City of Marion Engineering Department

City of Marion, Iowa

2014 ANNUAL REPORT

September 30, 2014

STORMWATER POLLUTION PREVENTION & MANAGEMENT PROGRAM

NPDES PERMIT NUMBER: 57-51-0-02

Prepared by
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Stormwater Coordinator
City of Marion

TABLE OF CONTENTS

Introduction

The City of Marion has completed its ninth year of the Stormwater Pollution Prevention and Management Program as outlined in the City's NPDES permit number 57-51-0-02. This annual report will outline and discuss the activities the City has performed in the past year to meet the requirements of the permit.

Indian Creek Watershed Management Authority

The Indian Creek Watershed Management Authority (ICWMA) is a cooperative agreement among the jurisdictions within the watershed to provide a framework for watershed level planning and management. The goal of ICWMA is to increase communication and coordination within the Indian Creek Watershed to reduce flood risk and improve water quality.

The City of Marion continues its leadership role in ICWMA. Since last year's report, Marion received additional funding from the Iowa Department of Natural Resources (IDNR) for $37,000 to complete the social assessment for the Comprehensive Watershed Management Plan on behalf of the Indian Creek Watershed Management Authority. Marion received the funding in cooperation with Linn County, the City of Cedar Rapids, the City of Hiawatha, the City of Robins, and Linn Soil & Water Conservation District as the other members of the ICWMA. In accordance with Section 9, §(2) of the ICWMA by-laws, the Board of Directors has designated the City of Marion as their fiscal agent to hold and administer the awarded amount as a special fund. Marion continues to subcontract with the East Central Iowa Council of Governments (ECICOG) to coordinate the planning process with all stakeholders in the Indian Creek Watershed.

The Comprehensive Watershed Management planning process for the Indian Creek Watershed has made significant progress including:

- The Comprehensive Watershed Management Plan for the Indian Creek Watershed is focusing on assessing and addressing the resource concerns identified by the ICWMA members:
    - Stormwater issues and MS4 Permit Requirements
    - Flood mitigation
    - Water quality concerns including Impaired Waters designation
    - Improved aquatic recreation including fishing and paddling
    - Public education and outreach/involvement
- Contract with Army Corps of Engineers Rock Island District to add Squaw Creek to the hydrology models. Once completed, the hydrology models allowed the Army Corps to present an overview of the watershed hydrology and identify areas of greatest concern for flood mitigation.
- Contract with Coe College through their Chemistry Department to conduct water quality monitoring and RASCAL field work to assess the physical condition of the stream.

- Contract with Vernon Research Group to conduct a survey of watershed residents, business owners, and farmers. The survey measured awareness levels about watershed issues and provides insight for developing educational materials in the future.
- Utilize partnerships with the Technical Advisory Team for the planning process to update the biologic assessment, the land cover assessment, and the urban storm water issues unique to the Indian Creek Watershed.
- Iterative goal setting process:
    - Three Lunch & Learn sessions presenting assessment data were organized by resource concerns. A wide range of stakeholders were invited to provide feedback to draft goals and suggest implementation steps for the plan.
    - ICWMA board will refine and prioritize the goals and action steps recommended by the Technical Advisory Team and informed by watershed assessment data and stakeholder input.
    - The prioritized goals and action steps will be reviewed by stakeholders and open to comment.
- Developing a 20-year implementation program based on the final goals and action steps that will include identification of high-priority BMPs.
- The draft plan will be completed and presented to policy makers establishing a public comment period.
- The Final Plan will be adopted and public outreach established to carry out the next steps.

The ICWMA board of directors is made up of public officials from jurisdictions within the watershed:

- Craig Hanson (Chair), Public Works Maintenance Manager, City of Cedar Rapids
- Bruce Frana (Vice-Chair), Assistant District Commissioner, Linn County SWCD
- Steve Cooper (Secretary / Treasurer), Stormwater Coordinator, City of Marion
- Vince Bading, Public Works Superintendent, City of Robins
- John Bender, Engineering Coordinator, City of Hiawatha
- Les Beck, Director of Planning & Development, Linn County

The ICWMA board of directors strongly believes that the best way to complete a Comprehensive Watershed Management Plan for the Indian Creek Watershed is to utilize local resources and partnerships wherever possible and build the capacity within the watershed to continue planning for the future.

City Staffing Additions

The City of Marion is fortunate to be experiencing healthy growth in business, residents, and recreation activities. To meet increasing needs for design, plan review, and construction inspection, Marion created two new FTE Engineering Intern (EI) positions and hired two qualified EIs who started in early July 2014. Marion is committed to reducing stormwater runoff and improving water quality, so one of these employees has

the responsibility of assisting in stormwater related activities such as responding to drainage complaints when the Stormwater Coordinator is not available, assisting in investigating erosion and stormwater runoff problems, and performing SWPPP inspections.

Stormwater Utility

In October 2013 the City of Marion implemented its new Stormwater Utility, which changed the Utility from a flat rate system to an equivalent runoff unit (ERU) system. The ERU based system is a more equitable method of collecting stormwater fees because larger properties with greater amounts of impervious surfaces have a greater impact on stormwater runoff than properties that are smaller and/or have less impervious surfaces. Consequently the larger properties have a larger Stormwater Utility fee. The City uses revenue from the Stormwater Utility to finance stormwater related capital improvements and initiatives that support our NPDES programs.

The base ERU for Marion is 2,791 square feet, which is the statistical average impervious area of the residential living units within the City of Marion. The Stormwater Utility rate is $1.55 per ERU. Residential monthly charges are 1 ERU plus a $3.25 administrative service charge, or $4.80 per month. Stormwater Utility fees for non-residential parcels (Commercial, Industrial, and Multi-Family 5-Units or more) are calculated based on the parcel impervious area divided by the ERU times $1.55 plus a $3.25 service charge. There is a maximum monthly charge of $133.71 for any individual property.

Impervious areas for these non-residential parcels were digitized using aerial photography and parcel data in both CAD and GIS, and this data is updated regularly using building permit information, recent aerial photography, and construction plans for new development.

Stormwater Utility fees are collected through Marion water bills. However, owners of parcels that have impervious surfaces with no water account associated with them – such as parking lots – receive their bills as an invoice from the Marion Finance Department.

Non-residential parcels with storm water controls and Best Management Practices may be eligible for a credit on their Stormwater Utility fee. Owners of a non-residential property with a detention basin controlling the *quantity* of water running off their site are eligible for a credit of up to 25% off their Stormwater Utility fee. If the detention basin also treats the *quality* of water running off their site, the owner is eligible for another 25% off their Stormwater Utility fee. Other Best Management Practices such as pervious pavers, bio-retention cells, or infiltration trenches can provide up to an additional 15% off Stormwater Utility fees. The maximum credit for any property is 65%. The intent of the credit system is to encourage and reward those parcels who manage their storm water in efficient, effective ways and to motivate others to do the same.

Property owners of non-residential parcels who are not currently getting a credit but believe they have proper stormwater controls have an opportunity to submit an application for credit. Marion has a Stormwater Utility Credit Committee to review these

applications and, if warranted, award this credit. At this time, residential accounts are not eligible to receive a credit on their Stormwater Utility fee.

Additionally, a property owner receiving a Stormwater Utility fee can apply for an *adjustment* to their fee if they believe that the amount of impervious surface has changed, or if they would like their bill to be sent to a different mailing address.

Finances

The City had expenditures in the amount of $7,768.17 last year out of the Stormwater Pollution Prevention and Management Program account. This would include costs for training seminars, publications, meeting room expenditures, and the Iowa Stormwater Education and Outreach Program. The City budget for the coming year is $15,000.00, of which $8,000.00 is earmarked for matching funds for the ICWMA Comprehensive Watershed Management planning process.

The above amount does not include any staff time to create and administer our Stormwater Pollution Prevention and Management Program. Our staff salary in dollars devoted to this program is approximately $140,000.00.

The expenditure amount also does not include the donation of meeting rooms by Marion for the ICWMA Board of Directors meetings or ICWMA Technical Team. The Board of Directors meets quarterly for two hours, and the Tech Team meets monthly for two hours.

Respectfully submitted,

Steve Cooper, GISP, ICCSPPI, ICIMPSP
Stormwater Coordinator, City of Marion

A. Public Education and Outreach

General Stormwater Education Brochures

The City of Marion receives support and information from the Iowa Stormwater Education Program (ISWEP). They continue to produce multiple informational storm water management brochures to assist in educating the public and businesses served by Marion. The brochures, pamphlets, and bookmarks are available for the public to pick up at the Marion City Hall. Stickers, wipe on tattoos, coloring books, and pencils with storm water themes supplied by ISWEP and handed out to children at the Engineering front desk.

The City of Marion had 187 new single family or multifamily building permits in the last fiscal year (July '13 to June '14). The building permit packet given with every single family house or condo permit included educational pamphlets "Erosion and Sediment Control: A Guide for Individual Building Sites" and "Stormwater Tips for Swimming Pool and Spa Owners". For Commercial and Industrial builders, a booklet is provided called "Putting FAIR into Action: Recommended Guidelines for Infiltration-Based Practices to Achieve Better Water Quality in Metro Area Communities". This booklet provides options on how to detain the 1" rain event over the site.

Telephone Hotline Number & Stormwater Web Page

The telephone number for Marion's stormwater hotline is (319) 743-6340 and is listed on the City's website. The phone number routes all calls to the Engineering Department. When a call is received a complaint/investigation form is filled out by our administrative assistant and passed along to an inspector to follow up on the caller's complaint or general question. Long-term issues that can't be resolved right away on site are logged into a drainage complaint spreadsheet so they can be tracked.

The City of Marion's website is www.cityofmarion.org. Under the Engineering Department section is a link called *Stormwater Management*. http://www.cityofmarion.org/departments/engineering/stormwater-management

Marion's Stormwater Management web page has links to www.iowasudas.org, www.iamu.org, www.rainscapingiowa.org, and www.iowastormwater.org where the latest methods of BMP's are available. The booklet called "Putting FAIR into Action: Recommended Guidelines for Infiltration-Based Practices to Achieve Better Water Quality in Metro Area Communities" is available to download. In addition, two instructional videos are posted to show what citizens can do to help maintain and protect Marion's streams

A printable form is available on this site at to report illegal or illicit discharges of non-storm water that is sent to the Engineering Department.

WORKSHOPS AND PUBLIC EVENTS

Watershed Planning Workshop

On November 18th, 2013, six representatives from the City of Marion attended a day-long workshop called *A Watershed Approach to Community Growth* held at the Prairie Oak Lodge in Marion's Squaw Creek Park. This included employees from Marion's Engineering, Planning, and Water departments as well as members of the Marion Water Board of Trustees. The following are some of the watershed and stormwater management topics covered in the workshop:

- Proven plans, policies and practices that enhance watershed planning / management
- Building partnerships and leveraging resources
- Finding opportunities for cooperation between communities and agricultural neighbors
- Tapping into financial resources dedicated to water resource projects and planning
- Interactive watershed planning exercises

Workshop for the 4" topsoil requirement

On Friday December 6th, 2013, we hosted a workshop to educate local construction professionals on the 4" topsoil requirement that went into effect in October 2012 as well as well as field office enforcement of IDNR policies. More than 25 local developers, contractors, inspectors, and engineers attended the workshop where presenters included Joe Griffin, NPDES Program Manager at IDNR, and Clark Ott from the IDNR field office #1 in Manchester. The workshop concluded with 30 minutes of Q & A between attendees and presenters. Attendees of this workshop represented the following companies:

Abode	Cedar Ridge Homes	Connolly Construction
Skogman Homes	Frazier Development	Pirc-Tobin Construction
Rathje Construction	First Construction	Platinum Development
Jerry's Homes	Mooney-Engle Land Co.	City of Marion employees
Culvers Landscape	DK Land Services	

League of Women Voters

The Linn County chapter of the League of Women Voters (LWV) has been very active in watershed management and efforts to improve water quality and more effectively manage stormwater runoff and floodplains. They regularly sponsor events that are open to the public to raise awareness of the factors that are endangering our waterways and educate residents on things they can do to improve water quality. They have invited me to participate in some of these events to answer questions from the public and show what Marion is doing for stormwater management.

On August 16th the LVW sponsored and hosted an event called *Clean Streams and Waterways*. The event was held at Marion's Thomas Park and included multiple displays educating attendees on stormwater runoff, rainwater harvesting, and native landscaping. Attendees were also given the opportunity to go to the banks of Indian Creek to take water samples and test for nitrates, phosphorus, and turbidity. A local news channel was present to cover the event, and the video of this can be seen in the following link:
http://www.kcrg.com/subject/news/event-teaches-how-to-keep-water-clean-with-hands-on-demonstrations-20140816

On September 13th the LWV hosted a forum at the Indian Creek Nature Center, and invited me to be on the panel to answer questions from the audience. The event opened with a keynote address from Cedar Rapids Gazette columnist Todd Dorman, whose column often addresses conservation and water quality issues. In addition to me, the panel was made up of:

- Rich Patterson, former director of the Indian Creek Nature Center
- Jennifer Fencl, Coordinator of the Indian Creek Watershed Management Authority
- Marty St. Clair, Coe College chemistry professor
- Curt Zingula, a Linn County farmer

Another local journalist who was present at the event published a story about it which can be found in the following link:
http://homegrowniowan.com/intrastate-rivalry-cyclones-outnumber-hawkeyes-at-game-day-forum/

Presentation to Marion Rotary

The Marion-East Cedar Rapids Rotary Club is a humanitarian organization of local professionals who are active in many civic activities – such as hosting the Marion *State of the City* address by the mayor – and provides financial support for local schools, Trees Forever, and other local non-profit activities. The club invited me to give a presentation during one of their weekly meetings on September 2nd to educate and inform them on Marion's stormwater program. My presentation to them covered the following topics:

The water cycle	Distribution of the earth's water	What is a watershed
The runoff problem	Soil quality	Sedimentation
Stormwater pollutants	Illicit discharges	Erosion control
Post-construction BMPs		

What residents can to do reduce runoff and improve water quality

Nutrient Reduction Strategy Tours

The Linn County Soil and Water Conservation District and the Linn County Farm Bureau hosted a nutrient reduction strategy tour on July 10th, showcasing some of the efforts to reduce the amount of nitrogen and prosperous that flow into the surface waters of the Indian Creek watershed. I participated in this tour along with more than 30 people including public officials, senators and representatives of the State of Iowa, and private land owners. The following is a link to article published in the Cedar Rapids Gazette about the tour:
http://thegazette.com/subject/news/tour-a-window-into-linn-county-farmers-conservation-efforts-20140709

MEDIA AND TELEVISION

Mediacom Newsleaders

One of our local telecommunications companies, Mediacom, provides local organizations with the opportunity to share their story in a 5-minute interview format on a topic of their choosing. The interview airs as part of a Mediacom Newsleaders special every Monday night for the period of one month on Channel 22. In November of 2013 I had the opportunity to utilize this resource to publicize Marion's stormwater management program. In addition to describing the challenges we are experiencing with stormwater runoff and water quality, my objective was to provide residents who watch the interview with useful information of what they can do individually to help reduce runoff and improve water quality. The video of this can be seen on Marion's Stormwater Management webpage:
http://www.cityofmarion.org/departments/engineering/stormwater-management

Stormwater Pollution Television Commercial

The cities of Marion, Cedar Rapids, and Hiawatha teamed up this year to develop a mass-media campaign raising more awareness of stormwater runoff and pollution issues. We received the rights to use a video created by Think Blue San Diego where little yellow rubber ducks depicting stormwater pollutants such as oil, pet waste, and cigarette butts float down gutters, into streams, and out to the sea. Production, including the customized voice-over, was completed locally and aired on the two local telecommunication providers, Mediacom and ImOn. The commercial aired 426 times between April 18th and April 27th on 22 different channels including TNT, TBS, Nickelodeon, ABC Family, and Comedy Central. The video of this commercial can be seen on Marion's Stormwater Management webpage:
http://www.cityofmarion.org/departments/engineering/stormwater-management/best-management-practices

City of Marion Stormwater Educational Video

MSA Consultants produced a 20 minute storm water video specifically made for the City of Marion, with scenes shot in the city and interviews/commentary from City and County staff. This video covers the basics in watershed drainage, basins, water quality issues, flooding, and explains where storm water does go once it goes into an intake. The City gave copies of this video to both area school districts, and provided a YouTube link on the City's website to view the video. As of September 30, 2014, Part 1 of the YouTube video had 272 views and Part 2 had 190 views. DVDs of the video are also available at City Hall.

Part 1 of the video can be seen here:
https://www.youtube.com/watch?v=LJ-jfOw_dps

Part 2 of the video can be seen here:
https://www.youtube.com/watch?v=cr3KdFgLNn8&list=UU5_52Vgm8PuDFyHNYRjRtpg

TRAINING AND CERTIFICATIONS

ICCSPPI

Three of Marion's engineering inspectors renewed their certification, and I received my initial certification, as Iowa Certified Construction Site Pollution (ICCSPPI) at a day-long workshop hosted by the Iowa Stormwater Education Program (ISWEP) on November 13th 2013. This training and certification provides stormwater professionals with knowledge of regulatory requirements, erosion processes, topsoil requirements, SWPPP essentials, sediment control, and stream bank stabilization. The City of Marion now has four inspectors recognized as having credentials to conduct pollution prevention inspections at construction sites.

ICIMPSP

Due to the increasing demands for installing and maintaining stormwater Best Management Practices such as detention basins, raingardens, and bioretention cells, the Iowa Stormwater Education Program began offering a new certification for inspection and maintenance of BMPs. This certification is called Iowa Certified Inspection & Maintenance Professional for Stormwater Practices (ICIMPSP). The initial training session for this was designed to "train the trainer" and was held on June 6th, 2014. I attended this session to both obtain this certification and be qualified to conduct training for this certification to others such as city employees and local landscapers and grading contractors.

Erosion Control Conference and CMS4S Workshop

On April 29th & 30th I attended the *Great Connections 2014* conference in Davenport, Iowa sponsored by the Great Rivers and Great Lakes Chapters of the International Erosion Control Association. The conference included an 8-hour workshop on the

Certified Municipal Storm Sewer System Specialist (CMS4S) program. The purpose of the CMS4S program is to certify individuals who are technically and ethically qualified to manage or coordinate nationally consistent EPA NPDES MS4 programs.

ISWEP Rainscaping Webinars

During the summer of 2014 I, along with two other City employees, attended a series of webinars put on by the Iowa Stormwater Education Program on infiltration-based green infrastructure practices. Each 90-minute webinar provided detailed information on the locating, design, installation, vegetation selection, and long-term maintenance and effectiveness for the following best management practices:

- Designing and installing Raingardens
- Designing and installing Bioretention cells
- Designing and installing Bioswales
- Soil quality restoration and soil health
- Planting and maintaining native landscaping and turf

Indian Creek Watershed Management Authority Social Assessment

One of the major tasks in developing the ICWMA watershed assessment was conducting a social assessment for the watershed to measure a variety of factors including:

- watershed awareness levels in urban and agricultural areas;
- attitudes about the watershed in urban and agricultural areas;
- personal sources of information; and
- interests for the watershed

The Vernon Research Group, a local research and marketing firm that specializes in on-line surveys, was selected by ICWMA to conduct this social assessment. The Vernon Research Group designed and programmed an on-line survey capable of characterizing participants in 3 target audiences – urban/suburban residents, agricultural producers, and businesses – located in the Indian Creek Watershed. The survey design allowed for common questions to be asked of all groups and specific questions tailored to each group. The survey went live in late April 2014 and continued through early July.

A variety of methods and marketing materials were used to promote the survey to the target audiences, and directed them to the Linn Soil and Water Conservation District website that posted a prominent link to the survey. E-mail invitations were sent to several distribution lists and postcards were mailed to rural landowners. The member cities of the Indian Creek WMA assisted in promoting the survey through their Communications staff utilizing websites, newsletters, and email contacts.

Over 1,000 people attempted to complete the survey which yielded 286 urban surveys and 22 agricultural producer surveys from within the Indian Creek Watershed. The Linn Soil and Water Conservation District and Linn County Farm Bureau Chapter agreed to coordinate with Vernon Research to get more agricultural producer surveys by mailing a printed version of the survey, which yielded another 15 agricultural responses.

The results of the social assessment survey are still being organized and analyzed, and it would be too early at this time to accurately report on any of these results.

Additionally, ICWMA hosted a series of *lunch & learn* sessions in July, August, and September to provide information about the watershed and the development of the watershed assessment.

The first lunch & learn session was held on July 30th and invited watershed stakeholders to a presentation of the hydrology modeling results and gather input about flood mitigation strategies in the watershed. A total of 40 stakeholders attended and provided specific input that is summarized in the report attached. Written input was collected from each individual participant on the draft hydrology goals. A local news channel covered this event, and the story can be found here: http://www.cbs2iowa.com/news/features/top-stories/stories/residents-give-input-indian-creek-plan-28824.shtml

On August 13th, the second lunch & learn session was held and provided watershed stakeholders with a presentation of the water quality research results and gather input about strategies to improve water quality in the watershed. A total of 41 stakeholders attended and provided specific input that is summarized in the report attached. Written input was collected from workgroups that each provided feedback on draft water quality goals. This event was also covered by a local news channel and can be seen here: http://www.cbs2iowa.com/news/features/top-stories/stories/officials-discuss-water-quality-indian-creek-29173.shtml

On September 24th, the third lunch & learn session was held to present the initial results of social assessment surveys. Again, having the results of the social assessment survey only recently received by ICWMA, it would be too early report on them at this time.

B. Public Involvement and Participation

Stormwater Advisory Committee

The Stormwater Advisory Committee met on August 29th, 2014 at noon. The agenda for this meeting included:

- An update on the Indian Creek Watershed Management Authority
- An update on the Stormwater Utility
- A review of the Public Education and Outreach completed in the last year
- Discussion on drainage and pollution issues from the past year
- A review of the City facility BMP's
- A discussion on potential stormwater projects and initiatives for 2014-2015

There was much discussion throughout the hour long meeting on these topics. The makeup of the Committee, with a mix of experts in storm water and professionals from all aspects of development, brings a wide range of thoughts and ideas to the table for discussion. The Committee is made up of two Professional Engineers from private Engineering firms (one is retired), a Licensed Land Surveyor who works with a local development company, a Stormwater Specialist with ISWEP, a local NRCS Official, and a City Planner.

Overall, the Committee felt the City was on the right track with our activity over the past year, as well as our plans for the future.
The Committee did have a couple suggestions:

1) The City should plan for and provide more regional stormwater detention basins to serve developed and developing areas, and rely less on smaller stormwater detention areas in each new development.
2) The City should reach out to and work with the Cedar Rapids Area Association of Realtors to educate area realtors on drainage issues and drainage easements, and be able to pass along this information to their clients and homebuyers.

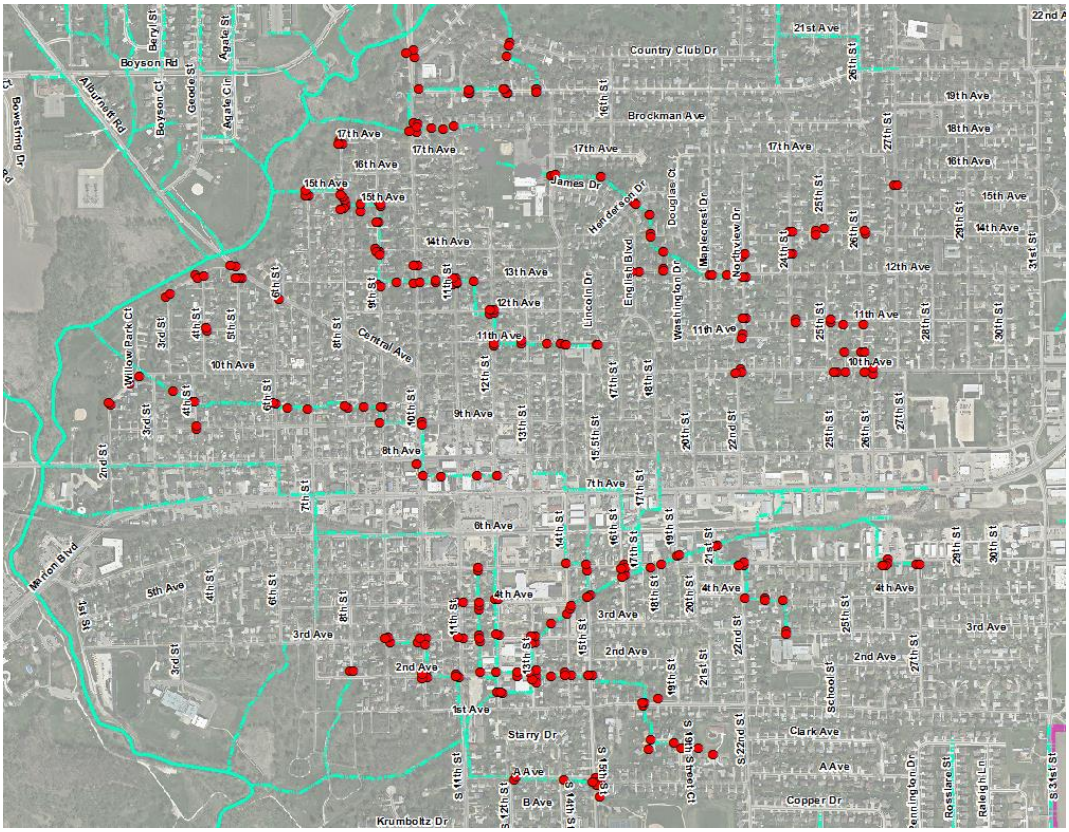
Storm Sewer Stenciling with Marion High School

The City's storm sewer intake stenciling program continued this year, with the help of Marion High School students. The City supplies the stencils and paint, while the school provides students to paint the "No Dumping, Drains to River" messages on the intakes.

This program teaches the students what a storm intake is and where the intake discharge actually drains too. At the same time, the stencils are an excellent warning to help prevent illicit dumping into intakes.

On May 13th, 2014, more than 20 Marion High School held an entire day of service and volunteer work called *One Day*

in May. The students broke into three teams lead by teachers and stenciled more than 300 storm sewer intakes in the Indian Creek and Squaw Creek watersheds, highlighted in the map below.



The map above shows the locations of storm sewer intakes that were marked with stencils

Marion City Showcase and Uptown Market

The City hosted its first City Showcase event on April 26th in City Square Park. The event was designed to provide an opportunity for residents to interact with city staff and council members and learn about community initiatives and upcoming events. Approximately 500-600 attended the event. City departments also participated in the monthly Uptown Marion Market, June-August. The open air market features over 50 vendors, live music and informational booths. The City's booth provided general resources and communication pieces and then placed special focus on the updated trails plan, stormwater management practices, and library expansion efforts. Roughly 100-150 people stopped by each month. In addition to the verbal interaction I had with Marion residents at these events, I handed out more than one hundred public information items to provide residents of all ages information on Marion's stormwater management programs.

Stormwater Utility Credit Committee

As required in our Stormwater Utility ordinance, a working group made up of Marion residents was developed to provide review of applications for credits and adjustments by non-residential properties. Committee members are appointed by City Council members and are educated on stormwater runoff issues and stormwater Best Management

Practices. The Committee meets as necessary when credit applications are submitted. Since the committee was formed and first met in January 2014, the committee received and reviewed four applications.

Future City Competition

The Future City Competition is a national, project-based learning experience where students in 6th, 7th, and 8th grade imagine, design, and build cities of the future. Students at participating schools form teams of 3 or 4 members and develop a fictional future city that must provide solutions to a determined environmental challenge or engineering-related theme. In 2014, this theme was *Tomorrow's Transit: Design a way to move people in and around your city*. In addition to addressing the specific theme, students whose future city addresses multiple challenges – such as stormwater runoff (which was last year's theme), energy conservation, or feeding future cities – typically perform the best in the competition and provide students with a more complete educational experience.

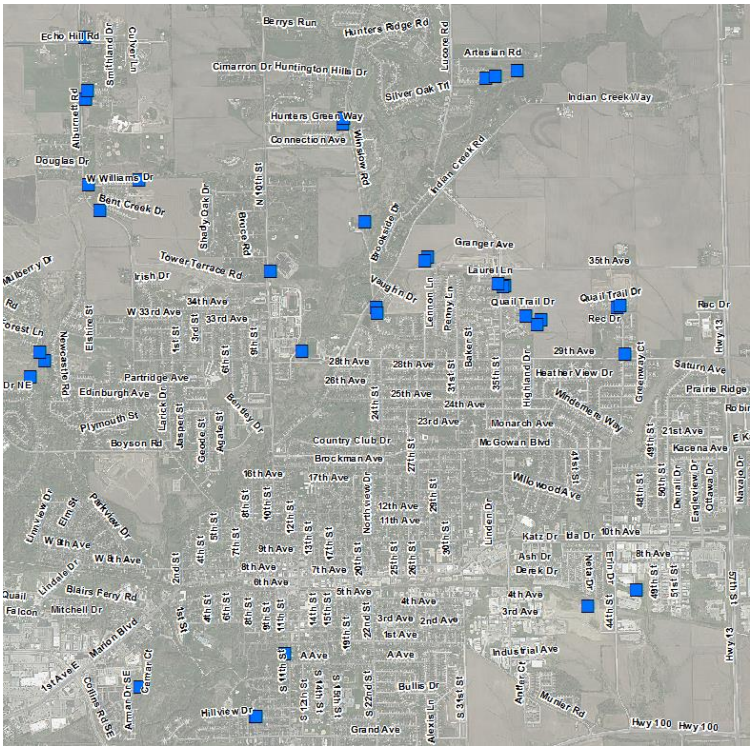
Schools participating in the Future City Competition are encouraged to have a mentor to serve as a technical coach and help translate the academic to the real world of engineering. In 2014 I was the mentor for McKinley Middle School in Cedar Rapids where I guided four teams to the regional competition. One of these teams went on to the finals competition with a future city that solved multiple environmental and socioeconomic challenges dealing with transportation, stormwater management, water quality and supply, energy production, and health care. This team was awarded fifth place in the region!

C. Illicit Discharge Detection and Elimination

Illicit Discharge Detection and Elimination Program

The City of Marion staff has continued to inspect our storm sewer outfalls for any illicit discharges. As required by our current NPDES permit, this summer we inspected 36 outfalls that had active subdivision or project sites draining to them. This included filling out the storm water outfall inspection sheets and taking photos of each one. No illicit discharges were found.

This map shows the location of outfalls that were inspected in 2014



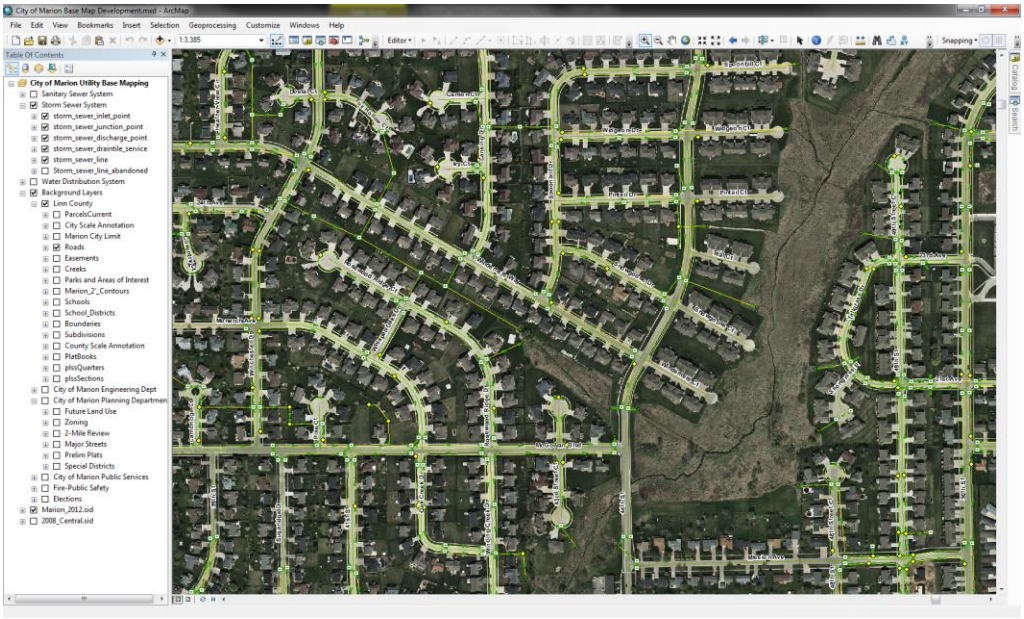
The City received only one citizen complaint since last year's report about potential illicit discharges. On May 27th, 2014, City staff received an anonymous complaint regarding discharge from the floor drains and truck wash bays at Rogers Concrete here in Marion. An investigation found that shop drains at the facility were not properly connected to the sanitary sewer system, and the bays being used to hold water from washing concrete trucks were not properly designed and, consequently, discharging water into the storm sewer system. Gary Hansen, Marion's Assistant Director of Building Services, and I met the day of the complaint with the owner of that facility to help him understand what he needed to do to correct the problems. Follow-up meetings and communications were conducted regularly after that.

On July 29th a final letter of warning was sent to Roger's Concrete. There was insufficient response to that letter, and the matter was referred to the Marion City Attorney, who then began to proceed with the institution of a municipal infraction with Roger's Concrete. On Monday September 22nd the owner was personally served with a Citation. Since this time, I have been in contact with the owner of Roger's Concrete, and he is now in the process of installing proper sanitary hookups and preventing

contaminated water from leaving the property. The City of Marion will continue to closely monitor this situation.

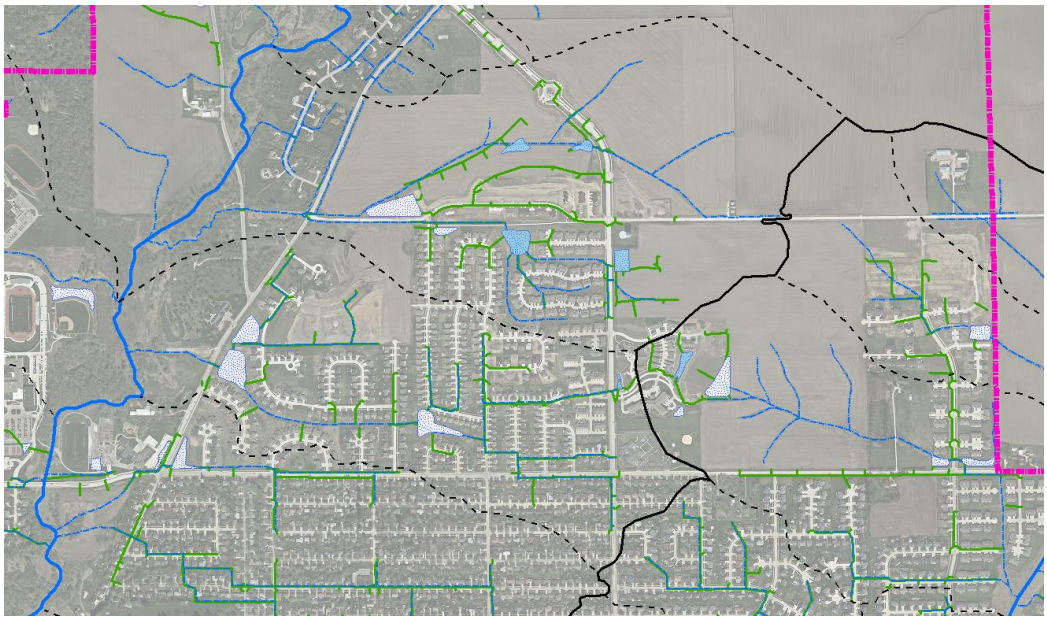
Storm Sewer System Map

The City of Marion has a complete Storm Sewer System map on our Geographic Information System. Inlets, outlets, and junctions have been shot in with survey grade GPS equipment. All storm structures in new Subdivisions are added to the map as they are constructed. Reconstructed storm structures and systems are re-surveyed after the work rehabilitation work is completed. Below is an example of our mapping system. Additionally, new GIS datasets are being developed that define drainageways, watersheds, sub-watersheds, and catchment areas in and upstream of Marion. This data provides both City staff and residents with a clearer picture of stormwater flows.



At left is the GIS Marion maintains that includes storm sewer pipes and structures as well as stormwater BMPs.

In the map at right, the solid blue lines are perennial flowing waterways, dotted blue lines are drainage ways with intermittent water, solid black lines are the borders of major watershed (Indian Creek, Squaw Creek, etc.), and dotted black lines are the boundaries of sub-watersheds.



D. Construction Site Storm Water Runoff Control

Construction Site Review and Inspection Program

The City of Marion has been requiring detailed site plans and stormwater pollution prevention plans from developers since 2005. The City does not allow developers to commence on construction projects until proper runoff control measures have been reviewed and approved by our office, and are in place out in the field.

There is a $100 fee for the Major Erosion Control Permits in place, which are defined as sites greater than 1 acre. There is a $25 fee for individual homes and small business sites less than 1 acre in size called Minor Erosion Control Permits.

The Engineering Department inspects Capital Project sites, Commercial sites, and Subdivision sites larger than one acre. One acre or less single family dwelling sites are inspected by the Building Department. Public Services, Parks, or Water Department projects too small to require a NPDES permit from IDNR are monitored by the corresponding department.

The Engineering Department also does quarterly SWPPP inspections on "Active NPDES" sites greater than one acre provided by the IDNR as required by our NPDES permit. Inspectors make appointments with the Owner named on the permit to notify them of our quarterly inspection. The quarterly inspection includes:

- an onsite inspection to review all the best management practices (BMP's)
- a review of the Owner's weekly inspection reports and SWPPP to see if they are keeping up with the required paper work as well as maintaining appropriate BMP's.

A non-compliance letter is sent to those that are not keeping up with their approved NPDES permits.

E. Post-construction Storm Water Management

Post-construction Site Runoff Control Policy Ordinance
The City of Marion has a storm water ordinance in the City Code and in effect since September of 2008. A copy of this ordinance is available upon request.

Stormwater Detention Requirements
The City of Marion uses the Cedar Rapids Metropolitan Area Engineering Design Standards for the design of the post-construction stormwater management. The minimum post-construction stormwater detention requirements for new development are:

- The post-development Best Management Practice (BMP) must have a release rate of the 5-year pre-development peak runoff or less.
- The difference between the 5-year pre-development and 100-year post-development storm run-off must be detained on site. Again, the 5-year pre-development peak runoff amount is the maximum the post-development site can release, so the volume difference between the two storm events will be used to size the BMP.
- The one-inch rainfall over the developed site shall be detained in the basin for a minimum of 24 hours. Known as the "first-flush events", this standard will typically result in 60—80 percent of the total suspended solids being removed.

BMP Manual
The city of Marion has adopted the FAIR Approach (**F**ilter – **A**bsorb – **I**nfiltrate – **R**etain) Best Management Practice (BMP) for our community. The FAIR Approach concept focuses on retaining the one inch rainfall event on site using different BMP independently and combined if necessary to achieve absorption of the one inch rain. We also use and reference the new SUDAS manual for additional BMP practices which is now located at the CTRE website. We currently reference both of these manuals on our city website.

Topsoil Requirement
As of October 1, 2012, the IDNR added to the City's NPDES permit the requirement to preserve topsoil. The requirement states that after soil disturbing activities have been completed and final stabilization achieved the topsoil depth shall be equal to or greater than 4.0 inches. This requirement is mandatory to sites preliminary platted after October 1, 2012. The only way to reduce the 4" minimum depth requirement of topsoil is if a soil survey conducted by a properly qualified person shows the predevelopment topsoil depth is less than 4". The site must match the predevelopment topsoil depth.

Since last year's report, a stakeholder group has been formed by the Governor of Iowa to review the 4" topsoil requirement and decide whether the requirement needs to be revised or even repealed altogether. This review came out of concerns voiced by contractors and developers across Iowa that preserving and replacing topsoil at construction sites is not economically achievable in light of the best industry practices, therefore it causes them hardship. The decision on this revision, called Executive Order 80, will likely be made in the coming months. The City of Marion will continue to follow the current 4" requirements in GP#2 until, should it happen, the administrative rule change is official.

Indian Creek Watershed Management Authority Inventory & Assessment

Indian Creek is a HUC10 watershed partially located within the limits of the City of Marion. Indian Creek is fed by Dry Creek and Squaw Creek, both partially in Marion, ultimately draining to the Cedar River.

The Indian Creek Watershed spans 93 square miles of urban and rural lands primarily in the Iowan Surface Landform Region, with a small area in the lower portion of the watershed in the Southern Iowa Drift Plain. In general, the watershed is characterized by a gently sloping landscape, with steeper elevations towards the Cedar River as the watershed transitions into the Southern Iowa Drift Plain. As is typical within the Iowan Surface, karst features are located throughout the watershed.

The Indian Creek Watershed Management Authority, or ICWMA, has partnered with the DNR Watershed Improvement Section staff, DNR Geology and Groundwater Section staff, and the Tech Team to provide GIS maps of slopes, topography, potential karst areas, soils, and wetlands within the watershed.

Land Use

According to the 2011 National Land Cover Dataset (NLCD), 39% of the watershed is dedicated to row crop agriculture (corn and soybeans). Urban land uses (residential, commercial, industrial, and roads) make up another 48% of the total watershed area, particularly in the southern half of the watershed.

The Indian Creek Watershed has experienced a steady increase in urban land uses over the last several decades. From 1992 to 2006, developed area increased by 64% from 9,399 acres to 15,417 acres (USACE 2012). At the same time, agricultural land area decreased by 11%, dropping from 42,946 acres to 38,159 acres.

Watershed stakeholders participating in the Interagency Visioning Workshops have expressed concern with the increase of impervious surfaces, which has implications for storm water management and flash flood conditions. A Comprehensive Watershed Management Plan is critical in guiding development in a sustainable manner, consistent with the Iowa Smart Planning Principles and with the resource concerns.

During the spring of 2013, the Linn SWCD began conducting a thorough agricultural land cover assessment using DNR tablets to identify opportunities for improving agricultural land management. The ICWMA will utilize this new information, combining it with a GIS analysis of urban parcel data from the ICWMA member cities to achieve a more accurate depiction of land uses for modeling impacts on water quality and quantity. The ICWMA Board and Tech Team will work with member city staff to provide more detailed information on parcel data.

Water Quality & Quantity Monitoring

Extensive monitoring has been completed in the Indian Creek Watershed to date by the City of Cedar Rapids, the Iowa DNR's Ambient Monitoring Program, and the volunteer IOWATER program. In addition, the City of Cedar Rapids and the DNR have partnered

with Coe College to support water quality monitoring work in the Indian Creek Watershed (among others) for over ten years.

The Coe Water Quality Lab is directed by Professor Marty St. Clair and staffed by Coe undergraduate students. The Coe Water Quality Lab utilizes professional quality instrumentation in the field and in the laboratory to generate data that meets Iowa's credible data standards including use of a DNR approved Quality Assurance Project Plan (QAPP).

Current monitoring efforts in the Indian Creek Watershed include weekly monitoring of sites located at the intersection of Indian Creek with Mt. Vernon Road, at Thomas Park, and at Linn-Mar High School. Sampling of Dry Creek takes place both at Donnelly Park and Boyson Park in Marion. In collaboration with the Cedar Rapids/Linn County Solid Waste Agency, sites were added in 2012 on landfill property to assess surface water impact.

The current monitoring sites are represented by red dots on the map below. In all cases, sampling occurs from public right-of-ways or with the permission of the landowner. The sampling parameters include dissolved oxygen, turbidity, temperature, specific conductance, pH, total suspended solids, chloride, nitrate, sulfate, dissolved reactive phosphorus, and *E. coli.*

In general, results show that the upper part of the Indian Creek watershed is typical of many eastern Iowa agricultural streams. Nitrate levels at Linn-Mar High School (on the northern edge of the developed part of the watershed) averaged 9.7 mg NO_3^--N/L in 2011, which places it in the middle of a group of seven other watersheds monitored for the past 10 years. As the creek then passes through the suburban areas of Marion and Cedar Rapids, nitrate values decline. In the summer of 2011, the average value at Mt. Vernon Road (near where the creek enters the Cedar River) was 6.8 mg NO_3^--N/L. The decrease is due to dilution – Dry Creek adds water that is approximately one-third lower in nitrate than Indian Creek due to the springs feeding that waterway – as well as uptake by plants and denitrification. *E. coli* levels in Indian Creek typically exceed the Iowa standard for children's play and wading; in 2011, two samples out of forty-seven were lower than the Iowa A3 standard. Dissolved reactive phosphorus (DRP) values are typically between 0.1-0.2 mg/L, and typically remain fairly constant moving downstream.

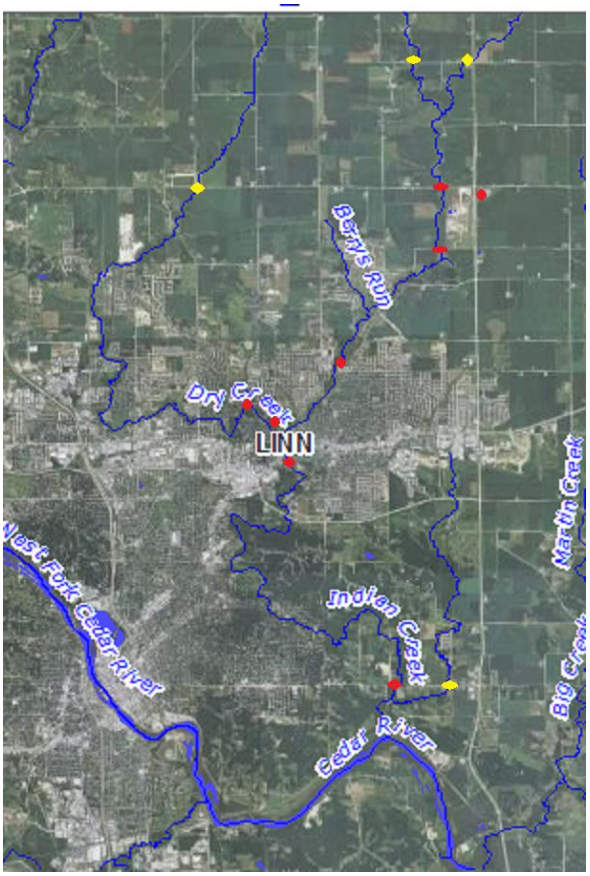


Figure 1 - Indian Creek watershed with 2012 sampling sites in red and proposed additional sites in yellow

The ICWMA is partnering with Coe College and the DNR IOWATER to expand their water quality monitoring programs in the Indian Creek Watershed to both capitalize on the existing experience and data records as well as leverage existing efforts achieving more results with fewer additional resources. The funds received in the 2nd round of funding from the Iowa Economic Development Authority is allowing an increase in the number of sampling sites (represented by yellow dots on the map above) as well as increase the frequency and duration of sampling. The sampling parameters have also been expanded to include total phosphorus and ammonia.

Coe students and IOWATER volunteers are sampling from March to November, with weekly sampling from March to May and August to November, and twice-weekly sampling from May to August. Additional sites on Squaw Creek at Mt. Vernon Road, on Indian Creek east and west branches in the upper part of the watershed, and on northern Dry Creek at County Home Road will add to the understanding of water quality within the entire watershed.

During the 2012 sampling season, Coe students made extensive measurements of flow, but the extended drought and resulting low flows did not allow for relationships between creek depth and flow rates to be determined. This year the DNR IOWATER program has provided Coe with a USGS-type current meter for use in measuring flow and will provide standardized training on acquiring the flow measurements. Coe students can then make regular flow measurements at each of the sites where the Iowa Flood Center has stream gauges. The data will be used to facilitate pollutant source identification and quantification, develop necessary pollutant loading reduction goals using a modeling approach deemed appropriate by the Tech Team, and will inform an implementation strategy to mitigate the water quality concerns.

Impaired Waterbodies

The Indian Creek Watershed has two stream segments that are considered impaired due to their inability to support aquatic recreation and aquatic life. These two segments are listed in the Iowa DNR's 303(d) 2010 Integrated Report as waterbodies in need of a TMDL. Indian Creek, from the mouth to the confluence with Dry Creek, is impaired for primary contact due to elevated indicator bacteria levels, and for aquatic life due to 'other habitat alterations'. Monitoring and assessment leading to these two impairments occurred from 2000 – 2005 and involved chemical monitoring and biological monitoring (including fish and benthic macroinvertebrate surveys). Dry Creek, from the mouth to the confluence with an unnamed tributary, is listed as impaired for primary contact due to elevated indicator bacteria levels. Monitoring took place in 2005 and consisted of water column surveys to detect concentrations of fecal coliform bacteria.

These impairments underscore the importance of undertaking a comprehensive planning effort in the Indian Creek Watershed. There are numerous potential sources of pathogen contamination, including waste from animals such as dogs or geese, or human sources as a result of sewage contamination. It should also be noted that biological monitoring and assessment have not been conducted on Dry Creek to assess the health of aquatic life, and no assessments have been performed on Squaw Creek.

The ICWMA will close the gaps in our understanding of Dry and Squaw Creeks through expanded chemical and pathogen monitoring as part of the overall planning process. The ICWMA partnering with the DNR's IOWATER program and Coe College's water quality monitoring program to conduct biological assessments in Indian, Dry and Squaw Creeks, which would involve fish and benthic macroinvertebrate surveys. These assessments will improve our understanding of the factors that have led to a biological impairment in Indian Creek and will facilitate documentation of biodiversity in Dry and Squaw Creeks.

Stream Conditions

The City of Marion has conducted a physical assessment on portions of Indian Creek and Squaw Creek within their city limits. Marion city staff assessed conditions within and along Indian Creek in 2005 and Squaw Creek in 2010 using the Rapid Assessment of Stream Conditions Along Length (RASCAL) methodology. Issues noted in the 2005 Indian Creek assessment are consistent with a flashy stream hydrology, such as:

- steep banks, particularly in the lower third of the stream, where bank heights averaged from 6' – 10' with some segments reaching up to 15' or above;
- lack of well-established vegetation, with the lower third in particular lacking vegetative cover;
- instances of actively eroding stream banks were observed
- Marion city staff did observe trout in Indian Creek, which underscores the need for habitat protection and improvement.

The ICWMA is partnering with Coe College to add a significant physical stream assessment component to their water quality monitoring program as part of the planning process. Coe faculty and students have some experience in physical stream assessments. In 2012, Coe students utilized the Stream Visual Assessment Protocol (SVAP), a precursor to RASCAL, at several sites in the watershed.

The ICWMA Board will work with Coe College and the DNR Watershed Improvement Section to ensure that faculty and students are trained and provided with equipment to conduct consistent RASCAL assessments throughout the watershed. The complete watershed RASCAL assessment will help identify specific in-stream concerns as well as locations for implementation of best management practices.

Hydrology

The Army Corps of Engineers (Rock Island District) has conducted a hydrologic assessment for Indian Creek and Dry Creek watersheds under the Corp's Section 205 program. The City of Cedar Rapids was the local sponsor and provided $150,000, a 50% cost-share, to fund the study. Cedar Rapids requested the study as the result of the June 2002 flood event that resulted in excessive flood damages concentrated in the lower portion of the watershed. To date, the Army Corps has completed the development of two existing conditions models to develop water surface profiles, floodway and floodplain mapping.

The first, a hydrologic (HEC-HMS) model, produced hydrographs that will have numerous applications in assessing urban drainage, identifying opportunities for flood damage reduction, and evaluating the impact of different floodplain regulations. A

hydraulic model (HEC-RAS) was also developed, which is used to develop water surface profile and inundation extents along the stream during storm events of different magnitudes. As part of model development, channel data were supplemented with field survey data, and the Rock Island District utilized the State of Iowa LiDAR surface data for overbank elevations. Through this process, the 100- and 500-yr floodplain maps were redeveloped, and discharges for these events can now be modeled to show potential impacts on structures within the floodplain.

Due to funding limitations the models have not undergone final calibration and review. While the modeling work has thus far only been completed for Indian and Dry Creeks, the ICWMA is partnering with the Army Corps to update the hydrologic modeling to include Squaw Creek and to finish the final calibration and review for all of the Creeks.

In addition, the ICWMA is partnering with the Iowa DNR's Watershed Improvement Section staff to calculate runoff volumes and pollutant loadings in urban areas using a GIS-based methodology developed by New York State. This method calculates percent imperviousness of each parcel using available aerial imagery and land use / land cover data, and uses simple formulas to calculate annual runoff volumes and pollutant loadings from each parcel. The resulting maps will be used to identify high-priority areas for BMPs and educational outreach to communities.

Groundwater systems

In 1994, the DNR Iowa Geological and Water Bureau (IGWS) produced detailed geologic maps of portions of Linn County. These maps depict the types of geological materials - rock strata, glacial deposits, stream alluvium, and wind-blown sand and silt - that occur within 18 feet of the land surface. Compiled at a scale familiar to users of U.S. Geological Survey topographic maps, 1:24,000 (1 inch = 2,000 ft.), they incorporate a wide array of information, including water well records, observations of rock and soil exposures, borings taken along road and power line rights-of-way, and the Linn County Soil Survey.

As part of the 1994 program, the IGWS developed a Groundwater Vulnerability Map (below) to show the varying susceptibility of aquifers to contamination from near-surface sources. The most vulnerable areas are shown in red and include areas underlain by sandy alluvial aquifers, areas where bedrock aquifers lie near the land surface, and areas characterized by karst features such as sinkholes. In contrast, aquifers in areas shown in green are overlain by 100 feet or more of slowly permeable glacial deposits, and are largely protected from surface-related contamination. These areas with greater natural protection are better suited for developments that have the potential to adversely impact groundwater, such as waste-generating industries or agri-businesses, housing developments with a high density of septic systems, or landfills.

Using the county- scale map, it appears that significant portions of the Indian Creek watershed have areas considered as "vulnerable" and "most vulnerable" to contamination from surface activities. The presence of the karst features also provides challenges for traditional hydrologic modeling efforts. As part of the Comprehensive Watershed Management Planning process, the ICWMA is partnering with the IGWS to refine the geologic maps and groundwater vulnerability map for the Indian Creek watershed as part

of its annual STATEMAP activities in order to provide a more rigorous assessment of the impact of karst and groundwater connections in the Indian Creek watershed.

The City of Marion has entered into a contract with IEDA to serve as the fiscal agent for this project. Marion has staff and a budget devoted to its Storm Water Pollution Prevention and Management Program that will administer the contractual details of the project. Marion subcontracted with ECICOG for planning services and to coordinate the project.

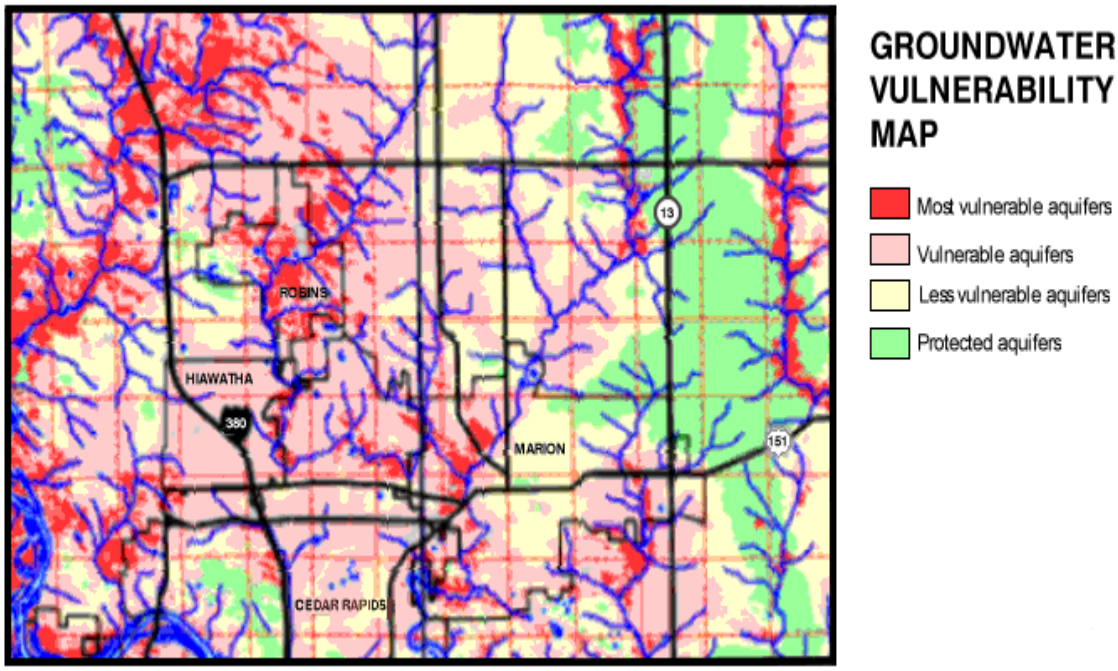


Figure 2: DNR Iowa Geological and Water Bureau Groundwater Vulnerability Map

Indian Creek Watershed Management Authority
Watershed Planning Project Financial Summary
Updated September 25, 2014

		CDBG Disaster Recovery Funds			EPA 319 Funds			Local Share	
	Budget Item	**IEDA Grant Amount**	**Amount Claimed to Date**	**IEDA Funds Remaining**	**DNR Grant Amount**	**DNR Funds Claimed**	**DNR Funds Remaining**	**Match Pledged**	**Match Submitted**
WMA Phase I – ICWMA Formation									
	Planning Services (ECICOG subcontract)	$27,600	$27,600	$0				$15,055	$17,932
WMA Phase II – Comprehensive Watershed Management Planning									
1.	Planning Services (ECICOG subcontract)	$78,625	$48,447	$30,178	$17,000	$16,569	$431	$48,000	$25,877[1]
2.	Technical Advisory Team	$1,375	$124	$1,251				$78,000	$14,248[1]
3.	Water Monitoring & RASCAL	$27,330	$25,225	$2,105				$33,000	$33,000[2]
4.	Modeling Work	$33,000	$33,000	$0				$300,000	$300,000[3]
5.	Social Assessment (Vernon subcontract)	$22,000	$10,782	$11,218	$20,000	$20,431	$-431	$6,000	$305
6.	Public Outreach	$25,000	$4,805	$20,195				$8,000	$0
	Phase II Totals	**$187,330**	**$122,383**	**$64,947**					
	WMA Project Totals	**$214,930**	**$150,483**	**$64,784**	**$37,000**	**$37,000**	**$0**		

Note[1]: Amounts provided by board member and TAT members. Submitted to IEDA.

Note[2]: Amount to be spent this summer by City of CR and DNR. Still need to document & submit to IEDA.

Note[3]: Amount spent by City of CR and USACE. Still need to document & submit to IEDA.

F. Pollution Prevention/Good Housekeeping

Operation and Maintenance of MS4

The City of Marion continues to improve its existing infrastructure by inspecting, maintaining and cleaning all components of the city's storm sewer system. The Public Services Department does most of the minor maintenance to the system. Larger projects are designed and constructed under the direction of the Engineering Department.

Since last year's report, the Engineering Department reported replacing or installing the following with projects:

- 23,738 l.f. of RCP storm sewer pipe, ranging from 12" to 54" in diameter.
- 204 storm sewer intakes and manholes
- 25,843 l.f. of HDPE draintile, 6" diameter

Below is a summary from the Public Services Department on their activities in the past year.

Stormwater Intake Inspection and Cleaning

Annual spring inspections and cleaning of stormwater intakes initiated in the spring of 2014. Inspections denote any necessary repairs and debris is removed from all storm water intakes. Continued program throughout year on rotating basis.

Street Sweeping

Street sweeping is an ongoing activity. Up to two street sweepers stay active at least 8 months out of the year. Sweeping activities are programed on a rotating basis in specified areas of the city. Annually, over 7,400 lane miles are swept each year.

Intersection Sweeping

Location	*Completed*
Parkview & West 9th Avenue/Donnelly Drive	X
Parkview & Alpine/Elm/ Terrace	X
South 15th Street & 3rd Avenue/2nd Avenue	X

Median Cleaning

Location	*Completed*
HWY. 151	X
7th Avenue @ 35th Street	X
Central Business District	X
Marion Blvd.	X
East Post Road	X
TwixTown Rd.	X
Lindale & Blairsferry	X
Hwy 100 & Munier Rd.	X
31st Street (8th Ave/McGowan)	X

Main Routes (Sweeping)

Location	*Completed*		
Pink Snow Route	X	Brown Snow Route	X
Green Snow Route	X	Blue Snow Route	X
Orange Snow Route	X	Black Snow Route	X
Purple Snow Route	X		
Yellow Snow Route	X		

Secondary Roadways Sweeping

Commercial Districts	*Completed*
C. B. D. Area – 6TH Ave. to 11TH Ave. & from 9TH St. to 14TH St.	**X**
Menard Ln & Oak Ln	X
Lyons Ln.	X
Katz Dr. & P.D.	X
Industrial Dr. – 3RD & 4TH Ave. east of 35TH St.	X
Commercial & Industrial area – off of 44TH St. & 50TH St.	X
Wal-Mart frontage road	X
Commercial area east of Hwy 13 – (Whole Sale Feeds)	X
Cardinal & Linden Dr. (Fareway)	X
Chandler Ct. (off 50th St.)	X
REC Dr. (Hwy 13 access)	X
Residential Areas	X
16TH & 18TH St. from 3RD to 5TH Ave.	X
20th St. from 3rd Ave. to 5th Ave.	X
3RD & 4TH St. from 3RD to 6TH Ave.	X
19TH St. 5TH to 7TH Ave.	X
1st Ave. – 8th St. to 11th St.	X
S.5th St. – S. 6th St. loop	X
S. 12th St. – A Ave. to Grand	X

Pepperwood Area	X
Keyes Ct. & Ridge Dr./Southview Areas	X
Linnwood Knolls Area	X
Tama St. (off Hwy100)	X
2ND , 3RD , 6TH, 7TH , 8TH St. – From 7TH TO 8TH Ave.	X
FIRST 100' OF 4TH, 5TH 6TH , 7TH St. North of 29TH Ave.	X
Partridge – Larick Dr. to Alburnett Rd.	X
7TH 8TH 9TH St. North of Central	X
17TH & 18TH St. North OF 10TH Ave	X
Edgebrook Dr.	X
26th St. from McGowan to 24th Ave.	X
24th Ave. – 26th St. to 31st St.	X
31st St. – north of 29th Ave.	X

Residential Sweeping Areas

Location	*Completed*	*Location*	*Completed*
Green District 1	*X*	Purple District 3	*X*
Green District 2	X	Purple District 4	X
Green District 3	X	Purple District 5	X
Green District 4	X	Blue District 1	X
Yellow District 1	X	Blue District 2	X
Yellow District 2	X	Blue District 3	X
Yellow District 3	X	Gold District 1	X
Purple District 1	X	Gold District 2	X
Purple District 2	X	Gold District 3	X

I. Stormwater Maintenance Program

Catch Basin Cleaning and Inspections- Activity will include visual inspections, visual repairs, and cleaning of catch basins.

Main Routes

Location	*Date Completed*
Pink Snow Route	
Green Snow Route	
Orange Snow Route	
Purple Snow Route	
Yellow Snow Route	
Red Snow Route	
Brown Snow Route	
Blue Snow Route	
Black Snow Route	

Residential Areas

Location	*Date Completed*	*Location*	*Date Completed*
Green District 1		Purple District 3	
Green District 2		Purple District 4	
Green District 3		Purple District 5	
Green District 4		Blue District 1	
Yellow District 1		Blue District 2	
Yellow District 2		Blue District 3	
Yellow District 3		Gold District 1	
Purple District 1		Gold District 2	
Purple District 2		Gold District 3	

Detention Basin Maintenance

A majority of the mowing for detention basins is contracted out. At times, Public Service is required to maintain or mow a detention basin on an as needed basis.

Contract Basin Mowing (twice per month)

2011/2012
35th St/Sunburst Ave
31st St/Abby Rd
31St St/Sunburst Ave
Larick Ditches
Echo Hill Rd/Bellboy Dr
Hillcrest Ct
Meadow View / East Post Rd
S. 26th St/Meadow Ridge Blvd
44th St Wetlands Area
S. 22nd St/Edgewood Ct
Partridge Ct.

Catch Basin Repairs and Reconstructions

805 50th Street
966 3rd Street
10th Ave at 966 3rd Street
1445 26th Street.
1425 25th Street

Storm Intake Maintenance

Joint Maintenance

2350-2355 Ashwood Ct.
2260 Timber Creek Drive,2335,2340,2160,2125,2005,2010
2010 to 2335 Geode Street

3185 Meadow Glenn Street
120 and 121 Meghann Drive
3420 Cottonwood Lane
150 and155 West 34th Ave

Cleaning

830 West Williams
3177 Brookfield Drive,
795 Hampshire
3195 Stanley Cup

Draintile Program

1. 3rd Ave. 3030 3rd Ave going west on the north side.
2. 5th Avenue - 80 feet of 10 inch tile- 5th Ave south to 6 inch line on the corner of 4th Ave and 27th Street.

Drain tile Cleaning

Drain tile cleaning is performed on as needed basis in identified areas. Drain tile cleaning includes inspection, flushing, and root treatment when needed.

Storm Water Channel Maintenance

It is estimated that 250 man hours are spent annually on floodplain and streamline channel maintenance, most of which for debris removal and streamline bank stabilization. Typically debris consists of dead trees within the water way or floodplain In the last ten years Public Services has cleaned the primary streamline channels at least twice. Supplemental clearing of streamline channels occurs annually in the fall and winter months.

Maintenance personnel are also required to remove beaver dams throughout the year in minor storm water channels. Typically eight to ten dams are removed each year.
In addition to stream channel cleaning, removal of sediment and silt within culverts and storm water lines typically requires annual attention. Smaller storm channels, such as Dry Creek, experience significant sediment buildup due to low water velocity. Cleaning of these storm water systems is required at least every two years.

Waterway Erosion Control

Maintenance activities within the stream channels also include erosion control along streamline banks. Erosion control is necessary to preserve not only the existing characteristics of the streamline channel, but every effort is made to maximize hydraulic flow capability by minimizing erosion and the potential for tree loss along streamlines. In some areas, erosion control becomes necessary to prevent damage to private or public property. Even though trees can potentially be a hazard within floodplain areas, they are very necessary in stabilizing soil conditions.
Bank stabilization is accomplished with either Class F Erosion stone or recycled concrete.

This year over 200 tons of recycled concrete were placed along the banks for erosion control.

Waterway Inspection and Cleaning- During the month of May- significant waterway cleaning operations were required to remove debris from the waterway following significant storm damage. Portions of the Indian Creek Waterway we cleaned and trees were removed.

Pesticide and Fertilizer Management Program

The goal of the City of Marion's Pesticide and Fertilizer Management Program is to minimize the pollutant discharge associated with storage, application and disposal of fertilizers for municipal operations within city parks.

The City of Marion Parks Department handles and applies fertilizers. Proper training has been provided to the individuals who will be handling and applying these materials. No insecticides were used this year.

The fertilizer and chemical application rates charts and the stormwater good housekeeping inspections reports for this year are included at the end of this report.

City Facility BMPs

The City Hall site has porous pavers, bio swales, and small detention basins to treat the storm water runoff quality and reduce the quantity. In September 2013, the Parks Department removed and replaced the amended soils in many of the bio swales, which had been installed poorly when City Hall was initially constructed.

The Library overflow parking site has porous pavers and a small detention basin to treat the storm water runoff quality and reduce the quantity.

The Public Service facility has a rain garden to handle roof runoff, and has detention ponds in the back yard storage area to treat the storm runoff.

The Lowe Park A&E Building uses rain barrels and bio-swales for the roof and parking lot, and has many native seeding plots throughout the site.

The Thomas Park Building Shop incorporated bio-swales and soil amendments to improve storm water quality.

The Thomas Park splash pad discharges to a bio-swale located adjacent to a walking trail.

The new Police Department Building has numerous small detention basins to treat the storm water runoff quality and reduce the quantity.

City Facility Inspections

The following are the individual inspection reports for Public Service, Parks, and Water Department buildings. The Fire Department inspects their two Fire Stations daily, and formally document HAZ-MAT spills on their server. These records can be made available upon request.

MS-4 Pollution Prevention Good Housekeeping Program

Annual Stormwater Site Inspection Form: Public Works Facilities

Name of Facility: COMPOST AREA **Date:** 4-21-14 **Time:** 8:00am

Inspector Name: RMiller **Signature:** _____

Please check one of the following: X Dry **Weather Inspection** ☐ **Wet Weather Inspection**

Area/Equipment/BMP Inspected	Observations	Actions Taken
YARD WASTE FACILITY	COMPOST FACILITY IS CONTAINED NO LEACHING OF ORGANIC MATERIALS IN WATERWAYS	

MS-4 Pollution Prevention Good Housekeeping Program

Annual Stormwater Site Inspection Form: Public Works Facilities

Name of Facility: MAIND FACILITY INSPECTION **Date:** 4-21-14 **Time:** 9:00am

Inspector Name: RMiller **Signature:** _____

Please check one of the following: X Dry Weather Inspection ☐ Wet Weather Inspection

Area/Equipment/BMP Inspected	Observations	Actions Taken
OIL ROOM	NO LEAKS CLEAN	NO ACTION TAKEN
FUEL CABINETS	NO SPILLS OR LEAKS	NO ACTION TAKEN
TRAFFIC MARKING PAINT STORAGE	NO SPILLS NO LEAKS	NO ACTION TAKEN
EQUIPMENT INSPECTION	SOME MINOR OIL (HYDRAULIC) SPILLS ON FLOOR	PART OF WEEKLY SHOP AND FLOOR CLEANING. EQUIPMENT REPAIRS REPORTED AND ADDRESSED
FLEET MAINTENANCE FACILITES	MINOR OIL SPILLS-CONTAINED INSIDE.	PART OF WEEKLY SHOP AND FLOOR CLEANING. SIGNIFICANT OILS SPOTS ARE CLEANED IMMEDIATELY
WASH BAY FACILITES	WASH BAYS CLEAN	NO ACTION TAKEN.
ON SITE STORM WATER FACILITES	WATERWAYS CLEAR	DEBRIS COLLECTION

MS-4 Pollution Prevention Good Housekeeping Program

Annual Stormwater Site Inspection Form: Public Works Facilities

Name of Facility: Winter Deicer Facilities **Date:**4-21-14 **Time:** 10:00am

Inspector Name: RMiller **Signature:** _____

Please check one of the following: X Dry Weather Inspection ☐ Wet Weather Inspection

Area/Equipment/BMP Inspected	Observations	Actions Taken
Brine Production Facility	Storage tanks empty Brine tank-needs cleaning Leaks no-leaching outside	Cleaned all brine facilities. Drained all storage tanks. Repaired leaks
Bulk Salt Storage Facilities	Some leaching-nothing outside of building	Cleaned facility Restocked winter deicers

MS-4 Pollution Prevention Good Housekeeping Program

Annual Stormwater Site Inspection Form: Public Works Facilities

Name of Facility: Winter Deicer Facilities **Date:** 10-20-13 **Time:** 9:00am

Inspector Name: RMiller **Signature:** _____

Please check one of the following: X Dry Weather Inspection ☐ Wet Weather Inspection

Area/Equipment/BMP Inspected	Observations	Actions Taken
Brine Production Facility	Storage tanks empty Brine tank empty No leaks noted	Facilities
Bulk Salt Storage Facilities		Cleaned facility Restocked winter deicers

Name of Facility: Water Dept Main Shop Site #4 & #1 **Date:** 8-15-14

Time: 9:00 am

Inspector Name: Todd Steigerwaldt

Please check one of the following: X Dry Weather Inspection ☐ Wet

Area/Equipment/BMP Inspected	Observations	Actions Taken
Equipment Area	Area Clean/No Spills	None
Wash Bay	Area Clean	None
Paint Storage Cabinets	Clean/ No Spills	None
Fuel Cabinet	Clean/ No Spills	None
Oil Room	Minor areas of oil on top of barrels	Area cleaned
Outside facility inspection	No chemicals stored outside No run off observed	None
Rock, sand, dirt stockpiles	No erosion occurring. Stockpiles have perimeter containment measures installed.	None

Name of Facility: Well Site #3 **Date:** 8-15 -14 **Time:** 9:30 AM

Inspector Name: Todd Steigerwaldt

Please check one of the following: X Dry Weather Inspection ☐ Wet

Area/Equipment/BMP Inspected	Observations	Actions Taken
Equipment Area / pumps	Area Clean	None
Outside facility inspection	No run off observed	None
Site currently not in use.		

Name of Facility: Well Site #6 **Date:** 08-15-14 **Time:** 10:00 AM

Inspector Name: Todd Steigerwaldt

Please check one of the following: X Dry Weather Inspection ☐ Wet

Area/Equipment/BMP Inspected	Observations	Actions Taken
Equipment Area / pumps	Area Clean	None
Outside facility inspection	No run off observed	None

Name of Facility: Well Site #5 **Date:** 08-15-14 **Time:** 10:30 AM

Inspector Name: Todd Steigerwaldt

Please check one of the following: X Dry Weather Inspection ☐ Wet

Area/Equipment/BMP Inspected	Observations	Actions Taken
Equipment Area / pumps	Area Clean	None
Outside facility inspection	No run off observed	None

Name of Facility: Lindale Tower and 35th Street Water Towers **Date:** 8-15-14
Time: 1: 00 PM

Inspector Name: Todd Steigerwaldt
Please check one of the following: X Dry Weather Inspection ☐ Wet

Area/Equipment/BMP Inspected	Observations	Actions Taken
Outside facility inspection	No run off observed	None

Name of Facility: Well Site #7 **Date:** 08-15-14 **Time:** 2:00 PM

Inspector Name: Todd Steigerwaldt
Please check one of the following: X Dry Weather Inspection ☐ Wet

Area/Equipment/BMP Inspected	Observations	Actions Taken
Equipment Area / pumps	Area Clean	None
Outside facility inspection	No run off observed	None

LOWE PARK AMPHITHEATER (3 ACRES)							
	APR	MAY	JUNE	JULY	AUG	SEPT	OCT
FERTILIZER							
25-5-15		250 LBS					
SEED							
Athletic Interseed							
Pace Sport Mix							
Pro Turf							
CHEMICALS							
Trimec Classic				2% mix			
Focus 15 G							
Organic 5-2-0							
Dimension							
Merit 0.5							
IRRIGATION							
Monthly average	4.5"	5.0"	5.5"	6.0"	6.25"	4.5"	2.5"
CONDITIONING							
Aeration							
Topdress mix							
Turface							

Marion PD (4 ACRES)							
	APR	MAY	JUNE	JULY	AUG	SEPT	OCT
FERTILIZER							
13-13-13						250lb	
SEED							
50/50 Pace Mix						400lb	
Pace Sporst Mix							
Pro Turf							
CHEMICALS							
Trimec Classic							
Focus 15 G							
Organic 5-2-0							
Dimension							
IRRIGATION							
Monthly average	4.5"	5.0"	5.5"	6.0"	6.25"	4.5"	2.5"
CONDITIONING							
Aeration							
Topdress mix							
Turface							

LOWE PARK A&E CENTER 5.3 ACRES												
	MARCH	APR	MAY	JUNE	JULY	AUG	SEPT	OCT				
FERTILIZER												
25-5-15			200lb									
13-13-13												
19-19-19												
SEED												
Athletic Interseed												
Pace 50/50												
Pro Turf												
CHEMICALS												
Trimec Classic				2% mix								
CONDITIONING												
Aeration												
Topdress mix												
Turface												

Fire Station #2	(3 ACRES)											
		APR	MAY	JUNE	JULY	AUG	SEPT	OCT	quanity			
									50lb bags			
FERTILIZER												
SEED												
Athletic Interseed												
Pace Sporst Mix												
Pro Turf												
CHEMICALS												
Trimec Classic				2% mix								
CONDITIONING												
Aeration												
Topdress mix												
Turface												

CITY PARK 45,000 SQ. FT. (1 ACRE)												
	MARCH	APR	MAY	JUNE	JULY	AUG	SEPT	OCT				
FERTILIZER												
22-15-5 25% SCU			75lb									
.10 Dimension												
13-13-13							50lb					
SEED												
Pace 50/50							100lb					
Dense shade mix												
Pro Turf												
CHEMICALS												
Trimec Classic												
Focus 15 G												
Organic 5-2-0												
Dimension												
IRRIGATION												
Monthly average		4.5"	5.0"	5.5"	6.0"	6.25"	4.5"	2.5"				
CONDITIONING												
Aeration							X					
Topdress mix												
Turface												

LIBRARY 15,000 SQ. FT.												
	MARCH	APR	MAY	JUNE	JULY	AUG	SEPT	OCT				
FERTILIZER												
22-15- 25% SCU		75 lbs										
SEED												
Athletic Interseed												
Pace 50/50												
Pro Turf												
CHEMICALS												
Trimec Classic				2% mix								
Focus 15 G												
Organic 5-2-0												
Dimension												

CITY HALL 15,000 SQ. FT.	APR	MAY	JUNE	JULY	AUG	SEPT	OCT
FERTILIZER							
22-15- 25% SCU		50lbs					
13-13-13							
SEED							
Athletic Interseed							
Pace Sporst Mix							
Pace 50/50							
Pro Turf							
CHEMICALS							
Trimec Classic			2% mix				
Focus 15 G							
Organic 5-2-0							
Dimension							

THOMAS PARK (7.0 ACRES)	MARCH	APR	MAY	JUNE	JULY	AUG	SEPT	OCT
FERTILIZER								
25-5-15								
13-13-13				50lb				
19-19-19								
SEED								
Athletic Interseed								
Pace 50/50				100lb				
Pro Turf								
CHEMICALS								
Trimec Classic								
CONDITIONING								
Aeration								
Topdress mix								
Turface								

BOYSON TRAIL SYSTEM (10.0 ACRES)												
	MARCH	APR	MAY	JUNE	JULY	AUG	SEPT	OCT				
FERTILIZER												
25-5-15												
13-13-13						300lb						
19-19-19												
SEED												
Athletic Interseed												
Pace 50/50						500lb						
Pro Turf												
CHEMICALS												
Trimec Classic												
CONDITIONING												
Aeration												
Topdress mix												
Turface												

MS-4 Pollution Prevention Good Housekeeping Program

Annual Stormwater Site Inspection Form: Parks

Name of Facility: Thomas Park Maintenance/Safe Room Facility **Date:** 6-26-1 **Time:** 11:00 am

Inspector Name: Aaron VanMilligan **Signature:** Aaron Van Milligan

Please check one of the following: X **Dry Weather Inspection** ☐ **Wet Weather Inspection**

Area/Equipment/BMP Inspected	Observations	Actions Taken
Shop Area	Area Clean- no spills	None
Wash Bay	Area Clean	
Storage Room	Paint Cabinets- Clean/No Spills Fuel Cabinet – Clean/No Spills Chemical Cabinets- Clean/No Spills Oil – Containment Area –Clean No/spills	
Safe Room	Area Clean	None
Office Area	Area Clean Cleaning products stored in janitorial closet	None
Outside Areas	Area Clean	None

Comments:
Spill containment systems have been placed in the building. Employees have been trained to identify spills and to take the proper actions to report and correct any problem.

In addition to the annual Storm water Site Inspection, the Parks Department does a monthly Safety and Good house keeping audit of our facilities

MS-4 Pollution Prevention Good Housekeeping Program

Annual Stormwater Site Inspection Form: Parks

Name of Facility: Cemetery Storage Building **Date:** 6-26 -14 **Time:** 10:00 am

Inspector Name: Aaron VanMilligan **Signature:** Aaron Va Milligan

Please check one of the following: X **Dry Weather Inspection** ☐ **Wet Weather Inspection**

Area/Equipment/BMP Inspected	Observations	Actions Taken
Storage Area	Clean- no spills	None

Comments:

This building is the departments wood working shop, no chemicals are stored in this building.

MS-4 Pollution Prevention Good Housekeeping Program

Annual Stormwater Site Inspection Form: Parks

Name of Facility: Lowe Park Storage Building **Date:** 6-26 -14 **Time:** 2:00 pm

Inspector Name: Aaron VanMilligan **Signature:** Aaron Van Milligan

Please check one of the following: X **Dry Weather Inspection** ☐ **Wet Weather Inspection**

Area/Equipment/BMP Inspected	Observations	Actions Taken
Vehicle Parking Area	Clean- no spills	None
Wash Bay	Area Clean	None
Storage Cabinets	Paint Cabinets- Clean/No Spills Fuel Cabinet – Clean/No Spills	None
Outside Areas	Area Clean	None

Comments:

Inside and outside of building in clean and orderly condition.