

What about mosquitoes?
The netting over the atrium basket should deter most mosquitoes, but eggs may still drop through. There are several additional ways to ensure their absence. One method is adding a tablespoon of vegetable oil each season or try a mosquito dunk wh ich can be purchased at most home supply stores. This biological pest control product kills mosquito larvae but is completely non-toxic to plants and animals such as fish, birds, wildlife and pets. Each dunk kills mosquito larvae for 30 days or more.

This material is based upon work supported by the Corporation for National and Community Service under AmeriCorps Grant No. 06AFHMO0010005. Opinions and point of view expressed in this document do not necessarily reflect the official position of the Corporation or the AmeriCorps Program.

Rain barrel on front cover painted by Charli Stout.

How to make a Rain Barrel

WATERSHED CENTER

JAMES RIVER BASIN PARTNERSHIP

Why use a rain barrel?

An average home with a roof size of 1,000 square feet will generate approximately 600 gallons of water from a 1-inch rainfall. Collecting and using this water with rain barrels helps reduce the demand on public and private water supplies, and reduces pollution, flooding, and erosion in local waterways by reducing storm water runoff.

How do I use the water?

The water that you collect in your rain barrel can be used to water indoor and outdoor potted plants and landscaped areas, clean off gardening tools, wash your car, and for other non-potable uses.

What do I need to get started?

You will need the following supplies:

- 55 gallon plastic (food grade) barrel
- Silicone
- Felt tip pen
- Teflon tape
- 4" atrium basket
- Old pantyhose or knee highs
- Flexible downspout
- (2) 3/4" hose bib

Tools needed:

- Jigsaw
- 1" holesaw
- Hacksaw (for cutting downspout if desired)

Directions:

Clean out barrel as needed.

Place atrium basket upside down over bung hole and trace.

Use jigsaw to cut out hole just inside of traced line.

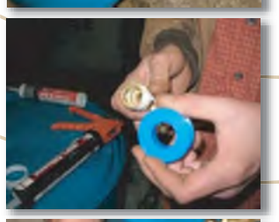
Decide which side you want your overflow valve, then measure down 2" from the top of barrel.

Drill hole using 1" holesaw.

Repeat procedure for the bottom of the barrel. This will be your main spigot where you can either attach a hose or use to fill a bucket or watering can.

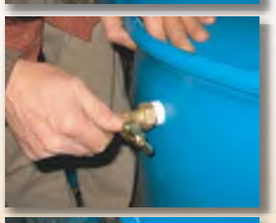
Drill hole using 1" holesaw from bottom of the barrel.

Wrap spigot threads with Teflon tape.

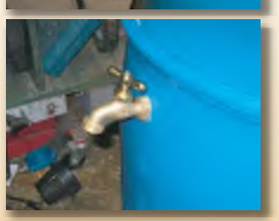


Put a bead of silicone around hole.

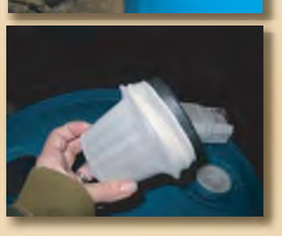
Screw spigot into hole and let dry.



Do this with both spigots.

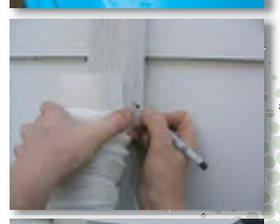


Cover bottom of atrium basket with foot of pantyhose and drop in the hole on top of the barrel.



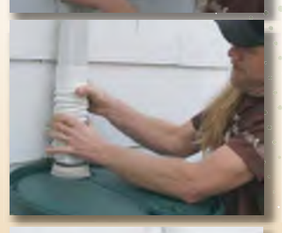
May need to line the edge of the hole with silicon and then let dry before placing basket in hole to ensure a tight fit.

At this point paint barrel if desired (see FAQ on back page).

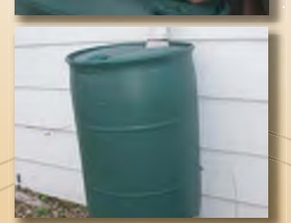


Elevate the constructed barrel next to down-spout. Concrete blocks work well. Bend flexible downspout into the basket, align with structure's downspout, and mark where the flexible downspout will be connected.

Using a hacksaw, make a horizontal cut on the the structure's downspout.



Attach flexible down-spout to regular downspout.



Attach piece of hose to overflow valve and direct away from your home's foundation.

Be sure to let all silicone dry thoroughly before filling with rain.

Enjoy your new rain barrel!

Rain Barrel Use and Care:

Place on raised surface to increase water pressure.

Keep screen free of debris.

Clean out gutters on a regular basis or use gutter screens.

Unhook barrel in winter to prevent freezing.

Direct overflow outlet away from foundation. Use water in barrel regularly so it will be empty for next rain.

For more information, contact:
The City of O'Fallon, MO
Stormwater Management
(636) 240-2000

Information provided in this brochure is courtesy of James River Basin Partnership and Watershed Center

What Are Rain Barrels and Why Should I Use One?

A rain barrel is a container that collects and stores the water from roofs and downspouts for future uses such as watering lawns, gardens, and house plants; cleaning off gardening tools; and washing your car.

Rain barrels help to **lower your water bills**, particularly in the summer months by collecting thousands of gallons of free water a year that you don't have to buy!

Rain barrels are also important for our environment because they help reduce water pollution by decreasing the amount of stormwater runoff reaching our streams and rivers. **Think about it.** The average rainfall of one inch within a 24 hour period can produce more than 700 gallons of water that run off a typical house! While it's running from our homes and lawns, this stormwater picks up anything on the ground such as litter, excess fertilizer, pet waste, and motor oil and transports it to storm drains that **DO NOT** treat the water before dumping it directly into our waterways. So, rain barrels play an important role in protecting our water resources by collecting the stormwater runoff from our homes before it reaches our local streams and rivers.

Using rain barrels is a great way to decrease your household's impact on local waterways and to help you become a good steward of our local waterways. This brochure will show you how to make your own rain barrel by following a few simple steps!

Important Tips for Using Your Rain Barrel

- Do not use collected water for drinking, cooking or bathing.
- Keep lid secure so children and pets cannot fall in and make sure that all other openings are secured to help prevent mosquitoes from entering the barrel.
- The atrium gate should prevent most mosquitoes but eggs could still fall through so for added mosquito prevention add a tablespoon of vegetable oil to the water every season or try a mosquito dunk that kills mosquito eggs but is non toxic to plants and animals.
- When using the overflow valve, make sure water drains away from structures and does not flow onto pavement, sidewalks, or neighboring properties.
- Disconnect the barrel from the downspout during winter months to avoid the formation of damaging ice in the barrel.
- Paint or decorate your rain barrel to make it a distinct part of your yard or garden!

For more information contact:
The City of O'Fallon, MO
Stormwater Management
(636)-240-2000

Information contained in this brochure provided courtesy of:

Appoquinimink River Association
www.apporiver.org

Thank you to John Harrod of the Delaware Nature Society for his assistance on the creation of this brochure!

Funding for this brochure was supplied by the EPA Clean Water Act 319 funding through the DNREC Division of Soil and Water Conservation Nonpoint Source Section.

Rain Barrels

What Do I Need to Get Started?

All of the following items can be purchased at your local hardware store for **a total cost of around $30** depending on the type of trash can and brand of fittings you purchase.

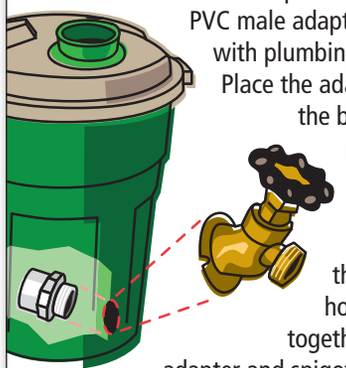
- Outdoor trash can with lid
  (any size will work – the larger, the more water you will collect)
- Downspout flex-elbow
- 6 inch atrium grate
- Sump pump drain hose kit
  (kit includes: one ¼ inch, 24 ft. hose, and one 1¼ inch insert male adapter)
- 1¼ inch PVC female adapter
- ¾ inch spigot with sillcock
- ¾ inch PVC male adapter
  (do not get CPVC male adapter)
- Electric drill
- 1 inch drill hole saw
  (type of drill bit)
- 1½ inch drill hole saw
  (type of drill bit)
- File
- Silicon caulk
- Plumbing tape
  (also known as Teflon tape)
- Felt tip pen
- Utility scissors or utility knife
- Hacksaw
  (for cutting downspout if desired)
- 2-4 Concrete blocks

5 Easy Steps to Make a Rain Barrel

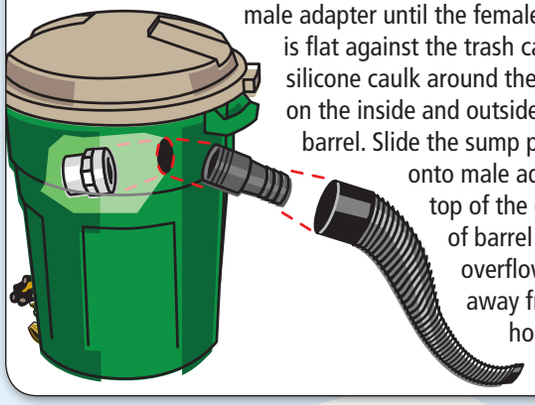
These steps serve as a guideline for the construction of your own rain barrel. Changes can be made based on your personal preferences.

STEP 1: Trace the outline of the top of the atrium grate (largest circle) on the top of the barrel with a felt tip pen. Next, with utility scissors or a utility knife, cut a hole out of the lid by following the traced line. The hole should be snug enough to allow the atrium gate edge to sit on top of the barrel securely without falling in. This allows water to flow into the barrel and keep debris and animals out.

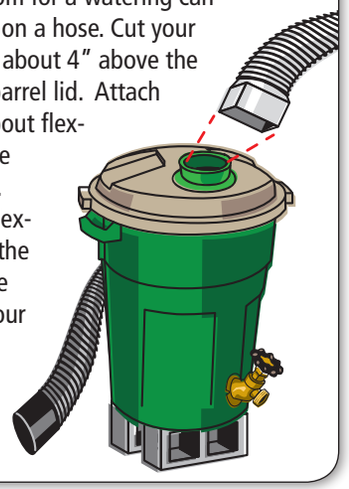
STEP 2: Drill a 1 inch hole about 1½ to 2 inches from the bottom of the barrel. Leave enough distance between the hole and the barrel's bottom to allow the barrel to sit flat on the ground without the spigot hitting the ground. Insert spigot on outside of barrel. Wrap the ¾ inch PVC male adapter threads with plumbing tape. Place the adapter inside the barrel and place the threaded end of the adapter through the hole. Screw together the adapter and spigot so that the spigot is tight against the trash can. Use silicone caulk to seal the hole on the inside and outside of the barrel.



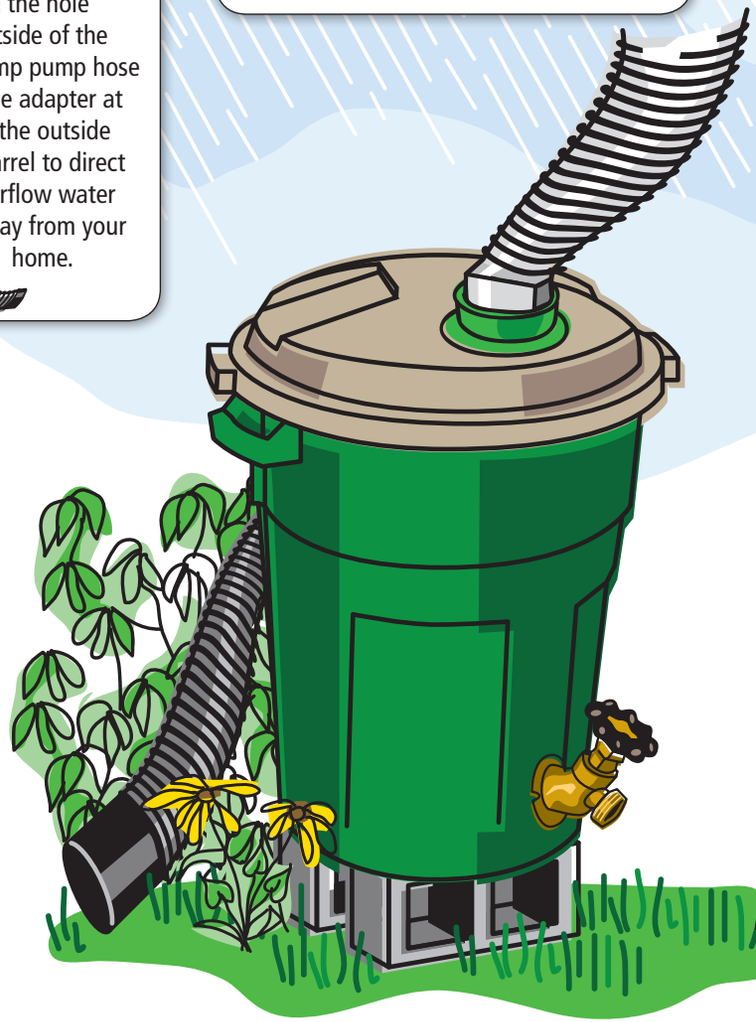
STEP 3: Choose the side of the barrel that you want to place your overflow valve, and drill a 1½ inch hole about one to two inches below the top of the barrel. Use your file to enlarge the hole enough to insert the 1¼ inch male adapter from the outside of the hole. Screw together the 1¼ inch female adapter on the inside to the male adapter until the female adapter is flat against the trash can. Place silicone caulk around the hole on the inside and outside of the barrel. Slide the sump pump hose onto male adapter at top of the outside of barrel to direct overflow water away from your home.



STEP 4: Place 2 concrete blocks under your selected downspout as a raised base to allow room for a watering can or to screw on a hose. Cut your downspout about 4" above the top of the barrel lid. Attach the downspout flex-elbow to the downspout. Direct the flex-elbow into the atrium grate on top of your trash can.



STEP 5: Congratulate yourself on your hard work and for making a difference in reducing stormwater pollution. Make sure to let all the caulk dry thoroughly before using. Enjoy your rain barrel!



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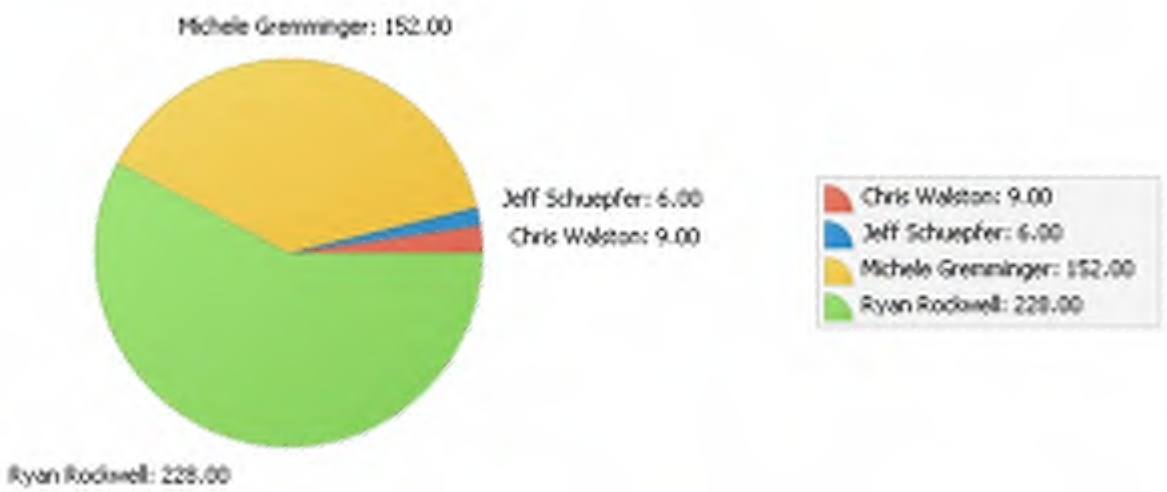


Chris Walston

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	10/30/2014	Yes	7/16/2014	W016839-071614	Completed	Report Storm Water Concern
Stormwater	10/29/2014	Yes	9/3/2014	W017452-090314	Completed	Report Storm Water Concern
Stormwater	5/18/2015	Yes	9/11/2014	W017588-091114	Completed	Report Storm Water Concern
Stormwater	10/23/2014	Yes	9/17/2014	W017668-091714	Completed	Report Storm Water Concern
Stormwater	4/27/2015	Yes	9/18/2014	W017688-091814	Completed	Report Storm Water Concern
Stormwater	10/2/2014	Yes	9/26/2014	W017772-092614	Completed	Report Storm Water Concern
Stormwater	5/11/2015	Yes	12/29/2014	W018551-122914	Completed	Report Storm Water Concern
Stormwater	1/13/2015	Yes	12/29/2014	W018552-122914	Completed	Report Storm Water Concern
Stormwater	1/8/2015	Yes	1/8/2015	W018657-010815	Completed	Report Storm Water Concern

Jeff Schuepfer

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	6/26/2014	Yes	6/25/2014	W016557-062514	Completed	Report Storm Water Concern
Stormwater	7/1/2014	Yes	7/1/2014	W016646-070114	Completed	Report Storm Water Concern
Stormwater	7/2/2014	Yes	7/2/2014	W016672-070214	Completed	Drainage Issue
Stormwater	7/2/2014	Yes	7/2/2014	W016677-070214	Completed	Report Storm Water Concern

Jeff Schuepfer

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	10/29/2014	Yes	10/27/2014	W018069-102714	Completed	Drainage Issue
Stormwater	1/29/2015	Yes	1/21/2015	W018759-012115	Completed	Drainage Issue

Michele Gremminger

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	6/26/2014	Yes	6/13/2014	W016383-061314	Completed	Report Storm Water Concern
Stormwater	6/26/2014	Yes	6/13/2014	W016385-061314	Completed	Drainage Issue
Stormwater	6/26/2014	Yes	6/16/2014	W016398-061614	Completed	Drainage Issue
Stormwater	6/23/2014	Yes	6/16/2014	W016405-061614	Completed	Drainage Issue
Stormwater	6/23/2014	Yes	6/18/2014	W016449-061814	Completed	Report Storm Water Concern
Stormwater	7/7/2014	Yes	6/23/2014	W016497-062314	Completed	Drainage Issue
Stormwater	6/26/2014	Yes	6/23/2014	W016502-062314	Completed	Report Storm Water Concern
Stormwater	6/23/2014	Yes	6/23/2014	W016503-062314	Completed	Report Storm Water Concern
Stormwater	7/15/2014	Yes	6/23/2014	W016507-062314	Completed	Drainage Issue
Stormwater	6/28/2014	Yes	6/23/2014	W016508-062314	Completed	Drainage Issue
Stormwater	7/15/2014	Yes	6/23/2014	W016510-062314	Completed	Drainage Issue
Stormwater	6/28/2014	Yes	6/24/2014	W016525-062414	Completed	Report Storm Water Concern
Stormwater	6/28/2014	Yes	6/25/2014	W016562-062514	Completed	Drainage Issue
Stormwater	9/3/2014	Yes	6/25/2014	W016563-062514	Completed	Report Storm Water Concern
Stormwater	6/28/2014	Yes	6/25/2014	W016571-062514	Completed	Report Storm Water Concern
Stormwater	7/7/2014	Yes	6/26/2014	W016575-062614	Completed	Drainage Issue
Stormwater	6/26/2014	Yes	6/26/2014	W016584-062614	Completed	Report Storm Water Concern
Stormwater	9/23/2014	Yes	6/26/2014	W016590-062614	Completed	Drainage Issue
Stormwater	6/28/2014	Yes	6/28/2014	W016612-062814	Completed	Drainage Issue
Stormwater	7/7/2014	Yes	6/30/2014	W016637-063014	Completed	Drainage Issue
Stormwater	7/7/2014	Yes	7/1/2014	W016647-070114	Completed	Drainage Issue
Stormwater	7/15/2014	Yes	7/1/2014	W016662-070114	Completed	Report Storm Water Concern
Stormwater	7/8/2014	Yes	7/3/2014	W016688-070314	Completed	Drainage Issue
Stormwater	7/25/2014	Yes	7/3/2014	W016690-070314	Completed	Drainage Issue
Stormwater	7/11/2014	Yes	7/10/2014	W016788-071014	Completed	Drainage Issue
Stormwater	7/15/2014	Yes	7/10/2014	W016789-071014	Completed	Drainage Issue
Stormwater	7/15/2014	Yes	7/15/2014	W016837-071514	Completed	Report Storm Water Concern

Michele Gremminger

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	8/27/2014	Yes	7/17/2014	W016860-071714	Completed	Report Storm Water Concern
Stormwater	7/17/2014	Yes	7/17/2014	W016869-071714	Completed	Drainage Issue
Stormwater	7/23/2014	Yes	7/23/2014	W016920-072314	Completed	Report Storm Water Concern
Stormwater	4/30/2015	Yes	7/23/2014	W016924-072314	Completed	Drainage Issue
Stormwater	8/5/2014	Yes	7/28/2014	W016983-072814	Completed	Ask a Question
Stormwater	1/21/2015	Yes	7/29/2014	W017013-072914	Completed	Report Storm Water Concern
Stormwater	8/5/2014	Yes	8/5/2014	W017125-080514	Completed	Report Storm Water Concern
Stormwater	8/6/2014	Yes	8/5/2014	W017134-080514	Completed	Ask a Question
Stormwater	8/12/2014	Yes	8/8/2014	W017175-080814	Completed	Drainage Issue
Stormwater	8/8/2014	Yes	8/8/2014	W017176-080814	Completed	Drainage Issue
Stormwater	8/27/2014	Yes	8/15/2014	W017254-081514	Completed	Report Code Violation
Stormwater	12/3/2014	Yes	8/21/2014	W017328-082114	Completed	Report Storm Water Concern
Stormwater	8/27/2014	Yes	8/25/2014	W017353-082514	Completed	Question, issue, or concern
Stormwater	8/27/2014	Yes	8/27/2014	W017380-082714	Completed	Question, issue, or concern
Stormwater	8/28/2014	Yes	8/28/2014	W017395-082814	Completed	Question, issue, or concern
Stormwater	9/22/2014	Yes	8/28/2014	W017402-082814	Completed	Drainage Issue
Stormwater	9/3/2014	Yes	9/2/2014	W017438-090214	Completed	Report Storm Water Concern
Stormwater	9/3/2014	Yes	9/3/2014	W017454-090314	Completed	Drainage Issue
Stormwater	9/4/2014	Yes	9/4/2014	W017469-090414	Completed	Report Storm Water Concern
Stormwater	9/11/2014	Yes	9/4/2014	W017471-090414	Completed	Drainage Issue
Stormwater	9/23/2014	Yes	9/4/2014	W017474-090414	Completed	Report Storm Water Concern
Stormwater	9/4/2014	Yes	9/4/2014	W017480-090414	Completed	Drainage Issue
Stormwater	9/11/2014	Yes	9/4/2014	W017481-090414	Completed	Drainage Issue
Stormwater	9/5/2014	Yes	9/5/2014	W017508-090514	Completed	Question, issue, or concern
Stormwater	9/23/2014	Yes	9/5/2014	W017511-090514	Completed	Report Storm Water Concern
Stormwater	9/11/2014	Yes	9/8/2014	W017518-090814	Completed	Drainage Issue
Stormwater	9/22/2014	Yes	9/15/2014	W017609-091514	Completed	Drainage Issue
Stormwater	9/15/2014	Yes	9/15/2014	W017610-091514	Completed	Drainage Issue
Stormwater	9/22/2014	Yes	9/15/2014	W017611-091514	Completed	Drainage Issue
Stormwater	9/22/2014	Yes	9/15/2014	W017614-091514	Completed	Drainage Issue

Michele Gremminger

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	9/15/2014	Yes	9/15/2014	W017616-091514	Completed	Drainage Issue
Stormwater	9/15/2014	Yes	9/15/2014	W017623-091514	Completed	Question, issue, or concern
Stormwater	9/26/2014	Yes	9/15/2014	W017624-091514	Completed	Drainage Issue
Stormwater	9/23/2014	Yes	9/23/2014	W017718-092314	Completed	Drainage Issue
Stormwater	9/23/2014	Yes	9/23/2014	W017719-092314	Completed	Drainage Issue
Stormwater	1/28/2015	Yes	9/24/2014	W017749-092414	Completed	Report Storm Water Concern
Stormwater	10/8/2014	Yes	9/26/2014	W017779-092614	Completed	Drainage Issue
Stormwater	10/3/2014	Yes	10/1/2014	W017855-100114	Completed	Question, issue, or concern
Stormwater	10/6/2014	Yes	10/6/2014	W017885-100614	Completed	Question, issue, or concern
Stormwater	10/8/2014	Yes	10/8/2014	W017909-100814	Completed	Drainage Issue
Stormwater	12/16/2014	Yes	10/13/2014	W017939-101314	Completed	Report Storm Water Concern
Stormwater	10/13/2014	Yes	10/13/2014	W017944-101314	Completed	Drainage Issue
Stormwater	10/31/2014	Yes	10/22/2014	W018035-102214	Completed	Report Storm Water Concern
Stormwater	11/3/2014	Yes	11/3/2014	W018154-110314	Completed	Drainage Issue
Stormwater	11/17/2014	Yes	11/5/2014	W018187-110514	Completed	Drainage Issue
Stormwater	12/16/2014	Yes	12/4/2014	W018355-120414	Completed	Drainage Issue
Stormwater	12/10/2014	Yes	12/10/2014	W018419-121014	Completed	Question, issue, or concern
Stormwater	1/28/2015	Yes	12/17/2014	W018478-121714	Completed	Drainage Issue
Stormwater	1/28/2015	Yes	12/31/2014	W018584-123114	Completed	Drainage Issue
Stormwater	1/9/2015	Yes	12/31/2014	W018585-123114	Completed	Question, issue, or concern
Stormwater	2/12/2015	Yes	12/31/2014	W018586-123114	Completed	Drainage Issue
Stormwater	1/21/2015	Yes	1/9/2015	W018660-010915	Completed	Report Storm Water Concern
Stormwater	1/28/2015	Yes	1/13/2015	W018681-011315	Completed	Drainage Issue
Stormwater	1/28/2015	Yes	1/13/2015	W018682-011315	Completed	Drainage Issue
Stormwater	2/13/2015	Yes	1/29/2015	W018834-012915	Completed	Report Storm Water Concern
Stormwater	2/12/2015	Yes	2/6/2015	W018875-020615	Completed	Drainage Issue
Stormwater	2/24/2015	Yes	2/23/2015	W019033-022315	Completed	Drainage Issue
Stormwater	3/9/2015	Yes	3/5/2015	W019197-030515	Completed	Drainage Issue
Stormwater	3/23/2015	Yes	3/5/2015	W019198-030515	Completed	Report Storm Water Concern
Stormwater	3/9/2015	Yes	3/9/2015	W019235-030915	Completed	Drainage Issue
Stormwater	3/27/2015	Yes	3/16/2015	W019378-031615	Completed	Drainage Issue
Stormwater	3/17/2015	Yes	3/17/2015	W019431-031715	Completed	Drainage Issue

Michele Gremminger

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	3/17/2015	Yes	3/17/2015	W019432-031715	Completed	Drainage Issue
Stormwater	3/17/2015	Yes	3/17/2015	W019433-031715	Completed	Drainage Issue
Stormwater	5/4/2015	Yes	3/19/2015	W019472-031915	Completed	Drainage Issue
Stormwater	4/3/2015	Yes	3/23/2015	W019515-032315	Completed	Drainage Issue
Stormwater	3/25/2015	Yes	3/23/2015	W019530-032315	Completed	Drainage Issue
Stormwater	4/16/2015	Yes	3/24/2015	W019557-032415	Completed	Report Storm Water Concern
Stormwater	3/27/2015	Yes	3/25/2015	W019577-032515	Completed	Drainage Issue
Stormwater	3/25/2015	Yes	3/25/2015	W019582-032515	Completed	Drainage Issue
Stormwater	4/3/2015	Yes	3/26/2015	W019602-032615	Completed	Drainage Issue
Stormwater	5/4/2015	Yes	3/27/2015	W019627-032715	Completed	Drainage Issue
Stormwater	3/31/2015	Yes	3/27/2015	W019630-032715	Completed	Drainage Issue
Stormwater	3/31/2015	Yes	3/31/2015	W019669-033115	Completed	Question, issue, or concern
Stormwater	4/3/2015	Yes	3/31/2015	W019681-033115	Completed	Question, issue, or concern
Stormwater	3/31/2015	Yes	3/31/2015	W019692-033115	Completed	Question, issue, or concern
Stormwater	4/27/2015	Yes	3/31/2015	W019693-033115	Completed	Ask a Question - City Projects
Stormwater	4/3/2015	Yes	3/31/2015	W019694-033115	Completed	Drainage Issue
Stormwater	4/3/2015	Yes	4/1/2015	W019697-040115	Completed	Ask a Question
Stormwater	4/3/2015	Yes	4/1/2015	W019708-040115	Completed	Ask a Question
Stormwater	4/3/2015	Yes	4/3/2015	W019740-040315	Completed	Drainage Issue
Stormwater	4/3/2015	Yes	4/3/2015	W019742-040315	Completed	Question, issue, or concern
Stormwater	4/7/2015	Yes	4/3/2015	W019745-040315	Completed	Drainage Issue
Stormwater	4/15/2015	Yes	4/3/2015	W019752-040315	Completed	Report Storm Water Concern
Stormwater	4/7/2015	Yes	4/3/2015	W019761-040315	Completed	Drainage Issue
Stormwater	5/6/2015	Yes	4/8/2015	W019807-040815	Completed	Drainage Issue
Stormwater	4/13/2015	Yes	4/13/2015	W019877-041315	Completed	Drainage Issue
Stormwater	4/16/2015	Yes	4/13/2015	W019878-041315	Completed	Drainage Issue
Stormwater	5/4/2015	Yes	4/13/2015	W019879-041315	Completed	Report Storm Water Concern
Stormwater	4/15/2015	Yes	4/13/2015	W019880-041315	Completed	Question, issue, or concern
Stormwater	4/17/2015	Yes	4/14/2015	W019892-041415	Completed	Drainage Issue
Stormwater	4/14/2015	Yes	4/14/2015	W019893-041415	Completed	Question, issue, or concern
Stormwater	4/15/2015	Yes	4/15/2015	W019913-041515	Completed	Question, issue, or concern
Stormwater	4/20/2015	Yes	4/15/2015	W019928-041515	Completed	Water Leak

Michele Gremminger

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	4/17/2015	Yes	4/16/2015	W019948-041615	Completed	Report Storm Water Concern
Stormwater	4/16/2015	Yes	4/16/2015	W019951-041615	Completed	Question, issue, or concern
Stormwater	4/30/2015	Yes	4/20/2015	W020002-042015	Completed	Report Storm Water Concern
Stormwater	4/30/2015	Yes	4/20/2015	W020008-042015	Completed	Drainage Issue
Stormwater	4/23/2015	Yes	4/23/2015	W020056-042315	Completed	Drainage Issue
Stormwater	4/23/2015	Yes	4/23/2015	W020059-042315	Completed	Report Storm Water Concern
Stormwater	4/23/2015	Yes	4/23/2015	W020060-042315	Completed	Drainage Issue
Stormwater	4/30/2015	Yes	4/24/2015	W020084-042415	Completed	Ask a Question
Stormwater	4/27/2015	Yes	4/27/2015	W020105-042715	Completed	Drainage Issue
Stormwater	4/30/2015	Yes	4/27/2015	W020114-042715	Completed	Report Storm Water Concern
Stormwater	5/19/2015	Yes	5/1/2015	W020208-050115	Completed	Report Storm Water Concern
Stormwater	5/6/2015	Yes	5/4/2015	W020236-050415	Completed	Drainage Issue
Stormwater	6/3/2015	Yes	5/5/2015	W020248-050515	Completed	Report Storm Water Concern
Stormwater	5/29/2015	Yes	5/5/2015	W020250-050515	Completed	Report Storm Water Concern
Stormwater	5/6/2015	Yes	5/6/2015	W020285-050615	Completed	Drainage Issue
Stormwater	5/6/2015	Yes	5/6/2015	W020288-050615	Completed	Question, issue, or concern
Stormwater	5/11/2015	Yes	5/7/2015	W020299-050715	Completed	Report Storm Water Concern
Stormwater	5/14/2015	Yes	5/11/2015	W020334-051115	Completed	Drainage Issue
Stormwater	5/11/2015	Yes	5/11/2015	W020335-051115	Completed	Drainage Issue
Stormwater	5/15/2015	Yes	5/12/2015	W020351-051215	Completed	Drainage Issue
Stormwater	5/18/2015	Yes	5/13/2015	W020372-051315	Completed	Report Storm Water Concern
Stormwater	5/19/2015	Yes	5/13/2015	W020378-051315	Completed	Drainage Issue
Stormwater	5/19/2015	Yes	5/19/2015	W020436-051915	Completed	Drainage Issue
Stormwater	5/26/2015	Yes	5/19/2015	W020438-051915	Completed	Drainage Issue
Stormwater	5/20/2015	Yes	5/20/2015	W020471-052015	Completed	Question, issue, or concern
Stormwater	5/26/2015	Yes	5/22/2015	W020505-052215	Completed	Question, issue, or concern
Stormwater	6/1/2015	Yes	5/28/2015	W020571-052815	Completed	Drainage Issue
Stormwater	6/3/2015	Yes	6/1/2015	W020638-060115	Completed	Drainage Issue
Stormwater	6/5/2015	Yes	6/2/2015	W020683-060215	Completed	Question, issue, or concern

Michele Gremminger

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	6/10/2015	Yes	6/5/2015	W020756-060515	Completed	Report Storm Water Concern
Stormwater	6/10/2015	Yes	6/10/2015	W020819-061015	Completed	Drainage Issue

Ryan Rockwell

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	6/26/2014	Yes	6/13/2014	W016379-061314	Completed	Report Storm Water Concern
Stormwater	6/18/2014	Yes	6/13/2014	W016380-061314	Completed	Report Storm Water Concern
Stormwater	5/6/2015	Yes	6/13/2014	W016381-061314	Completed	Report Storm Water Concern
Stormwater	10/30/2014	Yes	6/13/2014	W016386-061314	Completed	Report Storm Water Concern
Stormwater	6/18/2014	Yes	6/15/2014	W016395-061514	Completed	Drainage Issue
Stormwater	9/30/2014	Yes	6/16/2014	W016403-061614	Completed	Drainage Issue
Stormwater	11/14/2014	Yes	6/17/2014	W016413-061714	Completed	Report Storm Water Concern
Stormwater	4/28/2015	Yes	6/17/2014	W016416-061714	Completed	Report Storm Water Concern
Stormwater	6/19/2014	Yes	6/19/2014	W016462-061914	Completed	Report Storm Water Concern
Stormwater	6/23/2014	Yes	6/20/2014	W016487-062014	Completed	Report Storm Water Concern
Stormwater	6/26/2014	Yes	6/23/2014	W016494-062314	Completed	Report Storm Water Concern
Stormwater	6/26/2014	Yes	6/23/2014	W016496-062314	Completed	Report Storm Water Concern
Stormwater	6/25/2014	Yes	6/23/2014	W016504-062314	Completed	Report Storm Water Concern
Stormwater	8/1/2014	Yes	6/23/2014	W016509-062314	Completed	Report Storm Water Concern
Stormwater	6/30/2014	Yes	6/23/2014	W016511-062314	Completed	Report Storm Water Concern
Stormwater	6/30/2014	Yes	6/24/2014	W016523-062414	Completed	Report Storm Water Concern
Stormwater	6/27/2014	Yes	6/24/2014	W016524-062414	Completed	Drainage Issue
Stormwater	10/28/2014	Yes	6/24/2014	W016528-062414	Completed	Report Storm Water Concern
Stormwater	6/30/2014	Yes	6/24/2014	W016532-062414	Completed	Report Storm Water Concern
Stormwater	6/24/2014	Yes	6/24/2014	W016533-062414	Completed	Report Storm Water Concern
Stormwater	11/14/2014	Yes	6/24/2014	W016534-062414	Completed	Report Storm Water Concern

Ryan Rockwell

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	7/3/2014	Yes	6/24/2014	W016535-062414	Completed	Request Sidewalk Repair
Stormwater	7/24/2014	Yes	6/25/2014	W016551-062514	Completed	Drainage Issue
Stormwater	7/24/2014	Yes	6/25/2014	W016559-062514	Completed	Report Storm Water Concern
Stormwater	6/27/2014	Yes	6/25/2014	W016560-062514	Completed	Report Storm Water Concern
Stormwater	10/16/2014	Yes	6/25/2014	W016561-062514	Completed	Report Storm Water Concern
Stormwater	6/30/2014	Yes	6/26/2014	W016582-062614	Completed	Report Storm Water Concern
Stormwater	4/29/2015	Yes	6/26/2014	W016585-062614	Completed	Report Storm Water Concern
Stormwater	4/29/2015	Yes	6/26/2014	W016586-062614	Completed	Report Storm Water Concern
Stormwater	7/3/2014	Yes	6/26/2014	W016589-062614	Completed	Report Storm Water Concern
Stormwater	10/31/2014	Yes	6/27/2014	W016592-062714	Completed	Report Storm Water Concern
Stormwater	4/30/2015	Yes	6/27/2014	W016608-062714	Completed	Report Storm Water Concern
Stormwater	11/4/2014	Yes	6/30/2014	W016629-063014	Completed	Request Street Repair
Stormwater	4/27/2015	Yes	7/1/2014	W016649-070114	Completed	Report Storm Water Concern
Stormwater	7/2/2014	Yes	7/1/2014	W016651-070114	Completed	Report Storm Water Concern
Stormwater	1/21/2015	Yes	7/2/2014	W016664-070214	Completed	Report Storm Water Concern
Stormwater	4/29/2015	Yes	7/2/2014	W016665-070214	Completed	Report Storm Water Concern
Stormwater	9/25/2014	Yes	7/2/2014	W016676-070214	Completed	Report Storm Water Concern
Stormwater	7/3/2014	Yes	7/3/2014	W016682-070314	Completed	Report Storm Water Concern
Stormwater	4/29/2015	Yes	7/7/2014	W016710-070714	Completed	Report Storm Water Concern
Stormwater	7/30/2014	Yes	7/8/2014	W016734-070814	Completed	Report Storm Water Concern
Stormwater	4/30/2015	Yes	7/8/2014	W016735-070814	Completed	Report Storm Water Concern
Stormwater	10/16/2014	Yes	7/8/2014	W016738-070814	Completed	Report Storm Water Concern
Stormwater	5/5/2015	Yes	7/8/2014	W016744-070814	Completed	Report Storm Water Concern
Stormwater	7/30/2014	Yes	7/9/2014	W016748-070914	Completed	Report Storm Water Concern

Ryan Rockwell

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	4/27/2015	Yes	7/9/2014	W016759-070914	Completed	Report Storm Water Concern
Stormwater	4/28/2015	Yes	7/10/2014	W016770-071014	Completed	Report Storm Water Concern
Stormwater	7/10/2014	Yes	7/10/2014	W016776-071014	Completed	Report Storm Water Concern
Stormwater	4/29/2015	Yes	7/10/2014	W016790-071014	Completed	Report Storm Water Concern
Stormwater	5/14/2015	Yes	7/11/2014	W016803-071114	Completed	Report Storm Water Concern
Stormwater	7/24/2014	Yes	7/11/2014	W016806-071114	Completed	Report Storm Water Concern
Stormwater	8/28/2014	Yes	7/11/2014	W016815-071114	Completed	Report Storm Water Concern
Stormwater	8/12/2014	Yes	7/15/2014	W016830-071514	Completed	Report Storm Water Concern
Stormwater	8/14/2014	Yes	7/15/2014	W016833-071514	Completed	Report Storm Water Concern
Stormwater	7/22/2014	Yes	7/16/2014	W016842-071614	Completed	Drainage Issue
Stormwater	8/14/2014	Yes	7/16/2014	W016843-071614	Completed	Report Storm Water Concern
Stormwater	7/24/2014	Yes	7/16/2014	W016856-071614	Completed	Report Storm Water Concern
Stormwater	7/22/2014	Yes	7/17/2014	W016859-071714	Completed	Report Storm Water Concern
Stormwater	4/29/2015	Yes	7/22/2014	W016915-072214	Completed	Report Storm Water Concern
Stormwater	8/12/2014	Yes	7/25/2014	W016953-072514	Completed	Ask a Question
Stormwater	4/27/2015	Yes	7/28/2014	W016981-072814	Completed	Report Storm Water Concern
Stormwater	4/27/2015	Yes	7/28/2014	W016982-072814	Completed	Report Storm Water Concern
Stormwater	1/15/2015	Yes	7/29/2014	W016998-072914	Completed	Report Storm Water Concern
Stormwater	10/2/2014	Yes	7/30/2014	W017029-073014	Completed	Report Storm Water Concern
Stormwater	10/17/2014	Yes	7/30/2014	W017033-073014	Completed	Report Storm Water Concern
Stormwater	7/30/2014	Yes	7/30/2014	W017035-073014	Duplicate	Report Storm Water Concern
Stormwater	5/18/2015	Yes	7/31/2014	W017059-073114	Completed	Report Storm Water Concern
Stormwater	8/5/2014	Yes	7/31/2014	W017072-073114	Completed	Drainage Issue
Stormwater	8/7/2014	Yes	8/7/2014	W017165-080714	Completed	Report Storm Water Concern
Stormwater	8/7/2014	Yes	8/7/2014	W017166-080714	Completed	Report Storm Water Concern

Ryan Rockwell

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	9/4/2014	Yes	8/8/2014	W017171-080814	Completed	Report Storm Water Concern
Stormwater	9/30/2014	Yes	8/8/2014	W017173-080814	Completed	Report Storm Water Concern
Stormwater	8/14/2014	Yes	8/8/2014	W017177-080814	Completed	Report Storm Water Concern
Stormwater	8/12/2014	Yes	8/8/2014	W017186-080814	Completed	Report Storm Water Concern
Stormwater	9/4/2014	Yes	8/12/2014	W017205-081214	Completed	Report Storm Water Concern
Stormwater	9/16/2014	Yes	8/12/2014	W017206-081214	Completed	Question, issue, or concern
Stormwater	8/15/2014	Yes	8/13/2014	W017226-081314	Completed	Request Street Sweeping
Stormwater	8/14/2014	Yes	8/14/2014	W017232-081414	Completed	Question, issue, or concern
Stormwater	4/27/2015	Yes	8/15/2014	W017257-081514	Completed	Report Storm Water Concern
Stormwater	4/30/2015	Yes	8/15/2014	W017264-081514	Completed	Report Storm Water Concern
Stormwater	9/25/2014	Yes	8/18/2014	W017273-081814	Completed	Request Street Repair
Stormwater	8/20/2014	Yes	8/18/2014	W017274-081814	Completed	Report Storm Water Concern
Stormwater	9/10/2014	Yes	8/20/2014	W017303-082014	Completed	Water Leak
Stormwater	4/28/2015	Yes	8/21/2014	W017319-082114	Completed	Report Storm Water Concern
Stormwater	8/28/2014	Yes	8/21/2014	W017326-082114	Completed	Report Storm Water Concern
Stormwater	10/21/2014	Yes	8/26/2014	W017365-082614	Completed	Question, issue, or concern
Stormwater	8/28/2014	Yes	8/26/2014	W017366-082614	Completed	Report Storm Water Concern
Stormwater	9/4/2014	Yes	8/27/2014	W017387-082714	Completed	Report Storm Water Concern
Stormwater	9/5/2014	Yes	9/2/2014	W017422-090214	Completed	Drainage Issue
Stormwater	10/28/2014	Yes	9/2/2014	W017431-090214	Completed	Report Storm Water Concern
Stormwater	9/25/2014	Yes	9/3/2014	W017441-090314	Completed	Report Storm Water Concern
Stormwater	9/3/2014	Yes	9/3/2014	W017443-090314	Completed	Report Storm Water Concern
Stormwater	11/4/2014	Yes	9/4/2014	W017460-090414	Completed	Request Street Repair
Stormwater	9/11/2014	Yes	9/4/2014	W017466-090414	Completed	Report Storm Water Concern

Ryan Rockwell

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	10/29/2014	Yes	9/5/2014	W017486-090514	Completed	Report Storm Water Concern
Stormwater	9/5/2014	Yes	9/5/2014	W017499-090514	Completed	Report Storm Water Concern
Stormwater	10/23/2014	Yes	9/5/2014	W017500-090514	Completed	Report Storm Water Concern
Stormwater	9/11/2014	Yes	9/5/2014	W017510-090514	Completed	Report Storm Water Concern
Stormwater	9/11/2014	Yes	9/5/2014	W017512-090514	Completed	Drainage Issue
Stormwater	4/28/2015	Yes	9/5/2014	W017513-090514	Completed	Report Storm Water Concern
Stormwater	4/27/2015	Yes	9/8/2014	W017527-090814	Completed	Report Storm Water Concern
Stormwater	10/30/2014	Yes	9/9/2014	W017538-090914	Completed	Report Storm Water Concern
Stormwater	10/2/2014	Yes	9/10/2014	W017568-091014	Completed	Report Storm Water Concern
Stormwater	9/11/2014	Yes	9/10/2014	W017571-091014	Completed	Report Storm Water Concern
Stormwater	11/4/2014	Yes	9/11/2014	W017580-091114	Completed	Request Street Repair
Stormwater	10/29/2014	Yes	9/11/2014	W017592-091114	Completed	Report Storm Water Concern
Stormwater	4/29/2015	Yes	9/12/2014	W017594-091214	Completed	Report Storm Water Concern
Stormwater	10/17/2014	Yes	9/12/2014	W017599-091214	Completed	Report Storm Water Concern
Stormwater	4/30/2015	Yes	9/15/2014	W017618-091514	Completed	Report Storm Water Concern
Stormwater	10/29/2014	Yes	9/15/2014	W017619-091514	Completed	Report Storm Water Concern
Stormwater	9/16/2014	Yes	9/16/2014	W017626-091614	Completed	Report Storm Water Concern
Stormwater	4/22/2015	Yes	9/16/2014	W017629-091614	Completed	Report Storm Water Concern
Stormwater	1/13/2015	Yes	9/16/2014	W017631-091614	Completed	Report Storm Water Concern
Stormwater	9/18/2014	Yes	9/16/2014	W017637-091614	Completed	Report Storm Water Concern
Stormwater	4/29/2015	Yes	9/16/2014	W017645-091614	Completed	Report Storm Water Concern
Stormwater	10/30/2014	Yes	9/19/2014	W017700-091914	Completed	Report Storm Water Concern
Stormwater	1/14/2015	Yes	9/23/2014	W017712-092314	Completed	Report Storm Water Concern
Stormwater	5/6/2015	Yes	9/23/2014	W017720-092314	Completed	Report Storm Water Concern

Ryan Rockwell

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	10/23/2014	Yes	9/23/2014	W017721-092314	Completed	Drainage Issue
Stormwater	9/30/2014	Yes	9/23/2014	W017722-092314	Completed	Question, issue, or concern
Stormwater	10/30/2014	Yes	9/23/2014	W017731-092314	Completed	Report Storm Water Concern
Stormwater	9/25/2014	Yes	9/25/2014	W017759-092514	Completed	Request Street Sweeping
Stormwater	4/27/2015	Yes	9/26/2014	W017774-092614	Completed	Report Storm Water Concern
Stormwater	10/31/2014	Yes	9/26/2014	W017775-092614	Completed	Report Storm Water Concern
Stormwater	4/30/2015	Yes	10/1/2014	W017841-100114	Completed	Report Storm Water Concern
Stormwater	5/1/2015	Yes	10/3/2014	W017878-100314	Completed	Report Storm Water Concern
Stormwater	5/22/2015	Yes	10/3/2014	W017881-100314	Completed	Report Storm Water Concern
Stormwater	4/30/2015	Yes	10/7/2014	W017895-100714	Completed	Report Storm Water Concern
Stormwater	10/9/2014	Yes	10/9/2014	W017919-100914	Completed	Report Storm Water Concern
Stormwater	10/30/2014	Yes	10/9/2014	W017920-100914	Completed	Report Storm Water Concern
Stormwater	5/1/2015	Yes	10/14/2014	W017952-101414	Completed	Report Storm Water Concern
Stormwater	10/17/2014	Yes	10/14/2014	W017954-101414	Completed	Report Storm Water Concern
Stormwater	10/21/2014	Yes	10/15/2014	W017962-101514	Completed	Report Storm Water Concern
Stormwater	10/30/2014	Yes	10/15/2014	W017974-101514	Completed	Report Storm Water Concern
Stormwater	4/27/2015	Yes	10/16/2014	W017983-101614	Completed	Report Storm Water Concern
Stormwater	4/27/2015	Yes	10/16/2014	W017984-101614	Completed	Report Storm Water Concern
Stormwater	10/29/2014	Yes	10/17/2014	W017991-101714	Completed	Report Storm Water Concern
Stormwater	11/4/2014	Yes	10/20/2014	W018006-102014	Completed	Report Storm Water Concern
Stormwater	10/21/2014	Yes	10/21/2014	W018014-102114	Duplicate	Report Storm Water Concern
Stormwater	5/1/2015	Yes	10/21/2014	W018022-102114	Completed	Report Storm Water Concern
Stormwater	10/31/2014	Yes	10/22/2014	W018033-102214	Completed	Report Storm Water Concern
Stormwater	5/14/2015	Yes	10/23/2014	W018043-102314	Completed	Report Storm Water Concern

Ryan Rockwell

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	4/30/2015	Yes	10/24/2014	W018050-102414	Completed	Report Storm Water Concern
Stormwater	5/1/2015	Yes	10/24/2014	W018051-102414	Completed	Report Storm Water Concern
Stormwater	5/4/2015	Yes	10/24/2014	W018055-102414	Completed	Report Storm Water Concern
Stormwater	5/4/2015	Yes	10/24/2014	W018056-102414	Completed	Report Storm Water Concern
Stormwater	5/5/2015	Yes	10/24/2014	W018057-102414	Completed	Report Storm Water Concern
Stormwater	10/30/2014	Yes	10/24/2014	W018058-102414	Completed	Report Storm Water Concern
Stormwater	5/5/2015	Yes	10/24/2014	W018060-102414	Completed	Report Storm Water Concern
Stormwater	5/5/2015	Yes	10/27/2014	W018081-102714	Completed	Report Storm Water Concern
Stormwater	10/28/2014	Yes	10/28/2014	W018084-102814	Completed	Report Storm Water Concern
Stormwater	11/4/2014	Yes	10/29/2014	W018122-102914	Completed	Report Storm Water Concern
Stormwater	5/4/2015	Yes	10/29/2014	W018126-102914	Completed	Report Storm Water Concern
Stormwater	10/31/2014	Yes	10/31/2014	W018138-103114	Completed	Report Storm Water Concern
Stormwater	5/5/2015	Yes	10/31/2014	W018139-103114	Completed	Report Storm Water Concern
Stormwater	5/6/2015	Yes	11/4/2014	W018165-110414	Completed	Report Storm Water Concern
Stormwater	5/6/2015	Yes	11/5/2014	W018183-110514	Completed	Report Storm Water Concern
Stormwater	1/15/2015	Yes	11/5/2014	W018185-110514	Completed	Report Storm Water Concern
Stormwater	11/6/2014	Yes	11/6/2014	W018189-110614	Completed	Report Storm Water Concern
Stormwater	5/15/2015	Yes	11/10/2014	W018217-111014	Completed	Report Storm Water Concern
Stormwater	5/18/2015	Yes	12/10/2014	W018417-121014	Completed	Report Storm Water Concern
Stormwater	1/13/2015	Yes	12/15/2014	W018460-121514	Completed	Question, issue, or concern
Stormwater	12/18/2014	Yes	12/18/2014	W018498-121814	Completed	Question, issue, or concern
Stormwater	5/18/2015	Yes	12/19/2014	W018508-121914	Completed	Report Storm Water Concern
Stormwater	1/13/2015	Yes	1/2/2015	W018591-010215	Completed	Drainage Issue
Stormwater	5/11/2015	Yes	1/6/2015	W018633-010615	Completed	Report Storm Water Concern

Ryan Rockwell

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	6/1/2015	Yes	1/20/2015	W018733-012015	Completed	Report Storm Water Concern
Stormwater	5/15/2015	Yes	1/20/2015	W018737-012015	Completed	Report Storm Water Concern
Stormwater	4/2/2015	Yes	1/20/2015	W018738-012015	Completed	Drainage Issue
Stormwater	5/19/2015	Yes	1/20/2015	W018740-012015	Completed	Report Storm Water Concern
Stormwater	2/2/2015	Yes	1/26/2015	W018792-012615	Completed	Report Storm Water Concern
Stormwater	5/19/2015	Yes	1/27/2015	W018806-012715	Completed	Report Storm Water Concern
Stormwater	5/1/2015	Yes	1/28/2015	W018815-012815	Completed	Report Storm Water Concern
Stormwater	3/20/2015	Yes	2/11/2015	W018926-021115	Completed	Report Storm Water Concern
Stormwater	5/14/2015	Yes	2/13/2015	W018939-021315	Completed	Report Storm Water Concern
Stormwater	3/2/2015	Yes	2/26/2015	W019062-022615	Completed	Drainage Issue
Stormwater	3/2/2015	Yes	3/2/2015	W019162-030215	Completed	Request Snow/Street Plowing
Stormwater	4/27/2015	Yes	3/13/2015	W019353-031315	Completed	Report Storm Water Concern
Stormwater	5/1/2015	Yes	3/16/2015	W019367-031615	Completed	Report Storm Water Concern
Stormwater	5/21/2015	Yes	3/16/2015	W019387-031615	Completed	Report Storm Water Concern
Stormwater	3/24/2015	Yes	3/17/2015	W019421-031715	Completed	Ask a Question
Stormwater	5/5/2015	Yes	3/17/2015	W019425-031715	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	3/17/2015	W019428-031715	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	3/24/2015	W019548-032415	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	3/25/2015	W019568-032515	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	3/27/2015	W019606-032715	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	3/27/2015	W019611-032715	Completed	Report Storm Water Concern
Stormwater	4/8/2015	Yes	3/30/2015	W019652-033015	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	3/30/2015	W019656-033015	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	3/31/2015	W019666-033115	Completed	Report Storm Water Concern

Ryan Rockwell

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	4/1/2015	Yes	3/31/2015	W019691-033115	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	4/1/2015	W019706-040115	Completed	Report Storm Water Concern
Stormwater	5/20/2015	Yes	4/6/2015	W019782-040615	Completed	Report Storm Water Concern
Stormwater	4/7/2015	Yes	4/7/2015	W019791-040715	Completed	Report Storm Water Concern
Stormwater	4/7/2015	Yes	4/7/2015	W019796-040715	Completed	Report Storm Water Concern
Stormwater	5/1/2015	Yes	4/9/2015	W019830-040915	Completed	Report Storm Water Concern
Stormwater	4/29/2015	Yes	4/15/2015	W019930-041515	Completed	Report Storm Water Concern
Stormwater	4/20/2015	Yes	4/16/2015	W019934-041615	Completed	Report Storm Water Concern
Stormwater	5/1/2015	Yes	4/16/2015	W019950-041615	Completed	Report Storm Water Concern
Stormwater	4/27/2015	Yes	4/20/2015	W020015-042015	Completed	Report Storm Water Concern
Stormwater	5/18/2015	Yes	4/22/2015	W020052-042215	Completed	Question, issue, or concern
Stormwater	4/23/2015	Yes	4/23/2015	W020057-042315	Completed	Report Storm Water Concern
Stormwater	4/30/2015	Yes	4/30/2015	W020199-043015	Completed	Report Storm Water Concern
Stormwater	5/18/2015	Yes	5/4/2015	W020231-050415	Completed	Report Storm Water Concern
Stormwater	6/5/2015	Yes	5/4/2015	W020239-050415	Completed	Request Sidewalk Repair
Stormwater	5/14/2015	Yes	5/7/2015	W020293-050715	Completed	Report Storm Water Concern
Stormwater	5/12/2015	Yes	5/7/2015	W020298-050715	Completed	Report Storm Water Concern
Stormwater	5/14/2015	Yes	5/7/2015	W020300-050715	Completed	Report Storm Water Concern
Stormwater	5/8/2015	Yes	5/7/2015	W020301-050715	Completed	Question, issue, or concern
Stormwater	5/14/2015	Yes	5/12/2015	W020340-051215	Completed	Report Storm Water Concern
Stormwater	5/12/2015	Yes	5/12/2015	W020352-051215	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	5/13/2015	W020363-051315	Completed	Report Storm Water Concern
Stormwater	5/15/2015	Yes	5/15/2015	W020392-051515	Completed	Report Storm Water Concern
Stormwater	5/18/2015	Yes	5/18/2015	W020411-051815	Completed	Report Storm Water Concern

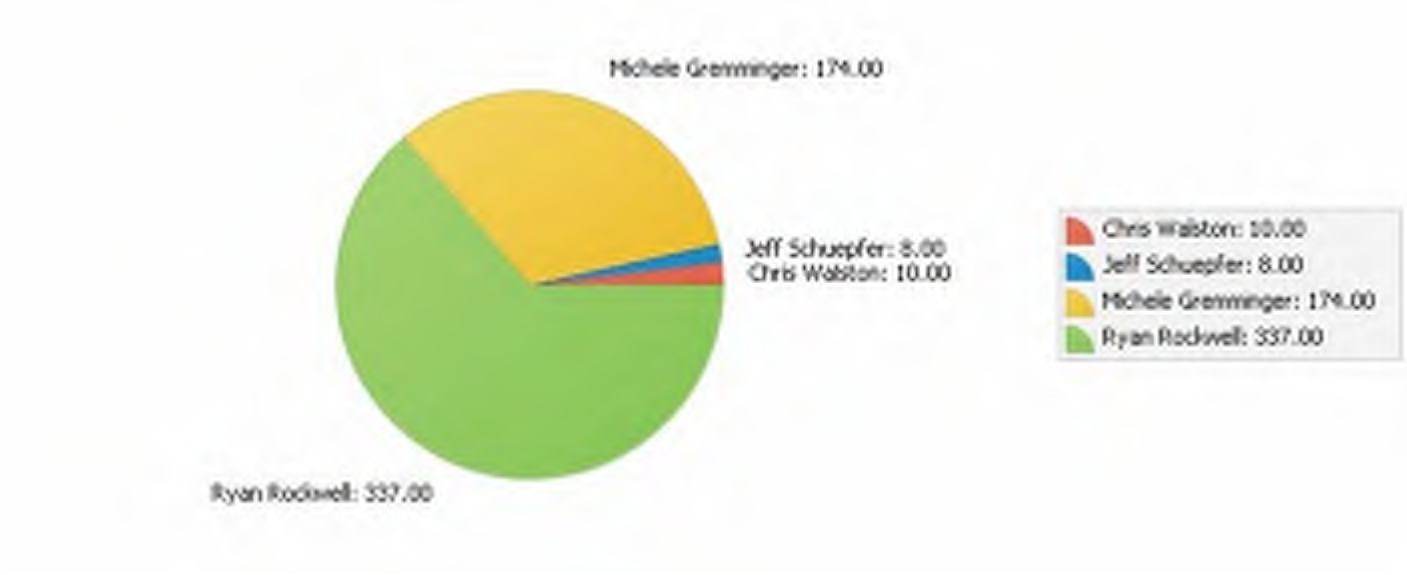
Ryan Rockwell

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	5/19/2015	Yes	5/19/2015	W020432-051915	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	5/19/2015	W020433-051915	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	5/19/2015	W020445-051915	Completed	Report Storm Water Concern
Stormwater	5/21/2015	Yes	5/21/2015	W020476-052115	Completed	Report Storm Water Concern
Stormwater	5/21/2015	Yes	5/21/2015	W020479-052115	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	5/22/2015	W020513-052215	Duplicate	Report Storm Water Concern
Stormwater	6/1/2015	Yes	5/26/2015	W020518-052615	Completed	Report Storm Water Concern
Stormwater	6/8/2015	Yes	5/27/2015	W020548-052715	Completed	Report Storm Water Concern
Stormwater	5/27/2015	Yes	5/27/2015	W020552-052715	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	5/27/2015	W020560-052715	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	5/28/2015	W020575-052815	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	5/29/2015	W020591-052915	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	6/1/2015	W020643-060115	Completed	Report Storm Water Concern
Stormwater	6/8/2015	Yes	6/5/2015	W020740-060515	Completed	Report Storm Water Concern

NPDES Annual Report June 2015

Run Date: 06/25/2015 12:38 PM

NPDES Annual Report 2015-Received



Chris Walston

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	10/23/2014	Yes	9/17/2014	W017668-091714	Completed	Report Storm Water Concern
Stormwater	1/8/2015	Yes	1/8/2015	W018657-010815	Completed	Report Storm Water Concern
Stormwater	5/18/2015	Yes	9/11/2014	W017588-091114	Completed	Report Storm Water Concern
Stormwater	10/30/2014	Yes	7/16/2014	W016839-071614	Completed	Report Storm Water Concern
Stormwater	10/29/2014	Yes	9/3/2014	W017452-090314	Completed	Report Storm Water Concern
Stormwater	4/27/2015	Yes	9/18/2014	W017688-091814	Completed	Report Storm Water Concern
Stormwater		No	9/23/2014	W017711-092314	Assess for Repair	Report Storm Water Concern
Stormwater	10/2/2014	Yes	9/26/2014	W017772-092614	Completed	Report Storm Water Concern
Stormwater	5/11/2015	Yes	12/29/2014	W018551-122914	Completed	Report Storm Water Concern
Stormwater	1/13/2015	Yes	12/29/2014	W018552-122914	Completed	Report Storm Water Concern

Jeff Schuepfer

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	7/1/2014	Yes	7/1/2014	W016646-070114	Completed	Report Storm Water Concern
Stormwater	7/2/2014	Yes	7/2/2014	W016672-070214	Completed	Drainage Issue
Stormwater		No	6/17/2014	W016444-061714	In Progress	Report Storm Water Concern

Jeff Schuepfer

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater		No	10/14/2014	W017958-101414	In Progress	Report Storm Water Concern
Stormwater	6/26/2014	Yes	6/25/2014	W016557-062514	Completed	Report Storm Water Concern
Stormwater	7/2/2014	Yes	7/2/2014	W016677-070214	Completed	Report Storm Water Concern
Stormwater	10/29/2014	Yes	10/27/2014	W018069-102714	Completed	Drainage Issue
Stormwater	1/29/2015	Yes	1/21/2015	W018759-012115	Completed	Drainage Issue

Michele Gremminger

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	6/5/2015	Yes	6/2/2015	W020683-060215	Completed	Question, issue, or concern
Stormwater	5/4/2015	Yes	3/19/2015	W019472-031915	Completed	Drainage Issue
Stormwater	1/21/2015	Yes	7/29/2014	W017013-072914	Completed	Report Storm Water Concern
Stormwater	5/11/2015	Yes	5/7/2015	W020299-050715	Completed	Report Storm Water Concern
Stormwater	7/15/2014	Yes	7/1/2014	W016662-070114	Completed	Report Storm Water Concern
Stormwater	4/7/2015	Yes	4/3/2015	W019761-040315	Completed	Drainage Issue
Stormwater	6/1/2015	Yes	5/28/2015	W020571-052815	Completed	Drainage Issue
Stormwater	8/27/2014	Yes	8/27/2014	W017380-082714	Completed	Question, issue, or concern
Stormwater	6/26/2014	Yes	6/23/2014	W016502-062314	Completed	Report Storm Water Concern
Stormwater		No	4/9/2015	W019835-040915	In Progress	Drainage Issue
Stormwater	8/27/2014	Yes	8/25/2014	W017353-082514	Completed	Question, issue, or concern
Stormwater	5/6/2015	Yes	4/8/2015	W019807-040815	Completed	Drainage Issue
Stormwater	1/21/2015	Yes	1/9/2015	W018660-010915	Completed	Report Storm Water Concern
Stormwater	6/26/2014	Yes	6/13/2014	W016385-061314	Completed	Drainage Issue
Stormwater	3/9/2015	Yes	3/5/2015	W019197-030515	Completed	Drainage Issue
Stormwater	4/23/2015	Yes	4/23/2015	W020059-042315	Completed	Report Storm Water Concern
Stormwater	4/15/2015	Yes	4/15/2015	W019913-041515	Completed	Question, issue, or concern
Stormwater	6/26/2014	Yes	6/13/2014	W016383-061314	Completed	Report Storm Water Concern
Stormwater	7/8/2014	Yes	7/3/2014	W016688-070314	Completed	Drainage Issue
Stormwater	2/24/2015	Yes	2/23/2015	W019033-022315	Completed	Drainage Issue
Stormwater	5/18/2015	Yes	5/13/2015	W020372-051315	Completed	Report Storm Water Concern

Michele Gremminger

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	5/19/2015	Yes	5/13/2015	W020378-051315	Completed	Drainage Issue
Stormwater	4/17/2015	Yes	4/16/2015	W019948-041615	Completed	Report Storm Water Concern
Stormwater	7/7/2014	Yes	6/26/2014	W016575-062614	Completed	Drainage Issue
Stormwater	8/5/2014	Yes	7/28/2014	W016983-072814	Completed	Ask a Question
Stormwater	8/6/2014	Yes	8/5/2014	W017134-080514	Completed	Ask a Question
Stormwater	6/23/2014	Yes	6/23/2014	W016503-062314	Completed	Report Storm Water Concern
Stormwater	9/3/2014	Yes	6/25/2014	W016563-062514	Completed	Report Storm Water Concern
Stormwater	5/20/2015	Yes	5/20/2015	W020471-052015	Completed	Question, issue, or concern
Stormwater		No	6/3/2015	W020694-060315	In Progress	Detention/retention basin maintenance
Stormwater		No	6/3/2015	W020703-060315	In Progress	Detention/retention basin maintenance
Stormwater	6/10/2015	Yes	6/5/2015	W020756-060515	Completed	Report Storm Water Concern
Stormwater	6/10/2015	Yes	6/10/2015	W020819-061015	Completed	Drainage Issue
Stormwater		No	5/19/2015	W020439-051915	In Progress	Detention/retention basin maintenance
Stormwater		No	5/19/2015	W020440-051915	In Progress	Detention/retention basin maintenance
Stormwater		No	5/19/2015	W020442-051915	In Progress	Detention/retention basin maintenance
Stormwater		No	5/19/2015	W020443-051915	In Progress	Detention/retention basin maintenance
Stormwater		No	5/19/2015	W020444-051915	In Progress	Detention/retention basin maintenance
Stormwater		No	5/20/2015	W020458-052015	In Progress	Detention/retention basin maintenance
Stormwater	5/6/2015	Yes	5/6/2015	W020285-050615	Completed	Drainage Issue
Stormwater		No	5/6/2015	W020286-050615	In Progress	Report Storm Water Concern
Stormwater		No	5/6/2015	W020287-050615	In Progress	Detention/retention basin maintenance
Stormwater	5/6/2015	Yes	5/6/2015	W020288-050615	Completed	Question, issue, or concern
Stormwater	5/11/2015	Yes	5/11/2015	W020335-051115	Completed	Drainage Issue
Stormwater	5/19/2015	Yes	5/19/2015	W020436-051915	Completed	Drainage Issue
Stormwater	5/19/2015	Yes	5/1/2015	W020208-050115	Completed	Report Storm Water Concern
Stormwater	5/6/2015	Yes	5/4/2015	W020236-050415	Completed	Drainage Issue
Stormwater	6/3/2015	Yes	5/5/2015	W020248-050515	Completed	Report Storm Water Concern

Michele Gremminger

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	5/29/2015	Yes	5/5/2015	W020250-050515	Completed	Report Storm Water Concern
Stormwater	3/31/2015	Yes	3/31/2015	W019692-033115	Completed	Question, issue, or concern
Stormwater	4/23/2015	Yes	4/23/2015	W020056-042315	Completed	Drainage Issue
Stormwater	2/13/2015	Yes	1/29/2015	W018834-012915	Completed	Report Storm Water Concern
Stormwater	3/23/2015	Yes	3/5/2015	W019198-030515	Completed	Report Storm Water Concern
Stormwater		No	3/18/2015	W019452-031815	In Progress	Drainage Issue
Stormwater	4/16/2015	Yes	3/24/2015	W019557-032415	Completed	Report Storm Water Concern
Stormwater		No	3/24/2015	W019558-032415	In Progress	Report Storm Water Concern
Stormwater		No	3/24/2015	W019559-032415	In Progress	Report Storm Water Concern
Stormwater	11/3/2014	Yes	11/3/2014	W018154-110314	Completed	Drainage Issue
Stormwater	1/28/2015	Yes	12/31/2014	W018584-123114	Completed	Drainage Issue
Stormwater	1/9/2015	Yes	12/31/2014	W018585-123114	Completed	Question, issue, or concern
Stormwater	2/12/2015	Yes	12/31/2014	W018586-123114	Completed	Drainage Issue
Stormwater	12/16/2014	Yes	10/13/2014	W017939-101314	Completed	Report Storm Water Concern
Stormwater	10/31/2014	Yes	10/22/2014	W018035-102214	Completed	Report Storm Water Concern
Stormwater	9/23/2014	Yes	9/4/2014	W017474-090414	Completed	Report Storm Water Concern
Stormwater	9/23/2014	Yes	9/23/2014	W017719-092314	Completed	Drainage Issue
Stormwater	1/28/2015	Yes	9/24/2014	W017749-092414	Completed	Report Storm Water Concern
Stormwater	12/3/2014	Yes	8/21/2014	W017328-082114	Completed	Report Storm Water Concern
Stormwater	8/28/2014	Yes	8/28/2014	W017395-082814	Completed	Question, issue, or concern
Stormwater	9/3/2014	Yes	9/3/2014	W017454-090314	Completed	Drainage Issue
Stormwater	9/4/2014	Yes	9/4/2014	W017469-090414	Completed	Report Storm Water Concern
Stormwater	4/30/2015	Yes	7/23/2014	W016924-072314	Completed	Drainage Issue
Stormwater	8/27/2014	Yes	7/17/2014	W016860-071714	Completed	Report Storm Water Concern
Stormwater	7/15/2014	Yes	7/15/2014	W016837-071514	Completed	Report Storm Water Concern
Stormwater	6/28/2014	Yes	6/24/2014	W016525-062414	Completed	Report Storm Water Concern
Stormwater	6/26/2014	Yes	6/16/2014	W016398-061614	Completed	Drainage Issue

Michele Gremminger

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	6/23/2014	Yes	6/16/2014	W016405-061614	Completed	Drainage Issue
Stormwater	6/23/2014	Yes	6/18/2014	W016449-061814	Completed	Report Storm Water Concern
Stormwater	7/7/2014	Yes	6/23/2014	W016497-062314	Completed	Drainage Issue
Stormwater	7/15/2014	Yes	6/23/2014	W016507-062314	Completed	Drainage Issue
Stormwater	6/28/2014	Yes	6/23/2014	W016508-062314	Completed	Drainage Issue
Stormwater	7/15/2014	Yes	6/23/2014	W016510-062314	Completed	Drainage Issue
Stormwater	6/28/2014	Yes	6/25/2014	W016562-062514	Completed	Drainage Issue
Stormwater	6/28/2014	Yes	6/25/2014	W016571-062514	Completed	Report Storm Water Concern
Stormwater	6/26/2014	Yes	6/26/2014	W016584-062614	Completed	Report Storm Water Concern
Stormwater	9/23/2014	Yes	6/26/2014	W016590-062614	Completed	Drainage Issue
Stormwater	6/28/2014	Yes	6/28/2014	W016612-062814	Completed	Drainage Issue
Stormwater	7/7/2014	Yes	6/30/2014	W016637-063014	Completed	Drainage Issue
Stormwater	4/3/2015	Yes	3/23/2015	W019515-032315	Completed	Drainage Issue
Stormwater	7/7/2014	Yes	7/1/2014	W016647-070114	Completed	Drainage Issue
Stormwater	7/25/2014	Yes	7/3/2014	W016690-070314	Completed	Drainage Issue
Stormwater	7/11/2014	Yes	7/10/2014	W016788-071014	Completed	Drainage Issue
Stormwater	7/15/2014	Yes	7/10/2014	W016789-071014	Completed	Drainage Issue
Stormwater	4/23/2015	Yes	4/23/2015	W020060-042315	Completed	Drainage Issue
Stormwater	7/17/2014	Yes	7/17/2014	W016869-071714	Completed	Drainage Issue
Stormwater	7/23/2014	Yes	7/23/2014	W016920-072314	Completed	Report Storm Water Concern
Stormwater	8/5/2014	Yes	8/5/2014	W017125-080514	Completed	Report Storm Water Concern
Stormwater	8/12/2014	Yes	8/8/2014	W017175-080814	Completed	Drainage Issue
Stormwater	8/8/2014	Yes	8/8/2014	W017176-080814	Completed	Drainage Issue
Stormwater	8/27/2014	Yes	8/15/2014	W017254-081514	Completed	Report Code Violation
Stormwater	10/13/2014	Yes	10/13/2014	W017944-101314	Completed	Drainage Issue
Stormwater	6/17/2015	Yes	6/8/2015	W020777-060815	Completed	Report Storm Water Concern
Stormwater	9/22/2014	Yes	8/28/2014	W017402-082814	Completed	Drainage Issue
Stormwater	9/3/2014	Yes	9/2/2014	W017438-090214	Completed	Report Storm Water Concern
Stormwater	9/11/2014	Yes	9/4/2014	W017471-090414	Completed	Drainage Issue
Stormwater	9/4/2014	Yes	9/4/2014	W017480-090414	Completed	Drainage Issue
Stormwater	9/11/2014	Yes	9/4/2014	W017481-090414	Completed	Drainage Issue
Stormwater	9/5/2014	Yes	9/5/2014	W017508-090514	Completed	Question, issue, or concern
Stormwater	9/23/2014	Yes	9/5/2014	W017511-090514	Completed	Report Storm Water Concern

Michele Gremminger

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	9/11/2014	Yes	9/8/2014	W017518-090814	Completed	Drainage Issue
Stormwater	9/22/2014	Yes	9/15/2014	W017609-091514	Completed	Drainage Issue
Stormwater	9/15/2014	Yes	9/15/2014	W017610-091514	Completed	Drainage Issue
Stormwater	9/22/2014	Yes	9/15/2014	W017611-091514	Completed	Drainage Issue
Stormwater	9/22/2014	Yes	9/15/2014	W017614-091514	Completed	Drainage Issue
Stormwater	9/15/2014	Yes	9/15/2014	W017616-091514	Completed	Drainage Issue
Stormwater	9/15/2014	Yes	9/15/2014	W017623-091514	Completed	Question, issue, or concern
Stormwater	9/26/2014	Yes	9/15/2014	W017624-091514	Completed	Drainage Issue
Stormwater	9/23/2014	Yes	9/23/2014	W017718-092314	Completed	Drainage Issue
Stormwater	10/8/2014	Yes	9/26/2014	W017779-092614	Completed	Drainage Issue
Stormwater	10/3/2014	Yes	10/1/2014	W017855-100114	Completed	Question, issue, or concern
Stormwater	10/6/2014	Yes	10/6/2014	W017885-100614	Completed	Question, issue, or concern
Stormwater	10/8/2014	Yes	10/8/2014	W017909-100814	Completed	Drainage Issue
Stormwater	11/17/2014	Yes	11/5/2014	W018187-110514	Completed	Drainage Issue
Stormwater	12/16/2014	Yes	12/4/2014	W018355-120414	Completed	Drainage Issue
Stormwater	12/10/2014	Yes	12/10/2014	W018419-121014	Completed	Question, issue, or concern
Stormwater		No	12/17/2014	W018473-121714	In Progress	Drainage Issue
Stormwater	1/28/2015	Yes	12/17/2014	W018478-121714	Completed	Drainage Issue
Stormwater	1/28/2015	Yes	1/13/2015	W018681-011315	Completed	Drainage Issue
Stormwater	1/28/2015	Yes	1/13/2015	W018682-011315	Completed	Drainage Issue
Stormwater	2/12/2015	Yes	2/6/2015	W018875-020615	Completed	Drainage Issue
Stormwater	3/9/2015	Yes	3/9/2015	W019235-030915	Completed	Drainage Issue
Stormwater	3/27/2015	Yes	3/16/2015	W019378-031615	Completed	Drainage Issue
Stormwater	3/17/2015	Yes	3/17/2015	W019431-031715	Completed	Drainage Issue
Stormwater	3/17/2015	Yes	3/17/2015	W019432-031715	Completed	Drainage Issue
Stormwater	3/17/2015	Yes	3/17/2015	W019433-031715	Completed	Drainage Issue
Stormwater	3/25/2015	Yes	3/23/2015	W019530-032315	Completed	Drainage Issue
Stormwater	3/27/2015	Yes	3/25/2015	W019577-032515	Completed	Drainage Issue
Stormwater	3/25/2015	Yes	3/25/2015	W019582-032515	Completed	Drainage Issue
Stormwater	4/3/2015	Yes	3/26/2015	W019602-032615	Completed	Drainage Issue
Stormwater	5/4/2015	Yes	3/27/2015	W019627-032715	Completed	Drainage Issue
Stormwater	3/31/2015	Yes	3/27/2015	W019630-032715	Completed	Drainage Issue
Stormwater	3/31/2015	Yes	3/31/2015	W019669-033115	Completed	Question, issue, or concern
Stormwater	4/3/2015	Yes	3/31/2015	W019681-033115	Completed	Question, issue, or concern
Stormwater	4/27/2015	Yes	3/31/2015	W019693-033115	Completed	Ask a Question - City Projects

Michele Gremminger

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	4/3/2015	Yes	3/31/2015	W019694-033115	Completed	Drainage Issue
Stormwater	4/3/2015	Yes	4/1/2015	W019697-040115	Completed	Ask a Question
Stormwater	4/3/2015	Yes	4/1/2015	W019708-040115	Completed	Ask a Question
Stormwater	4/3/2015	Yes	4/3/2015	W019740-040315	Completed	Drainage Issue
Stormwater	4/3/2015	Yes	4/3/2015	W019742-040315	Completed	Question, issue, or concern
Stormwater	4/7/2015	Yes	4/3/2015	W019745-040315	Completed	Drainage Issue
Stormwater	4/15/2015	Yes	4/3/2015	W019752-040315	Completed	Report Storm Water Concern
Stormwater	4/30/2015	Yes	4/24/2015	W020084-042415	Completed	Ask a Question
Stormwater	4/13/2015	Yes	4/13/2015	W019877-041315	Completed	Drainage Issue
Stormwater	4/16/2015	Yes	4/13/2015	W019878-041315	Completed	Drainage Issue
Stormwater	5/4/2015	Yes	4/13/2015	W019879-041315	Completed	Report Storm Water Concern
Stormwater	4/15/2015	Yes	4/13/2015	W019880-041315	Completed	Question, issue, or concern
Stormwater	4/17/2015	Yes	4/14/2015	W019892-041415	Completed	Drainage Issue
Stormwater	4/14/2015	Yes	4/14/2015	W019893-041415	Completed	Question, issue, or concern
Stormwater	4/20/2015	Yes	4/15/2015	W019928-041515	Completed	Water Leak
Stormwater	4/16/2015	Yes	4/16/2015	W019951-041615	Completed	Question, issue, or concern
Stormwater	4/30/2015	Yes	4/20/2015	W020002-042015	Completed	Report Storm Water Concern
Stormwater	4/30/2015	Yes	4/20/2015	W020008-042015	Completed	Drainage Issue
Stormwater	4/27/2015	Yes	4/27/2015	W020105-042715	Completed	Drainage Issue
Stormwater	4/30/2015	Yes	4/27/2015	W020114-042715	Completed	Report Storm Water Concern
Stormwater	5/14/2015	Yes	5/11/2015	W020334-051115	Completed	Drainage Issue
Stormwater	5/15/2015	Yes	5/12/2015	W020351-051215	Completed	Drainage Issue
Stormwater	5/26/2015	Yes	5/19/2015	W020438-051915	Completed	Drainage Issue
Stormwater	6/19/2015	Yes	5/19/2015	W020450-051915	Completed	Report Storm Water Concern
Stormwater	5/26/2015	Yes	5/22/2015	W020505-052215	Completed	Question, issue, or concern
Stormwater	6/3/2015	Yes	6/1/2015	W020638-060115	Completed	Drainage Issue
Stormwater		No	6/1/2015	W020651-060115	In Progress	Detention/retention basin maintenance
Stormwater	6/19/2015	Yes	6/9/2015	W020803-060915	Completed	Drainage Issue
Stormwater	6/19/2015	Yes	6/10/2015	W020818-061015	Completed	Report Storm Water Concern
Stormwater		No	6/10/2015	W020824-061015	New	Report Storm Water Concern

Michele Gremminger

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	6/15/2015	Yes	6/12/2015	W020864-061215	Completed	Report Storm Water Concern

Ryan Rockwell

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	9/3/2014	Yes	9/3/2014	W017443-090314	Completed	Report Storm Water Concern
Stormwater		No	3/18/2015	W019465-031815	Assess for Repair	Report Storm Water Concern
Stormwater	1/21/2015	Yes	7/2/2014	W016664-070214	Completed	Report Storm Water Concern
Stormwater	4/29/2015	Yes	7/2/2014	W016665-070214	Completed	Report Storm Water Concern
Stormwater	5/11/2015	Yes	1/6/2015	W018633-010615	Completed	Report Storm Water Concern
Stormwater	1/15/2015	Yes	7/29/2014	W016998-072914	Completed	Report Storm Water Concern
Stormwater	11/4/2014	Yes	9/4/2014	W017460-090414	Completed	Request Street Repair
Stormwater	5/5/2015	Yes	3/17/2015	W019425-031715	Completed	Report Storm Water Concern
Stormwater	4/30/2015	Yes	4/30/2015	W020199-043015	Completed	Report Storm Water Concern
Stormwater	5/14/2015	Yes	5/7/2015	W020293-050715	Completed	Report Storm Water Concern
Stormwater	5/12/2015	Yes	5/7/2015	W020298-050715	Completed	Report Storm Water Concern
Stormwater	5/14/2015	Yes	5/12/2015	W020340-051215	Completed	Report Storm Water Concern
Stormwater	5/18/2015	Yes	7/31/2014	W017059-073114	Completed	Report Storm Water Concern
Stormwater	6/16/2015	Yes	6/1/2015	W020642-060115	Completed	Report Storm Water Concern
Stormwater		No	6/10/2015	W020816-061015	Assess for Repair	Report Storm Water Concern
Stormwater	6/26/2014	Yes	6/23/2014	W016496-062314	Completed	Report Storm Water Concern
Stormwater	6/25/2014	Yes	6/23/2014	W016504-062314	Completed	Report Storm Water Concern
Stormwater	7/22/2014	Yes	7/16/2014	W016842-071614	Completed	Drainage Issue
Stormwater	9/16/2014	Yes	8/12/2014	W017206-081214	Completed	Question, issue, or concern
Stormwater	8/28/2014	Yes	7/11/2014	W016815-071114	Completed	Report Storm Water Concern
Stormwater	8/12/2014	Yes	7/15/2014	W016830-071514	Completed	Report Storm Water Concern

Ryan Rockwell

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	1/15/2015	Yes	11/5/2014	W018185-110514	Completed	Report Storm Water Concern
Stormwater		No	5/6/2015	W020284-050615	Assess for Repair	Report Storm Water Concern
Stormwater	6/30/2014	Yes	6/24/2014	W016532-062414	Completed	Report Storm Water Concern
Stormwater		No	5/27/2015	W020547-052715	Assess for Repair	Report Storm Water Concern
Stormwater	6/8/2015	Yes	5/27/2015	W020548-052715	Completed	Report Storm Water Concern
Stormwater	10/23/2014	Yes	9/5/2014	W017500-090514	Completed	Report Storm Water Concern
Stormwater	8/15/2014	Yes	8/13/2014	W017226-081314	Completed	Request Street Sweeping
Stormwater	5/18/2015	Yes	12/19/2014	W018508-121914	Completed	Report Storm Water Concern
Stormwater	5/1/2015	Yes	4/16/2015	W019950-041615	Completed	Report Storm Water Concern
Stormwater	3/2/2015	Yes	3/2/2015	W019162-030215	Completed	Request Snow/Street Plowing
Stormwater		No	4/28/2015	W020148-042815	Assess for Repair	Report Storm Water Concern
Stormwater		No	5/29/2015	W020619-052915	Assess for Repair	Report Storm Water Concern
Stormwater	8/12/2014	Yes	8/8/2014	W017186-080814	Completed	Report Storm Water Concern
Stormwater	4/22/2015	Yes	9/16/2014	W017629-091614	Completed	Report Storm Water Concern
Stormwater	9/11/2014	Yes	9/5/2014	W017512-090514	Completed	Drainage Issue
Stormwater		No	4/6/2015	W019780-040615	Assess for Repair	Report Storm Water Concern
Stormwater		No	7/11/2014	W016805-071114	Assess for Repair	Report Storm Water Concern
Stormwater	7/24/2014	Yes	7/11/2014	W016806-071114	Completed	Report Storm Water Concern
Stormwater	7/2/2014	Yes	7/1/2014	W016651-070114	Completed	Report Storm Water Concern
Stormwater		No	10/8/2014	W017904-100814	Assess for Repair	Report Storm Water Concern
Stormwater	4/20/2015	Yes	4/16/2015	W019934-041615	Completed	Report Storm Water Concern
Stormwater		No	7/25/2014	W016977-072514	Assess for Repair	Report Storm Water Concern
Stormwater	5/22/2015	Yes	10/3/2014	W017881-100314	Completed	Report Storm Water Concern
Stormwater		No	6/25/2014	W016558-062514	Assess for Repair	Report Storm Water Concern

Ryan Rockwell

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater		No	4/28/2015	W020138-042815	Assess for Repair	Report Storm Water Concern
Stormwater	6/1/2015	Yes	1/20/2015	W018733-012015	Completed	Report Storm Water Concern
Stormwater		No	7/8/2014	W016743-070814	In Progress	Report Storm Water Concern
Stormwater		No	3/23/2015	W019528-032315	Assess for Repair	Report Storm Water Concern
Stormwater		No	4/14/2015	W019907-041415	Assess for Repair	Report Storm Water Concern
Stormwater	10/29/2014	Yes	9/5/2014	W017486-090514	Completed	Report Storm Water Concern
Stormwater	4/29/2015	Yes	9/16/2014	W017645-091614	Completed	Report Storm Water Concern
Stormwater	4/27/2015	Yes	9/26/2014	W017774-092614	Completed	Report Storm Water Concern
Stormwater	11/4/2014	Yes	6/30/2014	W016629-063014	Completed	Request Street Repair
Stormwater		No	4/3/2015	W019757-040315	Assess for Repair	Report Storm Water Concern
Stormwater		No	5/6/2015	W020256-050615	Assess for Repair	Report Storm Water Concern
Stormwater	9/25/2014	Yes	9/25/2014	W017759-092514	Completed	Request Street Sweeping
Stormwater	6/27/2014	Yes	6/25/2014	W016560-062514	Completed	Report Storm Water Concern
Stormwater	10/16/2014	Yes	6/25/2014	W016561-062514	Completed	Report Storm Water Concern
Stormwater	4/27/2015	Yes	3/13/2015	W019353-031315	Completed	Report Storm Water Concern
Stormwater	9/5/2014	Yes	9/2/2014	W017422-090214	Completed	Drainage Issue
Stormwater	8/28/2014	Yes	8/26/2014	W017366-082614	Completed	Report Storm Water Concern
Stormwater		No	4/17/2015	W019983-041715	Assess for Repair	Report Storm Water Concern
Stormwater		No	3/12/2015	W019321-031215	Assess for Repair	Report Storm Water Concern
Stormwater		No	3/17/2015	W019403-031715	Assess for Repair	Report Storm Water Concern
Stormwater	5/1/2015	Yes	10/14/2014	W017952-101414	Completed	Report Storm Water Concern
Stormwater		No	6/5/2015	W020742-060515	Assess for Repair	Report Storm Water Concern
Stormwater		No	5/13/2015	W020353-051315	Assess for Repair	Report Storm Water Concern
Stormwater	10/21/2014	Yes	10/21/2014	W018014-102114	Duplicate	Report Storm Water Concern

Ryan Rockwell

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	8/14/2014	Yes	7/15/2014	W016833-071514	Completed	Report Storm Water Concern
Stormwater	5/14/2015	Yes	5/7/2015	W020300-050715	Completed	Report Storm Water Concern
Stormwater	9/18/2014	Yes	9/16/2014	W017637-091614	Completed	Report Storm Water Concern
Stormwater	7/24/2014	Yes	6/25/2014	W016551-062514	Completed	Drainage Issue
Stormwater	5/4/2015	Yes	10/24/2014	W018055-102414	Completed	Report Storm Water Concern
Stormwater	5/4/2015	Yes	10/29/2014	W018126-102914	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	3/24/2015	W019548-032415	Completed	Report Storm Water Concern
Stormwater	10/29/2014	Yes	9/11/2014	W017592-091114	Completed	Report Storm Water Concern
Stormwater		No	4/19/2015	W019992-041915	Assess for Repair	Report Storm Water Concern
Stormwater		No	4/30/2015	W020195-043015	Assess for Repair	Report Storm Water Concern
Stormwater	2/2/2015	Yes	1/26/2015	W018792-012615	Completed	Report Storm Water Concern
Stormwater	5/19/2015	Yes	1/27/2015	W018806-012715	Completed	Report Storm Water Concern
Stormwater		No	6/11/2015	W020836-061115	In Progress	Drainage Issue
Stormwater	7/22/2014	Yes	7/17/2014	W016859-071714	Completed	Report Storm Water Concern
Stormwater	5/5/2015	Yes	10/24/2014	W018060-102414	Completed	Report Storm Water Concern
Stormwater	4/27/2015	Yes	8/15/2014	W017257-081514	Completed	Report Storm Water Concern
Stormwater	6/30/2014	Yes	6/23/2014	W016511-062314	Completed	Report Storm Water Concern
Stormwater	10/21/2014	Yes	8/26/2014	W017365-082614	Completed	Question, issue, or concern
Stormwater		No	5/6/2015	W020283-050615	In Progress	Drainage Issue
Stormwater	7/3/2014	Yes	6/26/2014	W016589-062614	Completed	Report Storm Water Concern
Stormwater		No	5/28/2015	W020580-052815	Assess for Repair	Report Storm Water Concern
Stormwater	10/30/2014	Yes	10/15/2014	W017974-101514	Completed	Report Storm Water Concern
Stormwater	4/29/2015	Yes	7/10/2014	W016790-071014	Completed	Report Storm Water Concern
Stormwater	6/26/2014	Yes	6/23/2014	W016494-062314	Completed	Report Storm Water Concern
Stormwater	4/28/2015	Yes	8/21/2014	W017319-082114	Completed	Report Storm Water Concern

Ryan Rockwell

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	10/29/2014	Yes	9/15/2014	W017619-091514	Completed	Report Storm Water Concern
Stormwater	11/4/2014	Yes	10/29/2014	W018122-102914	Completed	Report Storm Water Concern
Stormwater	6/19/2014	Yes	6/19/2014	W016462-061914	Completed	Report Storm Water Concern
Stormwater	10/30/2014	Yes	9/9/2014	W017538-090914	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	3/27/2015	W019611-032715	Completed	Report Storm Water Concern
Stormwater		No	5/22/2015	W020504-052215	Assess for Repair	Report Storm Water Concern
Stormwater	5/21/2015	Yes	5/21/2015	W020476-052115	Completed	Report Storm Water Concern
Stormwater	6/30/2014	Yes	6/24/2014	W016523-062414	Completed	Report Storm Water Concern
Stormwater	8/12/2014	Yes	7/25/2014	W016953-072514	Completed	Ask a Question
Stormwater	4/2/2015	Yes	1/20/2015	W018738-012015	Completed	Drainage Issue
Stormwater		No	4/17/2015	W019967-041715	In Progress	Drainage Issue
Stormwater	3/20/2015	Yes	2/11/2015	W018926-021115	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	5/27/2015	W020560-052715	Completed	Report Storm Water Concern
Stormwater	6/23/2014	Yes	6/20/2014	W016487-062014	Completed	Report Storm Water Concern
Stormwater	7/24/2014	Yes	6/25/2014	W016559-062514	Completed	Report Storm Water Concern
Stormwater		No	5/26/2015	W020526-052615	Assess for Repair	Report Storm Water Concern
Stormwater		No	5/5/2015	W020243-050515	Assess for Repair	Report Storm Water Concern
Stormwater		No	5/6/2015	W020268-050615	Assess for Repair	Report Storm Water Concern
Stormwater		No	3/26/2015	W019603-032615	Assess for Repair	Report Storm Water Concern
Stormwater		No	4/3/2015	W019750-040315	Assess for Repair	Report Storm Water Concern
Stormwater		No	4/3/2015	W019751-040315	Assess for Repair	Report Storm Water Concern
Stormwater		No	4/30/2015	W020193-043015	Assess for Repair	Report Storm Water Concern
Stormwater		No	11/3/2014	W018151-110314	Assess for Repair	Report Storm Water Concern
Stormwater	5/1/2015	Yes	1/28/2015	W018815-012815	Completed	Report Storm Water Concern
Stormwater		No	9/26/2014	W017781-092614	Assess for Repair	Report Storm Water Concern

Ryan Rockwell

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	10/30/2014	Yes	10/9/2014	W017920-100914	Completed	Report Storm Water Concern
Stormwater	4/27/2015	Yes	10/16/2014	W017983-101614	Completed	Report Storm Water Concern
Stormwater	4/27/2015	Yes	10/16/2014	W017984-101614	Completed	Report Storm Water Concern
Stormwater	9/11/2014	Yes	9/5/2014	W017510-090514	Completed	Report Storm Water Concern
Stormwater	5/6/2015	Yes	9/23/2014	W017720-092314	Completed	Report Storm Water Concern
Stormwater	10/23/2014	Yes	9/23/2014	W017721-092314	Completed	Drainage Issue
Stormwater	8/5/2014	Yes	7/31/2014	W017072-073114	Completed	Drainage Issue
Stormwater	8/7/2014	Yes	8/7/2014	W017165-080714	Completed	Report Storm Water Concern
Stormwater	4/29/2015	Yes	6/26/2014	W016586-062614	Completed	Report Storm Water Concern
Stormwater	5/5/2015	Yes	7/8/2014	W016744-070814	Completed	Report Storm Water Concern
Stormwater	4/27/2015	Yes	7/28/2014	W016981-072814	Completed	Report Storm Water Concern
Stormwater	4/27/2015	Yes	7/28/2014	W016982-072814	Completed	Report Storm Water Concern
Stormwater	10/17/2014	Yes	7/30/2014	W017033-073014	Completed	Report Storm Water Concern
Stormwater	5/20/2015	Yes	4/6/2015	W019782-040615	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	5/13/2015	W020363-051315	Completed	Report Storm Water Concern
Stormwater	9/11/2014	Yes	9/4/2014	W017466-090414	Completed	Report Storm Water Concern
Stormwater	1/14/2015	Yes	9/23/2014	W017712-092314	Completed	Report Storm Water Concern
Stormwater	6/8/2015	Yes	6/5/2015	W020740-060515	Completed	Report Storm Water Concern
Stormwater	5/14/2015	Yes	2/13/2015	W018939-021315	Completed	Report Storm Water Concern
Stormwater		No	4/14/2015	W019891-041415	Assess for Repair	Report Storm Water Concern
Stormwater		No	5/28/2015	W020579-052815	Assess for Repair	Report Storm Water Concern
Stormwater	9/25/2014	Yes	7/2/2014	W016676-070214	Completed	Report Storm Water Concern
Stormwater	6/26/2014	Yes	6/13/2014	W016379-061314	Completed	Report Storm Water Concern
Stormwater	9/30/2014	Yes	6/16/2014	W016403-061614	Completed	Drainage Issue
Stormwater	6/18/2014	Yes	6/13/2014	W016380-061314	Completed	Report Storm Water Concern

Ryan Rockwell

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	5/6/2015	Yes	6/13/2014	W016381-061314	Completed	Report Storm Water Concern
Stormwater	10/30/2014	Yes	6/13/2014	W016386-061314	Completed	Report Storm Water Concern
Stormwater	6/18/2014	Yes	6/15/2014	W016395-061514	Completed	Drainage Issue
Stormwater	11/14/2014	Yes	6/17/2014	W016413-061714	Completed	Report Storm Water Concern
Stormwater	4/28/2015	Yes	6/17/2014	W016416-061714	Completed	Report Storm Water Concern
Stormwater	8/1/2014	Yes	6/23/2014	W016509-062314	Completed	Report Storm Water Concern
Stormwater	6/27/2014	Yes	6/24/2014	W016524-062414	Completed	Drainage Issue
Stormwater	10/28/2014	Yes	6/24/2014	W016528-062414	Completed	Report Storm Water Concern
Stormwater	6/24/2014	Yes	6/24/2014	W016533-062414	Completed	Report Storm Water Concern
Stormwater	11/14/2014	Yes	6/24/2014	W016534-062414	Completed	Report Storm Water Concern
Stormwater	7/3/2014	Yes	6/24/2014	W016535-062414	Completed	Request Sidewalk Repair
Stormwater		No	6/25/2014	W016572-062514	Assess for Repair	Report Storm Water Concern
Stormwater		No	6/26/2014	W016579-062614	Assess for Repair	Report Storm Water Concern
Stormwater	6/30/2014	Yes	6/26/2014	W016582-062614	Completed	Report Storm Water Concern
Stormwater	4/29/2015	Yes	6/26/2014	W016585-062614	Completed	Report Storm Water Concern
Stormwater	10/31/2014	Yes	6/27/2014	W016592-062714	Completed	Report Storm Water Concern
Stormwater	4/30/2015	Yes	6/27/2014	W016608-062714	Completed	Report Storm Water Concern
Stormwater	4/27/2015	Yes	7/1/2014	W016649-070114	Completed	Report Storm Water Concern
Stormwater	7/3/2014	Yes	7/3/2014	W016682-070314	Completed	Report Storm Water Concern
Stormwater	4/29/2015	Yes	7/7/2014	W016710-070714	Completed	Report Storm Water Concern
Stormwater		No	7/8/2014	W016715-070814	Assess for Repair	Report Storm Water Concern
Stormwater	7/30/2014	Yes	7/8/2014	W016734-070814	Completed	Report Storm Water Concern
Stormwater	4/30/2015	Yes	7/8/2014	W016735-070814	Completed	Report Storm Water Concern
Stormwater		No	7/8/2014	W016736-070814	Assess for Repair	Report Storm Water Concern

Ryan Rockwell

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	10/16/2014	Yes	7/8/2014	W016738-070814	Completed	Report Storm Water Concern
Stormwater	7/30/2014	Yes	7/9/2014	W016748-070914	Completed	Report Storm Water Concern
Stormwater	4/27/2015	Yes	7/9/2014	W016759-070914	Completed	Report Storm Water Concern
Stormwater	4/28/2015	Yes	7/10/2014	W016770-071014	Completed	Report Storm Water Concern
Stormwater	8/7/2014	Yes	8/7/2014	W017166-080714	Completed	Report Storm Water Concern
Stormwater	9/5/2014	Yes	9/5/2014	W017499-090514	Completed	Report Storm Water Concern
Stormwater	7/10/2014	Yes	7/10/2014	W016776-071014	Completed	Report Storm Water Concern
Stormwater		No	8/1/2014	W017105-080114	Assess for Repair	Report Storm Water Concern
Stormwater	5/14/2015	Yes	7/11/2014	W016803-071114	Completed	Report Storm Water Concern
Stormwater		No	7/11/2014	W016810-071114	Assess for Repair	Report Storm Water Concern
Stormwater	8/14/2014	Yes	7/16/2014	W016843-071614	Completed	Report Storm Water Concern
Stormwater	7/24/2014	Yes	7/16/2014	W016856-071614	Completed	Report Storm Water Concern
Stormwater	4/29/2015	Yes	7/22/2014	W016915-072214	Completed	Report Storm Water Concern
Stormwater		No	7/25/2014	W016952-072514	Assess for Repair	Report Storm Water Concern
Stormwater	10/2/2014	Yes	7/30/2014	W017029-073014	Completed	Report Storm Water Concern
Stormwater	7/30/2014	Yes	7/30/2014	W017035-073014	Duplicate	Report Storm Water Concern
Stormwater		No	7/31/2014	W017070-073114	Assess for Repair	Report Storm Water Concern
Stormwater		No	8/5/2014	W017128-080514	Assess for Repair	Report Storm Water Concern
Stormwater	9/4/2014	Yes	8/8/2014	W017171-080814	Completed	Report Storm Water Concern
Stormwater	9/30/2014	Yes	8/8/2014	W017173-080814	Completed	Report Storm Water Concern
Stormwater	8/14/2014	Yes	8/8/2014	W017177-080814	Completed	Report Storm Water Concern
Stormwater	9/4/2014	Yes	8/12/2014	W017205-081214	Completed	Report Storm Water Concern
Stormwater	8/14/2014	Yes	8/14/2014	W017232-081414	Completed	Question, issue, or concern
Stormwater	4/30/2015	Yes	8/15/2014	W017264-081514	Completed	Report Storm Water Concern

Ryan Rockwell

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	9/25/2014	Yes	8/18/2014	W017273-081814	Completed	Request Street Repair
Stormwater	8/20/2014	Yes	8/18/2014	W017274-081814	Completed	Report Storm Water Concern
Stormwater	9/10/2014	Yes	8/20/2014	W017303-082014	Completed	Water Leak
Stormwater	8/28/2014	Yes	8/21/2014	W017326-082114	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	4/1/2015	W019706-040115	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	5/19/2015	W020445-051915	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	5/28/2015	W020575-052815	Completed	Report Storm Water Concern
Stormwater	9/4/2014	Yes	8/27/2014	W017387-082714	Completed	Report Storm Water Concern
Stormwater	10/28/2014	Yes	9/2/2014	W017431-090214	Completed	Report Storm Water Concern
Stormwater	5/5/2015	Yes	10/27/2014	W018081-102714	Completed	Report Storm Water Concern
Stormwater	9/25/2014	Yes	9/3/2014	W017441-090314	Completed	Report Storm Water Concern
Stormwater		No	9/3/2014	W017446-090314	Assess for Repair	Report Storm Water Concern
Stormwater	4/28/2015	Yes	9/5/2014	W017513-090514	Completed	Report Storm Water Concern
Stormwater	4/27/2015	Yes	9/8/2014	W017527-090814	Completed	Report Storm Water Concern
Stormwater	10/9/2014	Yes	10/9/2014	W017919-100914	Completed	Report Storm Water Concern
Stormwater	5/14/2015	Yes	10/23/2014	W018043-102314	Completed	Report Storm Water Concern
Stormwater	10/2/2014	Yes	9/10/2014	W017568-091014	Completed	Report Storm Water Concern
Stormwater	9/11/2014	Yes	9/10/2014	W017571-091014	Completed	Report Storm Water Concern
Stormwater	11/4/2014	Yes	9/11/2014	W017580-091114	Completed	Request Street Repair
Stormwater	4/29/2015	Yes	9/12/2014	W017594-091214	Completed	Report Storm Water Concern
Stormwater	10/17/2014	Yes	9/12/2014	W017599-091214	Completed	Report Storm Water Concern
Stormwater		No	9/12/2014	W017602-091214	Assess for Repair	Report Storm Water Concern
Stormwater	4/30/2015	Yes	9/15/2014	W017618-091514	Completed	Report Storm Water Concern
Stormwater	9/16/2014	Yes	9/16/2014	W017626-091614	Completed	Report Storm Water Concern

Ryan Rockwell

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	1/13/2015	Yes	9/16/2014	W017631-091614	Completed	Report Storm Water Concern
Stormwater	10/30/2014	Yes	9/19/2014	W017700-091914	Completed	Report Storm Water Concern
Stormwater		No	9/23/2014	W017714-092314	Assess for Repair	Report Storm Water Concern
Stormwater		No	9/23/2014	W017716-092314	Assess for Repair	Report Storm Water Concern
Stormwater	9/30/2014	Yes	9/23/2014	W017722-092314	Completed	Question, issue, or concern
Stormwater	10/30/2014	Yes	9/23/2014	W017731-092314	Completed	Report Storm Water Concern
Stormwater	10/31/2014	Yes	9/26/2014	W017775-092614	Completed	Report Storm Water Concern
Stormwater	4/30/2015	Yes	10/1/2014	W017841-100114	Completed	Report Storm Water Concern
Stormwater	5/1/2015	Yes	10/3/2014	W017878-100314	Completed	Report Storm Water Concern
Stormwater	4/30/2015	Yes	10/7/2014	W017895-100714	Completed	Report Storm Water Concern
Stormwater		No	10/10/2014	W017935-101014	Assess for Repair	Report Storm Water Concern
Stormwater	10/17/2014	Yes	10/14/2014	W017954-101414	Completed	Report Storm Water Concern
Stormwater	10/21/2014	Yes	10/15/2014	W017962-101514	Completed	Report Storm Water Concern
Stormwater	10/29/2014	Yes	10/17/2014	W017991-101714	Completed	Report Storm Water Concern
Stormwater	5/19/2015	Yes	5/19/2015	W020432-051915	Completed	Report Storm Water Concern
Stormwater	5/27/2015	Yes	5/27/2015	W020552-052715	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	6/1/2015	W020643-060115	Completed	Report Storm Water Concern
Stormwater	11/4/2014	Yes	10/20/2014	W018006-102014	Completed	Report Storm Water Concern
Stormwater	5/1/2015	Yes	10/21/2014	W018022-102114	Completed	Report Storm Water Concern
Stormwater	10/31/2014	Yes	10/22/2014	W018033-102214	Completed	Report Storm Water Concern
Stormwater	4/30/2015	Yes	10/24/2014	W018050-102414	Completed	Report Storm Water Concern
Stormwater	5/1/2015	Yes	10/24/2014	W018051-102414	Completed	Report Storm Water Concern
Stormwater	5/4/2015	Yes	10/24/2014	W018056-102414	Completed	Report Storm Water Concern
Stormwater	5/5/2015	Yes	10/24/2014	W018057-102414	Completed	Report Storm Water Concern

Ryan Rockwell

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	10/30/2014	Yes	10/24/2014	W018058-102414	Completed	Report Storm Water Concern
Stormwater		No	10/24/2014	W018059-102414	Assess for Repair	Report Storm Water Concern
Stormwater		No	4/22/2015	W020053-042215	Assess for Repair	Report Storm Water Concern
Stormwater	10/28/2014	Yes	10/28/2014	W018084-102814	Completed	Report Storm Water Concern
Stormwater		No	10/30/2014	W018135-103014	In Progress	Report Storm Water Concern
Stormwater	10/31/2014	Yes	10/31/2014	W018138-103114	Completed	Report Storm Water Concern
Stormwater	5/5/2015	Yes	10/31/2014	W018139-103114	Completed	Report Storm Water Concern
Stormwater	5/6/2015	Yes	11/4/2014	W018165-110414	Completed	Report Storm Water Concern
Stormwater	5/6/2015	Yes	11/5/2014	W018183-110514	Completed	Report Storm Water Concern
Stormwater	11/6/2014	Yes	11/6/2014	W018189-110614	Completed	Report Storm Water Concern
Stormwater	5/15/2015	Yes	11/10/2014	W018217-111014	Completed	Report Storm Water Concern
Stormwater		No	11/10/2014	W018222-111014	Assess for Repair	Report Storm Water Concern
Stormwater		No	11/17/2014	W018252-111714	Assess for Repair	Report Storm Water Concern
Stormwater	5/21/2015	Yes	3/16/2015	W019387-031615	Completed	Report Storm Water Concern
Stormwater	4/8/2015	Yes	3/30/2015	W019652-033015	Completed	Report Storm Water Concern
Stormwater	4/1/2015	Yes	3/31/2015	W019691-033115	Completed	Report Storm Water Concern
Stormwater	4/7/2015	Yes	4/7/2015	W019791-040715	Completed	Report Storm Water Concern
Stormwater	5/12/2015	Yes	5/12/2015	W020352-051215	Completed	Report Storm Water Concern
Stormwater	5/15/2015	Yes	5/15/2015	W020392-051515	Completed	Report Storm Water Concern
Stormwater	5/18/2015	Yes	12/10/2014	W018417-121014	Completed	Report Storm Water Concern
Stormwater	1/13/2015	Yes	12/15/2014	W018460-121514	Completed	Question, issue, or concern
Stormwater	1/13/2015	Yes	1/2/2015	W018591-010215	Completed	Drainage Issue
Stormwater	12/18/2014	Yes	12/18/2014	W018498-121814	Completed	Question, issue, or concern
Stormwater		No	12/30/2014	W018573-123014	Assess for Repair	Report Storm Water Concern

Ryan Rockwell

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	5/15/2015	Yes	1/20/2015	W018737-012015	Completed	Report Storm Water Concern
Stormwater	5/19/2015	Yes	1/20/2015	W018740-012015	Completed	Report Storm Water Concern
Stormwater		No	1/27/2015	W018802-012715	Assess for Repair	Report Storm Water Concern
Stormwater	3/2/2015	Yes	2/26/2015	W019062-022615	Completed	Drainage Issue
Stormwater	6/1/2015	Yes	5/26/2015	W020518-052615	Completed	Report Storm Water Concern
Stormwater		No	3/18/2015	W019451-031815	Assess for Repair	Report Storm Water Concern
Stormwater		No	3/12/2015	W019323-031215	In Progress	Report Storm Water Concern
Stormwater	5/1/2015	Yes	3/16/2015	W019367-031615	Completed	Report Storm Water Concern
Stormwater	3/24/2015	Yes	3/17/2015	W019421-031715	Completed	Ask a Question
Stormwater	6/1/2015	Yes	3/17/2015	W019428-031715	Completed	Report Storm Water Concern
Stormwater		No	4/2/2015	W019721-040215	Assess for Repair	Report Storm Water Concern
Stormwater	6/1/2015	Yes	3/25/2015	W019568-032515	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	3/27/2015	W019606-032715	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	3/30/2015	W019656-033015	Completed	Report Storm Water Concern
Stormwater	6/1/2015	Yes	3/31/2015	W019666-033115	Completed	Report Storm Water Concern
Stormwater		No	4/3/2015	W019747-040315	Assess for Repair	Report Storm Water Concern
Stormwater		No	4/27/2015	W020126-042715	Assess for Repair	Report Storm Water Concern
Stormwater		No	4/2/2015	W019719-040215	Assess for Repair	Request Street Repair
Stormwater		No	4/3/2015	W019741-040315	Assess for Repair	Report Storm Water Concern
Stormwater		No	4/15/2015	W019926-041515	Assess for Repair	Report Storm Water Concern
Stormwater		No	4/6/2015	W019784-040615	Assess for Repair	Report Storm Water Concern
Stormwater	4/7/2015	Yes	4/7/2015	W019796-040715	Completed	Report Storm Water Concern
Stormwater		No	4/8/2015	W019819-040815	Assess for Repair	Report Storm Water Concern
Stormwater	5/1/2015	Yes	4/9/2015	W019830-040915	Completed	Report Storm Water Concern

Ryan Rockwell

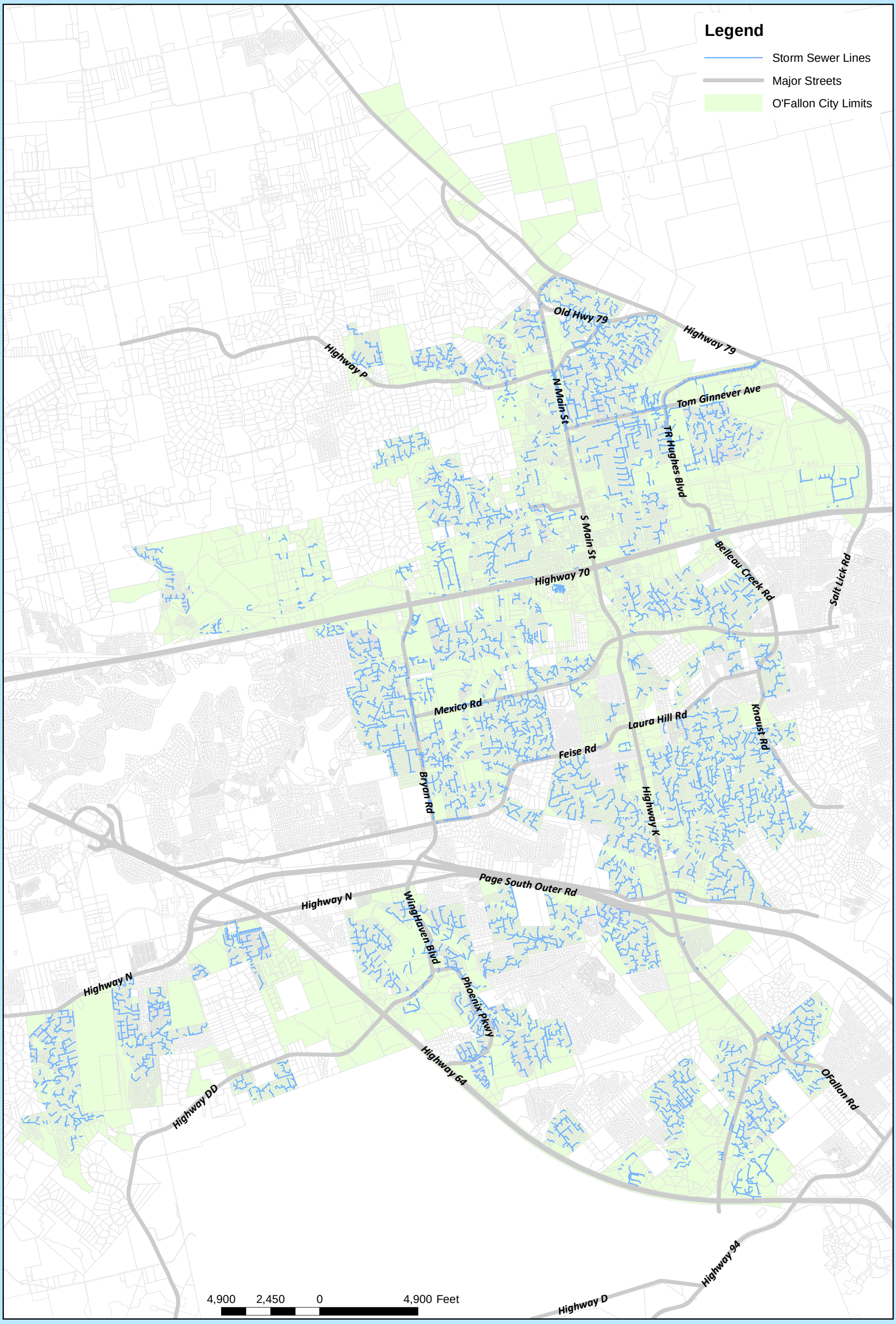
Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater	4/29/2015	Yes	4/15/2015	W019930-041515	Completed	Report Storm Water Concern
Stormwater		No	4/20/2015	W020007-042015	Assess for Repair	Report Storm Water Concern
Stormwater	4/27/2015	Yes	4/20/2015	W020015-042015	Completed	Report Storm Water Concern
Stormwater		No	4/22/2015	W020045-042215	Assess for Repair	Report Storm Water Concern
Stormwater		No	4/22/2015	W020047-042215	Assess for Repair	Report Storm Water Concern
Stormwater	5/18/2015	Yes	4/22/2015	W020052-042215	Completed	Question, issue, or concern
Stormwater	4/23/2015	Yes	4/23/2015	W020057-042315	Completed	Report Storm Water Concern
Stormwater		No	4/30/2015	W020198-043015	Assess for Repair	Report Storm Water Concern
Stormwater		No	4/27/2015	W020104-042715	Assess for Repair	Report Storm Water Concern
Stormwater		No	4/27/2015	W020131-042715	Assess for Repair	Report Storm Water Concern
Stormwater		No	4/30/2015	W020203-043015	Assess for Repair	Report Storm Water Concern
Stormwater		No	5/1/2015	W020210-050115	Assess for Repair	Report Storm Water Concern
Stormwater		No	5/4/2015	W020230-050415	Assess for Repair	Report Storm Water Concern
Stormwater	5/18/2015	Yes	5/4/2015	W020231-050415	Completed	Report Storm Water Concern
Stormwater	6/5/2015	Yes	5/4/2015	W020239-050415	Completed	Request Sidewalk Repair
Stormwater	6/1/2015	Yes	5/22/2015	W020513-052215	Duplicate	Report Storm Water Concern
Stormwater		No	5/6/2015	W020258-050615	Assess for Repair	Report Storm Water Concern
Stormwater	5/8/2015	Yes	5/7/2015	W020301-050715	Completed	Question, issue, or concern
Stormwater		No	5/7/2015	W020302-050715	Assess for Repair	Report Storm Water Concern
Stormwater		No	5/11/2015	W020323-051115	Assess for Repair	Report Storm Water Concern
Stormwater	5/18/2015	Yes	5/18/2015	W020411-051815	Completed	Report Storm Water Concern
Stormwater		No	5/18/2015	W020420-051815	Assess for Repair	Report Storm Water Concern
Stormwater	6/1/2015	Yes	5/19/2015	W020433-051915	Completed	Report Storm Water Concern
Stormwater		No	5/19/2015	W020434-051915	Assess for Repair	Report Storm Water Concern

Ryan Rockwell

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater		No	5/19/2015	W020451-051915	Assess for Repair	Report Storm Water Concern
Stormwater		No	5/20/2015	W020457-052015	Assess for Repair	Report Storm Water Concern
Stormwater	5/21/2015	Yes	5/21/2015	W020479-052115	Completed	Report Storm Water Concern
Stormwater		No	5/21/2015	W020489-052115	In Progress	Guardrail or Miscellaneous Repair
Stormwater		No	5/22/2015	W020501-052215	In Progress	Report Storm Water Concern
Stormwater		No	5/26/2015	W020520-052615	Assess for Repair	Report Storm Water Concern
Stormwater	6/1/2015	Yes	5/29/2015	W020591-052915	Completed	Report Storm Water Concern
Stormwater		No	6/2/2015	W020660-060215	Assess for Repair	Report Storm Water Concern
Stormwater		No	6/2/2015	W020662-060215	In Progress	Report Storm Water Concern
Stormwater		No	6/3/2015	W020687-060315	Assess for Repair	Report Storm Water Concern
Stormwater		No	6/3/2015	W020710-060315	New	Report Storm Water Concern
Stormwater	6/22/2015	Yes	6/3/2015	W020711-060315	Completed	Report Storm Water Concern
Stormwater		No	6/5/2015	W020744-060515	Assess for Repair	Report Storm Water Concern
Stormwater		No	6/5/2015	W020745-060515	Assess for Repair	Report Storm Water Concern
Stormwater		No	6/5/2015	W020746-060515	Assess for Repair	Report Storm Water Concern
Stormwater		No	6/5/2015	W020747-060515	Assess for Repair	Report Storm Water Concern
Stormwater		No	6/5/2015	W020748-060515	Assess for Repair	Report Storm Water Concern
Stormwater		No	6/5/2015	W020749-060515	Assess for Repair	Report Storm Water Concern
Stormwater		No	6/5/2015	W020750-060515	Assess for Repair	Report Storm Water Concern
Stormwater		No	6/5/2015	W020751-060515	Assess for Repair	Report Storm Water Concern
Stormwater		No	6/5/2015	W020752-060515	Assess for Repair	Report Storm Water Concern
Stormwater		No	6/5/2015	W020753-060515	Assess for Repair	Report Storm Water Concern
Stormwater		No	6/5/2015	W020754-060515	Assess for Repair	Report Storm Water Concern

Ryan Rockwell

Assigned Dept	Close Date	Completed/Closed	Create Date	Reference No	Request Status	Request Type
Stormwater		No	6/12/2015	W020846-061215	Assess for Repair	Report Storm Water Concern
Stormwater		No	6/12/2015	W020849-061215	Assess for Repair	Report Storm Water Concern



Community Development
Geographic Information Systems
O'Fallon, Missouri

Storm Sewer System

Printed: 06/08/2015

Path: M:\Maps\Storm_Sewers\Michelles_Storm_Lines.mxd

Legend

- Outfall Structure
- Major Streets
- Storm Sewer Lines
- Streams
- O'Fallon City Limits

Old Hwy 79
Highway 79
Highway P
Tom Ginnever Ave
N Main St
TR Hughes Blvd
S Main St
Highway 70
Salt Lick Rd
Bryan Rd
Mexico Rd
Laura Hill Rd
Knaust Rd
Highway K
Feise Rd
Page South Outer Rd
Highway N
Highway 64
WingHaven Blvd
Phoenix Pkwy
Highway DD
OFallon Rd
Highway 94
Highway D

4,900 2,450 0 4,900 Feet

Community Development
Geographic Information Systems
O'Fallon, Missouri

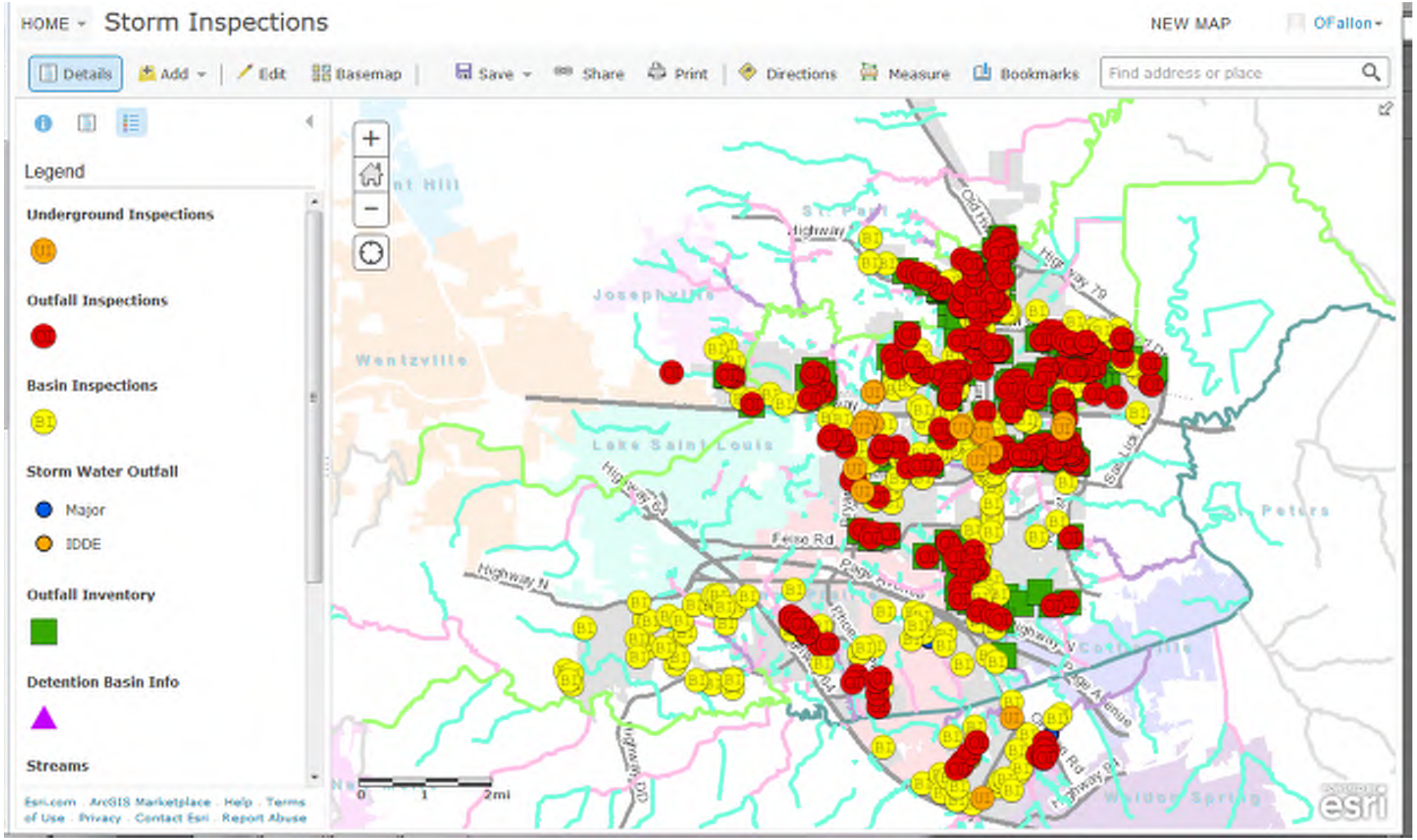
Creek Outfall

Printed: 06/08/2015

N W E S

Path: M:\Maps\Storm_Sewers\Michelle_Creek_Outfall.mxd

Screen shot of GIS map-2015



2014 IDDE Report

Blocked Drainage (yard)

04/09/2014	Darrell or Beverly Thompson	1151 Sunset Green Dr
Complete	04/22/2014	
04/02/2014	Richard Moore	1329 War Bonnet
Complete	04/14/2014	

Total Received: *2* ***Total Completed:*** *2*

Dumping Trash, Debris or other Pollutant

03/14/2014	Pam Moore (Henley)	47 Scarlett Meadow
Complete	03/25/2014	

Total Received: *1* ***Total Completed:*** *1*

Sediment Leaving Site

04/30/2014	Scott or Ronald Treece	18 Aspen Pointe Dr.
Complete		
04/02/2014	H & R Construction	Bluffs at Dames, Lot 20
Complete	04/19/2014	

Total Received: *2* ***Total Completed:*** *1*

Total Received 2012-2013: *5* ***Total Completed 2012-2013:*** *4*

100 N. Main St, O'Fallon MO 63366

City of O'Fallon, Missouri

Illicit Discharge Detection and Elimination Program

ADOPTED:
December 30, 2012

2010

Revised:

Acknowledgements

One of the reasons the Stormwater Department was developed and designed to protect public health and our water quality resources from the impact of point source and non-point source pollution.

This policy was developed by Michele Gremminger with assistance from Jay Herigodt, and other City of O'Fallon staff

A number of reference documents were used in the development of this policy. These include:

- The Ohio IDDE Policy, A Guidance Manual for Municipalities in the State of Ohio by Harry Stark and other staff of CCBH.
- Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments by the Center of Watershed Protection and Robert Pitt, University of Alabama, 2004
- US EPA Phase II Storm Water Rules and Regulations
- US EPA Phase II Fact Sheets on Illicit Discharge Detection and Elimination Program

City of O'Fallon, Missouri
IDDE Program Policy

Table of Contents

City of O'Fallon
IDDE Program Policy

Purpose

The purpose of this policy is to establish procedures for the development of a program to address the broad range of administrative and technical considerations involved with setting up an effective Illicit Discharge Detection and Elimination (IDDE) program as required by the EPA's Phase II Stormwater Program. This policy profiles the IDDE minimum control measure, which is one of six minimum control measures operators of Phase II regulated small municipal separate storm sewer system (MS4) is required to include in its stormwater management program.

A regulated MS4 as defined as a means of conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels or storm drains.

An understanding of the nature of illicit discharges in urban watersheds is essential to find, fix and prevent them. This policy reviews water quality as well as the regulatory context for controlling illicit discharges.

Background of Phase II

Although the quality of the nation's waters has improved greatly since the passage of the Clean Water Act in 1972, many water bodies are still impaired by pollution. According to the U.S. Environmental Protection Agency, the top causes of impairment include siltation, nutrients, bacteria, metals, and oxygen-depleting substances. Polluted storm water runoff, including runoff from urban/suburban areas and construction sites are leading sources of impairment. To address this problem, the EPA has put into place the "National Pollutant Discharge Elimination System (NPDES)" program that regulates certain storm water discharges.

In 1990, the EPA promulgated Phase I of its storm water program under the National Pollutant Discharge Elimination System (NPDES) permit provisions of the Clean Water Act. Phase I addressed storm water runoff from "medium" and "large" municipal separate storm sewer systems (MS4s) generally serving populations of 100,000 or greater, construction activity that would disturb five or more acres of land, and 10 categories of industrial activity. To further reduce the adverse effects of storm water runoff, the EPA instituted its Storm Water Phase II Final Rule on December 8, 1999.

The NPDES Phase II Stormwater Program was established in 2000 and is intended to further reduce adverse impacts to water quality and aquatic habitat by instituting the use of controls on the unregulated sources of stormwater discharges that have the likelihood of causing continued environmental degradation.

The Phase II Storm Water program is part of EPA's NPDES Program. The Missouri Department of Natural Resources (MDNR) is the regulating authority responsible for the Phase II Storm Water regulations in Missouri. The Phase II program regulates discharges from small MS4s located in "urbanized areas" (as delineated by the Census Bureau in the most recent census) and from operators of small construction activities that disturb equal to or greater than 1 (one) and less than 5 (five) acres of land.
The EPA's Storm Water Phase II Final Rule states that operators of regulated small MS4s are required to design their program to:

- Reduce the discharge of pollutants to the "maximum extent practicable"
- Protect water quality
- Satisfy the appropriate water quality requirements of the Clean Water Act

Further requirements within the program also state this storm water management program must include the following six minimum control measures (MCM):

- Public education and outreach on storm water impacts (MCM 1)
- Public involvement and participation (MCM 2)
- Illicit discharge detection and elimination (IDDE) (MCM 3)
- Construction site storm water runoff control (MCM 4)
- Post-construction storm water management in new development and redevelopment (MCM 5)
- Pollution prevention and good housekeeping for municipal operations (MCM 6)

Why are Efforts Necessary?

Many different sources and generating sites can produce illicit discharges. An understanding of the nature of illicit discharges in urban watersheds is essential to find, fix and prevent them.

The term "illicit discharge" has many meanings in regulation and practice. 40 CFR 122.26(b)(2) defines an illicit discharge as "any discharge to an MS4 not composed entirely of stormwater, except allowable discharges pursuant to an NPDES permit, including those resulting from fire activities".

Per City Ordinance Section 405.245 the term "illicit discharge" is defined as any direct or indirect non-stormwater discharge to the storm drain system except as exempted in subsection 405.245(G)(1).

What Are Some Guidelines for Developing and Implementing This Measure?

The objective of the illicit discharge detection and elimination minimum control measure is to have regulated, NPDES phase II operators gain a thorough awareness of their systems and position themselves to take necessary action on eliminating illicit discharges. This awareness will allow them to determine the types and sources of illicit discharges entering their system and establish the legal, technical, and educational means needed to eliminate these discharges.

Finding, Fixing, and Preventing Illicit Discharges

The purpose of an IDDE program is to find, fix and prevent illicit discharges, and develop a series of techniques to meet these objectives. This policy describes the major tools used to build a local IDDE program.

Highest priority in most programs is to find any continuous and intermittent discharges into the storm drain system. A range of monitoring techniques can be used to find such discharges. In general monitoring techniques are used to find problem areas and then trace the problem back up the stream or pipe to identify the ultimate generating site or connection. These techniques can sometimes pick up other types of illicit discharge that occurs. In the Phase II regulations, it is recommended that the plan to detect and address illicit discharges include procedures to:

- Map and Inventory System
- Inspect and Develop Priority areas by locating areas likely to have illicit discharges (which may include visually screening outfalls during dry weather and conducting field tests of selected pollutants)
- Tracing the source of an illicit discharge
- Removing the source of the discharge
- Program evaluation and assessment
- Educating Employees, Businesses and Residents

History

October 12, 2006 – Ordinance #5082 – Section 405.245 Stormwater Quality Management and Illicit Discharge control ordinance enacted to:

- Regulate contributions of pollution to the MS4 by stormwater discharges of any user
- Prohibit illicit connections and illicit discharges to the MS4
- Establish legal authority to carry out all inspection, surveillance and monitoring procedures necessary to ensure compliance

July 23, 1973 - Missouri State Statutes - Chapter 644 - Water Pollution, cited as the “Missouri Clean Water Law)

December 30, 2000 – Department of Natural Resources – Code of Regulations 10 CSR 20-7.031 Water Quality Standards

Chapter 1 What is an Illicit Discharge

Figure 1: Presence of Commercial Illicit Discharge

An **illicit discharge** is defined by the US EPA's Phase II Storm Water Regulations as "any discharge to an MS4 (Municipal Separate Storm Sewer System) that is not composed entirely of storm water..." with some exceptions. These exceptions include discharges from NPDES permitted industrial sources and discharges from fire-fighting activities. Illicit discharges are considered "illicit" because MS4s are not designed to accept, process, or discharge such non-stormwater wastes.

In most communities, the MS4 is directly connected to a water body and does not receive any type of treatment or "cleansing" prior to its discharge to receiving water bodies of the United States (per US Army Corps of Engineers delineation). Because of this non-treatment, it is vital that only storm water be discharged from these MS4s with as little pollutants as possible to the "maximum extent practicable".

The general permit received by Phase II regulated communities requires that those communities develop an illicit discharge detection and elimination (IDDE) program. This program will assist communities in meeting their requirement set forth in their general NPDES permit. This policy is designed to assist designated communities in establishing their IDDE program.

Types of Illicit Discharges

For the program to be effective it is important to be able to clearly distinguish between the various types of illicit discharges so that appropriate action towards compliance and necessary steps for elimination. These include:

- ***Continuous*** discharges occur most or all of the time, are usually easier to detect, and typically produce the greatest pollutant load. These are usually direct connections to

the MS4 and can be from sanitary sewers, cross connections, infrastructure problems with a sanitary sewer system or malfunctioning septic sewage system. These types of discharges are the easiest to find, investigate, trace and eliminate from the MS4. These types of discharges also have the greatest impact because of the constant pollutant loading into a water body or MS4

- ***Intermittent*** discharges occur over a shorter period of time or occasionally (e.g., a few hours per day or a few days per year). Because they are infrequent, they are harder to detect, but can still represent a serious water quality problem depending on their flow type. Methods of reducing this type of discharge is the use of a "hotline" telephone number for the public to call if discharge is observed
- ***Transitory*** discharges occur rarely or are a one-time event such as a spill, ruptured tank, sewer break, or illegal dumping episode. These discharges are hard to detect with routine monitoring, but under the right conditions, can exert severe water quality problems on downstream receiving waters. Methods of reducing this type of discharges are to educate the public on stormwater and illicit discharges, establishment of a "hotline" telephone number for public to call if a discharge is observed

Table 1-1 demonstrates examples of land uses, likely source locations and activities that can produce transitory or intermittent illicit discharges and Table 1-2 demonstrates examples that can produce continuous illicit discharges.

Table 1-1: LAND USES, LIKELY SOURCE LOCATIONS AND ACTIVITIES THAT CAN PRODUCE *TRANSITORY OR INTERMITTENT* ILLICIT DISCHARGES		
Land Use	**Likely Source Locations**	**Condition/Activity that Produces Discharge**
Residential	· Apartments · Multi-family · Single Family Detached	· Car Washing · Driveway Cleaning · Dumping/Spills · Equipment Wash-downs · Lawn/Landscape Watering · Septic System Maintenance · Swimming Pool Discharges · Laundry Wastewater · Improper Plumbing (garage floor drains)
Commercial	· Campgrounds/RV Parks · Car Dealers/Rental Car Co. · Car Washes · Commercial Laundry · Gas Stations/Auto Repair Shops · Marinas · Nurseries and Garden Centers · Oil Change Shops · Restaurants · Swimming Pools · Service Garages	· Building Maintenance (power washing) · Dumping/Spills · Landscaping/Grounds Care (irrigation) · Outdoor Fluid Storage · Parking Lot Maintenance (power washing) · Vehicle Fueling · Vehicle Maintenance/Repair · Vehicle Washing · Wash-down of Greasy Equipment & Grease Traps
Industrial	· Auto Recyclers · Beverages and Brewing · Construction Vehicle Washouts · Distribution Centers · Food Processing · Garbage Truck Washouts · Marinas, Boat Building and repair · Metal Plating Operations · Paper and Wood Products · Petroleum Storage and Refining · Printing	· All Commercial Activities · Industrial Process Water or Rinse Water · Loading and Un-loading Area Wash-downs · Outdoor Material Storage (fluids)
Municipal	· Airports · Landfills · Maintenance Depots · Municipal Fleet Storage Areas · Ports · Public Works Yards · Streets and Highways	· Building Maintenance (power washing) · Dumping/Spills · Landscaping/Grounds Care (irrigation) · Outdoor Fluid Storage · Parking Lot Maintenance (power washing) · Road Maintenance · Emergency Response · Vehicle Fueling · Vehicle Maintenance/Repair · Vehicle Washing

SOURCE: Modified from *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*, Center for Watershed Protection, 2004, p. 12, Table 2.

Table 1-2: LAND USES, LIKELY SOURCE LOCATIONS AND ACTIVITIES THAT CAN PRODUCE *CONTINUOUS* ILLICIT DISCHARGES	
Land Use	**Condition or Activity that Produces Discharge**
Residential	· Failed sanitary sewer infiltrating into storm drain · Sanitary sewer connection into storm drain · Failed septic systems discharging to storm drain system
Commercial/Industrial	· Failed sanitary sewer infiltrating into storm drain · Process water connections into storm drain · Sanitary sewer connection into storm drain
Municipal	· Failed sanitary sewer infiltrating into storm drain · Sanitary sewer connection into storm drain

Source: Table from *Guidelines and Standard Operating Procedures for Stormwater Phase II Communities in Maine*, Casco Bay Estuary Partnership.

These tables examine the likely source locations that contribute illicit discharges to an MS4 by understanding the possible discharges emanating from land use activities. It also allows for the IDDE program manager to thoroughly utilize this knowledge in identifying illicit discharges and their potential sources.

Industrial facilities are regulated by additional permits through the Missouri Department of Natural Resources (MDNR). For industrial problems, please contact your local MDNR St. Louis Regional Office at 314.416.2960 or Jefferson City at 573.634.2436 or http://www.dnr.mo.gov/env/wpp/stormwater/sw-industrial-permits.htm.

Discharge Flow Types

Dry weather discharges are composed of one or more possible flow types:

- Septic and sewage flows are produced from sewer pipes and septic systems
- Washwater flows are generated from activities such as gray water (laundry) from homes, commercial carwash wastewater, fleet washing, commercial laundry wastewater and floor washing to shop drains
- Liquid wastes refers to a wide variety such as oil, paint, and process water from radiator flushing that enter the storm drain
- Landscape irrigation flows occur when excess potable water used from residential or commercial irrigation ends up in the storm drain system
- Groundwater or spring water flows occur when the local water table rises above the bottom elevation of the storm drain and enters the storm drain either through cracks and joints, or where open channels or pipes associated with MS4 may intercept seeps

and springs. Each flow type has a distinct chemical fingerprint. The chemical fingerprint for each flow type can differ regionally, so it is a good idea to develop your own "fingerprint" library by sampling each local flow type

In practice, many storm drain discharges represent a blend of several flow types, particularly at larger outfalls that drain larger catchments. For example, groundwater flows often dilute sewage thereby making its presence.

Mode of Entry

Illicit discharges can be further classified based on how they enter a storm drain system or MS4. The mode of entry can either be direct or indirect.

Direct entry is generally by a direct connection to the system through a sewer pipe or drain of some kind. Direct entry usually occurs when two different types of plumbing or pipe are connected.

Indirect entry means that flows generated outside the system enter through storm drain inlets or by infiltrating through joints of the pipe. Generally, indirect modes of entry produce intermittent or transitory discharges with the exception of groundwater seepage. Other examples of these types of discharges are spills that enter the storm drain system at an inlet, dumping a liquid into a storm drain inlet, outdoor washing activities the create flow to a storm drain inlet, non-target irrigation from landscaping or lawns that reaches the storm drain system from over-watering or misdirected sprinklers that send runoff over impervious areas. In some instances, indirect entry can produce unacceptable loads of nutrients, organic matter or pesticides.

What are the Required EPA Elements of an Efficient IDDE Program?

The Phase II rule requires an operator of a regulated MS4 to develop, implement and enforce a program that includes the following:

- A storm sewer map system, showing the location of all outfalls and the names and location of waters of the US that receive discharges from outfalls
- Through an ordinance, or other regulatory mechanism, a prohibition (to the extent allowable under State, Tribal, or local law) on non-stormwater discharges into the MS4, and appropriate enforcement procedures and actions
- A plan to detect and address non-stormwater discharges, including illegal dumping, into the MS4
- The education of public employees, businesses, and the general public about the hazards associated with illegal discharges and improper disposal of waste
- The determination of appropriate best management practices (BMPs) and measurable goals for this minimum control measure. Some program implementation approaches, BMPs (i.e. the program actions/activities)

Does This Need to Address All Illicit Discharges?

The IDDE program does not need to address the categories of non-stormwater discharges or flows unless the operator of the MS4 identifies them as significant contributors of pollutants to it MS4. Per Ordinance Section 405.245(G) (1) the commencement, conduct or continuance of any illegal discharge to the storm drain system is prohibited except as described as follows:

a. The following discharges are exempt from discharge prohibitions established by this Section: water line flushing or other potable water sources, landscape irrigation or lawn watering, diverted stream flows, rising ground water, ground water infiltration to storm drains, uncontaminated pumped ground water, foundation or footing drains, sump pumps (not including active groundwater dewatering systems), crawl space pumps, air conditioning, condensation, springs, non-commercial washing of vehicles, natural riparian habitat or wetland flows, swimming pools (if de-chlorinated – typically less than one PPM chlorine), fire fighting activities, and any other water source not containing pollutants
b. Discharges specified in writing by the authorized enforcement agency as being necessary to protect public health and safety
c. Dye testing is an allowable discharge, but requires a verbal notification to the authorized enforcement agency prior to the time of the test
d. The prohibition shall not apply to any non-stormwater discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the Federal Environmental Protection Agency, provided that the discharger is in full compliance with all requirements of the permit, waiver, or Missouri Department of Natural Resources (MDNR) and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the storm drain system

Chapter 2 Mapping/Inventory

Figure 2: Stormwater GIS Mapping

What is a Municipal Separate Storm Sewer System (MS4)?

What constitutes an MS4 is often misinterpreted and misunderstood. The term does not solely refer to municipally-owned storm sewer systems, but rather is a term of art with a much broader application that can include, in addition to local jurisdictions, State departments of transportation, universities, local sewer districts, hospitals, military bases and prisons.

An MS4 is not always a system of underground pipes – it can include roads with drainage systems, gutters and ditches. According to 40 CFR 122.26(b)(8), a "***municipal separate storm sewer***" means a convey and or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(i). Owned or operated by a state, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law)…including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the Clean Water Act that discharges into waters of the United States

(ii) Designed or used for collecting or conveying stormwater

(iii) Which is not a combined sewer

(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2

When the field crew is performing the inventory of MS4 outfalls, a good understanding is needed as to the community and the outfalls possibly located within a water body. Most people know that a storm sewer outfall is an MS4 outfall. However, you must remember that ditches and catch basins are considered MS4s as well.

Figure 3: Storm sewer outfall


Figure 4: stormwater ditch

Mapping

One of the requirements of the NPDES IDDE component is that the MS4 develop, if not already completed, a storm sewer system map showing the location of all outfalls and names and locations of all surface waters of the state that receive discharges from those outfalls.

At the time that this policy was created, a city wide storm sewer system map in is in place and a plan to label all outfalls by performing a system survey and inventory has been put into action.

Review Information Available

The City has developed a mapping system of the storm, water and sanitary sewer system. While not all of the details are enclosed on the current map, steps are being taken to get this map up-to-date to include all of the pertinent information. A list of the following resources has been and will be utilized to develop a comprehensive database for the storm sewer system. Identifying outfall locations may help prioritize areas that may have high priority outfalls.

- Review city records – city records can include a variety of maps as detailed below as well as information obtained regarding complaints filed with the community on possible illicit discharges emanating from a possible MS4 outfall.
- Zoning maps
- Drainage maps
- Subdivision maps

- Storm drain maps
- Age of infrastructure and development – this information is important when determining and prioritizing areas with possible illicit discharges
- Location of septic systems, both household and commercial – this information is important when prioritizing illicit discharge locations and should be given high priority
- Identify water bodies and watersheds within the community – this information will provide the community a sense of where they exist in a larger watershed as well as the water bodies that they contain
- Water quality information – this will assist the City in evaluating areas within their community that have impaired water bodies, as well as areas with high bacteria counts

Field Activities Performed in Conjunction with Mapping

Performance of field surveys will be necessary to update the existing map system. These activities will serve a number of purposes such as:

- Provide data to the community as to the location of their MS4 outfall location
- Provide data on possible areas of illicit discharge
- Provide data as to the condition of the outfall and water bodies within the community. This can include areas that can cause flooding problems due to excessive amounts of trees and debris obstructing flow during periods of high water flow
- It can help prioritize areas in regard to possible illicit discharges by the observance of pollution in a specific area

It is vital that when performing the field inventory that the public is made aware of the process. Several access areas and streams are located on private property. Notification can be done in a variety of ways: letters/postcards to homeowners, newsletters, local cable channel, and City webpage.

Personnel safety is also extremely important during this process. Walking or boating water bodies can be potentially very hazardous and safety precautions must be utilized during this phase of your IDDE program. Wearing safety vests, carry a first aid kit, being careful while walking a water body due to algae growth (makes the rocks extremely slippery) and dark water (can contain unexpected deep holes and other items which could cause injury). Safety in the field is vital and typical surveys should always be done with two field staff (if available).

All field staff (City Staff of hired contractor) should carry appropriate ID's for safety and notification to residents. Also, be aware of possible confined space locations when entering culvert pipes and follow confined space protocols for your location. Remember, like the mapping component, during the field investigations, there will be remote areas that the field staff will be inspecting. If injury occurs, the extra field staff is a necessity. Be aware of the locations where field inspections will occur because specific locations may present specific sources of safety concerns. Inform Stormwater Management Coordinator or appropriate personnel where field surveys will be conducted on any particular day for follow up if required.

Field Survey

The field survey includes a number of processes to accurately provide the desired information that the City needs in order to effectively develop an IDDE program. Attached to this document in Appendix A and Appendix B are field forms that can be used during the field surveys for inspection and inventory. The field survey begins by compiling all information that the City has obtained on their storm sewer systems as well as information as to the locations of their MS4 outfall locations. This information can be in the form of a map or in written comment. Once this information is obtained, it is vital to bring the information along during the field survey to verify the information or to locate the outfall locations. Equipment for field surveys includes:

- Existing maps-mark them in the field with locations of outfalls. It allows field crew the ability to know where they are in relation to specific areas as they walk the water bodies
- Field Inventory and Inspection sheets (located in Appendix A and B)
- Digital Camera
- GPS unit (if applicable)
- Clip boards and pens
- Tape measure
- Waders (either chest or hip)
- Water proof flash light
- First Aid kit (small pocket size recommended)
- Cell phone, Nextel or handheld radio
- Safety vests
- Walking Stick

Field surveys are best conducted during low flows of the surface water ways (aka dry weather screening) to ensure that all outfalls, etc. are observable. During the survey, the field crew must be aware of how to properly perform the survey. The first step is to utilize the field maps and plan a course of action as to effectively walk or boat the water bodies within City limits. Field surveys of these water bodies can be performed in a variety of ways that include, but are not limited to:

- Perform in particular section of the City such as northwest, southeast, etc
- Survey one water body as it traverses through city limits. This can include just walking the main branch and then following up tributaries, or walking up tributaries as you come upon them in the field

Once the methodology is developed or decided upon, make sure all staff is familiar with the process that will be performed when conducting activity in the field. All must realize that this can change once the field survey has begun. All must be flexible to change once the field survey has begun.

The field survey begins by deciding where a creek will be entered by the survey crew and the utilization of an outfall site numbering system. The numbering of outfall locations is very important to the overall IDDE program. Having a rationale in place in the numbering of your outfall locations will enable future follow ups and easy determination as to the location of these outfall locations.

Once in the water body, the survey crew will walk or boat until they come upon a MS4 outfall location. When the outfall is located, the survey crew will photograph each outfall and characterize its dimensions, shape, and component material, and record observations on basic sensory and physical indicators. If dry weather flow occurs at the outfall, additional flow and water quality data are collected (refer to Appendix C). Field crews may also use field probes or test strips to measure indicators such as temperature, pH, chlorine and ammonia at flowing outfalls.

It is preferred to perform dry weather inspections and sampling at the same time as the field survey. However, due to the weather conditions, it may be necessary to perform the field surveys whenever possible and then to follow-up with dry weather inspections and sampling at a later date. Once the outfalls have been identified and mapped, it is easier to perform dry weather inspections and sampling because the locations will be easier to locate.

Chapter 3: Inspection and Developing Priority Areas

This chapter provides basic information about strategies needed to detect illicit discharges, beginning with a field screening technique designed to gather basic information and identify highly suspect outfalls or obvious discharges. EPA recommends that the plan to detect and address illicit discharges include the following four components:

1. Locate problem or priority areas
2. Trace the source
3. Remove/Correct source
4. Assess and evaluate the program

Developing Priority Areas/Hot Spots is vital to any IDDE program. The process can be broken down into three steps:

1. Use all available information to identify potential hot spots
2. Conduct dry weather screenings to locate non-stormwater discharges
3. Conduct water quality monitoring and analysis to determine if/what discharges are present

Hot Spots

These are areas where there is a potential for illicit discharges to occur. Such areas are where problems have occurred in the past. This includes locations with known water quality data and/or numerous concerns have been reported. Older areas of the community have a higher percentage of discharges due to illegal connections or deteriorating sewer lines leading to infiltration problems. Lastly commercial and/or industrial areas will tend to have a higher percentage of discharges because historically they have the most number of illegal connections and discharges with a higher potential to degrade water quality.

Figure 5: Hot spot Commercial Carwash – overflow directly to storm drain which leads directly to creek

Detection and Inspection

Once the hot spots have been identified and a list created, then inspections must be conducted on all of the known outfall locations within City limits. Dry weather inspections on all outfall locations within City limits are the preferred method of inspection. Dry weather inspections are visual inspections of the outfall location and include photos, measurements, water quality sampling, etc. Dry weather screening is defined as a minimum of 72 hours of no rainfall (0.1") within an area.

Always notify the public during field inspections by letters/postcards, City website, City newsletters and/or cable channel as it is important that the public is very aware of what is occurring and keeping them informed that what is occurring will benefit the IDDE program.

The inspectors need to be reminded that safety is vital. It is preferred that surveys be conducted with two field staff (if available). Remember, there will be remote areas that field staff will be inspecting that have the potential for injury. If an injury occurs, the extra field staff is vital.

Inspectors will utilize the information obtained from the City Stormwater Map, print out any completed inventory forms and inspection forms. This will help ease locating the outfall locations. The field form should have a photo of the outfall if it has been inspected previously. This knowledge is imperative when in the field. The field form may also include a section for water quality sampling that is to be conducted in the field at the outfall (see to Appendix A, B, C).

During the visual inspection, fill out the field inspection form which will contain a list of observations needed such as: date, time, staff member conducting site visit, last rain date and pipe flow. Visual comments may also include such things as: odor, color, floatable materials, turbidity.

Any floatables observed should also be noted at this time. Floatables are a good physical indicator with regard to the presence of an illicit discharge. The most common floatables observed consist of sewage, sludge, suds, or oil sheens. Observation of sewage indicates a serious or severe problem. Suds can be indicative of several things. They can also form by the natural movement of water. If they are located at a water drop off and break up quickly, this may only be natural movement of water. If the suds have a fragrant odor, then this can be indicative of the presence of car wash, laundry or wash water. Oil sheens need to be looked at to try to determine whether they are naturally occurring by in-stream natural processes or synthetic (man-made). Naturally occurring sheens form when iron bacteria forms a sheet-like film. This can be determined by looking at the sheen and seeing if it cracks when disturbed. Synthetic oil sheens will swirl when disturbed. If this is observed, then it is from a petroleum or oil source.

Dry weather flows are observed at a point where an outfall pipe meets a stream can be considered non-storm related. It may also be flow being generated from another action which is not an illicit discharge. This is why it is important to observe the area at each outfall location for any type of observable pollution problem.

It is also very important for the IDDE program manager to recognize that during field inspections, the outfall is observed as a snapshot in time. An effective program utilizes long term dry weather inspections as well. This involves regular inspections of outfalls throughout the City. They can be done once a year, but should be conducted on a continuous basis over time. This helps to identify if any changes that occur at that location and if action is necessary.

Water Quality and Sampling and Testing

Utilizing water quality and testing can be utilized as a tool. When a dry weather flow is observed, it may be difficult to determine if there is a problem with that flow. Obvious problems such as odor or visual presence of raw sewage or toilet paper will indicate that there is a bacterial problem and that the problem is from sanitary sewer or a cross connection. Most water observed during dry weather conditions may not have such visual clues. That is why water quality testing and sampling is a very important part of an IDDE program.

Certain water quality parameters can serve as indicators of the likely presence or absence of a specific type of discharge. Bacteria are not a good indicator parameter to use in the field because lab results cannot be received for at least one day. It is important to note that other factors such as animal operations can elevate stream nutrient concentrations, so data should always be interpreted in the context of surrounding land use. Water quality monitoring benchmarks should be continuously be refined as the City develops a better understanding of what dry weather baseline concentrations to expect.

There are a large number of water quality parameters that can be measured. When deciding on what water quality parameters to use, the IDDE program manager must be aware of the community makeup and the possible sources of illicit discharges as well as how much money is available to complete water quality sampling. It is not necessary to do lab analysis on every sample. It is very possible to operate a successful IDDE program on a shoestring budget. That is why developing a priority list and hot spot locations are very important in determining the specific parameters to test for.

If stream water quality monitoring indicates that a potential problem level benchmark has been exceeded, field crews continue stream sampling to locate the discharge through a process of eliminations. Crews walk upstream taking regular samples above and below stream confluences until the benchmark concentration declines. The crew then takes samples at strategic points to narrow down the location of the discharge.

Water Quality Standards

Missouri Department of Natural Resources lists criteria for designated uses and parameters for sampling in 10 CSR 20-7.031 Table A, B, F, H and J. Please refer to Appendix E to view criteria.

There are several major elements that are included in the Water Quality Standards process. Classified waters (those that maintain water during low flow periods in dry weather) are given designated uses to protect the public's health, preserve the public's use and recreation, and to protect fish and wildlife. These uses may already exist or they may be goals that can be attained in the future with improved water quality.

Some designated uses include:

- Wildlife watering
- Public drinking water
- Whole body contact recreation
- Fish consumption by people
- Irrigation
- Protection of aquatic life and/or livestock

Waters classified for drinking water supplies have maximum allowable concentrations for additional chemicals in the standards with particular concern for human health. Waters protected for whole-body-contact recreation, such as swimming or water skiing, also have a maximum allowable bacteria standard. States define their Water Quality Standards in terms of these designated uses or goals and in terms of scientifically determined criteria that limit pollutants to the level needed to protect the designated use. Water Quality Standards form the basis of water quality pollution control permitting. Designated use of the waters, criteria to support that use, and general criteria including anti-degradation policies are the infrastructure for the standards. Water Quality Standards for designated uses of all classified water bodies in Missouri set maximum allowable concentrations for 110 chemicals, as well as other criteria such as dissolved oxygen. Section 303(c) of the Clean Water Act requires states to review these standards at least once each three-year period for the purpose of reviewing applicable Water Quality Standards and/or adopting new standards. At least one public hearing must be held on proposed changes.

Whenever water quality is not protective of the designated use for a water body, that water body is designated as water quality limited, or impaired. Missouri's impaired waters are listed in compliance with 303(d) requirements under the Clean Water Act. The 303(d) List helps state and federal agencies keep track of waters that are impaired but not addressed by normal water pollution control programs. It is crucial to note that often only a segment of a stream is listed on the 303(d) List. When a segment is listed, that does not mean that water quality is impaired for the entire stream, but only within the designated segment. Special emphasis is then given to restoring the water quality in the 303(d) listed portion of the stream. The most current

303(d) listing may be found on MDNR's website at: http://www.dnr.mo.gov/env/wpp/waterquality/303d.htm.

"The Data in Table 3-2 are based on research by Robert Pitt, University of Alabama, 2004, and therefore, the percentages shown to distinguish "hits" for specific flow types should be viewed as representative and may shift. Also, in some instances, indicator parameters were "downgraded" to account for regional variation or dilution effects. For example, both color and turbidity are excellent indicators of sewage based on discharge fingerprint data, but both can vary regionally depending on the composition of clean groundwater." (Center for Watershed Protection and Pitt, 2004)

Table 3-2: Indicator Parameters Used to Detect Illicit Discharges

	Discharge Types It Can Detect				
Parameter	Sewage	Wash water	Tap Water	Industrial or Commercial Liquid Wastes	Laboratory/Analytical Challenges
Ammonia	#	*	x	*	Can change into other nitrogen forms as the flow travels to the outfall
Boron	*	*	x	N/A	
Chlorine	x	x	x	*	High Chlorine demand in natural waters limits utility to flows with very high chlorine concentrations
Color	*	*	x	*	
Conductivity	*	*	x	*	Ineffective in saline waters
Detergents-Surfactants	#	#	x	*	Reagent is a hazardous waste
E. coli Enterococci Total Coliform	*	x	x	x	24-hour wait for results. Need to modify standard monitoring protocols to measure high bacteria concentrations
Fluoride**1**	x	x	#	*	Reagent is a hazardous waste exception for communities that do not fluoridate their tap water
Hardness	*	*	*	*	
pH	x	*	x	*	
Potassium	*	x	x	#	May need to use two separate analytical techniques, depending on the concentration
Turbidity	*	*	x	*	

Can almost always (>80% of samples) distinguish this discharge from clean flow types (e.g., tap water or natural water). For tap water can distinguish from natural water.
* Can sometime (>50% of samples) distinguish this discharge from clean flow types depending on regional characteristics, or can be helpful in combination with another parameter
x Poor indicator. Cannot reliably detect illicit discharges, or cannot detect tap water.
N/A Data are not available to assess the utility of this parameter for this purpose.
Data Source: Pitt (this study)
1 Fluoride is a poor indicator when used as a single parameter, but when combined with additional parameter (such as detergent, ammonia and potassium), it can almost always distinguish between sewage and wash water.

SOURCE: ***Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*****, Center for Watershed Protection**

Odd hours of monitoring

Since many types of intermittent discharges probably occur when households are home, then the inspections may need to be performed during these times as well. They may need to be performed either later in the evening or early morning hours or on the weekends. Make sure that if samples will be collected during odd times, the lab needs to be notified to ensure they can accept and analyze the sample since there are specific holding times for each type of parameter.

Sampling at the outfall plunge pool:

A sample would be collected directly from the plunge pool below the outfall, if one is present. An upstream sample will also be taken to compare the results. This can be affected by dilution and time so it is not always that accurate and effective.

Chapter 4: Tracing for the Source of an Illicit Discharge

Figure 6: Presence of Commercial Illicit Discharge-grease from restaurant

Once an illicit discharge is found, a combination of methods is used to isolate its specific source and this chapter describes four investigation options. Once the pipe or stream segment has been identified, on-site investigations are used to find the specific discharge or improper connection. This method relies on an analysis of land use or other characteristics of the drainage area that is producing the illicit discharge. The investigation can be as simple as a "drive by" or "windshield" survey of the drainage or a more complex mapping analysis of the storm system network and potential generating sites. Drainage area investigations work best when prior indicator monitoring reveals strong clues as to the likely generating site producing the discharge.

On-site methods are used to trace the source of an illicit discharge in a pipe segment, and may involve dye, video or smoke testing within isolated segments of the storm system.

Where to sample?

The field crew should decide how to attack the pipe network that contributes to a problem outfall. Three options can be used:

1. Crews can work progressively up the trunk from the outfall and test manholes along the way
2. Crews can split the trunk into equal segments and test manholes at strategic junctions in the storm drain system
3. Crews can work progressively down from the upper parts of the storm drain network toward the problem outfall

The decision made to move up or down the trunk depends on the nature and land use of the contributing drainage area. Some guidance for making this decision is provided in Table 53. Each option requires different levels of advance preparation.

Table 53: Methods to Attack the Storm Drain Network

Method	Nature of Investigation	Drainage System	Advance Prep Required
Follow the discharge up	Narrow source of an individual discharge	Small diameter outfall (<36") Simple drainage network	No
Spilt into segments	Narrow source of a discharge identified at outfall	Large diameter outfall (>30"), Complex drainage Logistical or traffic issues may make sampling difficult	Yes
Move down the storm drain	Multiple types of pollution, many suspected problems – possibly due to old plumbing practices or number of NPDES permits	Very large drainage area (> one square mile)	Yes

Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments, Center for Watershed Protection

Option 1: Move up the trunk:
Moving up the trunk of the storm system network is effective for illicit discharge problems in relatively small drainage areas. Field crews can begin immediately when an illicit discharge is detected at the outfall, and only requires a map of the storm drain system. Field crews start with the manhole closest to the outfall, and progressively move up the network, inspecting manholes until indicators reveal that the discharge is no longer present. The goal is to isolate the discharge between two storm drain manholes.

Option 2: Split the storm drain network:
When splitting the storm system network, field crews select strategic manholes at junctions in the storm drain system to isolate discharges. This option is particularly suited in larger and more complex drainage areas since it can limit the total number of manholes to inspect, and it can avoid locations where access and traffic are problematic.

The method recommended for splitting the trunk is as follows:

1. Review a map of the storm drain network leading to the suspect outfall
2. Identify major contributing branches to the trunk. The trunk is defined as the largest diameter pipe in the storm drain network that leads directly to the outfall. The "branches" are networks of smaller pipes that contribute to the trunk
3. Identify manholes to inspect at the farthest downstream node of each contributing branch and one immediately upstream
4. Working up the network, investigate manholes on each contributing branch and trunk, until the source is narrowed to a specific section of the trunk or contributing branch

5. Once the discharge is narrowed to a specific section of trunk, select the appropriate on-site investigation method to trace the exact source
6. If narrowed to a contributing branch, move up or split the branch until a specific pipe segment is isolated, and commence the appropriate on-site investigation to determine the source

Option 3: Move down the storm drain network:
In this option, crews start by inspecting manholes at the "headwaters: of the storm system network, and progressively move down the pipe. This approach works best in very large drainage areas that have many potential continuous and/or intermittent discharges. Field crews certify that each upstream branch of the storm drain network has no contributing discharges before moving down pipe to a "junction manhole". If discharges are found, the crew performs dye testing to pinpoint the discharge. The crew then confirms that the discharge is removed before moving farther down the pipe network.

Key visual observations that are made during inspection include:

- Presence of flow
- Color
- Odor
- Floatable materials
- Deposits or stains (intermittent flows)

The results of storm drain network investigations should be systematically documented to guide future discharge investigations, and describe any infrastructure maintenance problems encountered.

Televising/Video Inspection
Another method in determining where the illicit discharge source is located once an area has been determined to contain the discharge, is televising the storm line. Video cameras can be used by either pushing or using a mobile video unit. Both cameras will provide detailed information as to where the infiltration or connection is located within the MS4 system.

Smoke Testing
This method should be used during special circumstances when a good storm sewer map is not available for a location and there are known problems of connection issues. Smoke is introduced into the storm drainage system and will emerge at locations that are connected to that system. It is recommended that qualified personnel be used for this method to ensure accurate test results. "Notifying the public about the date and purpose of smoke testing before starting is critical. The smoke used is non-toxic, but can cause respiratory irritation, which can be a problem for some residents. Residents should be notified one week prior to testing, if possible, and should be provided the following information" (Hurco Technologies, Inc., 2003):

- Date testing will occur and reason for smoke testing

- Precautions they can take to prevent smoke from entering their homes or businesses
- What they need to do if smoke enters their home or business, and any health concerns associated with the smoke
- A number residents can call to relay any particular health concerns (e.g., chronic respiratory problems)

Optical Brightener Monitoring (OBM) Traps

OBM traps can be used to assist in tracing intermittent flows that result from wash water with detergent. Detergents contain optical brighteners that can be detected at high concentrations. However, this method usually only picks up highly concentrated discharges. The OBM method may be used as a simple indicator for the presence or absence of intermittent flows or to detect the most concentrated flows.

These traps usually contain unbleached cotton pads or a fabric swatch placed inside of a wire mesh trap. These traps are anchored inside of an outfall using wire that is secured to the pipe itself. Rocks can also be used to hold the trap in place.

These traps will be retrieved after 24-48 hours of dry weather. They need to be removed prior to having contact with storm water. When placed under a fluorescent light, an OBM trap will indicate if it has been exposed to detergents.

Chapter 5 Elimination of Illicit Discharges

Developing and implementing an effective IDDE program requires the successful removal of an illicit discharge once it is located. Under the MDNR EPA Phase II rules, you must "to the extent allowable under law, effectively prohibit, through ordinance or other regulatory mechanism, non-stormwater discharges into your storm sewer system and implement appropriate enforcement procedures and actions."

There is currently an ordinance in place (#5082, Section 405.245) that addresses the regulatory mechanisms to address these discharges and comply with MNDR EPA Phase II requirements.

Once an illicit discharge has been identified, then the City must determine who is responsible for the removal of the discharge. Ultimately, it is the responsibility of the property owner. If the property owner cannot be identified, then the responsibility falls back to the City to remove the discharge. A few examples of such discharges are as follows:

- Internal plumbing connection-building/property owner
- Water/Sewer lateral-building/property owner
- Infrastructure Failure, e.g. sanitary sewer main within dedicated easement or right of way-City
- Illegal Dumping-e.g., oil, grease, paint, grass clippings/yard waste-building/property owner

Per the ordinance, the timeframe to repair the illicit discharge is determined by the type of discharge that occurs. A notice of violation is normally given to the building/property owner along with a timeline to correct in writing unless the discharge needs immediate attention, then the building/owner is notified in person and formal notification in writing is sent at a later date.

Once removal of the illicit discharge has occurred, it must be confirmed to ensure that all corrections have been made. For example, a dye test or camera of failed infrastructure, visible inspection after removal of grass clippings.

If the illicit discharge is emanating from outside City jurisdiction, it is important to notify the community where the discharge is coming from. This should be done in a letter format where you can document that it was sent out. The letter should include where the illicit discharge was detected and where it was traced to. Keeping records of what you did, and ask the neighboring community/jurisdiction to inform you that the correction has been made is also very important. Include all documentation with the annual Phase II Stormwater Report.

Preventing Illegal Dumping

One source of illicit discharge is illegal dumping. This is often difficult to identify and locate. It is also difficult to determine who is responsible for the illegal dumping. Because of the potential problem that this type of discharge presents, it is important to develop an IDDE program.

The US EPA has developed an Illegal Dumping Prevention Guidebook that provides key information and procedures in addressing this type of illicit discharge. The guidebook can be located at http://www.epa.gov/region5/illegaldumping/. Strategies for preventing illegal dumping include:

- Site maintenance controls: clean up areas where illegal dumping has occurred and use other controls to prevent further dumping, signs, fencing, etc.
- Targeted Enforcement: Utilization of an ordinance that prohibits illegal dumping
- Education and Involvement: Community outreach is vital to any successful IDDE program. There are a variety of programs that can assist the community in meeting their requirements under this component of Phase II

Chapter 6: Evaluation of your IDDE Program

A successful IDDE program involves program evaluation and assessment. EPA recommends that the IDDE programs be evaluated periodically to assess if it has been effective and most of all efficient.

Prior to evaluating the program, it is important to note that goals and implementation strategies need to be included with the IDDE program. This is done once the City understands the extent of the illicit discharge problem and how it influences local water quality. Initial program goals should be realistic and provide specific completion milestones to measure program compliance. Measurable goals enable the City to track and evaluate permit compliance over time, and to reassess and modify the program over time.

The NPDEs Phase II MS4 permit regulations grant considerable flexibility to develop program goals, as long as they are defined in a measurable way to gauge permit compliance and program effectiveness. EPA states (2000e) state that goals "should reflect the needs and characteristics of the operator and the area served by its small MS4. Furthermore, they should be chosen using an integrated approach that fully addresses the requirements and intent of the minimum control measure".

Tracking and Reporting System

An accurate and user-friendly system to track, report and respond to illicit discharge problems is critical for program managers. The tracking system enables managers to measure program indicators, and gives field crews a home to store the data they collect. The fundamental units to track are individual outfalls, along with any supporting information about their contributing drainage area. Some of the key information to include when tracking outfalls includes:

- Geospatial coordinates of each outfall location
- Any supporting information about the contributing land use
- Diameter and physical characteristics of the outfall
- Outfall Reconnaissance Inventory (ORI) data
- Any accompanying digital photos
- Any follow-up monitoring at the outfall or further up the pipe
- Any hotline complaints logged for the outfall, along with local response
- Status and dispositions of any enforcement actions
- Any maintenance and inspection data

Evaluating the Program

Program managers need to be extremely adaptable in how they allocate their resources. Effective IDDE programs are dynamic and flexible to respond to an ever-changing set of discharge problems, program obstacles, and emerging technologies. At a minimum, program managers should maintain and evaluate their IDDE tracking system annually, and modify program components as needed. Tracking systems should be designed so that progress toward

measurable goals can be easily reported. The tracking system should be evaluated and contain the following features:

- Updated mapping to reflect outfalls located during the ORI
- Surveyed stream reaches with locations obvious, suspect, and potential discharges, and locations of dumping sites
- Indicator sampling results for specific streams, outfalls, and storm drains
- Frequency of hotline use or confirmed illicit discharges
- Costs for each component of the program
- Number of discharges corrected
- Status and disposition of enforcement actions

Regular analysis of the tracking system sheds light on program strengths and deficiencies, and improved targeting limited program resources.

To effectively evaluate your program, a number of questions need to be asked and analyzed:

1. Evaluate priority areas within City limits
    a. Were areas identified initially?
    b. Are there areas still appropriate to continue to be a priority area?
    c. Have illicit discharges been located in these areas?
2. Detection Program
    a. Is the program effective? Need to assess and reassess the program by determining what has been achieved. Look at the number of outfall inventories, the number visibly inspected, the number that had dry weather flows and look at the overall percentages of these flows as part of your overall storm sewer system for the City
    b. Cost effectiveness: What aspects of the program had the highest quality of effectiveness in relationship to cost?
    c. Number of illicit discharges detected utilizing the detection method (which method is more effective?)
3. Tracing Program
    a. What techniques were used?
    b. Were these methods successful?
    c. What techniques that were not used would be beneficial for next year?
    d. How many illicit discharge sources were identified and/or eliminated?
4. Other
    a. If using water quality sampling, resample areas within community to determine effectiveness of removal of illicit discharges
    b. Determine how much time was spent by employees and expenses to determine overall cost for achieving a given result

City Action Items

At this time, the City addresses illicit discharges on a reactive basis. The goal of this program is to begin the process of being becoming more proactive so that discharges can be stopped before they start. We currently have most of the system located and mapped using our GIS system. An ordinance is in place for when a discharge occurs and we have a tracking system by means of database that houses all of the stormwater concerns reported to the City. The following is a list of items that the City will be addressing with regards to the IDDE program:

1. Continue to update mapping system as new development occurs
    a. One goal is to have all illicit discharges and monitoring information included in the mapping system
2. Perform Inventory and Survey of MS4 within City limits
    a. Once complete identify hot spots and violators
3. Establish a schedule for dry weather screening and testing/monitoring

Chapter 7: Education to Employees, General Public and Businesses

This chapter provides some suggestions as to how to provide this information to target audiences.

Employees

The Phase II Storm Water rule requires that municipal employees be trained on pollution prevention techniques. This is located within minimum control measure #6: "Pollution Prevention/Good Housekeeping for Municipal Operations.

Part of this training can include prevention of non-stormwater discharges from entering the storm sewer system from municipal operations. Employees can play an important role as partners in the detection and/or prevention of illicit discharges

Employees can also look for signs of illegal dumping into storm drains/detention/retention areas. Staff whose jobs keep them outside and mobile can help spot illegal dumpers. Fire and police department personnel, who respond to hazardous material spills, can help keep these spills out of the storm sewer system and adjacent water bodies.

General Public

The general public is made aware and educated on environmental and water quality issues. During the outreach stage, it is important to get the public engaged and involved in the process. Some examples of what can be done to educate the general public:

- Print and distribute outreach materials. This should include brochures/leaflets, articles in the City news letter, information on City website
- Use of a dedicated "hotline" for the public to call when they observe illicit discharges or illegal dumping
- Develop citizen volunteer programs or events to conduct storm drain stenciling, creek and roadside clean up events. All volunteer should sign a liability form
- Develop a recycling program for hazardous wastes as well as regular recyclables. St. Charles County has two such locations that citizens are referred to for bulk and hazardous waste recycling. They take such items as paint or appliances

Businesses

It is also important to educate local businesses to show how they can have an impact on water pollution. Here are some steps you can take to reach out to businesses:

- Develop a brochure and/or presentations to inform businesses about water pollution, storm water and illicit discharges. It is important to have partners assist on this project including the local Chamber of Commerce
- Provide contractors and developers information on illegal connections, non-stormwater discharges and illegal dumping

References

Center for Watershed Protection and Robert Pitt. 2004. Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments.

The Cuyhoga County Board of Health Water Protection, 1996 Illicit Discharge Detection and Elimination Manual: A Guidance Manual for Municipalities in the State of Ohio

New England Interstate Water Pollution Control Commission, 2003. Illicit Discharge Detection and Elimination Manual: A Handbook for Municipalities

US Environmental Protection Agency Federal Register, 1999. 40 CFR Parts 9, 122, and 124. National Pollutant Discharge Elimination System – Regulations for Revision of the Water Pollution Control Program Addressing Storm Water Discharges; Final Rule Report to Congress on the Phase II Storm Water Regulations; Notice

Missouri Department of Natural Resources Water Protection Program: http://www.mdnr.gov/env/wpp

US Environmental Protection agency: http://cfpub.epa.gov/npdes/stormwater/munic.cfm

Appendix A
Inventory Form

Outfall Inventory Form

General Location Information	
Receiving Stream:	
Stream Segment:	
Watershed:	
City:	
Latitude:	
Longitude:	
Location Description:	**Outfall Photograph**
Storm Sewer Map Information	
Outfall on Map: ☐Yes ☐No	
Map ID/Number:	
Map Source:	
Outfall Located on (facing downstream):	**Location Map**
Pipe Characteristics	
☐Circular ☐Elliptical ☐Egg ☐Rectangular ☐Other, Describe:	
Pipe Height (in):	
Pipe Width (in):	
Pipe Material: ☐RCP ☐PVC ☐VCP ☐Cast Iron ☐CMP ☐Other, Describe:	
Pipe Condition: ☐Good ☐Poor ☐Fair ☐N/A	
Height from Invert to Stream Flow Level (ft):	**Additional Details**
Outfall Type/Ownership	**Comments**
Outfall Type:	
Owner:	
Authority:City of O'Fallon	
Other ID:	
NPDES Permit: ☐Yes ☐No If Yes, #:	

Appendix B
Inspection Form

Outfall Inspection Form

	Receiving Stream:	Location Description:
	City:	

Inspection Information	
Outfall #/Project:	
Inspection Date: Time: Type: Scheduled	
Department:	
Crew Leader:	
Crew Member:	
Crew Member:	
Time of Last Rain: ☐<24 Hrs. ☐<48 Hrs. ☐<72 Hrs. ☐>72 Hrs Last rainfall (last 7 days) in inches:	
Pipe Submergence: ☐None ☐<1/4 Pipe ☐<1/2 Pipe ☐<3/4 Pipe ☐Full ☐Trickle	
Comments:	

Inspection Image

Sampling Information	**Analytical Results**
Sample Collected: ☐Yes ☐No	Lab Analysis ID:
Sample ID:	Analyzed By:
Description:	Fecal Coliform: (Colonies/100 ml)
Est. Flow: ☐Heavy ☐Medium ☐Trickle ☐No Flow/Pooling	E. Coli: (Colonies/100 ml)
Est. Method:	Ammonia (mg/l):
Comments:	Temperature (C):
	PH:
	Conductivity (us):
Sampling Strategy:	Phosphorus (mg/l):
	Dissolved Oxygen (mg/l):
	Other Parameters/Results

Recommendations

Action Required: ☐ Yes ☐No ☐Perform Problem Source Investigation

Comments:

Appendix C
Missouri Stream Team Data Sheets

The following data sheets are provided by the Missouri Stream Team can be found on their website at: http://www.mostreamteam.org/

- Water Chemistry Data Sheet
- Visual Survey Data Sheet
- Macroinvertebrate Data Sheet
- Stream Discharge Data Sheet

Appendix D
Illicit Discharge Ordinance

Please refer to the following website or contact the Stormwater Management Department for a copy of the City of O'Fallon Stormwater Quality Management and Illicit Discharge Control Ordinance, #5082, Section 405.245:

- City Website: http://www.ofallon.mo.us/dept_water-sewer_swm_regs.htm
- Stormwater Management Department: 636.240.2000

Appendix E
10 CSR 20-7.031
Table A, B, F, H and J

For the most updated regulations please refer to the MDNR website at:
http://www.dnr.mo.gov/env/wpp/wqstandards/wq_antideg_pol.htm

Or
Missouri Secretary of State's website at:

http://www.sos.mo.gov/adrules/csr/current/10csr/10c20-7.pdf

Appendix F
IDDE Field Guide

Illicit Discharge Detection and Elimination Field Guide

An **illicit discharge** is defined by the US EPA's Phase II Storm Water Regulations as "any discharge to an MS4 (Municipal Separate Storm Sewer System) that is not composed entirely of storm water..." with some exceptions. These exceptions include discharges from NPDES-permitted industrial sources and discharges from fire-fighting activities. Illicit discharges are considered "illicit" because MS4s are not designed to accept, process, or discharge such non-storm water wastes.

MS4 means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains)
(i) Owned or operated by a State, city, township, county, district, association, or other public body (created by or pursuant to State law) including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, that discharges into waters of the state;
(ii) Designed or used for collecting or conveying storm water;
(iii) Which is not a combined sewer; and
(iv) Which is not part of a Publicly Owned Treatment Works

Illicit Discharge Testing Procedure

1. Go to site.
2. Put on flashers, put out cones, and put on orange vest (if needed)
3. Locate the outfall.
4. Gather equipment.
5. Take a picture of the outfall.
6. Make visual observations about the pipe, its condition, and the water flowing out of the pipe including color, odor, turbidity, and floatables.
7. If water sample will be collected, put on gloves.
8. Collect a water sample in a lab supplied bottle for lab analysis or sanitized container for on sight testing.
9. Put sample for lab in cooler with ice, or for on sight testing, rinse test tubes/meters with the water to be tested.
10. Run water quality tests on sample (see back of Field Guide for possible parameters and the testing supplies section for specific test kits).
11. Measure the flow rate using the appropriate sized bucket/container
12. Rinse probes with distilled water.
13. Complete necessary paperwork.
14. Check to make sure all equipment is collected before leaving the site.

Stormwater testing supplies

- ❑ Conductivity Meter
- ❑ pH Meter
- ❑ Nitrate Test Kit
- ❑ Phosphate Test Kit
- ❑ Camera
- ❑ Latex Gloves
- ❑ Hand Cleaner
- ❑ Wet Wipes
- ❑ First Aid Supplies
- ❑ Bug Repellant
- ❑ Poison Ivy Cleanser
- ❑ Poison Ivy Repellant
- ❑ Writing Utensils
- ❑ Maps
- ❑ Storm Water Forms
- ❑ Unopened 100 mL sample bottles
- ❑ Extendable Water Sampling Pole w/bottle
- ❑ Distilled Water
- ❑ Flashlight
- ❑ GPS Unit
- ❑ Tape Measure
- ❑ Cones
- ❑ Safety Vest
- ❑ Boots
- ❑ One Gallon Bucket
- ❑ One Pint Container
- ❑ Lab Bottles
- ❑ Clipboard

Key Observations:
- Presence of Flow
- Odors
- Color/Clarity
- Stains/Deposits on the bottom of the stormwater structure
- Oil Sheen, scum or foam on standing water

Know the Difference??

Iron Bacteria

Diesel Fuel

Water Quality Test Parameters and Uses

Water Quality Test	Use of Water Quality Test
1. Conductivity	Indicator of dissolved solids
2. Bacteria (Fecal coliform, *E. Coli*)	Indicates presence of sanitary wastewater
3. Ammonia	May indicate presence of sanitary wastewater
4. Surfactants	Indicates presence of detergents (laundry and car washing)
5. pH	May indicate commercial or industrial discharge
6. Temperature	May indicate industrial cooling/sanitary wastewater
7. Phosphate	High levels indicate presence of sewage and fertilizers
8. Nitrate	May indicate presence of fertilizers
9. Dissolved Oxygen	Low levels may indicate presence of sewage
10. Hardness	Distinguishes between treated and untreated water
11. Total Chlorine	Indicator of inflow from potable water source
12. Fluoride	Indicator of inflow from potable water source
13. Potassium	High levels may indicate presence of sanitary wastewater
14. Optical Brighteners	Indicates presence of laundry detergents
15. Salinity	May indicate commercial or industrial discharge

Outfall Material:

High Density Polyethylene (HDPE)

Vitrified Clay Pipe (VCP)

Corrugated Metal Pipe (CMP)

Reinforced Concrete Pipe (RCP)

Polyvinyl Chloride (PVC)

Ductile Iron Pipe (DIP)

100 N. Main Street, O'Fallon MO 63366

City of O'Fallon

Stormwater Pollution Prevention Plan (SWPPP)
NPDES General Permit #MO-RO40039

DAMES PARK FACILITY

Adopted: June 2013

NOTE - document has been modified from the IWRC SWPPP Sample

http://www.iwrc.org/summaries/onlineSWPPP.doc

Revised:

Table of Contents

GENERAL FACILITY INFORMATION

Name of Facility: Dames Park

Facility Street Address: 389 Dames Park Dr.

Owner: City of O'Fallon

Facility Contact:

Name: Bill Mitchison

Title: Parks Superintendent

Telephone: (314) 581-3124

Mailing Address: 100 N. Main St

O'Fallon MO 63366

Emergency Contact:

Name: Bill Mitchison

Telephone: (314) 581-3124

INTRODUCTION

This storm water pollution prevention plan (SWPPP) covers the operations at Dames Park located at 389 Dames Park Dr.

It has been developed as required under the City of O'Fallon's National Pollutant Discharge Elimination System (NPDES) General Permit for storm water discharges. This SWPPP describes facility operations, identifies potential sources of storm water pollution at the facility, lists best management practices (BMPs) or pollution control measures to reduce the discharge of pollutants in storm water runoff, and provides for periodic review of this SWPPP.

OBJECTIVES

The goal of the storm water permit program is to improve the quality of surface waters by reducing the amount of pollutants potentially contained in the storm water runoff being discharged. Municipally owned facilities are subject to parameters of the NPDES MS4permit under MCM 6, Pollution Prevention and Good Housekeeping for Municipal Operations and must prepare and implement a SWPPP for their facility.

The objective of this SWPPP is three-fold:

- Identify potential sources of pollution
- Describe best management practices (BMPs) consistent with BMPs for the facility
- Provide other elements such as, but not limited to, a facility inspection program, site compliance evaluation program, record keeping and reporting program that will help the facility to comply with the terms and conditions of their NPDES MS4 permit

PHASE 1: PLANNING AND ORGANIZATION

STORM WATER POLLUTION PREVENTION TEAM

The storm water pollution prevention team is responsible for developing, implementing, maintaining, and revising this SWPPP. The members of the team are familiar with management and operations of the Dames Park (facility).

The members of the team and their primary responsibilities (i.e. implementing, maintaining, record keeping, submitting reports, conducting inspections, employee training, conducting the annual compliance evaluation, testing for non-storm water discharges, signing the required certifications) are listed in Table 1.

Table 1: Storm Water Pallution Prevention Team

Name & Title	Responsibility
Bill Mitchison	Parks Superintendent
Bob Deardeuff	Landscape Manager
Billy Roll	Parks Maintenance Supervisor
David James	Landscape Supervisor

EXISTING FACILITY MANAGEMENT PLANS

Dames Park (facility name) is (choose one)

☐ **required** or

☒ **not required**

to comply with other state required environmental plans. These include:

(list as appropriate- SPCC, RMP, etc.)

-
-

PHASE 2: ASSESSMENT

ASSESSMENT OF POTENTIAL SOURCES OF POLLUTANTS AND SITE MAP

Figure 1 presents a site map of the facility showing the following features:

- An outline of the drainage area of each storm water outfall including:
  - Drainage patterns
  - Direction of flow
  - Discharge points (outfalls)
- Existing structural storm water pollution control measures (physically constructed features used to control storm water flows), such as:
  - Flow diversion structures
  - Retention / detention ponds
  - Vegetative swales
  - Sediment traps
- Name of receiving waters (or if through a Municipal Separate Storm Sewer System)
- Location and name of surface water bodies, including any neighboring stream, river, lake or water body receiving storm water discharges from the site.
- Locations of ***"significant materials[1]"*** exposed to storm water.
- Locations of past spills and leaks (during the past three years)
- Locations for each of the following activities (where exposed to storm water):
  - Fueling stations
  - Vehicle/equipment washing and maintenance areas
  - Areas for unloading and loading materials
  - Aboveground tanks for liquid storage
  - Industrial waste management areas (landfills, waste piles, treatment plants, disposal area)

- Outside storage areas for raw materials, by products, and finished products
- Outside manufacturing or processing areas
- Other areas of concern (specify: _____)

1 ***"significant materials" are defined in the guidance document as: Raw materials, fuels, materials such as salvents, detergents, and plastic pellets, finished materials such as metallic products, raw materials used in food processing ar praductian, hazardaus substances designed under Section 101(14) of CERCLA, any chemical the facility is required ta repart pursuant ta EPCRA Sectian 313, fertilizers, pesticides and waste praducts such as ashes, slag and sludge that have the potential ta be released with starm water discharges.***

FIGURE 1. SITE MAP

(GIS aerial and markings)

INVENTORY OF SIGNIFICANT MATERIALS AND EXPOSURE INFORMATION

Table 2 is an inventory of ***"significant materials[1]"*** on site. For each significant material on site an evaluation will be conducted to determine the potential for these materials to be contributed to storm water runoff being discharged from the facility.

Table 2: Inventory of Significant Materials and Exposure Infarmation

Location or Process	Material	Quantity (units)	Management Practice	Likelihood of Exposure & Under What Conditions	Exposed Past 3 years (yes/no)

LIST OF PAST SPILLS/LEAKS AND "HAZARDOUS CONDITION"

A list of ***"significont moteriols[1] "*** that have been spilled or leaked over the three years prior to the completion of the plan is found in Table 3. The date, volume of materials, the exact location of each release, and the actions taken to clean up the materials and/or prevent exposure of the materials to storm water runoff is included in addition to indicating if a ***"hozordous condition[2]"*** occurred. (*If there have been no spills of polluting materials, state that in this section).*

No spills of polluting materials have occurred.

TABLE 3: LIST DF PAST SPILLS/LEAKS AND "HAZARDOUS CDNDITION"

Date	Material	Volume	Location	Storage Method	Disposal Method	Action Taken (prevention, clean up, etc.)	Hazardous Condition (yes/no)

[2] ***"hazardaus canditian" is defined in the guidance: '... any substance ar mixture af substances that presents a danger ta the public health ar safety and includes but is nat limited ta a substance that is taxic, carrasive or flammable, that is an irritant ar that, in confinement, generates pressure thraugh decampositian, heat ar ather means. Examples: acids, alkalis, explasives, fertilizers, heavy metals such as chramium, arsenic, mercury, lead and cadmium, industrial chemicals, paint thinners, pesticides, petroleum praducts, poisans, radiaactive materials, sludge and arganic salvents, any substance identified by EPA under RCRA ar any toxic pallutant listed under Sectian 307 of WPCA ar any DDT designated hazardaus material.***

NON – STORM WATER DISCHARGE ASSESSMENT

The permit requires that all discharge locations be evaluated for the presence of non-storm water discharges. Examples of non-stormwater discharges that may require coverage under a NPDES permit include any water used directly in the manufacturing process (process water) and vehicle or equipment washing where detergent is used. Allowable non-stormwater discharges include: uncontaminated ground water discharge, foundation or footing drains where flows are not contaminated with process materials, discharges from springs, routine exterior building wash down which does not use detergents or other compounds, air conditioning condensate, non-contact cooling water, pavement wash waters where spills or leaks or hazardous materials have not occurred and where detergents are not used. Also, discharges from fire fighting activities, fire hydrant flushing, potable water sources including waterline flushing, irrigation drainage and lawn watering are allowed.

Any unauthorized storm water discharges will be eliminated, or covered under another National Pollutant Discharge Elimination System (NPDES) permit. Table 4 summarizes the evaluation results.

TABLE 4: NON-STORM WATER DISCHARGE ASSESSMENT

Date	Outfall	Method Used	Location or Source	Person Evaluating	Result of assessment and potential significant sources
8/15/ 2014	Area inlet	visual	14 area locations within park	Brian H.	No discharge observed this date
8/15/ 2014	Curb inlet	visual	4 curb locations at front entrance	Brian H.	No discharge observed this date
8/15/ 2014	FES	Visual	9 FES located in parking lots within park	Brian H.	No discharge observed this date

EXISTING MONITORING DATA

(If no existing data – indicate on this table)

Table 5 includes existing monitoring data for the facility.

TABLE 5: EXISTING MONITORING DATA

Date	Location or Outfall	Parameter Analyzed	Employee Collecting Sample	Method of Collection	Frequency	Lab Analyst

SITE EVALUATION SUMMARY

This is a narrative description of activities with a ***high potential to contominote storm water*** at Dames Park (facility name). It includes areas, activities and materials associated with loading, unloading, outdoor storage, outdoor manufacturing or processing, onsite waste disposal and significant dust or particulate generating activities. The information found in Table 6 is used to select the most appropriate Best Management Practices (BMPs) to prevent or control pollutants from these areas.

TABLE 6: SITE EVALUATION SUMMARY

Activity/Area	Storm Water Pollutant Source	Pollutant of Concern	Existing BMP	New BMP Options (Recommendations)
Loading and Unloading Operations	Tractor/Loader	Various	Grass swales	N/A
Maintenances & Equipment Cleaning	Equipment Washing	Sediment	grass swale	N/A
Outdoor Storage Operations	Materials stored	Various	Grass swales	Storage bins
On-Site Practices	Various	Various	MSDS	N/A
Dust or Particulate Generating Processes	Vehicles	Dirt, sand, gravel	sweep, dust control	N/A
Above Ground Liquid Storage Tank	N/A	N/A	N/A	N/A

Outdoor Processes or Manufacturing	N/A	N/A	N/A	N/A
Other	Parking lot runoff	Sediment	grass swales	N/A

PHASE 3 & 4: BEST MANAGEMENT PRACTICE SLECTION, IMPLEMENTATION AND EMPLOYEE TRAINING

BEST MANAGEMENT PRACTICES: SUMMARY AND SCHEDULE OF IMPLEMENTATION

Based on information recorded in Table 6, Site Evaluation Summary, storm water management controls or best management practices (BMPs), have been or will be implemented to reduce the amount of pollutants in storm water discharge.

Non-structural controls are practices that are specifically intended to reduce the amount of pollution getting into surface waters. They are generally implemented to address the problem at the source. They do not require any structural changes to the facility.

Structural control measures may be necessary to control any pollutants that are still present in the storm water after the non-structural controls have been implemented. These types of controls are physical features that control and prevent storm water pollution. They can range from preventive measures to collection structures to treatment systems. Structural controls will require construction of a physical feature or barrier.

The following BMP's are a mixture of non-structural and structural control chosen for implementation at the Dames Park (facility name).

GOOD HOUSEKEEPING

Good housekeeping practices are designed to maintain a clean and orderly work environment. This will reduce the potential for significant materials to come in contact with storm water.

Table 7 lists good housekeeping practices that are or will be implemented, a schedule for implementation and the person responsible.

TABLE 7: GOOD HOUSEKEEPING PRACTICES			
Area / Equipment	Task	Implementation Schedule	Responsible Person
Maintenance building	Clean and organize	On going	staff

PREVENTIVE MAINTENANCE

Preventive Maintenance involves the regular inspection, testing, and cleaning of facility equipment and operational systems. Preventative maintenance will help to uncover conditions that might lead to a release of materials.

Table 8 contains the equipment and activities to be included in a preventive maintenance program.

TABLE 8: PREVENTIVE MAINTENANCE

Equipment / Activity	Tasks	Implementation Schedule	Responsible Person
mowers	Regular maintenance	On going	staff
tractors	Regular maintenance	On going	staff
Utility vehicles	Regular maintenance	On going	staff
Paint striper	Regular maintenance	On going	

VISUAL INSPECTION

Visual inspection of the facility (equipment, plant areas, and structural controls) is required by the permit. These inspections will occur at least once each year and after major storm events as prudent. Records of the inspections will be kept on file with the SWPPP for a minimum of three years. Pollution Prevention Plans will be revised after the inspection as needed. Table 9 is a description of the visual inspection and annual schedule.

TABLE 9: VISUAL INSPECTION

Location, Area or Equipment	Annual Inspection Date	Responsible Person	Management Practice/Method	Effectiveness (Yes/No)	Revision Notes

SPILL PREVENTION AND RESPONSE PLAN

Spills and leaks together are the largest industrial source of storm water pollution. Thus, this SWPPP specifies material handling procedures and storage requirements for significant materials. Equipment and procedures necessary for cleaning up spills and preventing the spilled material from being discharged have also been identified. Appropriate employees have been trained to follow SWPPP procedures.

Table 10 lists procedures that have been developed for spill response at the facility, the area(s) covered, response plan location and responsible person are also included.

TABLE 10: SPILL PREVENTION AND RESPDNSE

Area Activity Equipment	Pollutant(s) of Concern	Description of Response Plan	Location of Plan and Clean up Materials/Kits	Responsible Person or Team
Area Activity Equipment	Pollutant(s) of Concern	Description of Response Plan	Location of Plan and Clean up Materials/Kits	Responsible Person or Team
Paint	paint	MSDS	All parks maintenance buildings	staff
Herbicide/ insecticide/ fertilizer	Herbicide/ insecticide/ fertilizer	MSDS	All parks maintenance buildings	staff
Cleaning supply	Cleaning supply	MSDS	All parks maintenance buildings	staff
Oil / gas	Oil / gas	MSDS	All parks maintenance buildings	staff

SEDIMENT AND EROSION PREVENTION

There may be certain areas at the facility that are prone to soil erosion. These areas need to be protected, and soil kept out of the storm water discharge. If there are no areas prone to soil erosion it will be stated in this.

TABLE 11. SEOIMENT ANO EROSION PREVENTION

Area of Concern	Control Measures	Implementation Schedule	Responsible Person
Area inlets	Grass swales and riprap	Repairs as needed	staff
FES in parking lots	Riprap in place	Repairs as needed	staff

RUNOFF CONTROL - DIVERSION PRACTICES

Diversion practices are structures (including grading and paving) that are used to divert storm water away from high-risk areas and prevent contaminants from mixing with the runoff and/or to channel contaminated storm water to a treatment facility or containment area.

Table 12 includes information on diversion practices at Dames Park (facility).

TABLE 12: RUNOFF CONTROL – DIVERSION PRACTICES

Area	Pollutant(s) of Concern	Diversion Measure	Implementation Schedule	Responsible Person
Parking lots	Sediment/metals	Grass swales and riprap	In place	staff
Area collectors	erosion	Grass swales and riprap	Already in place- regular maintenance	staff

RUNOFF CONTROL - CONTAINMENT

Containment areas are structures designed to hold pollutants or contaminated storm water to prevent it from being discharged to surface waters. These structures can range from drip pans to large containment areas required for Spill Control and Countermeasures (SPCC) plans such as secondary containment structures or detention, retention and collection basins.

Table 13 includes a list of containment measures that are currently in place or that will be implemented.

TABLE 13: RUNOFF CONTROL – CONTAINMENT

Area	Pollutant(s) of Concern	Containment Measure	Implementation Schedule	Responsible Person

OTHER CONTROLS

There are other control measures that are used that may not fit into one of the previously mentioned categories such as, sumps, oil/water separators, sand filters, etc. Those controls are found in Table 14.

TABLE 14: OTHER CONTROLS

Area	Material	Control Measure	Implementation Schedule	Responsible Person
Maintenance Bldg	Various	Floor drain to grass swales	Regular maintenance	staff
Parking lot	Various	Grass swales	Regular maintenance	staff

BMP'S FROM SITE EVALUATION

Table 15 includes BMP's that will be implemented based on information obtained during the comprehensive site evaluation conducted during an earlier activity of this plan.

TABLE 15: BMP's FROM SITE EVALUATION

Area / Activity	Pollutant of Concern	BMP Control Measure	Implementation Schedule	Responsible Person

EMPLOYEE TRAINING

An employee training program will be implemented to inform appropriate personnel at all levels of responsibility of the components and goals of this SWPPP. The more knowledgeable employees are about the facility's SWPPP and what is expected of them, the greater the chance that the plan will be successful. Table 16 details the training program.

TABLE 16: EMPLOYEE TRAINING PROGRAM

Training/Information Topic	Employees Trained	Implementation Schedule	Responsible Person
multiple	all	annual	coordinator
multiple	all	As needed	Site supervisor

PHASE 5 & 6: EVALUATION

Record Keeping, Internal Report AND ANNUAL REPORT

The permit requires that records of all preventive maintenance, comprehensive visual site inspections, records of employee training sessions, records of monitoring information, and the annual report be retained at Dames Park (facility name) for at least three years after the permit coverage expires. Monitoring results should be retained for five years.

These records are available, upon request, to a representative of MDNR and/or a municipal separate storm sewer system operator as appropriate.

SITE EVALUATION

Qualified personnel will conduct site compliance evaluations once each calendar year.

ANNUAL SITE COMPLIANCE EVALUATION

The following areas, management practices, activities and BMPs listed in Table 17 will be included in the annual compliance evaluation.

TABLE 17: ANNUAL SITE COMPLIANCE PROGRAM

Area, Location, and or BMP	Effectiveness of Measures	Revision to SWPP Needed (yes/no)	Implementation Schedule	Responsible Person

RECORD KEEPING AND REPORTING FORMS

Forms used to conduct inspections/evaluations and report results are found in Appendix A.

ANNUAL REPORT

An annual report discussing the effectiveness of the SWPPP will be written. This report will include any changes that have been made, the reason for the changes, any spills that occurred, what actions were taken as result of the spill, inspection results, and any other information relevant to the SWPPP. The annual report will be retained on site with the SWPPP.

PHASE 7: GENERAL AND SPECIAL REQUIREMENTS

GENERAL REQUIREMENTS

All Notices of Intent, SWPPP's, reports, certifications, or information submitted to the MDNR, or the operator of a large or medium municipal separate storm sewer system will be signed by the "authorized representative" who is the person at or near the top of the Dames Park (facility name) management chain and who has been delegated the authority to sign and certify this type of document.

The SWPPP will be located at the facility and made public as appropriate.

CERTIFICATION OF THE SWPPP

I certify that this SWPPP has been developed in accordance with good general practices. To the best of my knowledge and belief, the information submitted is true, accurate, and complete. And at the time this plan was completed no unauthorized discharges were present. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

BILL MITCHISON

Print Name

PARK SUPERINTENDENT

Official Title

636-240-2000

Area Code & Phone Number

10/1/14

Date

B. Mitchison

Signature

SPECIAL REQUIREMENTS

1. The Dames Park (facility name) **(choose one):**
   ☐ **does** or
   ☒ **does not**
   discharge stormwater through a Municipal Separate Storm Sewer System in a city with a population of 100,000 or more. Relevant information outlining compliance with the MS4 special requirements is included as Attachment 1 of this SWPPP.

2. The Dames Park (facility name) **(choose one):**
   ☐ **does** or
   ☒ **does not**

store, handle process or transfer SARA Title III, Section 313 Water Priority Chemicals. Relevant information outlining compliance with SARA Title III special requirements is included as Attachment 2 of this SWPPP.

3. The Dames Park (facility name) **(choose one):**
   ☐ **does** or
   ☒ **does not**
   have salt storage piles used for deicing or other commercials purposes. Relevant information outlining compliance with salt storage piles special requirements is included as Attachment 3 of this SWPPP.

APPENDIX A

INSPECTION AND REPORTING FORMS

SIGNIFICANT SPILL REPORT FORM

Date of Occurrence:

Discovered by Whom:

Location:

Material Type & Volume:

Cause of Spill:

Corrective Action Taken:

Agencies/Persons Contacted:

Signature

ANNUAL SITE COMPLIANCE EVALUATION FORM

Date: Time:

Conducted by:

Signature: _____

Area/Equipment/BMP Inspected	Observations	Actions Taken

APPENDIX B

LIST OF TABLES

Stormwater Industrial Routine Facility Inspection Report

General Information			
Facility Name	The Renaud Spirit Center		
Date of Inspection	**6/9/2014**	**Start/End Time**	**15:15; 15:45**
Inspector's Name(s)	Craig Feldt		
Inspector's Title(s)	Recreation Superintendent		
Inspector's Contact Information	636-474-8101		
Inspector's Qualifications			

Weather Information

Weather at time of this inspection?

❑ Clear ☒Cloudy ❑ Rain ❑ Sleet ❑ Fog ❑ Snow ❑ High Winds

❑ Other: Temperature: 74

Have any previously unidentified discharges of pollutants occurred since the last inspection? ❑Yes ☒No

If yes, describe:

Are there any discharges occurring at the time of inspection? ❑Yes ☒No

If yes, describe:

Routine Facility Inspection Reports

Instructions:

- Include in your records copies of all routine facility inspection reports completed for the facility.
- Facilities subject to State industrial stormwater permits may also find this form useful.

Using the Sample Routine Facility Inspection Report

- This inspection report is designed to be customized according to the specific control measures and activities at your facility. For ease of use, you should take a copy of your site plan and number all of the stormwater control measures and areas of industrial activity that will be inspected. A brief description of the control measures and areas that were inspected should then be listed in the site-specific section of the inspection report.
- You can complete the items in the "General Information" section that will remain constant, such as the facility name, NPDES tracking number, and inspector (if you only use one inspector). Print out multiple copies of this customized inspection report to use during your inspections.
- When conducting the inspection, walk the site by following your site map and numbered control measures/areas of industrial activity to be inspected. Also note whether the "Areas of Industrial Materials or Activities exposed to stormwater" have been addressed (customize this list according to the conditions at your facility). Note any required corrective actions and the date and responsible person for the correction.

Control Measures

- *Number the structural stormwater control measures identified in your SWPPP on your site map and list them below (add as many control measures as are implemented on-site). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required control measures at your facility.*
- *Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.*

	Structural Control Measure	**Control Measure is Operating Effectively?**	**If No, In Need of Maintenance, Repair, or Replacement?**	**Corrective Action Needed and Notes** (identify needed maintenance and repairs, or any failed control measures that need replacement)
1	North West Parking Lot	☒Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	Drain is clear of debris
2	North East Parking Lot	☒Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	Drain is clear of debris
3	South West Parking Lot	☒Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	Drain is clear of debris
4	South East Parking Lot	☒Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	Drain is clear of debris
5	Drain in grass South of parking lot	☒Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	Drain is clear of debris
6	Storm sewer by playground	☒Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	Storm sewer is clear of debris
7	Rain Garden	☒Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	Vegetation is thriving, drainage is sufficient

	Structural Control Measure	Control Measure is Operating Effectively?	If No, In Need of Maintenance, Repair, or Replacement?	Corrective Action Needed and Notes (identify needed maintenance and repairs, or any failed control measures that need replacement)
8	North West of Circle drive	☒Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	Storm sewer is clear of debris
9	North entrance to parking lot	☒Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	Storm sewer is clear of debris
10	South entrance to parking lot	☒Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	Storm sewer is clear of debris
11	North entrance to Circle	☒Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	Storm sewer is clear of debris
12	South entrance to Circle	☒Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	Storm sewer is clear of debris
13	South East of Circle drive	☒Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	Storm sewer is clear of debris
14	North side of entry drive	☒Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	Storm sewer is clear of debris
15	South side of entry drive	☒Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	Storm sewer is clear of debris

Areas of Industrial Materials or Activities exposed to stormwater

Below are some general areas that should be assessed during routine inspections. Customize this list as needed for the specific types of industrial materials or activities at your facility.

	Area/Activity	Inspected?	Controls Adequate (appropriate, effective, and operating)?	Corrective Action Needed and Notes
1	Material loading/unloading and storage areas	☒Yes ☐No ☐ N/A	☒Yes ☐No	
2	Equipment operations and maintenance areas	☒Yes ☐No ☐ N/A	☒Yes ☐No	
3	Fueling areas	☐Yes ☐No ☒ N/A	☐Yes ☐No	
4	Outdoor vehicle and equipment washing areas	☐Yes ☐No ☒ N/A	☐Yes ☐No	
5	Waste handling and disposal areas	☐Yes ☐No ☒ N/A	☐Yes ☐No	
6	Erodible areas/construction	☐Yes ☐No ☒ N/A	☐Yes ☐No	
7	Non-stormwater/ illicit connections	☐Yes ☐No ☒ N/A	☐Yes ☐No	
8	Salt storage piles or pile containing salt	☐Yes ☐No ☒ N/A	☐Yes ☐No	
9	Dust generation and vehicle tracking	☐Yes ☐No ☐ N/A	☐Yes ☐No	
10	(Other)	☐Yes ☐No ☐ N/A	☐Yes ☐No	
11	(Other)	☐Yes ☐No ☐ N/A	☐Yes ☐No	
12	(Other)	☐Yes ☐No ☐ N/A	☐Yes ☐No	

Non-Compliance

Describe any incidents of non-compliance observed and not described above:

N/A

Additional Control Measures

Describe any additional control measures needed to comply with the permit requirements:

N/A

Notes

Use this space for any additional notes or observations from the inspection:

CERTIFICATION STATEMENT

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Print name and title: Craig Feldt, Recreation Superintendent

Signature: [signature] **Date:** 6/9/14

Rain Garden
Native Landscaping
Tri Sports Cir
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BMP Tracking Database Form

AutoID-BMP Tracking: 5

Plan approval date:

P & Z Project Number:

Go to First Record | Go to Last Record | Next Record

Site name: Fireman's Fund

Location or address: Progress Pointe-Technology Dr

BMP installation date: 01/01/2009

Type of BMP: Rain Garden, Inlet Filters, LEED Certified

Maintenance Agreement Approved by Staff:

Date Recorded:

Recorded Book number:

Recorded Page number:

Agreement Approved by Council:

Inspection Report Submittals Form:

Auto ID BMP Tracking	Site Name	Date report submitted	P & Z Project Number	Status of report	
5	Fireman's Fund	1/1/2009		Approved	LEED

Table 1 - MCM 1(Public Education and Outreach) Permit Plan

BMP	Responsible Party	Measurable Goal	Theme or Message	Target Audience	Summary of Planned Activities	Implementation Schedule	%Completed
Public Information Via Hard Copy and Internet Media	Stormwater Management-Stormwater Mgmt Coordinator Public Relations-Public Relations Director Communications-Communications Director	Provide printed materials such as brochures, fact sheets, etc. to build awareness of Stormwater and Water Quality locally via hard copy and internet media	1) Stormwater Management Plan 2) Water Quality 3) Stormwater Mgmt Regulations and Permitting 4) Illicit Discharge Detection and Elimination	1) General Public and Employees 2) General Public 3) General Public, Staff, Developers/Builders 4) General Public and Staff 5) General Public	1) Continue creation and distribution of printed materials for distribution 2) Provide articles for newspapers, publications, local cable channel 3) Provide information and links on our City website page	1) Ongoing 2) Ongoing 3) Ongoing	100%
Public Education	Stormwater Management- Stormwater Mgmt Coordinator	Environmental Education sessions to inform public about the importance of pollution prevention and its effects	1) Water Quality /Groundwater Recharge 2) Illicit Discharges 3) Litter 4) Yard Waste	Providing stormwater education at schools, community meetings, subdivision meetings, public events	1) K-12 education sessions and activities 2) Subdivision Meetings 3) Community Meetings	Ongoing-minimum twice annually	100%
Rain Garden/Rain Barrel/Native Landscaping Workshop	Stormwater Management-Stormwater Mgmt Coordinator Public Relations-Public Relations Director	Increase awareness of stormwater benefit from installation of rain garden, rain barrel or native landscape	1) Stormwater Benefits 2) Ease of installation and attractive aesthetics	General public as well as contractors, builders and developers	1) Meet with other municipalities for partnership opportunities 2) Plan Workshop Details 3) Publicize event via coordination with Public Relations 4) Hold event and evaluate feedback	Ongoing-minimum one time per year at Public Works Day	100%
Educational Signage for Native landscape and Rain Gardens	Stormwater Management-Stormwater Mgmt Coordinator Engineering-Assistant City Engineer Parks Department - Parks and Recreation Director	Installation of educational signage at various native landscape and rain gardens throughout the City limits	Educate public on benefits of installing rain gardens or utilizing native landscape	General Public	1) Concept design for signage 2) investigate grant opportunities for use 3) Request funds for purchase and installation	year end, 2014 pending fund approval	10%

Table 2 - MCM 2(Public Participation and Involvement) Permit

BMP	Responsible Party	Measurable Goal	Theme or Message	Target Audience	Estimate of People to Participate	Summary of Planned Activities	Implementation Schedule	%Completed	
Stormwater Advisory Committee	Stormwater Management-Stormwater Mgmt Coordinator Engineering-Assistant City Engineer Public Works-Public Works Director Public Works-City Engineer	Build and maintain public participation and involvement as well as raise citizen awareness for water quality	Maintain awareness and get input for water quality, regulations and permit activities or changes, as well as program updates and stormwater improvement	General Public, Businesses, Contractors and Developers	Team Members: *Public Works Director *City Engineer *Asst City Engineer *Stormwater Mgmt Coordinator *Recording Secretary *Street Dept Director *Councilman *10 Commission Members *Water/Sewer Director	1) Regular Public Works Commission Meetings to discuss stormwater program, regulation changes, policy and capital improvement projects	1) Ongoing	100%	
Public Participation Volunteer Events	Stormwater Management-Stormwater Mgmt Coordinator Volunteer Services-Volunteer Services Manager	Increase public awareness to improve water quality and prevent illicit Discharges	Increase public awareness to improve water quality and prevent illicit Discharges	General Public and Businesses	Team Members: *Stormwater Mgmt Coordinator *Volunteer Services Department	1)Continue SWAC (Storm Water Awareness Campaign) by coordinating Storm Drain Marking events with other volunteer events throughout calendar year as done in the past 2) Engineering Dept will make sure markers/pre cast requirements in place prior to escrow release 3) Meet with other municipalities for partnership opportunities 4)Plan workshop details 5) Publicize events via coordination with Public Relations 6) Hold event and evaluate feedback	1)Ongoing-minimum once annually based on volunteer participation 2) Engineering to continue as in past 3-6) Ongoing-minimum once annually	1-100% 2-100% 3-85% 4-10%	
Rain Garden Demonstration Project	Stormwater Management-Stormwater Mgmt Coordinator Engineering-Assistant City Engineer Public Relations-Public Relations Director	Installation of a demonstration rain garden either at residence or city owned property	Educate public on stormwater quality benefits of installing rain gardens or utilizing native landscape	General Public	Team Members: *Stormwater Mgmt Coordinator *Assistant City Engineer *Volunteer Services Manager *Public Relations Director *Partnership-outside organization *Property owner *Citizen Volunteers	1) Citizen donate area for project or choose city owned parcel 2) investigate grant opportunities for use 3) Request funds for purchase and installation 4) Procure materials 5) Publicize event and encourage volunteer participation whether subdivision or general public 6) visit site annually to evaluate success of plantings and record results by photographic record	1)Begin funding request late 2013 for fiscal year 2014 2) implement installation of at least one rain garden within 5 year permit cycle pending funding approval		**Consider public site close to Brendan's Playground for optimal visibility

Rain Barrel Program	Stormwater Management-Stormwater Mgmt Coordinator Engineering-Assistant City Engineer	Installation of rain barrels by citizens as a means of stormwater quality and quantity benefits	Educate public on stormwater quality benefits of installing rain barrel	General Public	Team Members: *Stormwater Mgmt Coordinator *Assistant City Engineer *Potential partnership-outside organization *Public Relations Director *Citizen Volunteers	1) Investigate other municipalities rain barrel programs to implement program efficiently 2) Request funds for purchase and installation 3) Investigate partnerships and or grant funding to assist with the program 4) Purchase rain barrels and or procure materials to assemble kits 5) Publicize event and encourage volunteer participation for installation 6) Evaluate success of project by photographic	1)Funds requested in 2012 2)Implementation to begin 2013-14 and continue as ongoing annually	1-100% requested	
Riparian Corridor Restoration	Stormwater Management-Stormwater Mgmt Coordinator Engineering-Assistant City Engineer Engineering-Floodplain Administrator Volunteer Services-Volunteer Services Manager	Installation of trees, shrubs and native plants to restore riparian corridor along a local stream to prevent flooding, improve water quality and assist in prevention of creek bank erosion	Educate public on stormwater quality and flood prevention benefits by re-establishing a riparian corridor	General Public	Team Members: *Stormwater Mgmt Coordinator *Assistant City Engineer *Volunteer Services Manager *Public Relations Director *Partnership-outside organization *Property owner *Citizen Volunteers	1) Investigate other municipalities rain barrel programs to implement program efficiently 2) Request funds for purchase and installation 3) Investigate partnerships and or grant funding to assist with the program 5) Purchase rain barrels and or procure materials to assemble kits 4) Publicize event and encourage volunteer participation whether subdivision or general public 5) visit site annually to evaluate success of plantings and record results by photographic record	1) Mid to late 2014 develop plan of action to implement project 2) 2015 implement project 3) Continue as ongoing annually to semi annually after initial project		

Table 3 - MCM 3(Illicit Discharge Detection and Elimination-IDDE) Permit Plan

BMP	Responsible Party	Measurable Goal	Summary of Planned Activities	Implementation Schedule	%Completed		
Storm Sewer System Mapping	Stormwater Management-Stormwater Mgmt Coordinator Engineering-Assistant City Engineer Planning-GIS Director	Develop and maintain storm system inventory that locates outfalls including detention/retention basins, pipes, ditches, flood control facilities and post construction best management practices	1) Scan all subdivision records on file so that it can be entered onto the existing map system 2) Continue to update the existing map as new development and redevelopment occurs 3) Implement a stream, outfall, discharge pipe, detention/retention inventory and incorporate it in the GIS Mapping system	1) Ongoing 2) Ongoing 3) Implemented in late 2011 and will continue as ongoing through 2013-2017 permit cycle	1-90% 2-90% 3-60%		
Private Sewer Treatment Systems (Septic)	Stormwater Management- Stormwater Mgmt Coordinator Engineering-Assistant City Engineer Sanitary Sewer Dept-Water/Sewer Director St. Charles County Health Department Planning-GIS Director	Develop and maintain a list of address and parcel ID's as available of all private sewer treatment systems and develop a map of on-site sewage disposal systems within the City	1)Perform records search and obtain a list of on-site sewage disposal systems from Board of Health (St Charles Co) 2) Map the location of all known home sewage treatment systems connected to the City's MS4 3) Continue to update the map and list of systems as information becomes available 4) Identify and clean up deteriorating systems (St Charles Co assistance)	1) 2013 2) Late2013 2) 2014 and ongoing from there			
IDDE Manual and Screen Outfalls	Stormwater Management- Stormwater Mgmt Coordinator Engineering-Assistant City Engineer	Implement manual procedures that were completed in 2012 to decrease illicit discharges by visual screening of outfalls and discharge pipes throughout City limits	1) Screening has begun in late 2011 and will continue through 2014 for existing development 2) Add new development and make any changes for re-development 3)Implement inspection protocol/schedule	1) Began late 2011 and will continue through 2014 2) Late 2014 and ongoing from there 3) Late 2014 and ongoing from there	1-60%		
Pet Waste Stations	Stormwater Management-Stormwater Mgmt Coordinator Parks and Recreation-Parks and Recreation Director/Superintendent Public Relations-Public Relations Director	Continue installation of Pet Waste stations to prevent Pet Waste dumping and improve water quality	1) Obtain continued funding to purchase 4 stations per budget year 2) Obtain continued funding to maintain existing pet waste stations 3)Continue to install and maintain at local parks 4) Begin procurement and installation to pedestrian trails	Ongoing	1-100% 2-100% 3-80%	**Consider public site close to Brendan's Playground for optimal visibility	

Municipal Recycling Program	Public Works-Public Works Director Environmental Services-Environmental Services Director Green Council-Volunteer Members	Continue our single stream recycling program to decrease the amount of waste placed in landfills to improve the quality of the environment	1) Green Council Board-continues to discuss ways to promote and improve recycling efforts and green solutions to increase the health of the environment 2) Environmental Services tracks the amount of recycling that occurs-continue to report information to the public and provide for NPDES reporting	Ongoing	all 100% and ongoing		
Stream Water Quality Monitoring	Stormwater Management-Stormwater Mgmt Coordinator Engineering-Assistant City Engineer Engineering-Floodplain Administrator Volunteer Services-Volunteer Services Manager	As part of the IDDE Manual/Program implementation, inventory of all discharge pipes and outfalls to the streams are to be visually inspected each year and water quality monitored by testing should a concern for IDDE be present. All inventory along with concerns will be tracked	1) Complete inventory and implement inspection schedule 2) Construction Sites monitored that are adjacent to streams 3) Update Stormwater Website with stream inventory information	1) Inventory has begun as of late 2011 with Stream Order Map in place 2) 2015 initial inspections complete and map added to City Website 3)2015-2016 monitoring program established	1-60%		
Watershed Management Plan	Stormwater Management-Stormwater Mgmt Coordinator Engineering-Assistant City Engineer Engineering-Floodplain Administrator Public Works-City Engineer	Hire a consultant to evaluate the entire watershed(s) and provide hydraulic information, areas of concern, miles of stream, 303(d) impaired streams, etc. to better manage water quality and quantity in City limits	1) Investigate potential for partnership for project 2) Investigate possible grant availability 3) Acquire/Request budget funds to hire consultant	1)Mid 2015 2) Mid 2015 3) Late 2015 for fiscal year 2017			

Table 4 - MCM 4 (Construction Site Runoff) Permit Plan

BMP	Responsible Party	Measurable Goal	Summary of Planned Activities	Implementation Schedule	% Completed
Construction Site Inspections	Engineering-Assistant City Engineer Engineering-Sr Construction Inspector Stormwater Management-Stormwater Mgmt Coordinator	Ensure construction sites are inspected to ensure compliance with approved plans and SWPPP	Track the number of construction sites within the City, the number of inspections performed, and the average frequency of inspections.	Ongoing	100%
Site Plan Review Procedures	Engineering-Assistant City Engineer Stormwater Management-Stormwater Mgmt Coordinator	Review the process for pre-construction SWPPP plan review for all residential and commercial projects that disturb one or more acres.	1) Review the existing procedures for site plan review. 2)Track the number of site plans reviewed	Ongoing	100%
Construction Site Water Quality Monitoring	Stormwater Management-Stormwater Mgmt Coordinator Engineering-Assistant City Engineer	Implement process and procedures for water quality monitoring on sites that are adjacent to streams	1) Develop process 2) Implement procedures	1)Mid-late 2015 2) 2016 and ongoing after	
Enforcement Procedures	Stormwater Management-Stormwater Mgmt Coordinator Engineering-Assistant City Engineer	Enforce City Regulations	Enforce City ordinances and state/federal regulations for all construction activity that disturbs one or more acres	Ongoing	100%

Table 5 - MCM 5 (Post Construction Site Runoff) Permit Plan

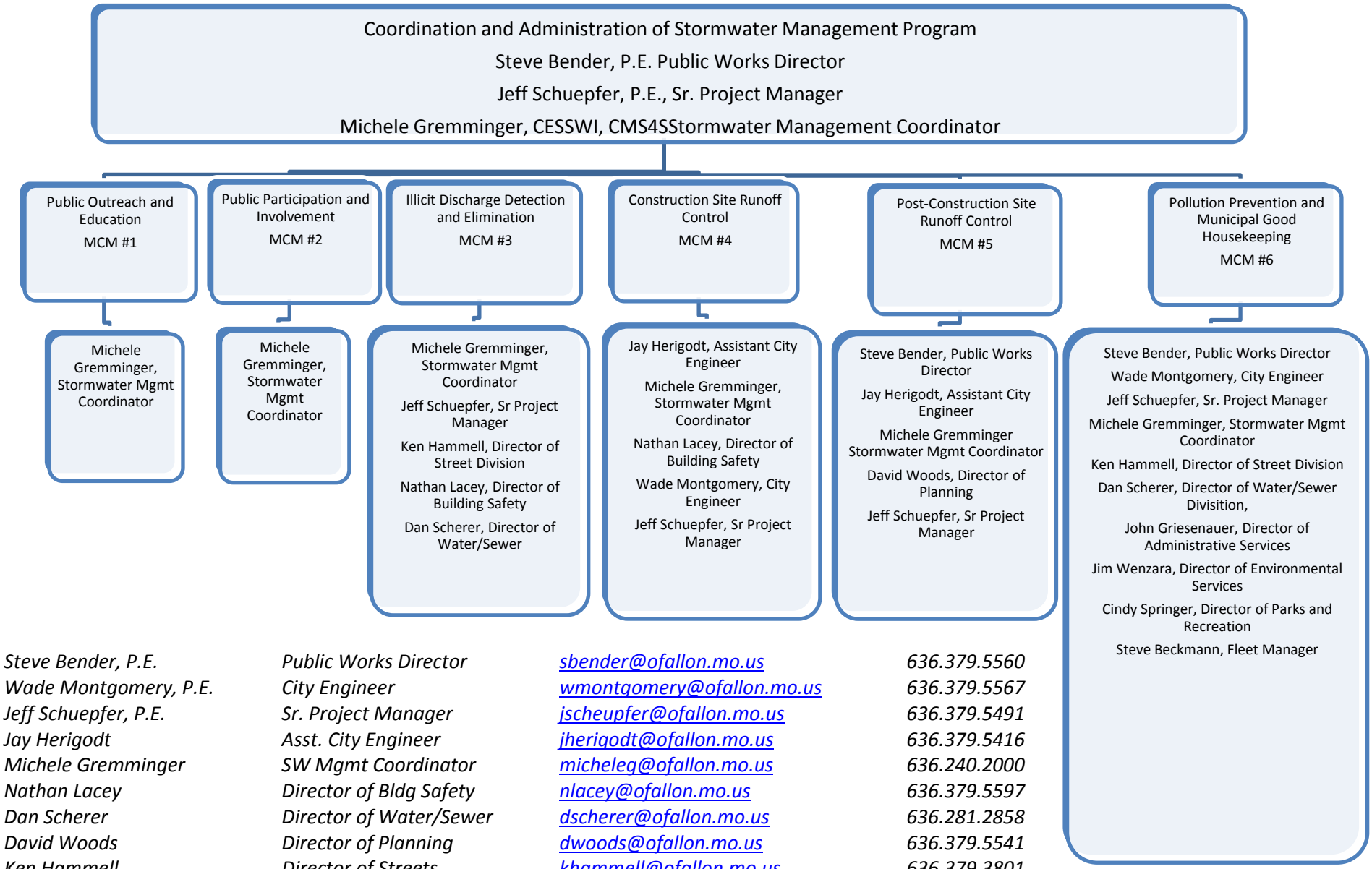
BMP	Responsible Party	Measurable Goal	Summary of Planned Activities	Implementation Schedule	% Completed
Ordinance or Other Regulatory Mechanism	Stormwater Management-Stormwater Mgmt Coordinator Engineering-Assistant City Engineer Engineering-Plan Review Engineer Planning-Planning Director	Adopt/revise ordinance addressing stormwater runoff from new development/redevelopment projects disturbing one or more acres	1) Review/Revise current ordinance(s) to include more detailed information for redevelopment projects 2) Educate development community 3) Evaluate periodically for necessary revisions	Ongoing	1-85% 2-60% 3-85%
Post-Construction Requirements	Stormwater Management-Stormwater Mgmt Coordinator Engineering-Assistant City Engineer Engineering-Plan Review Engineer Planning-Planning Director	Adopt/revise ordinance that requires post construction stormwater management per MDNR/EPA general construction permit	1) Adopt/Revise ordinance as needed with emphasis on re-development as the City matures 2) Continue to educate development community regarding approved BMP's 3) Continue to evaluate to review and evaluate BMP alternatives	Ongoing	100%
Site Plan Review Procedures	Stormwater Management-Stormwater Mgmt Coordinator Engineering-Assistant City Engineer Engineering-Plan Review Engineer	Adopt/revise policy that requires post construction stormwatermanagement per MDNR/EPA general construction permit	1) Review every site plan for post construction requirements 2) Meet with developers and engineers during design process to encourage the use of non structural BMP's/green infrastructure 3) Report the number of sites/plans reviewed	Ongoing	1-2 100%
Site Inspection Procedures	Stormwater Management-Stormwater Mgmt Coordinator Engineering-Assistant City Engineer Engineering-Sr Construction Inspector	All post construction (structural and non structural) BMPs will be inspected prior to acceptance of the project by the City to ensure BMPs are installed and functioning properly	1) Develop an inspection schedule for structural and non structural BMPs 2) Report the number of sites inspected, number of inspections performed, and average frequency of inspections	Ongoing	85%
Long-Term O&M Plans/Agreements	Stormwater Management-Stormwater Mgmt Coordinator Engineering-Assistant City Engineer Engineering-Plan Review Engineer	All sites will have an O&M plan	1) Adopt requirement for all projects to have an operations and maintenance plan identifying responsibility for private BMP O&M 2) report the number of sites with agreements	1) Completed 2008, under legal review again 2011 2) Ongoing	1-100%

Table 6 - MCM 6 (Pollution Prevention/Good Housekeeping for Municipal Operations) Permit Plan

BMP	Responsible Party	Measurable Goal	Summary of Planned Activities	Implementation Schedule	% Completed
Employee Training	Stormwater Management-Stormwater Mgmt Coordinator Public Works-Public Works Director Public Works-City Engineer Engineering-Assistant City Engineer Street Dept-Street Dept Director Parks and Recreation-Parks Director/Parks Superintendent Water/Sewer-Water/Sewer Director Administrative Services-Facilities Manager Administrative Services-Fleet Maintenance Manager Environmental Services-Environmental Services Director	Train key staff on issues related to MS4 permit in general, possible emphasis on MCM 3 and 6	1) Implement Guidance Manual 2)Conduct in-house training of appropriate staff	Ongoing	100%
MS4 Maintenance	Street Department-Street Dept Director Stormwater Management-Stormwater Management Coordinator	Maintain ongoing schedule for MS4 maintenance	1) Develop schedule for inspecting and cleaning storm infrastructure 2) Summarize maintenance activities in annual report	Ongoing	85%
Road Salt	Street Department-Street Dept Director Stormwater Management-Stormwater Mgmt Coordinator	Properly apply salt in a way that minimizes over-usage	1) Document existing street deicing procedures 2) Document tons of salt used each year 3) Develop procedures for reducing salt use	Ongoing	
Disposal of Wastes	Stormwater Management-Stormwater Mgmt Coordinator Public Works-Public Works Director Public Works-City Engineer Engineering-Assistant City Engineer Street Dept-Street Dept Director Parks and Recreation-Parks Director/Parks Superintendent Water/Sewer-Water/Sewer Director Administrative Services-Facilities Manager Administrative Services-Fleet Maintenance Manager Environmental Services-Environmental Services Director	Properly manage and dispose of wastes	1) Develop procedures for proper waste disposal	Ongoing	
MS4 Funding Mechanism	Stormwater Management-Stormwater Mgmt Coordinator Engineering-Assistant City Engineer Engineering-Plan Review Engineer Public Works-Public Works Director Public Works-City Engineer	Evaluate and recommend/revise funding mechanism to support program requirements as required by EPA	1) Investigate different types of funding mechanisms 2) Develop mechanism 3)Present alternative funding mechanism ideas to public and City Council	1) 2014 2) 2015 3) 2017	

City of O'Fallon, Missouri

Stormwater Management Program Organizational Chart



Steve Bender, P.E.	*Public Works Director*	*sbender@ofallon.mo.us*	*636.379.5560*
Wade Montgomery, P.E.	*City Engineer*	*wmontgomery@ofallon.mo.us*	*636.379.5567*
Jeff Schuepfer, P.E.	*Sr. Project Manager*	*jscheupfer@ofallon.mo.us*	*636.379.5491*
Jay Herigodt	*Asst. City Engineer*	*jherigodt@ofallon.mo.us*	*636.379.5416*
Michele Gremminger	*SW Mgmt Coordinator*	*micheleg@ofallon.mo.us*	*636.240.2000*
Nathan Lacey	*Director of Bldg Safety*	*nlacey@ofallon.mo.us*	*636.379.5597*
Dan Scherer	*Director of Water/Sewer*	*dscherer@ofallon.mo.us*	*636.281.2858*
David Woods	*Director of Planning*	*dwoods@ofallon.mo.us*	*636.379.5541*
Ken Hammell	*Director of Streets*	*khammell@ofallon.mo.us*	*636.379.3801*
Jim Wenzara	*Director of Environ. Services*	*jwenzara@ofallon.mo.us*	*636.240.2921*
Cindy Springer	*Director Parks/Recreation*	*cspringer@ofallon.mo.us*	*636.379.5570*
Steve Beckmann	*Fleet Manager*	*sbeckman@ofallon.mo.us*	*636.379.5340*

Chapter 405. Subdivision and Land Development

Article IV. Subdivision Improvements

Section 405.100. Construction Plan Requirements.

[R.O. 2007 §405.100; Ord. No. 1499 §§402.0—402.10, 8-17-1987; Ord. No. 1797 §§3, 4, 3-20-1990; Ord. No. 1837 §1, 9-10-1990; Ord. No. 5384 §1, 10-23-2008]

A. *General.* The construction plan for all aspects of the site development shall be prepared by an engineer and five (5) copies shall be submitted for review to the City Engineer.

B. The construction plan shall be any scale from 1 inch = 10 feet through 1 inch = 100 feet, so long as the scale is an increment of ten (10) feet and is sufficiently clear in reflecting details of the proposed construction. Construction plans shall be prepared on exhibits twenty-three and one-half (23½) inch by thirty-four and one-half (34½) inch. The site plan or title page shall be used as the cover sheet for the construction plan. *Note—Ord. no. 5585 §1, adopted April 22, 2010, sets out the applications and checklists for record plats, condominium, resubdivision and boundary adjustment plats and commercial site plans for all reviews pertaining to said applications, etc. All material noted herein is on file in the city offices.*

C. *Amenities Plan And Schedule.* In regard to amenities required as a condition of Planning and Zoning approval, detailed construction plans and specifications along with progress schedules shall be provided for, but not limited to, recreational buildings, swimming pools and appurtenant structures, tennis courts, jogging trails, fences and decorative landscaping provided as subdivision amenities. Unless otherwise specified by the Planning and Zoning Commission at the time of approval, these improvements are to be started prior to the City issuing building permits for more than thirty percent (30%) of the project and completed prior to the City issuing building permits for more than fifty percent (50%) of the project. *Note—Ord. no. 5585 §1, adopted April 22, 2010, sets out the applications and checklists for record plats, condominium, resubdivision and boundary adjustment plats and commercial site plans for all reviews pertaining to said applications, etc. All material noted herein is on file in the city offices.*

D. *Easements/Dedications Outside Subdivision Plat Boundaries.* Where development or construction will require easements and right-of-way dedications, no approval of construction plans for developments will be granted until verification of the recording of all easements and right-of-way dedications has been received. *Note—Ord. no. 5585 §1, adopted April 22, 2010, sets out the applications and checklists for record plats, condominium, resubdivision and boundary adjustment plats and commercial site plans for all reviews pertaining to said applications, etc. All material noted herein is on file in the city offices.*

E. *Information Required.* In all cases the construction plan submission should include a construction plan application. The Planning and Zoning Commission and City Council shall approve the applications and checklists for construction plans. *Note—Ord. no. 5585 §1, adopted April 22, 2010, sets out the applications and checklists for record plats, condominium, resubdivision and boundary adjustment plats and commercial site plans for all reviews pertaining to said applications, etc. All material noted herein is on file in the city offices.*

F. *Approval/Permits.*

1. No person, firm or corporation shall develop, alter or modify any tract of land, roadway or any City-owned utility within the City of O'Fallon or cause the same to be undertaken without first securing the approval of the construction plans as required by this Chapter or other City ordinances, nor shall any person, firm or corporation undertake such work or cause the same to be undertaken without first obtaining the required permits from necessary agencies, including the City of O'Fallon, County, State or Federal Governments for the proposed construction.
2. Applications for building permits shall be filed with the Building Official or his/her duly authorized representative, upon the prescribed forms, setting forth the legal description of the lot, tract or parcel of land, together with a general description of the building or structure to be constructed, erected or altered thereon including the approximate size and shape, principal material or construction, location of the building or structure upon the lot, tract or parcel and the intended use.
3. There shall be a separate permit for each building or structure to be constructed, erected or altered except accessory buildings which may be included in the permit for the principal building when construction is simultaneous. For each permit issued there shall be charged and collected from the applicant a fee in accordance with ordinances establishing same.
4. No permit shall be issued for any building, structure or construction unless the same is in conformity in every respect with all provisions of this Chapter.
5. The Building Official, or his/her duly authorized representative, shall be empowered to act within provisions of this Chapter upon all applications for building permits and the same shall be approved or denied not later than the tenth (10th) business day succeeding the day of filing. In the event of refusal to issue a permit upon an application as herein provided, the applicant shall have the right to appeal.
6. Work on any project may be suspended by the City Official at any time prior to the completion of the improvement, building or structure for which the approval/permit was issued, when it shall appear to him/her that there is departure from the plans, specifications or conditions as required under terms of the permit, that the same was procured by false representation, or that any provisions of this Chapter are being violated. Written notice of such stop work order shall be served upon the owner, his/her agent or contractor, or upon any person employed on the building or structure for which such approval/permit was issued, or shall be posted in a prominent location, and thereafter no such construction shall proceed.

G. *Violation And Penalty.*

1. In case any building or structure is erected, constructed, reconstructed, altered, converted or maintained or any building, structure or land is used in violation of this Chapter, the City, in addition to other remedies, may institute any appropriate action or proceedings to prevent such unlawful erection, construction, reconstruction, alteration, conversion, maintenance, or use to restrain, correct or abate such violation; to prevent the occupancy of said building, structure or land; or to prevent any illegal act, conduct, business or use in or about such premises.
2. Failure to obtain and display the required permit prior to making such improvement shall constitute a violation of this Chapter. Each day of such non-compliance shall constitute a separate violation.

3. The owner or general agent of a building or premises where a violation of any provision of the regulations of this Chapter has been committed or shall exist, or the lessee or tenant of an entire building or entire premises where such violation has been committed or shall exist, or the owner, general agent, lessee or tenant of any part of the building or premises in which such violation has been committed or shall exist, or the general agent, architect, builder, contractor or any other person who commits, takes part or assists in any such violation or who maintains any building or premises in which any such violation exists shall be guilty of a violation of this Chapter punishable by a fine of not less than ten dollars ($10.00) and not more than one hundred dollars ($100.00) for each and every day that such violation continues or by imprisonment for ten (10) days for each and every day such violation continues, or by both such fine and imprisonment in the discretion of the court. Any such person who, having been served with an order to remove any such violation, shall fail to comply with such order within ten (10) days after such service or shall continue to violate any provision of this Chapter in the respect named in such order shall also be subject to a civil penalty of two hundred fifty dollars ($250.00).

H. *Permit Applicants.* The applicant shall be the owner(s) of record or authorized representative designated by the owner(s).

I. *Plans And Fees.* Five (5) sets of plans and an electronic copy shall be required by the City of O'Fallon. Submit directly to:

City of O'Fallon
100 North Main Street
O'Fallon, Missouri 63366

City of O'Fallon, MO
Wednesday, July 9, 2014

Chapter 405. Subdivision and Land Development

Article III. Plat Procedures and Specifications

Section 405.070. Grading Plan Process.

Note—Ord. no. 5454 §1, adopted May 14, 2009, sets out the grading permit applications and checklists and matters related thereto. Said checklist and related information is on file in the city offices.

[R.O. 2007 §405.070; Ord. No. 1573 §§303.0—303.5, 4-7-1988; Ord. No. 1803 §1, 4-5-1990; Ord. No. 4854 §§1—2, 6-14-2005; Ord. No. 5242 §1, 10-30-2007; Ord. No. 5270 §1, 1-14-2008]

A. *Scope And Application.* The requirements of this Section shall apply to all site plan and construction plan approvals.

B. *Filing Procedures.* With regard to any real property within the City, the owner(s) of real property must have first obtained approval of the applicable site plan, preliminary plat or area plan for a proposed land development project prior to submitting a grading plan for said proposed land development project. The owner/developer shall submit five (5) copies of the proposed grading plan and a completed application form to the City Engineer.

C. *Information Required.* The following information is required for all grading plan submittals for approval. The required information may be combined for presentation on one (1) or more drawings or maps. The City Engineer may request that the information be presented on drawings or maps in addition to those submitted in the interests of clarity, speed and efficiency in the review process. In all cases the grading plan submission should include a grading plan application and all information as required per that application.

1. The grading plan shall be of a scale not to be greater than one (1) inch equals twenty (20) feet nor less than one (1) inch equals two hundred (200) feet and of such accuracy that the City Engineer can readily interpret the plan and shall include more than one (1) drawing where required for clarity.
2. The property is identified by lot lines and location, including dimensions, angles and size, correlated with the legal description of said property. The grading plan shall be designed and prepared by a qualified land planner, registered professional architect, engineer or land surveyor. It shall also include the name and address of the property owner(s), developer(s) and designer(s).
3. It shall show the scale, north point, boundary dimensions, natural features such as wood lots, streams, rivers, lakes, drains, topography (at least five (5) foot contours intervals; when terrain is irregular or drainage critical, contour interval shall be two (2) foot) and similar features. All topographic data shall directly relate to U.S.G.S. data.
4. It shall show existing manmade features such as buildings, structures, easements, high tension towers, pipelines, existing utilities such as water and sewer lines, etc., excavations, bridges, culverts and drains and shall identify adjacent properties within one hundred (100) yards and their existing uses.
5. Any proposed alterations to the topography or other natural features shall be indicated.
6. All filled places under proposed storm and sanitary sewer lines and/or paved areas shall be compacted to ninety percent (90%) of maximum density as determined by the Modified AASHTO T-180 Compaction Test or ninety-five percent (95%) of maximum density as determined by the Standard Proctor Test AASHTO T-99.
7. All filled places in proposed roads shall be compacted from the bottom of the fill up to ninety percent (90%) maximum density as determined by the Modified AASHTO T-180 Compaction Test or ninety-five percent (95%) of maximum density as determined by the Standard Proctor Test AASHTO T-99. All tests shall be verified by a soils engineer concurrent with grading and backfilling operations and supplied to the City in a timely manner.
8. All low places whether on or off site should be graded to allow drainage. This can be accomplished with temporary ditches.
9. The plan shall include the requirements of the City's Trees and Landscaping Ordinance (Chapter **402** *The reference herein to "Chapter **230**" was changed to "Chapter **402**", since ord. no. 5752 §1, adopted 12-8-11 repealed Chapter **230** and enacted Chapter **402** as it's replacement.* , the requirements of the City's Floodplain Ordinance (Chapter **415**), and a sediment and erosion control plan per St. Charles County Soil and Water Conservation District's "Protecting Water Quality" manual or other manual or method approved by the City Engineer.
10. The plan shall include recommendations from a registered professional engineer specializing in slope stabilizations for any slopes within the project area that exceed 3:1 and any vegetated drainage system that may be prone to erosion.
11. Grading plans that are being prepared in conjunction with an approved preliminary plat shall include an estimate of the quantity of soil to be removed (spoils) associated with the contemplated improvements. It is noted that these estimated quantities will change based on the actual size of foundations constructed and the type of material excavated.

D. *Erosion And Sediment Control Plan.* The grading plan shall be accompanied by an erosion and sediment control plan developed in accordance with Chapter **515** of the Municipal Code.

E. *Review Procedures.* The City Engineer shall review the grading plan for conformance to standards and specifications set forth in this Chapter and other applicable ordinances. The City Engineer may request modifications in the grading plan. The City Engineer shall then confer approval, conditional approval or disapproval of the grading plan within forty-five (45) days of filing and shall notify the Director of Planning and Development and Director of Building Safety with written reasons for its action.

F. *Effect Of Grading Plan Approval.* Grading plan approval shall confer upon the developer, for a period of one (1) year from date of approval, the conditional right that the general terms and conditions under which the approval was granted will not be changed by the City Engineer. This one (1) year period may be extended by the City Engineer if the developer has applied in writing for such an extension and the City Engineer determines a longer period should be granted due to unusual circumstances. If an extension is not granted, the grading plan approval is null and void. After approval of the grading plan, the developer may proceed with the grading operations upon the final direction of the City Engineer and under the inspection of the Community Development Department. Construction site plan approvals granted under Section **405.100** of this Chapter (which

include grading operations and do not already have a separate grading approval) shall be considered as including a grading plan component and be subject to the terms of this Section.

G. *Improvement Installation Or Performance Guarantee.* After approval of the grading plans by the City, the owner/developer must post a financial guarantee of performance as required by this Chapter. The following items, if they apply, shall be included in the financial guarantee:

1. Grading including permanent drainage swales.
2. Siltation/erosion control.
3. Temporary storm drainage.
4. Revegetation.
5. Sediment basin/trap construction.
6. Sediment basin/trap maintenance (dewatering and restoration) including sediment removal from retention basins.

The items above can be lumped into one (1) estimate as long as it is noted that they are included in the total estimate.

H. *Grading Operations.* The following procedures are to be followed on all sites.

1. The erosion and sediment control plans shall be implemented before grading operations begin. It is noted that certain clearing, removals and grading operations may be required in order to establish the erosion and sediment control plan.
2. All erosion and sediment control measures shall be implemented so as to prevent the flow or runoff of mud, silt, dirt, debris and other materials onto streets, sidewalks and other public rights-of-way. Additionally, positive steps shall be exercised to prevent mud, silt, dirt, debris and other materials from damaging adjacent property and silting up all storm drainage systems whether on or off site. Erosion and sediment control measures shall be designed at a minimum to accommodate flows from a 15-year, twenty (20) minute storm. It is understood that the Missouri Department of Natural Resources (DNR) approves a Storm Water Pollution Prevention Plan (SWPPP). In this plan, certain areas are designed to collect silt and other debris on site. It shall not be construed that the collection of silt and other debris in compliance with the DNR approved SWPPP be a violation of City ordinances. Upon request, copies of the SWPPP shall be provided to the City.
3. Graded areas shall be seeded and mulched (strawed) within fourteen (14) days of stopping land disturbance activities. Unless it can be shown to the City Engineer that weather conditions are not favorable, vegetative growth is to be established within six (6) weeks of stopping grading work on the project. The vegetative growth established shall be sufficient to prevent erosion and the standard shall be as required by EPA and DNR (seventy percent (70%) coverage per square foot).
4. The property owner, his/her agent or applicant shall inspect all erosion control and correct any deficiencies within forty-eight (48) hours of the end of any storm producing more than one-half (½) inch of rain at the project site.

I. *Enforcement.*

1. *Violations—nuisance.* It shall be unlawful for any person to violate any provision or fail to comply with any of the requirements of this Section. Any failure to adequately correct a deficiency in erosion and sediment control measures within forty-eight (48) hours after notification by the City shall be a violation of City ordinances. Any failure to comply with a SWPPP (Missouri Department of Natural Resources approved Storm Water Pollution Prevention Plan) for a site that results in sediment entering streets or the storm water system shall be considered a violation of City ordinances. For storms exceeding the design storm (15-year, twenty (20) minutes), any silt or debris leaving the site and affecting public rights-of-ways or stormwater drainage facilities shall be cleaned up within twenty-four (24) hours after the end of the storm. Any condition caused or permitted to exist in violation of any of the provisions of this Section is a threat to public health, safety and welfare and is declared and deemed a nuisance. The administration of violations and nuisances shall follow the City's ordinances related thereto and specifically Chapters **100** (General Provisions) and 220 (Nuisances).
2. Each incident of failure shall be deemed separate violations of City ordinances and each day where violations are not corrected shall be considered separate additional violations.
3. The City shall have the right to issue stop work orders to projects/sites not complying with the requirements of this Section.
4. *Prosecution for violations.* Any person that has violated or continues to violate this Section shall be liable to prosecution to the fullest extent of the law and, upon conviction, shall be subject to a fine in an amount of a minimum of two hundred dollars ($200.00) and not to exceed five hundred dollars ($500.00) per charge and/or imprisonment for a period of time not to exceed ninety (90) days per charge.

LAND DISTURBANCE WEEKLY CHECKLIST
City of O'Fallon
Community Development Department
Stormwater Management
100 North Main Street, O'Fallon, MO 63366, 636.240.2000, fax: 636.240.5511

This form is to be filled out weekly and after a 1" rain event within 24 hours. This form is to be faxed on a weekly basis to the project manager at 636.240.5511 on Monday morning of every week.

Week Ending: April 17, 2015

Project: Garden Villas O'Fallon

Contractor: Kadean Construction Company

Inspected By: Michael Weinkauf

Phone: 636-299-6022

Select one:

__x__Weekly inspection _____Post Event

Site Observations:

	Satisfactory	Deficient	Replace	Not Applicable
Perimeter Protection	X			
Stock Piles Stabilized				X
Sediment Control for Disturbed Areas	x			
Ditch Checks				X
Diversion Channels				X
Inlet Protection	X			
Sediment Basins/Traps	x			X
Erosion at Discharge Points				X
Creek Degradation				X
Vegetative Cover				X
Filter Strips, Level Spreaders				X
Wash-off Operation	x			
Nuisance Control				X
Other: parking lot	x			
Other:				
Other:				

(Attach Additional Sheets if Necessary)
Areas where land disturbance activities took place:

List problem areas and corrective steps taken:

Inspector's Signature: Michael Weinkauf Date: April 17, 2015

BILL NO. 5408 ORDINANCE NO. 5082

AN ORDINANCE AMENDING *TITLE IV: LAND USE, CHAPTER 405: SUBDIVISION AND LAND DEVELOPMENT CODE* OF THE CITY OF O'FALLON, MISSOURI, BY AMENDING *ARTICLE V: DESIGN AND DEVELOPMENT STANDARDS*, BY ADDING *SECTION 405.245: STORM WATER QUALITY MANAGEMENT AND ILLICIT DISCHARGE CONTROL*: PURPOSE - TO ENSURE THE HEALTH, SAFETY, AND GENERAL WELFARE OF THE CITIZENS, AND PROTECT AND ENHANCE THE WATER OUALITY OF WATERCOURSES AND WATER BODIES IN A MANNER PURSUANT TO AND CONSISTENT WITH THE FEDERAL CLEAN WATER ACT (33 U.S.C. § 1251 ET SEQ.), BY REDUCING POLLUTANTS IN STORM WATER DISCHARGES TO THE MAXIMUM EXTENT PRACTICABLE, AND BY PROHIBITING NON-STORM WATER DISCHARGES TO THE STORM DRAIN SYSTEM.

NOW THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF O'FALLON, MISSOURI AS FOLLOWS:

Section 1: That *Title IV: Land Use, Chapter 405: Subdivision and Land Development Code, Article V: Design and Development Standards* shall be amended by adding Section 405.245: Storm Water Ouality Management and Illicit Discharge Control, to read as follows:

SECTION 405.245 – STORM WATER QUALITY MANAGEMENT AND ILLICIT DISCHARGE CONTROL

A. Purpose and Intent: The purpose of this Section is to provide for the health, safety, and general welfare of the citizens of the City of O'Fallon through the regulation of non-storm water discharges to the storm drainage system to the maximum extent practicable as required by federal and state law. This Section establishes methods for controlling the Introduction of pollutants into the *Municipal Separate Storm Sewer System (MS4)* in order to comply with requirements of the *National Pollutant Discharge Elimination System (NPDES)* permit process. The objectives of this Section are:

1. **To regulate the contributlon of pollutants to the *Municipal Separate Storm Sewer System (MS4)* by storm water discharges by any user.**
2. **To prohibit Illicit Connections and Illicit Discharges to the *Municipal Separate Storm Sewer System (MS4).***
3. **To establish legal authority to carry out all inspection, surveillance and monitoring procedures necessary to ensure compliance with this Section.**

B. Definitions: For the purposes of this Section, the following words shall have the meanings set out herein:

- ***Authorized Enforcement Agency*: Employees or designees of the director of the municipal agency designated to enforce this Section.**
- ***Best Management Practices (BMP's):* Schedules of activities, prohibitions of practices, general good house keeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to storm water, receiving waters, or storm water conveyance systems. *BMP's* also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.**

- *Clean Water Act:* The federal *Water Pollution Control Act* (33 U.S.C. § 1251 et seq.), and any subsequent amendments thereto.

- *Construction Activity:* Activities subject to *National Pollutant Discharge Elimination System (NPDES)* Construction Permits issued by MDNR. These include construction projects resulting in land disturbance of one (1) acre or more. Such activities include but are not limited to clearing and grubbing, grading, excavating, and demolition.

- *Hazardous Materials:* Any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

- *Illegal Discharge:* Any direct or indirect non-storm water discharge to the storm drain system, except as exempted in subsection 405.245(G)(1) of this Section.

- *Illicit Connections:* An illicit connection is defined as either of the following:

    1. Any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the storm drain system including but not limited to any conveyances which allow any non-storm water discharge including sewage, process wastewater, and chlorinated water discharged from swimming pools to enter the storm drain system and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by an authorized enforcement agency or;

    2. Any drain or conveyance connected from a commercial or industrial land use to the storm drain system which has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.

- *Industrial Activity:* Activities subject to *National Pollutant Discharge Elimination System (NPDES)* Industrial Permits as defined in 40 CFR, Section 122.26 (b)(14).

- *Municipal Separate Storm Sewer System (MS4):* The system of facilities designed or used for collecting and/or conveying storm water, including, but not limited to, roads with drainage systems, municipal streets, catch basins, curbs, gutters, inlets, ditches, storm drains, swales, sidewalks, and natural or man-made drainage channels, owned and operated by the City and which is not used for the collecting or conveying of sewage.

- *National Pollutant Discharge Elimination System (NPDES) Storm Water Discharge Permit:* A permit issued by Federal Environmental Protection Agency (or by a State under authority delegated pursuant to 33 USC § 1342(b)) that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

- *Non-Storm Water Discharge:* Any discharge to the storm drain system that is not composed entirely of storm water.

- *Person:* Any individual, association, organization, partnership, firm, corporation or other entity recognized by law and acting as either the owner or as the owner's agent.

- *Pollutant:* Anything which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous

liquid and solid wastes and yard wastes; silt, refuse, rubbish, garbage, litter, or other discarded or abandoned objects, Ordinances, and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; and noxious or offensive matter of any kind.

- *Premises:* Any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.

- *Storm Drainage System:* Publicly-owned facilities by which storm water is collected and/or conveyed, including but not limited to any roads with drainage systems, municipal streets, gutters, curbs, inlets, piped storm drains, pumping facilities, retention and detention basins, natural and human-made or altered drainage channels, reservoirs, and other drainage structures.

- *Stormwater:* Any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation, and resulting from such precipitation.

- *Storm Water Pollution Prevention Plan:* A document which describes the *Best Management Practices (BMP's)* and activities to be implemented by a person or business to identify sources of pollution or contamination at a site and the actions to eliminate or reduce pollutant discharges to storm water, storm water conveyance systems, and/or receiving waters to the maximum extent practicable.

- *Wastewater:* Any water or other liquid, other than uncontaminated storm water, discharged from a facility.

C. Applicability: This Section shall apply to all water entering the storm drain system generated on any developed and undeveloped lands unless explicitly exempted by an authorized enforcement agency.

D. Responsibility for Administration: The City of O'Fallon shall administer, implement, and enforce the provisions of this Section. Any powers granted or duties imposed upon the City Administrator may be delegated by the City Administrator to persons or entities acting in the beneficial interest of or in the employ of the City.

E. Severability: The provisions of this Section are hereby declared to be severable. If any provision, clause, sentence, or paragraph of this Section or the application thereof to any person, establishment, or circumstances shall be held invalid, such invalidity shall not affect the other provisions or application of this Section.

F. Ultimate Responsibility: The standards set forth herein and promulgated pursuant to this Section are minimum standards; therefore this Section does not intend nor imply that compliance by any person will ensure that there will be no contamination, pollution, nor unauthorized discharge of pollutants.

G. Discharge Prohibitions:

1. Prohibition of Illegal Discharges: No person shall discharge or cause to be discharged into the municipal storm drain system or watercourses any materials, including but not limited to pollutants or waters containing any pollutants that cause or contribute to a violation of applicable water quality standards, other than storm water.

The commencement, conduct or continuance of any illegal discharge to the storm drain system is prohibited except as described as follows:

a. The following discharges are exempt from discharge prohibitions established by this Section: water line flushing or other potable water sources, landscape irrigation or lawn watering, diverted stream flows, rising ground water, ground water infiltration to storm drains, uncontaminated pumped ground water, foundation or footing drains, sump pumps (not including active groundwater dewatering systems), crawl space pumps, air conditioning condensation, springs, non-commercial washing of vehicles, natural riparian habitat or wetland flows, swimming pools (if de-chlorinated - typically less than one PPM chlorine), fire fighting activities, and any other water source not containing pollutants.

b. Discharges specified in writing by the authorized enforcement agency as being necessary to protect public health and safety.

c. Dye testing is an allowable discharge, but requires a verbal notification to the authorized enforcement agency prior to the time of the test.

d. The prohibition shall not apply to any non-storm water discharge permitted under an *NPDES* permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the Federal Environmental Protection Agency, provided that the discharger is in full compliance with all requirements of the permit, waiver, or Missouri Department of Natural Resources (MDNR) and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the storm drain system.

2. Prohibition of Illicit Connections:

a. The construction, use, maintenance or continued existence of illicit connections to the storm drain system is prohibited.

b. This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.

c. A person is considered to be in violation of this Section if the person connects a line conveying sewage to the *MS4*, or allows such a connection to continue.

H. Suspension of MS4 Access:

1. Suspension Due to Illicit Discharges in Emergency Situations: The City of O'Fallon may, with appropriate notice, suspend *MS4* discharge access to a person in order to prevent an actual or threatened discharge which presents or may present imminent and substantial danger to the environment, or to the health or welfare of persons, or to the *MS4* or waters of the United States. If the violator fails to comply with a suspension order issued in an emergency, the authorized enforcement agency may take such steps as deemed necessary to prevent or minimize damage to the *MS4* or waters of the United States, or to minimize danger to persons.

2. Suspension Due to the Detection of Illicit Discharge: Any discharge to the *MS4* in violation of this Section may result in termination of MS4 access. If such termination would abate or reduce an illicit discharge, the City shall notify the violator of the proposed termination of its *MS4* access. The violator may petition or request a hearing before the City Council , but must suspend the illicit discharge until after the reconsideration and hearing are held.

3. A person commits an offense if the person reinstates *MS4* access to premises suspended or terminated pursuant to this Section, without the prior approval of the authorized enforcement agency.

I. Industrial or Construction Activity Discharges: Any person subject to an industrial or construction activity *NPDES Storm Water Discharge Permit* shall comply with all provisions of such permit. Proof of compliance with said permit may be required in a form acceptable to the City of O'Fallon prior to the allowing of discharges to the *MS4*.

J. Monitoring of Discharges:

1. Applicability: This section applies to all facilities that have storm water discharges associated with industrial activity, including construction activity.

2. Access to Facilities and Records:

a. Facility operators shall provide to the City of O'Fallon copies of records that must be kept under the conditions of an *NPDES* permit to discharge storm water.

b. Upon consent of the property owner, the City of O'Fallon may install monitoring equipment as necessary. The facility's sampling and monitoring equipment shall be maintained at all times in a safe and proper operating condition by the discharger at its own expense; however, such equipment shall remain the property of the City of O'Fallon. All devices used to measure storm water flow and quality shall be calibrated to ensure their accuracy. No person shall damage such equipment or alter such equipment so that proper results cannot be obtained.

c. If the City of O'Fallon has been refused access to any part of the premises from which storm water is discharged or if the property owner is not available to give consent to access the premises, the City may, upon demonstrating probable cause to believe that there may be a violation of this Section or a need to inspect and/or sample to verify compliance with this Section or any order issued hereunder, seek issuance of an administrative search warrant from any court of competent jurisdiction.

K. Requirement to Prevent, Control, and Reduce Storm Water Pollutants by the Use of Best Management Practices (BMP's): The City of O'Fallon will adopt requirements identifying *Best Management Practices (BMP's)* for any activity, operation, or facility which may cause or contribute to pollution or contamination of storm water, the storm drain system, or waters of the U.S. The owner or operator of a commercial or industrial establishment shall provide, at their own expense, reasonable protection from accidental discharge of prohibited materials or other wastes into the municipal storm drain system or watercourses through the use of these structural and non-structural *BMP's*. Further, any person responsible for a property or premise, which is, or may be, the source of an illicit discharge, will be required to implement, at said person's expense, additional structural and non-structural *BMP's* to prevent the further discharge of pollutants to the *Municipal Separate Storm Sewer System (MS4)*. Compliance with all terms and conditions of a valid *NPDES* permit authorizing the discharge of storm water associated with industrial activity, to the extent practicable, shall be deemed compliance with the provisions of this Section. These *BMP's* shall be part of a *Storm Water Pollution Prevention Plan (SWPP)* as necessary for compliance with requirements of the *NPDES* permit.

L. Watercourse Protection: Every person owning property through which a watercourse passes, or such person's lessee, shall keep and maintain that part of the watercourse within the property free of trash, debris, excessive vegetation, and other obstacles that would pollute, contaminate, or significantly retard the flow of water through the watercourse. In addition, the owner or lessee shall

maintain existing privately owned structures within or adjacent to a watercourse, so that such structures will not become a hazard to the use, function, or physical integrity of the watercourse.

M. Notification of Spills: Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting or may result in illegal discharges or pollutants discharging into storm water, the storm drain system, or waters of the U.S., said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release. In the event of such a release of hazardous materials said person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services. In the event of a release of non-hazardous materials, said person shall notify the City in person or by phone or facsimile no later than the next business day. Notifications in person or by phone shall be confirmed by written notice addressed and mailed to the City of O'Fallon within three (3) business days of the phone notice. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three (3) years.

N. Enforcement:

1. Notice of Violation: Whenever the City Administrator finds that a person has violated a prohibition or failed to meet a requirement of this Section, the City Administrator may order compliance by written notice of violation to the responsible person. Such notice and order may require without limitation:

   a. The performance of monitoring, analyses, and reporting;

   b. The elimination of illicit connections or discharges;

   c. That violating discharges, practices, or operations shall cease and desist;

   d. The abatement or remediation of storm water pollution or contamination hazards and the restoration of any affected property; and

   e. The implementation of source control or treatment *BMP*'s.

The City Administrator may order that such work by completed within a reasonable time from the date of the notice of violation.

2. If the property owner fails to abate the violation and/or restore the affected property within the time prescribed following notice or appeal, the work may be done by the City or a contractor designated by the City Administrator and the expense in accordance with the City's procedures for abatement of a nuisance. The property owner shall be responsible for all costs of such work.

Appeal of Notice of Violation: Any person receiving a *Notice of Violation* may appeal the determination and order of the City Administrator. The notice of appeal must be received within thirty (30) days from the date of the *Notice of Violation*. Hearing on the appeal before the City Council or its designee shall take place within thirty (30) days from the date of receipt of the notice of appeal. Any aggrieved party shall then be entitled to judicial review in accordance with the provisions of the Missouri Administrative Procedures Act.

Injunctive and Other Relief: It shall be unlawful for any person to violate any provision or fail to comply with any of the requirements of this Section. If a person has violated or continues to violate

the provisions of this Section, the authorized enforcement agency may petition for a preliminary or permanent injunction restraining the person from activities which would create further violations or compelling the person to perform abatement or remediation of the violation. In addition, the authorized enforcement agency may utilize any remedy, at law or in equity, in order to enforce the provisions of this Ordinance. The City may recover all attorneys' fees, court costs, and other expenses associated with enforcement of this Chapter, including sampling and monitoring expenses.

O. **Violations Deemed a Public Nuisance: In addition to the enforcement processes and penalties provided, any condition caused or permitted to exist in violation of any of the provisions of this Section is a threat to public health, safety, and welfare, and is declared and deemed a nuisance, and may be summarily abated or restored at the violator's expense, and/or a civil action to abate, enjoin, or otherwise compel the cessation of such nuisance may be taken.**

P. **Prosecution for Violations: Any person that has violated or continues to violate this Section shall be liable to prosecution to the fullest extent of the law, and, upon conviction, shall be subject to a fine in an amount not to exceed five hundred dollars ($500.00) per charge and/or imprisonment for a period of time not to exceed ninety (90) days per charge.**

Q. **Remedies Not Exclusive: The remedies listed in this Section are not exclusive of any other remedies available under any applicable federal, state or local law and it is within the discretion of the City to seek cumulative remedies.**

Section 2: It is hereby declared to be the intention of the City Council that each and every part, section and subsection of this Ordinance shall be separate and severable from each and every other part, section and subsection hereof and that the City Council intends to adopt each said part, section and subsection separately and independently of any other part, section and subsection. In the event that any part of this Ordinance shall be determined to be or to have been unlawful or unconstitutional, the remaining parts, sections and subsections shall be and remain in full force and effect.

Section 3: The Chapter, Article, Section, and/or Subsection assignments designated in this Ordinance may be revised and altered in the process of re-codifying or servicing the City's *Municipal Code* upon supplementation of said *Municipal Code* if, in the discretion of the editor, an alternative designation would be more reasonable. In adjusting such designations, the editor may also change other designations and numerical assignment of other Chapters, Articles, Sections, and/or Subsections of the *Municipal Code* to accommodate such changes.

Section 4: This Ordinance shall be in full force and effect from and after its passage and approval by the Mayor.

First Reading: September 28, 2006

Second Reading: October 12, 2006

READ TWO (2) TIMES AND PASSED BY THE CITY COUNCIL OF THE CITY OF O'FALLON, MISSOURI, THIS 12 DAY OF October, 20 06.

Donna Meneau
Presiding Officer

ATTEST:

Pamela L. Smith

CITY CLERK, Pamela L. Smith

APPROVED BY THE MAYOR OF THE CITY OF O'FALLON, MISSOURI, THIS 24th DAY OF October 20 06.

Donna Morrow
MAYOR, Donna Morrow

ATTEST:

Pamela L. Smith
CITY CLERK, Pamela L. Smith

APPROVED AS TO FORM:
Curtis, Heinz, Garrett & O'Keefe, PC
Special Legal Counsel

BY: _____
ATTORNEY

BILL NO. 5614 **ORDINANCE NO. 5271**

AN ORDINANCE OF THE CITY OF O'FALLON, MISSOURI, AMENDING CHAPTER 405, ARTICLE V OF TITLE IV OF THE MUNICIPAL CODE RELATING TO THE STORMWATER QUALITY MANAGEMENT AND ILLICIT DISCHARGE CONTROL REQUIREMENTS AND ADDING A NEW SECTION 405.247 STORMWATER QUALITY – BEST MANAGEMENT PRACTICES

Whereas, staff has recommended certain amendments with regard to the stormwater quality best management practices; and

Whereas, the provisions contained herein were reviewed and considered by the Planning and Zoning Commission and the Commission held a public hearing and made a recommendation regarding these provisions.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF O'FALLON, MISSOURI, AS FOLLOWS:

Section 1. Section 405.245 of Article V of Chapter 405 of Title IV of the Municipal Code of the City of O'Fallon is hereby amended to add the following:

TITLE IV	**LAND USE**
CHAPTER 405	**SUBDIVISION AND LAND DEVELOPMENT**
ARTICLE V	**DESIGN AND DEVELOPMENT STANDARDS**
SECTION 405.247	**STORMWATER QUALITY – BEST MANAGEMENT PRACTICES**

A. Purpose and Intent: Two consequences of construction and development are increased runoff created by the changed properties of ground surface and the rate of discharge of this increased runoff. These are both of great relevance to storm water. The natural condition of the land before development is in relative balance with the natural capacity of the receiving creeks. Normally the undeveloped conditions provide greater permeability and longer times of concentration. By modification of the ground surface from the irregular, pervious, and vegetation-covered, the areas are changed to more impervious, more quickly drained and, in some cases, denuded of vegetation. It is the policy of the City to protect and promote the public, health, safety and general welfare. The management of storm water will reduce the erosion on land and creek channels, will reduce the possibility of damage to public and private property, and will assist in the

attainment and maintenance of water quality standards, and will preserve the environmental quality of the watercourses in the City.

B. *Requirements – Creekbank Setback:* Development along natural watercourses shall have residential lot lines, commercial or industrial improvements, parking areas and driveways setback a minimum of twenty-five (25) feet from the top of the existing stream bank. This is not meant to prevent access across creeks. Except as otherwise provided herein or as allowed by the City, the section of land between a natural watercourse and lot lines shall be designated as common ground and drainage easement to be maintained by the trustees or homeowners association of the subdivision within all types of residential developments. In lieu of the common ground requirement, the section of land between the natural watercourse and twenty-five (25) feet from the top of bank can be (i) private property with an easement dedicated to the trustees or homeowners association requiring maintenance of the areas as the responsibility of the trustees or homeowners association, (ii) private property subject to a conservation easement in favor of an organization or land trust dedicated to environmental protection or land preservation such as Trailnet, Inc., the Open Space Council for the St. Louis Region or similar organization, (iii) set aside in a stream bank mitigation program approved by the United States Army Corps of Engineers under the provisions of the Clean Water Act. All developments shall maintain a setback minimum of fifty (50) feet from the top of the existing bank to any building structure requiring a construction permit that necessitates excavation or also requires a foundation. Commercial and industrial areas shall have creek areas dedicated as drainage easements. Notwithstanding the foregoing setback requirements, an applicant may obtain a variance to develop within the stream buffer area from the City provided the applicant is able to demonstrate that the water quality and stream morphology will not be adversely affected or adequate mitigation is provided to offset such adverse affects. Mitigation may include, but not be limited to the following: (i) installing additional erosion and sediment control; (ii) if the stream has the potential for lateral movement, installing stream stabilization practices within the stream; (iii) for those sites where vegetation does not exist, establishing vegetation; and/or (iv) additional tree planting.

C. *Post Construction - Water Quality:* In order to preserve the quality of water in natural streams it is important to provide a mechanism to remove contaminants on the site prior to water entering the natural water course. Typically called Post Construction BMPs (Best Management Practices), these methods identify a critical Water Quality Volume that will need to receive a treatment to remove certain contaminants. These improvements whether structural or non-structural will remain in place after the construction is completed. The concepts introduced in the following paragraphs are taken from the Georgia Stormwater Management Manual, Volume 2, August, 2001. Nothing in the following paragraphs shall change or replace any of the City's detention ordinances.

1. *Water Quality Volume (WQv):* The Water Quality Volume (denoted as the **WQv**) is the storage needed to capture and treat the runoff from 90% of the recorded daily rainfall events. In numerical terms, it is equivalent to 1.14 inches of rainfall multiplied by the volumetric runoff coeffeicient (Rv) and site area. The WQv is directly related to the amount of impervious cover created at a site. A minimum WQv of 0.2 inches per acre shall be met at all sites.

   Redevelopment projects can appeal to the Planning and Zoning Commission to reduce or eliminate WQv if it can be shown that there are stormwater enhancements being provided.

2. As a basis for determining water quality treatment volume the following assumptions may be made:

   a. The water quality volume WQv for offsite areas is not required. The following equations are used to determine the storage volume, WQv (in acrefeet of storage):

      WQv = [(P)(Rv)(A)]/12
      P = 1.14 inches of rainfall

      Where: WQv =water quality volume (in acre-feet)
      Rv =0.05 + 0.009 (I) where I is percent impervious cover
      A =area in acres

   b. Measuring Impervious Cover: The measured area of a site plan that does not have vegetative or permeable cover shall be considered total impervious cover.

   c. Multiple Drainage Areas: When a project contains or is divided by multiple drainage areas, the WQv volume shall be addressed for each drainage area.

   d. Offsite Drainage Areas: Tbe WQv shall be based on the impervious cover of the proposed site. Offsite existing impervious areas may be excluded from the calculation of the water quality volume requirements.

   e. BMP Treatment: The final WQv shall be treated by an acceptable BMP(s) from the list presented in this chapter.

   f.. Extended Detention for Water Quality Volume: The water quality requirements can be met by providing a 24-hour draw down of a portion of the water quality volume (WQv) in conjunction with a stormwater pond or wetland system.

D. *Acceptable Urban BMP Options:* This section sets forth five acceptable groups of BMPs that can be used to meet the Water Quality volume criteria (WQv). The design and selection of these BMPs should comply with the Georgia Stormwater Management Manual, as prepared by the State of Georgia.

Where the City's criteria or requirements are more stringent, then they shall govern. Adapting to local Missouri environment and natural conditions should be expected but shall be as approved by the City or a higher authority.

1. The acceptable BMP designs are assigned into six general categories for stormwater quality control (WQv):

   BMP Group 1 -stormwater ponds
   BMP Group 2 -stormwater wetlands
   BMP Group 3 -infiltration practices
   BMP Group 4 -filtering practices
   BMP Group 5 -open channel practices

   See Section 1.3 of the Georgia Stormwater Management Manual for additional BMP options. Section 3 of the Georgia manual has detailed descriptions of each control.

2. To be considered an effective BMP for stand-alone treatment of WQv, a design shall be capable of:
   a. capturing and treating the required water quality volume (WQv)
   b. removing 80% of the TSS

3. A combination of BMPs and/or credits is normally required at most development sites to meet all three stormwater sizing criteria.

   a. *BMP Group 1. Stormwater Ponds*: Practices that have a combination of permanent pool, extended detention or shallow wetland equivalent to the entire WQvs include:

      P-1 micropool extended detention pond
      P-2 wet pond
      P-3 wet extended detention pond
      P-4 multiple pond system
      P-5 pocket pond

   b. *BMP Group 2. Stormwater Wetlands*: Practices that include significant shallow wetland areas to treat urban stormwater but often may also incorporate small permanent pools and/or extended

detention storage to achieve the full WQv include (Modification of existing wetland areas will require a Corps 404 permit):

W-1 shallow wetland
W-2 ED shallow wetland
W-3 pond/wetland system
W-4 pocket wetland

Wetlands shall not be used for control of water quantity (i.e. the flood protection volume).

c. *BMP Group 3. Infiltration Practices:* Practices that capture and temporarily store the WQv before allowing it to infiltrate into the soil over a two day period include:

I-1 infiltration trench
I-2 infiltration basin

Infiltration practices will be allowed on sites where it is proven that infiltration will work. Percolation rates shall be determined for proper use.

d. *BMP Group 4. Filtering Practices:* Practices that capture and temporarily store the WQv and pass it through a filter bed of sand, organic matter, soil or other media are considered to be filtering practices. Filtered runoff may be collected and returned to the conveyance system. Design variants include:

F-1 surface sand filter
F-2 underground sand filter
F-3 perimeter sand filter
F-4 organic filter
F-5 pocket sand filter
F-6 bioretention*
F-7 proprietary filtering system

*may also be used for infiltration

A maintenance agreement and maintenance schedule shall be required.

e. *BMP Group 5. Open Channel Practices:* Vegetated open channels that are explicitly designed to capture and treat the full WQv within the dry or wet cells formed by checkdams or other means include:

1) dry swale
2) wet swale

3) filter strips

Open channel practices shall be designed with the proper plantings. Wet swales shall be designed to drain out over time.

READ TWO (2) TIMES AND PASSED BY THE CITY COUNCIL OF THE CITY OF O'FALLON, MISSOURI, THIS 10th DAY OF January, 2008.

Donna Morrow
Presiding Officer

Attest:

Pamela L. Smith
Pamela L. Smith, City Clerk

APPROVED BY THE MAYOR ON THIS 14th DAY OF January, 2008.

Donna Morrow
Donna Morrow, Mayor

Attest:

Pamela L. Smith
Pamela L. Smith, City Clerk

APPROVED As To Form
Kevin M. O'Keefe
Attorney

100 NORTH MAIN STREET
O'FALLON, MISSOURI 63366
636.240.2000
FACSIMILE 636.978.4144
www.ofallon.mo.us

October 24, 2013

McBride & Son Homes Land Development, Inc.
Attn: Donna L. Knese
16091 Swingley Ridge Road, Suite300
Chesterfield, MO 63017

Phone: (314) 336-0230
Fax: (314) 336-0175

Project: Weatherby Landing
Subject: Stormwater Management and Best Management Practices Facilities Maintenance Agreement

Dear Ms. Knese:

The Stormwater Management and Best Management Practices Facilities Maintenance Agreement for the above mentioned project has been approved by the Planning & Zoning Commission and the City Council for the City of O'Fallon. One (1) original document with all original signatures and certificates has been provided for recording.

Upon receipt of the recorded copy of the document from the St. Charles County Recorder of Deeds office, provide a scanned copy of the entire document in a portable document format (pdf) and e-mail to the address below.

If you have any questions, I can be reached at bcopeland@ofallon.mo.us or (636) 379-5471.

Sincerely,

Robert Copeland
Plan Reviewer

cc via e-mail: Jay Herigodt – Assistant City Engineer
David Woods – Director of Planning & Development
File through AC

STORMWATER MANAGEMENT and BEST MANAGEMENT PRACTICES
FACILITIES MAINTENANCE AGREEMENT

Ordinance # 5271, City Code 405.247
O'Fallon, Missouri

636-240-2000

STORMWATER MANAGEMENT and BEST MANAGEMENT PRACTICES FACILITIES MAINTENANCE AGREEMENT

THIS AGREEMENT, made and entered into this 17th day of APRIL, 2013, by and between ROCKWOOD HOMES, LLC hereinafter called the "Landowner", and the City of O'Fallon, Missouri hereinafter called the "City".

WITNESSETH, that

WHEREAS, the Landowner is the owner of certain real property generally described as WEATHERBY LANDING with a St. Charles County tax Map/Parcel Identification Number of 2-0060-A073-0000-3A and as recorded by deed in the land records of St. Charles County, Missouri, Deed Book 5319 Page 2226, hereinafter called the "Property".

WHEREAS, the Landowner is proceeding to build on, develop or otherwise improve the property; and

WHEREAS, improvements are being made according to Site Plan/Subdivision Plan known as WEATHERBY LANDING, hereinafter called the "Plan", which is expressly made a part hereof, as approved or to be approved by the City.

WHEREAS, the City and the Landowner, its successor and assigns, including any homeowners association, agree that the health, safety, and welfare of the residents of O'Fallon, Missouri require that on-site stormwater management / Best Management Practices (BMP) facilities be constructed and maintained on the Property; and

WHEREAS, the City requires per ordinance #5271 (City Code 405.247) that on-site stormwater management / BMP facilities as shown on the Plan be constructed and adequately maintained by the Landowner, its successors and assigns, including any homeowners and or subdivision association.

NOW, THEREFORE, in consideration of the foregoing premises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

1. Initial Construction: The on-site stormwater management / BMP facilities shall be constructed by the Landowner, its successors and assigns, in accordance with the plans and specifications identified in the Plan and in accordance with City Ordinance.

2. Maintenance: The Landowner and its successors and assigns, including any homeowners and/or subdivision association, shall, at all times, adequately maintain the on site stormwater management / BMP facilities as approved for that development on the plan. The facilities to be maintained shall include all pipes and channels built to convey stormwater to the facility, as well as all structures, improvements, and vegetation provided to control the quantity and quality of the stormwater. Adequate maintenance is herein defined as good working condition so that these facilities are performing functions as designed, so that these facilities do not adversely affect other elements of the overall storm water system and so that these facilities comply with City Ordinance or other applicable law. Stormwater pipes marked on the plans as "private" are to be maintained by landowner. Storm pipes which are designated as "public" are not the responsibility of the landowner; however, landowner shall take no action to cause damage or adversely affect the public systems and, furthermore, landowner shall continue to maintain the "private" facilities so as not to adversely affect the "public" facilities.

3. Annual Inspections: The Landowner, its successors and assigns, shall inspect the stormwater management / BMP facility and submit an inspection report to the City's Stormwater Coordinator annually. The purpose of the inspection is to assure safe and proper functioning of the facilities. The inspection shall cover the entire facilities, berms, outlet structure, retention/detention and pond areas, access roads, etc. Deficiencies shall be noted in the inspection report.

4. City Authorized to Enter Property: The Landowner hereby grants its consent to the City to enter upon the Property, from time to time, and to inspect the stormwater management / BMP facilities whenever the City deems necessary. The purpose of inspection is to follow-up on reported deficiencies, to verify the annual reports submitted by Landowner and/or to respond to citizen concerns or possible nuisance conditions. The City shall provide the Landowner, its successors and assigns, copies of the inspection findings and a directive to commence with the repairs if necessary.

5. Maintenance Schedule: The Landowner, its successors and assigns, will perform the work necessary to keep these facilities in good working order as appropriate. In the event a maintenance schedule for the stormwater management / BMP facilities (including sediment and debris removal) is outlined on the approved plans or as part of this Agreement, the schedule will be followed. In addition to the actions outlined on the maintenance schedule, the Landowner and its successors and assigns shall take further action in order to keep the facilities in good working order; following the maintenance schedule, alone, will not relieve the Landowner of any responsibility to take further actions to ensure proper operation and maintenance of the facilities.

6. Failure to Maintain: In the event the Landowner, its successors and/or assigns, fails to maintain the stormwater management / BMP facilities in good working condition, the City will notify Landowner, its successors and/or assigns, of deficiencies by letter. The Landowner will have ten (10) days from the date of the letter to respond to the City with an adequate plan to make repairs. If adequate repairs are not made by Landowner in a timely manner, Landowner hereby consents and agrees that City may enter upon the Property and take whatever steps necessary to correct deficiencies identified in the inspection report; all costs of such repairs shall be billed to the Landowner, its successors and/or assigns. Landowner, its successors and/or assigns shall pay the bill as required by Section 7 of this Agreement. This provision shall not be construed to allow the City to erect any structure of permanent nature on the land of the Landowner outside of any easement for the stormwater management / BMP facilities. It is expressly understood and agreed that the City is under no obligation to routinely maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the City.

7. Landowner to Reimburse City: In the event the City pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials, and the like, the Landowner, its successors and assigns, shall reimburse the City upon demand, within thirty (30) days of receipt thereof for all actual costs incurred by the City hereunder. In the event that the City must pursue any action to collect any delinquent payments, Landowner, its successors and assigns, the City shall be entitled to recover all of its collection costs and attorney fees.

8. Liability and Hold Harmless: This Agreement imposes no liability of any kind whatsoever on the City and the Landowner agrees to hold the City harmless from any liability in the event the stormwater management / BMP facilities fail to operate properly.

9. Recording: This Agreement shall be recorded among the land records of St. Charles County, Missouri by the Landowner and shall constitute a covenant running with the land, and shall be binding on the Landowner, its administrators, executors, assigns, heirs and any other successors in interests, including any homeowners and or subdivision association. This agreement shall be recorded with the record plat of any development that requires such a plat. If the development does not require that a plat be recorded it shall be recorded prior to approval of the construction plans for the development.

WITNESS the following signatures and seals:

LANDOWNER SIGNATURES:

ROCKWOOD HOMES, LLC
BY: McBRIDE & SON HOLDINGS, INC. MANAGING MEMBER
Company/Corporation/Partnership Name (seal)

BY: Michael D Arri Treas

MICHAEL D. ARRI
(Type Name)

TREASURER
(Type Title)

STATE OF MISSOURI

COUNTY OF ST. LOUIS

The foregoing Agreement was acknowledged before me this 17TH day of APRIL, 2013, by

Donna L. Kniese

DONNA L. KNIESE
NOTARY PUBLIC

My Commission Expires: 12/6/15

DONNA L. KNIESE
My Commission Expires
December 6, 2015
St. Charles County
Commission #11510086

CITY SIGNATURES:

Passed by Consent of the City Council for the City of O'Fallon, Missouri, This 25 Day of July, 2013

BY: Bill Hennessy
Mayor, City of O'Fallon

ATTEST:
Pamela L. Clement
City Clerk, City of O'Fallon

Approved as to Form:
City Attorney 7-25-13
Date

This foregoing Agreement was acknowledged before me this 30 day of July, 2013 by

Pamela L. Clement

Pamela L. Clement
NOTARY PUBLIC

My Commission Expires: 5-18-2016

PAMELA L. CLEMENT
My Commission Expires 5/18/2016
NOTARY PUBLIC NOTARY SEAL
Commission # 12412954
St. Charles County
STATE OF MISSOURI

MAINTENANCE AND OPERATION PLAN

MAINTENANCE MANUAL

INTRODUCTION

In accordance with City of O'Fallon regulations, The Weatherby Landing Homeowners Association is responsible for inspecting and maintaining the stormwater management facilities (SWMFs) as approved by the City of O'Fallon. Research and experience have demonstrated that regular and thorough maintenance is necessary for Stormwater management facilities to perform effectively and reliably. They have also demonstrated that failure to perform such maintenance can lead to diminished performance, deterioration and failure, in addition to a range of health and safety problems including mosquito breeding, vermin, and the potential for drowning.

This maintenance manual contains specific preventative and corrective maintenance tasks for the SWMFs within this subdivision.

SELECTION OF STORMWATER MANAGER

The Weatherby Landing Homeowners Association shall select a Trustee who will be responsible for SWMF maintenance. This person shall be referred to as the stormwater manager. The stormwater manager must be aware of the purpose of the SWMFs and consequences of facility failure, particularly those failures caused by inadequate maintenance.

STORMWATER MANAGEMENT FACILITIES

There are a total of 2 storm SWMFs within this subdivision.

Water Quality Area A is the main basin located behind lots 20-23. This basin has a sandfilter located in the bottom of it that treats the stormwater for the majority of the subdivision. There are forebays (pretreatment areas) located on both ends of the basin which helps trap coarse materials and other pollutants before entering the sanfilter. The stormwater first passes through the pretreatment areas before entering the sandfilter through a 2' high rock dyke (berm). The sandfilter consists of 3 layers which are 3" of topsoil, 18" of clean washed "concrete" sand and 6" perforated pipe/8" thick gravel underdrain system. The sand layer is wrapped with a filter fabric to help keep the sand from being clogged with sediment. The approximate time it normally takes to drain the runoff volume below the swale bottom is 40 hours.

Water Quality Area B is located behind lots 31 and 32. This facility has an infiltration trench located in the bottom of it that treats the stormwater draining to it from the rear of lots 32-35. The stormwater drains into this facility via sheet flow. The 36" wide infiltration trench consists of 2 layers which are a 6" thick layer of 3" diameter or larger aggregate and a 30" layer of ¾" clean aggregate containing a 4" perforated pipe. The ¾" aggregate is wrapped with a filter fabric to help keep the aggregate from being clogged with sediment. The remainder of the facility is planted with a native seeding blend. The approximate time it normally takes to drain the runoff volume below the filter bed is 24 hours.

PREVENTATIVE MAINTENANCE

The purpose of preventative maintenance is to assure that the SWMFs remain operational and safe at all times, while minimizing the need for emergency and corrective maintenance.

1. Grass Cutting

A regularly scheduled program of mowing and trimming of grass at SWMFs during the growing season will help to maintain a tightly knit turf, and will also help to prevent diseases, pests and the intrusion of weeds. The actual mowing requirements of an area should be tailored to the specific site conditions, grass type, and seasonal variations in the climate. In general, grass should not be allowed to grow more than 1 to 2 inches between cuttings. Allowing the grass to grow more than this amount prior to cutting it may result in damage to the grass' growing points and limit its continued healthy growth.

2. Grass Maintenance

Grassed areas require periodic fertilizing, de-thatching and soil conditioning in order to maintain healthy growth. Additionally, provisions should be made to re-seed and re-establish grass cover in areas damaged by sediment accumulation, storm water flow, or other causes.

3. Removal and Disposal of Trash and Debris

A regularly scheduled program of debris and trash removal form SWMFs will reduce the chance of outlet structures, trash racks and other components becoming clogged and inoperable during storm events. Additionally, removal of trash and debris will prevent possible damage to vegetated areas and eliminate potential mosquito breeding habitats. Disposal of debris and trash must comply with all local, county, state and federal waste flow control regulations. Only suitable disposal and recycling sites should be utilized.

4. Sediment Removal and Disposal

Accumulated sediment should be removed before it threatens the operation or storage volume of a SWMF. Disposal of sediment must comply with all local, county, state, and federal regulations, Only suitable disposal sites should be utilized. The sediment removal program in infiltrations facilities must also include provisions for monitoring the porosity of the sub-base, and replacement or cleansing of the pervious materials as necessary.

5 Elimination of Potential Mosquito Breeding Habitats

The most effective mosquito control program is one that eliminates potential breeding habitats. Almost any stagnant pool of water can be attractive to mosquitoes, and the source of a large mosquito population. Ponded water in areas such as open cans and bottles, debris and sediment accumulations, and areas of ground settlement provide ideal locations for mosquito breeding. A maintenance program dedicated to eliminating potential breeding areas is certainly preferable to controlling the health and nuisance effects of flying mosquitoes.

6. Inspections

Regularly scheduled inspections of the facility should be performed by qualified inspectors. The primary purpose of the inspections is to ascertain the operational condition and safety of the facility, particularly the condition of embankments, outlet structures, and other safety-related aspects. Inspections will also provide information on the effectiveness of regularly scheduled Preventative and Aesthetic Maintenance procedures, and will help to identify where changes in the extent and scheduling of the procedures are warranted. Finally, the facility inspections should also be used to determine the need for and timing of Corrective Maintenance procedures. It should be noted that, in addition to regularly scheduled inspections, an informal inspection should be performed during every visit to a SWMF by maintenance or supervisory personnel.

7 Reporting:

The recording of all maintenance work and inspections provide valuable data on the facility condition. Review of this information will also help to establish more efficient and beneficial maintenance procedures and practices. Along with the written reports, a chain of command for reporting and solving maintenance problems and addressing maintenance needs should be established. From field personnel to the stormwater manager, everyone should be encouraged to report any problems or suggest any changes to the maintenance program.

CORRECTIVE MAINTENANCE

Corrective maintenance is required on an emergency or non-routine basis to correct problems or malfunctions and to restore the intended operation and safe condition of a SWMF.

1. Removal of Debris and Sediment

Sediment, debris and trash which threatens the discharge capacity of a SWMF should be removed immediately and properly disposed of in a timely manner. Equipment and personnel must be available to perform the removal work on short notice. The lack of an available disposal site should not delay the removal of trash, debris, and sediment. Temporary disposal sites should be utilized if necessary.

2. Dam, Embankment, and Slope Repairs

Damage to dams, embankments, and side slopes must be repaired promptly. This damage can be the result of rain or flood events, vandalism, animals, vehicles, or neglect. Typical problems include settlement, scouring, cracking, sloughing, seepage, and rutting. Equipment, materials and personnel must be available to perform these repairs on short notice. The immediacy of the repairs will depend upon the nature of the damage and its effects on the safety and operation of the facility. The analysis of damage and the design and performance of geotechnical repairs should only be undertaken by qualified personnel.

3. Dewatering

It may be necessary to remove ponded water from within a malfunctioning SWMF. This ponding may be the result of a blocked principal outlet (detention facility), inoperable low level outlet (retention facility), loss of infiltration capacity (infiltration facility) or poor bottom drainage. Portable pumps may be necessary to remove the ponded water temporarily until a permanent solution can be implemented.

4. Extermination of Mosquitoes

If neglected, a SWMF can readily become an ideal mosquito breeding area. Extermination of mosquitoes will usually require the services of an expert, such as the local Mosquito Extermination Commission. Proper procedures carried out by trained personnel can control the mosquitoes with a minimum of damage or disturbance to the environment. If mosquito control in a facility becomes necessary, the preventative maintenance program should also be re-evaluated, and more emphasis placed on control of mosquito breeding habitats.

5. Erosion Repair

Vegetative cover or other protective measures are necessary to prevent the loss of soil from the erosive forces of wind and water. Where a re-seeding program has not been effective in maintaining a non–erosive vegetative cover, or other factors have exposed soils to erosion, corrective steps should be initiated to prevent further loss of soil and any subsequent danger to the stability of the facility. Soil loss can be controlled by a variety of materials and methods, including riprap, sod, seeding, and re-grading. The local Soil Conservation District can provide valuable assistanee in recommending materials and methodologies to control erosion.

6. Elimination of Trees, Brush, Roots and Animal Burrows

The stability of dams, embankments, and side slopes can be impaired by large roots and animal burrows. Additionally, burrows can present a safety hazard for maintenance personnel. Trees and brush with extensive, woody root systems should be completely removed from dams and embankments to prevent their destabilization and the creation of seepage routes. Roots should also be completely removed to prevent their decomposition within the dam or embankment. Root voids and burrows should be plugged by filling with material similar to the existing material, and capped just below grade with stone, concrete or other material, If plugging of the burrows does not discourage the animals from returning, further measures should be taken to either remove the animal population or to make critical areas of the facility unattractive to them.

7. Snow and Ice Removal

Accumulations of snow and ice can threaten the functioning of a SWMF, particularly at inlets, outlets, and emergency spillways. Providing the equipment, materials and personnel to monitor and remove snow and ice from these critical areas is necessary to assure the continued functioning of the facility during the winter months.

SANDFILTER MAINTENANCE & INSPECTION SCHEDULE

Table 3.2.4-1. Typical Maintenance Activities for Sand Filters
(Source: WMI, 1997; Pitt, 1997)

Activity	Schedule
• Ensure that contributing area, facility, inlets and outlets are clear of debris. • Ensure that the contributing area is stabilized and mowed, with clippings removed. • Remove trash and debris. • Check to ensure that the filter surface is not clogging (also check after moderate and major storms). • Ensure that activities in the drainage area minimize oil/grease and sediment entry to the system. • If permanent water level is present (perimeter sand filter), ensure that the chamber does not leak, and normal pool level is retained.	Monthly
• Check to see that the filter bed is clean of sediment, and the sediment chamber is not more than 50% full or 8 inches, whichever is less, of sediment. Remove sediment as necessary. • Make sure that there is no evidence of deterioration, spalling or cracking of concrete. • Inspect grates (perimeter sand filter). • Inspect inlets, outlets and overflow spillway to ensure good condition and no evidence of erosion. • Repair or replace any damaged structural parts. • Stabilize any eroded areas. • Ensure that flow is not bypassing the facility. • Ensure that no noticeable odors are detected outside the facility.	Annually
• If filter bed is clogged or partially clogged, manual manipulation of the surface layer of sand may be required. Remove the top few inches of sand, roto-till or otherwise cultivate the surface, and replace media with sand meeting the design specifications. • Replace any filter fabric that has become clogged.	As needed

Additional Maintenance Considerations and Requirements

- A record should be kept of the dewatering time for a sand filter to determine if maintenance is necessary.
- When the filtering capacity of the sand filter facility diminishes substantially (i.e., when water ponds on the surface of the filter bed for more than 48 hours), then the top layers of the filter media (topsoil and 2 to 3 inches of sand) will need to be removed and replaced. This will typically need to be done every 3 to 5 years for low sediment applications, more often for areas of high sediment yield or high oil and grease.
- Removed sediment and media may usually be disposed of in a landfill.

Regular inspection and maintenance is critical to the effective operation of sand filter facilities as designed. Maintenance responsibility for a sand filter system should be vested with a responsible authority by means of a legally binding and enforceable maintenance agreement that is executed as a condition of plan approval.

INFILTRATION TRENCH MAINTENANCE & INSPECTION SCHEDULE

Table 3.2.4-2 Typical Maintenance Activities for Infiltration Trenches
(Source: EPA, 1999)

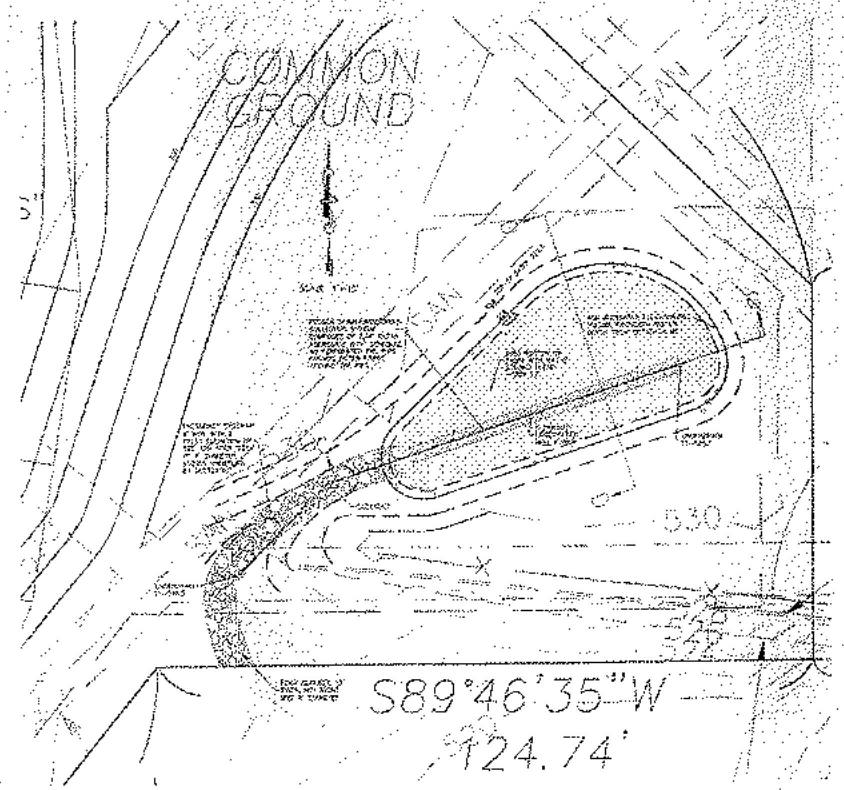
Activity	Schedule
• Ensure that contributing area, facility and inlets are clear of debris. • Ensure that the contributing area is stabilized. • Remove sediment and oil/grease from pretreatment devices, as well as overflow structures. • Mow grass filter strips should be mowed as necessary. Remove grass clippings.	Monthly
• Check observation wells following 3 days of dry weather. Failure to percolate within this time period indicates clogging. • Inspect pretreatment devices and diversion structures for sediment build-up and structural damage. • Remove trees that start to grow in the vicinity of the trench.	Semi-annual Inspection
• Replace pea gravel/topsoil and top surface filter fabric (when clogged).	As needed
• Perform total rehabilitation of the trench to maintain design storage capacity. • Excavate trench walls to expose clean soil.	Upon Failure

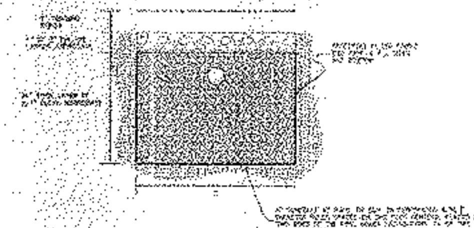
Additional Maintenance Considerations and Requirements

- A record should be kept of the dewatering time of an infiltration trench to determine if maintenance is necessary.
- Removed sediment and media may usually be disposed of in a landfill.

⚠ Regular inspection and maintenance is critical to the effective operation of infiltration trench facilities as designed. Maintenance responsibility for a infiltration trench should be vested with a responsible authority by means of a legally binding and enforceable maintenance agreement that is executed as a condition of plan approval.

WATER QUALITY PLANS & DETAILS BASIN A
10.1
WEATHERBY LANDING
PROJECT TITLE
S00°13'25"E
COMMON GROUND





TYPICAL FRENCH DRAIN SECTION

PROJECT TITLE

WEATHERBY LANDING

THE STERLING CO.

ENGINEERS & SURVEYORS

MCBRIDE & SON HOMES LAND DEVELOPMENT, INC.

WATER QUALITY PLANS & DETAILS BASIN B

P+Z No.
City No.
Date:
Job No.

Page No.

10.2

PROJECT TITLE

WEATHERBY LANDING

THE STERLING CO
ENGINEERS & SURVEYORS

WATER QUALITY PLANS & DETAILS BASIN A & B

10.3

100 N. Main St, O'Fallon MO 63366

City of O'Fallon, Missouri

Stormwater Management Policy

Adopted: June, 2011

2011

Revised:

City of O'Fallon, Missouri
Stormwater Management Policy

Table of Contents

City of O'Fallon
Stormwater Policy

Purpose

The purpose of this policy is to establish procedures for investigating storm water damage and other concerns reported to the City to determine responsibility, public or private, for corrective action.

The process that follows is to define and follow an orderly path of transition from an understanding that stormwater is essentially a private responsibility in which the City intervenes only in emergency situations to one where stormwater is considered a public infrastructure with both public and private responsibility.

History

June 2008 – Ordinance #5337 provides that no more than 3 cubic feet per second (cfs) shall flow in a man-made swale (excluding creeks) during a 15 year design storm event. Flows in excess of this amount need to be piped in a public or private storm sewer.

August 1987 – Prior to June 2008, the threshold of flow requiring a piped system was 4 cfs (Ordinance #1499)

Prior to 1987 – Drainage standards were less stringent and not consistently applied

Due to the different ordinances, each development within the City will have a different level of standards applied depending on when it was approved

Note – Events that exceed a design storm event will have flows that exceed the aforementioned amounts specified.

Missouri Law – Disposing of Surface Water

Modified Common Enemy Rule - The Missouri courts adopted this rule in 1884. Under this doctrine, an upper landowner was required to exercise reasonable care in diverting surface water onto a lower landowner's property. However, the lower landowner was free to take unrestricted action to divert surface water coming on to his property from upstream, provided the action did not obstruct a natural watercourse.

Rule of Reasonable Use - In 1993, the Missouri Supreme Court abandoned the Modified Common Enemy Rule and adopted the Rule of Reasonable Use to determine civil liability in cases involving the diversion or obstruction of surface water, whether by an upper or lower landowner (*Heins Implement Co. v. Mo. Hwy. & Trans. Commission*, 859 S.W.2d 681 [Mo. 1993]). The court ruling stated that

reasonableness of interference of flow of surface waters is a question of fact, to be determined in each case by weighing the gravity of harm to the plaintiff against the utility of the defendant's conduct.

In 1998, the Missouri legislature enacted a provision in Section 644.018 of the Missouri Revised Statutes specifying that in any case involving a flood prone area, if any defendant has obtained and fully complied with a permit from a local subdivision that has met the requirements of and is a participant in the NFIP, and the subdivision has jurisdiction over the area of dispute, then the proper permitting and compliance with all permit conditions shall be conclusive proof that the project meets any reasonable use test.

General Policies

If a property backs up to a storm sewer system, creek or stream, that creek/stream is located in an area owned and maintained by the Home Owners Association (HOA) for the subdivision (see or request Record Plat for clarification) or within private property. Therefore, creek bank stabilizations can be somewhat costly and while the adjacent homeowner or HOA should have had the understanding that creeks do meander and erode, the City has recently created a Stormwater Fund to help with certain projects.

To report a stormwater concern, someone must first contact the Stormwater Group by contacting stormwater@ofallon.mo.us or the street department at 636.379.3808. Based on the concern, a work order will be developed and will be supplied to either the Stormwater Foreman for minor concerns or the Stormwater Coordinator for more complex concerns. In both cases, they will contact the concerned party within one business day to touch base and describe our process and their schedule as to when we can review the concern.

For a minor concern, the foreman will evaluate the situation and if it is something the City is responsible for, the work order will be updated and the concern will be added to our maintenance schedule. If it is deemed a private matter, the foreman will contact the concerned party by phone and mail to discuss/describe the situation and provide assistance, as needed in accordance with the policy below, and the work order will then be closed out. If the concern turns out to be more complex than first anticipated, the foreman will turn the work order over to the coordinator. For more detail, please refer to the written procedures included in Appendix B.

For a more complex or major concern, the coordinator will perform an initial evaluation of the concern and determine if the concern is a matter the City can assist with as described later or if it is a private matter. Similar to the minor concerns, if it is deemed private, the coordinator will contact the concerned party and provide assistance as addressed in the policy and close the work order out with a letter to them. If the concern is deemed something the City will resolve or assist, the coordinator will evaluate the concern in more detail and provide a Category and Priority Rating to the concern.

After a concern has been evaluated and provided a category and rating number, the City will perform a conceptual design of the solution and evaluate the affected residents and the concern will added to the Stormwater priority list. The City will then need signed letters of understanding from the affected property owners prior to performing additional work on this project. A letter of understanding is not

an easement or an agreement, it is merely an agreement between the City and the affected parties that they are willing to work together throughout the process and take a common sense approach on temporary and permanent easements. It is also important to understand that since the project will enhance the affected properties owners, it is not in the City's best interest to pay for necessary easements since the storm improvements are not within City property and the funds can be better utilized for design and construction of this project.

Once the City has received the aforementioned letters of understanding, the stormwater coordinator and plan review group will evaluate the situation further and put together a concept study of the problem as well as several solutions with associated cost estimates. After this is done, the project will be placed within in its particular Category and relevant order based on Priority Rating and will then be budgeted appropriately within the constraints of the yearly budget when funding becomes available.

Public vs. Private Responsibility

Resolution of Drainage Concerns

Pursuant to City Ordinance and state law, the City cannot undertake drainage improvements on private property except where an easement exists or the protection of life or property requires emergency efforts. The City reserves the right to determine when an easement is necessary to install or maintain drainage facilities. The City may require a property owner to sign a release to permit access onto private property to facilitate these projects.

General: Residents, business owners, and developers have drainage concerns regarding their property or adjoining property. Once these concerns are brought to the City's attention, the process by which these are addressed shall follow a specific set of criteria. This section is intended to define those specific criteria for addressing these issues.

Stormwater drainage that relates to the conveyance of surface water, including but not limited to City Owned creeks/streams and storm sewer infrastructure are maintained by the City. The maintenance of these channels may be done by City departments or their contractors as needed for emergency services or as part of a maintenance program.

Localized stormwater drainage relates to the conveyance and storage of stormwater from a subdivision or large group of properties, creek/stream, and storm sewer infrastructure. These facilities are typically owned by the City or are under easement to the City such as storm sewer structures, pipes, inlets, etc.

Site specific drainage relates to the conveyance of stormwater from a single or small group of properties, and storm sewers. These facilities are typically not owned or maintained by the City and are not under easement to the City such as swales, smaller diameter pipes, etc

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City Assistance

Each stormwater concern will be reviewed and placed in a specific category and then have a specific rating attached to the concern. The four priority levels (PL) are as follows:

PL-1 – Flooding or erosion with potential structural failure of home structures or City infrastructure including perennial streams with stream order number of 2 or higher (this will be explained later)
PL-2 – Drainage areas that should have public sewers that do not
PL-3 – Private concern desiring to participate in a 50/50 program
PL-4 – Public Infrastructure concerns (routine maintenance)

If a project is deemed to be within PL 1 or 2, the project will not be approved for public funding until the applicants provide a signed statement from all adjoining property owners, including their street address, stating that they have approval of the project and agree that they will donate any easements necessary for the completion of the project. However, an exception can be made for properties not being improved by the project where payments can be made to acquire easements. If the project is deemed to be within PL 4, the repairs will take place when the work order can be addressed.

All proposed projects shall meet City of O'Fallon, Army Corp of Engineers and Missouri Department of Natural Resources guidelines.

<u>Creek banks:</u>

The City must be very careful when assisting individual reported lot concerns of creek bank erosion or stabilization. Therefore, the number of lots affected must typically include more than one; however, exceptions may be considered. All creek bank concerns will be evaluated on a case by case basis and must be adjacent to a City maintained creek.

There are three types of streams, Perennial, Intermittent and Ephemeral. They are defined as follows:

- Perennial – A watercourse that flows throughout a majority of the year in a well-defined channel
- Intermittent – Watercourse that flows in a well-defined channel only in direct response to precipitation; such a stream is dry for a large part of the year
- Ephemeral – A channel that carries water only during and immediately following rainstorms. Sometimes referred to as a dry wash. Ephemeral streams flow for less than 20% of the year during normal rainfall conditions

Appendix A is a stream order map of the streams throughout the City. While certain items on that map are being finalized, only Perennial stream order numbers 2 or higher will be addressed with PL 1 repairs. If a stream order number 1 or less is considered for PL 3, it will require a cost sharing between the City and the property owner(s).

PL-1 – City Assistance (Major Project)

(Two of the following must be met)

- A deficiency within a publically accepted storm sewer system or perennial stream
- Has clear potential for loss of life, damage to public infrastructure/property or damage to buildings
- Has had significant erosion on property (ies) within a stream order number of 2 or higher

PL-2 – City Assistance (Minor Project)

(Two of the following must be met)

- Have surface flows that exceed at least 3 cfs as calculated during a design storm event. Other factors will be considered after review of approved design requirements when area was developed
- Has clear potential for damage to public infrastructure/property or damage to certain private auxiliary structures (decks)
- Has had significant erosion on a single property due to a stream order number of 2 or higher

PL-3 – Partial City Assistance

If the creek with a stream order number of 1 or less affects multiple properties or a large stretch of common ground, the City will provide assistance splitting the costs 50/50 with use of the storm water tax fund and/or assistance by the use of a Neighborhood Improvement District (NID), Community Improvement District (CID) or other funding by developer, private group or citizen The affected parties will enter into a NID or CID (or other similar arrangement) that allows the project to be funded initially by the City and then be paid back by members of the district through their tax assessments.

While the City will rate the concern and put it on the list, it would be in the homeowner(s) best interest to take a proactive approach on the matter since this category will farther down the list and years away from funding.

PL-4 – City Assistance (In-house Maintenance Repairs)

Public Assistance Examples:

1. Sinkhole or erosion around the outside of a storm sewer in either back yard or front next to curb
2. Storm sewer is clogged or blocked and will not drain
3. Box culvert under public roadway is blocked with debris (City will only clean 3-feet outside of the box culvert within the creek)
4. Lid missing from structure that needs to be replaced
5. Storm sewer top in disrepair or shifted

Repairs of this level are mostly taken care of with the City's stormwater crew. Residents with concerns for this level should contact the street department at 636.379.3808 to report their concern.

Other

If the creek or creek bank concern does not fit into one of the categories for creek bank assistance stated previously, then it is considered normal property maintenance and the responsibility lies with the property owner. Examples of such reasons could be as follows:

- The creek bank erosion lies completely within the HOA property and has not directly affected multiple properties (single lot)
- The creek bank erosion has directly affected one property; however, it is not within 25-feet of a structure attached to the house
- The HOA or affected property owner has done something to the creek or creek bank to alter the natural flow of the creek
- The creek or creek bank is not being maintained correctly (i.e., dumping of debris into the area, not cleaning debris from creek, altering the creek bank, etc.)

No City Assistance

If your concern does not fit into one of the previous categories for City assistance, it is defined as a private concern that becomes the normal responsibility of owning property; the problem could be due to one of the following:

- Topography has changed due to a patio, swing set, deck, landscaping, pools, etc.
- Privacy fence or other item has blocked the drainage swale which is not in violation of a current City ordinance for Fencing Standards-400.273(c)(1), Nuisance Ordinance 200.020(21), Stormwater Quality Management and Illicit Discharge Control Section 405.245
- Discharge from a sump pump is not directed correctly to a drainage area or creates a semi to constant saturated zone of soil
- Private drainage system or underground gutter runoff not installed correctly or does not direct discharge to the appropriate drainage area
- You have a newly constructed home and the builder has not graded your yard correctly
- Over time, subtle changes in the ground can occur naturally which could create a low spot

The following is list of solutions to prevent or help private stormwater concerns:

- If you plan to change your swale for any reason or make significant yard changes, please contact the City for guidance or permits depending on the amount of changes to be done
- DO NOT block your swale
- Inspect and maintain all private stormwater systems and swales on your property and report any sinkholes above pipes or surrounding the structures to the City
- Install rain gardens or bio-swales to promote subsurface drainage and water cleansing
- Install rain barrel or underground storage systems to hold stormwater for your landscaping
- Reduce the amount of sprinkler use on your lawn

- Maintain private culverts located in front of a residential property that is incorporated with the driveway or in right of way adjacent to a road to prevent siltation and debris from allowing it to operate as intended

Residents can contact the City for review of a private system, but we will not fix matters that are deemed private. The City will provide guidance and potential recommendations; however, we will not direct how to resolve the problem/concern. There may be several causes of the reported site conditions and there may also be multiple remedies; therefore, the City will provide guidance and potential recommendations for addressing a residents concern. This may also include the recommendation for use of other professionals outside of City staff as well. Multiple remedies lead to multiple levels of designs/concepts and thus multiple costs and since the City will not oversee the actual work done, the City cannot take the liability of recommending one process over another.

Private-No City Assistance Examples:

1. Standing water or saturation in yard due to a Lot grading issue
2. Down spouts or sump drainage to swale or drainage area in back yard
3. French or other under drain installation (contact City if connecting to City infrastructure)
4. Culvert pipe and roadside ditch that is located on your property that is blocked or clogged
5. Erosion on a slope located on private property
6. Neighbors choice of landscaping that is causing drainage issue (not located in drainage swale per the plans)

Project Order and Rating for Major Projects

Each project that the City determines to be a public system or private system that the City will help fund will be analyzed and given a priority rating. However, each project will lumped into a category and the higher category will take precedence over the rating number and the categories again are as follows:

PL-1 – Flooding or erosion with potential structural failure of home structures or City infrastructure including perennial streams with stream order number of 2 or higher
PL-2 – Drainage areas that should have public sewers that do not
PL-3 – Private concern desiring to participate in a 50/50 program *1
PL-4 – Public infrastructure concerns *2

*1 – While this can be partially funded by the City, it is in the affected property owner(s) best interest to try and resolve this since it could be years before these projects are funded. Category 3 concerns for that particular year.
*2 – This category is budgeted on a yearly basis as a routine repair and maintenance items while levels 1, 2 and 3 will need to be budgeted on a yearly basis when the funding is available.

Maintenance

Publically Accepted Storm Infrastructure

Currently the City is in a reactive position with respect to stormwater concerns and we are working daily on making repairs. It is the City's goal to be able to obtain a more proactive approach and review storm systems on a continual and orderly basis which will help prevent smaller problems becoming larger. If you have a stormwater concern, please contact us at stormwater@ofallon.mo.us or 636.379.3808

Creeks (Order 2 and higher)

Since most of these stream lie completely within a property, it is typically the responsibility of the property owner(s) to clean their portion of the stream. However, due to the amount of water and debris possibly coming from upstream, the City has a volunteer program that assists the property owners that have a stream within their property. Two to three times a year, the City participates in a clean stream program, for more information or to have your area considered, please contact us at stormwater@ofallon.mo.us. If a log or debris jam has dammed up a portion of the creek within common ground or private property, it is the adjacent property owner's responsibility to resolve the blockage. However, since the debris may have come from upstream, the City can assist to an extent; if needed, please contact us to see how we can help with the concern.

Creeks (Order 1 and lower)

Since these types of creeks do not have water running through them continuously throughout the year, the maintenance of these systems will be up to the individual property owner(s)

Completed Projects

Whether it is completely financed by the City or partially, it is in the adjacent property owner(s) best interest to keep the new project maintained. If the City installs new infrastructure, it will be similar to above and it will maintained as needed by the City for the infrastructure only. The surrounding ground and landscaping are private property and to be maintained by the property owner.

Definitions

Best Management Practices (BMP'S): Schedule of activities, prohibitions of practices, general good housekeeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to storm water, receiving waters, or storm water conveyance systems. BMP's also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

cfs (Cubic Feet per Second): Stormwater flow rate measured in cubic feet per second

Clean Water Act: The federal Water Pollution Control Act (33 U.S.C. §1251 et seq.), and any subsequent amendments thereto.

Designed Storm Event: All developments shall provide storm water detention calculations for the two (2) year (3.1 inches), fifteen (15) year (4.60 inches), twenty-five (25) year (5.40 inches) and one hundred (100) year (6.20 inches), 20 minute storm. These are considered the design storm events. Storm water systems and swales are design for 15-year 20-minute storm.

Excavating: Any man-made cavity or depression in the earth's surface, including its sides, walls or faces; formed by earth removal and producing unsupported earth conditions by reasons of the excavation.

Fill/Filling: The depositing or dumping of earthen material on or into the ground resulting in the raising of the grade at that location.

Flooding: A temporary rise of the water level, as in a creek/stream or lake, resulting in its spilling over and out of its natural or man-made system onto land that is normally dry. Floods are usually caused by excessive runoff from precipitation or snowmelt, or storm surges.

Flood Plain: That area of land adjoining the channel of a river, stream, watercourse, lake or similar body of water which has a 1% chance to be inundated by a flood in any given year as determined by FEMA.

Grading Plan: The development plan that must be reviewed and approved by the City Engineer prior to the grading of fifty (50) or more cubic yards of any site within the City.

Private Storm System: System put into place/installed by resident/builder or more than one resident on private property to convey or collect stormwater and convey to the public stormwater system. Examples of such are extensions of commercial or private property systems that conveys to a public system such as gutters, sump pumps, installation of under drain pipe system, certain roadside ditches, basins and commercial infrastructure.

Public Storm System: Owned by a state, city, town, village, or other public entity that discharges to waters of the U.S.; Designed or used to collect or convey stormwater (including storm drains, pipes, ditches, etc.); Not a combined sewer; and Not part of a Publicly Owned Treatment Works (sewage treatment plant).

Rain Garden: A landscaping feature that is planted with native perennial plants and is used to manage stormwater runoff from impervious surfaces such as roofs, sidewalks, and parking lots.

Swale: A low, flat depression to drain storm water runoff.

Watercourse: A natural or artificial channel through which water flows.

Links or Helpful Information

Low Impact Development:

Municipal Guide:

http://www.lowimpactdevelopment.org/lid%20articles/Municipal_LID.pdf

Builder Guide:

http://www.lowimpactdevelopment.org/lid%20articles/Builder_LID.pdf

Landscaping for water quality:

Water Efficient Landscape Guide:

http://www.epa.gov/npdes/pubs/waterefficiency.pdf

Non-Point Source Pollution Landscaping Video:

http://www.epa.gov/owow_keep/NPS/lid/video.html

Native Landscaping Guide:

http://www.shawnature.org/nativeland/NativeLandscapingManual/

Rain Garden Brochures and Information:

Brochure:

http://raingardens.org/docs/rain_garden_brochure_greatlakes.pdf

Informational website:

http://www.raingardennetwork.com/

http://showmeraingardens.com/

Rain Barrel Information

Rain barrel Guide:

http://www.rainbarrelguide.com/

Government Links:

Missouri Department of Natural Resources:

http://www.dnr.mo.gov/env/wpp/wp-index.html

EPA NPDES Program:

http://cfpub.epa.gov/npdes/home.cfm?program_id=6

Brochure for Non Point Source Pollutants:

http://www.epa.gov/npdes/pubs/solution_to_pollution.pdf

Appendix A

Stream Order Map Example

100 N. Main St, O'Fallon MO 63366

City of O'Fallon, Missouri

Stormwater Management
Policy for the Stormwater Assistance Program

Adopted: July 30, 2012

2012

City of O'Fallon, Missouri
Stormwater Assistance Program

TABLE OF CONTENTS

City of O'Fallon
Stormwater Assistance Program (SWAP)

Purpose

With any stormwater issue, the difference between what is the responsibility of a private land owner and what becomes a problem large enough for the City to become involved is not always clear. As such, the City's Stormwater Policy which was adopted in June 2011 contains multiple priority levels. Priority levels 1 and 2 include items that would warrant full funding from the City. Priority level 3 items are ones which would still be considered for some public funding assistance from the City, but approach items that would be the normal maintenance responsibility of the property owner. As a result, this SWAP program has been developed to provide supportive financing assistance to property owners through two programs consisting of cost sharing and a rock assistance program. SWAP also benefits the City through improved water quality and by preventing smaller problems from growing into larger concerns.

Program Criteria

This program is designed to provide assistance to property owners experiencing creek bank erosion or similar stormwater related concerns as a means of reducing soil erosion and its effects on the storm system throughout the City. The following paragraphs will explain in detail the guidelines that will be applied to the Stormwater Assistance Program.

Property owners shall request consideration for matching funds in writing in the form of an application (see Appendix A) from the Public Works Director or his designee. Prime consideration will be given to areas with high ratings per the City's criteria. For full details on how drainage concerns are resolved and approved for funding, please see the Stormwater Management Policy.

SWAP Cost-Sharing Information and Guidelines

- The City will pay fifty (50) percent of the costs of alleviating erosion or similar stormwater concerns, funds permitting.
- The remaining fifty (50) percent of the costs must be paid by the property owner.
- The City's total share of the SWAP shall not exceed the amounts allocated in the budget for that purpose.
- If the project cannot be completed in that calendar year/budget, then it may have to be completed in phases based on the City budget and no other project would start until the project is complete.
- City participation in the rock program below will be deducted from the SWAP.
- The Applicants must provide a signed statement from all adjoining property owners, including their street address, stating they have no objections to the project. The City will provide a template and administer these letters.

- The applicants must provide any easements necessary for the completion of the project at no cost to the City.
- The property owner must pay the property owner's share of the estimated cost for the necessary engineering work based on the engineer's estimate prior to the design contract being sent out for bids. Should the cost estimate be high or low, the property owner's share will be adjusted to 50% of the actual cost.
- If this is a minimalist design, City staff will evaluate and design the solution and deduct any costs from the SWAP. If it is determined that a private engineer needs to be hired, the City will produce the bid documents and manage the bid; however, the property owner(s) will need to provide the City with the approximate 50% design cost ahead of selection of a bidder.
- The property owner must pay the property owner's share of the construction estimate costs prior to the beginning of construction. Should the actual costs be high or low, the property owner's share will be adjusted to 50% of the actual cost.
- All proposed projects shall meet the guidelines of the City, US Army Corps of Engineers and Missouri Department of Natural Resources.

Rock Assistance Program

The rock assistance program (RAP) is designed to assist property owners by utilizing recycled concrete provided and delivered by the City. This program can be done independently or in conjunction with a cost sharing program. The total amount of employee labor, truck usage, fuel, etc. will be applied toward the City's contribution of the total project cost.

- Priority will be given to locations where material may be placed without the necessity of grading preparatory work.
- Priority will be given based on available material and amount needed.
- The material is to be placed only on a slope of 2:1 or flatter.
- Material will be delivered to the front curb or yard of the property. (The property owner will have the ability to pick up the concrete from the City facility if so desired.)
- The property owner must place all delivered material in the area of erosion within two (2) weeks of delivery unless prohibited by weather conditions and a time extension is approved by the City.
- Concurrence of adjoining property owners must be secured regarding any work affecting their property.
- Material shall be provided on a secondary priority in areas where grading is required to provide a 2:1 slope.
- Material will not be provided for the repair of erosion which results from stormwater runoff from private property and can be addressed in another way to prevent further stream bank erosion.
- City staff will not haul, place, stack, etc. the rock once it has been delivered.

Application Process (SWAP and RAP)

Upon completion of an application (see Appendix A), the applicant shall return the application to the City for review and consideration. The completed application shall include the following:

- A sketch (and/or photographs) with information indicating the purposed use of material
- Location of work
- Estimate of required quantities (dimensions including length and width)
- An estimated time frame for the work to be completed
- Location for delivery of material on-site
- The Damage Waiver form

The City will review the application and will use the information provided to establish the necessity for and priority of the request based on the availability of funds for the program. Once City staff has reviewed and approved the request for assistance, the applicant will be notified and the process of obtaining necessary US Army Corps of Engineers and Missouri Department of Natural Resources permitting will commence. The City will provide assistance to property owners with obtaining necessary permits, if they are required.

Within two (2) weeks after the work has been completed, the applicant shall notify the City for final inspection of installation. Applicants that intentionally misuse materials or fail to complete proposed work shall be responsible for repaying the City the cost of the material and delivery charge.

The Stormwater Policy may be viewed at: http://www.ofallon.mo.us/dept_swm_regs.htm

Rock Quantities

The recommended rip rap rock sizes for the stabilization project should be calculated per the MSD (Metropolitan Sewer District) guideline as follows:

RECOMMENDED RIP RAP SIZES

22c

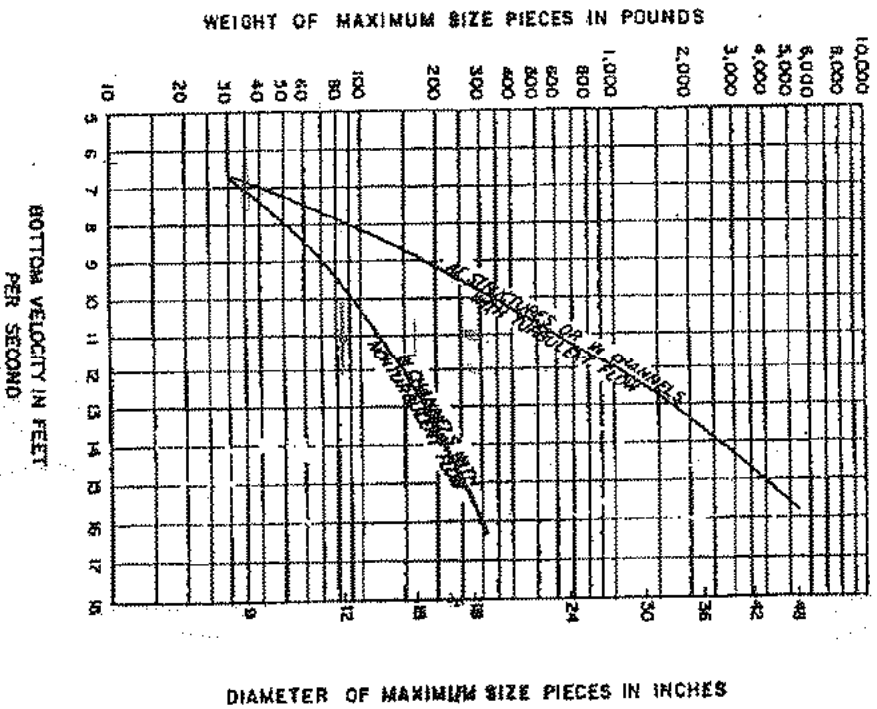

Fig. 3

US Army Corps of Engineers "Broken Concrete" Requirements

Per the US Army Corps of Engineers **(NWP 13 - Bank Stabilization, Permit Regulations)**:

Broken concrete used as bank stabilization must be reasonably well graded, consisting of pieces varying in size from 20 pounds up to and including at least 150 pound pieces. Gravel and dirt should not exceed 15% of the total fill volume. All protruding reinforcement rods, trash, asphalt, and other extraneous materials must be removed from the broken concrete prior to placement in waters of the United States.

Information regarding permit regulations may be viewed at:
http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/NationwidePermits.aspx

Links or Helpful Information

Government Links:

Missouri Department of Natural Resources and US Army Corps of Engineers:

401/404Permit Application Information:

http://www.dnr.mo.gov/env/wpp/401/

http://www.mvs.usace.army.mil/ConOps/permits/permits.html

Appendix A

Storm Water Assistance Program Application
Storm Water Assistance Program Damage Waiver Form

City of O'Fallon – Stormwater Management Department
100 North Main Street
O'Fallon, Missouri 63366
www.ofallon.mo.us
636.240.2000

Storm Water Assistance Program (Cost Share or Rock Program) Application

Please Print Clearly

Subject Property Information:

Property Location:

Is project located on your property:

If No, is it located on Common Ground:

Provide contact for Homeowners Association:

Estimated Grading Quantity:

Homeowners Association:

Name:

Address:

Telephone:

Contact Information (Please Type or Print):

Applicant:
Company:
Contact Person:
Address:
City/State/Zip:
Phone:
Fax:
E-mail:

Property Owner:
Company:
Contact Person:
Address:
City/State/Zip:
Phone:
Fax:
E-mail:

Emergency Contact:
Company:
Contact Person:
Address:
City/State/Zip:
Phone:
Fax:
E-mail:

Engineer:
Company:
Contact Person:
Address:
City/State/Zip:
Phone:
Fax:
E-mail:

The application shall be accompanied by the following information:

☐ Does on-site erosion cause an immediate threat to any habitable structures? If yes, estimate distance
0-5 ft 5-10 ft 10-20 ft 20+ft

☐ Are there any utilities located within project boundaries?
If Yes, please list them and their location:

☐ Description of work to be completed: (attach sketch/photographs)

☐ Estimated quantity of materials and/or dimensions of project:

☐ Estimated time of complete work, if approved:

☐ The Owner is willing to perform or contract work:

☐ **Applicant understands that measures should be taken to protect driveway from damage by use of protective materials such as ¾" plywood or larger, protective mats, etc.**

☐ **Applicant understands that any leftover materials will be the responsibility of the property owner to dispose of properly**

I(We) the undersigned owners of the property, have read, understand and agree to the terms and conditions of the Stream Bank Erosion Cost Share Program for the City of O'Fallon, Missouri.

_____ _____

Homeowner Signature **Printed**

_____ _____

Homeowner Signature **Printed**

_____ _____

Homeowner Association Representative Signature **Printed**

_____ _____

Homeowner Association Representative Title **Printed**

OFFICE USE ONLY

Date of Initial Submittal: _____ Project/Permit No.: _____

MDNR Land Disturbance Permit required for sites 1 acre and larger: Provided (Y) (N) (N/A), Expiration Date _____

US Army Corps of Engineers Permit Provided: (Y) (N) (N/A), Expiration Date _____

City Grading Permit Required/Provided: (Y) (N) (N/A), Expiration Date _____

Application (Approved/Denied) by: _____ Date: _____ Permit Expiration Date: _____

Filing Procedures: The owner/homeowners association shall submit two (2) copies of the proposed plan along with a completed Damage Waiver form, application form and checklist signed by the owner/homeowners association applicant(s) to the Engineering Department.

Inspections: (Initial/closeout):

Initial-
Inspector_____(print)_____Date_____

Final/Closeout-
Inspector_____(print)_____Date_____

Storm Water Assistance Program (Cost Share and Rock Assistance Program)
Damage Waiver Form

Please Read Before Signing

I, _____(Printed Name of Property Owner), of _____(physical address),_____ (city), _____(state), _____ (zip) understand that the trucks, equipment and materials for the Stream Bank Erosion Cost Share Program are very big and extremely heavy. I do hereby release the City of O'Fallon, Missouri of any damage that may be sustained to the above stated property to include, but not be limited to: concrete curbs, sidewalks, driveways, other concrete work, fences, landscaping, sprinkler systems, grass, trees, bushes or any other item, while we are providing assistance for the Stream Bank Erosion Cost Share Program on the above stated property.

By signing below I accept the terms of this damage waiver form

_____

Signature of Property Owner *Date*

_____

Signature of City of O'Fallon, MO Witness *Date*