Stormwater Management Program Annual Report

Unified Government of Wyandotte County \ Kansas City, KS

March 28, 2014

Compliance Year 1 (2013)

UNIFIED GOVERNMENT • Wyandotte County • Kansas City, Kansas

Unified Government of Wyandotte County/Kansas City, Kansas

STORMWATER MANAGEMENT PROGRAM ANNUAL REPORT

Compliance Year 1 (2013)

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1.0 INTRODUCTION

Kansas Water Pollution Control MS4 Permit. The Kansas Water Pollution Control MS4 NPDES Permit No. M-MO25-SO01, effective October 1, 2007, requires the Unified Government of Wyandotte County/Kansas City, Kansas (UG) to submit an Annual Report to the Kansas Department of Health and Environment (KDHE) which: (1) addresses the status of compliance with the permit conditions, assesses the appropriateness of UG's best management practices (BMPs), and explains progress toward achieving measurable goals for each minimum control measure (MCM) as well as the statutory goal to reduce pollutants discharged from the MS4 to the Maximum Extent Practicable (MEP); (2) includes data gathered during the reporting period, specifically including the results of the stormwater monitoring program; and (3) summarizes the stormwater activities that UG will undertake during the next reporting cycle.

The MS4 permit referenced above expired on September 30, 2012. The UG applied for renewal with KDHE on September 5, 2012 prior to the permit expiring. Since September 30, 2012, the UG has continued its efforts to comply with all the provisions contained in the 2007 permit (administratively continued).

United States Environmental Protection Agency (EPA) Partial Consent Decree. The UG had been involved in negotiations with the EPA on a Partial Consent Decree (PCD) since 2010. Final negotiations concluded in March 2013, with the final PCD lodged with and signed by the U.S. District Court on May 20, 2013. Within the PCD, there were specific requirements and compliance measures related to the UG's storm sewer system. In general terms, these MS4 compliance measures included the following:

- Stormwater Management Plan (SWMP) Implementation. The UG is to implement the SWMP and the Standard Operating Procedures (SOPs) include therein immediately upon the Date of Lodging.
- Standard Operating Procedures. The UG is to provide to EPA and the KDHE, for review and comment, no later than March 31, 2013, the following SOPs; a) Section 7.A.1 – Plan Review, b) Section 7.A.2 – Site Inspection, and c) Section 7.A.3 – Enforcement. Thirty days following the EPA's review and comment period, the UG is to implement the procedures outlined in each SOP.
- Legal Authority. By June 30, 2014, the UG is to certify that it has adopted and will maintain the Code of Ordinances that confers authority to perform inspections, to assess penalties, to issue enforcement orders, to issue stop-work orders, to require Industrial Facilities to address discharges to the MS4, and to require owners of privately owned BMPs to perform necessary maintenance and repairs.

- Funding. Beginning with the first compliance year, the UG is to ensure there is adequate funding for each operating year that is reasonably expected to be sufficient to implement all measures in the SWMP and to comply with its NPDES permit.
- Personnel and Training. The UG is to maintain adequate personnel and/or retain outside contractors to comply with MS4 provisions of the PCD and that all persons responsible for compliance receive necessary and appropriate training.

For the purposes of implementing the EPA-approved SWMP and in order to comply with the requirements of the PCD, Compliance Year 1 (CY1) is designated to begin on January 1, 2013. This Annual Report summarizes the progress for Compliance Year 1, from January 1, 2013 through December 31, 2013.

Stormwater Management Plan. The latest Stormwater Management Plan was approved by the EPA on March 21, 2013. The SWMP is intended to be detailed with respect to procedures and protocols for implementing the stormwater best management programs to ensure UG personnel in the various departments and divisions have ample guidance and instructions. The SWMP will also allow the UG to allocate financial resources in an efficient and effective manner, consistent with the objectives of the NPDES permit. The SWMP is a comprehensive program to manage the quality of stormwater discharged from UG's storm sewer system. The content of the SWMP is based on the requirements of the KDHE permit for the MS4, and also includes BMPs for Industrial Activity Stormwater Runoff Management, which the current state NPDES permit did not contain.

EPA and the state are authorized to regulate discharges from the MS4 owned or operated by UG as a point source under the Clean Water Act. Although some programs may be undertaken for the entire area, the SWMP is meant to address only the MS4 service area (hereinafter, "service area"). The service area is comprised of those properties that discharge stormwater into the UG stormwater system. It does not include properties that are served by UG's combined sewer system (CSS) (largely comprised of areas in the eastern part of the UG geographical area, including, the following watersheds: Fairfax Industrial District, Esplanade Creek, Jersey Creek, Splitlog Creek, Central Industrial District, Muncie Bluff Creek, Armourdale, parts of Argentine, parts of Turkey Creek, Brush Creek, and Matoon Creek). It does not include properties that discharge stormwater into stormwater conveyance systems pursuant to separately-issued NPDES permits, properties that discharge stormwater directly into local waterbodies (direct dischargers), or properties located within the City of Bonner Springs, the City of Edwardsville, within in Delaware Township (unincorporated, not within the urbanized area), and the City of Lake Quivira. The service area will be further refined with future updates

to the existing maps of the MS4 as the program continues to move forward. A map of the current MS4 service area is included in Appendix B-1.

2.0 STORMWATER MANAGEMENT IMPLEMENTATION AND PROGRAM EVALUATIONS

Program Objective. The objective of the SWMP is to implement specific pollution prevention programs to reduce pollutants from discharging into the UG's MS4 service area, to the maximum extent practicable. Noted water bodies in the MS4 area are the Wyandotte County Lake, the Missouri River, and the Kansas River. Implementation of the identified BMPs will lead to the attenuation of the discharges of Total Maximum Daily Load (TMDL) regulated pollutants as well as Principal Pollutants of Concern (PPOC) to these water bodies and other area streams, lakes and creeks.

Major Stormwater Management Program Accomplishments. The UG continues to facilitate major accomplishments in the on-going development of its overall SW management program. Other program activities which commenced during CY1 are listed below as well:

- Standard Operating Procedures (SOP) Documentation**.** In accordance with the PCD, the UG was to prepare and submit for review and comment, by March 31, 2013, three SOPs related to the Industrial Activity Stormwater Runoff Management Program. The three SOPs were developed and submitted to EPA on March 19, 2013. The following SOPs are included in Appendix C, as per the requirement of the SWMP:
    - SWMP No. 17 – Industrial Activity - Plan Review
    - SWMP No. 18 – Industrial Activity – Inspection
    - SWMP No. 19 – Industrial Activity – Enforcement

  Staff created a log book of all previously created SOPs, which was distributed to various departments who have some level of involvement in implementing the BMPs. Meetings were held with affected departments and their management team members on the requirements of the SWMP and the importance of following the procedures contained in the pertinent SOPs.

- Illicit Discharge Detection and Elimination (IDDE) Program. Beginning in late 2012, the UG engaged the services of a consultant to perform stream crossing inspections in the three watersheds tributary to the Kansas River – the Mill Creek, Brenner Heights and Brenner Heights Tributary watersheds. As part of that effort, the inspection crew also located and recorded key information on all stormwater outfalls discovered during the stream inspection. Over 300 outfalls were found and documented during the three month inspection period (December 2012-February 2013). Of those outfalls discovered, only four (4) were identified to contain a potential illicit discharge. A follow-up investigation was made by UG staff for those four sites. Staff was able to trace and

locate the source for three (3) of the discharges. These sources were either eliminated or determined not be an illicit discharge by the UG.

- Stormwater Outfalls Documentation. The UG reviewed its GIS stormwater maps and refined the list and location of all major outfalls located within the MS4 service area. For those major outfalls that serve residential, commercial and industrial zones, the UG found 582 outfalls.
- Industrial Activity Stormwater Runoff Management Program. The SWMP requires the UG to develop and implement a program to address stormwater runoff and discharges from industrial facilities, specifically those industries as defined in 40 CFR 122.26(d)(2)(iv)(C). As mentioned above, the appropriate Industrial Program SOPs for detailed plan review/approval, site inspections, review of SW control measures, and any subsequent enforcement actions were completed in March 2013. Additionally, a draft ordinance for this new program has been generated that will be presented to the City Council and recommended for adoption by June 30, 2014 in the UG's Code of Ordinances. In general terms, the proposed ordinance contains the following key areas of authority:
    - The Director shall maintain a registry of industrial facilities that discharge to the Unified Government's MS4. A facility shall be automatically placed on this registry if it is among any of the following: (A) a municipal landfill; (B) a hazardous waste treatment, disposal, and recovery facility; or (C) an industrial facility that reports to EPA's Toxics Release Inventory (TRI) in accordance with Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) (42 U.S.C. § 11023). A facility may also be placed on the registry if the Director determines the facility contributes or may contribute substantial pollutant loadings associated with the industrial activity to the MS4.
    - An owner or operator of a facility on the active registry shall comply, among other requirements, with the following: (A) submit to the Director a signed and authorized copy of a Notice of Intent filed with the State of Kansas for coverage under the KDHE state general or NPDES permit, (B) prepare and implement a stormwater pollution prevention plan (SWPPP) in accordance with the requirements set forth in the KDHE state general or NPDES permit, (C) Implement a sampling and testing program as required by the applicable NPDES permit, and upon request, provide a copy of any stormwater sampling and analysis results to the UG, (D) cooperate with and make the facility available to the Director for periodic independent inspections, in accordance with the procedures outlined in the Ordinance, and (E) following any comments provided by inspection of documentation and/or of the facility, the Director may then give a written directive requiring the owner or operator to alter, amend, change, or

discontinue practices that are found to cause or potentially cause the release of pollutants into the MS4.

- In the event that an owner or operator fails to comply with any provision of the new article, the Director may take, at the Director's discretion, any enforcement actions authorized by any section of the Ordinance.

Upon review of all the industries located within Wyandotte County, a total of ten (10) industrial facilities, which met the definition of a regulated facility defined above, were found within the MS4 area. The initial Industrial Program Industries List can be found in Appendix B. Inspections of these facilities will commence in CY2 (2014).

- Wyandotte County Lake Sampling and Baseline Report. To protect the water quality and integrity of Wyandotte County Lake, the NPDES permit and SWMP required the UG to implement and enforce BMPS within the lake's watershed to reduce the discharge of TMDL regulated pollutants. One of those activities involved taking Secchi Disk depth readings at three locations in the main body of the lake one week before Memorial Day, Independence Day, and Labor Day to record lake clarity. Also, water samples were taken from four locations in the southern and eastern tributaries of the lake and analyzed for eight (8) different parameters. A copy of the results from this sampling effort can be found in the Wyandotte County Lake Baseline Report located in the Appendix B. Additionally, the baseline report was prepared to document the existing build-out conditions using current land use, sampling information, and existing surveys (bathymetric) previously conducted. A copy of this report is located in Appendix B.

  The UG also discovered some septic tank issues within the lake's park grounds and have taken steps to address the deficiencies. Inspections of all septic systems were conducted in 2013, finding several in need of repair or replacement. Meetings have been conducted with the Parks and Recreation and Health Departments to develop procedures in locating, inspecting and evaluating inspection records. The UG will be utilizing a rehabilitation & repair contract in 2014 to engage the services of a contractor to provide repairs to or replacement of twelve (12) septic tank sites.

- Staff Training. Several external and internal training sessions were attended and/or conducted by UG staff members. Two training sessions were given on the Illicit Discharge Detection and Elimination program – detecting illicit discharges during daily work routines and standard operating procedures for dry weather inspection of stormwater outfalls. A full day training class on erosion and sediment control standards, provided by Johnson County, Kansas representative, was attended by several UG departments' staff members in

October 2013. Post-Construction SW Management Program elements were presented in 3 separate meetings to key employees from the Public Works, Building Inspections, Planning and Water Pollution Control Departments.

Overall Program Strengths. Reviewing the strengths and areas for improvement is necessary and an important step in implementing and maintaining a successful Stormwater Management Program. Acknowledging its strengths, the UG can build on its successes, establish a firm foundation, and effectively grow the program.

- Public Education and Participation. The UG continues to be very active in addressing the requirements for public education, outreach, and participation. By utilizing existing resources, distributing SW reference materials, and developing new messages regarding stormwater issues, the UG has taken steps to increase citizen knowledge and awareness of the need to reduce stormwater pollution. Examples of public participation included: the stormwater drainage inlet stenciling "Drains to Streams" program which partnered with Wyandotte High School and the Blue River Watershed Association (BRWA), involvement in Wyandotte County Conservation District's annual S.O.I.L. education day for 5th graders, and the continued partnership with Operation Brightside, the BRWA, and MARC's Water Quality Education Committee (WQEC). More details can be found in Appendix A on these and other educational and public involvement efforts.
- Private Construction Site Erosion and Sediment Control Inspections. Changes conducted by the Public Works staff early in the compliance year have resulted in an improved erosion and sediment control program. The Planning and Urban Development Department continues to provide excellent review and oversight of developer and private owner stormwater plans (over 80+ plans). Twenty two (22) land disturbance permits were issued during the year. Almost 250 Inspections were conducted at construction sites, as well as 66 re-inspections and 11 final inspections, to ensure appropriate erosion and sediment control measures are properly installed, maintained and operating as designed. The UG has modified and streamlined its existing permitting process which has improved efficiency, oversight and responsiveness. A brochure created for new developments was produced and a copy of the document can be found in Appendix B.7.

  In the Fall 2013, the UG decided to update the Kentucky Erosion Control Field Guide such that it could be used in Wyandotte County. The field guide was revised to include information on specific KDHE and UG requirements. The guide was completed in January 2014 and is being distributed at all pre-construction meetings held for infrastructure and development projects. UG inspectors are also circulating this guide book at construction sites during their field inspections.

- Street Sweeping. Over the course of 12 months, the UG's Street Department swept over 6,500 lane miles, which resulted in over 5,400 cubic yards of material collected during these activities.
- Commitment of the Leadership. One of the strengths of the UG's MS4 program is the ongoing commitment from the City Council and the Public Works leadership and staff members to meet the requirements of the SWMP and the EPA Consent Decree. A Stormwater Executive Committee comprised of four individuals, was formed to provide direction and guidance to staff and to oversee the implementation of the various measures and activities of the stormwater management plan.

Areas For Improvement. Evaluating the areas in which improvements are identified allows the UG to address and improve upon those issues, and to develop the appropriate strategies to handle them in the future. Making the necessary changes and improvements will make the UG's program more effective, address water quality, and be beneficial to the citizens within the Unified Government. Several performance measures and BMPs in the SWMP require annual evaluations to refine or improve the procedures and techniques employed to implement the program. The SWMP requires a complete review of almost all SOPs in Compliance Year 2.

- Task and schedule management. Based on last year's effort to complete all the required tasks on time, the UG plans to address the various tasks and time-sensitive requirements sooner in the year. A full accountability system is being employed in 2014 to ensure activities are completed thoroughly and promptly.
- Erosion and Sediment Control. Erosion and sediment control at construction sites remains a broadly complex and challenging issue.
- Impacting Public Awareness and Behavior. Although the UG continues to make available educational materials and to offer SW-related announcements, the local public primarily remains unaware of the importance of reducing stormwater pollution and the associated water quality issues. They have not become fully engaged in being a part of the solution to improve water quality in the local streams. Public education and outreach efforts will continue.

Notice of Violation. Wet weather monitoring at specific sampling sites during storm events is required by the 2007 NPDES permit. It has been discovered that not all of the required samples have been consistently collected and analyzed at monitoring sites 006S1, 008S1, 005SG and 008SG due to the following reasons:

1. The monitoring locations identified in the permit makes it difficult for two samplers (sites 006S1, 008S1) to collect samples because of the physical characteristics of the stream (very steep and

deep channel) and the depth to pull the sample which is greater than the suction lift capability of the sampling pump.

2. Based upon the number of personnel assigned to this activity that is required to cover monitoring sites within a 28 square mile area, it is difficult during a rain event to travel to all four sites to collect a grab sample that is required to be taken of the receiving streams within 30 minutes of initiation of a discharge. Locations 005SG and 008SG are the most problematic for collection of samples.

To address this situation, the UG intends to notify the KDHE before April 30, 2014 that there has been an issue with the sampling program and will request a meeting with KDHE representatives. During this meeting, we will work to collaboratively develop a plan to ensure that the appropriate wet weather samples are being collected and analyzed. This plan may involve requesting that KDHE authorize alternative sampling sites that do not involve physical limitations relating to monitoring sites 006S1, 008S1, 005SG, and 008SG. The UG will report on the results of this meeting in its upcoming report required by the Partial Consent Decree.

3.0 OVERALL PROGRAM COMPLIANCE SUMMARY

The following table lists the specific Stormwater Management Plan requirements and performance measures, the compliance schedule, the responsible parties, the compliance activities undertaken during this compliance year (CY1), and the references or supporting data that has been included in Appendix A, B and C of this Annual Report.

3.0 Overall Stormwater Management Program Compliance Summary

Minimum Control Measure	BMP No.	Measureable Goal	Responsible Department	Compliance Schedule	Description of Compliance Activities	Data/Reference Materials
1. Public Education and Outreach						
	1.A - Gather and Distribute Printed Stormwater Educational Materials					
		1.A.1 - Purchase 5,000 copies of selected SW flyers	Public Works, Public Relations	CY 1-5	Over 5,000 flyers of various messages were collected and purchased for distribution.	Appendix A.1 (Public Education & Outreach Summary)
		1.A.2 - Place flyers in various public locations	Public Works	CY 1-5	Almost 1,600 flyers were placed in 16 different locations throughout the community, including City Hall lobby, area libriaries, community centers and at the Neighborhood Resource Center.	Appendix A.1 (Public Education & Outreach Summary)
		1.A.3 - Prepare bilingual insert for water bill	Public Works	CY 1-5	A bi-lingual Board of Public Utilities insert was created.	Appendix A.1 (Public Education & Outreach Summary)
		1.A.4 - Distribute Insert with water bills	Public Works, BPU	CY 1-5	A breakdown of the 68,644 recipients from the June 2013 stormwater BPU flier included 59,059 residential customers; 8,236 commercial customers; 170 industrial customers; and 1,179 other customers such as schools, city, county, and wholesalers.	Appendix A.1 (Public Education & Outreach Summary)
		1.A.5 - Replenish flyers at targeted locations	Public Works	CY 1-5	Replenished flyers at all locations in November and December 2013.	
	1.B - Deliver Televised Programs/Announcements on Stormwater Management/Water Quality on UG's Cable Channel					
		1.B.1 - Research preparing or obtaining 3rd party license for a Public Service Announcement (PSA)	*Public Works, Public Relations*	*CY 2*	*To be accomplished in CY 2*	
		1.B.2 - Prepare or obtain 3rd Party Public Service Announcement	*Public Works, Public Relations*	*CY 2*	*To be accomplished in CY 2*	

Minimum Control Measure	BMP No.	Measureable Goal	Responsible Department	Compliance Schedule	Description of Compliance Activities	Data/Reference Materials
		1.B.3 - Air PSA at least four times per year	*Public Relations*	*CY 3*	*To be accomplished in CY 3*	
		1.B.4 - Annually review PSA and modify as needed	*Public Relations*	*CY 4-5*	*Each year following PSA*	
	1.C - Enhance Existing Website to Provide Information of Stormwater Issues					
		1.C.1 - Include copy of approved SWMP	Public Works, Technology	CY 1	Current EPA-approved SWMP placed on website.	Appendix A.2 (Public Works SW Information Website)
		1.C.2 - Copy of Annual Report placed on website	Public Works, Technology	CY 2-5	FY2012 Annual Report was placed on website.	Appendix A.2 (Public Works SW Information Website)
		1.C.3 - PSA placed on UG's website	*Public Works, Technology*	*CY 2-5*	*Each year following PSA*	
	1.D - Contribute Financially to Local Agencies within Wyandotte County Who Promote SW Management Improvements					
		1.D.1 - Annual contribution to WCCD	Public Works	CY 1-5	Contributed $42,771 to WCCD in January 2013. Participated in the S.O.I.L. (Students Outside Investigating the Land) in April of 2013 and presented stormwater pollution prevention to over 300 students.	Appendix A.3 (WCCD Annual Report)
	1.E - Contribute Financially to Regional Agencies Who Promote SW Education and Management Improvements					
		1.D.1 - Annual contribution to MARC	Public Works	CY 1-5	Remained a member in good standing throughout 2012 and an active participant in the quarterly Water Quality Education meetings. Dues paid to MARC for the committee were $15,000. Regularly attended at-large meeting as well as actively involved in WQRC Grant sub-committee.	Appendix A.4 (MARC Water Quality Education Annual Report)

Minimum Control Measure	BMP No.	Measureable Goal	Responsible Department	Compliance Schedule	Description of Compliance Activities	Data/Reference Materials
	1.F - Utilize Local Newsletters for Education of SW Related Issues					
		1.F.1 - Submit one article per year in Livable Neighborhoods newsletter.	Public Relations	CY 1-5	Nineteen (19) articles were included in the Livable Neighborhoods newsletter and ten (10) articles were utilized in the UG's Weekly E-Newsletter. Other public information was provided by the WYCO Extension Office. A presentation by UG staff on SW issues was given at the Livable Neighborhoods October 24, 2013 Board meeting.	Appendix A.5 (Local Newsletters Public Education Articles Summary)
		1.F.2 - Submit at least three (3) articles for publication in the UG's Weekly E-news	Public Relations	CY 1-5	Ten (10) articles were included in the UG's weekly E-News newsletter that has a circulation of over 2,500 subcribers.	Appendix A.5 (Local Newsletters Public Education Articles Summary)
	1.G - Annual Review of Media Used for Public Outreach					
		1.G.1 - Review annually of outlets used for public outreach efforts	Public Relations	CY 1-5	Approximately 1 million website hits. Also reached about 5,500 people through the ENews newsletter, Facebook, Twitter, and Youtube.	
2. Public Involvement and Participation						
	2.A - Create a Stormwater Quality Education Grant Program					
		2.A.1 - Prepare criteria for a SW Quality education grant program	*PW, PR, Procurement*	*CY 2*	*To be accomplished in CY 2*	
		2.A.2 - Promote the grant program to local schools/non-profits via various media outlets	*PW, PR, Procurement*	*CY 3*	*To be accomplished in CY 3*	
		2.A.3 - Provide copy of criteria and applications in Annual Report	*PW, PR, Procurement*	*CY 2-5*	*Report to be provided each year*	

Minimum Control Measure	BMP No.	Measureable Goal	Responsible Department	Compliance Schedule	Description of Compliance Activities	Data/Reference Materials
	2.B - Promote and Implement Community Cleanup Programs					
		2.B.1 - Partner with Operations Brightside and other neighborhood organizations to facilitate annual cleanups	Public Relations	CY 1-5	Forty six (46) cleanup activities occurred with over 2,427 volunteers contributing time throughout the year via Operation Brightside activities.	Appendix A.6 (Operation Brightside & Blue River Watershed Asssoc. Annual Reports)
	2.C - Provide Assistance and Materials to Community Groups for participation in a Storm Drain Inlets Stenciling Program					
		2.C.1 - Advertise the availability of a Storm Drain Stewardship Brochure	Public Works	CY 1-5	Copy of the brochure, now entitled "If it's on the Ground, It's in the Stream", was made available on the UG's website and distributed to all the sites where other brochures were placed. A new Inlet stenciling flier was created and distributed at neighborhood groups.	Appendix A.6 (Operation Brightside & Blue River Watershed Asssoc. Annual Reports)
		2.C.2 - Provide materials and areas for stenciling to participating groups.	Public Works	CY 1-5	Purchased 500 inlet markers and construction adhesive. Materials were provided to High School students at Wyandotte High School through the Blue River Association and EPA grant for one stenciling event.	Appendix A.6 (Operation Brightside & Blue River Watershed Asssoc. Annual Reports)
		2.C.3 - All storm drainage inlet castings manufactured w/ "*Exists to River, Do Not Dump Waste*"	Public Works	CY 1-5	All storm inlet castings are provided with the required statement.	A copy of the standard detail sheet for the castings was provided in the SWMP.
		2.C.4 - Document the number and name of groups, the number of inlets stenciled and number of brochures distributed.	Public Works	CY 1-5	UG participated in a couple of stenciling events. Forty (40) storm inlet markers were installed by 45 student volunteers as reported in the Blue River Annual Report.	Appendix A.6 (Operation Brightside & Blue River Watershed Asssoc. Annual Reports)

Minimum Control Measure	BMP No.	Measureable Goal	Responsible Department	Compliance Schedule	Description of Compliance Activities	Data/Reference Materials
3. Illicit Discharge Detection and Elimination Program						
	3.A - Evaluate, and if Necessary, Update Ordinances that pertain to Illicit Discharges.					
		3.A.1 - Prepare Memorandum regarding current ability of ordinances to perform IDDE inspections and take enforcement action.	Public Works, Legal	CY 1	Memorandum was prepared by Aqualaw on September 13, 2012 which identified the UG's legal authority and provided recommendations on new and enhanced authority. The UG's Legal Department also provided a memorandum dated December 13, 2013 which summarizes the UG's authority with respects to this program.	Copy of UG memorandum located in Appendix B.2 (IDDE Program)
		3.A.2 - Legal Authority contained in Chapter 30 of UG's current Municipal Code of Ordinances	Public Works, Legal	CY 1	Refer to 3.A.1 for action taken with regards to effectively prohibiting and requiring elimination of illicit discharges into the UG's storm sewer system.	Appendix B.2 (IDDE Program)
	3.B - Implement, & Revise if Needed, Standard Operating Procedures for Illicit Discharge Detection, Sampling, Tracking and Enforcement					
		3.B.1 - Implement applicable existing Standard Operating Procedures (SOPs)	Public Works, WPC, Legal	CY 1-5	SOPs were developed and reviewed by EPA and KDHE in 2012 . Although the UG was not required by the SWMP to commence with outfall inspections until CY2, about 300 outfalls were inspected in CY1.	Appendix B.2 (IDDE Program)
		3.B.2 - Review and update if appropriate, all IDDE Program SOPs	*Public Works, WPC, Legal*	*CY 2*	*To be accomplished in CY 2*	
		3.B.3 - Provide any updated SOPs in Annual Report	*Public Works*	*CY 2-5*	*To commence in CY 2*	
	3.C - Design, Implement and Maintain IDDE Program Tracking System					
		3.C.1 - Review maps and prepare list of major outfalls	Public Works, WPC	CY 1-5	For the MS4 area, a list of node numbers for all major outfalls that serve residential, commercial and industrial zones was created.	

Minimum Control Measure	BMP No.	Measureable Goal	Responsible Department	Compliance Schedule	Description of Compliance Activities	Data/Reference Materials
		3.C.2 - Commence tracking of outfall inspections and dry weather samplilng	Public Works, WPC	CY 2-5	Over 300 outfalls were inspected in 2013 and recorded on IDDE inspection forms. A spreadsheet contains all information gathered on each outfall.	Appendix B.2 (IDDE Program)
		3.C.3 - Commence illicit discharge detection, tracking and enforcement activities	Public Works	CY 2-5	Four suspect illicit discharges were detected from the 2013 outfall inspection work. Tracking of the suspect discharges occurred, with all four being eliminated or determined not to be an illlicit discharge.	Appendix B.2 (IDDE Program)
		3.C.4 - Amend current stormwater maps to distinguish major outfalls from other nodes/outfalls.	*Public Works, WPC*	*CY 2-5*	*To be accomplished in CY 2.*	
	3.D - Provide Training for IDDE Inspection Staff					
		3.D.1 - Conduct training session for key UG employees on identification of illicit discharges.	PW, WPC, Building Inspection	CY 1 and 4	Training was provided to 22 UG employees from the Building Inspections, Public Works, Water Pollution Control, and Planning Departments on December 3, 2013.	Appendix B.3 (Overall MS4 Program Training Summary)
		3.D.2 - Provide in-house or commercial training for persons assigned to inspect, sample and track illicit discharges.	Public Works, WPC	CY 1-5	Training was provided by HDR to 6 UG employees from the Public Works Department in November 2013.	Appendix B.3 (Overall MS4 Program Training Summary)
		3.D.3 - Provide copy of training materials and attendance sheet in Annual Report.	Public Works	CY 1-5	Training materials and sign-in sheet for all attendees were collected for each session.	Appendix B.3 (Overall MS4 Program Training Summary)

Minimum Control Measure	BMP No.	Measureable Goal	Responsible Department	Compliance Schedule	Description of Compliance Activities	Data/Reference Materials
	3.E - Perform Dry Weather Screening of Stormwater Outfalls					
		3.E.1 - Conduct at least 250 non-exclusive dry weather inspections per year of major outfalls.	Public Works, WPC	CY 2-5	Although not required for CY 1, over 300 outfalls were inspected in 2013.	Appendix B.2 (IDDE Program)
		3.E.2 - Evaluate the effectiveness of the outfall inspection program every 5th year.	*Public Works*	*CY 5*	*To be accomplished in CY 5.*	
		3.E.3 - Provide list of all inspected outfalls, illicit discharges detected, types of discharges, any eliminations, and enforcement action.	Public Works	CY 2-5	Although not required for CY 1, over 300 outfalls were inspected in 2013, and four (4) suspect discharges were detected. The discharges were traced to their source, investigated, and 3 of them were eliminated.	Appendix B.2 (IDDE Program)
	3.F - Implement Program to Televise and Inspect Illicit Discharges/Cross Connections in UG's Storm and Sanitary Sewer Systems					
		3.F.1 - Televise and review storm sewers CCTV information for illicit discharges and follow IDDE SOPs for any found illicit discharges.	Public Works, WPC	CY 2-5	To be performed in CY 2. The UG routinely inspects approximately 15 miles of storm sewer lines per year.	Appendix B.4 (Sewer Maintenance CCTV Inspections Summary)
		3.F.2 - Televise 20,000 feet of sanitary sewers and review CCTV information for cross connections and follow IDDE SOPs for any found illicit discharges.	Public Works, WPC	CY 2-5	To be performed in CY 2. The UG routinely inspects over 20,000 feet of sanitary sewer lines per year.	Appendix B.4 (Sewer Maintenance CCTV Inspections Summary)

Minimum Control Measure	BMP No.	Measureable Goal	Responsible Department	Compliance Schedule	Description of Compliance Activities	Data/Reference Materials
		3.F.3 - Review 20,000 feet per year of previously collected storm and sanitary sewer CCTV inspection videos to discover any illicit discharges/cross connections.	*Public Works, WPC*	*CY 2-5*	*To be performed in CY 2.*	
	3.G - Maintain a Current Storm Sewer Mapping System					
		3.G.1 - Convert all existing AutoCAD MS4 maps to a new GIS.	*Water Pollution Control*	*CY 3*	*Completed in 2013*	
		3.G.2 - Annually update GIS maps from record drawings.	*Water Pollution Control*	*CY 3-5*	*This activity is ongoing by the Mapping Dept.*	
	3.H - Continue the UG's Existing Household Hazardous Waste Collection Program					
		3.H.1 - Coordinate seven (7) HHW collection days every year.	Public Works, WPC	CY 1-5	There were seven (7) HHW collection events open to the public between April and October 2013, resulting in over 32 tons of household hazardous waste collected.	Appendix B.5 (Household Hazardous Waste Collection Information)
		3.H.2 - Estimate amount of material collected at each event and list in the Annual Report.	Public Works, WPC	CY 1-5	Information for each event was documented and is provided as part of this report.	Appendix B.5 (Household Hazardous Waste Collection Information)
		3.H.3 - Continue program to collect and dispose of abandoned tires.	Public Works, WPC	CY 1-5	497 tires were collected in 2013 and documentation is provided as part of this report.	Appendix B.5 (Household Hazardous Waste Collection Information)

Minimum Control Measure	BMP No.	Measureable Goal	Responsible Department	Compliance Schedule	Description of Compliance Activities	Data/Reference Materials
4. Construction Site Stormwater Runoff Control						
	4.A - Implement, & Revise if Needed, SOPs for SW Plan Review/Approval, Construction Site Inspections and Enforcement Activities					
		4.A.1 - Implement applicable SOPs.	Public Works, Urban Planning	CY 1-5	SOPS were distributed to the supervisors and their staff in each of the departments.	Appendix B.6 (Stormwater Plans Review Summary)
		4.A.2 - Review and update, if appropriate, all Construction Site Program SOPs	*Public Works, Urban Planning*	*CY 2*	*To be performed in CY 2.*	
		4.A.3 - Provide any updated SOPs in Annual Report	*Public Works*	*CY 2-5*	*To commence in CY 2*	
	4.B - Continue to Utilize Tracking System for SW Plan Review/Approval, Construction Site Inspections and Enforcement Activities					
		4.B.1 - Continue to use existing tracking system for all program activities.	Public Works, Urban Planning	CY 1-5	UG staff continues to use an existing tracking system for Land Disturbance permits and inspections. In 2013, research was done on different electronic tracking system and ACELLA Mobile Office (AMO) was selected. Implementation of AMO started during the first quarter of 2014.	Appendix B.7 & B.7 (Stormwater Plan Review Summary/Land Disturbance Inspections Summary)
		4.B.2 - Report on activities under this program.	Public Works	CY 1-5	Annual report includes summary of activities.	Appendix B.7 & B.8
	4.C - Provide Training to UG's Erosion & Sediment Control (E&SC) Inspection Staff					
		4.C.1 - Conduct training session for key UG employees on new E&SC standards every 2 years.	PW, Streets, Building Inspection	CY 1, 3 and 5	Training entitled, "The ABC's of BMPs, Erosion and Sediment Control Done Right" was provided to 39 UG employees from the Building Inspections, Public Works, and Streets Maintenance Departments in October 2013.	Appendix B.3 (Overall MS4 Program Training Summary)

Minimum Control Measure	BMP No.	Measureable Goal	Responsible Department	Compliance Schedule	Description of Compliance Activities	Data/Reference Materials
		4.C.2 - Provide copy of training materials and attendance sheet in Annual Report.	Public Works	CY 1, 3 and 5	Training materials and sign-in sheet for all attendees were collected for each session.	Appendix B.3 (Overall MS4 Program Training Summary)
	4.D - Develop Training Program For Local Contractors and Owners					
		4.D.1 Sponsor a training session for local construction site owners, contractors and installers on proper BMP uses on construction sites every 2 years.	*Public Works*	*CY 2 and 4*	*Training to be provided in CY 2.*	
		4.D.2 - Provide copy of training materials and attendance sheet in Annual Report.	*Public Works*	*CY 2 and 4*	*To be provided in CY 2 Annual Report.*	
	4.E - Conduct Routine Construction Site Inspections					
		4.E.1 - Conduct E&SC inspections based on various factors and criteria.	Public Works	CY 1-5	Continued improvements to the land disturance permitting and inspection processes were made. A dedicated inspector was assigned to conduct routine inspections at key times at all active private development construction sites. 248 total inspections were conducted, along with 66 re-inspections and 11 final inspections.	Appendix B.7 (Land Disturbance Inspections Summary)

Minimum Control Measure	BMP No.	Measureable Goal	Responsible Department	Compliance Schedule	Description of Compliance Activities	Data/Reference Materials
		4.E.2 - Conduct E&SC inspections within 5 working days of a complaint, whenever practical.	Public Works	CY 1-5	Whenever practicable, site inspections were conducted within the stipulated time frame. In most instances, complaints were inspected in a 24-hr time period.	Appendix B.7 (Land Disturbance Inspections Summary)
		4.E.3 - Include summary of all inspection records in Annual Report.	Public Works	CY 1-5	The UG issued 22 Land Disturbance permits, and conducted 248 total inspections, 66 re-inspections and 11 final inspections in 2013.	Appendix B.7 (Land Disturbance Inspections Summary)
5. Post-Construction Stormwater Management Program						
	5.A - Maintain and Make Available Local Standards for Post-Construction Stormwater BMPs					
		5.A.1 - Adopt a set of local standards for post-construction SW management BMPs.	Public Works	CY 1-5	A copy of the most recent version of the APWA BMP Manual of Practice is available at the Public Works offices and a link is provided on the UG's website.	Appendix D (Reference only)
	5.B - Implement, & Revise if Needed, SOPs for SW Plan Review/Approval, Post-Construction Site Inspections and Enforcement Activities					
		5.B.1 - Implement applicable SOPs.	Public Works, Urban Planning	CY 1-5	SOPS were distributed to the supervisors and their staff in each of the departments.	Appendix B.6 (Stormwater Plan Review Summary)
		5.B.2 - Review and update, if appropriate, all Post-construction Site Program SOPs	*Public Works, Urban Planning*	*CY 2*	*To be performed in CY 2.*	
		5.B.3 - Provide any updated SOPs in Annual Report	*Public Works*	*CY 2-5*	*To be included in CY-2 Annual Report.*	

Minimum Control Measure	BMP No.	Measureable Goal	Responsible Department	Compliance Schedule	Description of Compliance Activities	Data/Reference Materials
	5.C - Conduct BMP Site Inspections and Develop a Tracking Sysgtem for Post-Construction Sites					
		5.C.1 - Creat inventory of all existing publicly and privately owned BMPs.	Public Works	CY 1	An inventory was created for 23 privately owned BMPs within WYCO.	Appendix B.8 (BMPs Inspection and Enforcement List)
		5.C.2 - Update tracking system for inspection and compliance.	Public Works	CY 1	The tracking system developed in 2013 includes inspection activities and site data.	Appendix B.8 (BMPs Inspection and Enforcement List)
		5.C.3 - Conduct annual inspections of publically owned BMPs	Public Works	CY 1-5	No annual inspections were conducted due to no public BMPs.	Appendix B.8 (BMPs Inspection and Enforcement List)
		5.C.4 - Enforce annual operation & maintenance requirements for privately owned BMPs.	Public Works	CY 1-5	A total of six (6) 2-year inspections were conducted of the 23 privately owned BMP sites.	Appendix B.8 (BMPs Inspection and Enforcement List)
		5.C.5 - Develop and implement tracking system to store BMPs inspection and enforcement activities.	*Public Works*	*CY 3-5*	*To commence in CY 3.*	
		5.C.6 - Provide BMP Inventory list, inspection and enforcement summary in Annual Report.	Public Works	CY 1-5	To be included in CY1 Annual Report.	Appendix B.8 (BMPs Inspection and Enforcement List)
	5.D - Provide Training to UG's Post-Construction BMPs Inspection Staff					
		5.D.1 - Conduct training session for key UG employees on new BMP standards.	PW, Streets, Building Inspection	CY 1-5	Training was provided to 22 UG employees from the Building Inspections, Public Works, and Streets Maintenance Departments in December 2013.	Appendix B.3 (Overall MS4 Program Training Summary)
		5.D.2 - Provide copy of training materials and attendance sheet in Annual Report.	Public Works	CY 1-5	Training materials and sign-in sheet for all attendees were collected for each session.	Appendix B.3 (Overall MS4 Program Training Summary)

Minimum Control Measure	BMP No.	Measureable Goal	Responsible Department	Compliance Schedule	Description of Compliance Activities	Data/Reference Materials
	5.E - Develop Training Program For Local Property Owners, Designers and Developers on BMPs regarding maintenance and inspections					
		5.E.1 Sponsor a training session for architects/engineers/developers/contractors and owners of SW BMP sites every 2 years.	*Public Works*	*CY 2 and 4*	*Training to be provided in CY 2.*	
		5.E.2 - Provide copy of training materials and attendance sheet in Annual Report.	*Public Works*	*CY 2 and 4*	*To be provided in CY 2 Annual Report.*	
6. Pollution Prevention/Good Housekeeping						
	6.A - Implement, & Revise if Needed, SOPs for Application of Pesticides, Herbicides and Fertilizers on UG Property.					
		6.A.1 - Implement applicable SOPs.	Public Works, Parks & Rec.	CY 1-5	A meeting was held with Parks & Rec. staff on new SOPS, providing instructions on following them. Current certificate holders are Matt Hendren, Jim Raw, and Lori Rubpelt.	Appendix B.9 (PHFs Quantities and Contractors)
		6.A.2 - Review and update, if appropriate, all PHF SOPs	*Public Works, Parks & Rec.*	*CY 2*	*To be performed in CY 2.*	
		6.A.3 - Review and modify lawn care maintenance specifcations and contracts.	*Public Works, Parks & Rec.*	*CY 2*	*To be performed in CY 2.*	
		6.A.4 - Provide any updated SOPs, most recent PHF specifications, amounts applied, and list of certified contractors in Annual Report	*Public Works, Parks & Rec.*	*CY 2-5*	*To be included in CY-2 Annual Report.*	*Appendix B.9 (PHFs Quantities and Contractors)*
	6.B - Continue to Operate the UG's Existing Vehicle Washing Facility					
		6.B.1 - Continued use of existing washing facility in accordance with SOP.	Public Works	CY 1-5	A total of 16,527 vehicles were washed at the UG's 50th and State Ave. location. Procedures are located at the wash facility for all UG vehicles.	

Minimum Control Measure	BMP No.	Measureable Goal	Responsible Department	Compliance Schedule	Description of Compliance Activities	Data/Reference Materials
	6.C - Implement, & Revise if Needed, SOPs for Street Sweeping Activities.					
		6.C.1 - Implement existing SOP and review tracking system	Public Works	CY 1-5	Discussion were held with staff in this division of Public Works. Route classification and material collected were tracked.	Appendix B.10 (Street Sweeping Log)
		6.C.2 - Review SOP and prepare memorandum on results of in-depth review.	*Public Works*	*CY 2*	*To be performed in CY 2.*	
		6.C.3 - Use existing transfer station for street sweeping materials.	Public Works	CY 1-5	The transfer station at 50th Street and State Ave. continues to be used for this purpose.	
		6.C.4 - Provide list of monthly dates, route classifications and material collected in Annual Report.	Public Works	CY 1-5	Each annual report to KDHE has included a log of all street sweeping activities and material collected. In 2013, 6,527 lane miles were swept, collecting approximately 5,403 cubic yards of material and debris.	Appendix B.10 (Street Sweeping Log)
		6.C.5 - Provide any updated SOP in Annual Report.	*Public Works, Parks & Rec.*	*CY 2-5*	*To be included in CY-2 Annual Report.*	
	6.D - Provide Training to UG Employees on Good Housekeeping Activities and Information on Reducing Pollutants to the MS4.					
		6.D.1 - Prepare and distribute SW Pollution Prevention materials to employees via emails/website.	Public Work, Human Resources	CY 1-5	Information sheet was placed on the UG's Facebook page, Twitter account and the Weekly E-newsletter. Additionally, it was sent via an email blast to employees, providing information on pollution prevention and references that can be accessed for more best management practices.	Appendix B.11 (Good Housekeeping Training Information)

Minimum Control Measure	BMP No.	Measureable Goal	Responsible Department	Compliance Schedule	Description of Compliance Activities	Data/Reference Materials
		6.D.2 - Provide copy of all educational materials in Annual Report.	Public Works	CY 1-5	A copy of the training materials is included in CY-1 Annual Report.	Appendix B.11 (Good Housekeeping Training Information)
	6.E - Continue Existing Curb Inlet Inspection and Cleaning Program.					
		6.E.1 - Perform 5,000 curb inlet inspections per year.	Public Works, WPC	CY 1-5	Water Pollution Control crews inspected 25,107 curb inlets and storm drainage structures in 2013.	Appendix B.12 (Curb Inlet Inspection and Cleaning Records)
		6.E.2 - Continue to clean 3,000 curb inlets per year.	Public Works, WPC	CY 1-5	Water Pollution Control crews cleaned 11,011 curb inlets and storm drainage structures in 2013.	Appendix B.12 (Curb Inlet Inspection and Cleaning Records)
		6.E.3 - Re-evaluate the effectiveness of current inspection and cleaning program.	*Public Works, WPC*	*CY 3*	*To be conducted in CY3.*	
		6.E.4 - Provide summary report in Annual Report.	Public Works, WPC	CY 1-5	To be included in CY1 Annual Report.	Appendix B.12 (Curb Inlet Inspection and Cleaning Records)
	6.F - Implement, & Revise if Needed, Tracking System SOPs for Curb Inlet Inspection/Cleaning Activities.					
		6.F.1 - Implement existing SOPs.	Public Works, WPC	CY 1-5	Water Pollution Control crews continue to inspect and clean curb inlets annually.	Appendix B.12 (Curb Inlet Inspection and Cleaning Records)
		6.F.2 - Review, and update, existing tracking system, and incorporate into maintenance work order sytem.	*Public Works, WPC*	*CY 2-3*	*To be performed in CY 2 and 3.*	
		6.F.3 - Review SOPs and prepare memorandum on results.	*Public Works, WPC*	*CY 3*	*To be conducted in CY-3.*	

Minimum Control Measure	BMP No.	Measureable Goal	Responsible Department	Compliance Schedule	Description of Compliance Activities	Data/Reference Materials
		6.F.4 - Include copy of Review Memorandum and latest SOPs in the Annual Report.	*Public Works, WPC*	*CY 3*	*To be included in CY-3 Annual Report.*	
	6.G - Create UG-owned/operated or UG-operated Buildings and Facilities Inventory.					
		6.G.1 - Update existing UG-owned/operated or UG-operated bldgs/facilities inventory.	Public Works	CY 1-5	An initial list of those UG facilites that are believed to be regulated under the general permit, has been prepared and is included in the Annual Report.	Appendix B.13 (Inventory of UG-Owned/Operated and UG-Operated Facilities)
		6.G.2 - Verify those sites requiring State General Permit have one/review SWPPPs.	*Public Works*	*CY-2*	*The initial list of possible regulated sites will investigated furhter in CY 2 to determine whether their activities place them under the regulated list.*	
		6.G.3 - Take appropriate action if a UG site is not covered by current State permit.	*Public Works*	*CY 3*	*To be conducted in CY-3.*	
		6.G.4 - Provide copy of inventory, notifications, and action taken at sites in Annual Report.	Public Works	CY 1-5	Information will be provided in all future Annual Reports.	Appendix B.13 (Inventory of UG-Owned/Operated and UG-Operated Facilities)
	6.H - Monitor Good Housekeeping at Non-regulated UG Sites.					
		6.H.1 - Develop schedule to visit all non-regulated sites within 5 years.	*Public Works*	*CY 2*	*To be performed in CY 2.*	

Minimum Control Measure	BMP No.	Measureable Goal	Responsible Department	Compliance Schedule	Description of Compliance Activities	Data/Reference Materials
		6.H.2 - Commence visiting non-regulated sites and provide educational materials on good housekeeping practices.	*Public Works*	*CY 3*	*To be conducted in CY-3.*	
		6.H.3 - Provide copy of schedule, recommendations, and educational materials in Annual Report.	*Public Works*	*CY 2-5*	*To be included in CY-2 Annual Report.*	
7. Industrial Activity Stormwater Runoff Management Program						
	7.A - Develop SOPs for SW Plan Review/Approval, Industrial Site Inspections, Review of SW Control Measures, and Enforcement Activities.					
		7.A.1 - Create SOP for SW Plan Review/Approval by March 31, 2013.	Public Works, Planning	CY-1	SOP was prepared by the UG and submitted to KDHE and EPA for review on March 19, 2013.	Appendix C (Updated Standard Operating Procedures)
		7.A.2 - Create SOP for inspection of industrial sites by March 31, 2013.	Public Works	CY-1	SOP was prepared by the UG and submitted to KDHE and EPA for review on March 19, 2013.	Appendix C (Updated Standard Operating Procedures)
		7.A.3 - Create SOP for enforcement actions of violators by March 31, 2013.	Public Works, Legal	CY-1	SOP was prepared by the UG and submitted to KDHE and EPA for review on March 19, 2013.	Appendix C (Updated Standard Operating Procedures)
		7.A.4 - Include copy of SOPs in Annual Report.	Public Works	CY-1	SOPs are included in the CY1 Annual Report.	Appendix C (Updated Standard Operating Procedures)
	7.B - Create and Maintain Industrial Facilities Inventory.					
		7.B.1 - Annual update industrial facilities registry to include those industries defined in 40 CFR 122.26(b)(14).	Public Works	CY-1	A review of all industries operating within the MS4 was conducted, using the EPA Phase 1 regulations as a guide, to determine a final list of industries that fall within these requirements.	Appendix B.14 (Industrial Program Industries List)

Minimum Control Measure	BMP No.	Measureable Goal	Responsible Department	Compliance Schedule	Description of Compliance Activities	Data/Reference Materials
		7.B.2 - Provide list in the Annual Report.	Public Works	CY 1-5	Updated list is include in this Annual Report.	Appendix B.14 (Industrial Program Industries List)
	7.C - Implement an Industrial Facility Inspection Program.					
		7.C.1 - Inspect 25% of industries on registry.	*Public Works*	*CY 2-5*	*To commence in CY-2.*	
		7.C.2 - Train all UG personnel who will be conductin inspections.	Public Works	CY 1-2	Training was provided to UG personnel during the IDDE Training session.	Appendix B.3 (Overall MS4 Program Training Summary)
		7.C.3 - Include a copy of inspection reports in the Annual Report.	*Public Works*	*CY 2-5*	*To be included in CY-2 Annual Report.*	
	7.D - Adopt Legal Authority for Inspection of Industrial Facilities, Review of Onsite Control Measures, and Enforcement.					
		7.D.1 - Review current Code of Ordinances and adopt any ordinance authorizing this program.	*Public Works, Legal*	*CY 2*	*The UG reviewed the program requirements and preliminarily created a draft ordinance for consideration. A final ordinance is to be recommended for adoption by City Council in CY-2.*	
		7.D.2 - Include copy of review results and ordinance activities in the Annual Report.	*Public Works, Legal*	*CY 2*	*To be included in CY-2 Annual Report.*	
8. Total Maximum Daily Load Regulated Pollutants and Principal Pollutants of Concern						
	8.A - Develop and Implement BMPS to Reduce TMDL Regulated Pollutants from Entering the Kansas River.					
		8.A.1 - Implement BMPs by distributing pet waste brochures, regulating septic systems, and focus IDDE inspection program within Kansas River basin.	Public Works, Public Relations	CY 1-5	A pet waste brochure was acquired and distributed to several sites. The Health Dept. continued to monitor and address septic system issues. IDDE outfall inspections in 2013 were conducted in several watersheds tributary to the Kansas River.	Appendix B.15 (TMDLs Activities and BMPs Summary), Appendix B.2 (IDDE Program)

Minimum Control Measure	BMP No.	Measureable Goal	Responsible Department	Compliance Schedule	Description of Compliance Activities	Data/Reference Materials
		8.A.2 - Include all reports and activities in the Annual Report.	Public Works	CY 1-5	Information is included in this Annual Report.	Appendix B.15 (TMDLs Activities and BMPs Summary)
	8.B - Undertake Activities to Reduce Stormwater Impacts on Wyandotte County Lake.					
		8.B.1 - Develop baseline report of existing conditions surrounding the lake.	Public Works, WPC	CY 1	Land use, available data and the KBS 2010 bathymetric survey were used to develop a baseline report of the existing lake conditions.	Appendix B.16 (Wyandotte County Lake Baseline Report)
		8.B.2 - Gather and analyze lake samples taken four times per year.	Public Works, WPC	CY 1	Samples were collected during four rain events and anlyzed by WPC laboratory and the results have been recorded for TP, TSS, TN, TKN, nitrates/nitrites, NH3, BOD and pH.	Appendix B.16 (Wyandotte County Lake Baseline Report)
		8.B.3 - Place high priority to sites surrounding the lake when enforcing E&SC elements.	Public Works, WPC	CY 1	Refer to the activities under BMP No. 4.	Appendix B.7 (Land Disturbance Inspections Summary)
		8.B.4 - Conduct a follow-up bathymetric survey of lake.	*Public Works, WPC*	*CY 5*	*To be conducted in CY-5.*	
		8.B.5 - Take three Secchi Disk depth readings in lake one week before Memorial Day, Independence Day and Labor Day.	Public Works, WPC	CY 1	Three sets of depth readings were collected in six (6) specific locations in the lake.	Appendix B.16 (Wyandotte County Lake Baseline Report)
9. Wet Weather Monitoring Program						
	9.A. Implement SOPs to address monitoring of POCCs and other Water Quality Parameters					
		9.A.1 - Implement existing wet weather monitoring SOPs.	Public Works, WPC	CY 1-5	This has been an on-going activity since the initial permit.	
		9.A.2 - Review and update, if needed, any SOPs.	*Public Works, WPC*	*CY 2*	*To be conducted in CY-2.*	

Minimum Control Measure	BMP No.	Measureable Goal	Responsible Department	Compliance Schedule	Description of Compliance Activities	Data/Reference Materials
		9.A.3 - Provide copy of updated Monitoring Plan and data analysis procedures in the Annual Report	Public Works, WPC	CY 1-5	Updates will be provided in the CY they are made.	
	9.B - Develop Tracking System for Wet Weather Monitoring Activities					
		9.B.1 - Develop spreadsheet to track the water quality results	Public Works, WPC	CY 1	Spreadsheet has been developed and used for recording sampling results and locations.	Appendix B.17 (Stormwater Monitoring and Trend Analysis Results)
	9.C - Conduct Water Quality Analyses of SW Discharges to Assess Effectiveness of Implemented BMPs.					
		9.C.1 - Prepare Memorandum on analyses results.	Public Works	CY 1-5	The WPC staff provided the results from several samples taken and analyzed for several parameters during the year for several wet weather events.	Appendix B.17 (Stormwater Monitoring and Trend Analysis Results)
		9.C.2 - Provide copy of memorandum in the Annual Report.	Public Works	CY 1-5	Memorandum is included with this report.	Appendix B.17 (Stormwater Monitoring and Trend Analysis Results)
10. Stormwater Management Program						
	10.A - Hire a Stormwater Coordinator					
		10.A.1 - Create a new position of SW Coordinator.	Public Works, Human resources	CY 1	The UG reorganized and changed some of the existing responsibilities for a number of positions. An existing position now serves as the SW Coordinator and is in charge of the SW management program.	
		10.A.2 - Fill the SW Coordinator position.	Public Works	CY 1	Position has been filled by current staff member.	
	10.B - Create SW Executive Committee to Provide Adminstrative Oversight, Coordination and Direction.					
		10.B.1 - Form SW Executive Committee and conduct meeting.	Public Works	CY 1-5	The Executive Committee met on May 1, 2013 to discuss program progress/successes and provided guidance to the UG SW team.	

Minimum Control Measure	BMP No.	Measureable Goal	Responsible Department	Compliance Schedule	Description of Compliance Activities	Data/Reference Materials
		10.B.2 - SW Executive Committee to consider formation of other committees as needed.	Public Works	CY 1-5	The Executive Committee elected not to form any additional committees at this time.	
		10.B.3 - Prepare Executive Committee meeting minutes.	Public Works	CY 1-5	Minutes were prepared and available upon request.	
	10.C - Conduct an Annual Financial Analysis of the SW Program.					
		10.C.1 - Conduct an annual analysis of the program's funding and expenses.	*Public Works*	*CY 2-5*	*To be conducted in CY 2.*	
		10.C.2 - Include a copy of the financial analysis in the Annual Report.	*Public Works*	*CY 2-5*	*To be included in CY-2 Annual Report.*	

4.0 COMPLIANCE YEAR 2 (2014) ACTIVITIES

The UG's current permit requires that, as a part of each Annual Report, a summary of the stormwater activities UG will be undertaking during the next reporting cycle, including an implementation schedule, be provided. Starting January 1, 2014, the UG will continue to implement several of the BMPs as well as developing and undertaking some of the new tasks designated as Compliance Year 2 (CY2) activities identified in the 2013 SWMP. Some of the key activities are listed below.

- Compliance Year 2 (CY2) Annual or Continuous Tasks
    - *Public Education and Outreach* – Continue to distribute stormwater-related educational materials, make announcements on SW issues, to contribute funding for SW activities conducted by the Mid-America Regional Council and the Wyandotte County Conservation District, and to review public outreach efforts.
    - *Public Involvement and Participation* – Continue with neighborhood cleanup events and stormwater inlet stenciling programs with the volunteer groups.
    - *Illicit Discharge Detection and Elimination* – Provide outfall inspection training for IDDE inspectors, continue to hold Household Hazardous Waste Collection events and collect and dispose of abandoned tires.
    - *Construction Site SW Runoff Control* – Continue to inspect, track and enforce erosion and sediment control requirements for all land disturbance sites.
    - *Post-Construction SW Management Program* – Update the public and private BMP sites inventory list and inspect, track and enforce operation and maintenance requirements for privately owned BMPs.
    - *Pollution Prevention/Good Housekeeping* – Comply with established SOPs for curb inlet inspection and cleaning, application of pesticides, herbicides and fertilizer, and vehicle washing.
    - *Industrial Activity SW Runoff Management* – Review and update the industry registry.
    - *TMDLs and PPOC Discharge Reduction* – Continue to implement the BMPs identified for the Kansas River watershed and conduct depth readings, water sampling, and analysis in Wyandotte County Lake.
    - *Wet Weather Monitoring* – Conduct water quality analyses of SW samples taken during wet weather events.
- Compliance Year 2 (CY2) Discrete or Initial Commencement Tasks
    - *Public Education and Outreach* – Evaluate and prepare for use public service announcements on stormwater issues.
    - *Public Involvement and Participation* – Prepare the criteria and process for a SW Quality Education Grant Program.

- *Illicit Discharge Detection and Elimination* – Conduct and track outfall inspections for illicit discharges and evaluate/revise IDDE SOPs, if necessary. Commence with review of closed-circuit television tapes produced from storm and sanitary sewer inspections to search for possible cross connections or illicit discharges.
- *Construction Site SW Runoff Control* – Review and revise program SOPs, if necessary, and provide training to the private sector on E&SC measures.
- *Post-Construction SW Management Program* – Review and revise program SOPs, if necessary, and provide training to the private sector on BMP operation and maintenance.
- *Pollution Prevention/Good Housekeeping* – Review and revise street sweeping and curb inlet inspection/cleaning SOPs, if necessary. Identify, list, and visit all regulated and non-regulated UG Owned/Operated facilities.
- *Industrial Activity SW Runoff Management* – Develop and adopt the appropriate ordinance for implementation of the Industrial SW program, provide inspector training, and conduct inspections of at least 25% of the industry listed on the Industrial registry.
- *Stormwater Management* – Conduct a review of the SW Management Program financial to assess the implementation costs for the program.

APPENDIX A – PUBLIC EDUCATION AND PARTICIPATION MATERIALS

APPENDIX A.1 Public Education & Outreach Summary

Appendix A.1 - Public Education & Outreach Summary

In an effort to education the public about stormwater issues, numerous brochures that had been produced through the Mid-America Regional Council were obtained and distributed to the community in Compliance Year 1 (2013). Copies of these fliers are included in this section. A summary of the locations and the type of flier distributed is as follows:

1. Liveable Neighborhoods/NRC (8-28-13)	30 If it's on the Ground, It's in our Water 25 Conserve Water with Rain Barrels
2. KCK Public Libraries (8-29-13) (Main, South, West, Turner, Schlagle)	100 If it's on the Ground, It's in our Water 100 Disconnect or Redirect Your Downspout (English) 100 Disconnect or Redirect Your Downspout (Spanish)
3. Argentine Community Center (8-30-13)	10 Know Your Watershed (English) 15 Know Your Watershed (Spanish) 10 Disconnect or Redirect Your Downspout (English) 15 Disconnect or Redirect Your Downspout (Spanish) 20 If it's on the Ground, It's in our Water
4. Eisenhower Community Center (8-30-13)	10 Know Your Watershed (English) 6 Know Your Watershed (Spanish) 10 Disconnect or Redirect Your Downspout (English) 5 Disconnect or Redirect Your Downspout (Spanish) 20 If it's on the Ground, It's in our Water
5. Bethany Community Center (8-30-13)	10 Know Your Watershed (English) 15 Know Your Watershed (Spanish) 10 Disconnect or Redirect Your Downspout (English) 15 Disconnect or Redirect Your Downspout (Spanish) 20 If it's on the Ground, It's in our Water
6. Pat Halon Center (8-30-13)	10 Know Your Watershed (English) 10 Disconnect or Redirect Your Downspout (English) 20 If it's on the Ground, It's in our Water
7. Kensington Community Center (8-30-13)	10 Know Your Watershed (English) 10 Disconnect or Redirect Your Downspout (English) 20 If it's on the Ground, It's in our Water
8. JFK Community Center (8-30-13)	10 Know Your Watershed (English) 10 Disconnect or Redirect Your Downspout (English) 20 If it's on the Ground, It's in our Water

9. Armourdale Community Center (8-30-13) 10 Know Your Watershed (English)
6 Know Your Watershed (Spanish)
10 Disconnect or Redirect Your Downspout (English)
5 Disconnect or Redirect Your Downspout (Spanish
20 If it's on the Ground, It's in our Water

10. Parks & Recreation Admin. Off. (8-30-13) 10 Know Your Watershed (English)
10 Know Your Watershed (Spanish)
10 Disconnect or Redirect Your Downspout (English)
10 Disconnect or Redirect Your Downspout (Spanish)
20 If it's on the Ground, It's in our Water
25 Conserve Water with Rain Barrels

11. West Wyandotte Neighborhood (10-24-13) 25 If it's on the Ground, It's in our Water

12. Glanville Sr. Towers(10-24-13) 50 If it's on the Ground, It's in our Water

13. Hill Top Neighborhood (10-24-13) 30 If it's on the Ground, It's in our Water

14. Leavenworth Road Association (10-24-13) 10 If it's on the Ground, It's in our Water

15. Strugglers Hill Neighborhood (10-24-13) 20 If it's on the Ground, It's in our Water

16. Argentine Neighborhood Development Association (10-24-13) 400 If it's on the Ground, It's in our Water
50 Know Your Watershed (Spanish)
100 Pick Up After Your Pet (English)
100 Protect Our Streams (Spanish)

City-wide Informational Flier in Board of Public Utilities Billing Statement

In June 2013, a stormwater informational brochure was mailed out to all utility customers of the Board of Public Utilities. The flier identifies common items that end up in stormwater runoff and gives suggestions on what individuals can do to reduce this pollution. The flier was prepared with language in English on one side and Spanish on the other side. The flier also referred people to the UG webpage for more information. A copy of the flier is included.

A breakdown of the 68,644 recipients receiving the June 2013 Stormwater BPU flier included:

- 59,059 residential customers
- 8,236 commercial customers;
- 170 industrial customers
- 1,179 other customers, such as schools, city, county, and wholesalers.

Rain, roofs and runoff

Did you know that each downspout on a house can drain approximately 12 gallons of water per minute during a one-inch rainfall? If managed properly, the water that flows off rooftops can help keep lawns and gardens green while lowering utility bills during spring and summer months. However, most downspouts send rainwater down driveways, sidewalks, and underground pipes that lead to storm drains or sanitary sewer lines. This "**stormwater runoff**" picks up pollutants from motor oil, lawn chemicals, and pet waste along the way, before entering lakes and streams — **untreated**.

The large amount of untreated water entering the storm sewer system — and eventually our streams and lakes — has lasting health, safety, environmental and economic impacts on communities. Fortunately, there are many things that property owners can do to put rainwater to good use while reducing the amount of stormwater runoff that ends up in local waterways.

For more information, visit www.marc.org/water

The problem with pavement

During the construction of homes, roads and office buildings vegetation is often removed and replaced by large paved areas. These surfaces keep rain from infiltrating the soil and recharging groundwater supplies. The infiltration process helps clean water and feed the underground springs that supply drinking water. Paved surfaces also increase the speed and amount of water that rushes into streams, causing stream bank erosion and harming wildlife habitats. Direct the flow of water from downspouts away from paved surfaces whenever possible.

Combined sewer overflows

Combined sewers are older systems that carry both stormwater and wastewater to treatment plants. When rainstorms fill combined sewers beyond capacity, the result is a Combined Sewer Overflow — a discharge of untreated wastewater and stormwater into local waterways. Combined sewers are costly to replace and still used in older areas of the region. Residents are encouraged to disconect downspouts from sewer pipes or redirect downspouts to grassy areas or gardens to reduce the rain that enters sewers.

Disconnect or Redirect Your Downspout

Clean Water. Healthy Life.

Regional Water Quality Education Program

MARC

Mid-America Regional Council

www.marc.org/water

Lluvia, techos y escurrimiento

¿Sabía usted que cada canalón de una casa puede drenar aproximadamente 12 galones de agua por minuto durante una precipitación de una pulgada? Si se maneja de la manera adecuada, el agua que fluye de los techos puede ayudar a mantener verdes el césped y los jardines y a la vez reducir las cuentas de servicios públicos durante los meses de primavera y verano. Sin embargo, la mayoría de los canalones envían el agua de lluvia por las calles, las aceras y los caños subterráneos que conducen a desagües de aguas pluviales y tubos de alcantarillado. Este "escurrimiento de aguas pluviales" recoge contaminantes del aceite de vehículos, químicos del césped y desechos de pestes a su paso, antes de ingresar a los lagos y arroyos sin tratamiento.

La gran cantidad de agua sin tratar que ingresa en el sistema de alcantarillas pluviales y, en última instancia, en nuestros arroyos y lagos, genera un impacto ambiental, económico, a la salud y a la seguridad que perdurará por mucho tiempo en las comunidades. Afortunadamente, hay muchas cosas que los propietarios de viviendas pueden hacer para aprovechar el agua de lluvia y a la vez reducir la cantidad de escurrimiento de aguas pluviales que acaban en las vías fluviales locales.

Si desea obtener más información, visite www.marc.org/Environment/Water

El problema del pavimento

Durante la construcción de casas, caminos y edificios de oficinas, la vegetación generalmente se retira y es reemplazada por grandes áreas pavimentadas. Estas superficies impiden que la lluvia infiltre el suelo y, a la vez, impide la recarga de los suministros del agua subterránea. El proceso de infiltración ayuda a limpiar el agua y a alimentar los manantiales que suministran agua potable. Las superficies pavimentadas también aumentan la velocidad y la cantidad de agua que fluye a los arroyos, lo que produce la erosión de las orillas de los arroyos y daña los hábitats de vida salvaje. Cuando sea posible, dirija el flujo de agua de los canalones lejos de las superficies pavimentadas.

Desbordes de alcantarillas combinadas

Las alcantarillas combinadas son sistemas muy antiguos que transportan aguas pluviales y residuales a las plantas de tratamiento. Cuando el agua de lluvia llena las alcantarillas combinadas sobrepasando su capacidad, el resultado es el desborde de la alcantarilla combinada: una descarga de aguas residuales y pluviales sin tratamiento a las vías fluviales locales. Reemplazar las alcantarillas resulta bastante costoso y todavía se utilizan en áreas antiguas de la región. Se recomienda a los residentes que desconecten los canalones de los tubos de alcantarillado o que redirijan los canalones a zonas con césped o jardines para reducir la lluvia que ingresa a las alcantarillas.

Desconecte o redirija su canalón

MARC

Mid-America Regional Council

www.marc.org/Environment/Water

What is a watershed?

A watershed is an area of land that drains to a common body of water, such as a nearby creek, stream, river or lake. Watersheds vary considerably in size. For example, when it rains, all the water from a small watershed may travel to a local creek. That creek will flow into a larger stream, like Brush Creek, which in turn collects water from an even larger watershed. Brush Creek flows into the Blue River, which then deposits water into the Missouri River. **We all live in a watershed.**

We all live downstream

Watersheds cross city, county and state lines. When different communities share a watershed, the residents of all the cities and counties in the watershed need to address issues like flooding and water quality together. Local watershed decisions impact our upstream and downstream neighbors.

For more information, visit www.marc.org/water

What's the problem?

During the construction of homes, roads and office buildings, vegetation is often removed and replaced by large paved areas. These ***impervious surfaces*** keep rain from seeping into the soil and recharging groundwater supplies. Paved surfaces also increase the speed and amount of water that rushes down gutters and into storm drains during a rain storm. This **"stormwater runoff"** picks up pollutants from motor oil, lawn chemicals, pet waste, salt, litter and soil along the way, before flowing to rivers, lakes and streams — **untreated.**

The large amount of untreated water entering the storm sewer system — and eventually our streams and lakes — has lasting health, safety, environmental and economic impacts on our watersheds and communities.

Watersheds support a wide variety of plants and wildlife and provide outdoor recreation opportunities for residents. Protecting the health of our watersheds preserves and enhances the quality of life for Kansas City residents and those living downstream.

Know Your Watershed

Clean Water. Healthy Life.

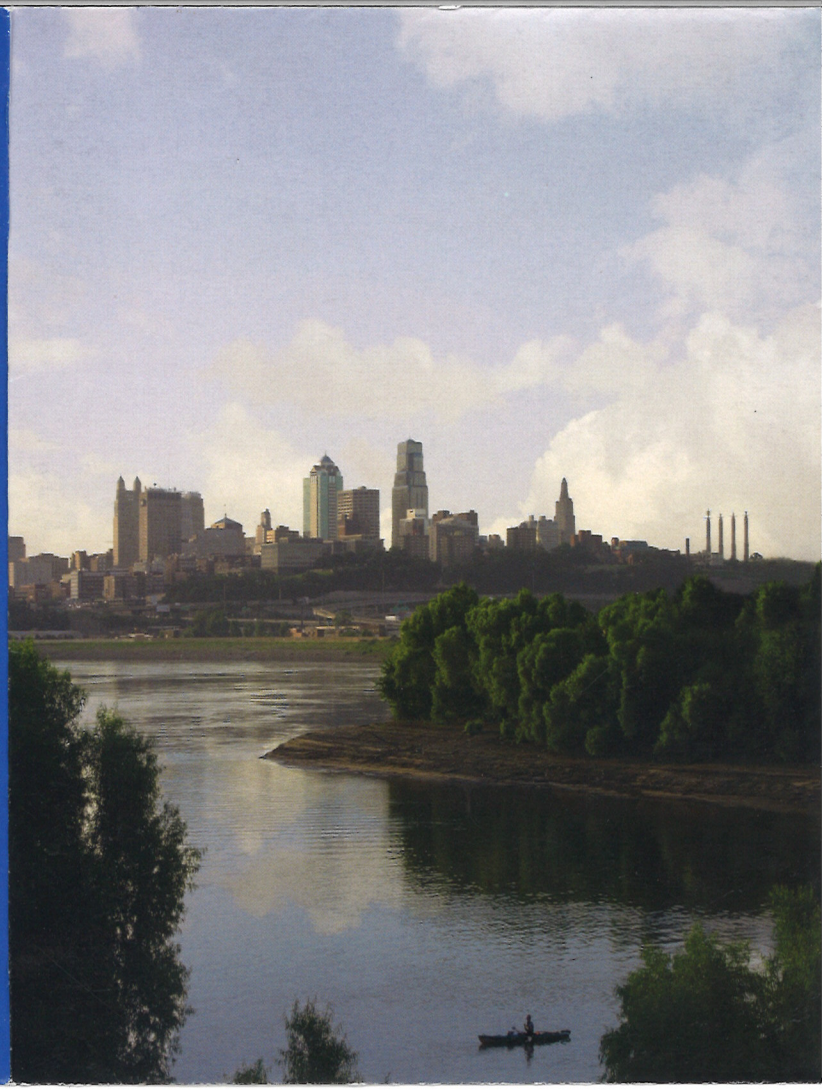
Regional Water Quality Education Program

MARC

Mid-America Regional Council

www.marc.org/water

On the cover: *A view of downtown Kansas City, Mo., from Kaw Point — the confluence of the Kansas and Missouri rivers — in Kansas City, Kan.*



¿Qué es una cuenca hidrográfica?

Una cuenca hidrográfica es un área de terreno que drena agua en una masa de agua, como un riachuelo, arroyo, río o lago cercano. Las cuencas hidrográficas tienen distintos tamaños. Por ejemplo, cuando llueve, toda el agua de una cuenca pequeña puede circular hasta un riachuelo local. Este riachuelo desembocará en un arroyo más grande, como Brush Creek, que a su vez recoge el agua de una cuenca de mayor tamaño. Brush Creek desemboca en Blue River, que lleva el agua hasta el río Missouri. Todos vivimos en una cuenca hidrográfica.

Todos vivimos aguas abajo

Las cuencas hidrográficas cruzan ciudades, condados y líneas de estados. Cuando distintas comunidades comparten una cuenca, los residentes de todas las ciudades y condados de la cuenca necesitan solucionar juntos problemas tales como inundaciones y calidad del agua. Las decisiones sobre las cuencas hidrográficas locales afectan a nuestros vecinos que viven aguas arriba y también a los que están aguas abajo.

Si desea obtener más información, visite www.marc.org/Environment/Water

¿Cuál es el problema?

Durante la construcción de viviendas, calles y edificios de oficinas, a menudo la vegetación se elimina y reemplaza con grandes áreas asfaltadas. Estas superficies impermeables impiden que el agua de lluvia penetre en el suelo y recargue los suministros de agua subterránea. Las superficies asfaltadas también aumentan la velocidad y la cantidad de agua que circula por los canalones y los desagües pluviales durante una tormenta. A su paso, este "agua de escurrimiento" recoge contaminantes, como aceite de motor, sustancias químicas para el césped, desechos de mascotas, sales, basura y tierra antes de llegar a ríos, lago y arroyos—sin recibir tratamiento.

La gran cantidad de agua sin tratar que ingresa en el sistema de alcantarillas pluviales — y, en última instancia, en nuestros arroyos y lagos — genera un impacto ambiental, económico, a la salud y a la seguridad que perdurará por mucho tiempo en nuestras cuencas y en nuestras comunidades.

Las cuencas hidrográficas albergan una gran variedad de plantas y animales, y brindan oportunidades de esparcimiento al aire libre para los residentes. La protección de la salud de nuestras cuencas hidrográficas preserva y mejora la calidad de vida de los residentes del área de Kansas City y de aquéllos que viven aguas abajo.

Conozca su cuenca hidrográfica

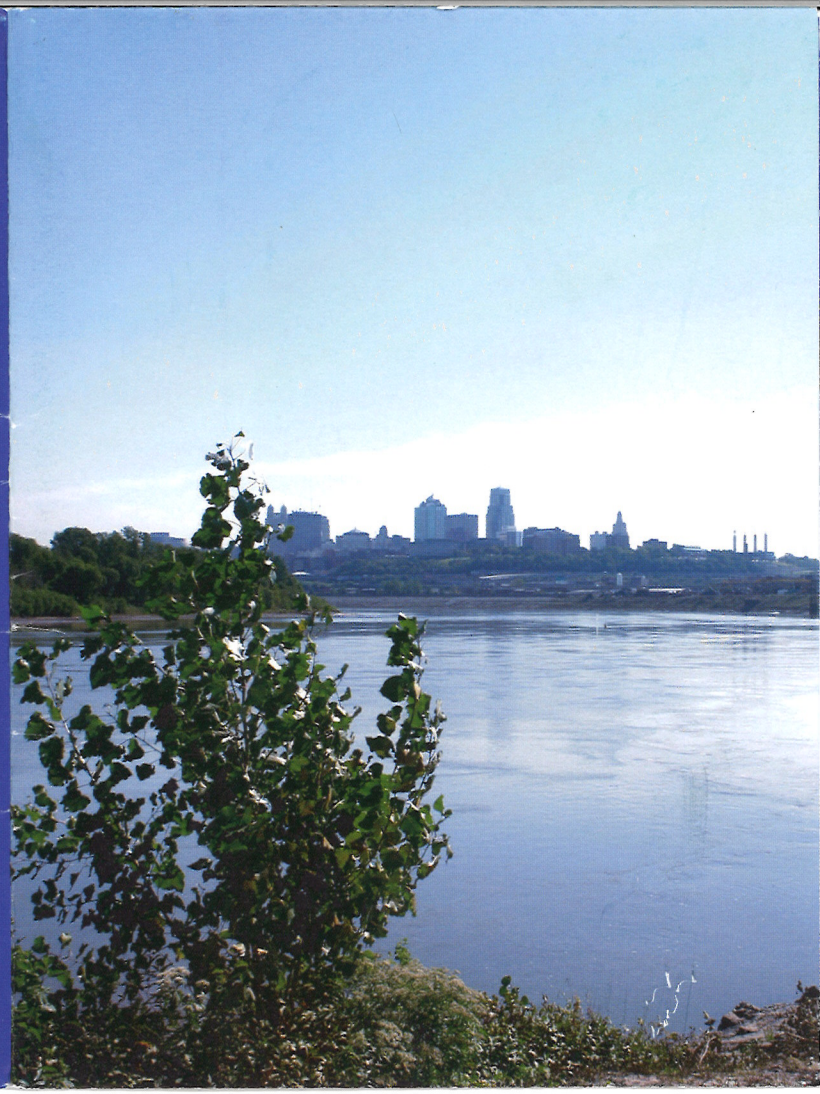
Agua limpia.
Vida sana.

MARC

Mid-America Regional Council

www.marc.org/water

En la portada: Vista del centro urbano de Kansas City, Mo., desde Kaw Point — confluencia de los ríos Kansas y Missouri — en Kansas City, Kan.



What is a rain barrel?

A rain barrel is a container that collects and stores rainwater from downspouts and rooftops for future use watering lawns and gardens. Generally a rain barrel is made using a 55-gallon drum, a vinyl garden hose, PVC couplings, a screen grate to remove debris and keep insects out, and other materials found at most hardware stores.

Rain barrels can be constructed in a number of ways, but they all serve the same purpose — to collect rainwater and decrease the amount of stormwater runoff that leaves your property. Using rain barrels is one way to decrease your household's impact on local waterways and to become a good steward of the local watershed.

For more information, visit www.marc.org/Environment/Water

Why use rain barrels?

They redirect water from your roof to your lawn or garden

The average rainfall of one inch within a 24-hour period can produce more than 700 gallons of water that runs off the roof of a typical house. Much of this water runs from gutters onto surfaces that do not allow water to soak into the ground. These are called ***impervious surfaces*** and include concrete, asphalt, and compacted soil. Even commonly used sod has a very low infiltration rate and can be a major cause of increased runoff.

As it flows, runoff collects and transports soil, pet waste, salt, pesticides, fertilizer, oil and grease, litter and other pollutants. This water drains directly into nearby creeks, streams and rivers, without receiving treatment at sewage plants.

Polluted stormwater contaminates local waterways. It can harm plants, fish and wildlife, while degrading the quality of water.

Conserve Water with Rain Barrels

Clean Water. Healthy Life.

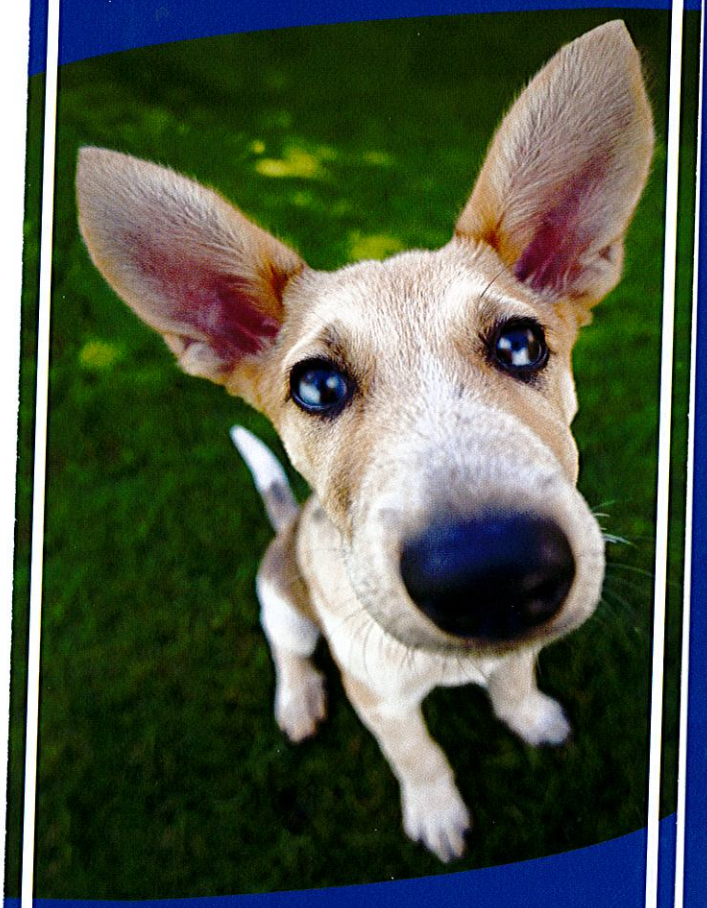
Regional Water Quality Education Program

MARC

Mid-America Regional Council

www.marc/Water

PICK UP AFTER YOUR PET



Pet Waste Affects Water Quality

Every time it rains, thousands of pounds of pet waste wash down storm drains and into streams, rivers and lakes. If not disposed of properly, pet waste flows directly into nearby streams and creeks without being treated at wastewater treatment facilities.

Clean Water. Healthy Life.

What's the Problem?

A recent U.S. Geological Survey study of streams and creeks in the Kansas City region showed that bacteria associated with pet waste is the source of approximately 25% of the bacteria in samples collected from local waterways.

When pet waste is disposed of improperly, water quality isn't the only thing that suffers — your health may be at risk, too.

Adults working in their gardens, children playing outside and family pets are the most at risk for infection from some of the bacteria and parasites found in pet waste.

What Can You Do?

- Pick up pet waste from your yard. It is not a fertilizer.
- Carry disposable bags while walking your dog to pick up and dispose of waste properly. When you dispose of pet waste in the trash, wrap it carefully to avoid spilling during collection.
- Bury pet waste in your yard, at least 12 inches deep and cover with at least eight inches of soil to let it decompose slowly. Bury the waste in several different locations and keep it away from vegetable gardens.
- Contact your local parks department to inquire about providing pet waste stations in area parks, along trails and in public places where people frequently walk their dogs.

Regional Water Quality Education Program

For more information, visit
www.marc.org/water
or call 816/474-4240

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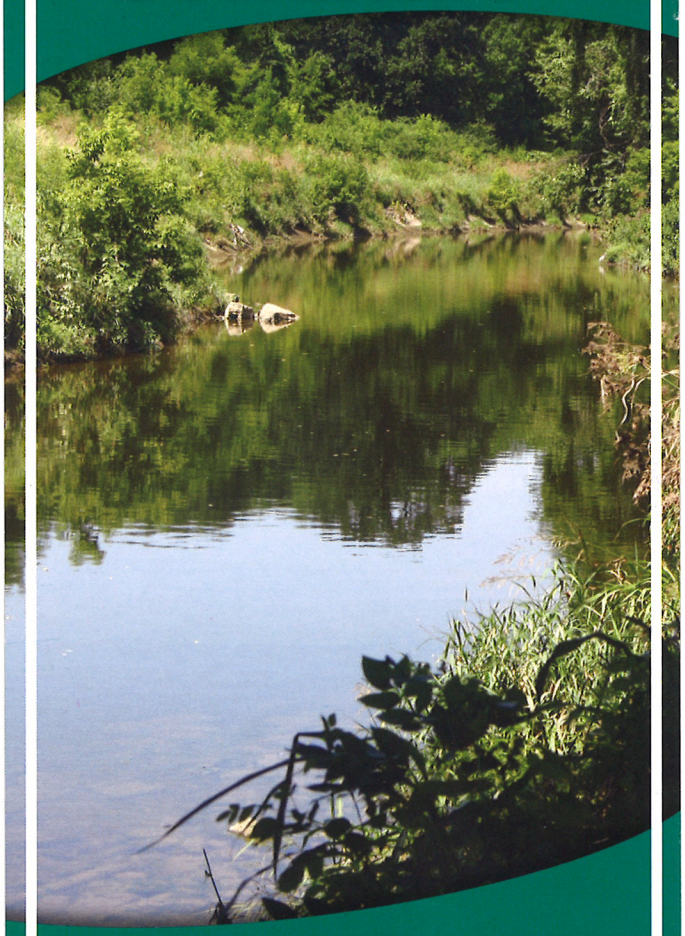
PROTECT OUR STREAMS



Healthy Streams, Healthy Region

Streams are among the most important natural resources in the Kansas City region, contributing to the overall quality of life in our communities.

Stream corridors provide vital habitat networks for wildlife and help filter out pollutants from our waterways.

Clean Water. Healthy Life.

What's the Problem?

Many property owners may not realize that what they do on their land impacts neighborhoods, stream habitats and water quality downstream. The condition of land surrounding streams directly affects property values, the health of the stream and the well-being and safety of the public.

What Can You Do?

- **DON'T MOW TO EDGES.** Mowing close to a stream's edge damages roots that hold soil in place, causing stream banks to erode and contributing to loss of natural habitats. Avoid mowing within 10 to 25 feet from the edge of a stream.
- **FERTILIZE LESS.** When the organic nutrients in fertilizers enter the stream cycle, they degrade water quality. Test your soil for healthy levels of nutrients on a regular basis.
- **LANDSCAPE WITH NATIVE PLANTS.** Check with your local nursery for plants that have deep roots and are naturally adapted to the climate and soil. Their natural properties eliminate or reduce the need for mowing, watering, fertilizers or pesticides.
- **DON'T DUMP WASTE.** Trash and litter on stream banks is unsightly, unsanitary and unsafe for humans and wildlife. Proper containment and disposal of organic trash and yard waste is also critical to maintaining clean streams. These materials decompose when they enter the stream cycle, releasing foul odors and leading to poor water quality.

Regional Water Quality Education Program

For more information, visit
www.marc.org/water
or call 816/474-4240

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Mid-America Regional Council

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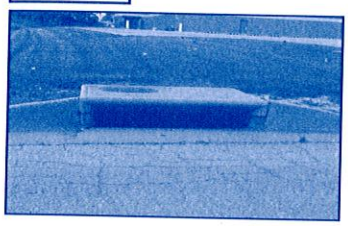
After a Heavy Rain, What Happens to the Stormwater Runoff?



Most rain seeps into the soil.

Some rain flows into the street and into storm drains.

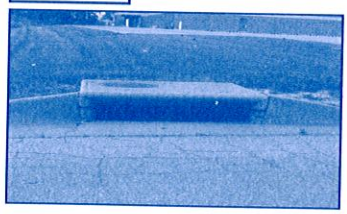
This stormwater runoff carries off soil, pet waste, pesticides, fertilizers, oil, and litter into storm drains and it flows directly into local streams, rivers, and lakes without treatment.

What Can I Do to Reduce Stormwater Pollution?

- Sweep driveways instead of hosing them off.
- Wash vehicles at a commercial car wash and not on driveways.
- Do not leave pet waste on yards.
- Do not over apply fertilizers & pesticides.
- Inspect & pump your private septic systems.
- Recycle motor oil & automotive fluids.
- Don't blow leaves & grass into the street.
- Don't throw or dump cigarette butts from car.

For More Information go to **www.wycokck.org/pw** the Unified Government of Wyandotte County/Kansas City, Kansas website of the Public Works Department and under Additional Links section click Stormwater Info.

Después de una fuerte lluvia, ¿qué sucede con el escurrimiento de agua de lluvia?



La mayoría de la lluvia se filtra en el suelo.

Parte de la lluvia corre por la calle y dentro de los drenajes de aguas.

Este escurrimiento de agua de lluvia arrastra tierra, desechos de mascotas, pesticidas, fertilizantes, aceite y basura dentro de los drenajes de aguas y esto fluye directamente a los arroyos, ríos y lagos locales sin tratamiento.

¿Qué puedo hacer para reducir la contaminación del escurrimiento del agua de lluvia?

- Barrer el área donde estaciona el automóvil en vez de lavarla con manguera.
- Lavar los automóviles en un lavadero comercial y no en el área donde los estaciona en su casa.
- No dejar los desechos de mascotas en los patios.
- No aplicar fertilizantes y pesticidas en exceso.
- Inspeccionar y limpiar su sistema séptico privado.
- Reciclar el aceite de motor y fluidos del automóvil.
- No soplar hojas y césped a la calle.
- No arrojar colillas de cigarrillos desde el automóvil.

Gobierno Unificado del Condado de Wyandotte/Kansas City, Departamento de Obras Públicas de Kansas

APPENDIX A.2 Public Works Stormwater Information Website

Appendix A.1 - Public Works Stormwater Information Website

A webpage has been developed by the Public Works Department of the Unified Government. Through this website, the community can obtain information about stormwater runoff, activities that contribute to stormwater runoff, simple steps the public can do to help reduce pollution in stormwater runoff, and it offers an outlet for the public to report any problems. The link for the Stormwater information is on the Unified Government's Public Works Department home page.

The webpage has a section that provides tips on the following subjects on what residents can do to minimize storm water runoff for:

- Sediment
- Oil
- Septic Systems
- Lawn Chemicals
- Pet Waste
- Car Washing
- Trash/Litter
- Yard Waste

The webpage has links to the following Unified Government ordinances:

- Illicit Discharge Ordinance
- Construction Sites Ordinance
- Post Construction Site Ordinance

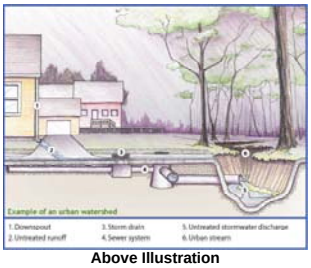
The webpage has additional information which includes links to other websites such as the EPA, KDHE, Mid America Regional Council, and K-State Extension. There are other educational fliers available. There is also a PowerPoint presentation on the additional information link that educates about stormwater runoff and gives an overview of what residents can do to minimize stormwater runoff. A copy of the webpage is included in this section.

Public Works

Stormwater Runoff Management

Sarah Fjell, Stormwater Engineer
Suite 712, 701 N. 7th Street
Phone: 913-573-5400
Fax: 913-573-5435
Email: sfjell@wycokck.org

Office Hours: Monday thru Friday, 8:00 am to 5:00 pm



Above Illustration from Mid American Regional Council, Kansas City, Missouri

Storm Drain

When water falls to the earth as rain, snow or ice; most of it seeps into the ground. If the ground is saturated, frozen, or has a road, sidewalk or paved surface the water flows over land creating what is called stormwater runoff. This stormwater runoff may carry off soil, pet waste, pesticides, fertilizers, oil, litter, and other pollutants into storm drains and it flows directly into local streams, rivers and lakes without treatment.

Will you help reduce stormwater runoff? Click on the items under "What I can Do" to participate.

What Can I Do?

- Sediment
- Oil
- Septic Systems
- Lawn Chemicals
- Pet Waste
- Car Washing
- Trash/Litter
- Yard Waste

Help Identify

- Problems

Stormwater Ordinances For:

- Illicit Discharge
- Construction Sites
- Post Construction

MS4 Compliance

- 2012 Annual NPDES Report
- SWMP-UG2013

Additional Information

- Website Links
- Educational Flyers
- What Can I Do? (PowerPoint Presentation)

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APPENDIX A.3 Wyandotte County Conservation District Annual Report

2013 District Outreach Programs

*over **9500** participants*

*District Volunteers donated over **1150 hours***

of their time to the make all of our programs possible!

January Programs: Kansas Day programs about Kansas farms and Natural resources

February Programs: included: Seven Middle school water quality investigations and five Head Start classes on recycling and water quality

March Programs: Five Head Start tree programs, Two Community composting soil program, Night at the Museum at Fort Leavenworth, Rain barrel/Composter workshop and Family Science Night made up the ten education programs presented

April Programs: Brand new S.O.I.L adventure. Provided 325 students opportunities to dig into the forest ecosystem, discover wildlife, decomposers, geology, trees, watersheds, soils and more from the forest floor to the canopy of the forest. Presented eight other programs for Earth Month events

May Programs: 3rd annual Parts of the plant program for First graders, Water Quantity/ Dam Safety Program, Teacher Appreciation Day, Earth Day Program for Kickapoo Tribe

June Programs: Community programs at Cabela's and the Library introduced hundreds to soil and the amazing forest floor, two more program addressed water quality and non-point source pollution

July Programs: New programs Kansas crops are found in so many products read the labels, Pollinators around the world, water comes from the ground?

August Programs: Soil Sustainability and soil particle sizes, one program water quantity

September Programs: Habitat and ecosystem explorations for Girl Scouts and their families Discover Kansas Series about wildlife in Kansas

October Programs: 20 demonstrations with the stream trailer about water quality, quantity, erosion and Kansas history, Soil presentation for Discover Kansas series, Middle School students habitat puzzle program

November Programs: Discover Kansas series, the Kansas River, 21 sessions with Head start classes about Trees. Discover Kansas Series Bees, Honey and pollinators. Habitat puzzle program for 4-H

December Programs: Family Science Night Scat and Tracks, matching the Kansas wildlife by their scat and tracks, what animals live in your neighborhood

Throughout the year Hundreds of walk-ins and phone calls come into the office with questions and concerns. We assist these citizens by providing literature, instructions, referrals or site visits. Some of the most common concerns are: nuisance animals or insects, invasive species, native plantings, ponds, rain barrels, composting, insect Identification, and unusual wildlife siting's.

Kickapoo

Seedballs of many

Tasty soil layers

Plant a tree for me

Outdoor Ecology Classroom O.E.C

We are squishy with water

Erosion in the prairie, city and farm,
who survives the flood?

Head Start

4 schools

More than

400 students

Middle Schools

Tracks, Scat, Skulls oh MY!!

Stream ecosystem puzzle

Inhabitant clues

Middle School Inquiries

Over 500 7th graders in investigated ecosystems, water quality and our Impact on both

Tree rings and me

Little acorns grow
mighty okas

Statement of Receipts and Expenses
January 1, 2013 through December 31, 2013
Operations Fund

RECEIPTS		
Balance, January 1	**46086.18**	
County Funds	42771	
State Matching Funds	24888	
NPS	7350	
Refunds	82.7	
Interest	24.9	
Total Receipts	**121202.78**	**121202.78**
EXPENSES		
Bonds and Insurance	1968.18	
Dues	250	
Employee Benefits	11280.8	
Education	7057.61	
Mileage	1159.97	
Office Expenses	4512.2	
Professional Services	595	
Workshops and Registrations	0	
Supervisors Expenses	0	
Taxes	13333.65	
Wages	31989.36	
annual meeting	0	
NPS I&E	7333.36	
Total Expenses	**79480.13**	**-79480.13**
Ending Balance		**41722.65**

Enterprise Fund

RECEIPTS		
Balance January 1	2209.01	
Annual Meeting	0	
Education Donations	1958.12	
Total Receipts	**4167.13**	4167.13
EXPENSES		
Annual Meeting	353.38	
Education	3124.47	
Office Expenses	227.48	
Total Expenses	**3705.33**	-3705.33
Ending Balance Enterprise		**461.8**
Ending Balance Operations		**41722.65**
Ending Cash Balance		**42184.45**

Repurposing/Reusing Barrels for Water Quality and Soil Health

Rain barrels :

Seven rain barrel workshops were presented to 250 people during 2013. Over 50 rain barrels were constructed and distributed through the seven workshops. Rain barrel construction and installation demonstrations occurred dozens of times as individuals stopped by the Conservation District office. Barrels are available in to sizes, 55 gallon and 30 gallon, to meet homeowners needs.

Composters:

Repurposing a barrel and lumber remnants into homeowner friendly composting systems, reduces trash amounts and creates a rich natural fertilizer saving homeowners money on both services. The barrel and stand system allow a person to "turn" the compost mix over with ease, while the barrel protects the compost from nuisance pests invasions. Reducing the amount of garbage thrown out saves landfill space, at the same time improving soil health with the rich mixtures from your kitchen fruit and vegetable scraps .

Vermicomposting:

Worms help speed up and improve compost turn around times. Designing a barrel composter for use especially with worms is a new barrel repurposing project. The small barrels were created to be used in classrooms as composting projects for teachers and students Involved with Master Gardener programs. The small barrels are ideal for student interaction and classrooms. There is a plan to expand their use from 4 classes to 5 schools.

Planters:

The Small 15 gallon barrels are cut horizontally in half and leftover 2X4's are cut for legs creating a simple flower or vegetable bed. These planters can be used indoors or outdoors to meet homeowners needs. The planters allow for fresh vegetable and fruits in spaces where opening the ground is not possible.

Stormwater-NPDES Packets:

The District distributed over 300 folders of stormwater information . The folders contain information defining stormwater and runoff, water quality issues in the urban/suburban areas. The materials provided also included ways individuals can help improve water quality while saving money.

Student Stormwater/NPS programs

Water comes from and goes where?

The District presented twelve Middle school water quality investigations; introducing and exploring the impacts of nonpoint source pollution. More than 500 students participated in the programs which also involved students brainstorming ideas ti improve water quality in their communities.

Freddy the Fish and NPS

Elementary and Preschool Students (more than 400) took part in the Freddy the Fish adventure. The program is a cautionary tale of the impact non-point source pollution has on water, wildlife and us. Sediment, pet waste, fertilizer, salt, oil and trash are all the obstacles a small fish must traverse. Students finish the program by cleaning up the stream and discussing what we could do differently in our daily routines.

Stream trailer

The stream model trailer was presented to more than 1000 students and families , demonstrating the effects of erosion and non point source pollution . Watching the devastating effects erosion can have on a city and rivers creates a visual explanation of the vocabulary students are learning in the classroom.

Watersheds

Watershed programs were presented to three classes. These programs used maps to locate there watershed address, and then make models of their watershed (Kansas River or Missouri River) Models were used to demonstrate NPS traveling from home to home with all materials ending at the last persons home. Great impact for thinking before dumping or dropping trash and even picking up pet waste.

S.O.I.L Students Outdoors Investing the Land

Brand new S.O.I.L adventure. Provided 325 students opportunities to dig into the forest ecosystem, discover wildlife, decomposers, geology, trees, watersheds, soils and more. From the forest floor to the canopy, students were exposed to the impacts our decisions and actions can have on water, air and soil quality. All of these which effect out our quality of life.

Sustainability

Introducing the concept of a balance use of the land and water while maintaining the lifestyles were are accustomed to is a new program. Native plants, soil health, rain harvesting and a few ways we begin talking about sustainability .

APPENDIX A.4 Mid-America Regional Council Water Quality Education Annual Report

APPENDIX A.4 Mid-America Regional Council Water Quality Education Annual Report

The Unified Government participates and provides funding for regional public education and outreach in the Kansas City metropolitan area. This regional effort is coordinated by the Mid America Regional Council in Kansas City, Missouri. This regional effort uses media advertising, printed materials, internet, and local initiatives.

The Unified Government remained a member in good standing throughout 2013 and was an active participant in the quarterly Water Quality Education meetings. Dues paid to MARC for the committee were $15,000. Staff regularly attended at-large meetings as well as actively involved in WQRC Grant sub-committee activities. The *MARC Water Quality Education Annual Report* is enclosed, which highlights the regional water quality public education efforts throughout the year. Additional information about the MARC can be found on their website, which is located at: www.marc.org. A copy of the funding for this organization is also enclosed.

The public outreach campaign continued to target residents and homeowners in 2013 focusing on two topics: storm drain stewardship and healthy lawn care.

The primary storm drain stewardship campaign maintained the message developed in 2010: "If it's on the Ground, it's in our Water." The campaign addressed issues such as improperly throwing waste down storm drains, fertilizer runoff and pet waste. Advertising efforts highlighted the connection between certain activities and regional water quality, emphasizing the role storm drains play in transporting materials to area waterways.

The secondary focus was healthy lawn care (Healthy Lawns, Healthy Communities). Messages were produced concerning actions that impact water quality, including proper fertilizing habits, yard waste disposal, and native species landscaping.

The 2013 media campaign was divided into spring and fall outreach periods. Total campaign elements for 2013 included:

- On-air network television:
  30-second TV commercials (stormwater and healthy lawn) on six local stations.
  Aired 132 spring commercials and 85 fall commercials.
- Four outdoor advertising billboards:
  2 spring campaign billboards and 2 fall campaign billboards
- Online advertising: (Kansas City.com; Facebook, Twitter)
  Approximately 408,626 online impressions earned
- Targeted newspaper advertisements
  94 ads in 15 regional publications with approximately 2 million readers reached.

UNIFIED GOVERNMENT OF WYANDOTTE COUNTY & KANSAS CITY, KANSAS
PUBLIC WORKS DEPARTMENT

ENGINEERING DIVISION

ONE McDOWELL PLAZA 701 NORTH 7TH STREET, 66101 (913) 573-5700
FAX (913) 573-5727

M E M O R A N D U M

TO: Theresa Houchins
Purchasing Agent

THROUGH: Bill Heatherman, P.E.
County Engineer

FROM: Sarah Fjell, P.E.
Stormwater Engineer

DATE: February 22, 2013

RE: **MARC Water Quality Education Program - Record of Selection and Request for Purchase Order**
CMIP 5305

Please note that in accordance with Department regulations and in compliance with our NPDES permit, Mid-America Regional Council was contacted to provide water quality educational services. Program fees are based on municipal population.

Please issue a contract purchase order in the amount of **$ 15,000.00** to **Mid-America Regional Council** for the work of this project.

Account Code 563-042-5305-5448

copies to: Brenda Janes, PW fiscal
John Menkhus, P.E.
Lesley Rigney, MARC

Mid-America Regional Council

Regional Water Quality Public Education Program

2013 ANNUAL REPORT

Clean Water. Healthy Life.

Regional Water Quality Public Education Program
Annual Report
January–December 2013

COMMITTEE HISTORY

Since 2003, MARC has convened a committee of representatives from local governments and environmental organizations to develop a regional watershed public education program. The committee was formed in response to numerous requests from local governments to develop a cooperative approach to water quality public education and to meet federal NPDES Phase I/II regulatory requirements. The committee's efforts have provided a firm foundation for its goal of educating the general public about actions people can take to reduce non-point source (NPS) pollution.

PROGRAM DETAILS

The Regional Water Quality Public Education Program is a comprehensive approach to raising public awareness about watershed issues and water quality in the Kansas City region. The long-term water quality public education strategy capitalizes on momentum created by past water quality awareness topics and community initiatives such as the Kansas Healthy Yards and Communities program. The program's outreach campaign structure identifies several specific water quality issues to address throughout the year; however, the structure remains flexible by promoting additional messages as opportunities arise. Campaigns consist of varying levels of support and methods of outreach, as explained below.

PROGRAM FOCUS

During the past 10 years the program has addressed several top NPS pollution issues facing the region. The program's theme — "Clean Water. Healthy Life." — focuses on changing behavior throughout the region in order to improve water quality, community health and quality of life. Each year the Regional Water Quality Education Committee (WQEC), with MARC staff support, develops an NPS pollution-focused message that supports the program's theme and determines the most effective means for disseminating the message. The committee's education and outreach activities vary each year but typically consist of a media campaign, a mini-grant program, training, and education and outreach materials. This year, the program has identified and participated in stormwater management and training opportunities.

PUBLIC ATTITUDE SURVEY

The committee administers a biennial public attitude survey to gauge the public's knowledge of and attitudes about water quality in the metropolitan area. Survey questions are designed to measure the impact that education efforts have on the public's overall awareness of water quality concerns and on behaviors that impact water quality in the region. The water quality survey provides a benchmark for objectively evaluating water quality public education initiatives over time, and provides guidance for future public policy, planning and education efforts.

The last survey was conducted in 2012, so the committee will repeat the survey in 2014. Historical survey results are available online at:

http://marc.org/Environment/Water-Quality/pdfs/RegionalWQsurveys/2012Survey.aspx

2013 PROGRAM ACCOMPLISHMENTS

Media Campaign

MARC staff assists the committee with strategic planning for media campaigns, including message development, writing, graphic design and the purchase of advertising. Campaigns used a variety of elements including paid advertising, earned media, printed materials and other activities. In 2013, the public outreach campaign continued to target residents and homeowners, focusing on two topics: **storm drain stewardship and healthy lawn care**.

The primary **storm drain stewardship** campaign maintained the message developed in 2010: "If it's on the ground, it's in our water." The campaign addressed issues such as improperly throwing waste down storm drains, fertilizer runoff and pet waste. Advertising efforts highlighted the connection between certain activities and regional water quality, emphasizing the role storm drains play in transporting materials to area waterways.

The secondary focus was **healthy lawn care** ("Healthy Lawns. Healthy Communities."). Messages addressed actions that impact water quality, including proper fertilizing habits, yard waste disposal, and native species landscaping.

CAMPAIGN ELEMENTS

Healthy Yards Video
"Healthy Yards, Healthy Communities"

Storm Drain Video
"If it's on the ground, it's in our water"

Billboards

CAMPAIGN ELEMENTS

Newspaper Ads

Web Ads

Sub-Campaign Videos

"Creating and Maintaining Native Landscapes"

"Inviting Native Plants into your Community"

The year's media campaign was divided into spring and fall outreach periods. Total campaign elements for 2013 included:

- On-air network television: 30-second TV commercials (stormwater and healthy lawn) on six local stations;
  - *Aired 132 spring commercials and 85 fall commercials*
- Four outdoor advertising billboards
  - *Two spring campaign billboards, two fall campaign billboards*
- Online advertising (Kansas City.com, Facebook, Twitter)
  - *Approximately 408,626 online impressions earned*
- Targeted newspaper ads
  - *Approximately 94 ads in 15 regional publications*
  - *Approximately 2 million readers reached*

Each commercial is available to on the MARC YouTube channel, (www.youtube.com/MARCKCMetro).

Sub-Campaigns

To supplement the messages of stormwater awareness and proper lawn and garden maintenance, the committee elected to build on the momentum of past campaigns by revisiting topics such as native plants, stormwater best management practices and pet waste. Messages targeted specific audiences and were disseminated via workshops, public events, web-based resources, publications, social media and public signage.

GRANT PROGRAMS

The committee offers funding opportunities to local nonprofit and educational organizations for education and outreach events related to reducing stormwater runoff and improving water quality in area creeks and streams. Proposals undergo a competitive selection process and are evaluated by a selection subcommittee. The WQEC budgeted $20,391 for grant awards in 2013, with a cap of $5,000 per proposal. Six proposals were chosen for funding in 2013:

- ***Green Works of Kansas City ($3,750 awarded)***

Green Works in Kansas City offered an after-school, environmental stewardship, experiential learning program to urban high school students at the Anita B. Gorman Discovery Center. The program was titled ECOS, which stands for Environmental Connection Opportunities for Students. The ECOS curriculum is aligned to national science standards and covers our region's most serious environmental issues including urban water, solid waste and energy conservation. Green Works requested and received a partial extension to complete a water quality educational video through the spring of 2014. Funding from MARC's grant program was used in support of the fall Urban Water Session for 20-25 high school students for 12 weeks (36 hours of programming) from September to December 2013. During this session the students learned about green infrastructure and native plants, learned about non-point source pollution, observed river conditions on the Missouri River, tested the water quality of Brush Creek and learned about Kansas City's storm and sewer system including touring the water and waste-water treatment facilities.

- ***South Grand River Watershed Alliance ($1,641 awarded)***

The SGRWA partnered with the Missouri Department of Conservation, the city of Peculiar, Cass County Sustainability Committee, Peculiar Lions Club, and local Stream Teams to host an event to further education on non-point source pollution and effects on stream water quality. This educational event addressed the water quality education goals set forth by the WQEC, by providing educational mini-lessons and information to attendees about the adverse impacts of excessive stormwater runoff and non-point source (NPS) pollution. The SGRWA invited 200 community leaders and stream team members to participate in food and activities while at the event. Only 40 people attended the festival, likely due to excessive heat.

- ***Cultivate KC ($5,000 awarded)***

Funding of $5,000 supported the Get Growing Kansas City Water Initiative Project of Cultivate KC. The 2013 Water Initiative focused on four areas with success: performing 24 water audits of urban farms and gardens in order to help growers design and implement best water management practices for 15 farms and community gardens; teaching water workshops for 42 attendees; creating a water management booklet and increasing access for urban growers to water through policy work. The Get Growing Kansas City Team provided comprehensive urban farming and community gardening resources in five counties, targeting neighborhoods with the greatest need and greatest potential for success. With requested grant funds the team taught urban growers about best water management practices and reducing stormwater runoff and water pollution in area creeks and streams in a three-layered approach: production practices including soil building and no/limited use of chemicals, water catchment to prevent run-off and save money, and connection to city water.

- ***Stonelion Puppet Theatre ($5,000 awarded)***

Stonelion Puppet Theater expanded this year's educational opportunities by producing a series of five family fun festivals, serving 665 participants, which provided public education about the adverse effects of stormwater runoff and water pollution in an after-school setting. Each event was partnered with a school to create a family outreach event featuring StoneLion's Puppet Carnivale of Water. This production was an interactive performance art spectacle. Individual "side show" events engaged small audiences in specific aspects of water quality education such as Mother Nature's Fortune Telling Booth discussing effects of stormwater runoff and air pollution on our water system or The Water Train (a small version of an old-fashioned circus wagon train) highlighting species that have been effected by water pollution and engaging the audience in a discussion of what could be done to reduce the risks to our local water system. Hands-on art activities related to water quality and environmental education displays with information from local Earth Friendly exhibitors were available. Additionally, schools were encouraged to show off student's eco projects and art work. Each festival culminated a performance of StoneLion's water quality puppet show called Down the Drain.

- ***West Branch Sni-A-Bar Creek Watershed Consortium ($2,500 awarded)***

The West Branch Sni-A-Bar Creek Watershed Consortium worked towards improving water quality in the watershed by education in three different activities. The WBSCWC planned to implement TRUE (Teaching Rivers in an Urban Environment) Blue to fifth graders in the Sni-A-Bar watershed. This program provides public education about the adverse impacts of storm water runoff and water pollution. A poster contest for middle schools on water quality awareness was hosted, reaching five different middle schools. Winning posters were printed in color and distributed to local businesses and schools to promote awareness about water pollution and native plants. Two rain gardens to demonstrate implementation of best management practices to reduce storm water runoff and water pollution in area creeks and streams were also built.

TRAININGS

The committee continues to house and expand a library of training videos for local communities' use. Available videos, with accompanying training materials, include:

- *Storm Warnings: Stormwater Pollution Prevention — Everyday Best Management Practices*
- *Septic Systems Revealed: A Guide to Operation, Care and Maintenance*
- *Stormwater Pollution Prevention: A Drop in the Bucket*
- *Ground Control: Stormwater Prevention for Construction Sites*
- *Rain Check: Stormwater Pollution Prevention for MS4s*
- *IDDE (Illicit Discharge Detection and Elimination) — A Grate Concern*

The committee hosted and/or partnered to host 10 webinars in 2013:

- *MS4 Audit Webinar: Center for Watershed Protection, May 15 , 2013*
- *U.S. Forestry Service — Conserving Private Lands in Perpetuity: Monitoring and Enforcement of Conservation Easements, May 29, 2013*
- *Community Forestry Workshop and Webinar for street trees and reducing runoff for stormwater management, Davey and Missouri Dept. of Conservation, June 4 and June 6, 2013*
- *A New Way of Stormwater Management: Applying Asset Management to Stormwater Programs, Sept. 10, 2013*
- *Combining Green and Grey in Combined Sewer Watersheds, September 18, 2013*
- *Stormwater Trading, Markets or Mayhem? Center for Watershed Protection, October 16, 2013*
- *Urban Erosion and Sediment Control — Brian McLane, CPESC, City of Cambridge, October 22, 2013*
- *EPA National Stormwater Calculator, October 23, 2013*
- *Street Dirt: A Better Way of Measuring BMP Effectivenes, November 14, 2013*
- *Stormwater Utilities: Reckoning the Cost Side of the Equation, November 20, 2013*

The committee partnered with Johnson County Community College on an educational training series **"Installation and Maintenance of Stormwater Treatment Best Management Practices"** that included a local BMP site visit, native plants species selection and establishment, and a design and maintenance workshop. The effort resulted in a successful series that highlighted the benefits of native plants and key stormwater treatment and best management principles.

PRINT MATERIALS

MARC staff researched, designed and ordered native landscaping rain gauges and storm drain markers for distribution and use by member communities.

Native Plants and Rain Gardens

- Distributed 1,000 wildflower seed packets.
- Continued to distribute *How to Build Your Own Rain Garden* and *Know Your Roots* brochures.
- Continued to provide informational rain garden signs for local community demonstration projects.
- Distributed 100 copies of *A Little Bit of Wild* native plant and rain garden booklets.
- Purchased and distributed 500 rain gauges designed with native species landscape for distribution.

Pet Waste

- Distributed 100 *Pick Up After Your Pet* waterproof signs for distribution to local municipalities.
- Continued distribution of *Pick Up After Your Pet* brochures.

Lawn Care

- Continued to distribute *Build Your Own Rain Barrel*, *Redirect or Disconnect Your Downspout*, *Know Your Soil*, *Making and Using Compost*, and *Use Lawn Chemicals Wisely* brochures

Brochure Translations

- Continued to use existing supply of Spanish-language Brochures.

General Stormwater Education

- Purchased and distributed 500 Storm Drain Inlet Markers for local municipalities.
- Continued to distribute *Keep Sediment Out of Our Water*, *Know Your Watershed*, *Protect Our Streams*, and *Storm Drain Stewardship* brochures.
- Continued to make available the committee's Water Quality Education Program banner for community events and functions.

Youth Stormwater Education

- Continued to distribute youth giveaways to help promote stormwater education: *From Rain to River – Keep it Clean* bracelets, *Discover Stormwater* activity booklet and *Healthy Water, Healthy People* activity booklet.
- Continued to make the committee's watershed display and marble game available for local community events.

Stormwater Education Brochure

Promotional Items

REGIONAL GOVERNMENT ORDINANCE SURVEY

A regional government survey was completed in 2013, a repeat and expansion of the 2008 watershed survey completed in 2008. The survey reported on 30 municipalities' ordinances regarding their current practices including; sediment and erosion control measures (APWA 5100), stormwater post-construction ordinances (APWA 5600), stream setback ordinances and land-use restrictions, and best management practices for stormwater (BMPs). Approximately 80 percent of the governing locations have adopted sediment and erosion control measures, a significant increase from 2008. More than 83 percent of the jurisdictions surveyed have adopted the APWA 5600 to follow their requirements for stormwater post-construction. Other findings included an impressive 80 percent of the regional locations surveyed have ordinances in place for stream setbacks and land-use restrictions. Additionally, six more governing jurisdictions were interviewed this year than in 2008 for participating in the region's government ordinances to protect water quality and natural resources. View all survey results online at http://marc.org/Environment/Water-Resources/pdfs/Ordinances-Simplified-Govt-2013.aspx.

ADDITIONAL WORK

MARC Environmental Programs launched a blog in 2013, providing an additional tool for education and outreach. Blog post topics have included regional and community forestry, water resources in urban agriculture, innovative public education strategies. http://environment.marcblogs.org/

Mid-America Regional Council launched a redesign of marc.org, incorporating better information architecture and intuitive navigation geared toward the user, allowing visitors to find what they're seeking in less time. http://marc.org/

Provided various information and material (brochure templates, images, etc.) to organizations in communities that are either outside the MARC region or local groups that are not part of the Water Quality Education Program. All organizations agreed to acknowledge MARC's Water Quality Education Program as the information source.

Know your roots art (Natives vs. Non-natives)

- Four Rivers Basin, Jackson Purchase Foundation , Ky.
- Health Department Laboratory, City of Racine, Wis.
- University of Nebraska – Lincoln

Urban watershed illustration

- Greenscapes.org, Massachusetts
- Arnold School of Public Health, Columbia, S.C.

Photos

- Water intakes — Water Environment Research Foundation, Alexandria, Va.
- Blue River — Kansas Forest Service, Manhattan, Kan.

FUNDING

In January 2013, MARC submitted a program funding request to local governments for $160,049. During the course of the year, 22 local governments supported the program. Participating governments are listed below.

PARTICIPATING GOVERNMENTS

Belton, Mo.
Blue Springs, Mo.
Clay County, Mo.
Excelsior Springs, Mo.
Gladstone, Mo.
Independence, Mo.
Jackson County, Mo.
Johnson County, Kan. *
Peculiar, Mo.
Platte County, Mo.
Lake Waukomis, Mo.
Liberty, Mo.
Lenexa, Kan. **
Lee's Summit, Mo.
Olathe, Kan.
Overland Park, Kan. **
Kansas City, Mo.
North Kansas City, Mo.
Raymore, Mo.
Raytown, Mo.
Weatherby Lake, Mo.
Unified Government of Wyandotte County / Kansas City, Kan.

**(Contributes for all Johnson County cities and unincorporated areas)*
***(Contributes additional funding above standard per capita rate)*

MARC STAFF

Tom Jacobs, Director of Environmental Programs
Lesley Rigney, Environmental Planner
Amanda McGee, Environmental Planning & Water Quality Intern
Kym Bledsoe, Public Affairs Specialist

CONTACT

To learn more about the Regional Water Quality Education Committee, contact Lesley Rigney at lrigney@marc.org or 816/701-8355

Clean Water. Healthy Life.
www.marc.org/water

APPENDIX A.5 Local Newsletters Public Education Articles

APPENDIX A.5 Local Newsletters Public Education Articles

The following newsletters and services were used to distribute and provide information to the public on stormwater issues and pollution prevention

1. ***Liveable Neighborhoods Task Force Neighborhood Monthly Newsletters.***
   (This is a monthly newsletter printed for neighborhood groups, with over 5,000 copies prepared monthly.)

   - April edition. Article about going green with lawn care as it relates to stormwater.
   - April edition. Article about 2013 household hazardous waste disposal schedule.
   - April edition. Article about spring open burning instructions.
   - May edition. Article about car washing as it relates to stormwater.
   - May edition. Article about household hazardous waste disposal schedule.
   - June edition. Article about proper handling of pet waste and how it impacts stormwater runoff.
   - June edition. Article about household hazardous waste disposal schedule.
   - July edition. Article about how washing your car can impact stormwater runoff.
   - July edition. Article about sediment as it relates to stormwater.
   - July edition. Article about household hazardous waste disposal schedule.
   - August edition. An article about septic systems as it affects stormwater.
   - August edition. Article about 2012 household hazardous waste disposal schedule.
   - September edition. Article about fall open burn.
   - September edition. Article about household hazardous waste disposal schedule.
   - October edition. Article about expanded yard waste options.
   - October edition Article about open burn.
   - October edition Article about household hazardous waste disposal schedule.
   - November edition. Article about yard waste management options as they relate to stormwater.

2. ***Unified Government Weekly E-Newsletter.***
   (The U.G. E-Newsletter comes out each Tuesday to over 2,500 subscribers.)

   - 4-2-13 edition. Open burn schedule for 2013
   - 4-9-13 edition. Prescription Drug Take Back locations for one day event.
   - 4-16-13 edition. Household Hazardous Waste Day schedule and explanation.
   - 4-16-13 edition. Going green with lawn care as it relates to stormwater.
   - 5-14-13 edition. Car washing as it relates to stormwater.
   - 7-16-13 edition. Sediment article as it relates to stormwater.
   - 8-13-13 edition. Pet waste article as it relates to stormwater.
   - 8-27-13 edition. Expanded options for yard waste disposal.
   - 10-1-13 edition. Septic systems and how they impact stormwater.
   - 11-5-13 edition. Options for what to do with leaves as relating to stormwater.

3. Wyandotte County Extension Office Youth Programming and Composting Education:

• 3-5-13	Stream Team, Composting	9 individuals
• 4-6-13	Bonner Library Children's Fair, Composting	150 individuals
• 4-17-13	Girl Scout Troop, Composting	12 individuals
• 4-24-13	Junction Elementary, Composting	20 individuals
• 4-26-13	Camp Naish S.O.I.L., Composting	107 individuals
• 4-27-13	Turner Fit & Fun Day, Composting	111 individuals
• 4-27-13	Stream Team, Garden Planting/Composting	40 individuals
• 7-10-13	Ag Hall, Composting	113 individuals
• 8-22-13	Freedom School, Composting	22 individuals
• 8-26-13	Freedom School, Composting	113 individuals
• 10-10-13	Schlagle Outdoor Ecology, Composting	103 individuals
• 11-5-13	Oak Grove Elementary, Composting	34 individuals
• 11-6-13	Midland Trails, Composting	23 individuals
	Totals of 13 events:	857 individuals

Liveable Neighborhoods
Government and Neighborhoods in Partnership

Liveable Neighborhoods Board of Directors

2013 Executive Committee
Paul Soptick, President
Carole Newton, Vice Pres.
Lou Braswell, Secretary
Kirk Suther, Treasurer
Kim Hausback
Ed Linnebur
Greg Talkin

Neighborhood Representatives
Betty Wells
Patty Orth
Evelyn Larson
Carole Newton
Don Ash
Virginia Chiles
Beverly Darby
Lou Braswell
Kim Hausback
Marty Thoennes
Heidi Holliday
Ed Linnebur
Barbara Kill
Mario Escobar
Elnora Jefferson

Government/ Professional Representatives
Lindsay Behgam
Linda Wolford
Captain Greg Lawson
Melissa Bynum
Tom Lally
Steve Curtis
Joe Dick
Wilba Miller
Kirk Suther
Chandra Ward
Cecilia Ysaac-Belmares

Executive Director
Mary Jane Johnson
Neighborhood Liaison
Andrea Generaux

Liveable Neighborhoods Meeting
Neighborhood Resource Center - 4953 State Ave. KCKs.
Thursday, Oct. 24, 2013
8:30 a.m.
AGENDA

1. Introductions

2. Approval of September Liveable Neighborhoods minutes.

3. The Liveable Neighborhoods Executive Committee has voted to recommend Donna Criss, Mirror Inc. Regional Prevention Center to fill the vacant flex position on the Liveable Neighborhoods board.

4. **Mayor Mark Holland** – Government Update

5. **Commissioner Ann Murguia** – Excel in Career Technical Education Initiative

6. **Chief of Police, Rick Armstrong** – PD Update (5 minutes)

7. **Sara Fjell, U.G. Storm Engineer** - MS4 program, storm water pollutants, and the inlet stenciling program that is offered to community volunteers. (15 minutes)

8. **Evelyn Hill**
   - Heartland Habitat (5 minutes)
   - Board of Education (5 minutes)

9. **NRC Sock Drive for Willa Gill – Cassandra Daniels, Code Enforcement**
   We will be collecting donations of new socks at the Liveable Neighborhoods meeting for the Willa Gill Center to assist the homeless. They are low on men's socks in particular. (2 minutes)

10. **Linda Wolford, KCK Public Library – Bop in the Dotte Event** (2 mintues)

11. **Other updates:**
    - Lindsay Behgam, Mayor's Office
    - Sheriff Don Ash
    - Greg Talkin, NRC
    - Capt. Greg Lawson, Commander of Community Policing

The Neighborhood Resource Center will host an Open House immediately following the meeting. Please plan to stay a few minutes after the meeting to tour our new offices.

UNIFIED GOVERNMENT

NEIGHBORHOOD NEWS

SEPTEMBER 2013

Liveable Neighborhoods Neighborhood News

Your neighborhood group information can be placed here.

If you would like newsletters made, contact our office at (913) 573-8737 or email us at vmliveableneighbor@wycokck.org.

Wyandotte County Land Bank

The Wyandotte County Land Bank is a unit of the Department of Administration. The Land Bank oversees approximately 2,000 vacant lots acquired through the Judicial Foreclosure Process. The duties of this division are to put delinquent tax properties back on the tax roll through various strategies that benefit the community. This includes marketing, removing prior year taxes, maintaining an inventory list, accepting parcels as donations and researching neighborhoods in Wyandotte County that contain delinquent taxes.

If you would like more information about the Land Bank contact:

Chris Slaughter, Manager

4th Floor, City Hall 701 North 7th Street

(913) 573-8977 or Email: cslaughter@wycokck.org or www.wycokck.org

Parade Schedule

Central Avenue Parade - Saturday September 14, 2013 11:00am along Central Ave. For more information call (913) 281-9222.

Silver City Day Parade - Saturday October 5, 2013 10:00am along Strong Ave. For more information go to www.silvercitydays.org

Turner Days Parade - Saturday October 12, 2013 10:00am along 55th Street. For more information go to www.turnerdays.com or call (913) 362-5862.

Leavenworth Road Parade - Sunday September 15, 2013 2:00pm along Leavenworth Road. For more information call (913) 788-3988.

Unified Government Neighborhood Group Assistance Grants

Since 1995, the Mayor and Unified Government Commissioners have provided funding for the neighborhood groups to receive grants. The grants have been used for mowing equipment, assistance for elderly and disabled with minor home repair, clean ups, neighborhood signage, beautification, community gardens and supplies to provide necessary resources for groups to accomplish their goals.

Last year 50 neighborhood groups received grants totaling $26,920.00. The average grant awarded is approximately $450.00 depending on the project.

Grant applications will be mailed out to all of the neighborhood groups the last week of August. If you need further information about the grants contact Liveable Neighborhoods at 913-573-8737.

Copies provided by Community Development Block Grants.

September Calendar of Events

09/20/2013
Adventures In Learning (Shepherd's Center)
Grace Lutheran Church 3333 Wood Ave.
(NEW LOCATION)
913-281-8908 or www.shepherdscenterkck.org
8:30 a.m. - 2:00 p.m.
Call for a lunch reservation. Join us for adventures in learning. Meet a friend , make a friend.

09/26/2013
Liveable Neighborhoods Meeting
Free - everyone welcome 8:30am-10:00am
Neighborhood Resource Center 4953 State Ave. (NEW LOCATION)
913-573-8737 or vmliveableneighbor@wycokck.org
Come learn about important programs and services available in your community. Also get updates on what's happening at city hall, the KCKPD and the WYCO Sheriffs Department.

For more information about events in Wyandotte County go to www.visitkansascityks.com and go to www.wycokck.org and register for the UG E-News.

This picture was taken at the July 25, 2013 Liveable Neighborhoods Meeting. Guest speakers at the meeting included: Mayor Mark Holland, Wesley McKain and Caitlin McMurtry – Healthy Communities and Melissa Pluss – Mt. Carmel Redevelopment Corp., Mentoring 4 Success. There were also updates provided by Major Tyrone Garner, Capt. Soptic and Lt. Kelli Balliff with the Sheriff's Dept.

Opportunities 2013 Job Fair & Resource Expo

Tuesday September 17 9:00am-10:00am (Veterans only)
10:00am-1:00pm (General Public)
Jack Reardon Civic Center 520 Minnesota Ave.
For mor information contact Deanna Michaud at (913) 577-5946
or deannam@workforcepartnership.com

Local Farmers Markets

Buy fresh, buy local!

Rosedale Farmers Market

May 19 to September, Sundays 11-2 p.m.
4020 Rainbow Blvd. (Commerce Bank Parking Lot)
For more information contact:
www.rosedalefarmersmarket.com
info@rosedalefarmersmarket.com or
913-677-5097

KCK Green Market

June - October
Strawberry Hill (6th and Ann)
Wednesdays 7:30 to sellout
Juniper Gardens (3rd and Richmond)
Mondays 7:30am - to sellout
Catholic Charities (2220 Central)
Tuesdays 7:30am - to sellout
The market doubles the Senior Vouchers and the SNAP/Vision program.
For more information contact:
Rachel at (913) 909-1027

Oak Grove Neighborhood Market

End of June-September or October
Sundays 10:00am - 12:00pm
North 5th Street and Haskell Ave.
The market accepts Senior Vouchers
An on-farm market experience. See where your food is grown! Fresh herbs and vegetables grown using organic practices!
For more information contact:
Rachel Jefferson at 913-206-0047 or
email: iejfarms@live.com

September 24, 2013

9:00am to 11:00am
Trinity Community Church
5010 Parallel KCK
Coffee and snacks are provided.

Presentation: Heartland Habitat For Humanity Common Cents training.

Going Green Corner

Fall 2013 Kansas City, Kansas Burn Permit Process

Residents in Kansas City, Kansas are allowed to apply for a burn permit for the time period of October 16, 2013 through November 15, 2013 at any of the Fire Stations currently staffed by the Kansas City, Kansas Fire Department. Kansas City, Kansas residents are limited to one 3-day burn permit per burn period that allows for the combustion of one 10 foot by 10 foot or smaller pile of naturally occurring residential organic yard waste generated onsite. If you operate a business out of your home you are classified as a business and cannot participate. Applications must be received and approved at least 24 hours prior to the commencement of burning. Open burning with a permit is allowed between the hours of 7:00 a.m. to 6:00 p.m.

The resident doing the burning must be at the burning site at all times. Residents shall maintain a copy of the burn permit on site, an adequate water supply and/or fire extinguisher while conducting open burning. In no circumstance shall open burning occur within 15 feet of any building or within 15 feet from any one's property line. Piling of brush, tree limbs, grass and other organic materials are limited in size to 100 square feet at the base.

Each Burn Permit allows for one organic pile per permit, one permit per residential property. (yard waste generated such as tree limbs, leaves, weeds, brush and grass) All organic materials burned within the city limits of Kansas City, Kansas are limited to organic materials and/or burning without a permit shall be subject to Section I-7 (General Penalty, Continuing Violations) of the general provisions code of the Unified Government of Wyandotte County/Kansas City, Kansas.

At no time shall wire insulation, tires, rubber products, plastic, automobile products, paper, cardboard, construction chemicals, household chemicals or any other material that normally emits dense smoke, noxious odors or hazardous air pollutants be burned.

At any time, the Fire Chief may revoke burn permits or ban open burning. Weather conditions (high winds, low humidity) may make open burning too dangerous. Open burning may also be suspended when air pollution "Red Alert" days are declared by the Mid America Regional Council, MARC, and the Unified Government.

2013 Household Hazardous Waste Collection

The remaining schedule for the Household Hazardous Waste Collection days for Wyandotte County residents for 2013 are September 21 and October 19. The site will be open from 8:30 a.m. to 1:00 p.m. on these Saturdays. The site is located at 2443 South 88th Street in Kansas City, Kansas. (South on 88th Street from K-32) or (East of I-435 using Woodend exit near Kaw River)

When bringing items to the collection site please label or identify all items. Items accepted include tires (limit of 10 tires and rims need to be removed), motor oil, batteries, antifreeze, degreasers, paints, varnishes, solvents, lawn & garden insecticides/pesticides, and household cleaning products. For additional information call 573-5400

Wyandotte/Leavenworth Regional Prevention Center Tip of the Month

How does alcohol affect a person?

Alcohol affects every organ in the body. It is a central nervous system depressant that is rapidly absorbed from the stomach and small intestine into the bloodstream. Alcohol is metabolized in the liver by enzymes; however, the liver can only metabolize a small amount of alcohol at a time, leaving the excess alcohol to circulate throughout the body. The intensity of the effect of alcohol on the body is directly related to the amount consumed.

Why do some people react differently to alcohol than others?

Individual reactions to alcohol vary, and are influenced by many factors; such as:

- Age.
- Gender.
- Race or ethnicity.
- Physical condition (weight, fitness level, etc).
- Amount of food consumed before drinking.
- How quickly the alcohol was consumed.
- Use of drugs or prescription medicines.

Family history of alcohol problems.

For more information:

Wyandotte/Leavenworth RPC
1854 Minnesota Ave Suite 5
Kansas City, KS
913-281-7744

THE REGIONAL PREVENTION CENTER

Mirror, Inc
Safe, Healthy People in Strong Communities

** Liveable Neighborhoods Prevention Coalition meets monthly to address community change in substance prevention efforts by dedicating time, support and recourses to keep the youth of our community educated and healthy. If you're interested in how you can help, our next meeting will be held on* ***Tuesday 9/24/2013 10:30 A.M. at the Neighborhood Resource Center 4953 State Ave.*** *Meetings only last an hour but the impact could last a lifetime!*

September Programming

All programs are located at 2220 Central Ave.

Helping Teens Manage Anger, a three-part program, will be offered on **Wednesdays, September 4-18, 9:30 – 11:00 a.m.,** at Keeler Women's Center, 2220 Central Ave, KCK. Call 913.906.8990. Presented by Nona Boyd and offered in partnership with Wyandot Center and the PACES program. Free.

Are You for Real? Or "How to be Who You Really Are and Your Own Best Advocate," **4 Wednesdays, September 4-25, 1:30-2:30 p.m.** This is a 4-part workshop that teaches women how to speak up for themselves in a way that commands respect for themselves and others (Mari John, facilitator), Keeler Women's Center, 2220 Central Ave., KCK. Call 913.906.8990 to register.

September is National Recovery Month. Keeler Women's Center, 2220 Central Ave., KCK, will offer the following program for social workers, clergy, counselors and other professionals: ***Interventions: a Primer for Professionals*****:** Marla Looper, BCI, is the presenter and participants can earn 3 ceu's on **Monday, September 9, 1:00 -4:00 p.m.** The workshop will offer information, discussion and role-playing. Free. Call 913.906.8990 to register.

Money Management for Your Senior Years, **Thursday, September 12, 10:00-11:30 a.m.,** Keeler Women's Center, 2220 Central Ave., KCK. Men and women welcome. Presented in partnership with Heartland Habitat for Humanity and Wells Fargo Bank. Call 913.906.8990 to register.

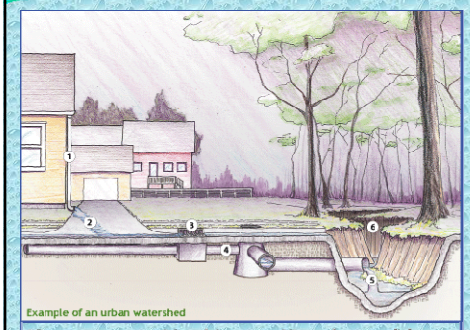
Keeler Women Center will offer ***Holy Woman, St. Margaret of Cortona***, on**Thursday, September 12, 1:00-3:00 p.m.** S. Judith Sutera, OSB is the presenter, at 2220 Central Ave., KCK. Call 913.906.8990 to register.

Fall Cleaning and De-Cluttering 101, **Monday, September 16, 1:30-3:00 p.m.**(Register by September 11 for free cleaning supplies) at Keeler Women's Center, 2220 Central Ave., KCK. Presented by Chiquita Miller of K-State Research and Extension. Call 913.906.8990 to register.

UG Stormwater Management Program

How each person can help with Water Quality in WYCO

Sarah Fjell, P.E. Stormwater Engineer October 24, 2013



Pollutants of Concern

- Sediment
- Yard Waste- Leaves and Grass Clippings
- Oil and Gas
- Lawn Chemicals-Fertilizers and Pesticides
- Pet Waste
- Litter and Trash

Sediment Pollution

- #1 Stormwater Pollutant
- Degrades Water Quality
- Can cause flooding

Oil, Gas, and Auto Fluids

Lawn Chemical Pollution

- Fertilizers
- Herbicides
- Insecticides.

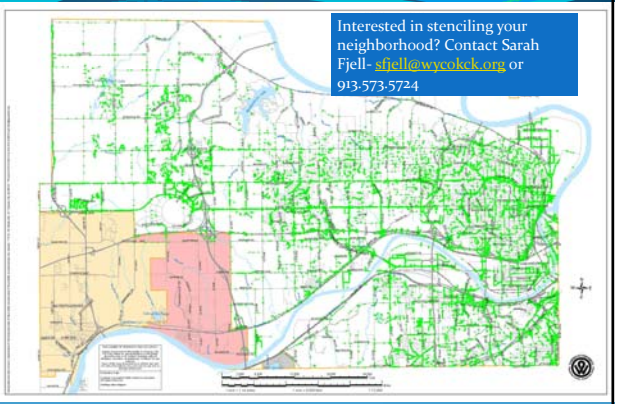
Pet Waste Pollution

Litter and Trash Pollution

Yard Waste Pollution

GRASS CLIPPINGS AND LEAVES

Inlet Stenciling Program



Interested in stenciling your neighborhood? Contact Sarah Fjell- sfjell@wycokck.org or 913.573.5724

Hello, just a reminder that you're receiving this email because you have expressed an interest in the Unified Government of Wyandotte County/Kansas City, KS. Don't forget to add info@wycokck.org to your address book so we'll be sure to land in your inbox!

You may unsubscribe if you no longer wish to receive our emails.

Tuesday, December 17, 2013

www.wycokck.org

Groundbreaking event on new Central Industrial Park in Fairfax

ENews Source

Unified Government of Wyandotte County/Kansas City, Kansas

UG Offices Closed

The Unified Government Offices will be closed Wednesday, December 25th in observance of the Christmas Day Holiday.

UG offices will also be closed the following week on Wednesday, January 1st in observance of the New Year's Day Holiday.

This Week in Kansas City

UG Offices Closed

Growing from the Ground Up!

New Industrial Park to Bring Additional Jobs to KCK

BPU Holiday Schedule

Public Hearing on CommunityAmerica Ballpark Next Week

Are you a Friend to the Environment?

Christmas Tree Recycling

Upcoming Holidays Impact Trash & Recycling Services

Road Closures

UG Road Closures

Westbound I-70 over 57th Street Bridge Repair

KDOT Daily Lane Closures

UG Tax Sale List... Check it Out!

Sign-up Now!

Commission Meetings

Stay Connected

All offices are scheduled to reopen during regular business hours the following day on Thursday, December 26th and Thursday, January 2nd.

Top

Growing from the Ground Up!

Initiative Awarded Grant

Mayor Holland would like to announce the Kansas City, KS initiative "Growing from the Ground Up!" was awarded a $25,000 grant from the Cities of Service Impact Volunteering Fund this week.

The project will go toward educating residents about the benefits of healthy foods and teaching them how to grow and maintain a sustainable healthy food source through community gardening. Volunteers will transform a vacant lot into an edible garden site with the goal of producing over 500 pounds of fresh produce for 62 low-income families and seniors over the next year.

Top

Industrial Park Means More Jobs for KCK

A new 1-million square foot industrial park will bring new manufacturing jobs to the Kansas City area. A groundbreaking ceremony was held last Thursday afternoon in the historic Fairfax Industrial District to kick-off the first phase of construction of a Central Industrial Park

The project is a joint venture of the Unified, NorthPoint Development and RACER. The new industrial park is expected to bring in nearly 2,000 jobs when completed and is the first new development project in Fairfax in more than 25-years.

"It's hard to overstate the importance of what this development means for Wyandotte County," said Mark R. Holland, Mayor/CEO of the Unified Government. "Turning a Brownfield site into 2,000 well paying jobs is a great opportunity for our community and it's a symbol of what can be achieved here in Wyandotte County. We have the location with our highways, we have the location with the proximity to airports, and we have something very few industrial sites have and that's heavy rail."

Part of the first phase of construction consists of the installation of infrastructure; access roads and utility lines. Some of the building footings and foundations of a 72,000 square foot commercial building are already underway.

Quick Links

Trash Collection Schedule

Liveable Neighborhoods

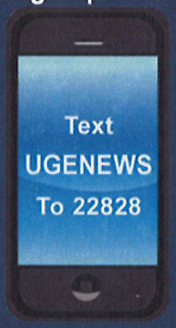
Target of the Month

Delinquent Real Estate

Check out the UG's ***Tax Sale List***

ENews Source

Sign-up now!



Then text your email address to get started or click

Join Our Mailing List!

Board of Commissioners

Commision Meeting
on Thursday,
December 19, at 7:00 pm
Commission Chambers

Planning and Zoning
on Thursday,
January 9, 7:00 pm

"There is no better feeling than to experience the energy and excitement that surrounds great news for a community, especially when you have seen first-hand the hard work, determination and passion that so many invested to get to this point," said Elliot Laws with RACER Trust. "From the moment RACER Trust took ownership of this property in 2011, our team worked with leaders of the Unified Government and local economic development to hear their ideas and discover their vision for how this vacant land could once again be a source of jobs and opportunity for the community."

The Central Industrial Park is designed to accommodate three to eight manufacturing businesses, which are expected to be fully built over a 6 to 10 year period. The $60 to $70 million in new investment will undoubtedly set the tone for future development and economic growth in the manufacturing industry for Wyandotte County.

The RACER (Revitalizing Auto Communities Environmental Response) Trust was created to clean up and position for redevelopment properties and other facilities owned by the former General Motors Corp. before its 2009 bankruptcy. RACER is one of the largest holders of industrial property in the United States and is the largest environment response and remediation trust in U.S. history. When the Trust was formed, it owned properties at 89 locations in 14 states, principally in the Midwest and Northeast. For more information, please visit the RACER Trust website at www.racertrust.org.

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BPU Holiday Schedule

The administrative offices and customer service lobby of the Kansas City Board of Public Utilities will be closed on Wednesday, December 25th, 2013 for Christmas. The BPU offices will also be closed on Wednesday, January 1st, 2014 in observance of New Year's Day.

Christmas Eve and New Year's Eve both fall on a Tuesday, and Tuesday is one of the days that the lobby normally stays open until 7:00 p.m. The BPU lobby will close at 5:00 p.m. both of those days and will resume extended lobby hours on Thursday, January 2nd. Normally BPU offers extended lobby hours on Tuesdays and Thursdays.

Although BPU's business offices are closed on holidays, emergency service is available seven days a week, 24 hours a day. For power emergencies, customers should call (913)-573-9522. The water emergency number is (913)-573-9622.

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Commission Chambers

Agendas and Minutes

Stay

Tuned

Channel 2 Time Warner Cable
Channel 141 Google
Channel 25 Wow! TV

and

Stay Connected

to your local government

Quick Links

UG Website

Mayor/CEO

Board of Commissioners

Agendas/Minutes

Area Attractions

Contact Information

Departments

Trash Collection Schedule

List of the holidays where residential trash and recycle pick-up would be delayed one day.

Public Hearing on CommunityAmerica Ballpark Next Week

The Unified Government Commission will hold a public hearing this week on a proposal to use STAR Bonds to purchase the CommunityAmerica Ballpark in Village West.

The Unified Government, in cooperation with the State of Kansas, plans to use $8-million in Village West Sales Tax Revenue Bonds (STAR) to acquire and renovate the stadium which is privately owned by Ehlert Development. The Ehlert's also own the T-Bones Baseball Club. The Unified Government is taking the steps to ensure the long-term success of the popular Kansas City T-Bones baseball team.

CommunityAmerica Ballpark is one of the few privately owned stadiums in the nation. Most stadiums are owned by the city or county where they are located and leased by a team. While the T-Bones Baseball Club is financially successful, the burden of stadium ownership would not be viable for the next decade. A requirement of the stadium purchase is that the T-Bones Baseball Club signs a long-term lease to remain playing in Wyandotte County.

"We have been honored to be a vital part of the revival of Wyandotte County and a first-class asset to the Village West Entertainment district," said Adam Ehlert, team owner and president. "The purchase of ballpark by the Unified Government will ensure the stadium will continue to benefit Wyandotte County and the State of Kansas and the T-Bones are thrilled to keep playing in one of the best ballparks in the American Association. This will only enhance the T-Bones family-friendly product and the facility will continue to proudly wear the CommunityAmerica Ballpark name."

The Unified Government studied the possible purchase for months before moving ahead. Officials say the positive economic impact of the T-Bones playing in Wyandotte County more than justifies purchase of the stadium to keep the team here.

"For the last 12 years we have been fortunate to have a successful baseball franchise in Kansas City, Kansas," said Mayor Mark Holland. "The Kansas City T-Bones are a fun, family-friendly, and affordable attraction for visitors and residents. We look forward to our continued partnership with this valued member of our Village West community."

Liveable Neighborhoods
Government and Neighborhoods in Partnership

Improving the Quality of Lives in Kansas City, Kansas

Target of the Month

The **Code Enforcement Division** of the UG brings you this message monthly to encourage voluntary citizen compliance to reduce blight and beautify the appearance of our city.

Please click on the target to access information on the Code Enforcement for the month. You may contact Code Enforcement.

Monday through Friday
8:00 a.m. to 5:00 p.m.
913-573-8600.

In 2013, more than 265,000 fans attended T-Bones games. The team generates more than $5.5-million a year in economic benefit for Wyandotte County. The annual payroll for local workers is more than $1.5-million. The T-Bones have also provided more than $650,000 to improve Wyandotte County parks.

The $8-million in STAR bonds to buy the stadium will require less than five months of revenue from the Village West STAR Bonds. The STAR Bonds issued to build Village West are scheduled to still be paid-off in 2017, four years ahead of the original schedule when the bonds were issued. The purchase of the stadium by the Unified Government levels the playing field with other STAR Bond supported attractions.

Without public ownership of CommunityAmerica Ballpark, as is the case with almost all professional sports franchises, it is likely the T-Bones would have to leave Kansas City and the stadium would go dark. After a season or two without operation, it would require a public ownership model in order to attract another minor league ball team. By acting now, the Unified Government is able to keep the ballpark active for an investment that is only 10% of what other communities such as St. Paul, Minnesota are investing to build a minor league stadium. St. Paul officials are spending $50-million to build a new minor league ballpark.

Governor Sam Brownback and the State Department of Commerce endorse the purchase of the stadium and are sharing in the transaction by allowing some of the State STAR Bond sales tax revenues to be used toward the purchase.

The public hearing is set for the Unified Government Commission meeting Thursday, December 19 at 7:00 pm in City Hall.

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Are You a Friend to the Environment?

The UG is increasing its efforts in keeping pollutants out of our streams, rivers and lakes...and we need your help! It will take a joint effort from contractors, residents and business owners to comply with regulations. The following are tips and guidelines on how you can help the UG keep pollutants out of our streams, rivers, and lakes; providing a cleaner county for all!

For more information, please visit our webpage at www.wycokck.org/pw. To report stormwater pollution, call 913.573.5700 or 913.573.5565 (after hours)

Let's all be "Good Housekeepers" for Stormwater!!

Office Chemicals

- Cleaning solutions should not be dumped on the grass, parking lot, or down the storm drain. Follow instructions on how to properly dispose of chemicals.
- Clean up any chemical or hazardous material spills before they can wash down our inlets!

Litter & Trash

- Litter and trash in our streets and yards can end up in our streams and rivers
- Put all trash & litter in a wastebasket or trash bag.
- Do not dump trash or trash bags into storm inlets, rivers, and streams.

Pet Waste

- Pick-up after your dog and throw into trash
- Pet waste left on yards, streets, and sidewalks can be carried to the stream during a storm event. Pet waste contains bacteria that pollute our water.

Yard Waste & Chemicals

- Do not put leaves or grass clippings down the storm sewer inlet
- Use lawn waste bags, compost or mulch leaves and grass
- Do not over apply pesticides, herbicides and fertilizers. Excess chemicals will runoff yard and end up in the stream. Less is best when it comes to yard chemical application.

Oils, Gas and Auto Fluids

- Do not dump oil, gas, and auto fluids in storm inlets, or directly on the street, driveways or sidewalk

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Christmas Tree Recycling

Many of you have your trees up and nicely decorated for the upcoming Christmas Holiday. However, when the

holiday is over, what are you planning on doing with the tree?

We want you to know that residents can drop off their tree for recycling on December 26, 2013 through January 31, 2014 at several locations in Wyandotte County.

The drop-off locations for Christmas tree recycling are:

- Stony Point Park: 527 N. 86th (North East corner of parking lot)
- Alvey Park: 4834 Metropolitan (North side of the South parking lot)
- City Park: 2601 Park Drive (In the park around the corner on the grass)
- Wyandotte County Park: 631 N 126th (Ball field parking)

All drop-off locations will be clearly marked with a sign. Please remember to remove all tinsel, lights and ornaments must be removed prior to your tree being recycled.

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Upcoming Holidays Impact Trash & Recycling Services

Deffenbaugh Industries will not be picking up residential trash or curbside recycling on Christmas Day, Wednesday, December 25, 2013. There will be normal trash and recycling services on Monday and Tuesday during the week of Christmas.

The trash service schedule is as follows:

- Wednesday pickup will be done on Thursday December 26th
- Thursday pickup will be done on Friday December 27th
- Friday pickup will be done on Saturday, December 28th

In addition, Deffenbaugh will not be picking up residential trash or curbside recycling on New Year's Day, Wednesday January 1, 2014. There will be normal trash and recycling services on Monday and Tuesday of New Year's week. The New Year's Holiday trash service schedule is as follows:

- Wednesday pickup will be done on Thursday January 2nd
- Thursday pickup will be done on Friday January 3rd
- Friday pickup will be done on Saturday, January

4th

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Road Closures

Based on information provided by both the UG's **Public Works Department** and the **Kansas Department of Transportation (KDOT)**, we are able to provide motorist living in Wyandotte County an update on road and highway projects.

This information can be useful to prepare individuals, commuting to and from work, with early warnings on minor delays. This also encourages motorists to use alternate routes due to land and ramp closures.

No UG Closures to Report this Week

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Kansas
Department of Transportation

No KDOT Closures to Report

Top

Daily Lane Closure

Remember, you can always go to the **KDOT** website for up to the minute road closures and traffic information.

Forward email

SafeUnsubscribe

Trusted Email from Constant Contact FREE
Try it FREE today.

This email was sent to cburns@drgengineers.com by info@wycokck.org |
Instant removal with SafeUnsubscribe™ | Privacy Policy.
Unified Government of WyCo/KCK | 701 N. 7th St | Kansas City | KS | 66101

APPENDIX A.6 Operation Brightside & Blue River Watershed Association Annual Report

IF IT'S ON THE GROUND IT'S IN OUR WATER

STORMWATER AND REGIONAL WATER QUALITY

Clean Water. Healthy Life.

Mid-America Regional Council Regional Water Quality Education Program

Did you know that your everyday habits impact our water quality? Even small amounts of pollution can add up to big problems when it comes from an area the size of the Kansas City region. Leaving harmful materials on yards and streets can pose dangers to the health and safety of our neighborhoods and the environment. REMEMBER:

IF IT'S ON THE
GROUND
IT'S IN OUR
WATER

When it rains, water runs across rooftops, down streets and across parking lots and yards, picking up substances along the way.

USE A RAIN BARREL.

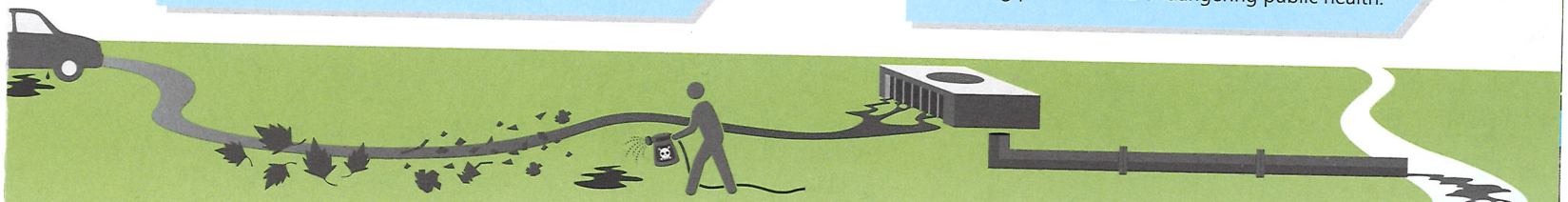
Collect and store rainwater from downspouts and rooftops for future use watering lawns and gardens. Rain barrels can help decrease the amount of stormwater runoff that leaves your property.

LANDSCAPE WITH NATIVE PLA AND RAIN GARDENS.

Native plants have natural propertie often eliminate or reduce the nee mowing, fertilizing or using pestic Rain gardens catch stormwater and filter it into the ground, meaning les runs off lawns into our storm sewers, prevent flooding and erosion in our s

This stormwater "runoff" often contains materials like chemical fertilizer, pet waste, litter, automotive fluids and yard waste such as leaves and grass clippings.

Runoff then washes down storm drains and is eventually deposited into local rivers and streams, causing pollution and endangering public health.



NTS

s that
l for
des.
slowly
water
helping
treams.

PICK UP AFTER YOUR PET.

Pet waste is not a fertilizer – it contains harmful bacteria. Carry disposable bags while walking your dog to pick up and dispose of waste properly.

USE LAWN CHEMICALS SPARINGLY.

Chemical fertilizers, pesticides and herbicides can contain ingredients harmful to human health and the environment. Test your soil to know how much fertilizer your lawn ***really*** needs.

GO NATURAL.

Instead of using chemical lawn products, consider compost or natural alternatives.

GOES IN **HERE** | ENDS UP **HERE**

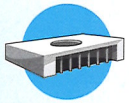
STORM DRAINS are metal grates found on neighborhood streets, often at corners and on the sides of curbs and gutters. They help prevent flooding by draining rainwater and melted snow off streets and other paved surfaces.

ONLY RAIN SHOULD GO DOWN STORM DRAINS! YOU can help keep our community's water clean and healthy! By keeping waste and hazardous materials out of storm drains, you're doing your part to reduce flooding and pollution in our local waterways.

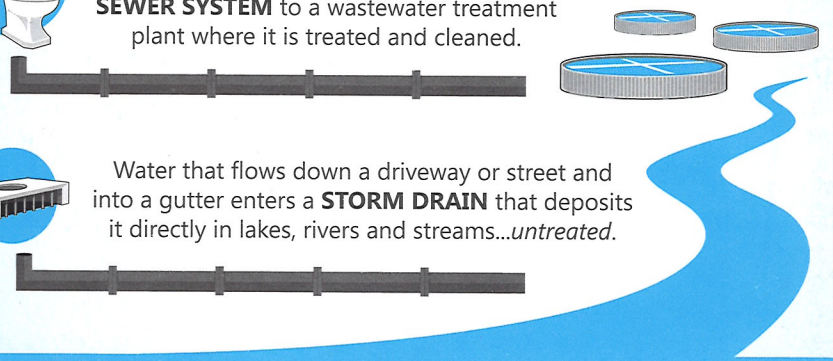
Find more ways to help protect our water at
MARC.ORG

KNOW WHERE WATER FLOWS

The water that goes down a sink or toilet in your home or business flows through a **SEWER SYSTEM** to a wastewater treatment plant where it is treated and cleaned.



Water that flows down a driveway or street and into a gutter enters a **STORM DRAIN** that deposits it directly in lakes, rivers and streams...*untreated*.



MARC
Mid-America Regional Council

Clean Water. Healthy Life.
Mid-America Regional Council
Regional Water Quality Education Program

UG Inlet Stenciling Program

- **Volunteer to mark inlets in your neighborhood or community**
- **Gather your friends and neighbors to help promote stormwater pollution prevention**
- **UG will supply the inlet markers, map of the stormwater system, and construction adhesive**
- **To sign up or for more information, visit www.wycokck.org/pw or contact Sarah at sfjell@wycokck.org or 913.573.5724**

Operation Brightside, Inc.

2013 Summary of Activities

The Great American Cleanup is coordinated by Keep America Beautiful nationally. Operation Brightside, Inc. is a local affiliate of KAB. We organized activities locally for the Great American Cleanup.

The Great American Cleanup is the nation's largest organized annual cleanup, beautification and community improvement program. Millions of volunteers nationwide take part annually in this program, from coast-to-coast, March through June. The Great American Cleanup is a platform for a wide range of initiatives embraced by Keep America Beautiful, such as: litter cleanups, litter prevention education, recycling drives, graffiti removal, beautification and community improvement projects, park renewals, clothes collection programs, river, lake and seashore cleanups.

Supplies Operation Brightside, Inc. received for the Great American Cleanup included 5,020 GLAD trash bags, 4 large banners, 63 cases of Pure Life Water. We gave out supplies to those neighborhood groups who requested supplies. As well as giving out Keep America Beautiful GLAD bags, we also distributed trash bags we received from the Unified Government in 2010 that have a stormwater message of not littering to volunteers.

2013 Results included:

- There were 46 different cleanup events.
- We estimated that 2,427 volunteers contributed 4,168 hours of service in the community thru the Great American Cleanup.
- We estimated that 52.19 tons of litter and debris was cleaned during the Great American Cleanup.
- We estimated that 144 miles of streets were cleaned of litter.
- An estimated 6 miles of rivers, lakes, stream, and shoreline was cleaned up of litter.
- An estimated 10 acres of park land was cleaned.
- Seven school properties and surrounding neighborhoods were cleaned.

Litter Free Events

Operation Brightside Inc. gave out Unified Government storm water message bags for four special events that were litter free events. They gave out water and Unified Government trash bags with a no littering message on them to be used for cleanup at the special events. Wayne Hubbard, host of the TV Show Urban American Outdoors, hosted one of these litter free events at their fishing derby at the KCKCC lake area. The Unified Government Parks Department hosted a litter free event with track and field event. The Leavenworth Road Association hosted a

litter free event at their fishing derby held at the Wyandotte County Lake. The Kiawanis West Club hosted a bicycle safety event. An estimated 645 youths participated in these four events with an estimated 475 adults with them.

School Participation:

In spring 2013 Operation Brightside Inc. delivered to schools environmental educational materials from KDHE. The lessons are in Solid Waste Management. Topics covered include littering, waste, disposal of waste, reducing waste, reusing, recycling, and composting. Four schools, J.F. Kennedy Elementary, Midland Trail Elementary, Resurrection Catholic School, and Holy Name Elementary School participated. These schools had 42 teachers and 908 students who participated.

In spring 2013 Operation Brightside Inc. delivered to schools environmental educational materials from KDHE. The lessons focused on Household Hazardous Waste for grades 4-8. Topics covered with the Household Hazardous Waste curriculum included definitions of, identification of, health concerns, storage, use, disposal, and reduction of household hazardous waste products. Three schools participated, J.F. Kennedy Elementary, Midland Trail Elementary, and Resurrection Catholic School. These schools had 11 teachers with 406 students involved.

Operation Brightside Inc. had four schools involved with cleanup activities this spring. They included J.F. Kennedy Elementary, Midland Trail Elementary, Holy Name Elementary, and Resurrection Catholic School. These four schools had 1,244 students involved with cleanups in and around their school yards. In addition, Holy Name Elementary and Midland Trail Elementary chose to make their school litter free zones by conducting on-going cleanups.

In addition, Operation Brightside Inc. gave the Blue River Watershed Association 1,000 storm water no littering message trash bags for Wyandotte County Schools for their 2013 Clean Streams program with schools. There were 1,452 students from 4 schools involved with their Clean Streams program from KCK. Schools participating included: Whittier Elementary, Eisenhower Middle School, Resurrection School, and Turner Middle School.

Blue River Watershed Association

educating and engaging Kansas Citians to restore and protect the Blue River Watershed

PO Box 7276, Kansas City, Missouri 64113

www.brwa.net

Summary of Work for Wyandotte County, Kansas
By the Blue River Watershed Association
2013

TRUE Blue (Teaching Rivers in an Urban Environment): TRUE Blue is a 4-lesson, hands-on, interactive water monitoring program that targets students in grades 6-12. It includes an interactive lesson on watersheds, stormwater runoff, and its impacts on water quality; a training lesson on conducting monitoring tests following safety and testing protocols; a site visit to conduct tests and collect data; a data analysis lesson to calculate a Water Quality Index Number.
In April 2013, the Blue River Watershed Association implemented its TRUE Blue program at Eisenhower Middle School (2901 N. 72nd St, KCK). Two teachers taught 4 classes with 104 students. Students tested water in Muncie Creek on April 12. In May, TRUE Blue was implemented at Turner Middle School (55th & Metropolitan, KCK). Two teachers taught 12 classes with 309 students. Tests were conducted in the Kansas River at boat ramp under the Turner Diagonal. In September, TRUE Blue was taught at Arrowhead Middle School (1715 N. 82nd St. KCK). Two teachers taught 6 classes with 150 students. A **total of 563** students from **three schools** with **6 teachers** participated in TRUE Blue. **23 volunteers** contributed **143 hours** to mentor students as they tested and collected data.

Wyandotte County Stream Teams: BRWA recruited Wyandotte County residents to form Stream Teams. The teams were trained to monitor water quality and collect data. BRWA staff worked with each team to determine an appropriate testing site and tested with each group at least three times. Teams also collected litter at their testing site. The Clark Team had a total of 26 members (6 adults and 20 high school students). They did their testing and litter pickup in Clifton Park, KCK. The Hotz team had a total of 32 members (7 adults and 25 high school students). They tested and did their litter pick up at Kaw Point and Big 11 Lake. A **total of two teams** with **58 members** contributed **174 volunteer hours** to monitor water quality and pick up litter at **3 sites** in Wyandotte County.

KC Clean Streams: BRWA sponsors the largest school-based litter pick up event in the Kansas City metro area, KC Clean Streams. BRWA provides gloves and trash bags and students collect trash around and close to their school. In 2013, a total of **648 students** and **52 adults** spent **23 hours** picking up **336 bags** of trash.

Storm Drain Stenciling: 3 classes (45 students) at Wyandotte High School participated in lessons about the effects of impervious surfaces on stormwater runoff and the impacts of that runoff on water quality. To make KCK citizens more aware of how their actions impact water quality, students learned how to install storm drain decals. Students were given maps of the neighborhood around their school and the location of storm drains. Students were organized into 8 teams and went through different areas of the neighborhood to apply the decals. Each team installed an average of 5 storm drain decals. A total of **45 students** and **5 adults** spent **3 hours** installing **40 storm drain decals.**

2013 Totals: 1,301 Students 99 Adults 343 Volunteer Hours 4 Programs

Unified Government of Wyandotte County
Summary of Work
January 1, 2013 – December 31, 2013
Blue River Watershed Association
T.R.U.E. Blue (Teaching Rivers in an Urban Environment)

Month	School	Teacher	Volunteers (Hours)	# Students	# Classes
April	Eisenhower Middle School	Alan Gilmore Kari Lickey	Bob Everhart (6) Megan McCutcheon (6) Ingrid Sitzler (6) Joan Leavens (6) Liz Lockett (6) 3 GM Employees (18)	104	4
May	Turner Middle School	Jim Benz Tom Ballas	Charlotte McDonald (7) Linda Lif (7) Susan Robb (7) Mary Alley (7) Joan Leaven (7) 5 WyCo Community Members (20)	309	12
Sept	Arrowhead Middle School	Jan Isabell Paula Threadgill	Carolyn Wilson (8) Charlotte McDonald (8) Mary Alley (8) Cosmo Canareri (8) Nathan Wesche (8)	150	6
Totals	**3**	**6**	**23 (143)**	**563**	**22**

Summary of Work for Wyandotte County, Kansas
January 1, 2013 – December 31, 2013
Wyandotte County Stream Teams

Stream Team Name	Affiliation	Current Members	Status	Test Site (s)
Clark	Kauffman Scholars	Tom Clark 5 Kauffman Adults 20 Kauffman Students	First Year Team Field Dates: July 9 July 23 August 6	Clifton Park
Hotz	Wyandotte High School	Mike Hotz 6 WHS Adults 25 WHS Students	Second Year Team Field Dates: August 28 September 28 November 7	Kaw Point and Big 11 Lake
Totals:	**2 Teams**	**58 Members** **174 Volunteer Hours**		**3 Sites**

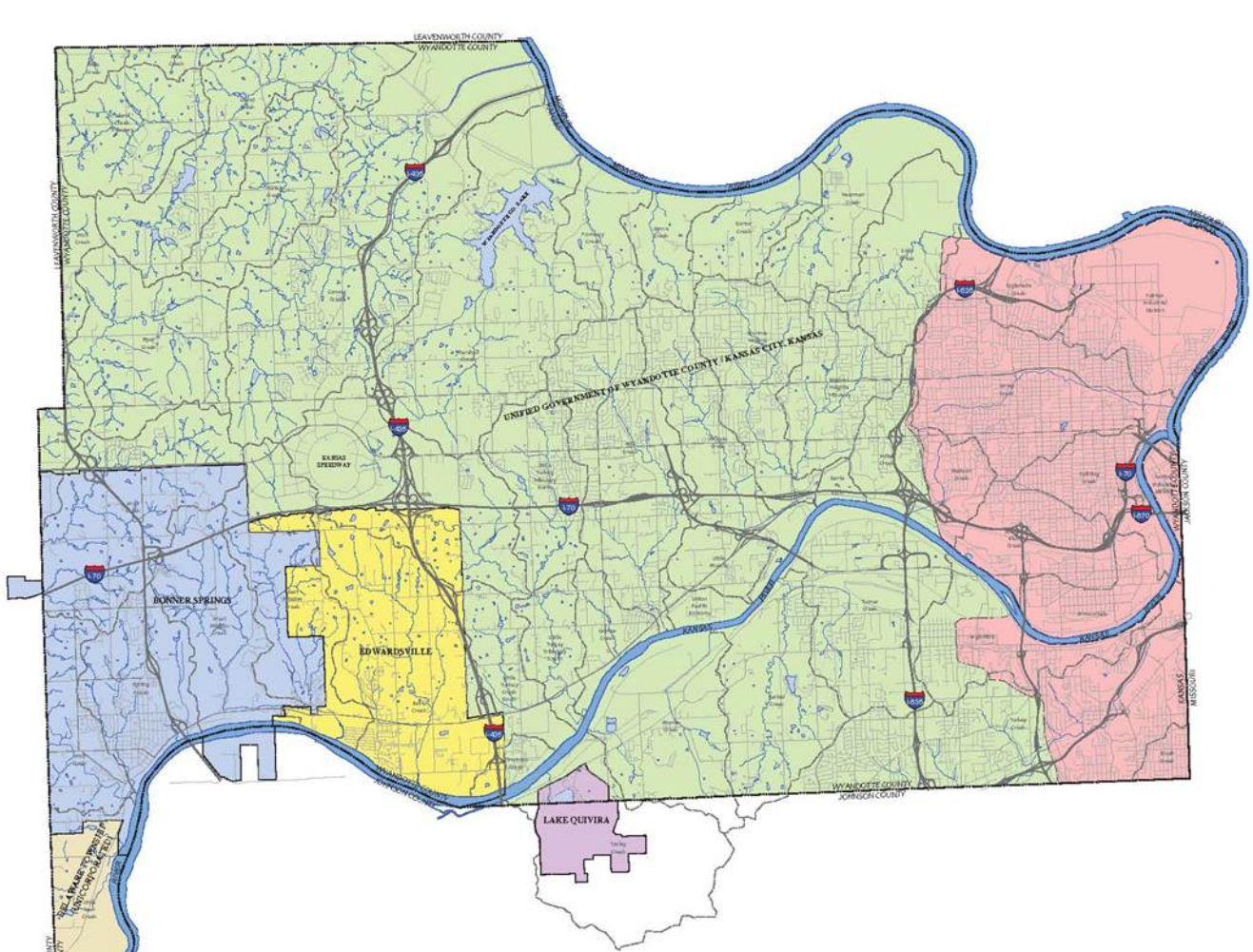
KC Clean Streams 2013

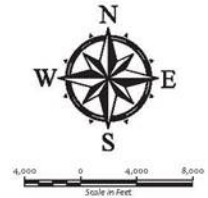
Wyandotte County Participation List

Date	Time	# of hrs	Teacher	School	Location	# of St.	# of Ad.	# of bags
4-Apr	9:00-noon	3	Alan Gilmore	Eisenhower MS	72nd & State Ave.	102	8	64
5-Apr	9:00-noon	3	Kari Lickey	Eisenhower MS	72nd & State Ave.	116	9	75
26-Apr	9:00-2:00	5	Mike Hotz	Wyandotte HS	Big 11 Lake	125	10	59
3-May	8:00-2:00	6	Jim Benz	Turner MS	Turner Diagonal	148	13	66
6-May	8:00-2:00	6	Tom Balas	Turner MS	55th & Metropolitan	157	12	72
Totals		**23**				**648**	**52**	**336**

APPENDIX B – SUPPORTING PROGRAM DATA

APPENDIX B.1 Unified Government or Wyandotte County/Kansas City, Kansas MS4 Service Area Map





LEGEND

- UNIFIED GOVERNMENT MS4 SERVICE AREA

AREAS NOT INCLUDED IN THE UNIFIED GOVERNMENT'S MS4 SERVICE AREA

- CITY OF KANSAS CITY, KANSAS CSS AREA (NINE MINIMUM CONTROLS APPLY)
- CITY OF BONNER SPRINGS, KANSAS
- CITY OF EDWARDSVILLE, KANSAS
- CITY OF LAKE QUIVIRA, KANSAS
- DELAWARE TOWNSHIP, WYANDOTTE COUNTY, KANSAS (UNINCORPORATED AND OUTSIDE OF URBANIZED AREA)

UNIFIED GOVERNMENT · Wyandotte County · Kansas City · Kansas

DELICH, ROTH & GOODWILLIE ENGINEERS

UNIFIED GOVERNMENT OF WYANDOTTE COUNTY / KANSAS CITY, KANSAS

MS4 SERVICE AREA

APPENDIX B.2 Illicit Discharge Inspections, Elimination and Enforcement (IDDE) Program

LEGAL DEPARTMENT of the UNIFIED GOVERNMENT OF WYANDOTTE COUNTY/KANSAS CITY, KANSAS

Municipal Office Building – Room 961
701 North Seventh Street
Kansas City, Kansas 66101
Phone (913) 573-5060
Fax (913) 573-5243

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Kenneth J. Moore

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Patrick Waters
Misty Brown
Brandelyn K. Nichols
Ryan Carpenter
Ryan Haga
Colin Welsh
Jennifer Meyers

MEMORANDUM

TO: Bill Heatherman
City Engineer

FROM: Misty Brown
Senior Counsel

DATE: December 13, 2013

RE: Stormwater Management Plan BMP 3A

Section 3A of the Stormwater Management Plan Best Management Practices requires the Unified Government to prepare a Memorandum detailing existing ordinances that apply to illicit discharges and highlight any changes that may be needed to establish adequate legal authority to perform inspection, assess penalties, and issue enforceable orders with regard to illicit discharges into the MS4 system.

It is my legal opinion that the Unified Government has sufficient legal authority to perform inspections, assess penalties, and issue enforceable orders with regard to illicit discharges into the MS4 system. Chapter 30 of the Unified Government's Municipal Code of Ordinance contains numerous applicable provisions. Illicit discharges into the MS4 system are prohibited in § 30-11 and §30-123; § 30-124 prohibits any discharge into the sewer system which would interfere with the operation of the municipal sewer system (Note: that MS4 is covered pursuant to the definition of "sewer" in §30-1); §30-6 grants the Unified Government authority to inspect suspected violations, sample, and maintain, repair, or install structural controls and recover costs; and § 30-3 provides the Unified Government with authority to obtain injunctions and assess civil, administrative, and/or criminal penalties. Aside from Chapter 30, § 8-616 grants the Unified Government authority inspect and issue stop work orders for land disturbance violations, and § 8-618 contains provisions enabling the Unified Government to impose penalties for land disturbance violations. While not directly related, we call know that land disturbance activities can impact the MS4 System.

Extensive review of the Unified Government's legal authority has been completed. Staff, consultants, and outside counsel have performed a detailed analysis of the Unified Government

existing legal authority, and a number of recommendations are under advisement. While it is my legal opinion that sufficient legal authority already exists, there is always room for improvement. An example, the Unified Government adopted a FOG ordinance on December 5, 2013. An amendment to §23-15 was added to enable the environmental compliance officer to issue a citation to a violator of City code. Additionally, a new § 30-4 was created enabling the Director to disconnect sewer and water services to any premise which violates any provision of Chapter 30 after fifteen (15) days and upon notice. I anticipate a number of new ordinances that better define the Unified Government's legal authority in regards to illicit discharges, particularly in regards to the Stormwater and Surface Water Utility, land disturbance, post-construction stormwater treatment, building and building regulations, and the plugging of abandoned sewer connections.

2013 Stormwater Outfall Inspection Data

Kansas Watershed

Structure ID	Outfall Type	Material	Outfall Shape	Circular Pipe Size	Box or Elliptical Pipe Size	Outfall Flowing?	Suspicion of Illicit Discharge?	Apparent Sanitary Related Concern?
213-519	Flared End Section	Concrete	Circular	36	-	Yes	No	No
213-520	Headwall	Concrete	Box	-	8'x6'	Yes	No	No
213-566	Open End	Concrete	Circular	18	-	No	No	No
213-567	Open End	Concrete	Circular	18	-	No	No	No
212-535	Headwall	Concrete	Box	-	8'x7'	No	No	No
212-541	Open End	Concrete	Circular	15	-	No	No	No
212-620	Flared End Section	Concrete	Circular	24	-	No	No	No
212-619	Open End	Concrete	Circular	24	-	No	No	No
212-XX1	Open End	Plastic	Circular	4	-	No	No	No
212-544	Open End	CMP	Circular	60	-	Yes	No	No
212-546	Headwall	Concrete	Box	-	4'x5'	No	No	No
212-548	Headwall	Concrete	Box	-	4'x4'	Yes	No	No
212-547	Headwall	Concrete	Box	-	4'x4'	No	No	No
213-XX1	Open End	Plastic	Circular	4	-	No	No	No
213-XX2	Open End	Concrete	Circular	30	-	Yes	No	No
213-XX3	Open End	Concrete	Circular	30	-	No	No	No
213-602	Flared End Section	Concrete	Circular	36	-	No	No	No
213-X3B	Open End	Concrete	Box	-	-	No	No	No
213-XX4	Open End	Concrete	Circular	48	-	Yes	No	No
213-XX5	Open End	Concrete	Circular	48	-	No	No	No
213-XX6	Open End	Plastic	Circular	4	-	No	No	No
213-539	Open End	CMP	Circular	15	-	No	No	No
213-040	Open End	CMP	Circular	15	-	No	No	No
177-546	Open End	CMP	Circular	24		No	No	No
177-507	Headwall	Plastic	Circular	24		No	No	No
177-505	Headwall	Concrete	Box		4 x 4	No	No	No
177-539	Headwall	Concrete	Box		10 x 6	Yes	No	No
168-541	Headwall	Concrete	Box		8 x 7	Yes	No	No
168-537	Headwall	Concrete	Box		8 x 7	Yes	No	No
168-535	Headwall	Clay	Circular	8		No	No	No
168-xx1	Open Concrete Channel	Concrete				No	No	No

2013 Stormwater Outfall Inspection Data

Kansas Watershed

168-537A	Headwall	DIP/Steel	Elliptical		5 x 4.5	No	No	No
168-xx2	Open End	CMP	Circular	15		No	No	No
168-xx3	Headwall	Concrete	Box		7 x 6	No	No	No
168-xx3A	Headwall	Concrete	Box		7 x 6	No	No	No
168-xx4	Open End	Concrete	Circular	15		No	No	No
177-xx1	Open End	Clay	Circular	15		No	No	No
177-540	Headwall	Concrete	Box		10 x 6	No	No	No
268-XX1	Open End	CMP	Circular	24		No	No	No
268-553	Open End	CMP	Circular	15		No	No	No
269-XX1	Open End	CMP	Circular	36		No	No	No
269-536	Open End	CMP	Circular	18		No	No	No
269-524	Open End	CMP	Circular	36		No	No	No
291-540	Flared End Section	Concrete	Circular	66		No	No	No
291-XX1	Open End	CMP	Circular	24		No	No	No
291-501	Headwall	Concrete	Box		6x4	No	No	No
291-502	Open End	Concrete	Circular	36		No	No	No
306-501	Open End	Concrete	Circular	36		No	No	No
306-502	Headwall	Concrete	Box		6x4	No	No	No
306-514	Open End	Concrete	Circular	30		No	No	No
306-527	Headwall	Plastic	Box		5x4	No	No	No
307-569	Headwall	Concrete	Box		5x4	No	No	No
307-XX1	Open End	Concrete	Circular	4		No	No	No
307-XX2	Flared End Section	Plastic	Circular	15		No	No	No
307-XX3	Open End	Concrete	Circular	18		No	No	No
307-647	Headwall	Concrete	Box		6x4 dbl	No	No	No
307-593	Flared End Section	CMP	Circular	56		No	No	No
307-653	Flared End Section	Concrete	Circular	18		No	No	No
307-652	Flared End Section	Concrete	Circular	60		No	No	No
268-X10	Open End	CMP	Circular	12		No	No	No
269-024	Open End	CMP	Circular	27		No	No	No
269-519	Flared End Section	CMP	Circular	30		No	No	No
270-xx1	Open End	Concrete	Circular	30		No	No	No
270-xx2	Open Concrete Channel	Concrete	Circular	30		No	No	No
286-511	Open End	CMP	Circular	30		No	No	No

2013 Stormwater Outfall Inspection Data

Kansas Watershed

286-518	Flared End Section	Concrete	Circular	12		No	No	No
286-514	Flared End Section	Concrete	Circular	48		No	No	No
311-XX1	Open Concrete Channel	Concrete				No	No	No
286-510	Flared End Section	Concrete	Circular	36		No	No	No
268-507	Flared End Section	Concrete	Circular	24		No	No	No
268-504	Unknown	Unknown	Circular	Un		No	No	No
269-XX2	Open Concrete Channel	Concrete	Box		36x4	No	No	No
255-505	Open Concrete Channel	Concrete	Box		12x12	Yes	No	No
254-511	Open Concrete Channel	Concrete	Box		12x12	Yes	No	No
254-524	Flared End Section	CMP	Circular	18		No	No	No
254-526	Flared End Section	CMP	Circular	18		No	No	No
254-521	Open End	Concrete	Circular	36		No	No	No
254-595	Flared End Section	CMP	Circular	15		No	No	No
254-568	Headwall	Concrete	Box		5x8	No	No	No
254-xx1	Flared End Section	CMP	Circular	12		No	No	No
254-503	Flared End Section	CMP	Circular	54		No	No	No
167-611	Open End	CMP	Circular	15		No	No	No
179-xx1	Open End	CMP	Circular	21		No	No	No
179-508	Flared End Section	Concrete	Circular	72		Yes	No	No
179-509	Open End	CMP	Circular	Un		No	No	No
179-507	Open Concrete Channel	Concrete				No	No	No
179-510	Unknown	Unknown	Circular	Un		No	No	No
pond of	Open Concrete Channel	Concrete				Yes	No	No
178-xx1	Open End	CMP	Circular	18		No	No	No
167-568	Open End	Concrete	Box		8 x 6	No	No	No
167-502	Open End	CMP	Circular	24		No	No	No
167-501	Open End	CMP	Circular	15		No	No	No
213-561	Open End	CMP	Elliptical	48	-	No	No	No
213-560	Open End	CMP	Circular	48	-	No	No	No
213-559	Open End	CMP	Circular	42	-	No	No	No
213-557	Open End	CMP	Circular	18	-	No	No	No
240-583	Open End	CMP	Circular	42	-	No	No	No
240-572	Open End	CMP	Circular	18	-	No	No	No
240-571	Open End	CMP	Circular	18	-	No	No	No

2013 Stormwater Outfall Inspection Data

Kansas Watershed

240-XX1	Open End	Plastic	Circular	4	-	No	Yes	No
240-XX2	Open End	CMP	Circular	48	-	No	No	No
240-XX3	Open End	CMP	Circular	48	-	No	No	No
240-568	Open End	Concrete	Circular	60	-	No	No	No
215-508	Headwall	Concrete	Box	-	14 x 8	No	No	No
215-536	Open End	Concrete	Circular	30	-	Yes	No	No
215-537	Open End	Concrete	Circular	15	-	No	No	No
215-XX4	Open End	DIP/Steel	Circular	6	-	No	No	No
214-502	Headwall	Concrete	Box	-	14 x 8	No	No	No
214-608	Open End	Concrete	Circular	18	-	Yes	No	No
214-609	Open End	Concrete	Circular	30	-	Yes	No	No
214-XX1	Open End	Clay	Circular	12	-	No	No	No
214-XX2	Open End	Concrete	Circular	15	-	No	No	No
214-XX3	Flared End Section	Plastic	Circular	30	-	No	No	No
214-524	Headwall	Concrete	Box	-	3 boxes	Yes	No	No
214-652	Open End	Concrete	Circular	36	-	No	No	No
214-XX4	Flared End Section	Plastic	Circular	24	-	No	No	No
214-XX5	Open End	Concrete	Box		4 x 6	No	No	No
203-XX1	Open End	Concrete	Circular	18	-	No	No	No
203-XX2	Flared End Section	Concrete	Circular	18	-	No	No	No
203-548	Headwall	Concrete	Box	-	-	No	No	No
203-566	Flared End Section	Concrete	Circular	48	-	No	No	No
203-XX4	Flared End Section	Concrete	Box	15	4x6	No	No	No
203-XX5	Open End	Clay	Circular	15	-	No	No	No
203-527	Open End	Concrete	Circular	18	-	No	No	No
203-XX6	Open End	Clay	Circular	6	-	No	Yes	Yes
203-XX7	Open End	Clay	Circular	6	-	Yes	Yes	Yes
203-572	Flared End Section	Concrete	Circular	42	-	No	No	No
203-530	Open End	Concrete	Circular	30	-	No	No	No
203-076	Open End	Plastic	Circular	8	-	No	Yes	Yes
203-X11	Open End	Plastic	Circular	4	-	No	No	No
203-542	Open End	DIP/Steel	Circular	6'	-	Yes	No	No
203-541	Open End	CMP	Circular	18	-	No	No	No
203-XX9	Open End	Clay	Circular	8	-	No	No	No

2013 Stormwater Outfall Inspection Data

Kansas Watershed

204-503	Headwall	Concrete	Box	-	8x8	Yes	No	No
204-575	Open End	Concrete	Circular	18	-	No	No	No
203-537	Open End	Concrete	Circular	36	-	No	No	No
203-535	Flared End Section	Concrete	Circular	42	-	No	No	No
204-508	Headwall	Concrete	Box	-	8x8	No	No	No
204-576	Open End	Concrete	Circular	18	-	No	No	No
204-XX1	Open End	Concrete	Circular	18	-	No	No	No
204-530	Open End	CMP	Circular	66	-	Yes	No	No
204-529	Open End	CMP	Circular	66	-	No	No	No
204-528	Open End	CMP	Circular	18	-	No	No	No
204-XX2	Open End	Plastic	Circular	4	-	No	No	No
204-568	Open End	CMP	Circular	36	-	Yes	No	No
204-567	Open End	CMP	Circular	36	-	No	No	No
204-564	Flared End Section	Concrete	Circular	72	-	No	No	No
204-XX3	Open End	Plastic	Circular	15	-	No	No	No
204-574	Open End	Concrete	Circular	48	-	No	No	No
204-573	Open Concrete Channel	Concrete		-	-	No	No	No
204-XX4	Open End	Plastic	Circular	8	-	No	Yes	Yes
204-599	Headwall	Plastic	Circular	30	-	No	No	No
214-581	Headwall	Concrete	Box	-	8x7	Yes	No	No
214-623	Headwall	Concrete	Box	-	8'x7'	No	No	No
214-630	Open End	Concrete	Circular	18	-	No	No	No
214-631	Open End	Concrete	Circular	24	-	No	No	No
214-632	Open End	Concrete	Circular	15	-	No	No	No
214-XX9	Open End	Concrete	Circular	6	-	Yes	No	No
214-X10	Open End	Concrete	Circular	6	-	No	No	No
214-584	Open End	Concrete	Box	-	-	No	No	No
214-582	Open End	Concrete	Box	-	-	No	No	No
214-583	Open End	Concrete	Circular	6	-	No	No	No
214-XX8	Flared End Section	Concrete	Elliptical	48	-	No	No	No
214-078	Flared End Section	Plastic	Circular	10	-	No	No	Yes
214-594	Open Concrete Channel	Concrete		-	-	No	No	No
214-XX6	Open End	Plastic	Circular	8	-	No	No	No
214-XX7	Open End	DIP/Steel	Circular	3	-	No	No	No

2013 Stormwater Outfall Inspection Data

Kansas Watershed

214-617	Flared End Section	Concrete	Circular	6'	-	No	No	No
214-619	Open End	Concrete	Circular	15	-	No	No	No
214-XX1B	Flared End Section	Concrete	Circular	15	-	No	No	No
214-XX2	Open End	Clay	Circular	6	-	No	No	No
214-XX3	Open End	Clay	Circular	6	-	No	No	No
214-XX4	Open End	Clay	Circular	8	-	No	No	No
214-XX5	Open End	Clay	Circular	8	-	No	No	No
311-053	Open End	Concrete	Circular	60		No	No	No
287-XX5	Open End	Plastic	Circular	2		No	No	No
286-XX1	Open End	CMP	Circular	16		No	No	No
286-537	Open End	CMP	Circular	24		No	No	No
286-569	Flared End Section	Concrete	Circular	30		No	No	No
288-067	Open End	CMP	Circular	36		No	No	No
288-648	Open End	Concrete	Circular	42		Yes	No	No
287-550	Flared End Section	Concrete	Circular	24		No	No	No
287-605	Flared End Section	Concrete	Circular	36		No	No	No
287-524	Open End	CMP	Circular	24		No	No	No
287-XX1	Open End	Concrete	Circular	18		No	No	No
287-XX2	Open End	CMP	Circular	8		No	No	No
287-XX3	Open End	Concrete	Circular	12		No	No	No
287-XX4	Open End	Concrete	Circular	12		No	No	No
311-XX1	Open End	CMP	Circular	18		No	No	No
288-XX1	Open End	Plastic	Circular	2		No	No	No
199-XX2	Open End	CMP	Circular	60		No	No	No
199-598	Open Concrete Channel	Concrete				No	No	No
199-600	Open Concrete Channel	Concrete				No	No	No
199-604	Open Concrete Channel	Concrete				No	No	No
199-516	Flared End Section	CMP	Circular	60	-	No	No	No
199-520	Flared End Section	CMP	Circular	12	-	No	No	No
216-XX1	Open End	CMP	Circular	36	-	Yes	No	No
249-XX1	Flared End Section	Concrete	Circular	18		No	No	No
250-XX1	Flared End Section	Concrete	Circular	36		No	No	No
272-XX1	Open End	Plastic	Circular	24		Yes	No	No
272-XX2	Open End	Plastic	Circular	18		No	No	No

2013 Stormwater Outfall Inspection Data

Kansas Watershed

289-XX1	Open Concrete Channel	Concrete				No	No	No
272-XX3	Open Concrete Channel	Concrete				No	No	No
273-XX1	Open Concrete Channel	Concrete				No	No	No
218-XX1	Open End	Concrete	Circular	30		No	No	No
252-XX1	Open End	Concrete	Circular	36		No	No	No
166-512	Open End	Concrete	Circular	12	-	No	Yes	No
166-XX1	Open End	Concrete	Circular	24	-	No	Yes	No
167-XX2	Open End	Concrete	Circular	48	-	Yes	No	No
167-XX3	Open End	Concrete	Circular	76	-	Yes	No	No
167-XX1	Open End	CMP	Circular	36	-	Yes	No	No
167-XX2	Flared End Section	Concrete	Circular	36	-	No	No	No
167-XX3	Flared End Section	Concrete	Circular	36	-	No	No	No
200-XX1	Open End	DIP/Steel	Circular	15		No	No	No
200-XX2	Open End	DIP/Steel	Circular	15	-	No	No	No
216-XX4	Open End	Concrete	Circular	42	-	No	No	No
216-509	Open End	Concrete	Circular	24	-	Yes	No	No
215-XX1	Open End	Clay	Circular	15	-	No	No	No
215-XX2	Open End	Clay	Circular	15	-	Yes	No	No
200-XX3	Open End	DIP/Steel	Circular	15	-	Yes	Yes	Yes
201-XX1	Flared End Section	Unknown	Circular	Un		No	No	No
201-XX2	Flared End Section	CMP	Circular	30	-	No	No	No
200-XX1	Open End	CMP	Circular	15	-	No	No	No
200-XX2	Open End	Plastic	Circular	2	-	No	No	No
200-XX3	Open End	Clay	Circular	8	-	Yes	Yes	No
216-XX1	Open End	CMP	Circular	18	-	No	No	No
216-XX2	Open End	Clay	Circular	15	-	No	No	No
216-XX3	Open End	Concrete	Circular	15	-	No	No	No
215-XX3	Open End	Clay	Circular	15	-	No	No	No
450-666	Flared End Section	Concrete	Circular	84	-	No	No	No
450-607	Headwall	Concrete	Box	-	14 x 10	Yes	No	No
450-XX3	Flared End Section	Concrete	Circular	54	-	No	No	No
450-569	Flared End Section	Concrete	Circular	30	-	No	No	No
449-XX6	Flared End Section	Concrete	Circular	30	-	No	No	No
449-559	Flared End Section	Concrete	Circular	60	-	Yes	No	No

2013 Stormwater Outfall Inspection Data

Kansas Watershed

450-538	Flared End Section	Concrete	Circular	54	-	Yes	No	No
450-XX1	Flared End Section	Concrete	Circular	15	-	No	No	No
450-XX2	Flared End Section	Concrete	Box		Un	No	No	No
449-XX1	Flared End Section	Concrete	Circular	54	-	No	No	No
449-XX2	Flared End Section	Concrete	Circular	42		No	No	No
449-XX3	Headwall	Concrete	Box		42 x 14	Yes	No	No
449-XX4	Open End	Concrete	Circular	18	-	No	No	No
449-XX5	Headwall	Concrete	Box	-	42 x 14	No	No	No
324-530	Flared End Section	Concrete	Circular	30		No	No	No
324-535	Open End	Concrete	Circular	24		No	No	No
324-522	Flared End Section	Concrete	Circular	36		No	No	No
344-502	Flared End Section	Concrete	Circular	24		No	No	No
344-526	Open End	Plastic	Circular	24		No	No	No
386-507	Flared End Section	Concrete	Circular	24		No	No	No
325-594	Open End	Concrete	Circular	36		No	No	No
325-534	Flared End Section	Concrete	Circular	24		No	No	No
325-520	Flared End Section	Concrete	Circular	18		No	No	No
325-538	Flared End Section	Concrete	Circular	24		No	No	No
325-527	Open End	CMP	Circular	24		No	No	No
325-551	Flared End Section	Concrete	Circular	24		No	No	No
325-530	Open End	Concrete	Circular	24		No	No	No
325-xx1	Flared End Section	Concrete	Circular	18		No	No	No
547-XX1	Open End	Unknown	Circular	18		No	No	No
547-XX2	Flared End Section	Plastic	Circular	18		No	No	No
546-XX1	Open Concrete Channel	Concrete				No	No	No
547-XX3	Open End	Plastic	Circular	4		No	No	No
547-XX4	Open End	DIP/Steel	Circular	30		Yes	No	No
547-XX4	Open End	Concrete	Circular	48		Yes	No	No
326-511	Flared End Section	CMP	Circular	24		No	No	No
326-522	Flared End Section	CMP	Circular	Un		No	No	No
326-507	Flared End Section	CMP	Circular	21		No	No	No
325-xx1	Open End	CMP	Circular	24		No	No	No
325-507	Open Concrete Channel	Concrete				No	No	No
330-XX2	Open End	DIP/Steel	Circular	12		No	No	No

2013 Stormwater Outfall Inspection Data

Kansas Watershed

341-523	Headwall	Concrete	Box		27 X 12	Yes	No	No
341-516	Flared End Section	Concrete	Circular	42		No	No	No
133-xx1	Open End	CMP	Circular	18		No	No	No
105-606	Headwall	Concrete	Elliptical		30 x 27	No	No	No
331-XX1	Open End	Concrete	Circular	18		No	Yes	Yes
388-XX1	Open End	CMP	Circular	18	-	No	Yes	No
326-526	Flared End Section	Concrete	Circular	36		No	No	No
326-xx1	Open End	CMP	Circular	36		No	No	No
326-xx2	Open End	Plastic	Circular	6		No	No	No
327-xx1	Open End	CMP	Circular	18		No	No	No
327-xx2	Open End	DIP/Steel	Circular	8		No	No	No
327-xx3	Open End	CMP	Circular	15		No	No	No
327-xx4	Open End	DIP/Steel	Circular	8		No	No	No
327-xx5	Open End	CMP	Circular	24		No	No	No
327-xx6	Open End	Clay	Circular	24		No	No	No
106-551	Flared End Section	Concrete	Circular	48		Yes	No	No
329-XX3	Open End	Plastic	Circular	18		No	No	No
329-XX4	Open End	Plastic	Circular	18		No	No	No
329-XX5	Open End	DIP/Steel	Circular	18		No	No	No
329-XX1	Open End	DIP/Steel	Circular	18		No	No	No
331-XX4	Open End	Plastic	Circular	18		No	No	No
330-XX3	Open End	DIP/Steel	Circular	18		No	No	No
331-xx3	Open End	DIP/Steel	Circular	10		No	No	No
331-xx2	Open End	Plastic	Circular	Un		No	No	No
275-608	Flared End Section	Concrete	Circular	24	-	No	No	No
250-540	Open End	CMP	Circular	24	-	No	No	No
275-537	Open End	Concrete	Circular	48	-	Yes	No	No
250-579	Headwall	Concrete	Circular	96	-	No	No	No
250-565	Open End	CMP	Circular	48	-	No	No	No
250-XX6	Open End	CMP	Circular	15	-	No	No	No
239-534	Open End	CMP	Circular	48	-	No	No	No
250-535	Open End	Concrete	Circular	60	-	Yes	No	No
250-534	Open End	Concrete	Circular	60	-	No	No	No
250-587	Flared End Section	Concrete	Circular	24	-	No	No	No

2013 Stormwater Outfall Inspection Data

Kansas Watershed

250-XX3	Open End	Plastic	Circular	4	-	No	No	No
250-XX4	Open End	Plastic	Circular	4	-	No	No	No
250-XX5	Open End	Plastic	Circular	4	-	No	No	No
250-585	Open End	Concrete	Circular	36	-	No	No	No
250-570	Flared End Section	Concrete	Circular	48	-	No	No	No
250-546	Flared End Section	Concrete	Circular	60	-	Yes	No	No
250-XX1	Open End	Clay	Circular	4	-	No	No	Yes
250-XX2	Open End	DIP/Steel	Circular	30	-	No	No	No
250-544	Open End	Concrete	Circular	60	-	No	No	No
250-541	Open End	CMP	Circular	18	-	No	No	No
250-537	Open End	CMP	Circular	15	-	No	No	No
241-525	Open End	CMP	Circular	18		No	No	No
241-522	Flared End Section	Concrete	Circular	18		No	No	No
241-XX1	Headwall	Concrete	Box		4'x4'	Yes	No	No
241-XX2	Headwall	Concrete	Box		4'x4'	No	No	No
241-547	Open End	Concrete	Box		8'x10'	Yes	No	No
241-XX3	Headwall	Concrete	Box		8'x10.5	No	No	No
212-XX2	Open End	CMP	Circular	48		No	No	No
212-549	Open End	CMP	Circular	30		No	No	No
241-532	Open End	CMP	Elliptical	30		No	No	No
203-XX3	Flared End Section	Concrete	Circular	18	-	No	No	No
212-570	Open End	Unknown	Circular	Un		No	No	No
212-571	Open Concrete Channel	Unknown	Circular	Un		No	No	No
212-569	Open End	CMP	Circular	48	0	No	No	No
212-559	Open End	CMP	Circular	18		No	No	No
212-560	Open End	CMP	Circular	18		No	No	No
212-561	Open End	Concrete	Circular	18	0	No	No	No
212-562	Open End	Concrete	Circular	18		No	No	No

APPENDIX B.3 Overall MS4 Program Training Summary

Illicit Discharge Detection and Elimination

Erosion & Sediment Control

Post-Construction Stormwater Management Program

Unified Government of Wyandotte County/Kansas City, Kansas

STORMWATER MANAGEMENT PROGRAM

Illicit Discharge Detection and Elimination Program

December 3, 2013

<u>Final IDDE Training Session Agenda</u>

A. Introduction (25 min.) – *Heatherman/Burns*
   - Background
   - EPA Phase I & II Stormwater Regulations
     - i. Background/Requirements
   - KDHE SW Permit Requirements
     - i. Annual Reporting
   - UG Stormwater Management Program
     - i. Key Elements
     - ii. Program Area of Influence
     - iii. Ordinances
   - IDDE Video (15 min.)

B. IDDE Program Training – Part 1 (30 min.) - *Burns*
   - Which Discharges are Illicit
     - i. Illicit Discharges and Connections
     - ii. Authorized Discharges

C. BREAK (10 min.)

D. IDDE Program Training – Part 2 (45 min.) - *Burns*
   - IDDE Program Elements
     - i. Screening and Investigation Activities
       - 1. Outfall Inspection Pilot Program Summary
     - ii. Tracing the Source
     - iii. Enforcement Action/Removal and Elimination
     - iv. Complaint Calls Response
   - New Industrial Program Elements - *Heatherman*
   - Related Public Education - *Fjell*
     - i. Media Types

E. Discussion and Comments (1 hour) - *Attendees*
   - Your Role in the IDDE Program
   - Open Dialog/Future Plans and Issues/Questions
   - Summary and Closing Comments

Unified Government of Wyandotte County/Kansas City, Kansas
STORMWATER MANAGEMENT PROGRAM

Illicit Discharge Detection and Elimination Program
December 3, 2013 Training Session
Attendee List

Name	UG Dept./Affiliation	Job Title/Position	Phone #	Email Address
CHRIS BURNS	BENESCH	PROJECT MANAGER	913-441-1100	CBURNS@BENESCH.COM
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LANCE LAVENDER	PW / STREET	ASST. MANAGER	913-573-8343	llavender@wycokck.org
Gerald Beck	P.W./TRAFFIC eng.	SUPT.	816-719-4174	gBeck@wycoKCK.org
Brent Thompson	Public Works	County Surveyor / Stormwater Coordinator	913-573-5710	bthompson@wycokck.org
TRENTON FOGLESONG	WPC-SEWER MAINTENANCE	Collection System Mgr	913-573-1362	tfoglesong@WycoKCK.org
Clinton Manderfeld	Benesch	Project Engineer	913-286-2455	cmanderfeld@benesch.com
Sarah Fjell	PW - Engineering	Stormwater Engineer	913.573.5724	sfjell@wycokck.org
Bruce Pointelin	PW / Streets	Supervisor	913-449-1207	BPointelin@wycokck.org

Table A.1: Common Generating Sites and their Pollution Potential

Land Use Generating Site Description	Associated SIC Code(s)	Regulated Storm Water Hotspot	Unregulated Storm Water Hotspot	Illicit Discharge Potential*	
				Direct	Indirect
Commercial					
Animal Care Services	0742, 0752		X	L	L
Auto Repair	7532-7539, 7549		X	M	M
Automobile Parking	7521			L	M
Building Materials	5211-5251		X	L	L
Campgrounds/RV parks	7033		X	L	M
Car Dealers	5511-5599,		X	M	M
Car Washes	7542		X	L	L
Commercial Laundry/Dry Cleaning	7211-7219		X	L	L
Convenience Stores	5399		X	L	L
Food Stores and Wholesale Food and Beverage	5141-5149 5411-5499		X	L	M
Equipment Repair	7622-7699		X	L	L
Gasoline Stations	5541		X	M	M
Heavy Construction Equipment Rental and Leasing	7353		X	L	H
Building and Heavy Construction (For land disturbing activities)	1521-1542 1611-1629	X		L	H
Marinas	4493	X		L	M
Nurseries and garden centers	5261		X	L	M
Oil Change Shops	7549		X		M
Restaurants	5812,5813,7011		X	M	L
Swimming Pools	7997, 7999		X	L	L
Warehouses	4221-4226	X** (4221-4225)		L	L
Wholesalers of Chemical and Petroleum	5162-5169,5172		X	L	L
Industrial					
Apparel and Other Fabrics	2311–2399 3131–3199	X**		2300 L 3100 H	L M
Auto Recyclers and Scrap Yards	5015, 5093	X		L	H
Beverages and Brewing	2082-2087	X**		L	L
Boat Building and Repair	3731,3732	X		L	H
Chemical Products	2812-2899	X** (2830, 2850)		2810 H 2820 H 2840 H 2860 M 2830 L 2850 L 2870 L 2890 L	2810 L 2820 L 2840 L 2860 L 2830 L 2850 L 2870 L 2890 L

Table A.1: Common Generating Sites and their Pollution Potential					
Land Use Generating Site Description	**Associated SIC Code(s)**	**Regulated Storm Water Hotspot**	**Unregulated Storm Water Hotspot**	**Illicit Discharge Potential***	
				Direct	**Indirect**
Industrial (continued)					
Food Processing	2011–2141	X**		2010 H 2020 H 2030 H 2040 H 2050 L. 2060 L 2070 M 2090 L 2110 M	2010 L 2020 L 2030 L 2040 L 2050 L. 2060 L 2070 L 2090 L 2110 L
Garbage Truck Washout Activities	4212		X	L	H
Industrial or Commercial Machinery, Electronic Equipment	3511–3599 3612–3699	X**		L	L
Instruments; Photographic and Optical Goods, Watches and Clocks and other Miscellaneous Manufacturing	3812–3873 3933-3999	X**		L	L
Leather Tanners	3411	X		H	M
Metal Production, Plating and Engraving Operations	2514, 2522, 2542, 3312-3399, 3411-3499, 3590	X** (2514,2522, 2542, 3411-3433, 3442-3499, 3590)		H	L
Paper and Wood Products	2411-2499, 2511, 2512, 2517, 2519, 2521, 2541, 2611–2679	X** (2434, 2652–2657, 2671–2679)		2400 L 2500 L 2600 H	2400 H 2500 L 2600 H
Petroleum Storage and Refining	2911	X		2911 H	H
Printing	2711–2796	X**		L	L
Rubber and Plastics	3011-3089	X**		M	L
Stone, Glass, Clay, Cement, Concrete, and Gypsum Product	3211-3299	X** (3233)		L	L
Textile Mills	2211–2299	X**		H	L
Transportation Equipment	3711–3728, 3743-3799	X**		H	M
Institutional					
Cemeteries	6553		X	L	L
Churches	8661		X	L	L
Colleges and Universities	8221-8222		X	L	M
Corporate Office Parks			X	L	L
Hospitals	8062-8069 8071-8072		X	L	L
Private Golf Courses	7997		X	L	L
Private Schools	8211		X	L	L

Table A.1: Common Generating Sites and their Pollution Potential					
Land Use Generating Site Description	**Associated SIC Code(s)**	**Regulated Storm Water Hotspot**	**Unregulated Storm Water Hotspot**	**Illicit Discharge Potential***	
				Direct	**Indirect**
Municipal					
Composting Facilities	2875	X		L	L
Public Golf Courses	7992		X	L	L
Landfills and Hazardous Waste Material Disposal	4953, HZ, LF	X		L	H
Local Streets		MS4	X	L	H
Maintenance Depots	4173	MS4		M	H
Municipal Fleet Washing	4100	MS4		L	M
Public Works Yards		MS4		M	H
Steam Electric Plants	SE	X		L	L
Treatment Works	TW	X		L	L
Transport Related (NPDES regulation is for the portion of the facility dedicated to vehicle maintenance shops, equipment-cleaning operations, and airport deicing operations).					
Airports	4581	X		L	M
Streets and Highways Construction	1611, 1622	X		L	H
Ports	4449, 4499	X		L	H
Railroads	4011, 4013	X		L	H
Rental Car Lots	7513-7519	X		L	M
US Postal Service	4311	X		L	M
Trucking Companies and Distribution Centers	4212-4215, 4231	X		L	M
Petroleum Bulk Stations or Terminals	5171	X		L	H

*Adapted from Pitt (2001)
** Generating sites where storm water permits are required only if material handling equipment or activities, raw materials, immediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water.

Table 2: Land Uses, Generating Sites and Activities That Produce Indirect Discharges

Land Use	Generating Site	Activity that Produces Discharge
Residential	• Apartments • Multi-family • Single Family Detached	• Car Washing • Driveway Cleaning • Dumping/Spills (e.g., leaf litter and RV/boat holding tank effluent) • Equipment Washdowns • Lawn/Landscape Watering • Septic System Maintenance • Swimming Pool Discharges
Commercial	• Campgrounds/RV parks • Car Dealers/Rental Car Companies • Car Washes • Commercial Laundry/Dry Cleaning • Gas Stations/Auto Repair Shops • Marinas • Nurseries and Garden Centers • Oil Change Shops • Restaurants • Swimming Pools	• 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 • Washdown of greasy equipment and 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 washdowns • Outdoor material storage (fluids)
Institutional	• Cemeteries • Churches • Corporate Campuses • Hospitals • Schools and Universities	• Building Maintenance (e.g., power washing) • Dumping/Spills • Landscaping/Grounds Care (irrigation) • Parking Lot Maintenance (power washing) • Vehicle Washing
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 • Spill Prevention/Response • Vehicle Fueling • Vehicle Maintenance/Repair • Vehicle Washing

OUTFALL RECONNAISSANCE / SAMPLE COLLECTION FORM

Section 1: Background Data

Today's date:	Outfall ID:
Photo #s:	Time:
Land Use in Drainage Area (Check all that apply): ☐ Industrial ☐ Residential ☐ Commercial	☐ Institutional Other: _____

Section 2: Physical Indicators for Flowing Outfalls Only

INDICATOR	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other: ☐ None	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐ Yes - See severity ☐ None	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ None ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 3: Sample Collection

1. Sample for the lab?	☐ Yes	☐ No	Reason no sample taken:

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed:		Outfall ID: 269-514	
Today's date: 1/24/12		Time (Military): 2:00	
Investigators: DR + JB		Form completed by: DR	
Temperature (°F):	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude:	Longitude:	GPS Unit:	GPS LMK #: L3
Camera:		Photo #s: 177-185	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☒ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☐ RCP ☒ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☐ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: _____	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☒ Yes ☐ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☒ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	___' ___"	Ft, In	Tape measure
	Measured length	___' ___"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
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Are physical indicators that are not related to flow present? ☐ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☑	☐ Odors ☐ Colors ☐ Floatables ☑ Oil Sheen ☑ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☑ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

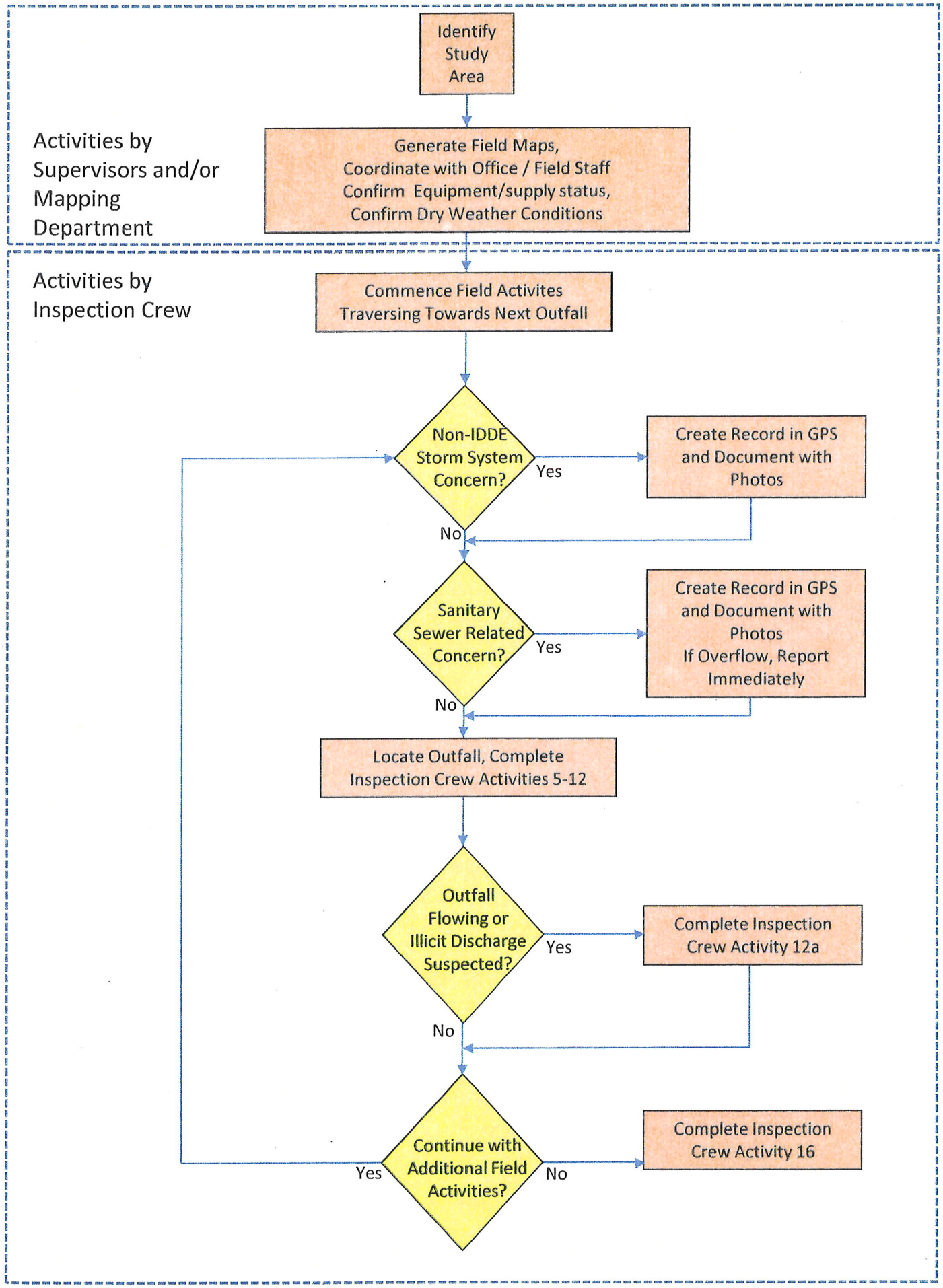
1. Sample for the lab?	☐ Yes	☑ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

01/24/2012

01/24/2012

OUTFALL INSPECTION FIELD ACTIVITY FLOW CHART



Unified Government of Wyandotte County/Kansas City, Kansas

Stormwater Management Program

ILLICIT DISCHARGE OBSERVATION REPORT

Date: _____

Time: _____

Location: _____

_____

License Plate No: _____

Photo Taken? Y or N (If Yes, attached photo to report or send via email)

Describe the observation: _____

_____

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Name of Observer: _____

Phone No. or email address: _____

Please report this information to the UG Stormwater Coordinator - Brent Thompson
913-573-5710, bthompson@wycokck.org

Unified Government of Wyandotte County/Kansas City, Kansas
MS4 Stormwater Management Program

Illicit Discharge Detection and Elimination Program
Training Session

December 3, 2013

Agenda

- Introduction
- Stormwater Program Background
- IDDE Program Training (Parts 1 & 2)
- Questions/Open Discussion
- Closing

Federal Regulations

- 1972 EPA - Clean Water Act
- Municipal Separate Storm Sewer Systems (MS4)
  - 1990 Stormwater Regulations – Phase I
    - Large and Medium MS4s (>100,000 population)
    - Non-MS4s (Industrial Activity)
    - Stormwater Management Program
  - 1999 Stormwater Regulations – Phase II
    - Small MS4s
- Combined Sewer Overflow (CSO) Preventions
  - 1997 Combined Sewer Overflow (CSO) Control Policy

Phase I Requirements - Summary

- The Stormwater Management Program (SWMP) shall include an ongoing program to detect and remove illicit connections and discharges, as defined in 40 CFR 122.26(b)(2):
  - *"… illicit discharge means any discharge to a municipal separate storm sewer that is not composed entirely of storm water except discharges pursuant to a NPDES permit and discharges resulting from fire fighting activities."*
- Develop and implement an ongoing illicit discharge detection and elimination program.

KDHE MS4 NPDES Permit Requirements

- Develop, implement and enforce a program to detect and eliminate illicit discharges in the MS4.
- Develop a storm sewer map of the MS4, showing and identifying locations of all outfalls and receiving water bodies.
- Enact an ordinance to prohibit non-stormwater discharges into the storm sewer system and implement enforcement procedures.
- Inform public employees, businesses, and the general public of hazards associated with illicit discharges and improper disposal of wastes.
- Develop/implement plan to detect and address prohibited non-stormwater discharges.

UG's Stormwater Management Program (SWMP)

- EPA Partial Consent Decree (March 2103) Requirements related to MS4:
  - SWMP Implementation
  - Standard Operating Procedures (SOPs)
  - Legal Authority
  - Funding
  - Personnel and Training

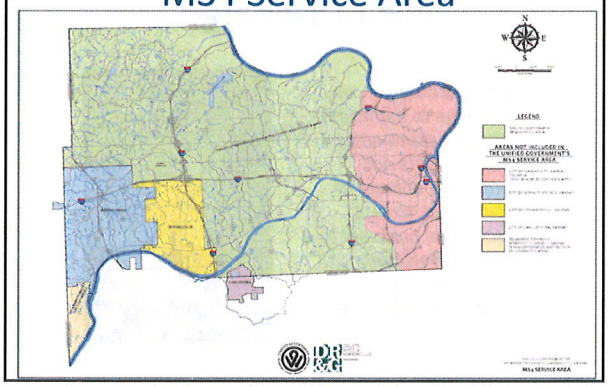
UG's Stormwater Management Program

- Key Elements and BMPs:
  - Public Education and Outreach
  - Public Involvement and Participation
  - *Illicit Discharge Detection and Elimination*
  - Construction Site SW Runoff Control
  - Post-Construction SW Management Program
  - Pollution Prevention/Good Housekeeping
  - Industrial Activity SW Runoff Management
  - TMDLs/PPOCs
  - Wet Weather Monitoring Program

Illicit Discharge Detection & Elimination (IDDE) Program

- Evaluate and update UG ordinances pertaining to illicit discharges.
- Implement MS4 related SOPs
- Develop/implement/maintain tracking and reporting system
- Provide training to IDDE program staff
- Perform dry weather screening and inspections of stormwater outfalls (250/year)
- Televise/inspect cross connections
- Maintain current MS4 mapping system
- Continued participation – existing HHW Collection Program

MS4 Service Area



UG Code of Ordinances

***Illicit Connection**…any drain or conveyance, whether on the surface or subsurface, that allows an illicit discharge to enter a municipal separate storm sewer system.*

***Illicit Discharge**…any discharge to municipal separate storm sewer system that is not composed entirely of stormwater, except discharges pursuant to a National Pollutant Discharge Elimination System (NPDES) permit.*

UG Code of Ordinances

Sec. 30-123. Discharge to storm sewers.

(a) Prohibited illicit discharges to storm sewer system

(1) No person shall release…any discharge that is not composed entirely of uncontaminated stormwater…contaminants include sediment, trash, yard waste, lawn chemicals, pet waste, wastewater, used motor oil, petroleum products, cleaning products, paint products, other household hazardous waste, and toxic substances.

(3) The construction, use, maintenance or continued existence of illicit discharge…is prohibited.

UG Code of Ordinances

Sec. 30-123. Discharge to storm sewers

(b) Acceptable non-stormwater discharges.

(Twenty two non-stormwater discharges deemed acceptable are listed in the ordinance)

(c) Requirements applicable for certain discharges.

(d) Release reporting and cleanup.

IDDE Program Training - Part 1

- Which discharges and connections are illicit
- Potential generating sites
- Which discharges are authorized

Illicit Discharge

***Illicit Discharge**...any discharge to municipal separate storm sewer system that is not composed entirely of stormwater, except discharges pursuant to a National Pollutant Discharge Elimination System (NPDES) permit.*

Common Types and Indicators of Illicit Discharges

- Petroleum Hydrocarbons – Conspicuous visual and/or olfactory evidence (sheen, color, odor)
- Foam – Usually attributed to natural causes, sometimes affiliated with an illicit discharge/connection (lathers when agitated, produces large white bubbles, un-natural odor)
- Sewage – Gray waters containing solid and organic wastes (odor, grayish color)
- Solid Waste/Dumping – Conspicuous accumulations at various water bodies/drainage areas
- Construction Sites – Sediment discharges due to the lack of adequate erosion control.
- Hazardous/Chemical Wastes – Near industrial sites (color, odor, sheen, turbidity)

Illicit Discharges

Industrial Site Discharge

Failing Septic System Drain Field

Illicit Discharges

Used oil discharge to inlet

Dewatering sediment laden water from a construction site into MS4

Mode of Entry

- Direct
  - Sewage Cross Connections
  - Straight Pipe Discharge
  - Industrial/Commercial Cross Connections
- Indirect
  - Groundwater Seepage
  - Spills Entering at an Inlet
  - Liquid Dumping into an inlet
  - Outdoor Washing Activities
  - Non-targeted Irrigation of Lawns/Landscaping

Land Use and Potential Generating Sites

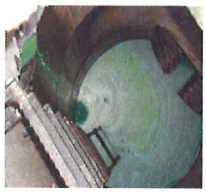
- Residential (i.e. failing septic tanks)
- Commercial (i.e. food wastes disposal)
- Industrial (i.e. process water, spills/leaks)
- Institutional (i.e. building maintenance)
- Municipal (i.e. fleet washing/fueling, spills)

(*Refer to Table 2*)

Common Generating Sites and their Pollution Potential *(Refer to Table A.1)*

Illicit Connections

- Any built conveyance that is connected to an MS4 without a permit, excluding roof drains and other similar connections
- Cross connections (intentional/unintentional)
- May not be easily identified



Authorized Discharges*

- Discharges authorized by an NPDES permit
- Waterline flushing
- Landscape irrigation
- Diverted streamflow
- Rising groundwater
- Uncontaminated groundwater infiltration
- Contaminated authorized by KDHE/UG
- Potable water discharges
- Foundation/footing drains
- Air conditioning condensate
- Irrigation waters
- Springs
- Crawlspace pump discharges
- Lawn watering
- Individual residential car washing
- Flows from riparian habitats and wetlands
- Dechlorinated swimming pool discharges (excluding filter backwash)
- Street wash waters (excluding street sweepings)
- Discharges or flows from emergency firefighting activities
- Heat pump discharge waters

*UG Code of Ordinances

End of Part 1

Break

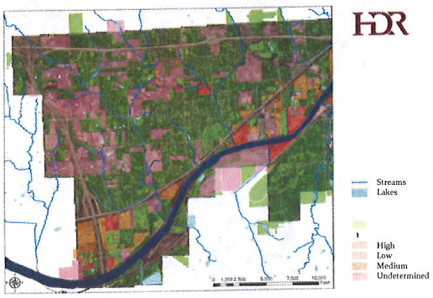
IDDE Program Training - Part 2

- Initial outfall screening
- Investigation activities
- Tracing the source
- Enforcement
- Hotline/Observations response
- Industrial Program elements
- Public Education/Participation activities

Initial Screening of Outfalls

- Perform desktop assessment of illicit discharge potential
  - Delineate Subwatersheds
  - Compile Mapping Layers/Data
  - Define Discharge Screening Factors
  - Screen Subwatersheds for Illicit Discharge Potential
  - Generate Maps for Field Screening

Illicit Discharge Risk by Land Use



Prioritizing Water Bodies

- Wyandotte County Lake Subwatershed
  - Sediment
  - Total Phosphorus
- Kansas River Basin (all associated subwatersheds)
  - Bacteria (E. coli)

Outfall Inspection Tasks

- Personnel
  - Trained two-person crew
- Equipment
  - GPS unit, camera, safety equipment, sampling supplies
- Mapping
  - Stormwater system/aerial map
- Forms
  - Outfall Reconnaissance/Sample Collection Form
- Schedule
  - Dry season, dry period of at least 72 hours
- Field Activities Flow Chart *(refer to flow chart)*
- Gather sample
  - Follow protocol
- Report Major Issues
- Follow SOPs

Inspection Field Map

How to spot an Illicit Discharge

- Ongoing outfall inspections
- Most easily observed during dry weather
- Source may not be easily identified (search upstream for connection of continued discharge)
- Follow-up monitoring

SUDS

Natural Foam
Note: Suds only associated with high flows at the "drop off"
Do not record.

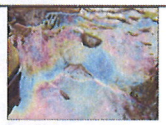
Low Severity Suds
Rating: 1
Note: Suds do not appear to travel; very thin foam layer

High severity suds
Rating: 3
Sewage

OIL SHEENS

Low Severity Oil Sheen
Rating: 1

Moderate Severity Oil Sheen
Rating: 2



High Severity Oil Film
Rating: 3

Bacterial growth at this outfall indicates nutrient enrichment and a likely sewage source.

This bright red bacterial growth often indicates high manganese and iron concentrations. Surprisingly, it is not typically associated with illicit discharges.

Sporalitis filamentous bacteria, also known as "sewage fungus" can be used to track down sanitary sewer leaks.

Algal mats on lakes indicate eutrophication. Several sources can cause this problem. Investigate potential illicit sources.

Illicit discharges or excessive nutrient application can lead to extreme algal growth on stream beds.

The drainage to this outfall most likely has a high nutrient concentration. The cause may be an illicit discharge, but may be excessive use of lawn chemicals.

Reddish staining on the rocks below this outfall indicate high iron concentrations.

Toilet paper directly below the storm drain outlet

Watershed Protection??

Trash is not an indicator of illicit discharges, but should be noted

Staining at the base of the outfall may indicate a persistent, intermittent discharge

Excessive vegetation may indicate enriched flows associated with sewage

Brownish stain of unclear origin May be from degradation of the brick infrastructure

Cracked rock below the outfall may indicate an intermitient discharge

Poor pool quality. Consider sampling from the pool to determine origin

Isolating or Tracking an Illicit Discharge to the Source

- Four Types of Investigations
  - Storm Drain Network Investigation
  - Drainage Area Investigation
  - On-site Investigation
  - Septic System Investigation

Storm Drain Network Investigation*

- Method of Investigation Options:
  - Follow discharge upstream
  - Split the storm drain network
  - Move down storm sewer network
- Dye Water Testing
- Manhole Inspection
  - Visual
  - Indicator Sampling
- Isolation Techniques

*Lab analysis of sample confirms illicit discharge

Drainage Area Investigations

- Quick Windshield Survey
- Detailed Drainage Area Evaluation
  - GIS data
  - Permit databases
  - Previous complaints/reports

On-site Investigations

- Dye Water Testing
- Video Testing (CCTV)
- Smoke Testing

Septic System Investigations

- On-site investigation
  - Homeowner Survey
  - Surface Conditions Analysis
- Detailed Inspection
  - Dye water testing (direct)
  - Infrared Imagery
  - Infrared Thermography

Removal and Elimination

- Who is responsible?
- What methods will be used to repair/address issue?
- How long will repair take to complete?
- How will removal be confirmed?

Compliance or Enforcement

- Notification to responsible party (NOV)
  - Corrective action within 30 days
- Voluntary compliance by violator
  - Inspection to confirm correction or not
- Non-compliance:
  - Take action consistent with UG Code
    - Fines
    - Initial legal action
    - UG corrects violation/places lien on property

Citizen Hotline & Complaint Calls

- Public Calls into the 3-1-1 System
- Dedicated UG Field Staff
- Observations by UG employees *(Observation Report form)*
- Reporting Structure and Flow Chart
- Response/Investigation Plan
- Recordkeeping/Tracking

UG Industrial Activity SW Runoff Management Program

- Ordinance Development
- Industrial Facilities Inventory
- SW Plan Review/Approval
- Site Inspections
- Tracking/Reporting
- Enforcement

Public Education & Participation Activities

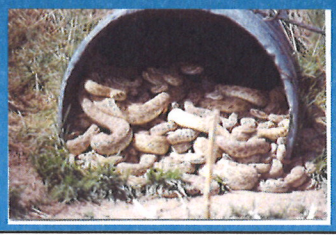
- Public Participation
  - Storm Drain Stenciling
- Household Hazardous Waste Collection Program
- Business Outreach and Education
- Public Education
  - PSA
  - Brochures
  - Website

Open Discussion

- Your Role
- Questions
- Issues
- Opportunities
- Next Steps

Unified Government MS4

Summary and Close



HDR | ONE COMPANY *Many Solutions*℠

Sign In Sheet

Subject: Storm Outfall Inspection Training	
Client: Unified Government of Wyandotte County/Kansas City, KS	
Project:	Project No:
Meeting Date: 12-19-2013	Meeting Location: City Hall, 7th Floor

Name	Representing	Phone Email
BRENT THOMPSON	Public works	bthompson@wycokck.org 573-5710
Clinton Manderfeld	Benesch	cmanderfeld@benesch.com 913 441 1197
Sarah Fjell	PW-Engineering	sfjell@wycokck.org 913573.5704
Mark Gates	Public Works	mgates@wycokck.org. 816-810-2785
Bill Heatherman	Public Works	bheatherman@wycokck.org 913-573-5416
Lori Mundhenke	PW	
TRENTON FOGLESONG	SMD	tfoglesong@wycokck.org 913-573-1362
JOHN BERTRAND	HDR	816-347-1154 john.bertrand@hdrinc.com
Aaron Bresette	HDR	aaron.bresette@hdrinc.com

HDR | ONE COMPANY *Many Solutions*℠

Meeting Agenda

Subject: UG Storm System Outfall Inspection Training	
Client: Unified Government of Wyandotte County and Kansas City, Kansas	
Project: Storm System Outfall Inspection Pilot Study	Project No:
Meeting Date: 12-18-2013, 9:30 am	Meeting Location: UGWCKCK City Hall

1. Introductions
2. Sign-in Sheet
3. UG Overview
4. Project History
    a. Outfall Inspection Study
    b. Sewer Crossing and Stream Bank Study
    c. Scope of Work and Deliverables
5. Lessons Learned
6. Questions?

3741 NE Troon Drive
Lee's Summit, MO,64064
Phone (816) 347-1100
Fax (816) 347-1197
www.hdrinc.com

STANDARD OPERATING PROCEDURES

Title: Storm Outfall Inspection and Field Reconnaissance

SOP Identification No. : IDDE-01

Revision Date: August 2012 APPROVED/DATE:_____

PURPOSE:

To establish a procedure for field activities to locate, inspect, document, and evaluate storm drainage outfalls, to identify illicit or potentially illicit discharges, and update maps and databases.

PROCEDURES:

SUPERVISORS AND MAPPING DEPARTMENT

1. Supervisor will identify area of reconnaissance and assign to an inspection crew. The area of reconnaissance will typically be within a particular drainageway or watershed or a particular set of quarter sections not previously visited.

2. Supervisor will confirm that dry weather conditions exist. Dry weather conditions are defined as follows: when no precipitation, including rain, snowfall, snowmelt, or sleet is occurring or no more than 0.1" has occurred in the preceding 72 hours.

3. Supervisor is responsible to debrief inspection crew at the end of the day to determine whether any of the inspection findings require follow-up action.

4. WPCD mapping department staff will generate maps of the area that identifies outfall structures that are 36-inches or larger in residential areas and 12-inches or larger in commercial and residential areas. The maps shall be at a scale that allows the crew to find the structures in the field. The map may include:

    a. Aerial photography
    b. Contours
    c. Parcels
    d. Storm Sewer System and Node Identification
    e. Sanitary Sewer System and Node Identification
    f. Or other features that facilitate locating the structures to be inspected

INSPECTION CREW

1. Crew shall confirm that equipment and supplies are loaded in their vehicle. Refer to OUTFALL INSPECTIONS EQUIPMENT AND SUPPLIES LIST.

2. The inspection crew will consult with their supervisor as needed to determine the most efficient and logical route to follow in order to complete the mapped set of outfalls scheduled for inspection.

3. In some cases, multiple outfall structures will be located in close proximity along a stream or channel. In those cases, the crew will typically commence activities at the downstream end of the basin or drainage way and walk upstream.

4. While locating mapped structures, inspectors should be on the lookout for outfall structures that are encountered that are not mapped. Refer to the OUTFALL INSPECTION ACTIVITY FLOW CHART (attached) for addition information.

5. When an outfall structure is located, enter the structure ID number into the handheld GPS unit as follows:

   SSS-###

   SSS = three-digit quarter section number followed by a dash
   ### = three digit map node number
   (*example* : 259-509)

   If an unmapped structure is encountered, assign a temporary identification number in the GPS unit in the following format:

   SSS-XX#

   SSS = three-digit quarter section number followed by a dash
   XX = Two character crew identification code such as YY or ZZ followed by a dash
   ### = temporary node number sequentially assigned for each unmapped structure encountered within the quarter section (1, 2, 3)
   (*example* : 259-XX1)

6. Use the handheld GPS unit to establish the structure coordinates. In some cases, trees or clouds may block the GPS signal. In those cases, indicate the approximate location on the map to the best of extent possible.

7. Proceed to record the following information in the handheld unit:

   a. Outfall Type - Open End, Flared End Section, Headwall, Open Concrete Channel

   b. Material - Clay, Concrete, Plastic, DIP/Steel, CMP

   c. Outfall Shape - Circular, Elliptical, Box

   d. Circular Pipe Size - Inch.

   e. Box/Elliptical Size (width x height) - Inch.

f. Flowing - Yes or No

g. Non-stormwater Discharge Suspected - Yes or No

h. Other Structural Concern - Yes or No

i. Sanitary Related Concern - Yes or No

j. Comments – enter a brief description and complete the paper copy of Outfall Reconnaissance/Sample Collection Form if item f, g, h or i is checked "yes". If these items are checked yes, follow up may be required.

8. Write outfall number on white board and place (or have partner hold) adjacent to outfall where visible for photographing.

9. Photograph each inspected outfall and any other stormwater or sanitary sewer related concern that may be encountered. Photos shall be taken in sufficient numbers and positions to illustrate the location, configuration and condition of outfall or concern.

10. Review photos to ensure pictures are acceptable and white board is legible.

11. Inspectors should be looking for indicators of a non-stormwater discharge such as: oil sheen, suds, odor, sewage smell, color, toilet paper, cloudiness, algae growth or other signs of pollutants. Notably, the most common illicit discharge encountered by these inspections is sewage from a cross connected sanitary sewer.

12. If an indicator of the type listed above is encountered, indicate in appropriate boxes and describe in the comment section for activity 7 and complete an OUTFALL RECONNAISANCE / SAMPLE COLLECTION FORM.

    a. If the outfall is actively flowing, collect sample in accordance with SOP - IDDE-02.

    b. If there is not enough flow or material to collect sample (or if sample is not collected), indicate this in the comment section of the Outfall Reconnaissance / Sample Collection Form and report it to the supervisor for follow-up.

13. Any suspected active sanitary flows, sanitary sewer line leaks or manhole leaks encountered are to be reported to the Supervisor or dispatcher at 913-573-5535 as soon as possible after discovery.

14. Other stormwater concerns such as structural problems should be recorded on the Outfall Reconnaissance / Sample Collection Form and photographed for follow-up action.

15. If an emergency or hazardous condition is encountered, call 911. Follow-up with call to Supervisor as soon as practical.

16. Upon completing inspection schedule for the day,

    a. Deliver collected water samples to laboratory in accordance with IDDE-02.

b. Complete notes and report inspection findings that require follow-up to the Supervisor. Findings that may require follow up include: Structural defects, suspicious non-stormwater discharges, sanitary sewer defects or concerns.

c. Deliver GPS unit, paper forms and camera to the mapping staff for data download.

d. Check field supplies and replenish if necessary. Charge all electronic field equipment.

APPLICABLE FORMS AND INFORMATION:

1. OUTFALL INSPECTION - EQUIPMENT AND SUPPLIES LIST
2. OUTFALL RECONNAISSANCE/SAMPLE COLLECTION FORM
3. OUTFALL INSPECTION FIELD ACTIVITY FLOW CHART
4. Completed Example - OUTFALL RECONNAISSANCE/SAMPLE COLLECTION FORM

OUTFALL INSPECTION - EQUIPMENT AND SUPPLY LIST

Safety and Identification

- Safety Vests
- Identification Badges
- Authorization from UG
- Cell phone
  - Verify batteries are charged
- Pepper Spray/Mace - recommended
- Bug spray
- Sunscreen
- First Aid Kit
- Latex Gloves
- Hand Sanitizer

Equipment and Supplies

- Camera
  - Date and Time stamp set to "on" with correct date and time
  - Verify batteries are charged
- Handheld GPS Unit
  - Verify batteries are charged
- Sampling Supplies
  - Sample bottles
  - Cooler with ice or cold packs
  - Several clean sample collection scoops
  - Masking / Duct Tape for bottle label
- Clipboards, Pens, and permanent markers
- Outfall Reconnaissance/Sample Collections Forms
- Tape Measure
- Waterproof Flashlight
- Waders / boots
- White board (dry-erase) and markers or chalk board and chalk

OUTFALL RECONNAISSANCE / SAMPLE COLLECTION FORM

Section 1: Background Data

Today's date:	Outfall ID:
Photo #s:	Time:
Land Use in Drainage Area (Check all that apply):	
☐ Industrial	☐ Institutional
☐ Residential	Other: _____
☐ Commercial	

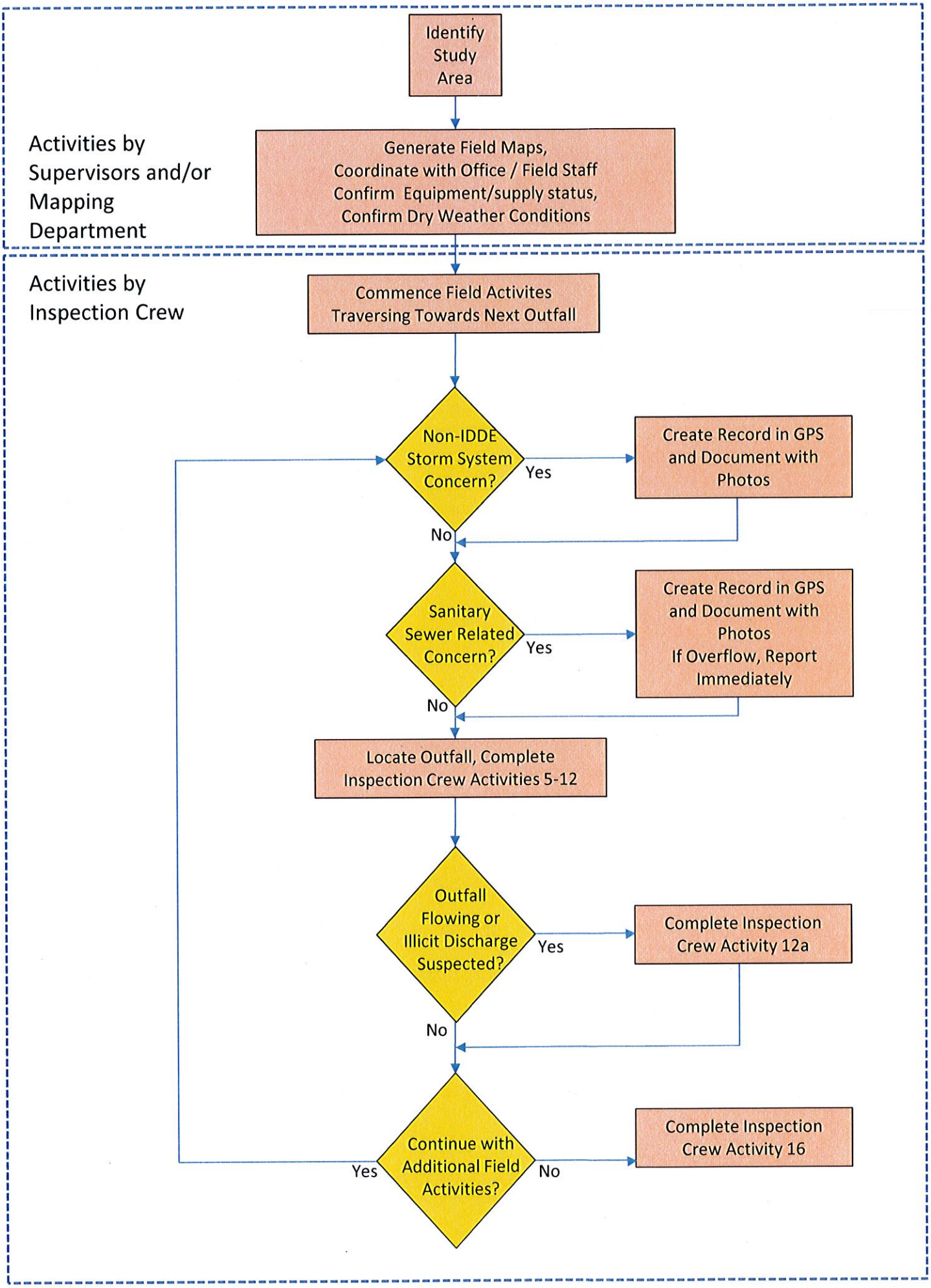
Section 2: Physical Indicators for Flowing Outfalls Only

INDICATOR	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other: ☐ None	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐ Yes - See severity ☐ None	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ None ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 3: Sample Collection

1. Sample for the lab?	☐ Yes	☐ No	Reason no sample taken:

OUTFALL INSPECTION FIELD ACTIVITY FLOW CHART



OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Today's date: 3/26/12	Outfall ID: 199-609
Photo #s: 229	Time (Military): 12:00

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Residential
- ☒ Commercial
- ☐ Institutional
- Other: _____

Section 2: Physical Indicators for Flowing Outfalls Only

INDICATOR	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other: ☒ None	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
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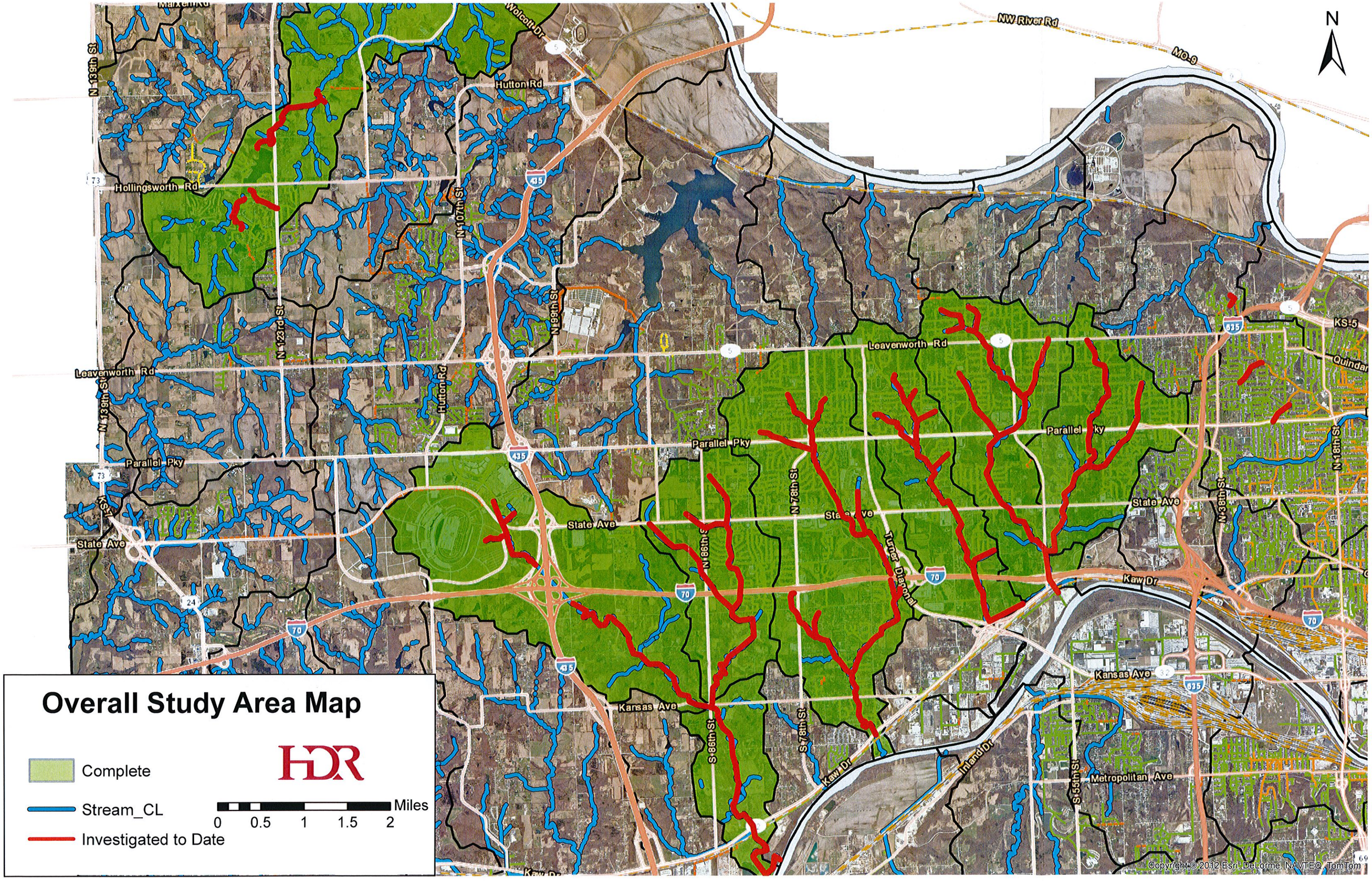
Section 3: Sample Collection

1. Sample for the lab? ☐ Yes ☒ No


Overall Study Area Map
Complete
Stream_CL
Investigated to Date
HDR
0 0.5 1 1.5 2 Miles
N
NW River Rd
MO-9
Wolcott Dr
Hutton Rd
Hollingsworth Rd
N 139th St
N 123rd St
N 107th St
N 99th St
Leavenworth Rd
N 138th St
Parallel Pky
KS-7
State Ave
N 86th St
N 78th St
Turner Diagonal
Kaw Dr
Kansas Ave
S 86th St
S 78th St
Inland Dr
S 55th St
Metropolitan Ave
N 38th St
N 16th St
KS-5
Quindar
Copyright © 2012 Esri, DeLorme, NAVTEQ, TomTom

Department of Public Works

Certifies that

_____

Has successfully completed the class

ABC's of BMPs,
Erosion & Sediment Control Done Right

And earned 6 Professional Development Hours

October 18, 2013

Brent E. Thompson, *County Surveyor/Stormwater Coordinator*

Instructor: Shirley D. Morrow, CPESC, CISEC

Department of Public Works
ABC's of BMPs, Erosion & Sediment Control Done Right

AGENDA

Friday, October 18th
8-4:30 p.m.
Neighborhood Resource Center, 4953 State Avenue

Construction sites in Kansas City, KS, regardless of size, are regulated to ensure Best Management Practices (BMPs) are installed and maintained to prevent sediment and other pollutants from leaving the site. Lack of erosion and sediment control BMPs can allow large quantities of sediment and other pollutants to leave the site and enter streams, lakes, and rivers.

National Pollutant Discharge Elimination System (NPDES) Permit Requirement: Erosion and Sediment control are regulated and reported through our NPDES permit with the State of Kansas and the Environmental Protection Agency under the Clean Water Act. The UG is currently under a partial consent decree with the EPA and efforts have been increased on storm water pollution prevention in Wyandotte County. It will take a unified effort from designers, contractors, consultants, UG staff, and installers to implement an acceptable Erosion and Sediment Control Program. Working together, we will be able to meet requirements as well as produce an exceptional product for WYCO.

Shirley D. Morrow will provide a full day training class on erosion and sediment control standards.

- 8-8:30 a.m. — Registration sign in
  - 8:30-8:45 — Introduction with Bill Heatherman
- 10-10:15 — Morning break
- 11:45-1:00 p.m. — Lunch host by Public Works at Jalisco Restaurant
- 2:30 -2:45 — Afternoon break
- 4:15-4:30 — Q & A session
- 4:30 — Seminar Adjourn

ABC's of BMPs, Erosion & Sediment Control Done Right – Friday, October 18, 2013

NAME	DEPARTMENT	EMAIL
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Bill Bartling	Engr	
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Eric Nobert	Engineering	
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Jesse Castro	Code enforcement	
Cassandra Daniels	Code enforcement	
BOB LAUBSCH	CODE ENFORCEMENT	
Lora Ferguson	Code enforcement	

NAME	DEPARTMENT	EMAIL
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Erin Downing	Codes	
Stephanie Vogel	Codes	
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ANTHONY HUTCHINSON	BLDG INSP	AHUTCHINSON@WYCOKCK.ORG
Harvey Fields	BI	hfields@wycokck.org
Glen E. Newbill	Code Enforcement	
Greg Talkin	NRC	
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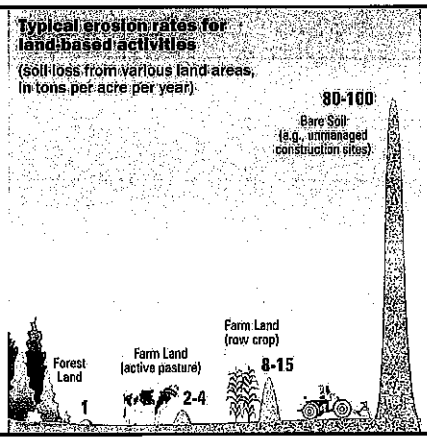
Brent Thompson	Public Works	bthompson@wycokck.org
Lideance LABay	Public Works	llabay@wycokck.org
John Pack	Demolitions	jpack@wycokck.org

Unified Government Erosion and Sediment Control Inspector

Class and Exam

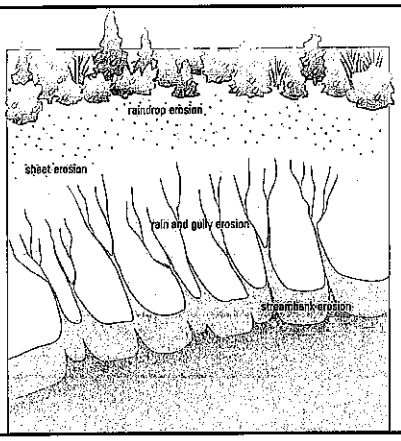
Why Are We Here

- Sediment is a leading pollutant of urban streams.
- Federal, State, and Local regulations require the use of adequate erosion and sediment control best management practices (BMPs).
- BMPs must be inspected and maintained in proper working order throughout the duration of the construction project.

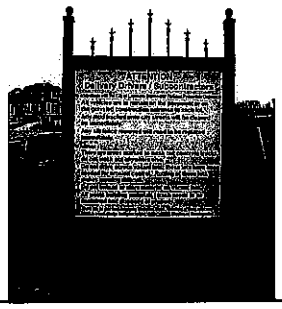


What Contributes to Erosion ?

- Removing Vegetation
- Removing topsoil and organic matter
- Reshaping the lay of the land
- Exposing subsoil to precipitation
- Failure to cover bare soil areas
- Allowing gullies to form and grow larger
- Removing vegetation along stream banks



Section 12 – Regulatory Information



Federal Regulations

- Section 402 of the Clean Water Act requires coverage of all construction projects that disturb one acre or more under the NPDES permit program.
  - National Pollutant Discharge Elimination System (NPDES)

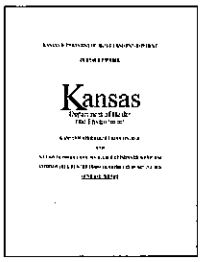
State Regulations

- Kansas Department of Health and Environment (KDHE) administers the NPDES program in the State of Kansas.
- You file a NOI (Notice of Intent) for permit coverage with $60 permit fee and all supporting documents.
- Prepare a Stormwater Pollution Prevention Plan (SWPPP) with appropriate BMPs to be used throughout the construction project.
- Inspect and maintain the BMPs.
- File an NOT (Notice of Termination) after project is complete and site is stabilized.

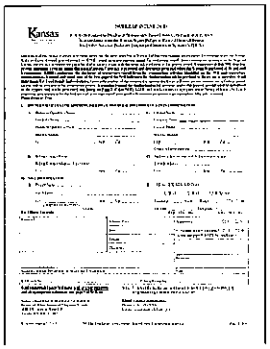
State Regulations cont.

- A copy of the Kansas NPDES permit and all necessary forms are available at:

http://www.kdheks.gov/stormwater/index.html#construct

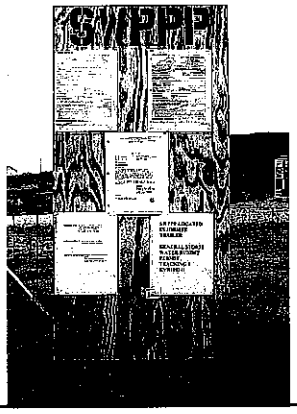


Notice of Intent

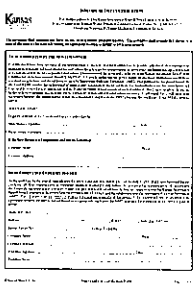


Records Address

- Records regarding the permit must be kept at the project site or at a readily available location. If the records will not be located on the project site, provide the address where the records will be located.



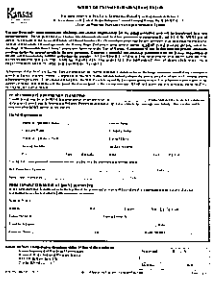
Additional Forms in Kansas



- Individual Lot Certification (ILC) - Completed by both the permittee who transfers ownership of a lot or a portion of the overall permitted area and the new owner or operator of the lot or parcel.
- The permittee shall maintain the ILC or a copy of the contract for sale covering the same requirements either on the site or at the Records Address location

Additional Forms in Kansas

- Notice of Transfer of Ownership (NOTO) - Use this form when ownership of the entire permitted tract or project will be changed.



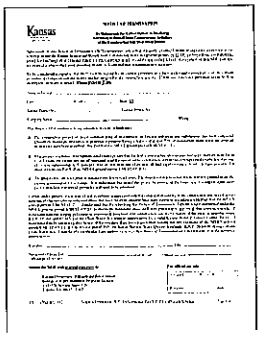
Design Engineer/Contractor

- Contractor should work with the design engineer.
- Understand the drawings.
- Understand the regulatory requirements.
- **Be engaged and communicate with who hired you.**

Completion of the Construction Project

- Before you can file the Notice of Termination you must complete the following:
  - All temporary BMPs are removed and the area disturbed by the removal of the device is stabilized.
  - Entire area that was disturbed has a minimum of 70% density of perennial vegetative cover or hardscape.

Notice of Termination



Local Regulations

- Unified Government regulations:
  http://www.wycokck.org/pw
- Johnson County regulations:
  http://stormwater.jocogov.org/Regulations/JOCO%20ESC.shtml
- Lenexa regulations:
  http://www.ci.lenexa.ks.us/publicworks/index.html#
  Permit required for any land disturbance of 5,000 sq. ft. or more
- Overland Park regulations:
  http://www.opkansas.org/_Bus/Engineering_Services/erosion_resources.cfm
  The City of Overland Park requires the superintendent to show 8 hours of training but no certification is required at this time.
- Other City Information
  - Inside front cover of the Field Guide

Erosion ⇒ Sediment ⇒Sedimentation

Dislodge Soil Particles *	⇒	Transport Soil Particles *	⇒	Deposit Soil Particles *

* And everything attached to them.

Erosion ⇒ Sedimentation

Action ⇒ Stop

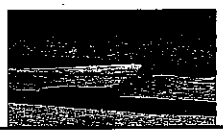
ENERGY

Erosion Controls

- These are any controls, measures, or devices that will cover the bare soil and dissipate the energy from the raindrop impact to reduce or eliminate the amount of erosion that occurs.

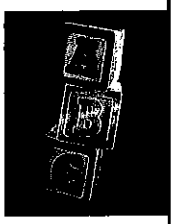
Sediment Controls

- These are controls, measures, or devices that slow the flow, pond the water and otherwise reduce the energy in the flowing stormwater so the energy is dissipated and the sediment falls out while still on the construction site.



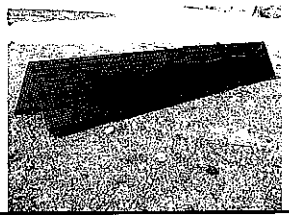
The Basics of Staying in Compliance on the Construction Site

- There are four things to remember:
  - Erosion controls and sediment controls are entirely different
  - There MUST be a system of controls
  - The SWPPP is not stagnate - It is constantly changing.
  - The SWPPP is only as good as its implementation, installation, and maintenance



What is a BMP?

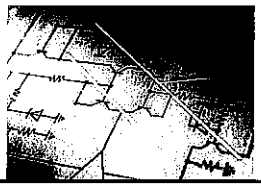
Best Management Practice - any measure, practice, or device used to reduce or eliminate the amount of erosion or sediment release from a construction site.



Build the System

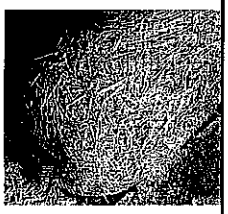
The Million Dollar Question:

How many steps in the system are necessary to reduce the amount of sediment leaving the site?



All storm water must be treated before it leaves your site.

- What is 'TREATED' Stormwater?
  - All stormwater must flow over or through some type of measure, control, or device to reduce it's energy and allow as much sediment to deposit on the construction site prior to the discharge of stormwater from the site.

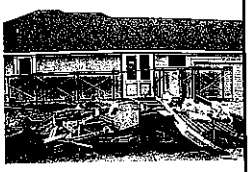


Section 1
Pre-Construction Planning

- Assess soils and slopes on the site
- Identify discharge points and receiving waterways
- Preserve existing vegetation where possible
- Design the project to fit the site
- Minimize impervious surfaces
- Promote infiltration in the design

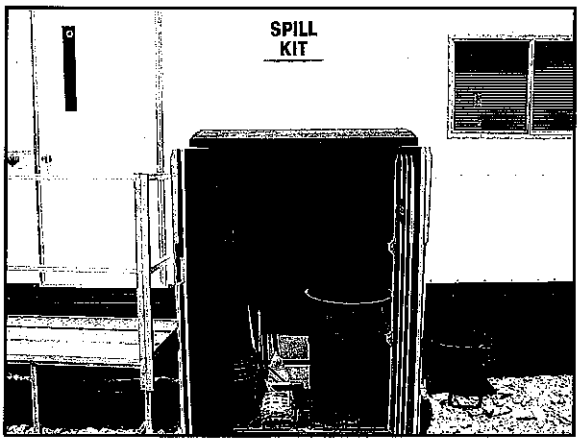
Develop the SWPPP

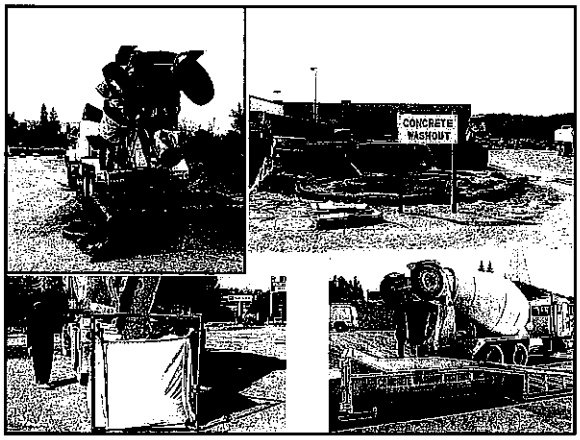
- Erosion Controls
- Sediment Controls
- Other pollutants
  - Concrete washout
  - Trash
  - Hazardous waste and petroleum product containment



Spills over Reportable Quantities

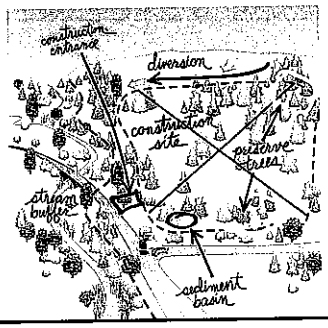
- Petroleum products
- Hazardous waste
- Spill kit
- MSDS information
  (Material Safety Data Sheet)



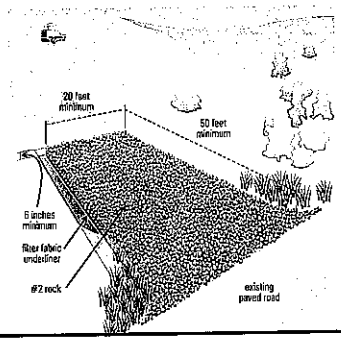


Concrete mix over the inlet

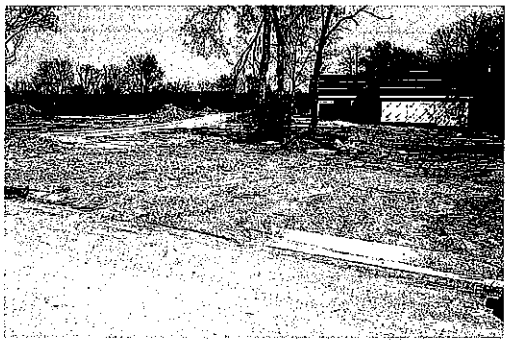
Section 2
Construction Phase Operations

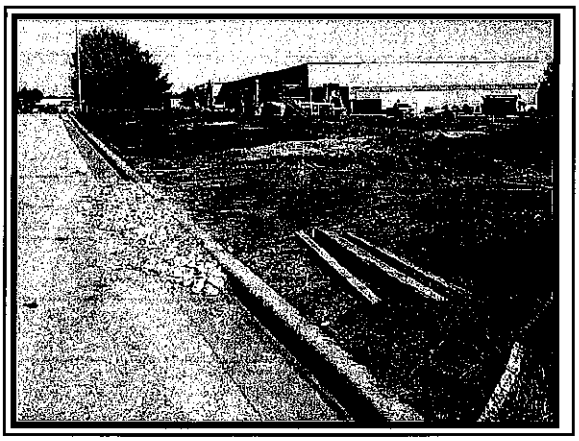


Construction Exit



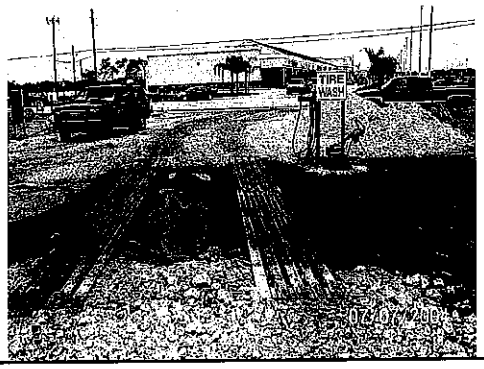
Construction Exit

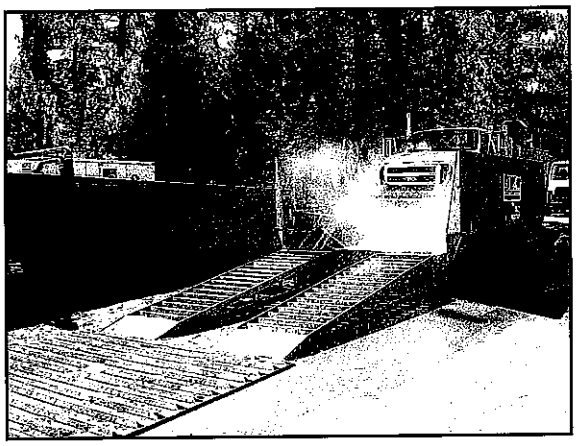




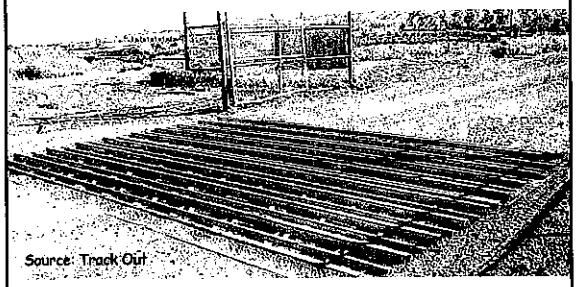
Is this Construction Exit working ?

Tire Wash



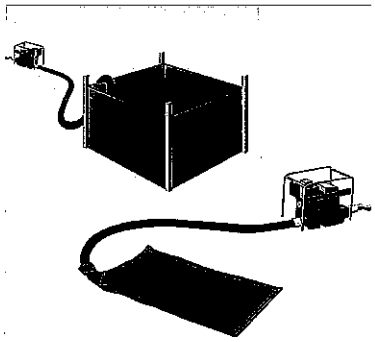


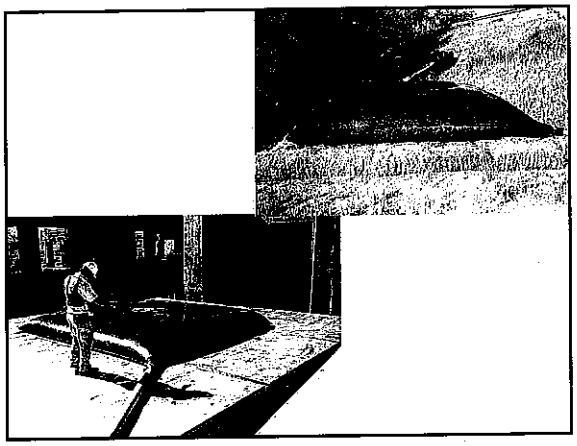
Rumble Plates



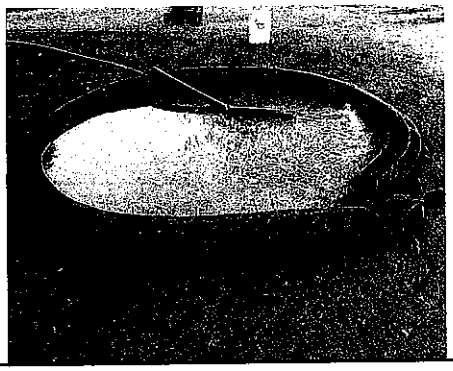
Mud Mats

Dewatering





Dewatering



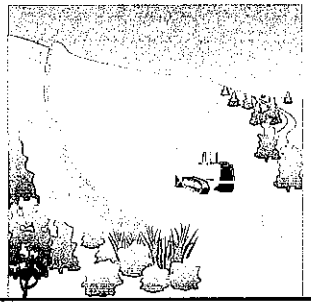
Inspection and Maintenance

- Perform site inspection every 14 days – or more often if required by local ordinance
- Within 24-hours after each 0.5 inch rainfall event
- Keep written records
- Remove accumulated sediment when it reaches ½ height behind silt fence
- Remove sediment from traps and basins when 20% of capacity is filled

Inspect the Paperwork

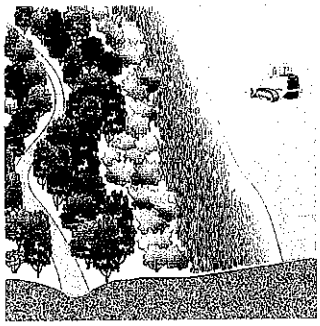
- Copy of the Construction General Permit (CGP)
- Signed Notice of Intent (NOI)
- Agency Correspondence
- Site and BMP descriptions
- Copy of local (city/county) permit

Section 3
Diverting Upland Runoff Around Exposed Soils

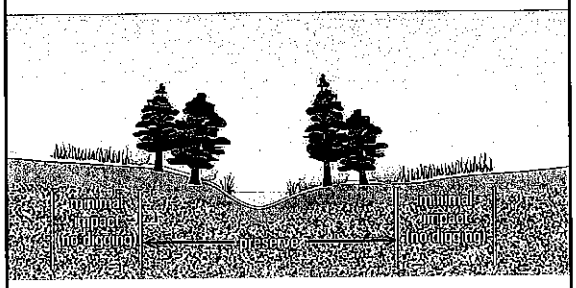


Diversion Berm

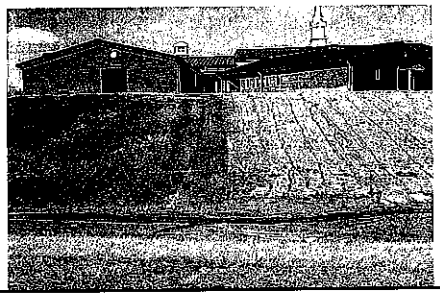
Vegetated Buffers



Vegetated Waterways

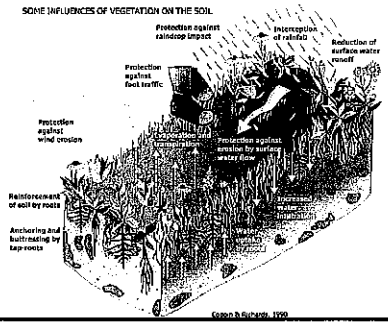


Section 4
Protecting Soils With Seed, Mulch, or Other Products



Vegetative Cover

- Vegetation provides many protective devices for the soil.

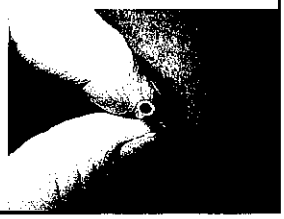


Clump or Bunch Type Growth

- When seeded at sufficient rates, they can form a uniform turf. However, at low seeding rates, or if seeds are not protected from washing away, small clumps develop. Erosion can occur between the clumps.

Temporary Stabilization

You cannot file a Notice of Termination and leave a construction site if stabilization is an annual (temporary) vegetative species.



Guide for Choosing Temporary Stabilization Species

- American Public Works Association
  - Division 2150 - Erosion and Sediment Control
- Protecting Water Quality

Sod

Soil Preparation

- Soil preparation is very important in establishing vegetation
- To successfully establish vegetation you must have - Topsoil
- Topsoil will have approximately 5% organic matter in its make up
- Topsoil is considered the A horizon while subsoil is the B horizon in a soil profile.

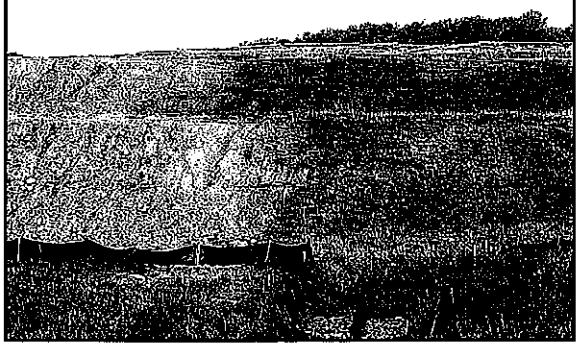
Organic Matter

- Organic matter consists of plant and animal litter in various stages of decomposition.
- Organic matter improves soil structure and increases permeability, water-holding capacity, and soil fertility.
- Subsoil does not have enough organic matter or nutrients in it to sustain plant growth.

Fertilizer N-P-K-+

- N - % Nitrogen - grows leaf blade
- P - % Phosphorus - rooting and blooming
- K - % Potassium - health and vigor
- + - Some other ingredients in fertilizers could include the following:
  - Iron
  - Sulfur
  - Micronutrients

Stabilize as you go

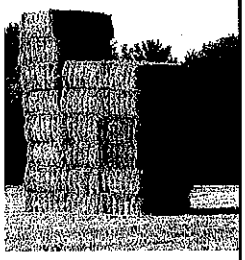


Mulch or Compost

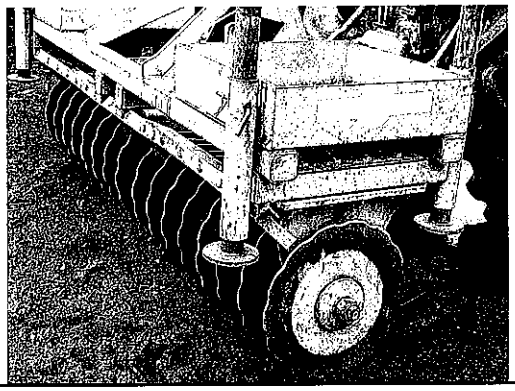
- Mulch
  - Straw/Hay
    - Tackifier or crimping
  - Wood
    - Shredded
    - Bark chips
    - Recycled wood products
  - Paper
  - Cotton Fibers
- Compost
  - Vegetable matter
  - Solid waste

Straw

- Straw mulch is from grains such as wheat or rice that are hollow stemmed so they are much lighter weight and can blow off a site easily if not secured by crimping or use of a tackifier.
  - Crimping is when a blade is used to cut the straw into the ground to hold it in place.
  - Tackifiers are resins (tree sap) or slick paper (Sunday advertisements - clay) that are sticky and hold the mulch together.

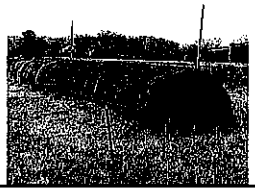


Crimping



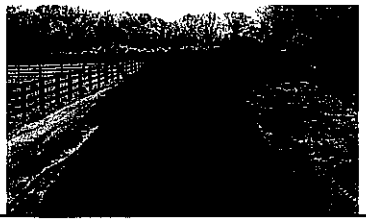
Hay

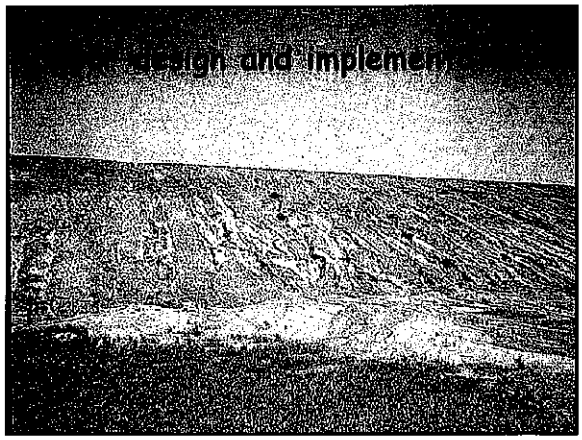
- Hay is made from grass plants which are solid stemmed so they are somewhat heavier than straws and may mat together better when applied as a mulch to cover bare soil. It is still recommended to use some kind of tackifier or netting to keep the mulch in place to protect the soil surface.



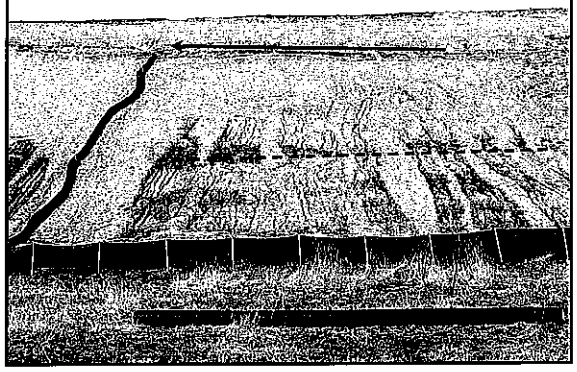
Compost

- Not the same as mulch
- Made of totally decomposed vegetable or solid waste matter
- Excellent as a topsoil additive in addition to soil protection.
- Excellent moisture and nutrient holding capacity.





Erosion controls and sediment controls

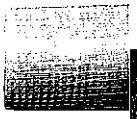


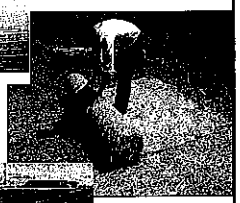
Hydromulch/Hydroseeding

- Paper
- Paper/Wood 30/70 or 50/50
- Wood
- Tackifier
  - Guar Gum
  - Slick paper - clay
- Bonded Fiber Matrix
- Flexible Growth Medium

Rolled Erosion Control Products

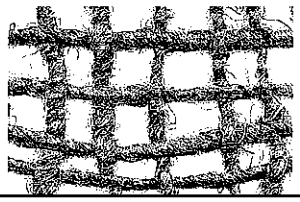
- Netting
  - Plastic
  - Jute
  - Anti-washed jute
- Blankets
  - Straw
  - Excelsior/Wood
  - Coir/Coconut
- TRM's
- ECTC Specs





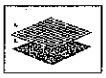
Netting

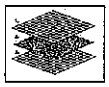
- Open weave
- Over mulch
- During good growing conditions, vegetation must establish quickly
- Not recommended for use in channels



Blankets

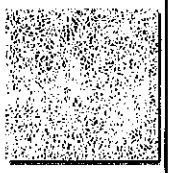
- Short Term Degradable
  - Straw or Wood (Excelsior)
  - 9 months to 18 months
- Long Term Degradable
  - Straw/Coconut, Wood, Coconut (Coir)
  - 1 to 2 years





Blanket Make-Up

- Important things to consider about blankets and how long they will last:
  - Type of material they are made out of
    - Straw
    - Wood
    - Coconut
  - Netting: There is a top and bottom to all blankets. Make sure they are installed right side up.
  - They will degrade faster during wet weather periods.

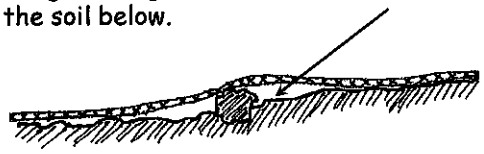


Blanket Installation

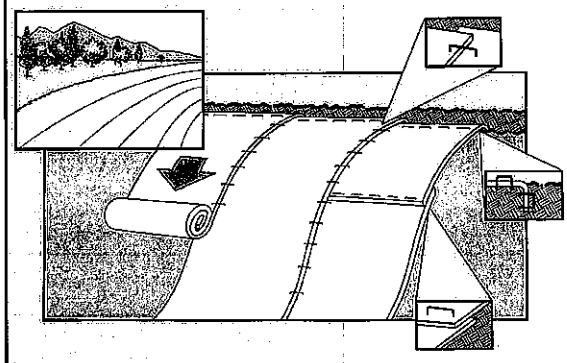
- Must have area fine graded/no clods
- Must have good soil contact
- Appropriate staple pattern
- Toed in at edges
- Proper overlap between blankets
- Do not use in improper site conditions
- Use for areas where vegetation should be fully established prior to blanket degradation

Blanket Installation cont.

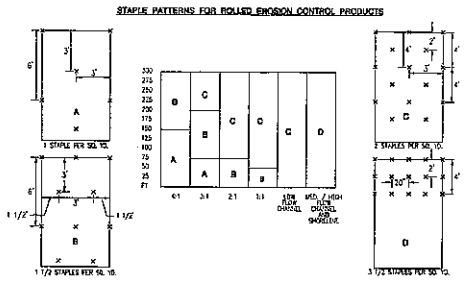
- Clods in the soil will produce air pockets or "tenting" which is where stormwater will go through the blanket and erode the soil below.



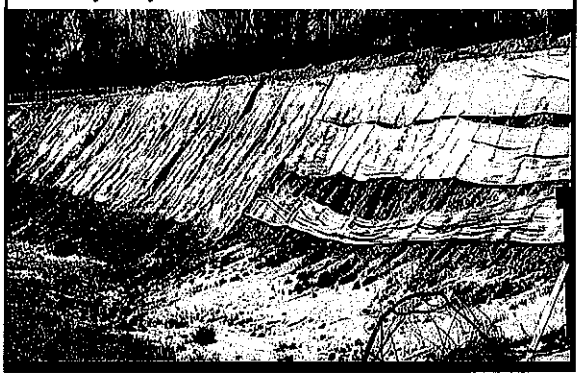
Blanket installation instructions



Appropriate Staple Patterns

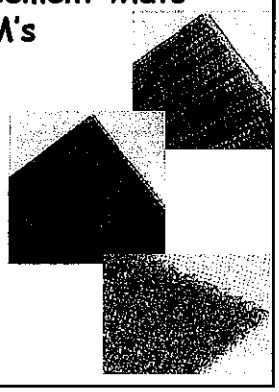


Improper blanket installation



Turf Reinforcement Mats TRM's

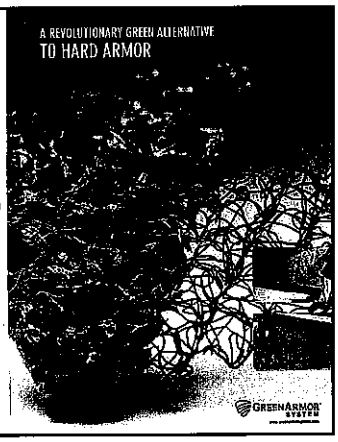
- Composite TRM's
  - Partially degradable
  - Protection of blanket plus reinforcement
- Synthetic TRM's
  - Permanent
- Soil Fill TRM's



Soil Fill TRM's

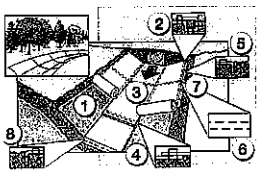
- Should have soil over the mat with seed
- Then a short term blanket over it to protect the soil and seed.
- Soil fill TRM's are to provide the grass plants with a stronger root system during overland stormwater flow situations.

Two products used together as one



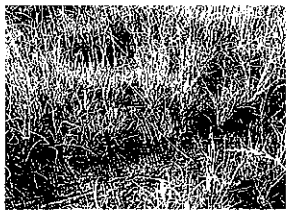
TRM Installation

- Must have area fine graded/no clods
- Must have good soil contact
- Appropriate staple pattern for the use
- Toed in at edges
- Proper overlap between blankets



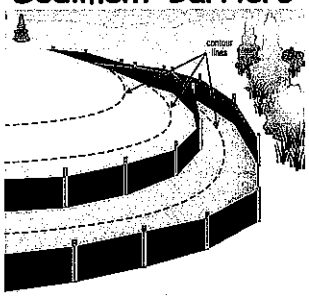
TRM Uses

- Steep slopes
- Highly erodible soils
- Areas where 70% vegetative cover will not become established for longer than one year
- Ditches and swales
- Flow channels



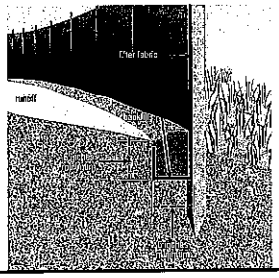
TRM Uses

Section 5
Using Silt Fence and Other Sediment Barriers



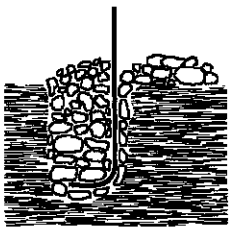
Silt Fence Installation

- Each 100-foot section of silt fence can control runoff from about ¼ acre

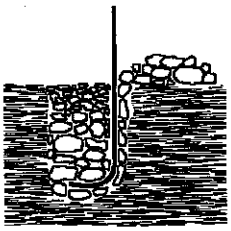


ASTM D-6462-03

Updated trenching specification 2003

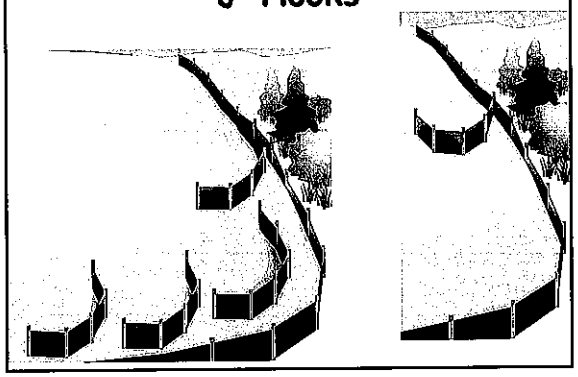


Requires over-backfill of trench **prior** to mechanical compaction.



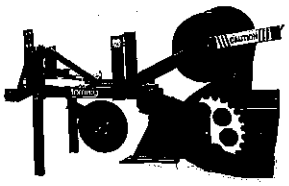
Compacted backfill must be level with undisturbed soil.

J-Hooks



Slicing

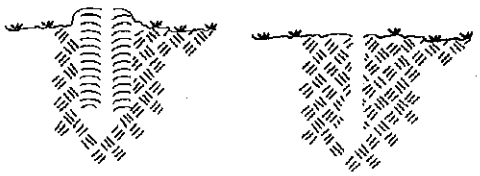
The other way to install silt fence is to slice it in place with a machine specialized in silt fence installation.



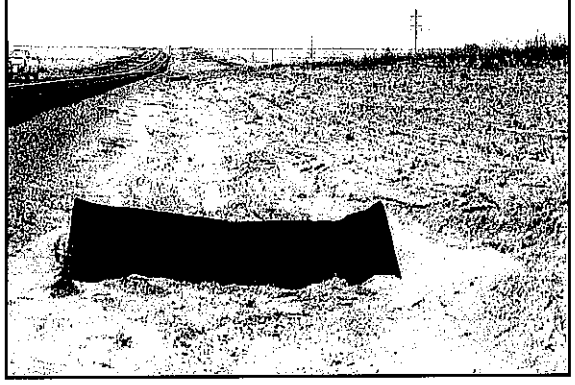
Slicing Installation

- Embedded tightly to reduce the risk of blow out underneath the fence
- No open trench
- Fast

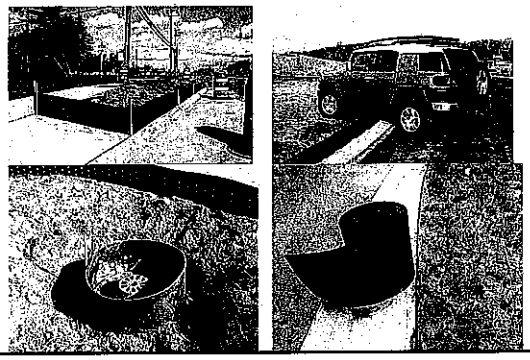
Static Slicing



Incorrect Silt Fence Placement



Flexible Self Supporting Silt Fence



Proper Silt Fence Installation

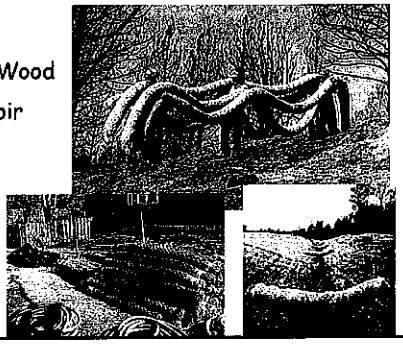
- Placed along the contour with a slight turn up gradient at the ends.
- Only placed in those areas where stormwater leaves the site via overland flow.
- Never placed in concentrated flow areas
- It should be relocated as necessary when soil movement and land grading changes the overland flow patterns.

Silt fence does not work in concentrated flows

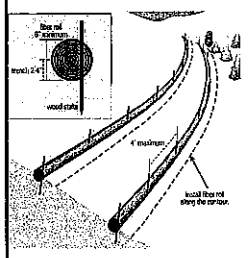
Leave room for sediment storage at toe of slope. Need erosion control until vegetation is established.

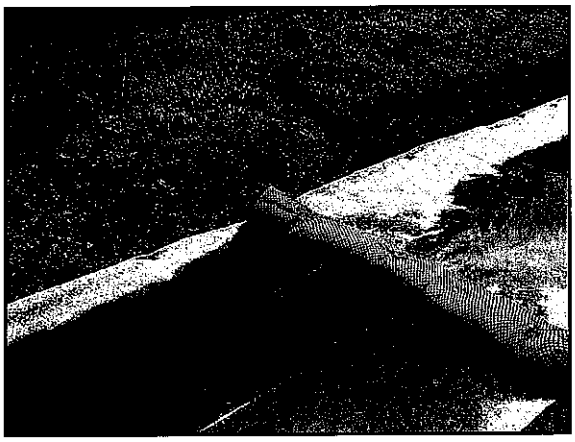
Bio-Degradable Wattles/Logs

- Straw
- Excelsior/Wood
- Coconut/Coir
- Mulch
- Compost



Fiber Rolls

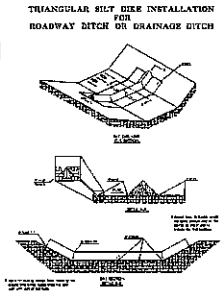




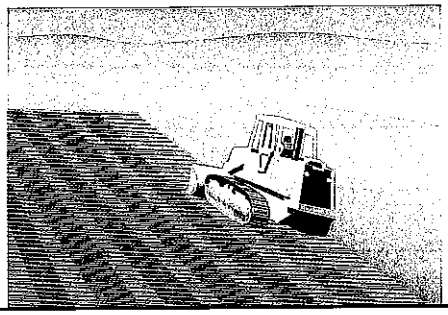
Erosion Tubes

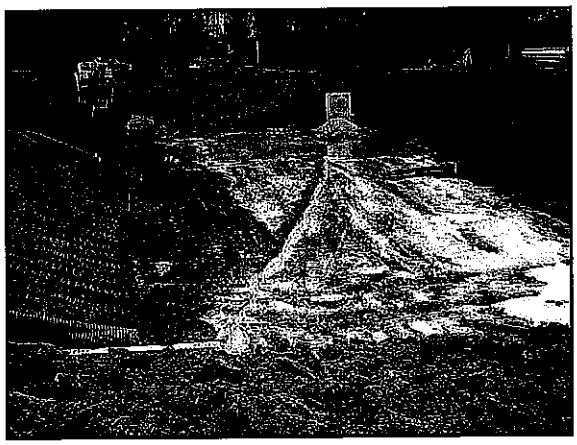
Triangular Foam Dike

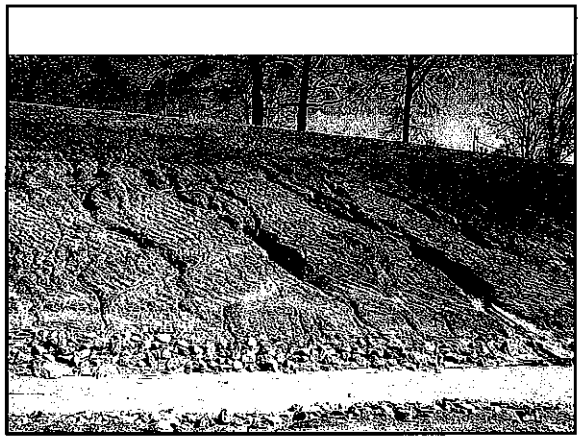
- Fast & Easy Installation
- Effective Sediment Control
- Conforms to Rough Terrain
- Lightweight & Durable

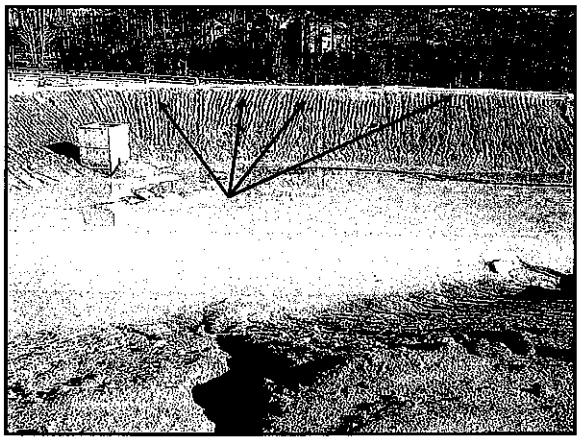


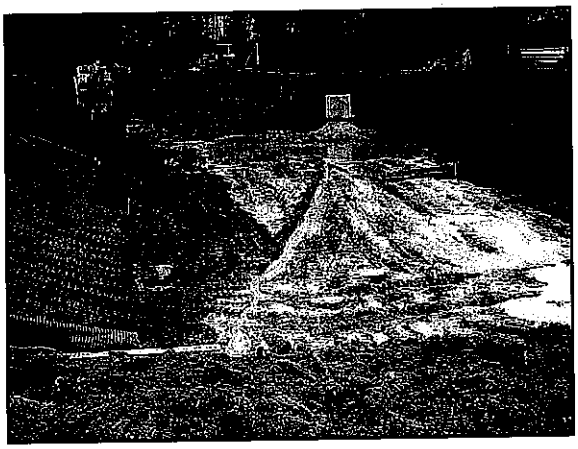
Section 6
Protecting Slopes to Prevent Gullies



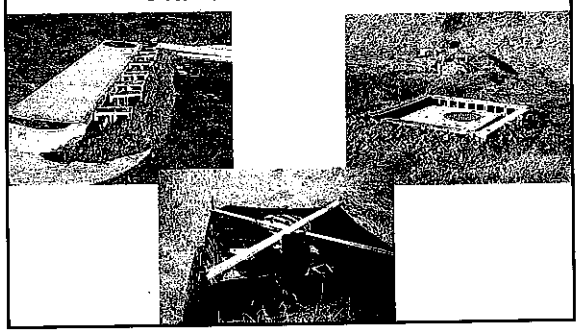


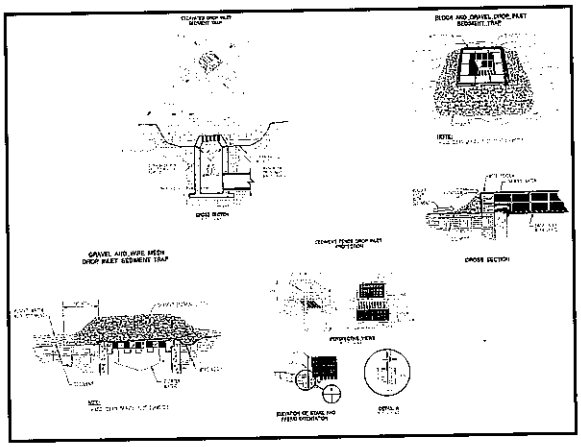




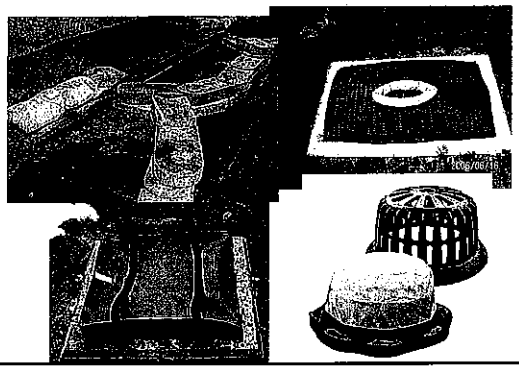


Section 7
Protecting Culvert and Ditch Inlets and Outlets

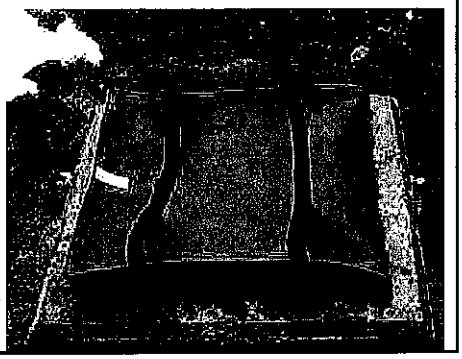




Other Inlet Products

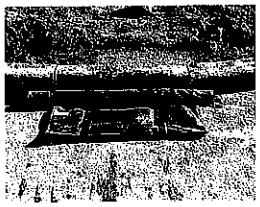


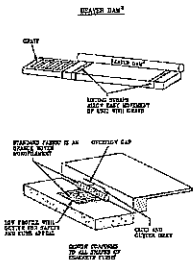
Geotextile Bag



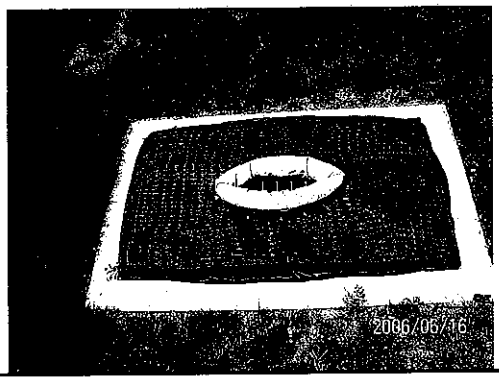
Underground Device

Bag and Dam Combination

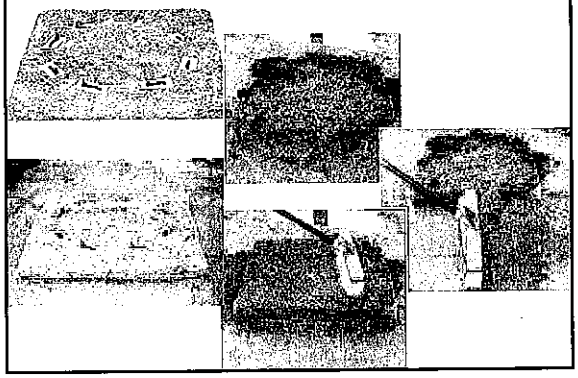




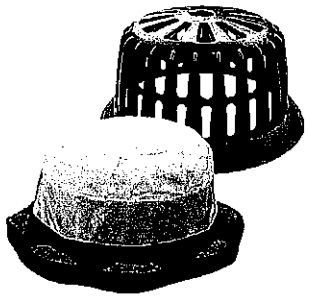
Grate Cover

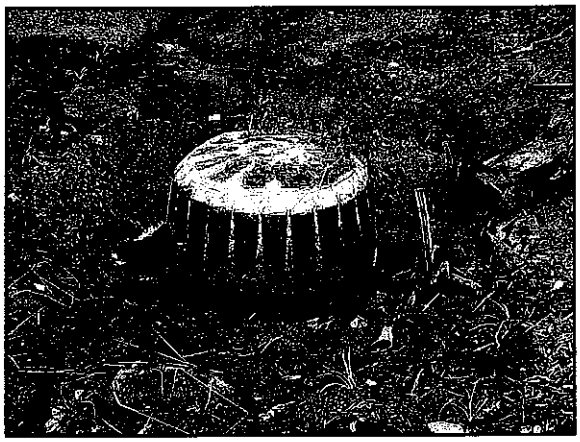


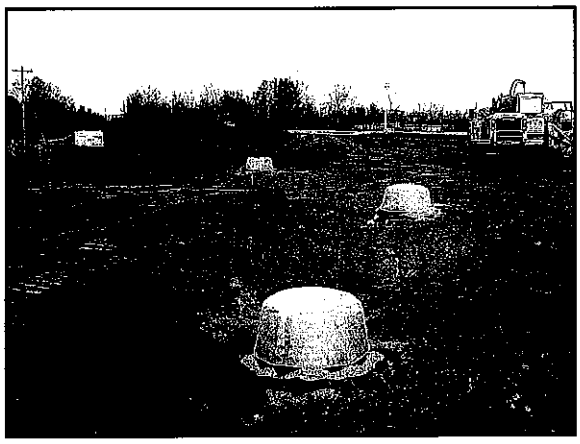
Coconut Inlet Protection



Domed Device







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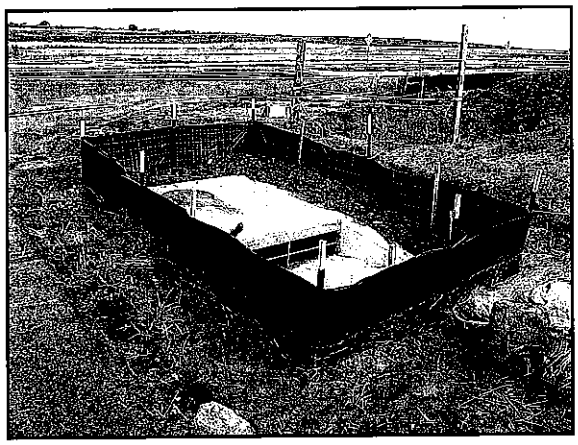
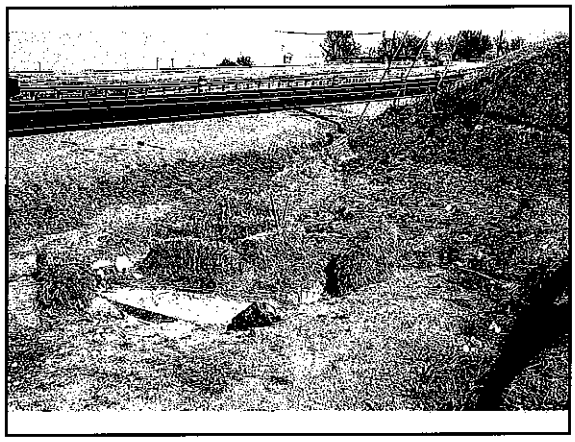
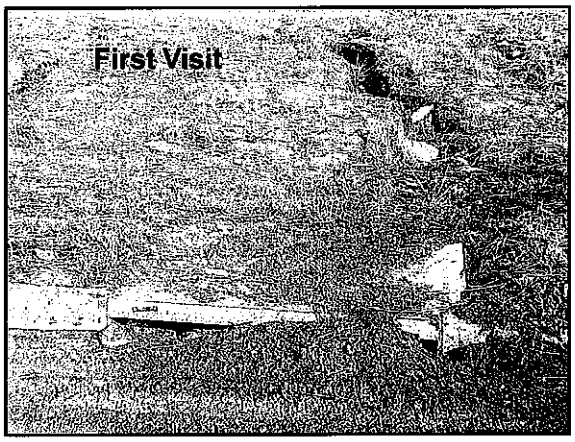
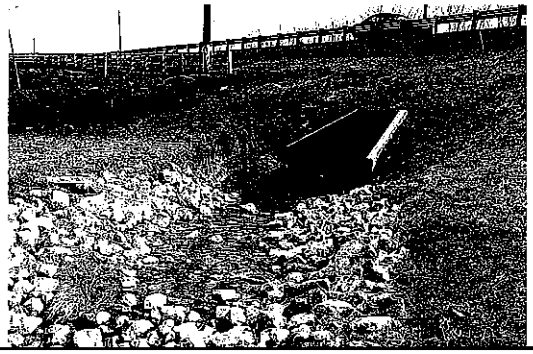




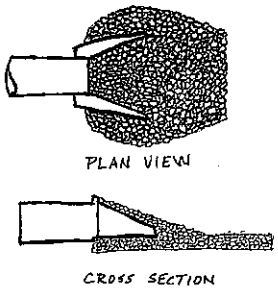

First Visit

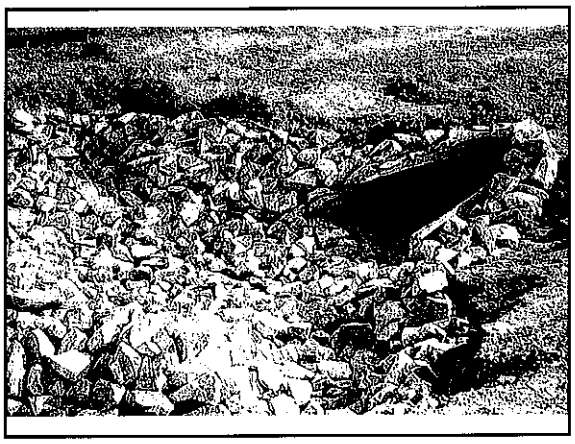
Mammoth layer

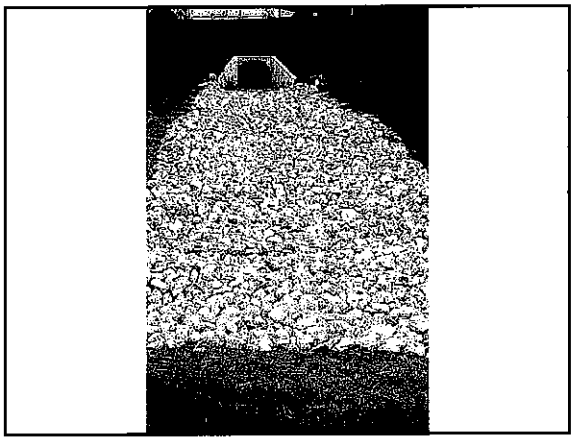
Outlets

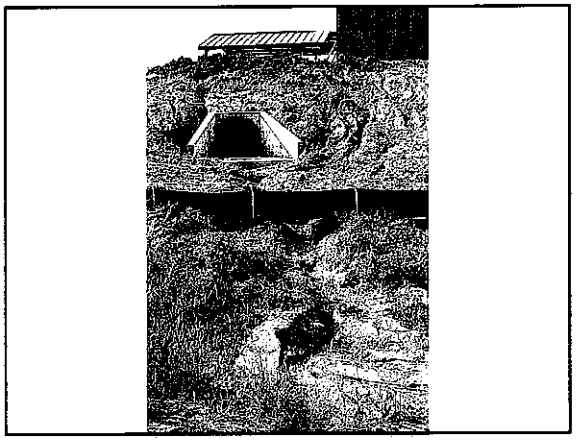


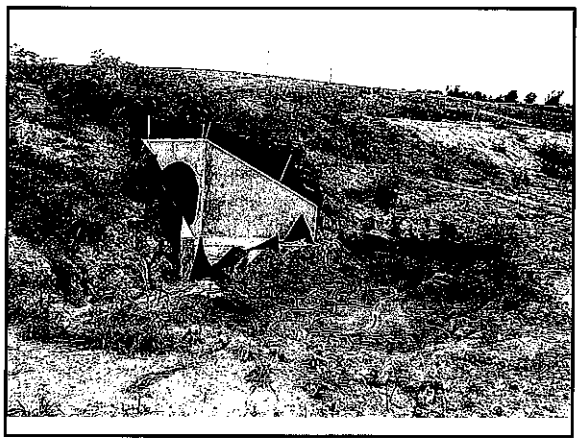
Rip Rap

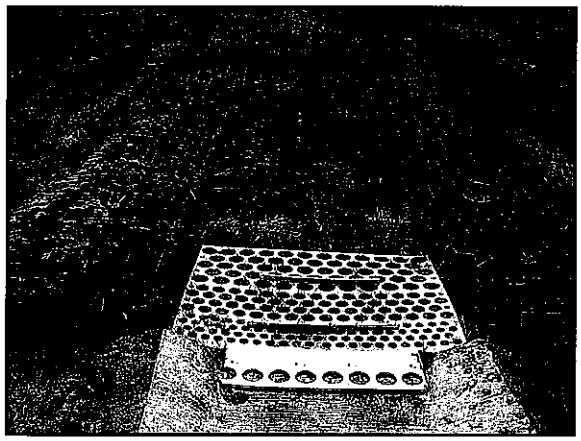


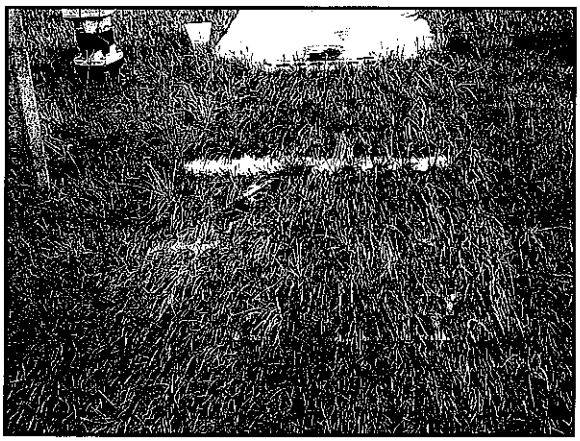








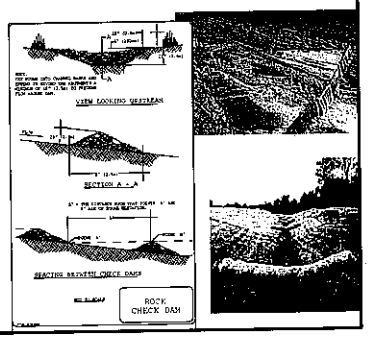


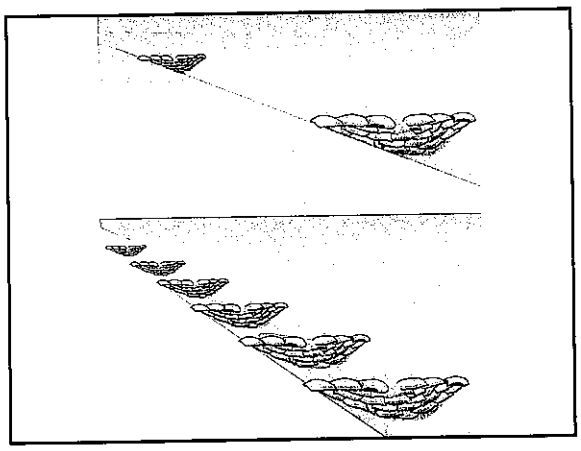


Section 8
Stabilizing Drainage Ditches

Ditch Checks / Check Dams

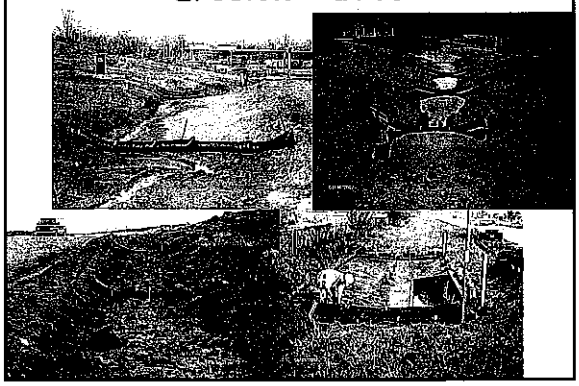
- Rock Ditch Checks
- Alternative Products:
  - Fiber Tubes
  - Foam Dike
  - Ridge Ditch check
  - Wattles
    - Degradable
    - Non-degradable





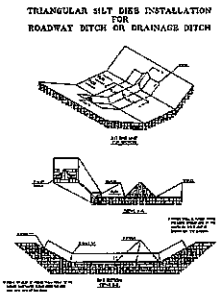
Proper Building of the Rock Dams

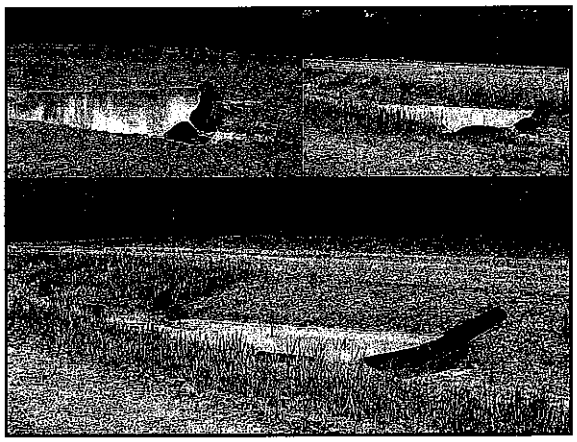
Erosion Tubes



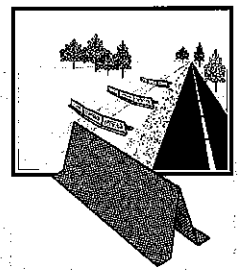
Triangular Foam Dike

- Fast & Easy Installation
- Effective Sediment Control
- Conforms to Rough Terrain
- Lightweight & Durable



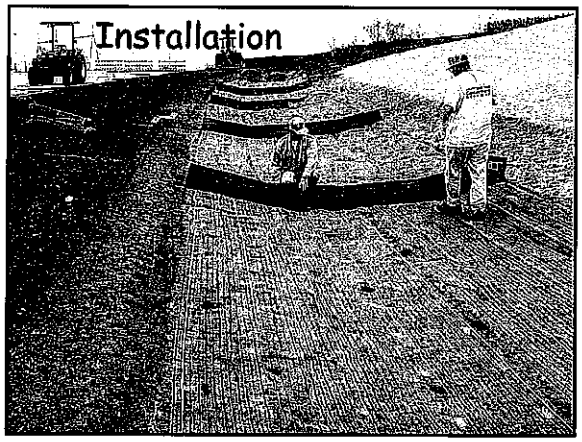


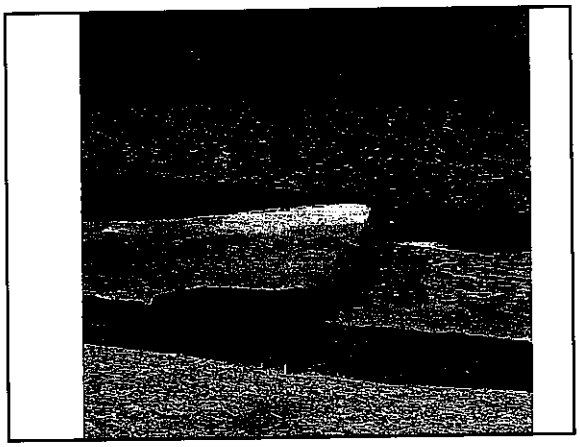
Another Ditch Check Product

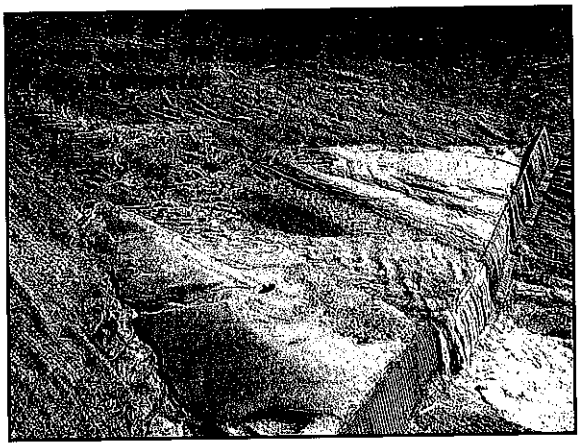


Ridge Check Installation

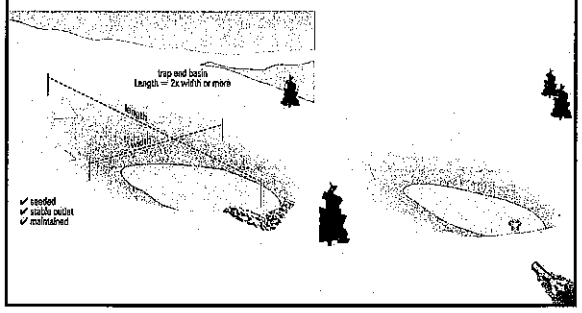
- Channels
- Ditches
- High flow or concentrated flow areas
- Must be used in conjunction with a TRM
- Maintenance is somewhat difficult

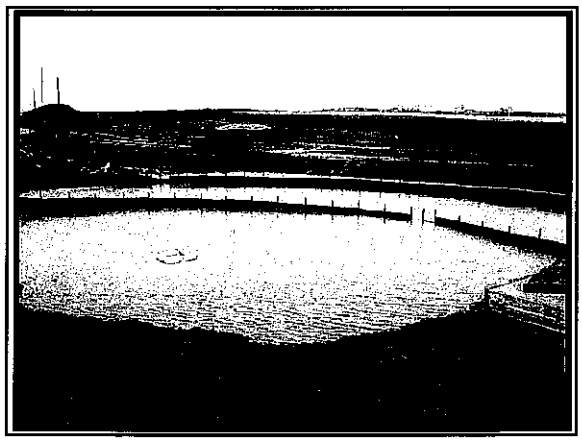




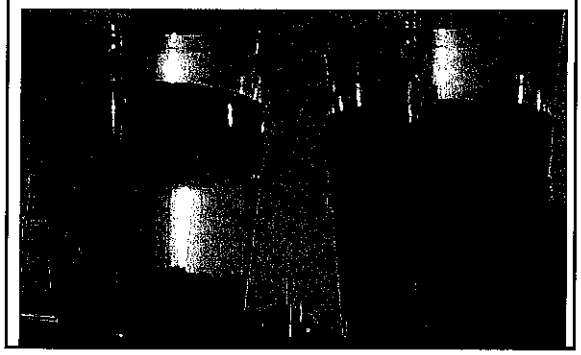


Section 9
Installing Sediment Traps and Basins





Flocculent Polymers (PAMs)



Long-Chain Polymers

- Have a positive charge and bind with colloidal materials, which are negatively charged
- Creates flocculation for treatment of construction storm water

Polyacrylamides (PAMs)

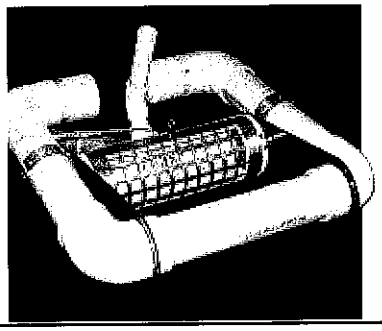
- Binds soil particles
- Should not enter waters of the US
- Applied as per the specific soil type
- Do NOT use the toxic forms:
  - Non food grade PAMs
  - Any cationic PAMs
  - Emulsion-based PAMs

Chitosan

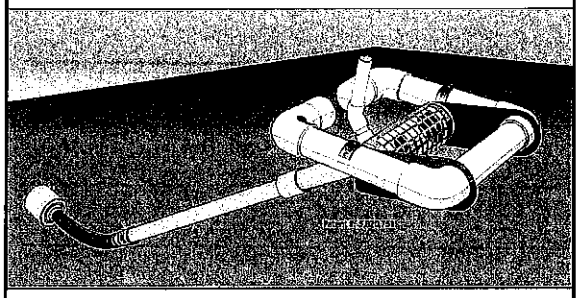
- Derivative of chitin, the second most abundant natural polymer on earth, after cellulose.
- Found in shells of crustaceans, insect shells, and fungi cell walls
- A linear polymer very effective in removal of heavy metals from wastewater and drinking water
- Fat Magnet - Fat Zapper
- Not soil specific

Flock Bags Attached to Check Dam Device

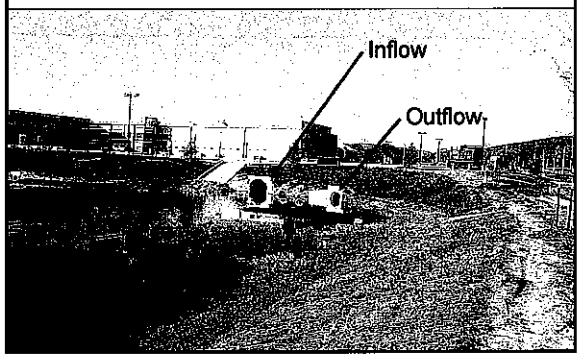
Pond Skimmers



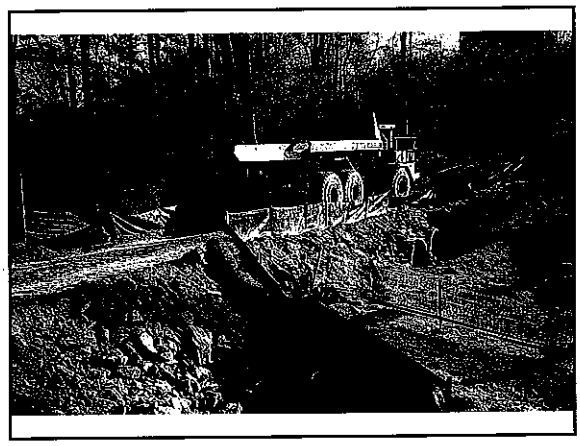
Pond Skimmers



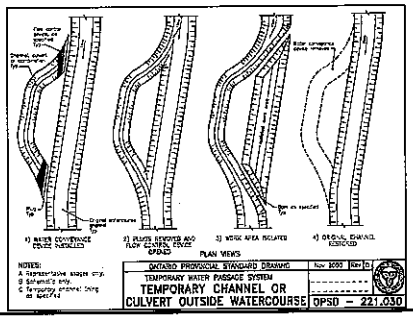
Short Circuit Design



Section 10
Protecting Stream Channels, Wetlands, and Lakes

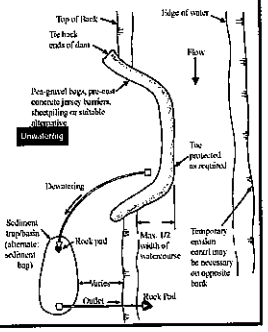


Temporary Stream Bypass or Full Diversion



Coffer Dam

- Temporary dam in or adjacent to watercourse
- Isolates area to allow construction in dry conditions
- Pea-gravel bags, jersey barriers, sheet piling
- Requires waterproof membrane



Section 11
Maintaining and Closing Out Your Construction Project

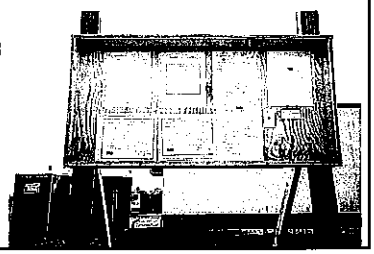
- Inspect all best management devices
- Manage trash and materials on site
- Vegetate disturbed soil as soon as possible
- Once the site is covered with a density of 70 %, remove all temporary BMPs
- Stabilize areas disturbed by removing BMPs

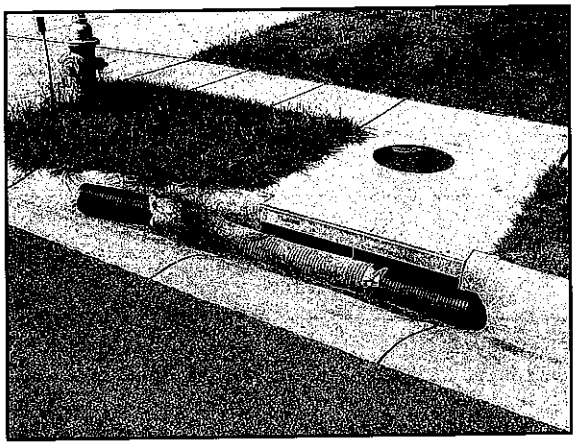
Inspect the Paperwork

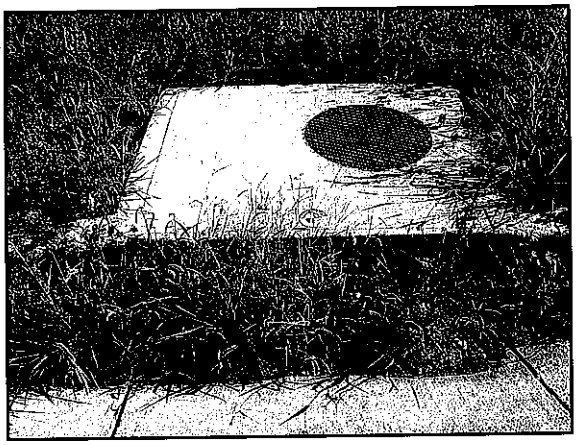
- Copy of the Construction General Permit (CGP)
- Signed Notice of Intent (NOI)
- Agency Correspondence
- Contractor Certifications
- Site and BMP descriptions
- Copy of local (city/county) permit

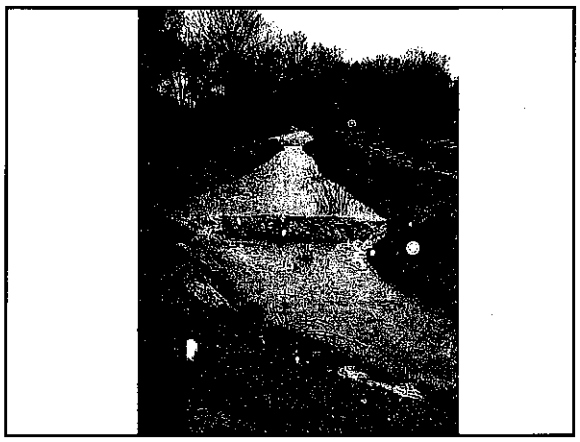
Site Inspection

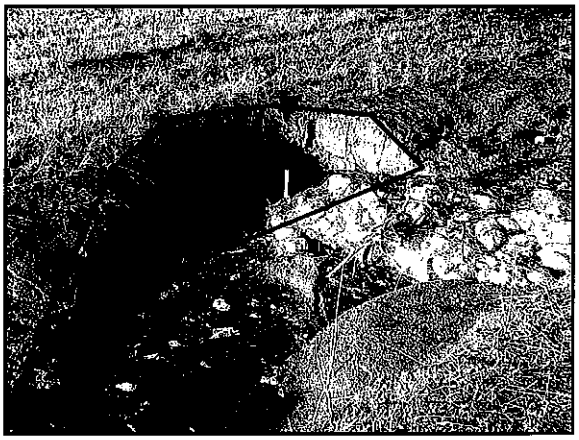
- Public posting
- Material storage areas
- Walk the perimeter
- Stormwater discharge locations

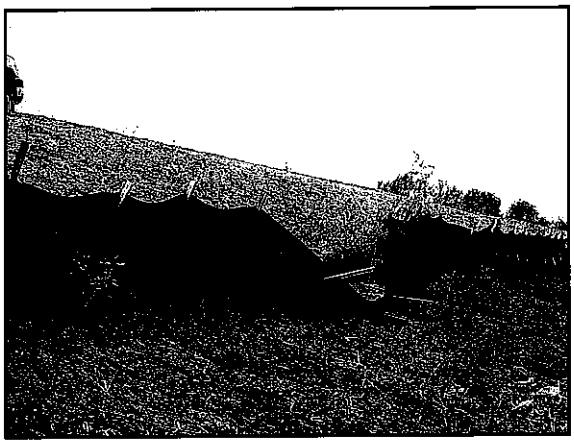


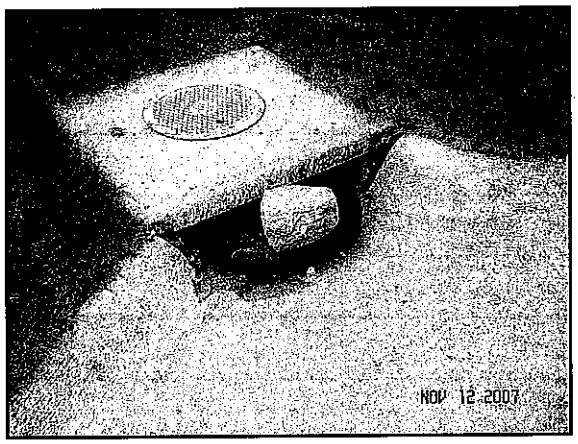








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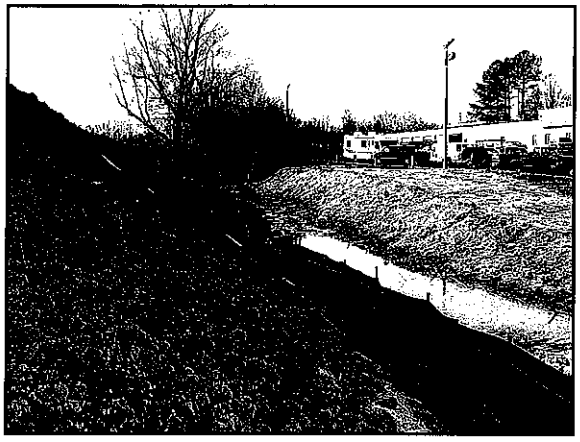
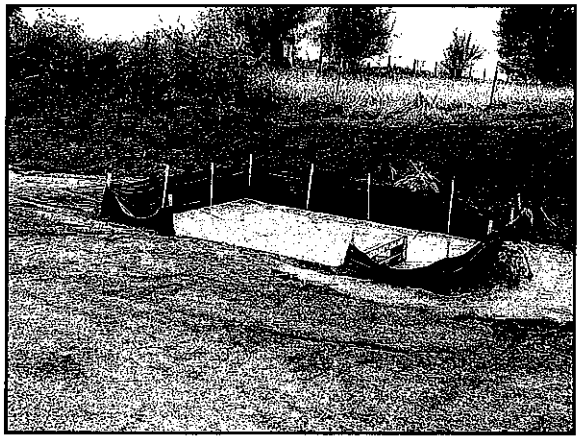
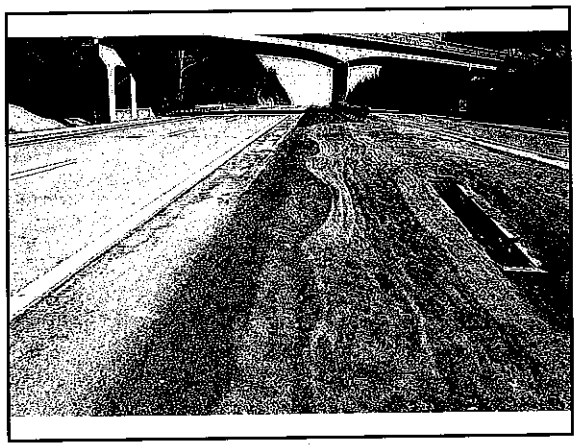
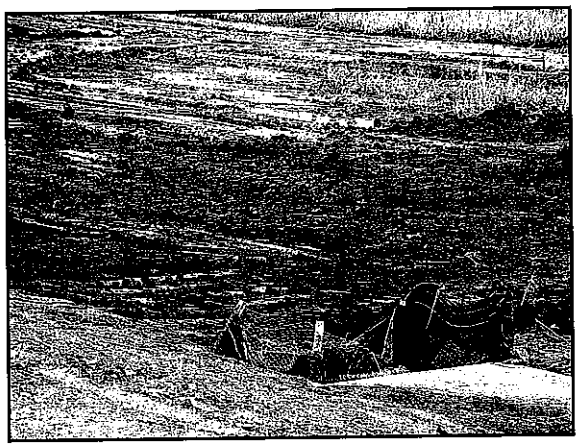
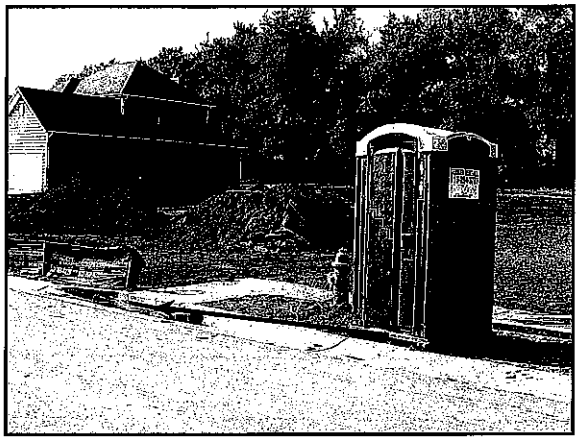
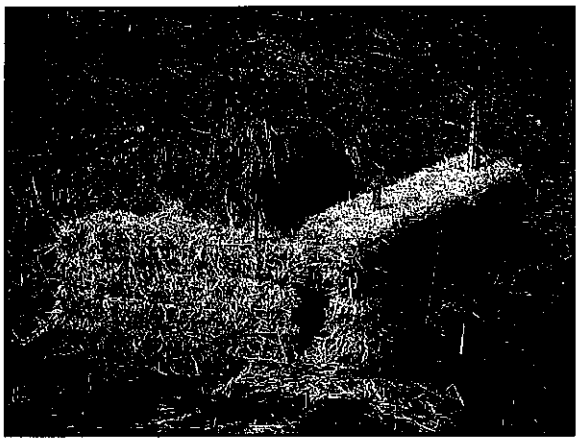


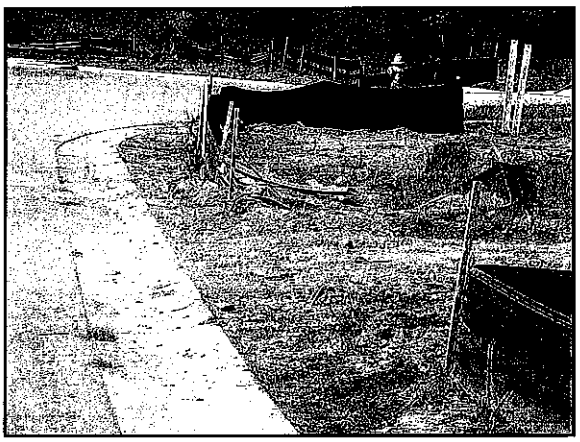


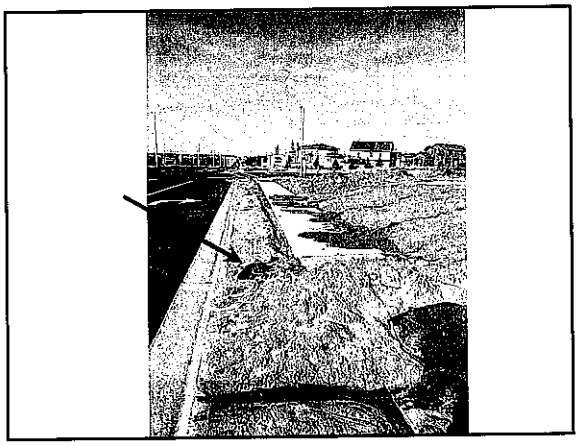


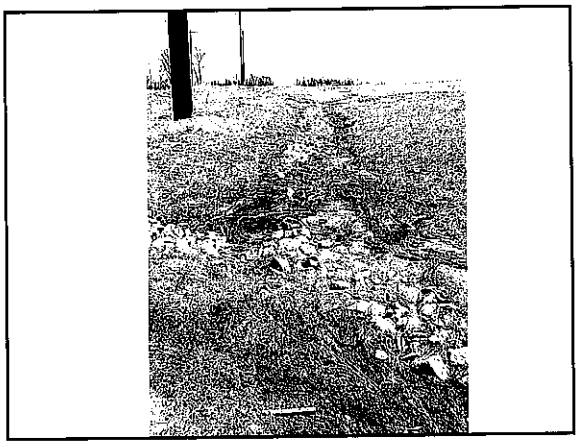


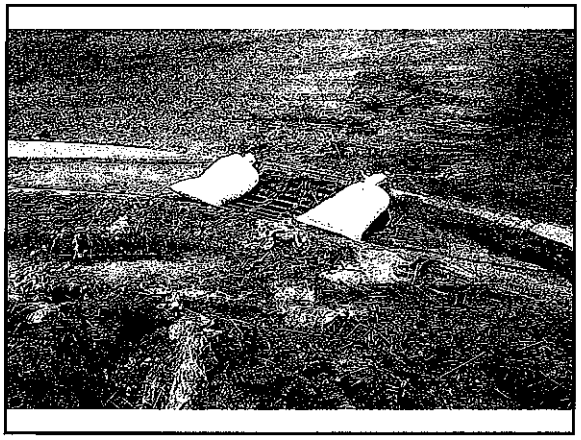


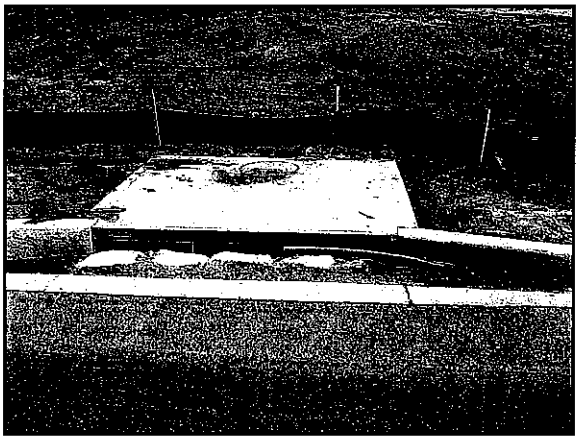


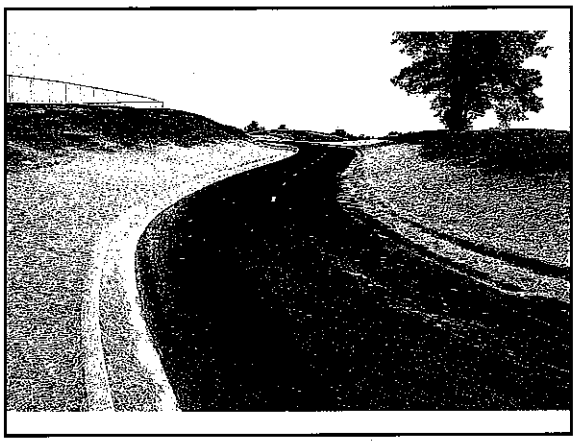


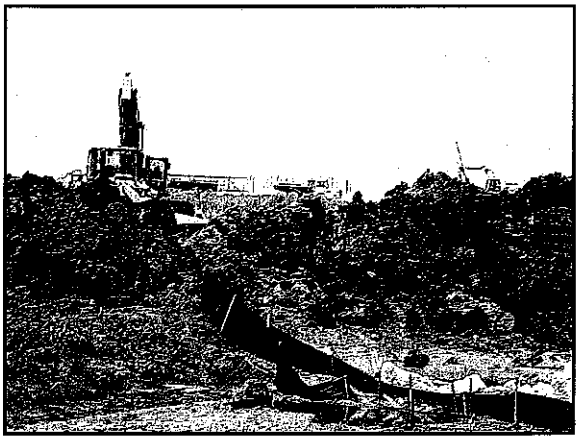


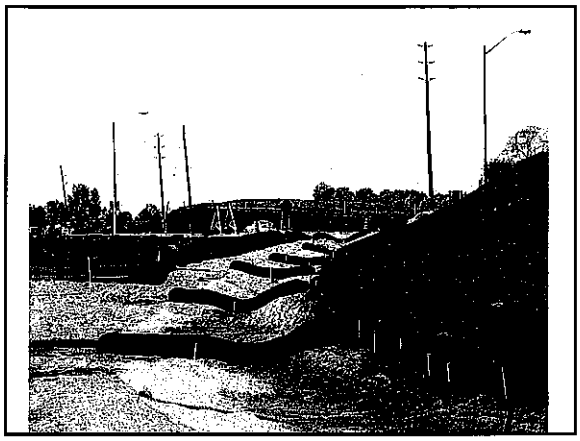


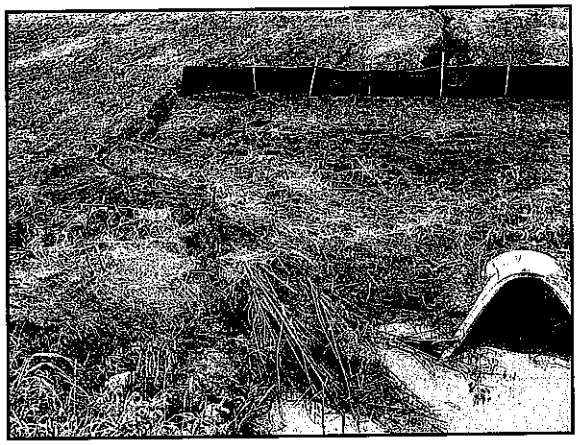


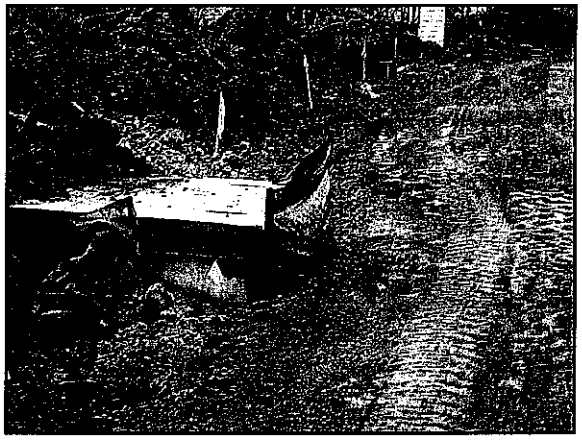












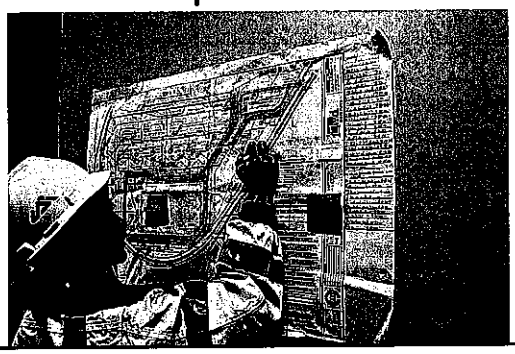
Remember When Doing an Inspection

- Inspect every part of compliance
  - Permit paperwork
  - SWPPP
  - Public entry postings
  - Best Management Practices
- When writing up the inspection – tell the story
  - What needs repaired or replaced
  - When was it repaired or replaced

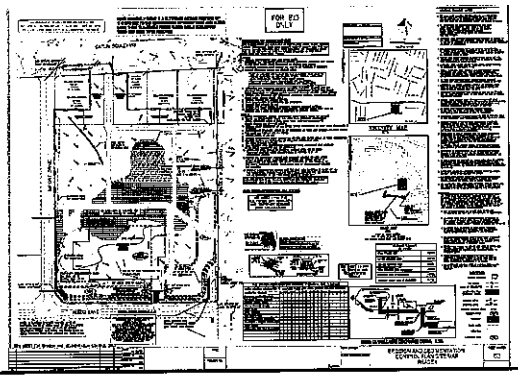
Inspections

- Keep all the SWPPP materials together in order and readable
- Make them accessible to contractors and agencies who do inspections
- Educate your contractors and subcontractors so they understand how important it is to stay in compliance.

When you are done with the inspection….



The Site Map



Dates of BMP Installation and Removal

- First marks on the site map include:
  - Installation of construction exit
  - Installation of perimeter control
  - Parking, trailer and lay down areas

Maintaining an Updated SWPPP

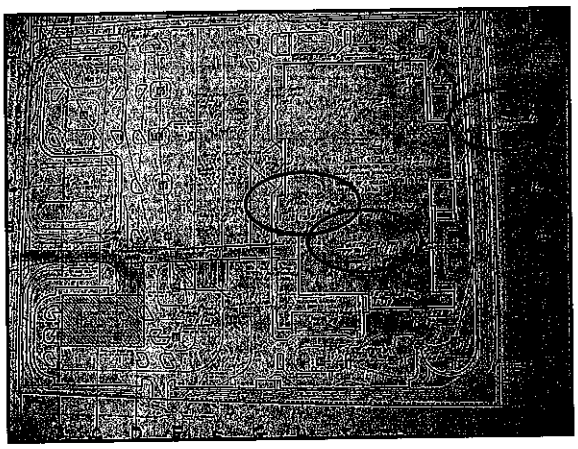
- The SWPPP must be modified when the following occur:
  - Changes in design, construction, operation, or maintenance that may effect the discharge of pollutants
  - During any inspections, it is determined the discharges are causing or contributing to water quality exceedances or the SWPPP is ineffective in eliminating or reducing pollutants in the stormwater discharge
- Changes in the revised SWPPP shall be implemented before the next rain event where practicable.

Records of Stabilization

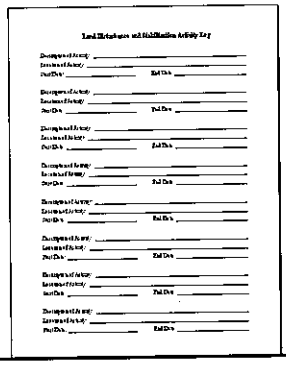
- Dates when major grading activities occur
- Dates when construction activities temporarily or permanently cease on any portion of the site
- Dates when stabilization measures are initiated and complete and any reasons for delays

Major Grading Activities

- Removing topsoil
- Cut or Fill
- Stormwater Basin installation
- Utility installation
  - Storm sewer
  - Sanitary
  - Water



Amendment Log



Land Disturbance and Stabilization Activity Log

Development Area: _____
Investment Activity: _____
Start Date: _____ End Date: _____

Development Area: _____
Investment Activity: _____
Start Date: _____ End Date: _____

Development Area: _____
Investment Activity: _____
Start Date: _____ End Date: _____

Development Area: _____
Investment Activity: _____
Start Date: _____ End Date: _____

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Development Area: _____
Investment Activity: _____
Start Date: _____ End Date: _____

Development Area: _____
Investment Activity: _____
Start Date: _____ End Date: _____

Amendments to the SWPPP

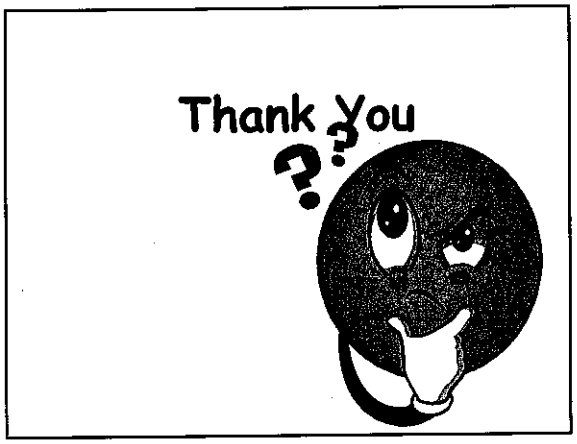
- Coordinate with the designer/engineer
- Understand the changes in the construction project and how they will affect stormwater flow
- Bring everyone to the table to discuss major changes

More Resources and Training

- International Erosion Control Association
  www.ieca.org
- EPA's Guide to Developing a SWPPP
  http://cfpub.epa.gov/npdes/stormwater/swppp.cfm
- EnviroCert International - Professional training and certification programs
  www.envirocertintl.org
- Certified Inspector of Sediment and Erosion Control
  www.cisecinc.org

Magazines

- Forester Communications


Thank You
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Unified Government of Wyandotte County/Kansas City, Kansas

STORMWATER MANAGEMENT PROGRAM

Post-Construction Stormwater Management Program

December 3, 2013

Final Post-Construction Training Program Agenda

A. Background (5 min.) – Thompson/Fjell
   - Development/Redevelopment Criteria- Stormwater Drainage
   - Ordinance
   - Proposed Program-UG

B. Post-Construction BMP Training (30 min.) – Fjell
   - Overview of BMPs-What are they, how do they work
   - Top 5 BMPs in WYCO- Pictures, descriptions
   - Operation & Maintenance
   - Plan Review/Inspection/Enforcement

C. Discussion and Comments (10 min.) – UG attendees
   - Your Role in this Program
   - Open Dialog/Issues/Questions
   - Summary and Closing Comments

Unified Government of Wyandotte County/Kansas City, Kansas
STORMWATER MANAGEMENT PROGRAM

Post-Construction Stormwater Management Program
December 3, 2013 Training Session
Attendee List

Name	UG Dept./Affiliation	Job Title/Position	Phone #	Email Address
CHRIS BURNS	BENESCH	PROJECT MANAGER	913-441-1100	CBURNS@BENESCH.COM
Sarah Fjell	PW - Engineering	Stormwater Engineer	913.573.5714	sfjell@wycokck.org
Bill Heatherman	PW - ~~County Engineer~~	County Engineer	913-573-5416	bheatherman@wycokck.org
Jim Neath	Building Inspection	Inspection Supervisor	913-573-8629	jneath@wycokck.org
ANTHONY HUTCHINSON	"	CHIEF BLDG INSP	913-573-8620	AHUTCHINSON@WYCOKCK.ORG
John Pack	Demolition	Coordinator	913-573-8607	jpack@wycokck.org
Tracy Stuart	Street Dept	Sup Dist #2 & #3	913-449-6553	TStuart@wycokck.org
STEVE LEMONDS	WPC / SM	ENG. SUPPORT SUPR	238-5061	SLEMONDS —
Albert Whitaker	PW - Mapping	Eng Support Supervisor	913-573-1374	awhitaker@wycokck.org
Luke Folscroft	311 Operations	311 Coordinator	913-573-8949	lfolscroft@wycokck.org
KIRK ROLAND	WPC / SEWER MAINT	PROGRAM SUPERVISOR	913-573-1361	kroland@wycokck.org
Steven M Mortell	P.W. Street Dept.	Sup Dist 5	991-7966	S.Mortell@wycokck.org
Kirk Suther	Operation Brightside	Program Coordinator	573-8735	ksuther@wycokck.org
SCOTT CRAIG	PW/WPC	ENV. COMP. SUPSR	913-573-1313	SCRAIG@WYCOKCK.ORG
Kressa Anderson	PW/WPC	Lab Director	913-573-1307	KressaAnderson@wycokck.org
LANCE LAVENDER	PW/STREET	ASS. MANAGER	913-573-8348	llavender@wycokck.org
Gerald Beck	PW/Traffic eng.	SUPT.	816-719-4174	gBeck@wycokck.org
Brent Thompson	Public works	County Surveyor / Stormwater Coordinator	913-573-5710	bthompson@wycokck.org
TRENTON FOGLESONG	WPC - SMD	Collection System Mgr	913-573-1362	tfoglesong@wycokck.org
Clinton Mandorfell	Benesch	Project Engineer	913 441 1157	cmandorfell@benesch.com
Bruce Pointelin	PW/Streets	Supervisor	913-449-1207	BPointelin@wycokck.org

Unified Government of Wyandotte County/Kansas City, Kansas
STORMWATER MANAGEMENT PROGRAM

Post-Construction Stormwater Management Program
December 3, 2013 Training Session
Attendee List

Name	UG Dept./Affiliation	Job Title/Position	Phone #	Email Address
WILLIE JONES	PW	STAFF ENGINEER	573-5400	wijones@wycokck.org
Bill HEATHERMAN	PW	COUNTY ENGINEER	573-5400	bheatherman@wycokck.org
BRENT THOMPSON	PW	County Surveyor	573-5400	bthompson@wycokck.org
Jerod Letcher	PW	Staff Engineer	573-5400	jletcher@wycokck.org
Lori Mundhenke	PW	Deputy Co Eng	5708	lmundhenke@.
TROY SHAW	PW	PROJECT ENGINEER	573-5700	tshaw@wycokck.org
Brendon Grover	PW	Engineering Tech	573-5700	bgrover@wycokck.org
WAYNE Moody	PW	Deputy County Engineer	5735700	wmoody@wycokck.org

UG Staff Training
December 3, 2013

Outline

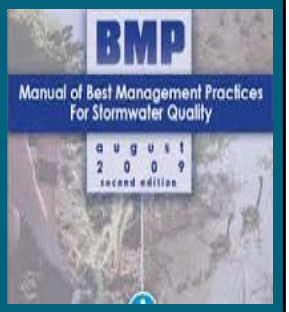
- Background (Why are we doing this training?)
- Post-Construction BMPs (What are they? How do they work? How will I know them when I see them?)
- Operation & Maintenance
- UG Staff's role in this program

Background

- BMPs- Best Management Practices
- Started in Agriculture- Non-Point Management
- Stormwater BMP-Any action or practice aimed at reducing flow rates and pollutants concentrations in (urban) runoff.

Background

- Why are we doing this?
  - Stormwater Drainage Criteria- Development/Redevelopment
  - UG's Ordinance
  - APWA/MARC BMP Manual



Post-Construction BMPs

- What are they? & How do they work?
  - Non-Structural or Structural BMPs
  - Water Quantity vs. Water Quality
  - Why not pipes and culverts?

Types of Post-Construction BMPs

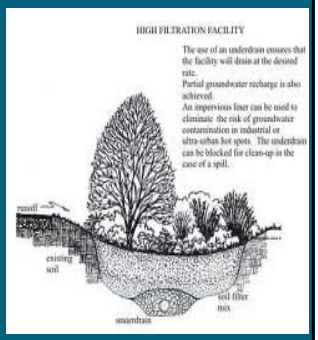
- Native Planting
- Stream Buffers

Types of Post-Construction BMPs Raingardens

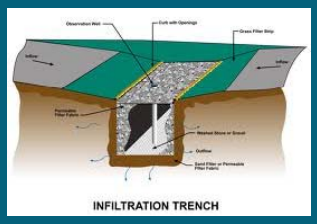
- Infiltration
- Low-lying area where stormwater collects
- Normally for single lots
- Multiple raingardens needed for larger lot
- Ideally-No irrigation needed

Types of Post-Construction BMPs Bioretention

- Filters and Infiltrates using plants and engineered soils
- Underdrain (sometimes)
- Highest pollutant and nutrient removal
- Runoff from impervious areas



Types of Post-Construction BMPs Infiltration Basins/Trenches



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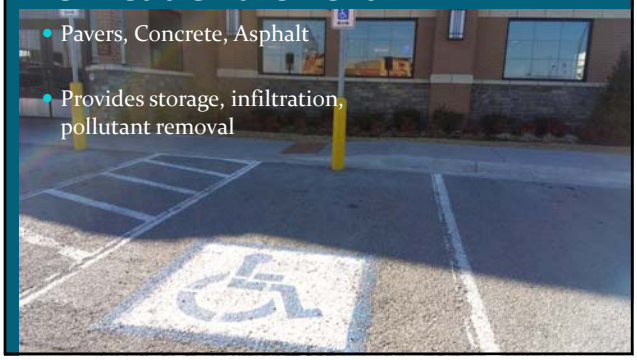
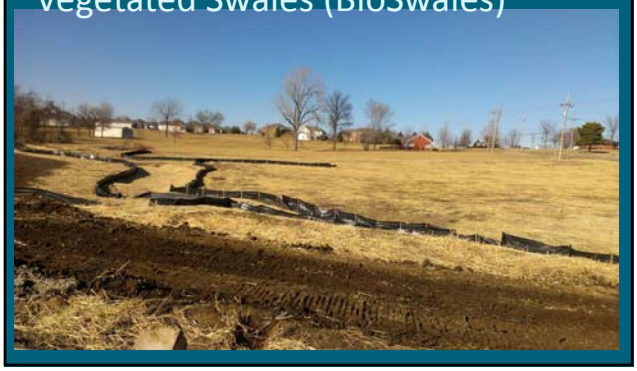
- Pavers, Concrete, Asphalt
- Provides storage, infiltration, pollutant removal



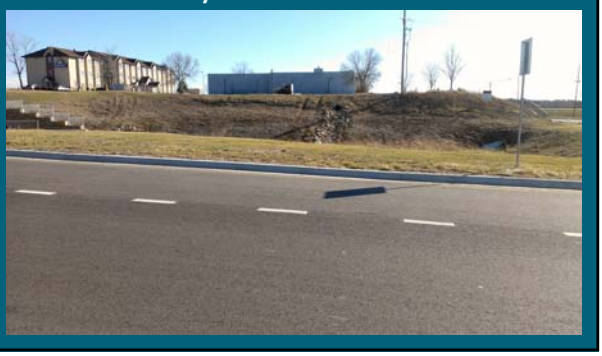
Types of Post-Construction BMPs Wetland

- Native Plants
- Sustainable

Types of Post-Construction BMPs Vegetated Swales (BioSwales)



Types of Post-Construction BMPs Extended Dry Detention Basin



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- Filtration
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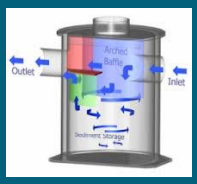

Operations & Maintenance

UG Staff Role

Unified Government of Wyandotte County/Kansas City, Kansas
STORMWATER MANAGEMENT PROGRAM

Post-Construction Stormwater Management Program
December 10, 2013 - Parks & Rec
Attendee List

Name	UG Dept./Affiliation	Job Title/Position	Phone #	Email Address
Michael Erickson	Parks & Rec	Superintendent	449-2232	mericksen@wycokck.org
Andrew P. Bettinger	"	"	449 2235	abettinger "
Ruben Sanchez	Parks & Rec	Supervisor	645-8148	RSANCHEZ@wycokck.org
Matt Hendren	Parks + Rec	Operations Superintendent	217-5929	mhendren@wycokck.org
Jack Webb	Park & Rec	Deputy Director	816-719-9193	jwebb2@wycokck.org

UG Staff Training
December 11, 2013

Outline

- Background (Why are we doing this training?)
- Post-Construction BMPs (What are they? How do they work? How will I know them when I see them?)
- Operation & Maintenance
- Level of Service Calculations
- UG Staff's role in this program

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- Started in Agriculture- Non-Point Management
- Stormwater BMP-Any action or practice aimed at reducing flow rates and pollutants concentrations in (urban) runoff.

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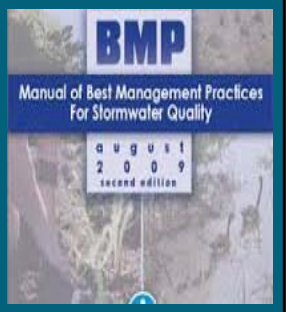

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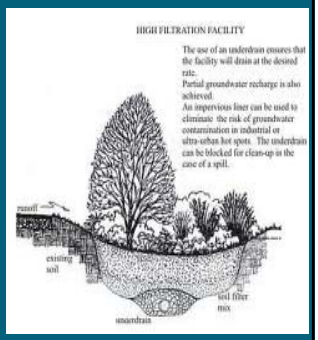

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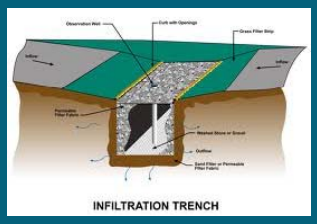

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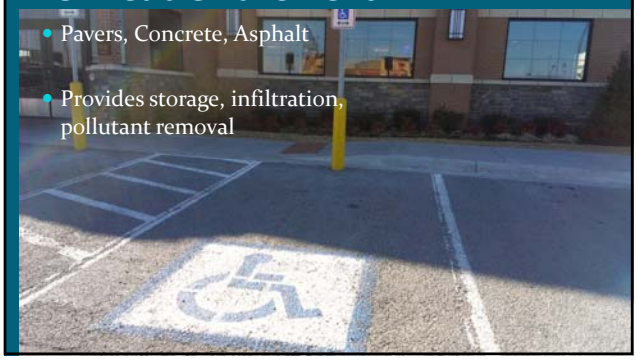

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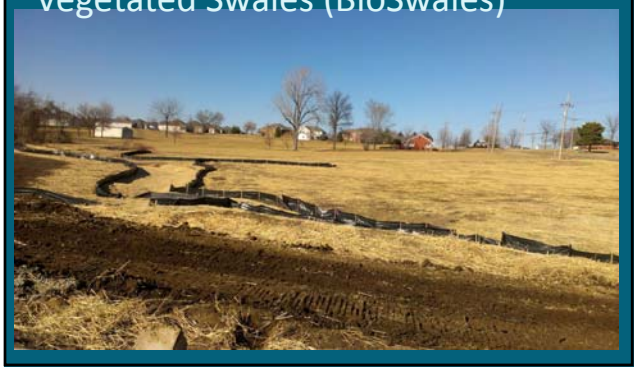

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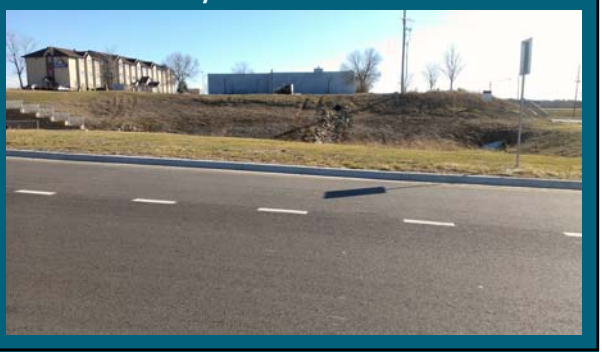

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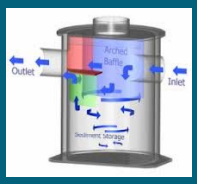
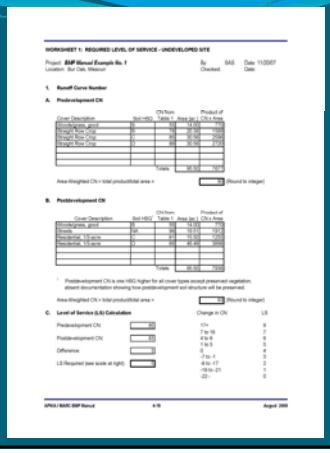


BMP Selection

- Level of Service Calculations



Operations & Maintenance

UG Staff Role

Installation and Maintenance of Stormwater Treatment Best Management Practices

This two-day workshop will demystify the most common components of stormwater treatment best management practices. Learn from area experts who have experience designing, installing and maintaining the vegetative components of stormwater treatment BMPs.

The workshop is geared toward landscapers, subcontractors and general contractors currently working with stormwater treatment BMPs or those who would like to gain experience with these systems.

It will focus primarily on the most commonly installed practices in the metro area at this time – bioretention, rain gardens and native landscaping.

For more information, contact Lesley Rigney, MARC at 816-701-8355, or Tim Frenzel, Johnson County Community College at 913-469-3844.

To register, call 913-469-2323 or register online at www.jccc.edu/ce

You can register to attend both days or one of the two days:

Discounted two-day rate: $149 CRN 24806
Day 1 (Nov. 12) $99 CRN 24807
Day 2 (Nov. 13) $99 CRN 24808

Workshop Overview

Day 1 – Installation and Native Plant Education

- Broad overview of the intended function of stormwater treatment BMPs and how they work
- How do BMPs "treat" stormwater?
- Installation of stormwater treatment BMPs
- Timing and phasing of installation during construction
- Best time for plant establishment; planting seasons
- How to bid installation and maintenance for native landscaping projects and stormwater treatment BMPs
- Native plant education
- Plant identification
- Plant placement within stormwater treatment BMPs
- Planting and establishing native plants
- Identification of quality plant products
- Seed verification

Day 2 – Maintenance of Stormwater Treatment BMPs

- Review of native plant education
- Weed versus native plant identification
- Native plant establishment – priorities for maintenance in the first three years of the stormwater treatment BMP
- Continuing maintenance for the life of the BMP – plant replacement, structure fixes, erosion problems and other issues
- Bidding guidance for long-term maintenance

This workshop was developed in cooperation with the Johnson County Stormwater Management Program, with funding provided by the Mid-America Regional Council's Water Quality Education Committee and Johnson County Community College.

Nov. 12-13

8 a.m.-5 p.m.

Regnier Center 101
Johnson County Community College

JOHNSON COUNTY COMMUNITY COLLEGE
CONTINUING EDUCATION

MARC
MID-AMERICA REGIONAL COUNCIL

APPENDIX B.4 Sewer Maintenance CCTV Inspections Annual Summary

SEWER MAINTENANCE ANNUAL REPORT - 2013

SEWER MAINTENANCE CREWS:

WORK PERFORMED	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	TOTAL
Catch Basins Checked	1,746	1,679	2,457	2,215	2,665	2,244	2,156	2,397	1,858	2,635	1,871	1,184	**25,107**
Catch Basins Cleaned	633	692	1,092	1,212	1,074	1,025	740	877	1,021	1,118	1,076	451	**11,011**
Miles of Sewer Lines Cleaned - PM Program	23.53	3.80	25.47	23.60	36.52	22.98	28.19	51.60	20.37	41.03	20.66	28.34	**328.39**
Miles of Sewer Lines Cleaned - Deroot Program	2.00	3.00	4.80	7.60	4.00	3.00	8.30	2.60	8.00	4.30	2.17	2.30	**52.07**
Miles of Storm & Sanitary Lines Televised	3.39	2.52	3.29	4.38	4.29	4.86	6.14	6.70	6.36	7.68	4.21	3.92	**57.74**

CONSTRUCTION CREWS:

WORK PERFORMED	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	TOTAL
Sanitary Repairs	15	18	10	12	8	19	29	36	29	40	27	32	**275**
Storm Repairs	17	10	18	14	31	26	17	16	12	6	7	12	**186**
Manhole Repairs	13	8	17	7	21	22	14	21	6	22	14	16	**181**
Abandonments	6	0	2	4	3	12	1	2	0	25	9	4	**68**
Spray Rig	0	0	0	0	14	5	0	0	5	6	1	0	**31**

INSPECTIONS:

WORK PERFORMED	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	TOTAL
Inspections	11	14	16	17	25	21	18	22	15	17	13	17	**206**
Complaints	43	34	37	48	61	54	41	46	38	49	29	22	**502**
Locates	0	0	5	1	3	4	4	12	2	7	3	10	**51**

APPENDIX B.5 Household Hazardous Waste Collection Information

APPENDIX B.5 Household Hazardous Waste Collection Information

1. Household Hazardous Waste Collection: This is a summary of the activities and the participation of residents in utilizing the seven scheduled Household Hazardous Waste Days. All the Unified Government staff that worked the 7 events in 2013 finished an 8-hour computer refresher course offered by the Kansas Department of Health & Environment.

   In 2013, Wyandotte County residents were provided seven (7) Saturdays from April thru October in which to bring household hazardous waste for proper disposal by the Unified Government. This information was available on the website of the Unified Government under the Public Works Department, announcements were placed into 7 monthly newsletters of Liveable Neighborhoods Inc., and advertised locally. There were 800 Wyandotte County participants who dropped off 64,301 pounds, or 32.15 tons, of household hazardous waste. Since reporting is done in accordance with KDHE's fiscal year, all of the following numbers are for the time period of July 1, 2012 through June 30, 2013. A breakdown of materials collected includes:

Household Hazardous Collection Day Totals 2012-2013

(Materials reported in pounds)

Material	**2013**
Bulk Latex Paint	22,887
Bulk Used Oil	12,005
Sorted Aerosols	1,751
Bulk Oil Base Paint	14,142
Bulk Fuel/Fuel Blends	2,947
Flammable Solids	42
Spontaneous Combustible	3
Dangerous when wet	24
Amines	0
Isocyanides	0
Oxidizers	162
Organic Peroxide	7
Poisons	3,608
Corrosive, acids, & bases	1,923
Lead Acid Batteries	3,540
Sorted Batteries	114
Dry Cell Batteries	703
Lithium Batteries	23
Anti-Freeze	0
Mercury	10
Florescent bulbs	294

Helium	0
Fire Extinguishers	116
Formaldehyde	0
Propane	0
Total Pounds of HHW	64,301 (32.15 tons)
Total # of Cars	800

2. Electronic Waste Collection: There were 2 electronics recycling events held in Wyandotte County in 2032. The Unified Government was involved with programming of both electronics recycling events. In celebrating Earth Day in 2013, in partnership with the E.P.A., Federal Prison Industries Inc. (UNICOR), the BPU, and Operation Brightside Inc., the Unified Government participated with an annual electronic collection day that targeted Federal Government Agencies and its employees, the Unified Government and its employees, and the Board of Public Utilities and its employees. On April 23, 2013; 55 vehicles dropped of 18,388 pounds, or 9.2 tons, of electronics.

   In celebration of America Recycles Day, Heartland Habitat for Humanity Restore, the Federal Prison Industries Inc. (UNICOR), the Unified Government, and Phi Theta Kappa from Kansas City, Kansas Community College, and Operation Brightside Inc. combined to sponsor another electronic collection day event. On November 16, 2013, 135 vehicles dropped off 22,279 pounds, or 11.1 tons, of electronics.

2013 Events Held	**Tonnage Electronics**	**# of Vehicles**
Earth Day Event	9.2	55
America Recycles Day	11.1	135
2013 Totals	20.3 Tons	190 Vehicles

   Electronics that were accepted free of charge at these events have included the following: computers, printers, scanners, old computer monitors, old TV sets, old cell phones, DVD players, fax machines, stereos, radios, tape players, PDAs, Game Boys, VCRs, cameras, and other electronic items.

3. National Prescription Drug Take-Back Days: The Drug Enforcement Administration (DEA) held another National Prescription Drug Take-Back Day on April 27, 2013. There were 8 locations in Kansas City, Kansas in which residents could take old prescriptions to be properly disposed of. A second National Prescription Drug Take-Back Day was conducted on October 26, 2013. Total volume collected was not available.

4. Number of Tires Collected: Throughout the year, 497 tires were disposed of.

Unified Government of Wyandotte County / Kansas City, Kansas
Solid Waste/Public Works
5033 State Avenue
Kansas City, KS 66102
Phone 913-573-5400 • Fax 913-573-8353
www.wycokck.org

MEMORANDUM

TO Sarah Fjell, P.E. Stormwater Engineer
From: Ken Mack , Solid Waste Manager

RE: EPA Audit HHW Training Requirements

The KDHE training requirements for all UG staff working the HHW events is as Follows:

Initial training 24 Hour Haswoper Course Barton Community College.
Each following year requires 8 hour Haswoper refresher Training.
The number of UG staff for the Training , which includes supervisors, is13.

With regard to advertising, we advertise in twice a month from April through October, in Wyandotte county newpapers, UG publications Operation Brightside. Park Rec, and Liveable the Dotte.

Tires Totals 64 Participants, 497 Tires.
Please let me know if you need any other Information.

Thanks. Ken Mack Solid Waste Manager.

Kansas Household Hazardous Waste Program Annual Report Form

Name of Facility: Olathe Government — Permit Number: [illegible]

Population Served - Wyandotte

Facility Address: 2244 South [illegible] Kansas City, Kansas 66111

Facility Contact: Kenneth L. Mack Sr. — Phone #: (913) 573-2460 [illegible] — Cell #: (913) 573-8318 — email: kmack@olathe.com

Waste Category DOT Class (Class description)	Name of Disposal Contractor for each Category	Conversion factors used to estimate amounts left in Storage	Wastes in STORAGE (includes all wastes left in storage at the close of the report period) pounds	Wastes DISTRIBUTED through a REUSE Waste Exchange program pounds	HAZARDOUS WASTES CONTRACTED or disposal at a cost: Recycled (HW) i.e. batteries pounds	Energy Recovery (HW) fuel sub. pounds	Treatment (HW) pounds	Landfilled (HW) pounds	Incineration (HW) pounds	Wastes not contracted as Hazardous Waste or disposal at no cost: Recycled i.e. batteries & refining of used oil pounds	Energy Recovery i.e. used oil, fuel substitutes pounds	Treatment and/or disposal through sanitary sewer pounds	Landfilled at Non HAZ MSW LF pounds	Total Pounds COLLECTED
1. NR (Bulk Latex Paint)	PSC	12 pounds per gallon						22,887						22,887
2. NR (Bulk Used Oil)	PSC	8 pounds per gallon				12,000			5					12,005
3. Class 2, Div. 2.1 (Sorted Aerosols, Lab/Loose Pack)	PSC				236		1,515							1,751
4. Class 3 (Bulk Oil Based Paint)	PSC	12 pounds per gallon				14,142								14,142
5. Class 3 (Bulk Fuels/Fuel Blends)	PSC	8 pounds per gallon				2,947								2,947
6. Class 4, Div. 4.1 (Flammable Solids)	PSC	When determining weights of LAB PACKS in Storage don't forget to subtract the drum weight and the absorbent material, to report the NET WEIGHT, or the amount of the wastes collected and managed.							42					42
7. Class 4, Div. 4.2 (Spontaneously Combustible)	PSC								3					3
8. Class 4, Div. 4.3 (Dangerous When Wet)	PSC								24					24
9. Class 5, Div. 5.1 (Oxidizers)	PSC								162					162
10. Class 5, Div. 5.2 (Organic Peroxides)	PSC								7					7
11. Class 6, Div. 6.1 (Poisons)	PSC								3,608					3,608
12. Class 6, Div. 6.1 (Dioxins)														0
13. Class 8 (Corrosives, Acids and Bases)	PSC								1,923					1,923
14. Class 8 (Batteries - Lead Acid)	PSC	Car batteries, at 30 pounds each			3,540									3,540
15. Class 8 (Sorted Batteries - NiCd)	PSC	For all other batteries report actual weight						114						114
16. Class 8 (Batteries - Dry Cell)	PSC							703						703
17. Class 8 (Batteries - Lithium)					23									23
18. NR (Antifreeze)		Please note conversion factor used to estimate amounts left in storage, if applicable.												0
19. NR (Non-Hazardous)														0
20. Mercury	PSC				10									10
21. Fluorescent Bulbs	PSC				294									294
22. Electronic Waste	Unicol			34,200										34,200
23. Pharmaceuticals														
24. Other: Fire Extingushers Helium	PSC				116									116
			0	34,200	4,219	28,678	3,438	23,704	4,262	0	0	0		98,501

Additional Program summary results:

A. Disposal Cost	$ 63,710.51	E. Public Education/Advertising:	$ 800.00
B. Salaries:	$ 14,825.79	F. Physicals:	$
C. Equipment/Supplies:	$ 3,000.00	G. Training:	$ 2,075.00
D. Overhead (Admin & Util):	$ 4,000.00	H. Other:	$
TOTAL ANNUAL OPERATIONAL COSTS:			$ 89,613.69

Total Cost per Participant:	$ 112.02
Total Disposal Cost per Participant:	$ 79.64
Average Pound per Participant:	123.13
Cost to manage per Pound:	$ 0.91
Average Disposal Cost per Pound:	$ 0.99

Percent Managed through Waste Exchange Program:	34.72%
Percent Contracted for Hazardous Waste disposal:	65.28%
Percent Managed through Other means:	0.00%
Percent in Storage as of report date:	0.00%

Total Number of Participants for the year (July 1, 2012 - June 30, 2013): 800

Department of Justice
Federal Prison Industries, Inc.
Recycling Business Group
Washington, DC 20534

Federal Prison Industries, Inc.
UNICOR

CERTIFICATE OF REUSE OR RECYCLING

Material Received From: Comm. Collections - Habitat Restore - KS

Location (City, State):

Date Received: 11/18/2013

Lot Weight: 22,279 lbs.

Description: **Misc. Used Electronic Equipment**

All material has been received, identified and processed. Each item has been evaluated for reuse of entire unit, or component parts. Material that did not meet reuse criteria has been de-manufactured and recycled as scrap. All reuse and recycling was done in conformance with Federal, state and local regulations and certifications for Responsible Recycling (R2), ISO 9001 and 14001 and OHSAS 18001.

Leavenworth
UNICOR Processing Facility

Facility Representative

11/18/2013
Date

Department of Justice
Federal Prison Industries, Inc.
Recycling Business Group

FEDERAL PRISON INDUSTRIES, INC.
UNICOR
Leavenworth Recycling
CERTIFICATE OF RECYCLING

Received From:	EPA - KCK
Date Received:	4/25/2013
Document #:	206134
Delivered To:	Federal Prison Industries (UNICOR) Leavenworth Recycling Factory 1300 Metropolitan Leavenworth, Kansas 66048
Description:	18388 lbs. **Miscellaneous Electronic Equipment**

All material is received, identified, and processed as recyclable. Each unit is evaluated for re-utilization of whole components, parts and/or materials, and the material not re-utilized is recycled to the greatest extent possible. Hazardous materials, if any, are handled in compliance with Federal, State, and local regulations. Federal Prison Industries, Inc. (UNICOR), warranties the complete disposition of this material.

Tim Moore, Factory Manager
Federal Prison Industries, Inc.
Recycling Business Group

4/25/2013
Date

Kansas Household Hazardous Waste Program - Annual Report Form

for State Fiscal Year 2012 (July 1, 2012 to June 30, 2013)

Name of Facility: Unified Government Permit Number: 677H
County(ies) Served: Wyandotte
Facility Address: 2443 South 88th st Kansas City Kansas 66111

Facility Contact: Kenneth L Mack Sr. Phone #913)573-5400)573-8318) Fax # 913)573-8318 email: Kmack@wycokck.org

Waste Category DOT Class (Class description)	Name of Disposal Contractor for each Category	Conversion factors used to estimate amounts left in Storage	Wastes in STORAGE (includes all wastes left in storage at the close of the report period) pounds	Wastes DISTRIBUTED through a REUSE Waste Exchange program pounds	HAZARDOUS WASTES CONTRACTED or disposal at a cost: Recycled (HW) i.e. batteries pounds	Energy Recovery (HW) fuel sub. pounds	Treatment (HW) pounds	Landfilled (HW) pounds	Incineration (HW) pounds	Wastes not contracted as Hazardous Waste or disposal at no cost: Recycled i.e. batteries & refining of used oil pounds	Energy Recovery i.e. used oil, fuel substitutes pounds	Treatment and/or disposal through sanitary sewer pounds	Landfilled at Non HAZ MSW LF pounds	Total Pounds COLLECTED
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2. NR (Bulk Used Oil)	PSC	8 pounds per gallon				11,589			416					12,005
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4. Class 3 (Bulk Oil Based Paint)	PSC	12 pounds per gallon				14,142								14,142
5. Class 3 (Bulk Fuels/Fuel Blends)	PSC	8 pounds per gallon				2,947								2,947
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8. Class 4, Div. 4.3 (Dangerous When Wet)	PSC								24					24
9. Class 5, Div. 5.1 (Oxidizers)	PSC								162					162
10. Class 5, Div. 5.2 (Organic Peroxides)	PSC								7					7
11. Class 6, Div. 6.1 (Poisons)	PSC								3,608					3,608
12. Class 6, Div. 6.1 (Dioxins)														0
13. Class 8 (Corrosives, Acids and Bases)	PSC						1,923							1,923
14. Class 8 (Batteries - Lead Acid)	PSC	Car batteries, at 30 pounds each			3,540									3,540
15. Class 8 (Sorted Batteries - NiCd)	PSC	For all other batteries report actual weight						114						114
16. Class 8 (Batteries - Dry Cell)	PSC							703						703
17. Class 8 (Batteries - Lithium)					23									23
18. NR (Antifreeze)		Please note conversion factor used to estimate amounts left in storage, if applicable.												0
19. NR (Non-Hazardous)														0
20. Mercury	PSC				10									10
21. Fluorescent Bulbs	PSC				294									294
22. Electronic Waste	Unicor			34,200										34,200
23. Pharmaceuticals														
24. Other: Fire Extingushers Helium	PSC				116									116
			0	34,200	4,219	28,678	3,438	23,704	4,262	0	0	0		98,501

Additional Program summary results:

A. Disposal Cost	$ 63,713.51	E. Public Education/Advertising:	$ 1,800.00
B. Salaries:	$ 14,525.18	F. Physicals:	$ -
C. Equipment/Supplies:	$ 3,500.00	G. Training:	$ 2,075.00
D. Overhead (Admin & Util):	$ 4,000.00	H. Other:	$ -
	TOTAL ANNUAL OPERATIONAL COSTS:		$ 89,613.69

Total Cost per Participant:	$ 112.02
Total Disposal Cost per Participant:	$ 79.64
Average Pound per Participant:	123.13
Cost to manage per Pound:	$ 0.91
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Percent Managed through Waste Exchange Program:	34.72%
Percent Contracted for Hazardous Waste disposal:	65.28%
Percent Managed through Other means:	0.00%
Percent in Storage as of report date:	0.00%

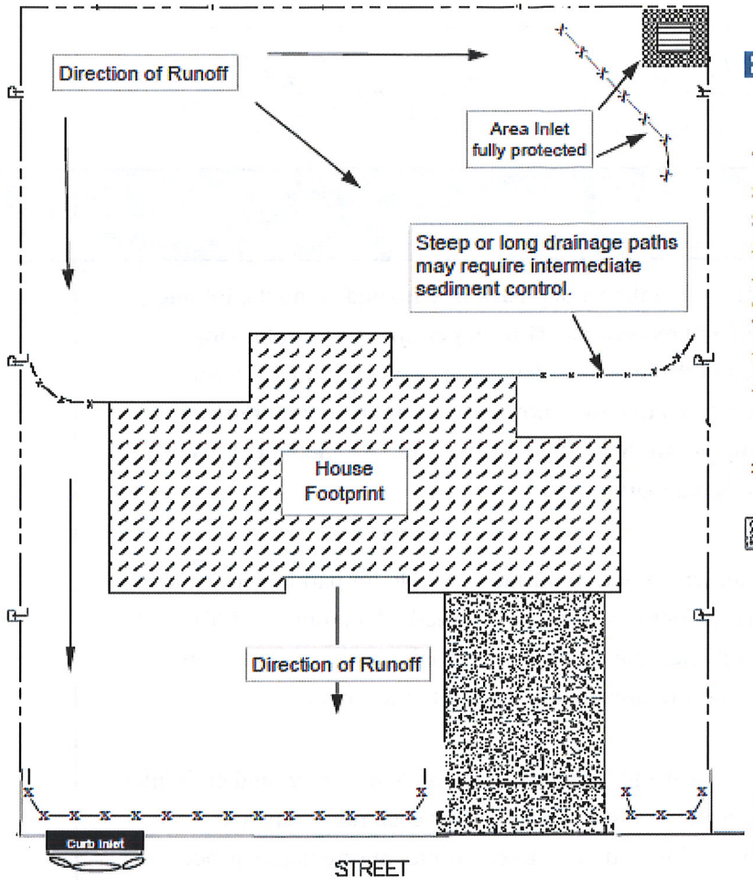
Total Number of Participants for the year (July 1, 2012 - June 30, 2013): 800

APPENDIX B.6 Stormwater Plans Review Summary

Stormwater Drainage (SD) & Stormwater Quality (SQ) Reviews -2013

Project Name	Location/Address	Watershed	Review Type	Civil Engineer	Final Review	Date that Plans were sealed	Date Received by Reviewer	Review Comments Sent
Advance Auto (#11193)	5934 Leavenworth Rd.	Brenner Heights Creek	SD	'rtaylor@pcesti.com'	yes	05/23/13	05/30/13	06/12/13
Advance Auto Parts	78th St. and State Ave.	Mill Creek	SD	Olsson Associates	yes	01/28/13	01/31/13	02/06/13
AT&T/Starbucks Plaza at the Speedway	10620 Parallel Pkwy	Little Turkey Creek North	SD	Kaw Valley Engineering	yes	10/04/13	10/04/13	10/11/13
Barton Solvents, Site Modifications	901 S. 66th Terrace	Union Pacific Bottoms	SD	cmartin@ep.com	no	07/19/13	07/30/13	08/06/13
BNSF Argentine Auto Facility	301 S 51st ST & 4835 Speaker Rd.	Santa Fe Industrial District	SD	AECom	no	02/06/13	03/20/13	03/21/13
BNSF Argentine Auto Facility	301 S 51st ST & 4835 Speaker Rd.	Santa Fe Industrial District	SQ	AECom	no	02/06/13	02/14/13	02/27/13
Century Concrete, Wet Batch Plant	8901 S. Woodend Rd.	Timmons Creek	SD	LRA Inc.	yes	09/30/13	10/03/13	10/08/13
Century Concrete, Wet Batch Plant	8901 S. Woodend Rd.	Timmons Creek	SQ	LRA Inc.	yes	09/30/13	10/03/13	10/08/13
Century Concrete, Wet Batch Plant (Re-Design)	8901 S. Woodend Rd.	Timmons Creek	SD	LRA Inc.	yes	11/14/13	11/14/13	11/25/13
Century Concrete, Wet Batch Plant (Re-Design)	8901 S. Woodend Rd.	Timmons Creek	SQ	LRA Inc.	yes	11/14/13	11/14/13	11/25/13
Ceva Biomune (Chicken Buildings)	1649 S. 63rd St.	Barber Creek	SD	kathy@kwarman.com	yes	06/26/13	07/02/13	07/11/13
Ceva Biomune (Chicken Buildings)	1649 S. 63rd St.	Barber Creek	SQ	kathy@kwarman.com	yes	06/26/13	07/02/13	07/11/13
Convenience Store at 838 S. 7th St. Trfy	838 S. 7th Trfwy	Armourdale	SD	Steve Warger	yes	07/16/13	07/16/13	07/18/13
Convenience Store at 838 S. 7th St. Trfy	838 S. 7th Trfwy	Armourdale	SQ	Steve Warger	yes	07/23/13	07/23/13	07/24/13
Crickett Store	710 North Simpson Ave.	Splitlog	SD	mleon	yes	04/12/13	04/16/13	04/24/13
Crooker Huyett Dental Group	2933 S. 47th St.	Turkey Creek	SD	Uhl Engineering	yes	12/12/12	12/20/12	01/08/13
Diamond Ideal	346 N. James St.	CID Watershed	SQ	Phelps Engineering	yes	08/26/13	08/26/13	08/26/13
Dollar General (Final Plat of "Minnesota 18")	1801 Minnesota Ave.	Jersey Creek	SD	Abeln Associates	no	03/06/13	03/06/13	03/06/13
Dollar General (Final Plat of "Minnesota 18")	1801 Minnesota Ave.	Jersey Creek	SQ	Abeln Associates	no	not sealed	01/31/13	02/07/13
El Chalateco Restaurante & Bar	1007 Osage Ave.	Armourdale	SQ	wereinoz@allegiance.tv	yes	10/16/13	10/31/13	11/06/13
Excel Linen Supply Co., Parking Lot	550/501 Stanley Rd.	Fairfax Industrial Creek	SQ	CFS Engineering	yes	02/12/13	02/05/13	02/15/13
Family Dollar (63rd & Parallel) (Re-design)	1999 N. 63rd Dr.	Brenner Heights Creek	SD	Burkhardt Engineers	yes	12/10/13	12/12/13	12/18/13
Family Dollar (63rd & Parallel) (Re-design)	1999 N. 63rd Dr.	Brenner Heights Creek	SQ	Burkhardt Engineers	yes	**	12/05/13	12/17/13
Family Dollar (8049 Leavenworth Rd.)	8049 Leavenworth Rd.	Marshall Creek	SD	Burkhardt Engineers	yes	09/03/13	10/22/13	10/29/13
Family Dollar (8049 Leavenworth Rd.)	8049 Leavenworth Rd.	Marshall Creek	SQ	Burkhardt Engineers	yes	09/03/13	10/22/13	10/29/13
General Motors (Paint Shop)	3201 Fairfax Trafficway	Fairfax Ind. District	SD	'jason.fleis@ibigroup.com'	yes	03/12/13	03/12/13	03/12/13
General Motors (Paint Shop)	3201 Fairfax Trafficway	Fairfax Ind. District	SQ	'jason.fleis@ibigroup.com'	yes	02/11/13	03/04/13	03/06/13
Genesis at Piper - Phase 2 (Final Plat)	3230 N. 123rd St.	Piper Creek	SD	Robert Wessel	yes	11/04/13	11/05/13	11/07/13
Genesis at Piper - Phase 2 (Final Plat)	3230 N. 123rd St.	Piper Creek	SQ	Robert Wessel	yes	11/04/13	11/05/13	11/07/13
Hacros Chemicals (Drumming Facility)	5200 Speaker Rd.	Santa Fe Ind. District	SD	strickland const.	no	12/11/12	01/18/13	01/22/13
Hazelwood Assisted Living	2309 N. 113th Place	Connor Creek	SD	Continental Consulting Engineers	yes	04/26/13	06/27/13	06/28/13
Hazelwood Assisted Living	2309 N. 113th Place	Connor Creek	SQ	Continental Consulting Engineers	yes	04/26/13	06/27/13	06/28/13
Inergy Automotive Systems	220 Kindleberger Rd,.	Fairfax Drainage District	SD	BHCRhodes Engineers	yes	11/07/13	11/14/13	11/25/13
Inergy Automotive Systems	220 Kindleberger Rd,.	Fairfax Drainage District	SQ	BHCRhodes Engineers	no	11/07/13	11/14/13	11/25/13
Kansas Speedway (TV Compound)	1601 Phoenix Dr.	Little Turkey Creek	SD	Continental	no	05/21/13	05/22/13	05/31/13
Kansas Speedway (TV Compound)	1601 Phoenix Dr.	Little Turkey Creek	SQ	Continental	no	05/21/13	05/22/13	05/31/13
KCK Event Center	2951 S. 34th St.	Turkey Creek	SD	Renaissance Infrastructure Consult	yes	12/06/13	12/10/13	12/15/13
Kraft Tank	320 Kindleberger Rd.	Fairfax Drainage Dist.	SD	Kaw Valley Eng.	yes	12/12/13	12/19/13	12/24/13
Kraft Tank	320 Kindleberger Rd.	Fairfax Drainage Dist.	SQ	Kaw Valley Eng.	yes	12/12/13	12/19/13	12/24/13
La Plaza Argentine Public Storm Sewer & St. Improvements	2100 Metropolitain Ave.	Argentine	SD	Davidson AE	no	12/09/13	12/09/13	12/18/13
LG Everist (Floodplain Fill)	8600 Gibbs Rd.	Barber Creek	SD	BHCRhodes Engineers	yes	11/15/13	11/19/13	11/22/13
LG Everist (Floodplain Fill)	8600 Gibbs Rd.	Barber Creek	SQ	BHCRhodes Engineers	no	08/30/13	09/10/13	09/23/13
Liberty Fruit Co. (Underground Detention & Bldg. Addn.)	1247 Argentine Blvd.	Armourdale	SD	Matt Schlicht	no	11/18/13	11/21/13	12/03/13
Liberty Fruit Co. (Underground Detention & Bldg. Addn.)	1247 Argentine Blvd.	Armourdale	SQ	Matt Schlicht	no	11/18/13	11/21/13	12/03/13
Mainstreet Senior Living KCK	8900 Parallel Pkwy	Marshall Creek	SD	CFS Engineering	yes	11/07/13	11/07/13	11/08/13
Mainstreet Senior Living KCK	8900 Parallel Pkwy	Marshall Creek	SQ	CFS Engineering	yes	11/07/13	11/07/13	11/08/13
McKinley Elementary School	1304 Ann Ave.	Jersey Creek	SD	SKW	yes	06/18/13	06/18/13	06/27/13
McKinley Elementary School	1304 Ann Ave.	Jersey Creek	SQ	SKW	no	04/25/13	05/07/13	05/16/13

Metropolitan Gas Station	4116 Metropolitan Ave.	Argentine	SD	riad.baghdadi@yahoo.com	yes	05/31/13	06/04/13	06/07/13
Metropolitan Gas Station	4116 Metropolitan Ave.	Argentine	SQ	riad.baghdadi@yahoo.com	yes	09/09/13	09/10/13	09/17/13
Nablus Gas Station	6863-65 State Ave.	Muncie Creek	SD	Khalid Banday	yes	not sealed	12/31/12	01/05/13
Nablus Gas Station	6863-65 State Ave.	Muncie Creek	SQ	Khalid Banday	yes	not sealed	12/31/12	01/03/13
Pentair (Scrap Hopper)	3601 Fairbanks Rd.	Turner Creek	SD	bgraverholt@asm4.com	yes	09/19/13	09/24/13	10/07/13
Piper Landing Second Plat	second plat at 2815 N. 115th St.	Connor Creek	SD	Robert Wessel	yes	not sealed	09/17/13	09/23/13
Piper Landing Second Plat	second plat at 2815 N. 115th St.	Connor Creek	SQ	Robert Wessel	yes	09/16/13	09/22/13	10/03/13
Pizza Ranch	10544 Parallel Pkwy	Little Turkey Creek	SD	IS Group Inc.	yes	not dated	03/26/13	03/27/13
Pizza Ranch	10544 Parallel Pkwy	Little Turkey Creek	SQ	IS Group Inc.	yes	not dated	03/26/13	03/27/13
PQ Corporation (Customer Care Center)	18th & Kansas Ave.	Armourdale	SD		yes	07/22/13	09/03/13	09/12/13
PQ Corporation (Silica/Hydrogel/Zeolyst Expansion 13/14)	1700 Kansas Ave.	Armourdale	SD	Ford, Bacon and Davis	yes	06/24/13	07/02/13	07/14/13
Proctor and Gamble (Bldg. 8)	2077 Bayard Ave.	Muncie Bluff Creek	SD	'staines.c@pg.com'	yes	10/01/13	10/01/13	10/03/13
Save-a-Lot, HDOG Subdivision, Lots 1 & 2	2100 Metropolitan	Argentine	SD	Paul Miller	yes	01/14/13	01/08/13	01/16/13
Save-a-Lot, HDOG Subdivision, Lots 1 & 2	2102 Metropolitan	Argentine	SQ	Paul Miller	yes	04/03/13	04/16/13	04/23/13
Schlitterbahn (Train Track)	9400 State Ave.	Marshall Creek	SD	knfontenot	yes	06/21/13	07/04/13	07/15/13
Schlitterbahn (Verruckt and Zip Line)	9400 State Ave.	Marshall Creek	SD	knfontenot	yes	04/16/13	04/16/13	04/22/13
Schlitterbahn (Verruckt and Zip Line)	9400 State Ave.	Marshall Creek	SQ	knfontenot	no	04/16/13	04/16/13	04/22/13
St. Margaret's Lofts	759 Vermont Ave.	Muncie Bluff Creek	SD	Cornerstone Eng.	no	11/22/13	12/17/13	12/18/13
St. Margaret's Lofts	759 Vermont Ave.	Muncie Bluff Creek	SQ	Cornerstone Eng.	yes	11/22/13	12/17/13	12/18/13
State Tractor Dirt Fill (Clifford Dale, Dale Brothers)	5737, 5831, 5831R & 5841 State Ave. and 1000 N.57t	Brenner Heights Creek	SD	Robert Wessel	yes	05/02/13	05/04/13	05/08/13
State Tractor Dirt Fill (Clifford Dale, Dale Brothers)	5737, 5831, 5831R & 5841 State Ave. and 1000 N.57t	Brenner Heights Creek	SQ	Robert Wessel	yes	05/02/13	05/04/13	05/08/13
The Legends Apartments	110th Ave. and Delaware Pkwy	Connor and Little Turkey Creek	SD	BHC Rhodes	yes	01/03/13	01/25/13	01/29/13
The Legends Apartments	110th Ave. and Delaware Pkwy	Connor and Little Turkey Creek	SQ	BHC Rhodes	yes	01/03/13	01/08/13	01/16/13
Timber Creek Events	3150 N. 91st St.	Marshall Creek	SD	Robert Wessel	yes	05/24/13	05/28/13	05/30/13
Timber Creek Events	3150 N. 91st St.	Marshall Creek	SQ	Robert Wessel	yes	05/24/13	05/28/13	05/30/13
Valero "Clean Energy"	4610 kansas Ave.	Santa Fe Ind. District	SD	ryan@permitplace.com	yes	12/21/12	01/08/13	01/17/13
Village Plaza (New Garage)	1200-1232 N. 79th St.	Mill Creek	SD	Barry Hart	yes	09/24/13	09/26/13	10/07/13
Walmart at La Plaza Argentine	2100 Metropolitain Ave.	Argentine	SD	Davidson AE	no	12/09/13	12/04/13	12/05/13
Walmart at La Plaza Argentine	2100 Metropolitain Ave.	Argentine	SQ	Davidson AE	no	12/09/13	12/04/13	12/05/13
Waterone (Electrical Substation Replacement)	7601 Holiday Dr.	Morris Creek	SQ	Black and Veatch	yes	01/26/13	11/21/13	12/02/13
Wholesale Batteries	605 Kansas Ave.	Armourdale	SD	Davidson AE	yes	07/23/13	07/27/13	07/31/13
William White Elementary Modular Classroom	2600 N. 43rd Terrace	Eddy Creek	SD	SKW	yes	Not Sealed	04/16/13	04/22/13
William White Elementary Modular Classroom	2600 N. 43rd Terrace	Eddy Creek	SQ	SKW	no	Not Sealed	04/16/13	04/22/13
Woodside Village (Phase I Const.)	47th and Rainbow Blvd.	Brush Creek	SD	Olsson Engineering	yes	06/05/13	06/06/13	06/10/13
Woodside Village (Phase I Const.)	47th and Rainbow Blvd.	Brush Creek	SQ	Olsson Engineering	yes	04/26/13	05/02/13	05/14/13



Single Family Lot Erosion and Sediment Control Plan

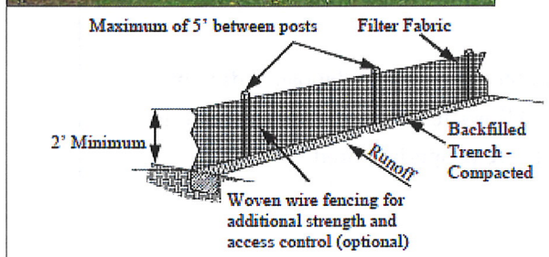
This sample plan represents a typical single family lot. Users of these standards must make their own assessment (or seek professional advice) as to the conditions and drainage patterns of individual sites. These conditions should determine the selection and location of appropriate BMPs.

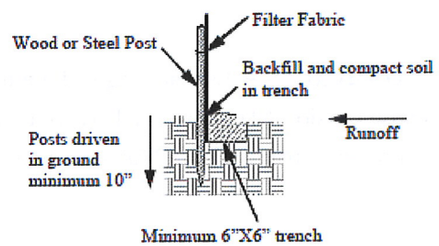
- Sediment Control (Silt Fence, Wattles, Rolled Erosion Control Product, Grass Buffer, etc)
- Lot Access
- Direction of Surface Water Runoff
- Area Inlet with Stabilized Buffer (grass, sod, RECP, etc)
- Curb Inlet with Filter Protection

NOTE: Once sidewalk is installed, BMPs shall be moved to the back of the sidewalk to prevent sediment from reaching the sidewalk.

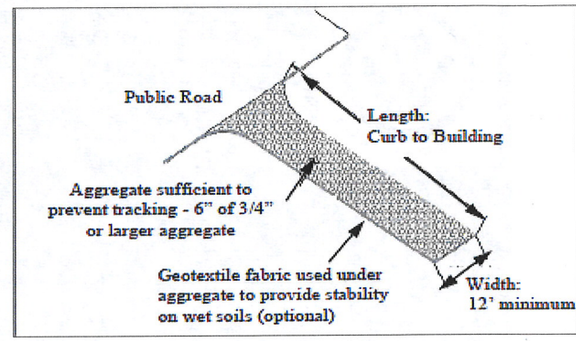
Silt Fence

- Turn ends of silt fence uphill to capture runoff.
- Overlap to next stake when joining two sections.
- Remove accumulated sediment to maintain capacity and reduce stress on fence.





Lot Access



Silt Fence Alternatives

Straw wattles, compost logs, blankets, grass buffers and mulch are good alternatives to silt fence, reducing erosion and filtering sediment. These BMPs can be installed in all weather conditions and are easily repaired if necessary. They are appropriate for perimeter control on most individual building lots and work well in small areas such as the right-of-way between the curb and sidewalk. Installation of manufactured products should follow the instructions provided with the product.

Wattle / Log

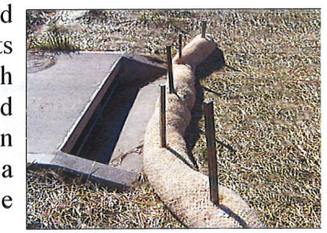
Blanket

Grass Buffer

Mulch

Inlet Protection

Many products are available for inlet protection. Regular maintenance of all inlet BMPs is critical to prevent localized flooding and to prevent sediment from entering the stormwater system. Area inlets can be protected with a stabilized buffer and wattle placed in front or by wrapping the inlet with reinforced silt fence. Curb inlets can be protected with a manufactured product or clean gravel placed in a non-biodegradable bag.



Other Pollutants

In addition to sediment, other pollutants must also be controlled on a construction site. Some common pollutants requiring BMPs include, but are not limited to, concrete washout, mechanical fluids, paint, stucco, sanitary waste, trash and dewatering discharge.

Construction sites in Kansas City, KS, regardless of size, are regulated to ensure Best Management Practices (BMPs) are installed and maintained to prevent sediment and other pollutants from leaving the site. Lack of erosion and sediment control BMPs can allow large quantities of sediment and other pollutants to leave the site and enter streams, lakes and rivers.

Additionally, a Stormwater Pollution Prevention Plan (SWPPP) may be in effect for your lot in accordance with the subdivision's coverage under the Construction General Permit issued by the Kansas Department of Health and Environment ((785) 296-6804). Check with the developer of the subdivision to complete an Individual Lot Certification (ILC) as required by the State of Kansas and to obtain a copy of the SWPPP, as you may be responsible for that portion of the plan that affects your lot.

This brochure contains plans and practices appropriate for residential building lots. It is not intended to address all circumstances. Local permits and regulations may prevail over information contained in this brochure.

Unified Government of Wyandotte County, Kansas City, Kansas

Public Works Department

Brent E. Thompson, County Surveyor
701 N. 7th Street, Room 712
Kansas City, Kansas 66101
p. (913) 573-5710
f. (913) 573-5435

Unified Government of
Wyandotte County,
Kansas City, Kansas
Public Works Department

Erosion Prevention and Sediment Control for Individual Building Lots

August 2013

Compliance Checklist

Best Management Practice (BMP)	✓
Perimeter Controls – BMPs are installed along back of curb and along the lot line of adjacent properties which are downhill and receive runoff from permitted lot. Following sidewalk installation, BMPs are moved to the back of sidewalk to prevent sediment from reaching the sidewalk. BMPs are maintained to ensure proper function, including repair or replacement of torn, degrading, missing or otherwise ineffective materials. Sediment deposits are removed as necessary to provide adequate protection.	
Lot Access – Required for each individual lot. A surface suitable for parking and unloading that prevents the tracking of mud and rock onto the street is installed. A minimum of 6"of 3/4" or larger aggregate is suggested. All vehicles that access the lot shall use the construction entrance. Restrict other access if necessary to prevent tracking onto the street.	
Inlet Protection – BMPs are in place and functioning for both area inlets and curb inlets along street. Maintenance includes removal of sediment following each rain event and replacement of failing materials. Do not allow sediment to enter inlet during maintenance.	
Stockpiles – Stockpiles are protected to prevent sediment from reaching the street and adjacent properties. Stockpiles are located away from street and property lines.	
Intermediate Control – Long or steep drainage paths have intermediate or interior BMPs installed to help slow the flow of runoff. Failure of perimeter controls due to the force of runoff often determines the need for intermediate controls.	
Other Pollutants – Dewatering is done in such a manner as not to deposit sediment offsite or cause erosion. Trash and debris are contained. All waste water, including concrete washout, is properly disposed of. Materials and chemicals are properly stored.	

APPENDIX B.8 Post-Construction BMPs Inspections and Enforcement Summary

BMP Registry

	Project Name	Owner	Location / Address	Civil Engineer	Construction Completed	2-Year Inspection		
						Inspection Due	Notification Date	Follow-up Date
1	39 Rainbow - Phase II	Rainbow Real Estate Partners II, LLC	39th Ave. and Rainbow Blvd.	Davidson AE	In Construction			
2	Advantage Metals Recycling, Parking Lot and	Advantages Metals Inc.	1050 Packard	URS Corp	2/21/2012	2/21/2014		
3	BPU Nearman WTP Reservoir	City of Kansas City, KS	4200 N. 55th St.	Black & Veatch	In Construction			
4	Con-way Freight	Conway Transportation Services, INC	234 Donovan Rd.	TranSystems	11/10/2010	11/10/2012		
5	Dollar General, 18th St. Exprwy (HODG II, LLC Final Plat)	ECI Development Corporation	2100 Metropolitan Ave.	Napier Engineering	11/7/2011	11/7/2013		
6	Family Dollar (7th. Ave. & Nebraska Ave.)	Family Dollar	7th. Ave. & Nebraska Ave.	Davidson Architecture and	2/14/2012	2/14/2014		
7	Hazel Grove Elementary School	USD #500	2401 N. 67th ST	SKW	8/9/2013	8/9/2015		
8	Interstate Oil Gas Station & Convenience	Samed Qarini	914 S. 55th Street	none (architect = Barry Hart)	7/1/2011	7/1/2013		
9	Jack in the Box, Plaza at the Speedway	Plaza Speedway, LLC	10630 Parallel (Fourth Plat, Lot 51)	Galloway Planning, Architecture, & Engineering	11/14/2011	11/14/2013		
10	KCKCC Athletic Field/Bldg (Redesign)	KCK Community College	7250 State Ave.	Christopher Boos	3/7/2013	3/7/2015		
11	Logan's Roadhouse	Plaza Speedway, LLC	10780 Parallel Parkway (Plaza at the Spee	Design and Engineering Inc.	5/1/2012	5/1/2014		
12	Mark Twain Elementary School	USD #500	2300 Minnesota Ave.	SKW	8/9/2013	8/9/2015		
13	Metal Panels, Inc., Lot 3 of Westhills Industrial	KMK Properties, LLC	8340 Kaw Dr. (K-32)	BHC Rhodes	In Construction			
14	Mi Ranchito	Alonso Villasenor	1311 Minnesota Avenue	Brauer Engineering	N/A			
15	Mt. Carmel Church Bldg. Add.	Mt. Carmel Church of God in Christ	2025 N. 12th St.	Engineering Solutions	In Construction			
16	Parallel Senior Villas	Roswell Church of Christ	6246 Parallel Parkway	MKEC Eng.	1/31/2013	1/31/2015		
17	Prairie Heights Apartments, Private Site	State Avenue 240 LLC	1401 N. 126th St.	GBA	In Construction			
18	QuikTrip, Store #239R (78th & Elizabeth)	Seestore Partners, Inc.	78th St & Elizabeth Ave.	Holman Engineering	2/17/2012	2/17/2014		
19	Sam's Club Gas Station, Plaza at the Speedway	Wal-Mart Real Estate Business Trust	106th St. & Parallel Pkwy	Continental Engrs.	9/17/2012	9/17/2014		
20	Speedy's C-Store	Prescott Plaza, Inc.	Lot 1, Prescott Plaza	Uhl Engineering	9/18/2012	9/18/2014		
21	Transport Truck Sales (527 S. 68th St.)	Kaw Properties LLC	527 S. 68th St.	BHC Rhodes	8/17/2011	8/17/2013		
22	Wyandotte Medical	WYCO Medical LLC	Lot 4 of Roberts Landmark, Phase 2	SKW	4/23/2013	4/23/2015		
23	Zeolyst Int'l (PQ Corp.), Existing Stormwater	PQ Corporation	1700 Kansas Avenue	Ford, Bacon, & Davis	2/11/2011	2/11/2013		

APPENDIX B.9 Pesticides, Herbicides & Fertilizers Quantities and Approved Contractors

APPENDIX B.9 Pesticides, Herbicides & Fertilizers Quantities and Approved Contractors

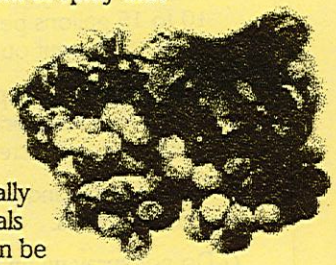
- Total number of sales (223) and total volume of product distributed (288 gal. 2,4-D Amine, 132 gal. glyphosate) in 2013 under KDA's "Cost Share Program".
- Type and volume of pesticides procured for Park maintenance operations (2.5 gal. Pathway (Tryclopyr), 2.5 gal. 2,4-D Amine, 105 gal. (glyphosate)
- Quantity of fertilizer used in lbs. nitrogen (1920 lbs.)
- Samples of literature distributed in connection with the "Cost Share Program" is provided in this section.

Avoiding Damage to Sensitive Crops

Many fruits, vegetables, field crops, and even trees and shrubs are sensitive to herbicides. Herbicides such as 2,4-D, trichlopyr, dicamba, and picloram may drift in particle or vapor forms that injure sensitive plants a mile or more from the application site.

When herbicides are applied under windy conditions, temperature inversions, high temperatures, low humidity, or in close proximity to sensitive crops, there is potential for damage.

A grape vineyard that is mature and in full production can represent an investment of $50,000 per acre. One incident of spray drift can destroy the vineyard.



The herbicide label includes all the safety precautions an applicator should follow when using that herbicide.

Herbicide applicators are legally responsible to use all chemicals according to the label and can be held liable for off-target damage.

Suggestions for preventing sensitive crop injury include:

- Visit with your neighbors and learn the locations of sensitive crops. The Kansas Department of Agricultural Pesticide Program sponsors a Web site where growers of sensitive crops can list locations. Applicators are encouraged to check the list before making herbicide applications: *www.accesskansas.org/kda/Pest&Fert/sensitivecrops.htm.*
- Avoid the use of ester formulations of phenoxy herbicides in any area near sensitive crops. Examples are 2,4-D and Banvel.
- Follow label directions closely.
- Use proper equipment and clean the equipment thoroughly after use.
- Follow label directions for herbicide container disposal.
- Watch weather conditions before and during herbicide application. Do not apply herbicides in windy conditions or when wind direction is toward sensitive plants.
- Spray in the fall if possible. Many broadleaf pasture weeds, such as thistle, will translocate the herbicide into the root system much better in the fall than in the spring. And, many sensitive crops are not actively growing in the fall.

Cooperating Agencies and Where to Go for More Information

Kansas Department of Agriculture Pesticide Program
109 SW 9th St
Topeka, KS 66612-1280
785-296-3786
Sensitive Crop Location Web site:
www.accesskansas.org/kda/Pest&Fert/sensitivecrops.htm

Kansas State University Department of Agronomy
2004 Throckmorton Hall
Manhattan, KS 66506-5504
785-532-6101
www.oznet.ksu.edu

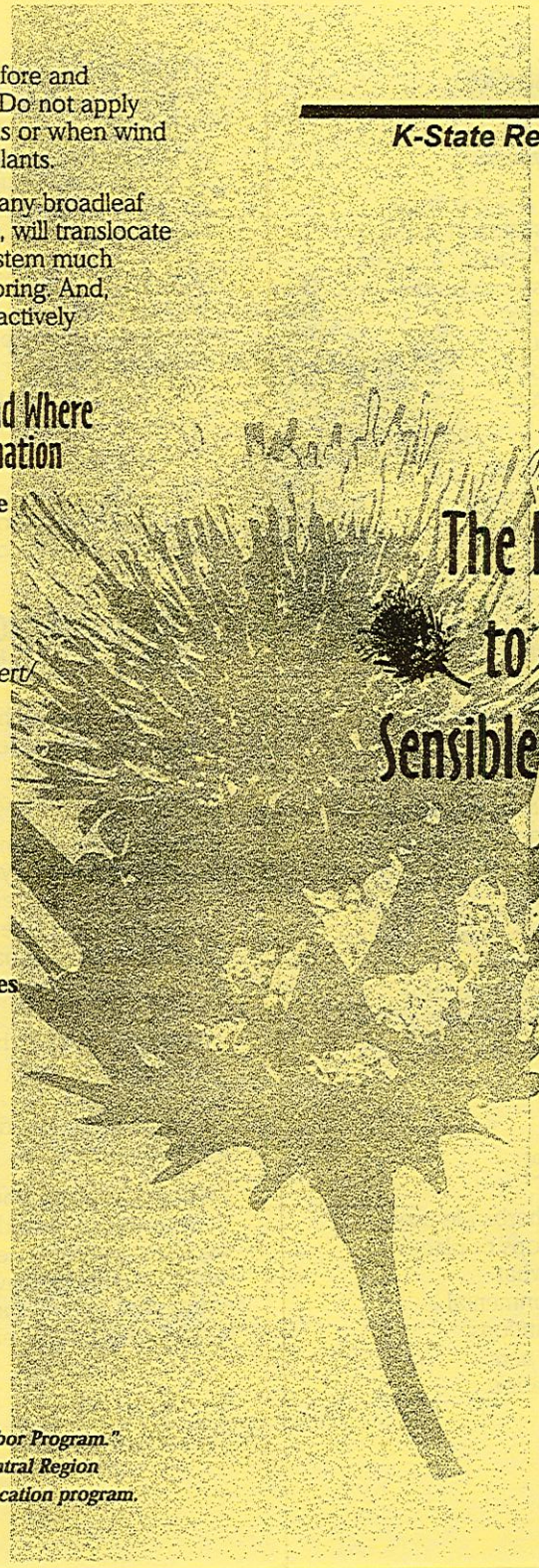
Kansas State University Department of Horticulture, Forestry, and Recreation Resources
2021 Throckmorton Hall
Manhattan, KS 66506-5506
785-532-6170
www.oznet.ksu.edu

Kansas Grape Growers and Winemakers Association
Greg Shipe, President
email: *ks_wines@hotmail.com*

Kansas Fruit Growers
www.kansasfruitgrowers.com

Kansas Vegetable Growers
Chuck Marr, Secretary
Email: cmarr@oznet.ksu.edu

This brochure is part of the "Good Neighbor Program." Partial funding provided by the North Central Region Sustainable Agriculture Research and Education program.



K-STATE
Kansas State University
K-State Research and Extension

The Rookie's Guide to Responsible & Sensible Herbicide Use

- When, Why, How
- Application Tips
- Herbicide Behavior
- Avoiding Non-Target Damag
- Being a Good Neighbor

Kansas State University
Agricultural Experiment Station and
Cooperative Extension Service

The Basics of Weed Science

Weed: A plant growing out of place.

So you think you have a weed? Do you know what plant it actually is? The first step in weed management is identifying the "weed." You can check out books at the library, search on the Web, *www.rice.rutgers.edu/weeds/index-thumbnail.asp* or *www.psu.missouri.edu/fishel/default.htm* or take a healthy looking specimen to your local extension office.

Once you identify the plant, you can find out the plant's life cycle, and then figure out the best option for control.

Many weeds can be controlled with inexpensive cultural methods — digging, pulling, mowing, crop rotation, and good grassland management. Well-managed land and healthy, desirable crops and grass make it more difficult for weeds to compete.

A few weeds, such as musk thistle, can be managed with biological methods, primarily beneficial insects. Scientists and researchers are continually working on improving this method.

A third option to consider is the use of chemical herbicides. Proper weed identification is the place to start when thinking of herbicides. Next, select a herbicide that will specifically kill that weed. The herbicide label will list all the weeds it controls. Advice on herbicide selection can be found at the local extension office, Noxious Weed Department, or chemical dealers.

The Basics of Herbicides

The number one rule involved in herbicide use: is Read the label. The label lists crops or places where the herbicide use is legal, what plants/weeds it will control, environmental precautions, personal safety precautions, proper rate and mixing directions, and weather conditions for safe application.

Herbicides are made up of various chemicals that have individual and unique properties. Herbicides can be purchased as wettable powders, granules, and liquids. Some herbicides work by contact and are absorbed through the leaves and stems, while others are soil-applied and are absorbed through the roots or by seedlings.

Some herbicides will kill just about any growing plant – these are called nonselective herbicides. Others are more specific and may affect mostly broadleaf plants, or mostly grass-type plants. The K-State *Herbicide Mode of Action* bulletin C-715 has more information on how herbicides affect plants.

The label on a herbicide container offers a wealth of helpful information. Take time to read it before handling the product.

Safe and Effective Herbicide Application

The label is again the place to start when discussing herbicide application. It includes mixing instructions, application rates, surfactant requirements, and other use information.

Drift is always a concern when herbicides are applied with a sprayer. Drift can result in the waste of product, reduce the effectiveness of application, damage non-target crops, and hurt wildlife or contaminate water supplies.

There are two basic types of drift.

Vapor drift is when herbicide molecules volatilize (evaporate into the air) and move downwind with the airflow. This form of drift is related to the product, not to the type of application method.

Particle drift is the movement of spray particles, or droplets, formed during application. Several key factors determine if a spray droplet hits its target or drifts downwind: droplet size, equipment and method of application, and wind speed and other climatic conditions.

Here are eight ways to reduce drift.

1) Select a nozzle that produces coarse droplets. Use droplets that are as coarse as practical to provide necessary coverage. Examples are turbo flood or turbo flat-fan.

2) Use the lower end of the pressure range on your sprayer. Higher pressures generate many more small droplets. Under most conditions, do not exceed 20 psi. pressure.

3) Lower sprayer boom height. Wind speed increases with height. Keeping the sprayer nozzles closer to the target lowers chances of off-target drift.

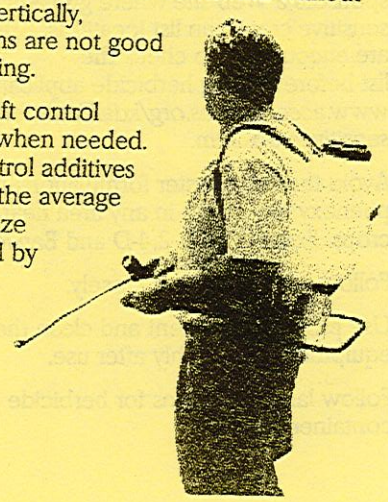
4) Increase nozzle size. Larger capacity nozzles reduce drift. If you use nozzles that put out 10 to 15 gallons per acre, increase size to nozzles that put out 15 to 20.

5) Spray when wind speeds are less than 10 m.p.h. More spray moves off target as wind speed increases.

6) Spray when wind is moving away from sensitive crops.

7) Do not spray when the air is very calm. Calm air, or an inversion, reduces air mixing, which means spray can move slowly downwind. Inversions generally occur in early morning or near bodies of water. You can recognize an inversion by observing a column of smoke. If the smoke does not dissipate, or if it moves downwind without mixing vertically, conditions are not good for spraying.

8) Use a drift control additive when needed. Drift control additives increase the average droplet size produced by nozzles.



Use Pesticides Carefully

Many plants, including grapes, tomatoes, potatoes, cotton, soybeans, and fruit and nut trees, are very sensitive to spray drift from hormonal-type pesticides like 2,4-D, dicamba, picloram, MCPA, triclopyr, fluroxypyr and Mecoprop. The effect can be miles away from the application site. Also, bees may be killed when insecticides are used near their hives or in flowering fields where the bees gather nectar.

You can take precautions to avoid harming sensitive crops when you apply pesticides. Pesticides include herbicides, insecticides and fungicides. Many plants and animals are sensitive to pesticides and may be damaged by particle spray drift, vapor drift or affected by pesticides that run off the target area.

The Kansas Department of Agriculture maintains an online registry for growers to post the locations of sensitive crops, and we recommend you refer to it to determine if any are near where you plan to apply a pesticide. Keep in mind, however, that one or more of your neighbors may have sensitive plants in their gardens and those won't be on our registry.

The sensitive crop registry can be found online at www.ksda.gov/pesticides_fertilizer/content/177.

How to Protect Sensitive Crops and Be a Good Neighbor

Carefully select a pesticide product. Read the product label to find one that is suitable for the pest you want to control and make sure the location is listed on the label. Consider the toxicity and hazard of the product you select, and don't buy more than you need for a job.

Read the label. Find out how much to use and follow all label directions. It is illegal to use more than the label allows.

Follow all precautions on the label. The label will inform you if you need to wear gloves or other protective clothing. It also will inform you of environmental hazards and any restrictions on the use of the product.

Look around you before you use the pesticide. Ask yourself these questions:

- Are there any sensitive or desirable plants and animals nearby?
- Is there a stream, pond, ditch or other open water source around?
- Will the wind carry the pesticide to the neighboring property?
- Is this product likely to volatilize due to a high temperature today or tomorrow?
- Are there any children, pets or other animals in the area?

Watch for drift or runoff as you apply the pesticide. Stop applying if it becomes windy or if the product starts to run off the target area.

Follow label directions and store pesticides in their original container. When you dilute a pesticide, use all of the mixture or store it in a nonfood container that is clearly labeled and kept out of reach of children. The empty container should be thoroughly rinsed and punctured so it can't be reused. Rinse water can be used in the spray mix to avoid disposal problems and environmental contamination.

How Pesticides Move Away From the Application Site

Particle Drift. Small spray droplets or particles may drift during a pesticide application and travel long distances to damage desirable plants or animals. To help prevent drift, use larger spray droplets, use low pressure and apply close to the plants. Make sure the wind is low and blowing away from any sensitive areas. Please be aware that any dust blowing as you apply weed-and-feed fertilizer to your lawn is drift and may cause damage.

Vapor Drift. After a pesticide is applied, the product may evaporate (volatilize) off the plants and affect plants in other areas. The volatility of some pesticide products increases as the temperature increases. The product label may warn you not to apply the product if a specific temperature is expected in the next few days. Ester formulations of phenoxy herbicides are more likely to volatilize and damage sensitive crops than amine formulations.

Runoff. A product applied to a slope, bare ground or right before a rain may run off and enter streams or severely damage other plants. Runoff

may kill fish or invertebrates and make the water unsuitable for swimming or drinking. Dry weed-and-feed lawn products often cause problems when they are carried off of the application site with runoff from rain or from too much watering.

Be aware of where sensitive plants are growing in your neighborhood. Select a weed control chemical and application method that will not violate the label or cause damage.

Do you know . . .

- Products you purchase to control a pest, whether it's an insect, weed, disease, rodent or even household germs, are strictly regulated by the U.S. Environmental Protection Agency and the Kansas Department of Agriculture.
- Pesticide products must have EPA-approved labels that explain how the product is to be used, whether certain precautions must be taken and how the product should be stored.
- It is unlawful to store, use and dispose of a pesticide product in a manner different than what is specified on the product label.
- It is unlawful to accept payment for applying any pesticide, even weed and feed fertilizers, for someone else if you do not have a pesticide business license and commercial pesticide applicator certification from the Kansas Department of Agriculture.

Where to Learn More

Kansas Department of Agriculture
(785) 296-3786
www.ksda.gov

K-State Research and Extension
Equipment to Reduce Spray Drift
www.oznet.ksu.edu/library/ageng2/mf2445.pdf

K-State Research and Extension
Strategies to Reduce Spray Drift
www.oznet.ksu.edu/library/ageng2/mf2444.pdf

K-State Research and Extension
The Rookie's Guide to Responsible
& Sensible Herbicide Use
www.ksda.gov/includes/document_center/pesticides_fertilizer/Drift/Rookie_Guide293.pdf

National Pesticide Information Center
(800) 858-7378
www.npic.orst.edu

The U.S. Environmental Protection Agency
Office of Pesticide Programs
www.epa.gov/pesticides/

KANSAS DEPARTMENT OF AGRICULTURE

Kansas Department of Agriculture
Pesticide and Fertilizer Program
109 SW 9th Street, 3rd Floor
Topeka, KS 66612
(785) 296-3786

Protect Kansas' Sensitive Crops

Project Good Neighbor

DON'T LET YOUR PESTICIDES DRIFT

www.ksda.gov

What is compost?

Many of the kitchen scraps that we send down the disposal and much of the yard wastes we dispose of can be put to better use as compost. Compost is decomposed organic material made from such ingredients as leaves, grass clippings, shredded twigs and some kitchen scraps. Composting is a practical and convenient way to reuse your lawn, garden and certain household wastes.

The composting process involves four main components: organic matter, moisture, oxygen, and bacteria. Organic matter includes plant materials and some animal manures. Moisture is important to support decomposition. Oxygen accelerates the breakdown of plant material.

Once all the components are in place, a complex feeding pattern begins that involves hundreds of different organisms, including bacteria, fungi, worms and insects. What remains after these organisms break down organic refuse is the rich compost that nourishes lawns and gardens.

The benefits of using compost

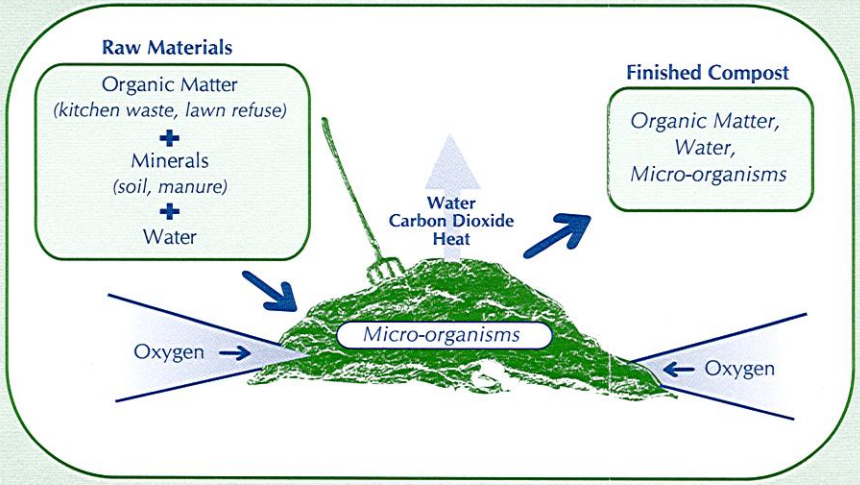
Homeowners often have difficulty disposing of leaves, grass clippings and other garden refuse. In many states, it is illegal to dump lawn waste in landfills, and disposing of it in storm drains, lakes, rivers and streams clogs drains and pollutes water.

Instead of filling landfills and polluting local waterways with this waste, citizens can benefit from it. Backyard composting of organic waste creates natural soil additives for use on lawns and gardens, and around the house. Other benefits of using organic compost:

- Reduces soil erosion and water runoff
- Assists soil in holding nutrients, which reduces the need for fertilizers
- Promotes healthier plants that are less susceptible to disease and insects
- Improves water absorption into soil and by plants
- With the addition of compost, sandy soils hold water better, and clay soils drain faster

Make your own compost pile

- Locate your pile on a well-drained site which would benefit from nutrient runoff, but avoid areas adjacent to streams and other waterways.
- To ensure good aeration, start your pile with a three-inch layer of course plant material such as small twigs, or use a wooden pallet.
- Build successive layers of leaves, grass clippings, food scraps, and other green matter. For more rapid decomposition, chop and mix components together.
- Cover layers with 1–2 inches of soil or manure to add nitrogen to the process.
- During dry weather, keep the pile moist. In cold winter months, cover the pile with black plastic to insulate and shed excess water.
- Mix compost with a pitchfork after six weeks. This helps aerate the pile, and keeps the bacterial processes from overheating.



What can you compost?

To achieve the healthiest compost, you will need the right mix of ingredients. Here are some ideas for ingredients to include and those to avoid:

Stuff to include

- Grass clippings and leaves
- Fruit and vegetable scraps
- Tea bags and coffee grounds
- Fireplace ashes
- Vacuum cleaner lint
- Straw/hay
- Wood chips and sawdust
- Shredded newspaper

Stuff to avoid

- Diseased plants
- Human and pet waste
- Chemically treated wood products
- Barbecue grill ash
- Meat and fish scraps and bones
- Oils and other fatty food products
- Milk products
- Pernicious weeds

** Check with your local government to see if there are code requirements for building a compost pile in your community.*

What is a Watershed?

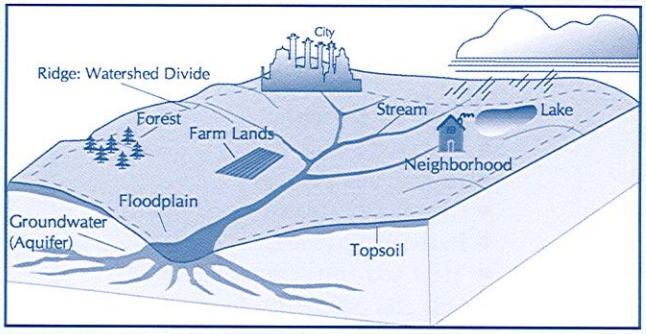
A watershed is an area of land that drains to a common point, such as a nearby creek, stream, river or lake. Every small watershed drains to a larger watershed that eventually flows to the ocean.

Watersheds support a wide variety of plants and wildlife and provide many outdoor recreation opportunities. Protecting the health of our watersheds preserves and enhances the quality of life for Kansas City area residents.

What is Stormwater Runoff?

Stormwater is water from rain or melting snow. It flows from rooftops, over paved streets, sidewalks and parking lots, across bare soil, and through lawns and storm drains. As it flows, runoff collects and transports soil, pet waste, salt, pesticides, fertilizer, oil and grease, litter and other pollutants. This water drains directly into nearby creeks, streams and rivers, without receiving treatment at sewage plants.

Polluted stormwater contaminates local waterways. It can harm plants, fish and wildlife, while degrading the quality of water.



A typical watershed system

MARC
Mid-America Regional Council
600 Broadway, Suite 300
Kansas City, Missouri 64105

For more information, visit www.marc.org/water or call 816/474-4240.

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Making and Using Compost

Autumn Watershed Tip

Help keep yard waste and kitchen scraps out of landfills and waterways

Good Neighbors Care About Clean Water

APPENDIX B.10 Street Sweeping Log

APPENDIX B.10 Street Sweeping Log (2013)

Month	Lane Miles	Estimated Material in Cubic Yards
JAN	854	909
FEB	617	657
MAR	202	169.5
APR	1157	823.5
MAY	840	711
JUN	339	195
JUL	497	381
AUG	647	465
SEP	267	156
OCT	613	426
NOV	322	363
DEC	172	147
TOTAL:	**6,527**	**5,403**

APPENDIX B.11 Good Housekeeping Training Information

Are you a Friend to the Environment?

The UG is increasing its efforts in keeping pollutants out of our streams, rivers and lakes…and we need your help! It will take a joint effort from UG staff, contractors, WYCO residents and business owners to comply with regulations. The following are tips and guidelines on how you can help as a UG employee and resident of WYCO. Together we can help keep pollutants out of our streams, rivers, and lakes; providing a cleaner county for all! Let's all be "Good Housekeepers" for Stormwater!!

For more information, please visit our webpage at www.wycokck.org/pw. To report stormwater pollution, call 913.573.5700 or 913.573.5565 (after hours)

Office Chemicals

*Cleaning solutions should not be dumped on the grass, parking lot, or down the storm drain. Follow instructions on how to properly dispose of chemicals.

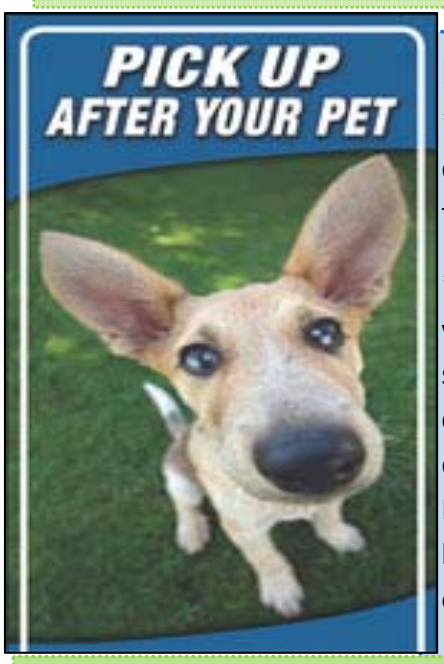
*Clean up any chemical or hazardous material spills before they can wash down our inlets!

Litter & Trash

*Litter and trash in our streets and yards can end up in our streams and rivers

*Put all trash & litter in a wastebasket or trash bag.

*Do not dump trash or trash bags into storm inlets, rivers, and streams.



Pet Waste

*Pick-up after your dog and throw into trash

*Pet waste left on yards, streets, and sidewalks can be carried to the stream during a storm event. Pet waste contains bacteria that pollutes our water.

Yard Waste & Chemicals

*Do not put leaves or grass clippings down the storm sewer inlet

*Use lawn waste bags, compost or mulch leaves and grass

*Do not over apply pesticides, herbicides and fertilizers. Excess chemicals will runoff yard and end up in the stream. Less is best when it comes to yard chemical application.

Oils, Gas and Auto Fluids

*Do not dump oil, gas, and auto fluids in storm inlets, or directly on the street, driveways or sidewalk

APPENDIX B.12 Curb Inlet Inspection and Cleaning Records

SEWER MAINTENANCE ANNUAL REPORT - 2013

SEWER MAINTENANCE CREWS:

WORK PERFORMED	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	TOTAL
Catch Basins Checked	1,746	1,679	2,457	2,215	2,665	2,244	2,156	2,397	1,858	2,635	1,871	1,184	**25,107**
Catch Basins Cleaned	633	692	1,092	1,212	1,074	1,025	740	877	1,021	1,118	1,076	451	**11,011**

APPENDIX B.13 UG-Owned/Operated and UG-Operated Facilities Registry

List of UG-Owned/Operated and UG-Operated Facilities Classified as Industrial by CFR 122.26 (b)(14)(i-xi) - 2013

Date: 23-Oct-13

Department	Description	Address
WPC	Wastewater Treatment Plant (Kaw)	50 Market Street
WPC	Wastewater Treatment Plant #20	900 Wood Avenue
PUBLIC WORKS	Fleet Center, Parks & Rec. Admin.	5033 State Avenue

Note: This is an initial list of those UG facilites that are believed to be regulated under the general permit. However, the UG will continue to investigate these sites to determine if their activities would keep them on the regulated list.

List of non-regulated UG-Owned/Operated and UG-Operated Facilities - 2013

Date: 23-Oct-13

Department	Building	Address
B & L	Court Service & Correctional	812 N 7th Street
B & L	Public Works, Public Levee	2151 S 34th Street
COURT	District Court	711 Armstrong Avenue
COURT	Election Office	850 State Avenue
COURT	Justice Complex, Parking Garage #D	725 Ann Avenue
COURT	Municipal Bldg (multiple use)	710 N 7th Street
FACILITY	Parking Garage #A	741 Nebraska Avenue
FACILITY	Parking Garage #B	625 State Avenue
FACILITY	Parking Garage #C	7th Street & Armstrong Avenue
FACILITY	Parking Garage #E	600 Ann Avenue
FACILITY	Public Levee Maintenance Bldg	1401 Fairfax Trafficway
FACILITY	Sunflower Golf Course Maint. Shop	12200 Riverview Avenue
FIRE	Fire Station #01 - Headquarters	815 N 6th Street
FIRE	Fire Station #02 - HAZMAT	6241 State Avenue
FIRE	Fire Station #03	420 Kansas Avenue
FIRE	Fire Station #04	3044 N 81st Street
FIRE	Fire Station #05	910 Quindaro Boulevard
FIRE	Fire Station #06	9548 State Avenue
FIRE	Fire Station #07	2717 Strong Avenue
FIRE	Fire Station #08	3131 N 123rd Street
FIRE	Fire Station #09	1100 Central Avenue
FIRE	Fire Station #10	2210 W 36th Street
FIRE	Fire Station #11	3100 State Avenue
FIRE	Fire Station #14	2615 N 27th Street
FIRE	Fire Station #15	444 Kindleberger Road
FIRE	Fire Station #16	1437 S 55th Street
FIRE	Fire Station #17	2416 S 51st Street
FIRE	Fire Station #18	5427 Leavenworth Road
FIRE	Fire Station #19	1011 N 80th Terrace
FIRE	Fire Station #20	7741 Kansas Avenue
OFFICES	Municipal Bldg (multiple use)	701 N 7th Street
OFFICES	Office Building	412 N 61st Street
OFFICES	Treasurer, Appraiser Offices	8200 State Avenue
OTHER	Radio Tower Building	3011 N 53rd Street
OTHER	WDDS Development	842 State Ave
PARKS AND REC	Argentine Recreation Center	2810 Metropolitan Avenue
PARKS AND REC	Armourdale Recreation Center	730 Osage Avenue
PARKS AND REC	Bethany Recreation Center	1120 Central Avenue
PARKS AND REC	Boathouse	4280 West Drive
PARKS AND REC	City Park	Park Drive & Grandview
PARKS AND REC	Eisenhower Recreation Center	2901 N 72nd Street
PARKS AND REC	Golf Course	126th Street and Riverview Avenue
PARKS AND REC	James P Davis Hall, Sheriff Ranger HQ	3488 West Drive
PARKS AND REC	JFK Recreation Center	1310 N 10th Street
PARKS AND REC	Kensington Recreation Center	2900 State Avenue

Department	Building	Address
PARKS AND REC	Lake House #1	3450 East Drive
PARKS AND REC	Memorial Hall	600 N 7th Street
PARKS AND REC	Natural History Museum	631 N 126th Street
PARKS AND REC	Nature Center	4051 West Drive
PARKS AND REC	Noxious Weeds Department	3480 West Drive
PARKS AND REC	Parks & Rec. Office Building	75 S 23rd Street
PARKS AND REC	Parks Administration	3400 N 91st Street
PARKS AND REC	Parks and Rec. Nursery	1st Street & Franklin Avenue
PARKS AND REC	Parkwood Recreation Center	950 Quindaro Boulevard
PARKS AND REC	Pat Hanlon Senior Center	1101 Ridge Avenue
PARKS AND REC	Pierson Recreation Center	1800 S 55th Street
PARKS AND REC	Piper Connunity Center	3130 N 122nd Street
PARKS AND REC	Pump House	4290 West Drive
PARKS AND REC	Rental Building, UG Owned	4400 West Drive
PARKS AND REC	Willa Gill Multi-purpose Bldg	635 Nebraska Avenue
POLICE	Animal Control	3301 Park Drive
POLICE	Community Corrections, Pre-trial Services	1 Northrup Avenue
POLICE	Community Policing, Midtown Patrol	4601 State Avenue
POLICE	Division 2 Police Station	1011 N 80th Terrace
POLICE	Division 3 Police Station	2151 S 24th Street
POLICE	Midtown Patrol	910 N 47th Street
POLICE	Neighborhood Resource Center	4953 State Avenue
POLICE	Police Academy	7340 State Avenue
POLICE	Police Dept. Firing Range	4800 N 47th Street
POLICE	Police Dept. Firing Range	5400 N 57th Street
POLICE	Police Headquarters	700 Minnesota Avenue
POLICE	Traffic Support	6000 Leavenworth Road
POLICE	UG Communications Center	6730 Riverview Avenue
PUBLIC HEALTH	Public Health Center, Records Mgmt.	619 Ann Avenue
PUBLIC LEVEE	Cold Storage Building	1401 Fairfax Trafficway
STORAGE	Public Levee Bldg Storage #A - E	3103 Fairfax Trafficway
STORAGE	Storage Shed	9700 State Avenue
STREETS	Street Dept. North Barn, Shed	1st Street and Garfield Avenue
STREETS	Street Dept. Truck Garage	6803 Cernech Road
STREETS	Street Dept. Truck Garage	82nd Street & Riverview Avenue
WPC	FPS # 1	10 Market Street
WPC	FPS # 10	9 Shawnee Avenue
WPC	FPS # 11	1137 S 5th Street
WPC	FPS # 12	1197 S Mill Street
WPC	FPS # 13	1171 S 12th Street
WPC	FPS # 14	2105 Osage Avenue
WPC	FPS # 15	1717 Strong Avenue
WPC	FPS # 16, CID	295 Central Avenue
WPC	FPS # 2	24th Street & Strong Avenue
WPC	FPS # 8, CID	310 Central Avenue
WPC	Maintenance	Market and Ohio Avenue
WPC	PS # 1, AID	300 N 4th Street
WPC	PS # 10	3120 N 83rd Street
WPC	PS # 11	9191 Minnesota Avenue
WPC	PS # 12	3102 West 43rd Avenue

Department	Building	Address
WPC	PS # 13	74th Street & Washington Ave.
WPC	PS # 14	2080 S 18th Street
WPC	PS # 15	73rd Street & Holiday Drive
WPC	PS # 16	10614 Rowland Avenue
WPC	PS # 17	11800 Polfer Road
WPC	PS # 18	9402 State Avenue
WPC	PS # 18 and WPC Storage Barn	5830 Inland Drive
WPC	PS # 19	1196 S 39th Street
WPC	PS # 2, CID	300 N James Street
WPC	PS # 20	2443 S 88th Street
WPC	PS # 21	1006 S 49th Drive
WPC	PS # 22	845 S 51st Street
WPC	PS # 23	690 S 54th Street
WPC	PS # 24	6020 Kansas Avenue
WPC	PS # 25	388 S 65th Street
WPC	PS # 26	3356 N 34th Street
WPC	PS # 27	3231 N 38th Sreet
WPC	PS # 28	2998 N 42nd Street
WPC	PS # 29	2830 N 44th Street
WPC	PS # 3, FID	1520 N. 2nd Street
WPC	PS # 30	3034 N 48th Terrace
WPC	PS # 31	3240 N 84th Place
WPC	PS # 33	880 S 65th Street
WPC	PS # 34	2480 S 88th Street
WPC	PS # 35, WPC Storage Barn	3225 N 46th Street
WPC	PS # 36	4325 State Avenue
WPC	PS # 37	2847 N 99th Street
WPC	PS # 38	4607 Cambridge Street
WPC	PS # 39	14th Street & Muncie Avenue
WPC	PS # 4	3770 Fairbanks Avenue
WPC	PS # 40	1830 S 13th Street
WPC	PS # 41	625 Metropolitan Avenue
WPC	PS # 42	3252 N 91st Street
WPC	PS # 43	4801 Steele Road
WPC	PS # 44	8009 Kansas Avenue
WPC	PS # 44	880 S 9th Street, Edwardsville, KS
WPC	PS # 45	401 N 57th Street
WPC	PS # 46	831 S 78th Street
WPC	PS # 47	403 Orville Avenue
WPC	PS # 48	7324 Oliver Street
WPC	PS # 49	2059 S 50th Street
WPC	PS # 5	5091 Kansas Avenue
WPC	PS # 50	10515 Donohoo Road
WPC	PS # 51	3285 Fairfax Trafficway
WPC	PS # 52	17 Ohio Sreet
WPC	PS # 53	3198 Woodview Ridge Road
WPC	PS # 54	8054 Leavenworth Road
WPC	PS # 55	3500 N 27th Street
WPC	PS # 56	1399 S 55th Street
WPC	PS # 57	5098 Douglas Avenue

Department	Building	Address
WPC	PS # 58	1715 N 98th Street
WPC	PS # 59	9590 Leavenworth Road
WPC	PS # 6	8260 Kaw Drive
WPC	PS # 60	2938 N 103rd Terrace
WPC	PS # 61	3903 N 123rd Street
WPC	PS # 63	123rd Street and Leavenworth Road
WPC	PS # 7	5611 Kaw Drive
WPC	PS # 8	7544 Richland Avenue
WPC	PS # 9	800 N 41st Terrace
WPC	WWTP #14 (<1MGD)	7014 Holiday Drive
WPC	Wolcott WWWTP (<1MGD)	5335 N 95th Street
WPC	Wastewater Treatment Plant (<1MGD)	4130 Brenner Road

APPENDIX B.14 Industrial Activity SW Management Program Industry Registry

UG Registry of Industrial Facilities - MS4 Regulated Stormwater

Updated: 20-Nov-13

Map #	Industrial Stormwater Group	Facility Name	Address
1	C, D	AMSTED RAIL CO GRIFFIN WHEEL KC FACILITY	7111 GRIFFIN ROAD
2	C	BARTON SOLVENTS INC KANSAS CITY	901 S. 66TH TERRACE
3	A, C	BPU-NEARMAN CREEK POWER STATION	4240 N. 55TH STREET
4	C, D	DAYTON SUPERIOR CORPORATION	636 S. 66TH TERRACE
5	C	FUCHS LUBRICANTS CO	2140 S 88TH STREET
6	B, C, D	HARCROS CHEMICALS INC	5200 SPEAKER ROAD
7	A	KC HHW	2443 S. 88TH STREET
8	B, C	NEXEO SOLUTIONS LLC	5022 SWARTZ ROAD
9	C, D	PLASTIC PACKAGING TECHNOLOGIES LLC	750 S. 65TH STREET
10	B, C	SINCLAIR KANSAS CITY PRODUCTS TERMINAL	3401 FAIRBANKS AVENUE

Total Facilities: **10**

A- Municipal Landfills
B- Hazardous waste treatment, disposal, or recovery (RCRA)
C- Facilities Subject to Section 313 of Title III of SARA (TRI)
D- KDHE NOI Permit Holders
E- Industrial facilities which are found to contribute or potentially contribute
N- Has KDHE "No Exposure" Certication

Note: Industries located in Edwardsville, Bonner Springs, Lake Quivera and Delaware township are not in the UG regulatory jurisdiction and are excluded from this list.

APPENDIX B.15 TMDLs Activities and BMPs Summary

APPENDIX B.15 TMDLs Activities and BMPs Summary

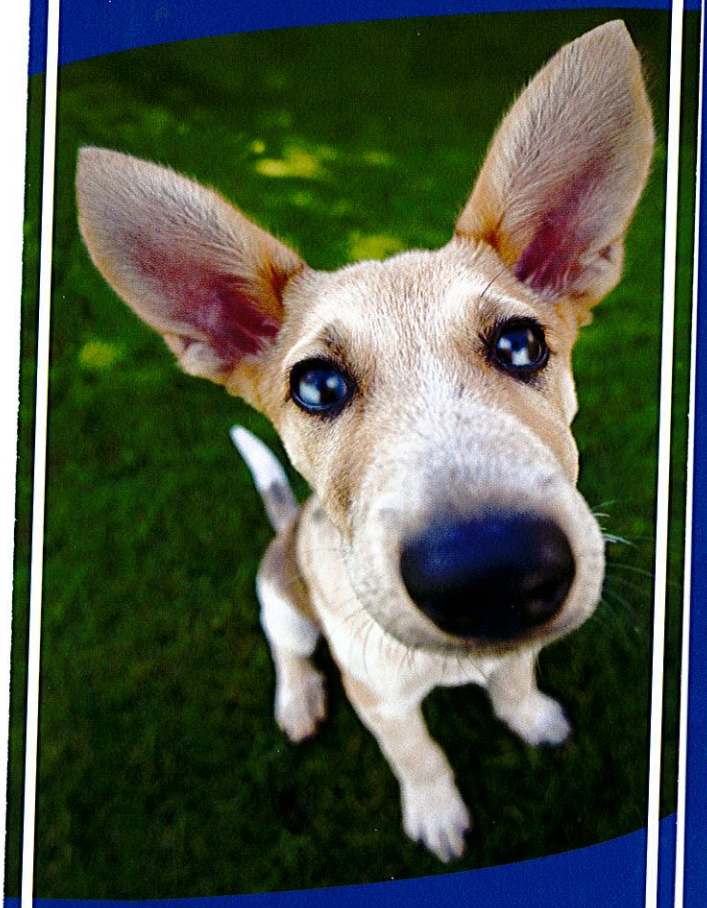
The following information summarizes the activities and BMPs incorporated to reduce, to the Maximum Extent Practicable, the Total Maximum Daily Load regulated pollutants and Principal Pollutants of Concern in the Kansas River Basin as well as in the Wyandotte County Lake Watershed.

- Pet Waste Info (flier included)
    - Number of pet waste stations installed - 3
    - Number of pet waste bags used - 12,800

- Septic Tank Info from Health Department
    - Number of letters or notices sent to owners of failing septic systems - 26
    - Number of system permits issued as a result of the notices - 0
    - Number of summons issued for failing septic systems – 0

- Wyandotte County Lake Septic Tanks Inspection and Maintenance
    - Total septic systems inspection/pumped out - 10

PICK UP AFTER YOUR PET



Pet Waste Affects Water Quality

Every time it rains, thousands of pounds of pet waste wash down storm drains and into streams, rivers and lakes. If not disposed of properly, pet waste flows directly into nearby streams and creeks without being treated at wastewater treatment facilities.

Clean Water. Healthy Life.

What's the Problem?

A recent U.S. Geological Survey study of streams and creeks in the Kansas City region showed that bacteria associated with pet waste is the source of approximately 25% of the bacteria in samples collected from local waterways.

When pet waste is disposed of improperly, water quality isn't the only thing that suffers — your health may be at risk, too.

Adults working in their gardens, children playing outside and family pets are the most at risk for infection from some of the bacteria and parasites found in pet waste.

What Can You Do?

- Pick up pet waste from your yard. It is not a fertilizer.
- Carry disposable bags while walking your dog to pick up and dispose of waste properly. When you dispose of pet waste in the trash, wrap it carefully to avoid spilling during collection.
- Bury pet waste in your yard, at least 12 inches deep and cover with at least eight inches of soil to let it decompose slowly. Bury the waste in several different locations and keep it away from vegetable gardens.
- Contact your local parks department to inquire about providing pet waste stations in area parks, along trails and in public places where people frequently walk their dogs.

Regional Water Quality Education Program

For more information, visit
www.marc.org/water
or call 816/474-4240

MARC
Mid-America Regional Council

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APPENDIX B.16 Wyandotte County Lake Baseline Report

Wyandotte County Lake Baseline Condition Assessment Report

PREPARED FOR

Unified Government of Wyandotte County/Kansas City, Kansas

December 17, 2013
Revised: January 24, 2014

benesch
engineers · scientists · planners

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SECTION 1 Introduction..... 2

SECTION 2 Existing Watershed Build-Out Conditions.. 2

SECTION 3 Bathymetric and Sediment Survey 4

SECTION 4 Secchi Disk Depth Readings..... 4

SECTION 5 Tributary Water Sampling..... 5

APPENDIX

A.1 WYCO Lake - Existing Build-Out Conditions - 2013
A.2 Bathymetric and Sediment Survey WYCO Lake- 2010
A.3 Secchi Disk Depth Reading Results - 2013
A.4 WYCO Lake Tributary Water Sampling Summary - 2013

SECTION 1 – INTRODUCTION

In accordance with the Unified Government of Wyandotte County/Kansas City, Kansas (UG) Stormwater Management Plan (SWMP), the UG has compiled available information and sampling data to establish baseline conditions for Wyandotte County Lake (WYCO Lake) in order to reduce the impacts from stormwater pollution to the maximum extent practicable. The report includes analysis using GIS information and datasets along with Master Plans in Wyandotte County to establish existing build-out conditions in the WYCO Lake watershed. It also contains information from the Kansas Biological Survey's *Bathymetric and Sediment Survey of Wyandotte County Lake, Wyandotte County Kansas* (conducted in 2010), Secchi disk depth reading results for 2013, and a summary of the results from sampling of stormwater entering WYCO Lake conducted in 2013 by the UG's Water Pollution Control Department.

SECTION 2 – EXISTING WATERSHED BUILDS-OUT CONDITIONS

The existing build-out conditions were determined using ArcGIS® software and an Excel® spreadsheet to analyze data obtained from the Urban Planning and Land Use Department. The UG Urban Planning and Land Use Department collects and maintains data concerning future and existing land use, current build-out conditions, and master plans for all of Wyandotte County under the UG jurisdiction. These datasets were used to create a final dataset overlay representing the Wyandotte County Lake watershed. A map (Figure No. 1) of the existing build-out conditions can be found in Appendix A.1. A City-Wide Master Plan dated July 2008 was prepared for all of Wyandotte County under the UG's jurisdiction. This master plan contains a City-Wide Land Use Plan that applies to areas that do not currently have an existing land use plan. The City-Wide Master Plan for existing and future land use applies to the area south of WYCO Lake and east of N. 91st Street. The Prairie Delaware Piper Master Plan updated in 2004 for land use applies for the remaining areas within the WYCO Lake watershed. Both plans are maintained by the UG and are located on the UG website at http://www.wycokck.org/. The GIS datasets used to create the plans were also used to create Figure No. 1.

The WYCO Lake watershed consists of approximately 5,200 acres and consists of seven categories of land use: Agriculture, Commercial/Office, Multi-Family Residential, Parks/Open Space, Public/Semi-Public, Single-Family Residential and Utility/Other. Figure 2-1 illustrates the breakdown of the watershed based on the percentage of area occupied by each category. Further analysis of the existing data was used to produce figure 2-2 which indicates what percentage of each category is currently vacant. Figure No. 1 in appendix A.1 shows where these areas are within the watershed.

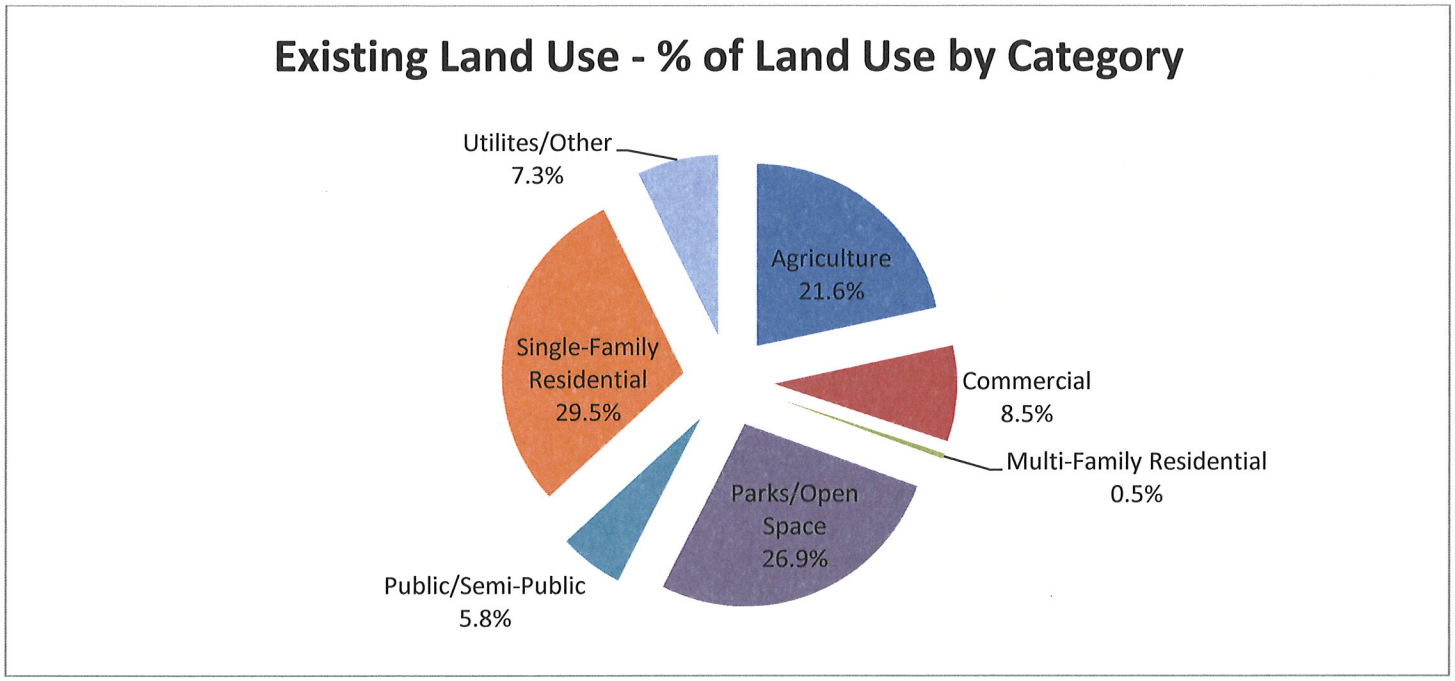


Figure 2-1

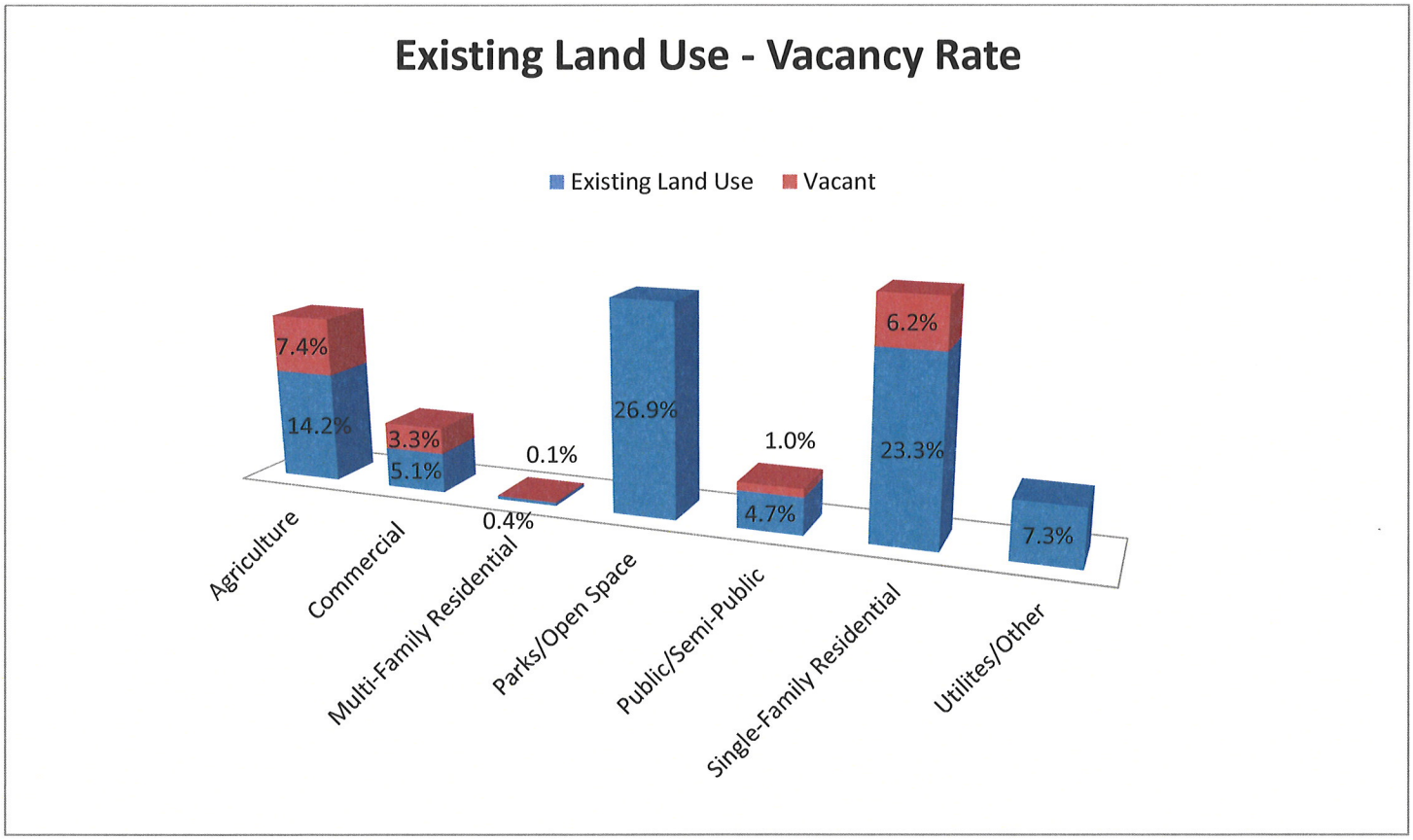


Figure 2-2

SECTION 3 – BATHYMETRIC AND SEDIMENT SURVEY

In 2010 the Kansas Biological Survey conducted a bathymetric and sediment survey of Wyandotte County Lake. The referenced report dated March 2011 can be found in Appendix A.2. The bathymetric survey consisted of using sonar and GPS equipment to produce data that was then used to produce a reservoir depth map and volume elevation curves. Concurrently the Kansas Biological Survey conducted a Sediment Survey in 3 areas of the Lake (Appendix A.2). The samples were taken with a drop-corer device and then shipped to the Kansas State University Soil Testing Laboratory in Manhattan, Kansas for particle size analysis. This data will be used to establish the baseline condition for the lake.

SECTION 4 – SECCHI DISK DEPTH READINGS

In accordance with the UG's Stormwater Management Plan, the UG staff conducted Secchi disk depth readings on June 28, August 23 and October 24 in six locations. The testing consisted of traveling by boat to a location and lowering the Secchi disk until the markings on the disk were no longer discernible by the individuals conducting the readings and measuring the resulting depth of the disk. The process was performed four times at each location and an average was calculated from the four readings. The disk readings are a measure of the turbidity of the lake. A summary of the results is shown in Table 4-1. The full results can be found in Appendix A.3.

Summary of Secchi Disk Readings Results

	Coordinates		Average Depth in Meters Date of Reading		
Location	Latitude	Longitude	6/28/2013	8/23/2013	10/24/2013
Dam	N 39D 10' 11.0"	W 094D 46' 22.0"	2.15	4.32	2.68
West of Dam	N 39D 10' 01.2"	W 094D 46' 51.3"	2.00	4.28	2.75
South End of Lake	N 39D 09' 12.1"	W 094D 47' 18.2"	0.74	1.95	2.42
Stotler Cove	N 39D 09' 34.8"	W 094D 47' 27.2"	1.52	3.34	2.99
Opposite Beach	N 39D 09' 44.7"	W 094D 47' 12.4"	1.84	4.10	2.81
Wilson Cove	N 39D 09' 36.4"	W 094D 46' 41.4"	1.77	3.59	3.34

Table 4-1

SECTION 5 –TRIBUTARY WATER SAMPLING

In accordance with the UG's Stormwater Management Plan, samples from the southern and eastern tributaries entering Wyandotte County Lake were gathered during 4 separate wet weather events and analyzed by the UG Water Pollution Control Laboratory. The purpose of sampling the tributaries is to determine if BMPs and stormwater practices are improving the quality of water entering the lake. A reduction of pollutants in the tributaries should translate to an overall reduction of pollutants in the lake. The parameters tested included Total Phosphorous, Total Suspended Solids (TSS), Total nitrogen (calculated), TKN, nitrates + nitrites, ammonia, biochemical oxygen demand (BOD), and pH. The results can be found in appendix A.4. Total phosphorous values ranged from 0.25 to 0.40 mg/L. TSS values ranged from 38.0 to 152.0 mg/L. Total nitrogen (calculated) values ranged from 0.43 to 1.43 mg/L. TKN ranged from 0.23 to 0.83 mg/L. Nitrates + nitrite values ranged from 0.20 to 0.60 mg/L. Ammonia values were found to be less than 0.1 mg/L. BOD values ranged from <2.0 to 2.1 mg/L. pH ranged from 7.35 to 7.94 S.U.

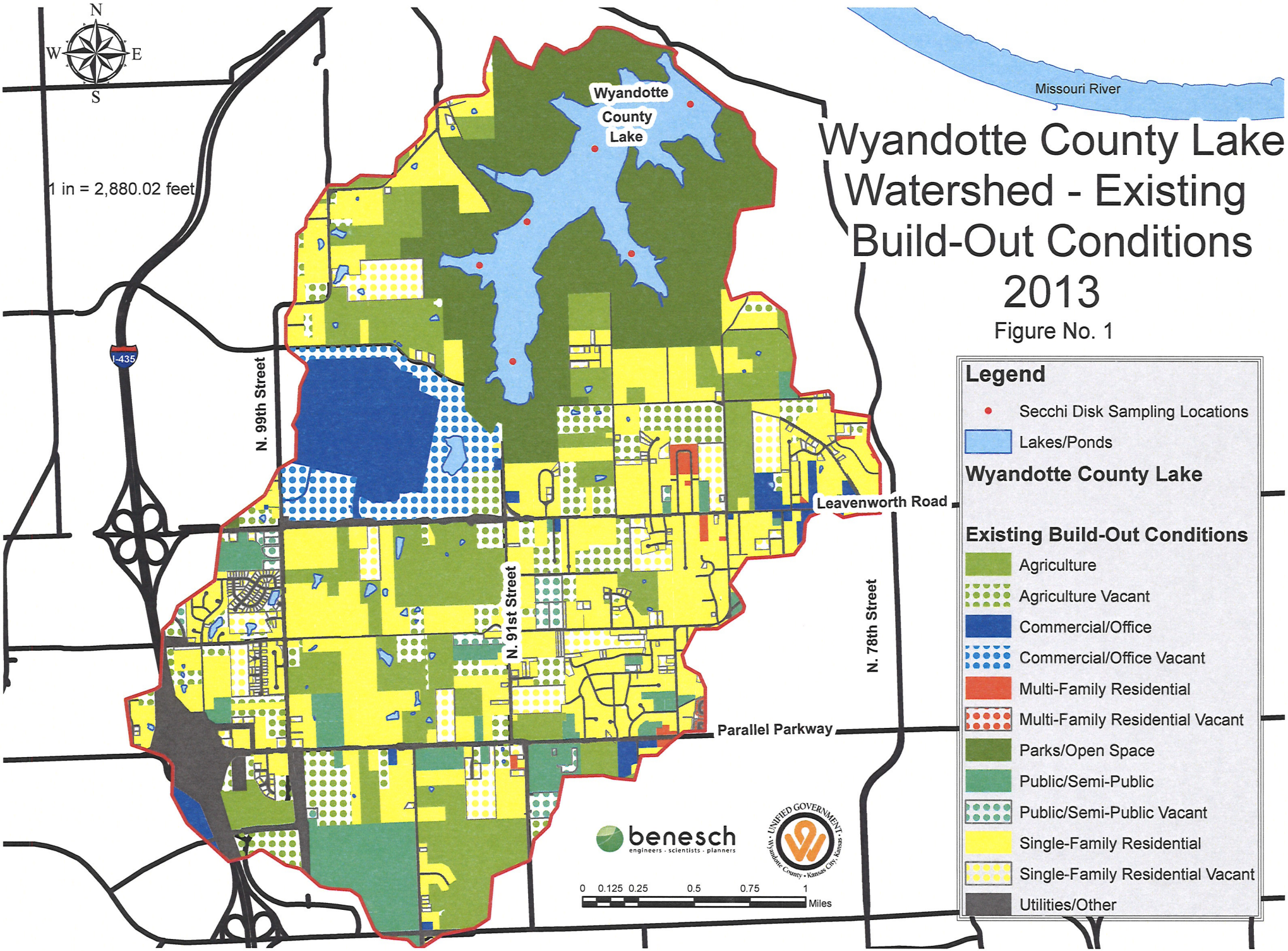
CONCLUSIONS

This report encompasses several parameters that highlight overall state of Wyandotte County Lake. Wyandotte County Lake is listed as a 303(d) impaired water with the impairment being eutrophication. The lake is currently allowed a TMDL of 6.27 lbs/day of phosphorous. Eutrophication can be controlled by limiting the amounts of nitrogen and phosphorous entering the lake. The implementation of the UG's SWMP will address some of these threats and reduce the pollution that threatens the lake. According to the KDHE TMDL report dated 2008, the lake is considered to be in relatively good condition with good clarity as indicated by high Secchi Disk readings. Current Secchi disk readings were consistently higher than those of the 2008 TMDL report. There are other threats to the lake including the existing public and private septic systems, erosion and sediment from private developments, water fowl pollution, and zebra mussels. The UG is taking or has taken steps through the current SWMP and other means to address these issues and will continue to monitor the results of these actions.

Appendix A.1

Wyandotte County Lake

Existing Build-Out Conditions


Wyandotte County Lake Watershed - Existing Build-Out Conditions 2013
Figure No. 1
N
S
E
W
1 in = 2,880.02 feet
Missouri River
Wyandotte County Lake
I-435
N. 99th Street
N. 91st Street
N. 78th Street
Leavenworth Road
Parallel Parkway
benesch
engineers · scientists · planners
UNIFIED GOVERNMENT
Wyandotte County · Kansas City, Kansas
0 0.125 0.25 0.5 0.75 1
Miles
Legend
Secchi Disk Sampling Locations
Lakes/Ponds
Wyandotte County Lake
Existing Build-Out Conditions
Agriculture
Agriculture Vacant
Commercial/Office
Commercial/Office Vacant
Multi-Family Residential
Multi-Family Residential Vacant
Parks/Open Space
Public/Semi-Public
Public/Semi-Public Vacant
Single-Family Residential
Single-Family Residential Vacant
Utilities/Other

Appendix A.2

Bathymetric and Sediment Survey of Wyandotte County Lake

Bathymetric and Sediment Survey of Wyandotte County Lake, Wyandotte County, Kansas

KANSAS BIOLOGICAL SURVEY

Kansas Biological Survey

Applied Science and Technology for Reservoir Assessment (ASTRA) Program

Report 2011-12 (March 2011)

KANSAS
WATER
OFFICE

This work was funded by the Kansas Water Office through the State Water Plan Fund in support of the Reservoir Sustainability Initiative.

SUMMARY

On July 20, 2010, the Kansas Biological Survey (KBS) performed a bathymetric survey of Wyandotte County Lake in Wyandotte County, Kansas. The survey was carried out using acoustic echosounding apparatus linked to a global positioning system. The bathymetric survey was georeferenced to both horizontal and vertical reference datums.

Sediment samples were collected from three sites within the reservoir: One sample was taken near the dam; a second at mid-lake; and a third in the upper end. Sampling was performed on the same day as the bathymetric survey, following completion of the survey. Sediment samples were analyzed for particle size distributions.

Summary Data:

Bathymetric Survey:		
	Date of survey:	July 20, 2010
Reservoir Statistics:		
	Elevation on survey date	830.96 ft
	Area on survey date:	328 acres
	Volume on survey date:	8789 acre-feet
	Maximum depth:	56.75 ft
Elevation Benchmark (if applicable)		
	UTM location of elevation benchmark:	345450.90, 4336684.47
	UTM Zone:	15N
	UTM datum:	NAD83
	Elevation of benchmark, from GPS:	832.70 ft.
	Vertical datum, all data:	NAVD88
Sediment Survey:		
	Date of sediment survey:	July 20, 2010

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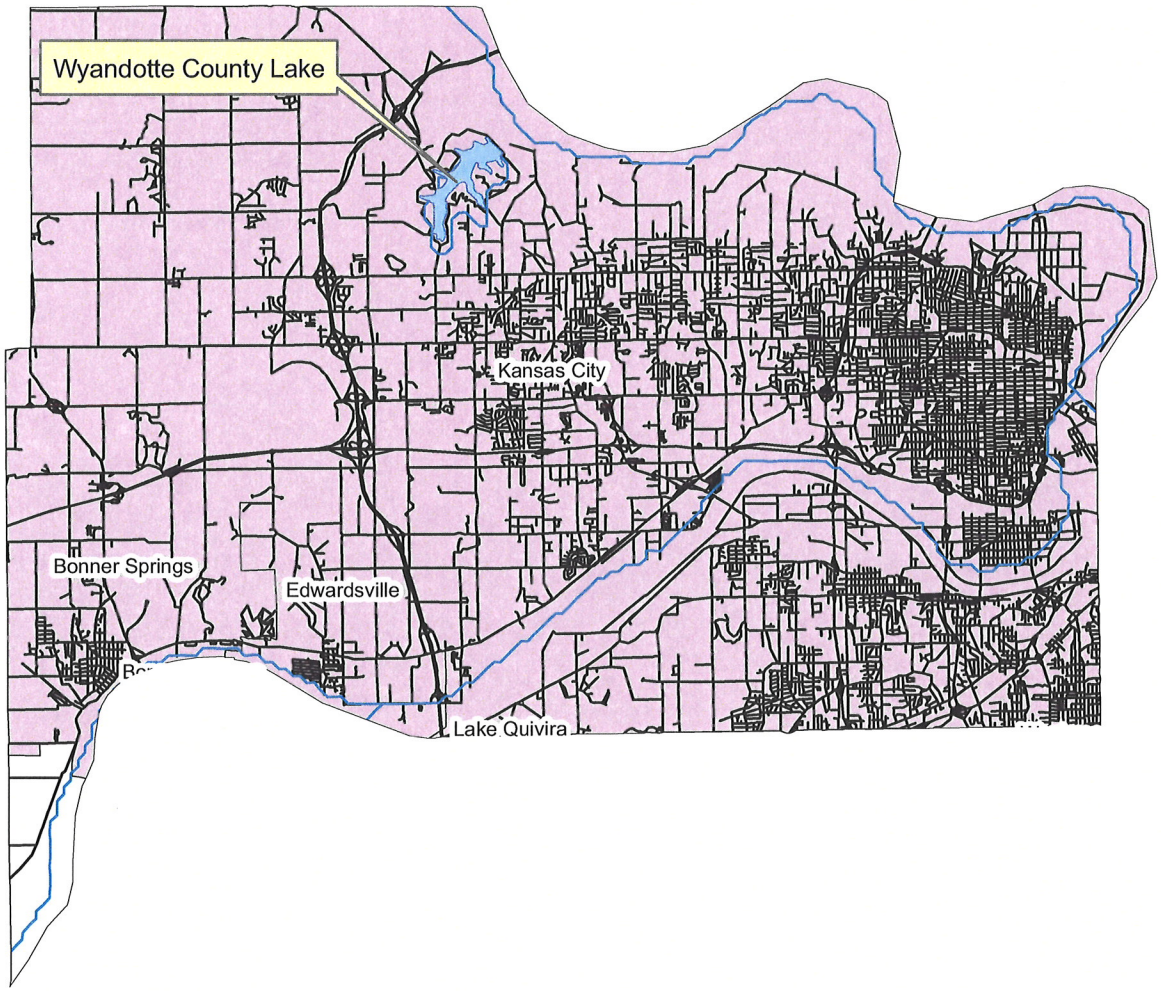
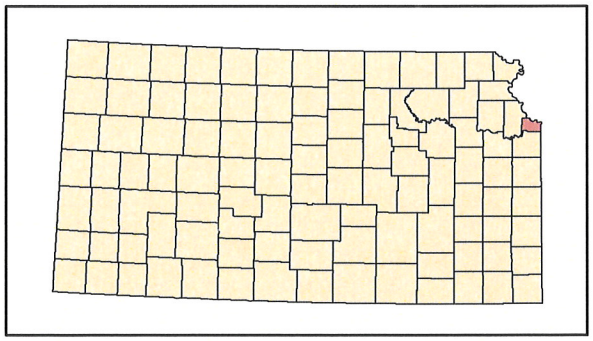
LAKE HISTORY AND PERTINENT INFORMATION

Figure 1. Wyandotte County Lake, Wyandotte County, Kansas.

Wyandotte County Lake is located within Kansas City, Kansas, at Leavenworth Rd and 92nd Street. Wyandotte County Lake was built during the 1930s and 1940s as a way to create jobs during the years of the depression. The construction faced many hardships including worker strikes and the collapsing of the dam in 1937. President Roosevelt approved additional funding to the Works in Progress Administration to continue the work on the infrastructure. In 1941, the county was announced to be the owner and maintainer of the reservoir and surrounding park. In 1944, the structure was approved to start impounding water.

Wyandotte County, Kansas





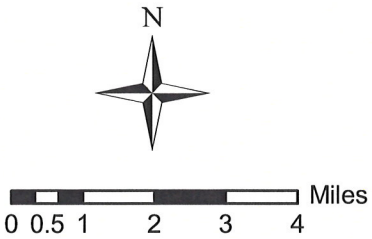


Figure 2. Location of Wyandotte County Lake in Wyandotte County, Kansas

Reservoir Bathymetric (Depth) Surveying Procedures

KBS operates a Biosonics DT-X echosounding system (www.biosonicsinc.com) with a 200 kHz split-beam transducer and a 38-kHz single-beam transducer. Latitude-longitude information is provided by a global positioning system (GPS) that interfaces with the Biosonics system. ESRI's ArcGIS is used for on-lake navigation and positioning, with GPS data feeds provided by the Biosonics unit through a serial cable. Power is provided to the echosounding unit, command/navigation computer, and auxiliary monitor by means of a inverter and battery backup device that in turn draw power from the 12-volt boat battery.

Pre-survey preparation:

Geospatial reference data: Prior to conducting the survey, geospatial data of the target lake is acquired, including georeferenced National Agricultural Imagery Project (NAIP) photography. The lake boundary is digitized as a polygon shapefile from the FSA NAIP georeferenced aerial photography obtained online from the Data Access and Service Center (DASC). Prior to the lake survey, a series of transect lines are created as a shapefile in ArcGIS for guiding the boat during the survey.

Survey procedures:

Calibration (Temperature and ball check): After boat launch and initialization of the Biosonics system and command computer, system parameters are set in the Biosonics Visual Acquisition software. The temperature of the lake at 1-2 meters is taken with a research-grade metric electronic thermometer. This temperature, in degrees Celsius, is input to the Biosonics Visual Acquisition software to calculate the speed of sound in water at the given temperature at the given depth. Start range, end range, ping duration, and ping interval are also set at this time. A ball check is performed using a tungsten-carbide sphere supplied by Biosonics for this purpose. The ball is lowered to a known distance (1.0 meter) below the transducer faces. The position of the ball in the water column (distance from the transducer face to the ball) is clearly visible on the echogram. The echogram distance is compared to the known distance to assure that parameters are properly set and the system is operating correctly.

On-lake survey procedures: Using the GPS Extension of ArcGIS, the GPS data feed from the GPS receiver via the Biosonics echosounder, and the pre-planned transect pattern, the location of the boat on the lake in real-time is shown on the command/navigation computer screen. The transect pattern is maintained except when modified by obstructions in the lake (e.g., partially submerged trees) or shallow water and mudflats. Data are automatically logged in new files every half-hour (approximately 9000-ping files) by the Biosonics system.

Establishment Of Lake Level On Survey Dates:

State and Local Reservoirs:

Most state and local lakes in Kansas do not have water surface elevation gauges. Therefore, a local benchmark at the edge of a lake is established, typically a concrete pad or wall adjacent to the water. The location of the benchmark is photographed and a description noted. On the day of the survey, the vertical distance between the water surface and the surface of the benchmark is measured. In cases where the benchmark must be established a distance away from the lake, a survey-grade laser level is used to establish the vertical distance between benchmark and water surface.

A TopCon HiPerLite+ survey-grade static global positioning system is used to establish the height of the benchmark. The unit is set at a fixed distance above the benchmark, and the vertical distance between the benchmark and the Antenna Reference Point recorded. The unit is allowed to record data points for a minimum of two hours at a rate of one point every 10 seconds.

Following GPS data acquisition, the data are downloaded at the office from the GPS unit, converted from TopCon proprietary format to RINEX format, and uploaded to the National Geodetic Survey (NGS) On-line Positioning User Service (OPUS). Raw data are processed by OPUS with respect to three NGS CORS (Continuously Operating Reference Stations) locations and results returned to the user.

The elevation of the benchmark is provided in meters as the orthometric height (NAVD88, computed using GEOID03). The vertical difference between the lake surface on the survey day is subtracted from the OPUS-computer orthometric height to produce the lake elevation value, in meters. This lake elevation value is entered as an attribute of the lake perimeter polygon shapefile in postprocessing to create lake bottom elevation and water depth models.

The ASTRA elevation benchmark for Wyandotte County Lake is the concrete pad west of the boat ramp on the northwest side of the lake (Figure 3a, Figure 3b, Figure 3c). The water surface elevation of Wyandotte County Lake of July 20, 2010 was **830.96** feet AMSL.

Coordinates:
UTM Zone 15
East: 345450.90
North: 4336684.47

Figure 3a. Location of ASTRA benchmark on Wyandotte County Lake.

Location of Lake Elevation Benchmark:

Wyandotte County Lake:

UTM (Zone 15) Easting (X) [meters] 345450.90, Northing (Y) [meters] 4336684.47

Figure 3b. View of concrete pad benchmark site, facing east.

Figure 3c. View of benchmark site, facing southeast.

```
 FILE: log1321t.09O 000025791 - Wyandotte County Lake

 1008   NOTE:  Antenna offsets supplied by the user were zero.  Coordinates
 1008   returned will be for the antenna reference point (ARP).
 1008
                              NGS OPUS SOLUTION REPORT
                             ========================

All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: http://www.ngs.noaa.gov/OPUS/about.html#accuracy

      USER: mjakub@ku.edu                            DATE: December 03, 2009
RINEX FILE: log1321t.09o                             TIME: 20:16:43 UTC

  SOFTWARE: page5  0909.08 master40.pl 081023      START: 2009/11/17  19:37:00
 EPHEMERIS: igs15582.eph [precise]                  STOP: 2009/11/17  22:05:00
  NAV FILE: brdc3210.09n                        OBS USED:  4587 /  4885   :  94%
  ANT NAME: TPSHIPER_PLUS   NONE              # FIXED AMB:    30 /    37   :  81%
ARP HEIGHT: 0.0                               OVERALL RMS: 0.014(m)

 REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000)            ITRF00 (EPOCH:2009.8791)

         X:      -413410.527(m)   0.057(m)           -413411.262(m)   0.057(m)
         Y:     -4934617.404(m)   0.053(m)          -4934616.040(m)   0.053(m)
         Z:      4006732.738(m)   0.013(m)           4006732.613(m)   0.013(m)

       LAT:   39  9 56.37931      0.040(m)        39  9 56.40275      0.040(m)
     E LON:  265 12 39.88352      0.061(m)       265 12 39.84827      0.061(m)
     W LON:   94 47 20.11648      0.061(m)        94 47 20.15173      0.061(m)
    EL HGT:          221.402(m)   0.030(m)               220.316(m)   0.030(m)
 ORTHO HGT:          253.810(m)   0.065(m) [NAVD88 (Computed using GEOID09)]

                        UTM COORDINATES    STATE PLANE COORDINATES
                         UTM (Zone 15)         SPC (1501 KS N)
Northing (Y)  [meters]     4336684.472           97317.184
Easting (X)   [meters]      345450.904          677444.577
Convergence   [degrees]    -1.13004300          2.03169645
Point Scale                 0.99989411          0.99995795
Combined Factor             0.99985937          0.99992321

US NATIONAL GRID DESIGNATOR: 15SUD4545036684(NAD 83)

                              BASE STATIONS USED
PID       DESIGNATION                        LATITUDE    LONGITUDE DISTANCE(m)
DJ3673 KST6 TOPEKA 6 CORS ARP              N390239.667 W0960220.831  108977.7
DJ3671 KST5 TOPEKA 5 CORS ARP              N390240.554 W0960220.776  108972.7
DL2740 MOSB SEILER BELTON CORS ARP         N384948.687 W0943204.448   43274.2

                   NEAREST NGS PUBLISHED CONTROL POINT
KE1660      LAKE 2                         N391023.396 W0944626.563    1531.7

This position and the above vector components were computed without any
knowledge by the National Geodetic Survey regarding the equipment or
field operating procedures used.
```

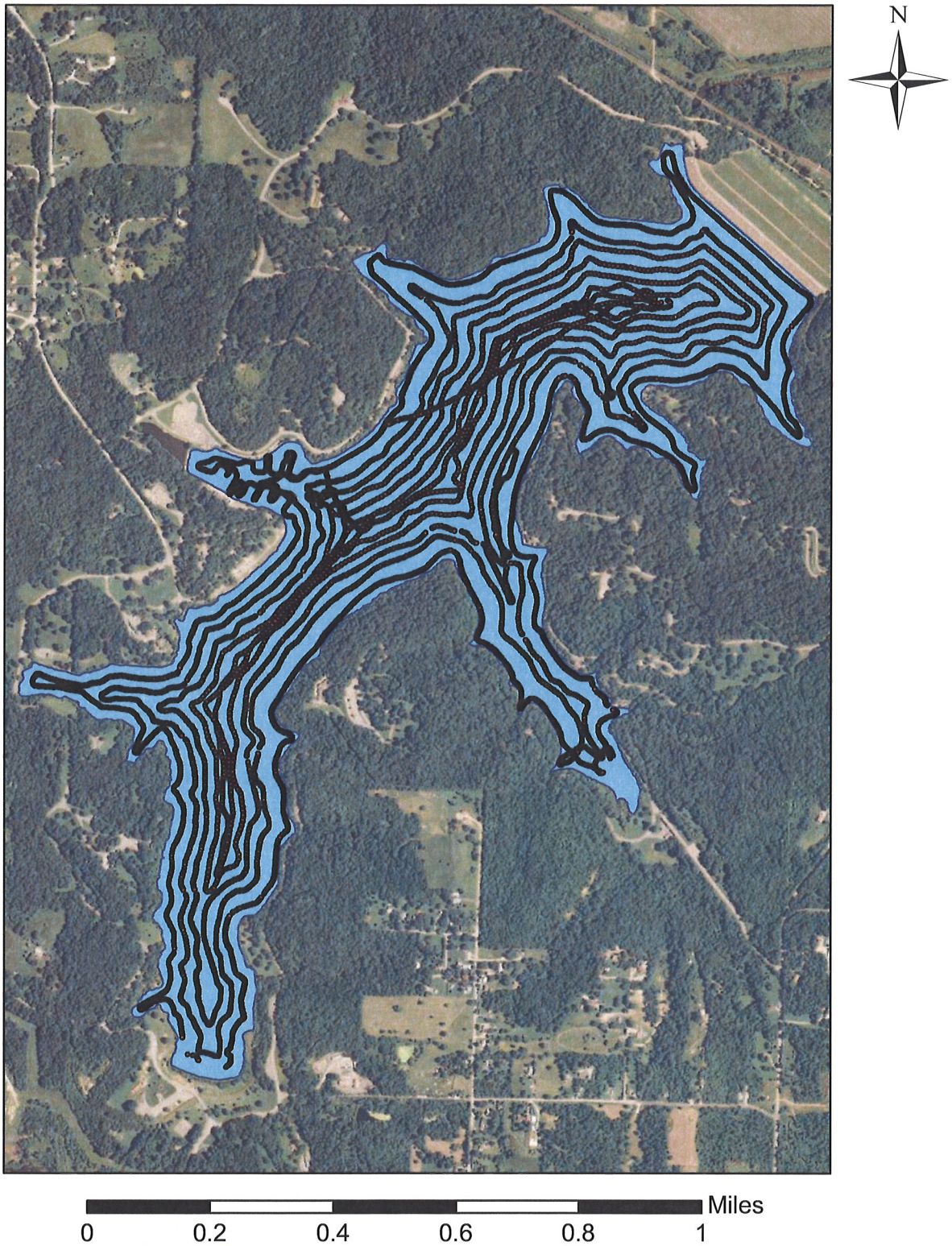


Figure 4. Bathymetric survey lines for Wyandotte County Lake

Post-processing *(Visual Bottom Typer)*

The Biosonics DT-X system produces data files in a proprietary DT4 file format containing acoustic and GPS data. To extract the bottom position from the acoustic data, each DT4 file is processed through the Biosonics Visual Bottom Typer (VBT) software. The processing algorithm is described as follows:

> *"The BioSonics, Inc. bottom tracker is an "end_up" algorithm, in that it begins searching for the bottom echo portion of a ping from the last sample toward the first sample. The bottom tracker tracks the bottom echo by isolating the region(s) where the data exceeds a peak threshold for N consecutive samples, then drops below a surface threshold for M samples. Once a bottom echo has been identified , a bottom sampling window is used to find the next echo. The bottom echo is first isolated by user_defined threshold values that indicate (1) the lowest energy to include in the bottom echo (bottom detection threshold) and (2) the lowest energy to start looking for a bottom peak (peak threshold). The bottom detection threshold allows the user to filter out noise caused by a low data acquisition threshold. The peak threshold prevents the algorithm from identifying the small energy echoes (due to fish, sediment or plant life) as a bottom echo."* (Biosonics Visual Bottom Typer User's Manual, Version 1.10, p. 70).

Data is output as a comma-delimited (*.csv) text file. A set number of qualifying pings are averaged to produce a single report (for example, the output for ping 31 {when pings per report is 20} is the average of all values for pings 12-31). Standard analysis procedure for all 2008 and later data is to use the average of 5 pings to produce one output value. All raw *.csv files are merged into one master *.csv file using the shareware program File Append and Split Tool (FAST) by Boxer Software (Ver. 1.0, 2006).

Post-processing **(*Excel*)**

The master *.csv file created by the FAST utility is imported into Microsoft Excel. Excess header lines are deleted (each input CSV file has its own header), and the header file is edited to change the column headers "#Ping" to "Ping" and "E1' " to "E11", characters that are not ingestable by ArcGIS. Entries with depth values of zero (0) are deleted, as are any entries with depth values less than the start range of the data acquisition parameter (0.49 meters or less) (indicating areas where the water was too shallow to record a depth reading).

In Excel, depth adjustments are made. A new field – Adj_Depth – is created. The value for AdjDepth is calculated as AdjDepth = Depth + (Transducer Face Depth), where the Transducer Face Depth represents the depth of the transducer face below water level in meters (Typically, this value is 0.2 meters; however, if changes were made in the field, the correct level is taken from field notes and applied to the data). Depth in feet is also calculated as DepthFt = Adj_Depth * 3.28084.

These water depths are RELATIVE water depths that can vary from day-to-day based on the elevation of the water surface. In order to normalize all depth measurements to an absolute reference, water depths must be subtracted from an established value for the elevation of the water surface at the time of the bathymetric survey. Determination of water surface elevation has been described in an earlier section on establishment of lake levels.

To set depths relative to lake elevation, two additional fields are added to the attribute table of the point shapefile: LakeElevM, the reference surface elevation (the elevation of the water surface on the day that the aerial photography from which the lake perimeter polygon was digitized)and Elev_Ft, the elevation of the water surface in feet above sea level (Elev_ft), computed by converting ElevM to elevation in feet (ElevM * 3.28084).

Particularly for multi-day surveys, Adj_Depth and Depth_Ft should **NOT** be used for further analysis or interpolation. If water depth is desired, it should be produced by subtracting Elev_M or Elev_Ft from the reference elevation used for interpolation purposes (for federal reservoirs, the elevation of the water surface on the day that the aerial photography from which the lake perimeter polygon was digitized).

Post-processing *(ArcGIS):*

Ingest to ArcGIS is accomplished by using the Tools – Add XY Data option. The projection information is specified at this time (WGS84). Point files are displayed as Event files, and are then exported as a shapefile (filename convention: ALLPOINTS_WGS84.shp). The pointfile is then reprojected to the UTM coordinate system of the appropriate zone (14 or 15) (filename convention ALLPOINTS_UTM.shp).

Raster interpolation of the point data is performed using the same input data and the Topo to Raster option within the 3D Extension of ArcGIS. The elevation of the reservoir on the date of aerial photography used to create the perimeter/shoreline shapefile was used as the water surface elevation in all interpolations from point data to raster data.

Contour line files are derived from the raster interpolation files using the ArcGIS command under 3D Analyst – Raster Surface – Contour.

Area-elevation-volume tables are derived using an ArcGIS extension custom written for and available from the ASTRA Program. Summarized, the extension calculates the area and volume of the reservoir at 1/10-foot elevation increments from the raster data for a series of water surfaces beginning at the lowest elevation recorded and progressing upward in 1/10-foot elevation increments to the reference water surface. Cumulative volume is also computed in acre-feet.

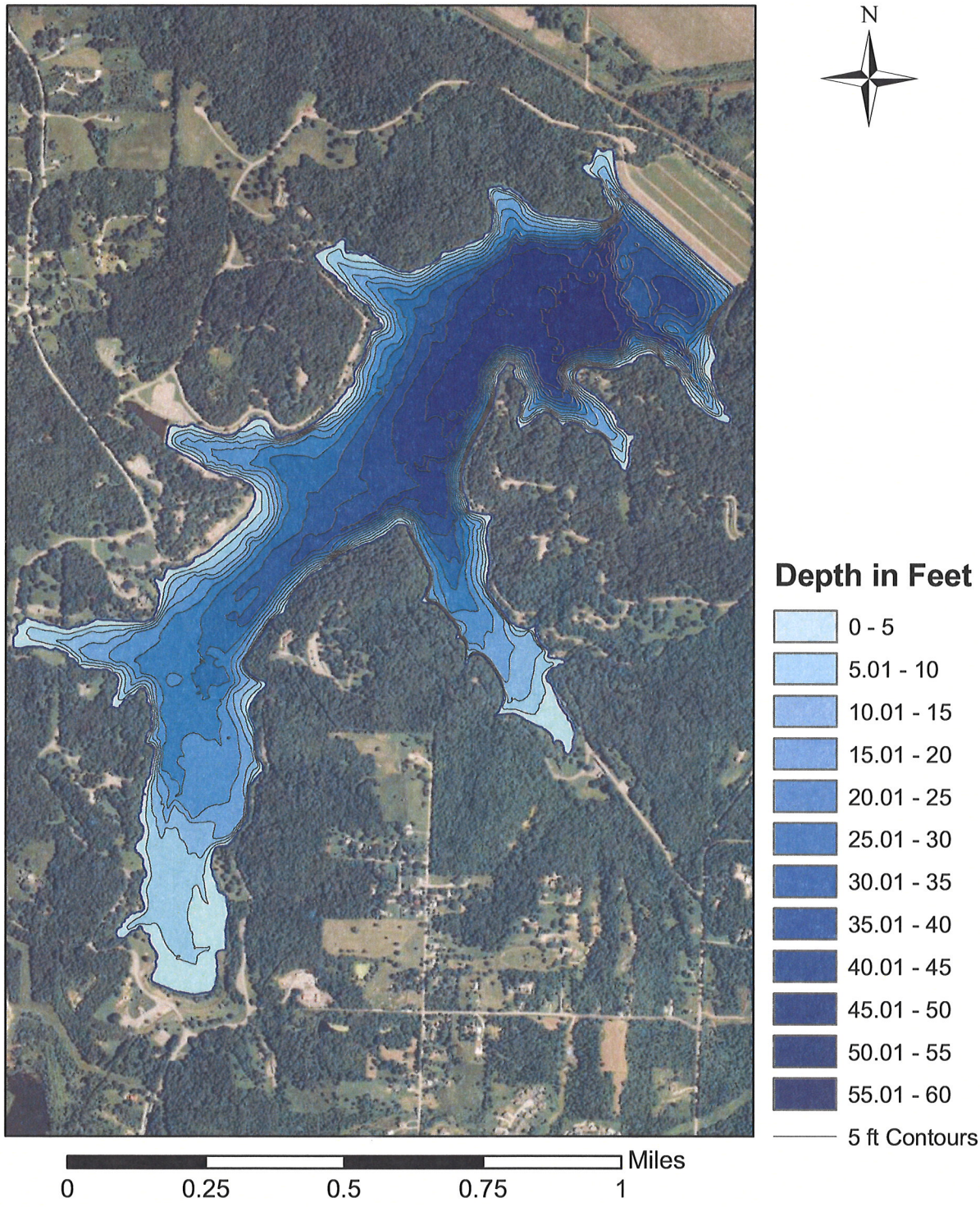


Figure 5. Water depth based on July 20, 2010 bathymetric survey for Wyandotte County Lake. Depths are based on a pool elevation of 830.96 ft.

Table 1

Cumulative area in acres by tenth foot elevation increments

Elevation (ft NGVD)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90
774	0.0	0.0	0.0	0.0	0.2	0.4	0.8	1.4	2.1	2.7
775	3.4	4.0	4.7	5.3	6.1	6.7	7.3	7.7	8.2	8.7
776	9.1	9.5	9.8	10.2	10.6	11.0	11.4	11.8	12.4	13.0
777	13.6	14.1	14.6	15.0	15.4	15.8	16.2	16.6	17.0	17.3
778	17.7	18.1	18.5	18.9	19.4	20.1	20.6	21.2	21.7	22.2
779	22.8	23.3	23.8	24.3	24.7	25.2	25.6	26.1	26.6	27.1
780	27.8	28.5	29.2	29.9	30.7	31.5	32.2	32.9	33.5	34.2
781	34.8	35.4	35.9	36.4	37.0	37.5	38.0	38.5	39.0	39.5
782	39.9	40.4	40.8	41.3	41.8	42.2	42.7	43.2	43.6	44.1
783	44.5	45.0	45.6	46.1	46.7	47.2	47.7	48.3	48.8	49.3
784	49.8	50.4	50.9	51.5	52.1	52.7	53.3	53.8	54.4	55.0
785	55.6	56.1	56.7	57.2	57.8	58.3	58.8	59.3	59.8	60.3
786	60.8	61.3	61.8	62.2	62.7	63.2	63.6	64.1	64.5	65.0
787	65.4	65.9	66.4	66.9	67.4	67.9	68.5	69.0	69.5	70.0
788	70.6	71.2	71.7	72.2	72.6	73.1	73.6	74.0	74.5	74.9
789	75.3	75.8	76.2	76.7	77.1	77.6	78.0	78.5	79.0	79.4
790	79.9	80.4	80.8	81.3	81.9	82.4	82.9	83.4	83.9	84.3
791	84.8	85.3	85.8	86.3	86.8	87.2	87.7	88.2	88.8	89.3
792	89.8	90.3	90.8	91.3	91.9	92.4	92.9	93.5	94.0	94.5
793	95	96	96	97	97	98	98	99	99	100
794	101	101	102	103	103	104	104	105	105	106
795	106	107	108	108	109	109	110	111	111	112
796	112	113	114	114	115	116	116	117	118	118
797	119	119	120	120	121	121	122	123	123	124
798	124	125	125	126	126	127	127	128	128	129
799	129	130	130	131	131	132	132	133	133	134
800	134	135	135	136	136	137	137	138	139	139
801	140	140	141	142	142	143	143	144	145	145

Table 1

Cumulative area in acres by tenth foot elevation increments

Elevation (ft NGVD)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90
802	146	147	147	148	148	149	149	150	151	151
803	152	153	154	154	155	156	157	157	158	159
804	160	160	161	162	162	163	164	164	165	166
805	166	167	168	168	169	170	170	171	172	172
806	173	174	174	175	176	176	177	178	178	179
807	180	180	181	182	182	183	184	184	185	186
808	186	187	188	189	189	190	191	192	193	194
809	194	195	196	196	197	197	198	199	199	200
810	200	201	201	202	202	203	203	204	205	205
811	206	206	207	207	208	208	209	209	210	210
812	211	211	212	212	213	213	214	215	215	216
813	216	217	217	218	218	219	220	220	221	221
814	222	222	223	223	224	225	225	226	226	227
815	227	228	229	229	230	230	231	231	232	232
816	233	233	234	235	235	236	236	237	237	238
817	238	239	239	240	240	241	241	242	242	243
818	243	244	245	245	246	246	247	247	248	248
819	249	249	250	250	251	251	252	252	253	253
820	254	255	255	256	256	257	257	258	258	259
821	259	260	260	261	261	262	262	263	263	264
822	264	265	266	266	267	267	268	268	269	270
823	270	271	272	273	274	275	275	276	277	278
824	278	279	280	280	281	282	283	283	284	285
825	285	286	287	287	288	289	289	290	291	291
826	292	293	294	294	295	296	296	297	298	299
827	300	301	301	302	303	303	304	305	305	306
828	306	307	308	308	309	310	310	311	311	312
829	313	313	314	315	315	316	317	317	318	319
830	319	320	321	322	323	324	324	326	327	328

Table 2

Cumulative volume in acre-feet by tenth foot elevation increments

Elevation (ft NGVD)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90
774	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.6
775	0.9	1.3	1.7	2.2	2.8	3.4	4.1	4.9	5.7	6.5
776	7.4	8.4	9.3	10.3	11.4	12.4	13.6	14.7	15.9	17.2
777	18.5	19.9	21.3	22.8	24.4	25.9	27.5	29.2	30.8	32.5
778	34.3	36.1	37.9	39.8	41.7	43.7	45.7	47.8	50.0	52.2
779	54.4	56.7	59.1	61.5	63.9	66.4	69.0	71.6	74.2	76.9
780	79.6	82.4	85.3	88.3	91.3	94.4	97.6	100.9	104.2	107.6
781	111.0	114.5	118.1	121.7	125.4	129.1	132.9	136.7	140.6	144.5
782	148.5	152.5	156.6	160.7	164.8	169.0	173.3	177.6	181.9	186.3
783	190.8	195.2	199.8	204.4	209.0	213.7	218.4	223.3	228.1	233.0
784	238.0	243.0	248.1	253.2	258.4	263.6	268.9	274.3	279.7	285.2
785	290.7	296.3	301.9	307.6	313.4	319.2	325.0	331.0	336.9	342.9
786	349.0	355.1	361.2	367.5	373.7	380.0	386.3	392.7	399.2	405.7
787	412.2	418.8	425.4	432.0	438.8	445.5	452.4	459.2	466.2	473.1
788	480.2	487.3	494.4	501.6	508.9	516.2	523.5	530.9	538.3	545.8
789	553.3	560.9	568.5	576.1	583.8	591.6	599.3	607.2	615.0	623.0
790	630.9	639.0	647.0	655.2	663.3	671.5	679.8	688.1	696.5	704.9
791	713.4	721.9	730.4	739.1	747.7	756.4	765.2	774.0	782.8	791.7
792	800.7	809.7	818.8	827.9	837.1	846.3	855.6	864.9	874.3	883.7
793	893	903	912	922	932	941	951	961	971	981
794	991	1001	1011	1022	1032	1042	1053	1063	1074	1084
795	1095	1106	1116	1127	1138	1149	1160	1171	1182	1193
796	1204	1216	1227	1238	1250	1261	1273	1285	1296	1308
797	1320	1332	1344	1356	1368	1380	1392	1405	1417	1429
798	1442	1454	1467	1479	1492	1504	1517	1530	1543	1556
799	1568	1581	1594	1608	1621	1634	1647	1660	1674	1687
800	1700	1714	1727	1741	1755	1768	1782	1796	1810	1823
801	1837	1851	1866	1880	1894	1908	1922	1937	1951	1966

Table 2

Cumulative volume in acre-feet by tenth foot elevation increments

Elevation (ft NGVD)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90
802	1980	1995	2010	2024	2039	2054	2069	2084	2099	2114
803	2129	2145	2160	2175	2191	2206	2222	2238	2253	2269
804	2285	2301	2317	2333	2350	2366	2382	2399	2415	2432
805	2448	2465	2482	2499	2515	2532	2549	2566	2584	2601
806	2618	2636	2653	2670	2688	2706	2723	2741	2759	2777
807	2795	2813	2831	2849	2867	2886	2904	2922	2941	2959
808	2978	2997	3015	3034	3053	3072	3091	3110	3130	3149
809	3168	3188	3207	3227	3247	3266	3286	3306	3326	3346
810	3366	3386	3406	3426	3446	3467	3487	3507	3528	3548
811	3569	3590	3610	3631	3652	3672	3693	3714	3735	3756
812	3777	3798	3820	3841	3862	3883	3905	3926	3948	3969
813	3991	4013	4034	4056	4078	4100	4122	4144	4166	4188
814	4210	4232	4255	4277	4299	4322	4344	4367	4389	4412
815	4435	4458	4480	4503	4526	4549	4572	4596	4619	4642
816	4665	4689	4712	4735	4759	4782	4806	4830	4853	4877
817	4901	4925	4949	4973	4997	5021	5045	5069	5093	5118
818	5142	5166	5191	5215	5240	5264	5289	5314	5338	5363
819	5388	5413	5438	5463	5488	5513	5538	5564	5589	5614
820	5640	5665	5691	5716	5742	5767	5793	5819	5845	5871
821	5896	5922	5948	5975	6001	6027	6053	6079	6106	6132
822	6159	6185	6212	6238	6265	6292	6318	6345	6372	6399
823	6426	6453	6480	6508	6535	6562	6590	6617	6645	6673
824	6701	6729	6757	6785	6813	6841	6869	6897	6926	6954
825	6983	7011	7040	7069	7097	7126	7155	7184	7213	7242
826	7272	7301	7330	7360	7389	7419	7448	7478	7508	7538
827	7568	7598	7628	7658	7688	7718	7749	7779	7810	7840
828	7871	7902	7932	7963	7994	8025	8056	8087	8118	8150
829	8181	8212	8244	8275	8307	8338	8370	8402	8433	8465
830	8497	8529	8561	8594	8626	8658	8691	8723	8756	8789

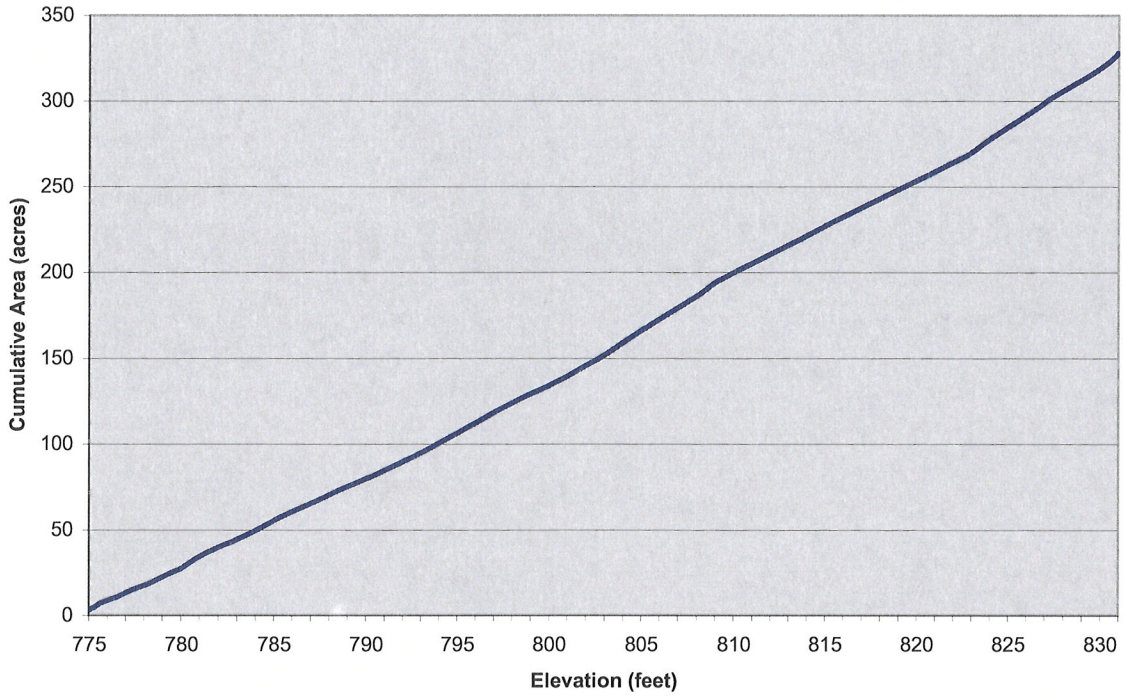


Figure 6. Cumulative area-elevation curve

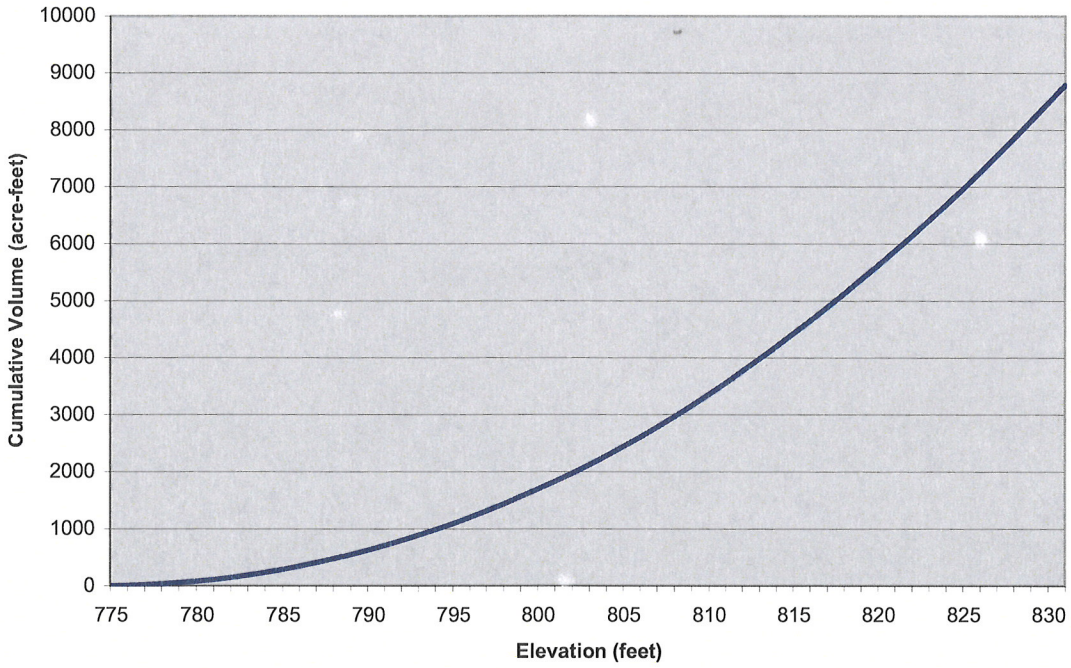


Figure 7. Cumulative volume-elevation curve

SEDIMENT SAMPLING PROCEDURES

Sediment samples were collected from three sites within the reservoir using a Wildco drop-corer (Wildlife Supply Company, Buffalo, NY). One sample is taken near the dam; a second at mid-lake; and a third in the upper end/transitional area. Sampling was performed on the same day as the bathymetric survey, following completion of the survey. As the drop-corer samples only the upper sediment, the entire sample in each case was collected and sealed in a sampling container. The samples were then shipped to the Kansas State University Soil Testing Laboratory (Manhattan, KS), for texture analysis.

SEDIMENT SAMPLING RESULTS:

Sampling sites were distributed across the length of the reservoir (Figure 8). Silt percentages were highest at the inflow end (WYT-3, 70%), decreasing to 42% at the dam end (Table 3; Figure 9; Figure 10).

Table 3
Wyandotte County Lake Sediment Sampling Site Data

CODE	UTMX	UTMY	%Sand	% Silt	% Clay
WYT-1	346672.43	4337060.71	0	42	58
WYT-2	345955.61	4336511.81	0	42	58
WYT-3	345521.61	4335614.56	0	70	30

Coordinates are Universal Transverse Mercator (UTM), NAD83, Zone 15 North

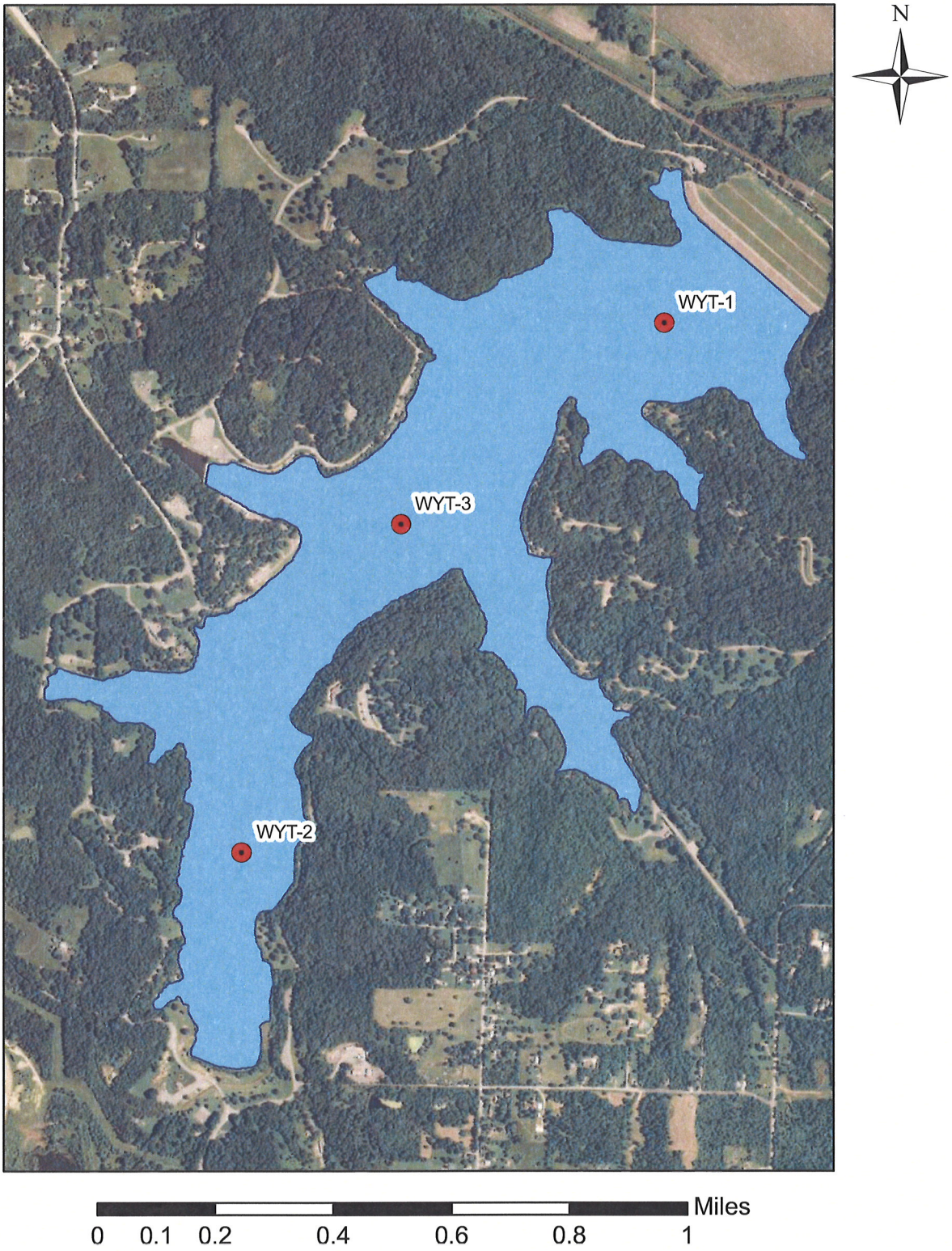


Figure 8. Location of sediment samples in Wynadotte County Lake

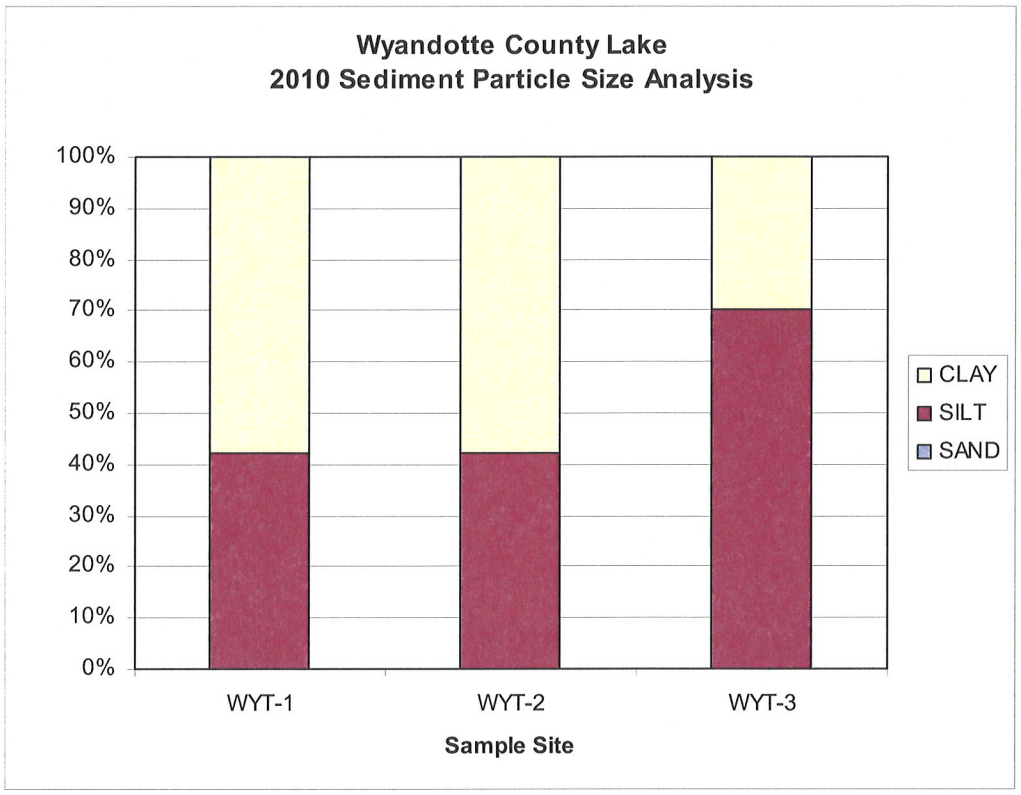


Figure 9. Sediment particle size analysis.

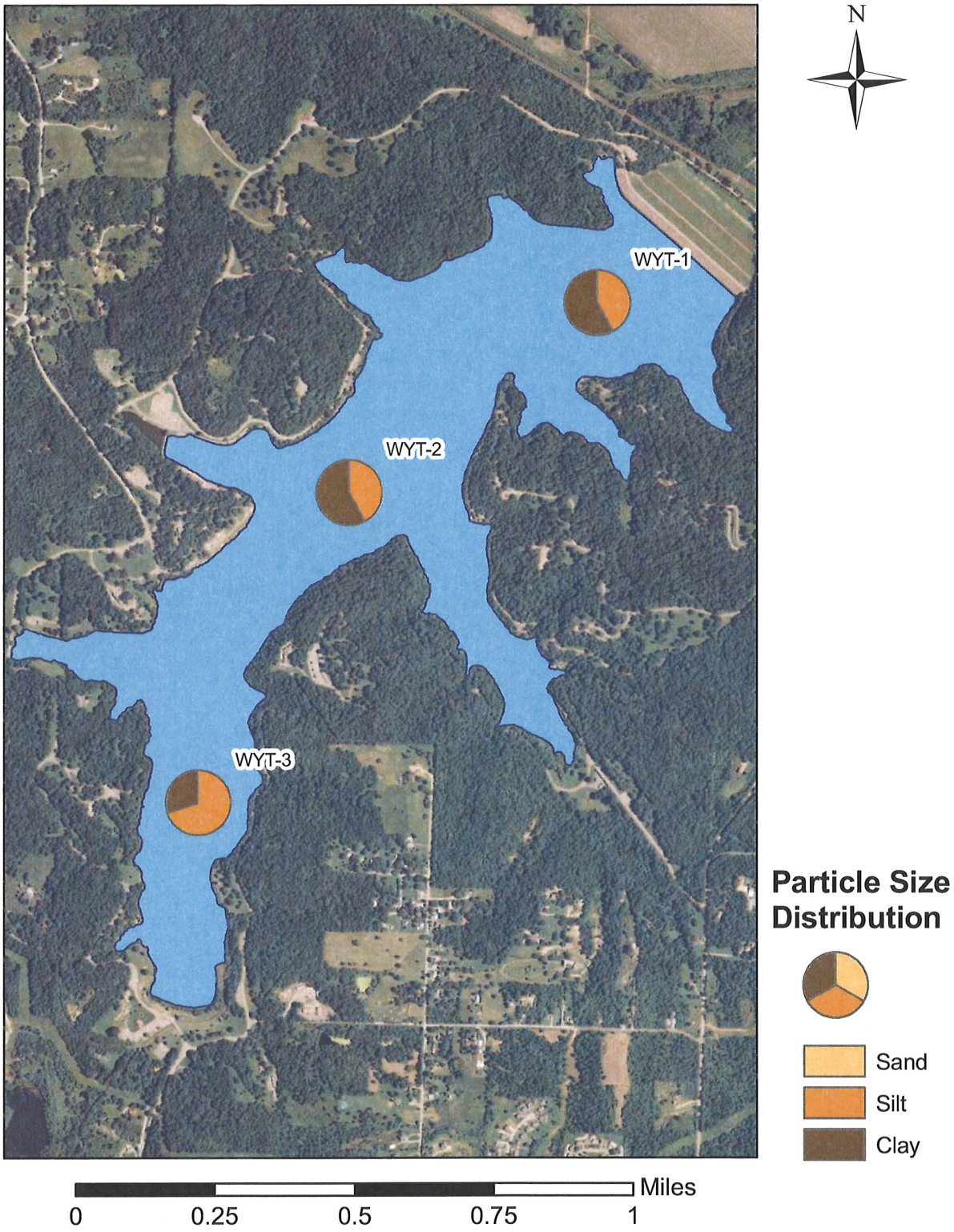


Figure 10. Particle size distribution of sediment samples in Wyandotte County Lake

Appendix A.3

Secchi Disk Depth Reading Results

Dam Location

	6/28/2013 Readings	8/23/2013 Readings	10/24/2013 Readings
1st measurement in inches	114 1/2	201 1/2	138 1/2
2nd measurement in inches	121 1/2	201 1/2	146 1/2
3rd measurement inches	122 1/2	210	144
4th measurement inches	125 1/2	213 1/2	138 1/2
Total in inches	484	826 1/2	567 1/2
Avg in inches	121	206 5/8	141 7/8
top of rail to water in inches	36 1/2	36 1/2	36 1/2
Water to secchi disk in inches	84 1/2	170 1/8	105.375
distance in feet	7.0	14.2	8.8
distance in meters	2.15	4.32	2.68
Time	10:35 AM	11:05 AM	11:28 AM
Weather	79° P. Cldy	85° Clear	48° Clear
Latitude	N39°10'11.0"	N39°10'11.0"	N39°10'11.0"
Longitude	W094°46'22.0"	W094°46'22.0"	W094°46'22.0"

West of Dam

	6/28/2013 Readings	8/23/2013 Readings	10/24/2013 Readings
1st measurement in inches	114 1/2	202 1/2	135
2nd measurement in inches	118 1/2	204	146
3rd measurement inches	113	205 1/2	148 1/2
4th measurement inches	115	208	150
Total in inches	461	820	579 1/2
Avg in inches	115 1/4	205	144 7/8
top of rail to water in inches	36 1/2	36 1/2	36 1/2
Water to secchi disk in inches	78 3/4	168 1/2	108.375
distance in feet	6.6	14.0	9.0
distance in meters	2.00	4.28	2.75
Time	10:45 AM	11:15 AM	11:46 AM
Weather	80° P. Cldy	85° Clear	48° Clear
Latitude	N39°10'01.2"	N39°10'01.2"	N39°10'01.2"
Longitude	W094°46'51.3"	W094°46'51.3"	W094°46'51.3"

South End of Lake

	6/28/2013 Readings	8/23/2013 Readings	10/24/2013 Readings
1st measurement in inches	64	111	124
2nd measurement in inches	65 1/4	113	127 1/2
3rd measurement inches	67	113	132
4th measurement inches	66	116	144
Total in inches	262 1/4	453	527 1/2
Avg in inches	65 4/7	113 1/4	131 7/8
top of rail to water in inches	36 1/2	36 1/2	36 1/2
Water to secchi disk in inches	29	76 3/4	95.375
distance in feet	2.4	6.4	7.9
distance in meters	0.74	1.95	2.42
Time	11:00 AM	11:25 AM	12:30 PM
Weather	80° P. Cldy	85° Clear	48° Clear
Latitude	N39°09'12.1"	N39°09'12.1"	N39°09'12.1"
Longitude	W094°47'18.2"	W094°47'18.2"	W094°47'18.2"

Stotler Cove

	6/28/2013 Readings	8/23/2013 Readings	10/24/2013 Readings
1st measurement in inches	95	164	152 1/2
2nd measurement in inches	97	166 1/2	153 1/2
3rd measurement inches	95 1/2	169	154 1/2
4th measurement inches	98	173	156 1/2
Total in inches	385 1/2	672 1/2	617
Avg in inches	96 3/8	168 1/8	154 1/4
top of rail to water in inches	36 1/2	36 1/2	36 1/2
Water to secchi disk in inches	59 7/8	131 5/8	117.75
distance in feet	5.0	11.0	9.8
distance in meters	1.52	3.34	2.99
Time	11:05 AM	11:30 AM	12:20 PM
Weather	80° P. Cldy	85° Clear	48° Clear
Latitude	N39°09'34.8"	N39°09'34.8"	N39°09'34.8"
Longitude	W094°47'27.2"	W094°47'27.2"	W094°47'27.2"

Opposite Beach

	6/28/2013 Readings	8/23/2013 Readings	10/24/2013 Readings
1st measurement in inches	106 1/2	190 1/2	142
2nd measurement in inches	109	193 1/2	146
3rd measurement inches	109 1/2	202 1/2	147
4th measurement inches	111	205 1/2	153
Total in inches	436	792	588
Avg in inches	109	198	147
top of rail to water in inches	36 1/2	36 1/2	36 1/2
Water to secchi disk in inches	72 1/2	161 1/2	110.5
distance in feet	6.0	13.5	9.2
distance in meters	1.84	4.10	2.81
Time	11:15 AM	11:40 AM	12:10 PM
Weather	80° P. Cldy	85° Clear	48° Clear
Latitude	N39°09'44.7"	N39°09'44.7"	N39°09'44.7"
Longitude	W094°47'12.4"	W094°47'12.4"	W094°47'12.4"

Mean	198
Standard Deviatio	7.141428429
2STD	14.28285686

Appendix A.4

Wyandotte County Lake

Tributary Water Sampling Results Summary

2013 Summary of Sampling - Wyandotte County Lake

			Pace Report	pH	TSS	Total P	BOD	NH3	TKN	NO3	NO2	NO3+No2	Total Nitrogen
Site	Date	Sample ID		(S.U)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
WyCo Lake E	7/23/2013	130726G24	60149722	7.35	38.0	0.35	< 2.0	< 0.10	0.23	< 0.10	< 0.10	0.20	0.43
WyCo Lake E	8/12/2013	130812G26	60150845	7.89	152.0	0.33	< 2.0	< 0.10	0.69	0.42	< 0.10	0.52	1.21
WyCo Lake E	9/17/2013	130917G26	60153281	7.82	16.0	0.45	< 2.0	< 0.10	0.52	0.44	< 0.10	0.54	1.06
WyCo Lake E	10/3/2013	131003G32	60154625	7.52	27.0	1.14	< 2.0	< 0.10	0.66	< 0.10	< 0.10	0.20	0.86
WyCo Lake S	7/23/2013	130726G23	60149722	7.94	11.0	0.40	< 2.0	< 0.10	0.26	< 0.10	< 0.10	0.20	0.46
WyCo Lake S	8/12/2013	130812G27	60150845	7.44	68.0	0.25	2.1	< 0.10	0.45	0.48	< 0.10	0.58	1.03
WyCo Lake S	9/17/2013	130917G25	60153281	7.09	16.0	0.53	< 2.0	< 0.10	0.83	0.50	< 0.10	0.60	1.43
WyCo Lake S	10/3/2013	131003G33	60154625	7.50	32.0	1.06	< 2.0	< 0.10	0.61	< 0.10	< 0.10	0.20	0.81

2013 Summary of Sampling - Wyandotte County Lake													
			Pace Report	pH	TSS	Total P	BOD	NH3	TKN	NO3	NO2	NO3+No2	Total Nitrogen
Site	Date	Sample ID		(S.U)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
WyCo Lake E	7/26/2013	130726G24	60149722	7.35	38.0	0.35	< 2.0	< 0.10	0.23	< 0.10	< 0.10	0.20	0.43
WyCo Lake E	8/12/2013	130812G26	60150845	7.89	152.0	0.33	< 2.0	< 0.10	0.69	0.42	< 0.10	0.52	1.21
WyCo Lake E	9/17/2013	130917G26	60153281	7.82	16.0	0.45	< 2.0	< 0.10	0.52	0.44	< 0.10	0.54	1.06
WyCo Lake E	10/3/2013	131003G32	60154625	7.52	27.0	1.14	< 2.0	< 0.10	0.66	< 0.10	< 0.10	0.20	0.86
WyCo Lake S	7/26/2013	130726G23	60149722	7.94	11.0	0.40	< 2.0	< 0.10	0.26	< 0.10	< 0.10	0.20	0.46
WyCo Lake S	8/12/2013	130812G27	60150845	7.44	68.0	0.25	2.1	< 0.10	0.45	0.48	< 0.10	0.58	1.03
WyCo Lake S	9/17/2013	130917G25	60153281	7.09	16.0	0.53	< 2.0	< 0.10	0.83	0.50	< 0.10	0.60	1.43
WyCo Lake S	10/3/2013	131003G33	60154625	7.50	32.0	1.06	< 2.0	< 0.10	0.61	< 0.10	< 0.10	0.20	0.81

APPENDIX B.17 Stormwater Monitoring and Trend Analysis Results

Memorandum

TO:	Bill Heatherman, PE
	Brent Thompson, PLS
FROM:	Clinton Manderfeld, PE
SUBJECT:	MS4 Program - Wet Weather Monitoring Sample and Trend Analysis
DATE:	March 3, 2014

INTRODUCTION

The UG's Water Pollution Control Department (WPC) currently monitors, collects and tests stormwater samples for storm events in accordance with KDHE NPDES permit No. M-MO25-SO01. The purpose of which is to assess the effectiveness of BMPs implemented as part of the UG's Stormwater Management Plan. There are currently eight permanent monitoring stations located in watersheds tributary to the Kansas River as shown in Figure 1. These stations collect discrete (a.k.a. grab) samples and composite samples. The grab samples are collected within the first half hour of the beginning of a storm event and represent the "first flush". The composite sample is made UP of 4 or 8 individual samples, depending on the sampler station model, that are collected at predetermined intervals with the intention of representing the water quality of the overall storm event. The monitoring stations are scheduled to collect samples during storm events each quarter. In addition to the eight permanent stations, the permit requires that grab samples be collected twice a year upstream of stations R-2, R-3, R-5 and R-8. These sampling locations are identified with an "UP" designation.

In accordance with the current KDHE permit, eleven (11) parameters are analyzed [Total Suspended Solids(TSS), E. Coli, Cadmium (Cd), Copper (Cu), Lead (Pb), Zinc (Zn), Hardness as $CaCO_3$, Oil & Grease, Total Dissolved Solids (TDS), Chloride, and 5-day Biochemical Oxygen Demand (BOD)] for monitoring stations R-1 Thru R-8. The permit also requires that locations R-2 UP, R-3 UP, R-5 UP, and R-8 UP be sampled twice a year and five (5) parameters [E. Coli, Cadmium (Cd), Copper (Cu), Zinc (Zn), and 5-day Biochemical Oxygen Demand (BOD)] are analyzed. Laboratory analysis of the collected samples was conducted by WPC lab and outside lab services.

BACKGROUND

In 2013, the WPC was able to collect samples at all permanent monitoring stations, with the exception of stations R-6 and R-8. Stations R-6 and R-8 have experienced issues with collection due to their location relative to the height above the water they are sampling. The sampling stations are suspected to be located beyond the suction lift capability of the sampler pump to effectively gather the samples. Monitoring station R-6 must also be turned on manually which is a challenge for the WPC staff to accomplish within 30 minutes of the start of a storm event. These issues are currently being looked into and will be discussed in 2014.

The stations with the designation "UP" are sampled twice each year upstream of the referenced monitoring station. These stations may be sampled by discrete (grab) sampling techniques and only Principal Pollutants of Concern (PPOC) are tested for. The UG has had logistical problems obtaining the samples within the 30 minutes of the beginning of a storm event due to a lack of manpower required to visit all the monitoring stations and

locations that require manual collections within that time. The UG WPC has not been able to gather a single sample at R-5 UP or R-8 UP since 2007 due to this challenge.

When compared to previous years, the WPC has improved on its collection rates in 2013. Table 1 summarizes the collection results for 2013. Part of the reason collection compliance has improved is that the all but station R-6 have been upgraded with land line telephone or cellular wireless service, meaning they can be turned on and monitored remotely through land line telephone or cellular wireless connections. In previous years the stations were turned on manually which created problems with the logistics of providing the man power to turn on each station within 30 minutes of the beginning of a storm event.

Samples Collected in Year 2013

	Samples Collected	Collection Requirements	Compliance %
R-1	4	4	100%
R-2	4	4	100%
R-3	4	4	100%
R-4	3	4	75%
R-5	4	4	100%
R-6	0	4	0%
R-7	4	4	100%
R-8	0	4	0%
R-2 UP	2	2	100%
R-3 UP	2	2	100%
R-5 UP	0	2	0%
R-8 UP	0	2	0%
TOTAL	**27**	**40**	**68%**

Table 1

Note: Samples are collected quarterly during storm events for R-1 through R-8 and twice a year for stations R-2 UP through R-8 UP.

SUMMARY OF DATA ANALYSIS AND TRENDS BY STATION

A summary of all the data analyzed is compiled in the following tables. Two methods were used and combined to draw conclusions on the trends of the data due to the high variability of the data and to the small sampling sizes.

The first method consisted of creating graphs of the data and depicting trend lines to determine current trends in the parameters at each monitoring stations. The second method consisted of calculating average values for each parameter of the samples collected between 2007 and 2013 (historic values), calculating the averages for 2013 samples, and then comparing the 2013 average values to the historic values.

Additionally, a review of the 1983 National Urban Runoff Program (NURP) report was conducted. The pollutant concentration values contained in that report were compared with the results for some of the sampling parameters.

The evaluation consider the ranges for both Median Cold Season and Median Warm Season for E.Coli concentrations, which was converted from the NURP fecal coliform values (The current 2003 KDHE geometric-mean primary contact criterion for fecal coliform bacteria of 200 col/100 mL to the 2002 USEPA recommended geometric-mean criterion of 126 col/100 mL for E. coli results in an EC/FC ratio of 0.63). The median and 90th percentile EMC values for copper, zinc, lead and BOD_5 were also graphically depicted. The graphs in the Appendix show these NURP values as compared to actual sampling results for each sampling location.

Average 2013 values that exceed overall average values are highlighted in the tables below.

Station R-1

Number of samples collected from January of 2007 to December of 2013 = 10

	TSS	E Coli	Cd	Cu	Pb	Zn	Hardness	O&G	TDS	Chloride	BOD
Average	(mg/L)	(col/100 mL)	µg/L	µg/L	µg/L	µg/L	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Historic	637	12,699	5	113	48	359	1,483	8	529	231	8
2013	849	10,086	5	74	53	464	3,180	7	665	279	8
Agree w/ Trend Line?	No	No	Yes	Yes	No	Yes	Yes	Yes	No	Yes	No

Station R-2

Number of samples collected from January of 2007 to December of 2013 = 17

	TSS	E Coli	Cd	Cu	Pb	Zn	Hardness	O&G	TDS	Chloride	BOD
Average	(mg/L)	(col/100 mL)	µg/L	µg/L	µg/L	µg/L	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Historic	333	13,687	5	40	62	417	232	10	360	138	17
2013	539	5,229	5	49	25	502	290	6	662	305	13
Agree w/ Trend Line?	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No

Station R-2 UP

Number of samples collected from January of 2007 to December of 2013 = 8

	BOD	E Coli	Cd	Cu	Zn
Average	(mg/L)	(col/100 mL)	µg/L	µg/L	µg/L
Historic	7	1,859	5	28	149
2013	6	407	5	13	66
Agree w/ Trend Line?	No	No	Yes	Yes	Yes

Station R-3

Number of samples collected from January of 2007 to December of 2013 = 13

	TSS	E Coli	Cd	Cu	Pb	Zn	Hardness	O&G	TDS	Chloride	BOD
Average	(mg/L)	(col/100 mL)	µg/L	µg/L	µg/L	µg/L	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Historic	375	47,254	5	28	39	151	149	5	164	79	15
2013	891	145,046	5	51	22	223	265	6	241	83	19
Agree w/ Trend Line?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes

Station R-3 UP

Number of samples collected from January of 2007 to December of 2013 = 7

	BOD	E Coli	Cd	Cu	Zn
Average	(mg/L)	(col/100 mL)	µg/L	µg/L	µg/L
Historic	29	4,872	5	27	65
2013	39	10,538	5	10	50
Agree w/ Trend Line?	Yes	Yes	Yes	Yes	Yes

Station R-4

Number of samples collected from January of 2007 to December of 2013 = 16

	TSS	E Coli	Cd	Cu	Pb	Zn	Hardness	O&G	TDS	Chloride	BOD
Average	(mg/L)	(col/100 mL)	µg/L	µg/L	µg/L	µg/L	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Historic	478	12,221	5	48	58	246	484	6	269	52	17
2013	362	3,721	5	80	110	518	1,037	6	528	118	13
Agree w/ Trend Line?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes

Station R-5

Number of samples collected from January of 2007 to December of 2013 = 11

	TSS	E Coli	Cd	Cu	Pb	Zn	Hardness	O&G	TDS	Chloride	BOD
Average	(mg/L)	(col/100 mL)	µg/L	µg/L	µg/L	µg/L	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Historic	333	6,883	5	42	55	332	313	1	182	24	106
2013	592	6,369	5	40	52	599	314	7	302	53	11
Agree w/ Trend Line?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes

Station R-5 UP

Number of samples collected from January of 2007 to December of 2013 = 0

Comments: The WPC has not been able to gather a sample at R-5 UP. The primary reason is the logistics of manually gathering samples at all five stations.

Station R-6

Number of samples collected from January of 2007 to December of 2013 = One sample in 2011.

Comments: This station has experienced problems collecting samples. A new location or upgrade of the pump may improve sampling operation. A new location has been suggested by the Environmental Compliance Director. The station must also be turned on manually.

Station R-7

Number of samples collected from January of 2007 to December of 2013 = 11

	TSS	E Coli	Cd	Cu	Pb	Zn	Hardness	O&G	TDS	Chloride	BOD
Average	(mg/L)	(col/100 mL)	µg/L	µg/L	µg/L	µg/L	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Historic	326	75,225	6	27	15	470	184	<5	342	119	9
2013	550	129,500	7	38	22	786	317	<5	314	85	NA
Agree w/ Trend Line?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes	Yes	Yes

Comments: BOD analysis reports indicated that not enough dissolved oxygen was available in the sample to produce results for the samples collected. Only 3 of the collected samples were tested for Oil and Grease.

Station R-8

Number of samples collected from January of 2007 to December of 2013 = 3 samples in 2011.

Comments: This station has experienced problems collecting samples. A new location or upgrade of the pump may improve sampling operation. An alternative location has been recommended by the Environmental Compliance Director.

Station R-8 UP

Number of samples collected from January of 2007 to December of 2013 = 0.

Comments: The UG WPC has not been able to gather a sample at R-8 UP. The primary reason is the logistics of manually gathering samples at all five stations.

Trend Direction Summary

The results of these two methods were then compared to determine whether they agreed on the direction the data was trending for each station and each parameter. Utilizing two methods for analysis gives more insight into the data and indicates whether the variability affects both models in the same manner. Refer to Appendix A – Data Analysis Trend Direction Summary.

The column labeled "% of Trend Variability" is the percentage of the variability that is explained by the linear regression model. It is the R^2 value shown on the graphs. The higher the value, the greater the likelihood that future values can be predicted with this model. Low percentages indicate that a straight trend line may not be the best choice to represent the data. Indirectly it indicates just how strong the trend is based on the variability of the data. The data sample size also affects quality of the model. Small sample sizes can have high variability that may skew the data and the resulting trend line to the extreme. More data points are necessary to determine the number of outliers and the magnitude of those outliers.

For a variety of reasons, there are several quarters in which data was not available. Consequently, graphs were not created for monitoring stations where three (3) samples or less were collected. Small sample sizes and high variability in the data at some of the stations resulted in trend lines with low agreement with the sample data as shown in Tables A-1 thru A-11 in Appendix A. Factors that affect the trends in data include variability in the time of the year the samples are taken, how the seasonality may affect certain parameters (i.e. E. Coli), and inconsistent collection throughout the data. As more and consistent data is collected in the future, some of the trends in data will become more apparent. Only discrete samples were included in the analyses of the pollutants to reflect first flush conditions with the exception of BOD values which came from the composite samples.

OBSERVATIONS AND CONCLUSIONS

Based on six years of data, some parameters remained consistent across monitoring stations, some parameters trended up, some trended down, and some were too variable across monitoring stations and/or did not agree consistently between trend lines to show a strong trend one way or another. Cadmium remained fairly consistent for all stations. Total Suspended Solids (TSS), Hardness as $CaCO_3$, and Total Dissolved Solids (TDS) showed an upward trend across all or most stations and average 2013 values vs. historic values consistently agreed with trend lines. Oil and Grease (O&G) showed a downward trend across all or most stations and average 2013 values vs. historic values consistently agreed with trend lines. E. Coli, Copper (Cu), Lead (Pb), Zinc (Zn), Chloride, and Five Day Biochemical Oxygen Demand (BOD) were highly variable in trends and in agreement.

At this point it is difficult to conclude whether best management practices (BMP), performance measures, and stormwater program implementation activities are having a positive affect on stormwater quality in the Kansas River.

Comparison of the NURP values indicated that most sampling values fell below the median or within the median and 90th percentile range. E.Coli appeared to have the most values exceeding the 90th percentile value. However, almost all of the lead sampling results were under the median NURP value.

It is important to note that monitoring stations R-1, R-8, and R-8 UP are located in the Combined Sewer System (CSS) area and not in the MS4. The UG's Stormwater Management Plan and associated BMP activities only apply in the MS4 area. Coupled with possible sanitary sewer overflows (SSOs) in the area, the results obtained from these three testing sites may not truly reflect the positive impacts that UG efforts have on water quality in the MS4.

RECOMMENDATIONS

The following recommendations are presented for the UG's Wet Weather Monitoring Program with the goals of gathering all required samples in a given year, providing consistent reliable data and ensuring the samples collected are representative of the MS4 areas.

1. Contact KDHE Representatives to discuss the sampling issues described in this memorandum.
2. Work with the KDHE on developing a plan of action to address the various monitoring and sampling issues such that compliance with the permit conditions can be consistently achieved.
3. Implement the approved sampling plan of action.

APPENDIX A – DATA ANALYSIS TREND DIRECTION SUMMARY

Wet Weather Monitoring Station Locations

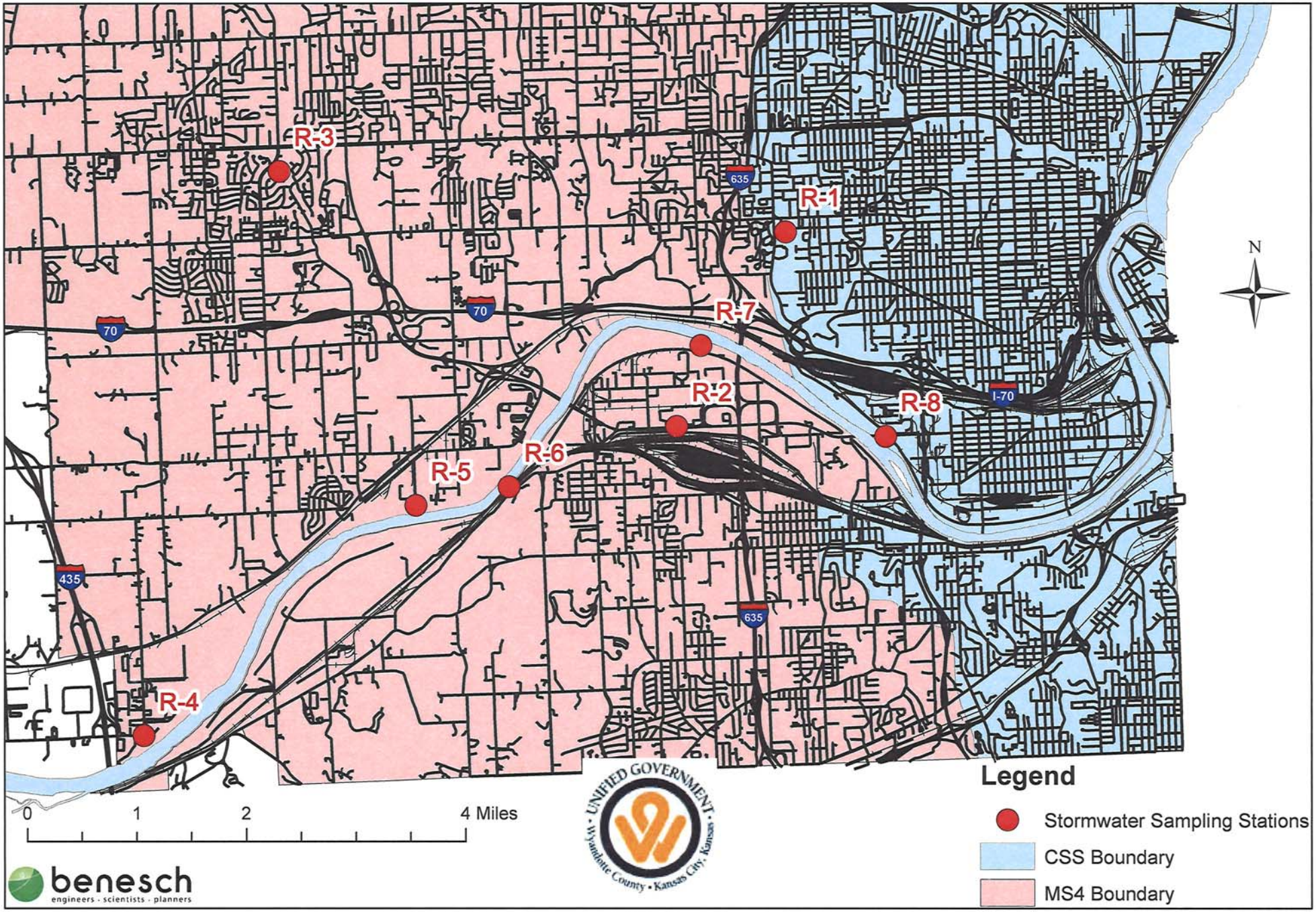


Figure 1

DATA ANALYSIS TREND DIRECTION SUMMARY

Monitor Station	# of Samples Collected	TSS				
		High	Low	Trend	% of Trend Variability	Agree w/ 2013 Average Values?
		mg/L	mg/L		$100*R^2$	
R-1	10	2,272	78	Steady	0.20%	No
R-2	17	1,547	26	Up	3.0%	Yes
R-2 UP	8	NR	NR	NR	NR	NR
R-3	13	1,927	46	Up	27.8%	Yes
R-3 UP	7	NR	NR	NR	NR	NR
R-4	16	1,352	66	Up	2.1%	Yes
R-5	11	876	34	Up	42.4%	Yes
R-5 UP	0	NR	NR	NR	NR	NR
R-6	1	NA	NA	NA	NA	NA
R-7	11	1,880	24	Up	5.9%	Yes
R-8	3	NA	NA	NA	NA	NA
R-8 UP	0	NR	NR	NR	NR	NR

Table A-1

Monitor Station	# of Samples Collected	E Coli				
		High	Low	Trend	% of Trend Variability	Agree w/ 2013 Average Values?
		col/100 mL	col/100 mL		$100*R^2$	
R-1	10	60,150	107	Up	12.8%	No
R-2	17	100,800	20	Down	11.5%	Yes
R-2 UP	8	10,112	152	Up	2.0%	No
R-3	13	290,090	221	Up	24.3%	Yes
R-3 UP	7	17,820	917	Up	43.4%	Yes
R-4	16	100,800	15	Down	12.8%	Yes
R-5	11	24,198	10	Down	4.3%	Yes
R-5 UP	0	NA	NA	NA	NA	NA
R-6	1	NA	NA	NA	NA	NA
R-7	11	488,400	3,448	Up	19.9%	Yes
R-8	3	NA	NA	NA	NA	NA
R-8 UP	0	NA	NA	NA	NA	NA

Table A-2

NR = Not Required by permit

NA = Not Applicable

R^2 = Coefficient of of determination = [1- (error sum of squares)/(total sum of squares)]

DATA ANALYSIS TREND DIRECTION SUMMARY

Monitor Station	# of Samples Collected	Cd				
		High	Low	Trend	% of Trend Variability	Agree w/ 2013 Average Values?
		µg/L	µg/L		$100*R^2$	
R-1	10	-	<5	Steady	100%	Yes
R-2	17	-	<5	Steady	100%	Yes
R-2 UP	8	7.7	<5	Steady	0.12%	Yes
R-3	13	-	<5	Steady	100%	Yes
R-3 UP	7	-	<5	Steady	100%	Yes
R-4	16	-	<5	Steady	100%	Yes
R-5	11	-	<5	Steady	100%	Yes
R-5 UP	0	NA	NA	NA	NA	NA
R-6	1	NA	NA	NA	NA	NA
R-7	11	13	<5	Up	8.1%	Yes
R-8	3	10.5	<5	NA	NA	NA
R-8 UP	0	NA	NA	NA	NA	NA

Table A-3

Monitor Station	# of Samples Collected	Cu				
		High	Low	Trend	% of Trend Variability	Agree w/ 2013 Average Values?
		µg/L	µg/L		$100*R^2$	
R-1	10	690	10	Down	31.6%	Yes
R-2	17	92	11	Up	0.2%	Yes
R-2 UP	8	96.9	10.6	Down	1.0%	Yes
R-3	13	88.9	<10	Up	39.4%	Yes
R-3 UP	7	85	<10	Down	52.6%	Yes
R-4	16	164	10.2	Up	12.3%	Yes
R-5	11	201	<10	Down	0.8%	Yes
R-5 UP	0	NA	NA	NA	NA	NA
R-6	1	NA	NA	NA	NA	NA
R-7	11	72	<10	Up	27.6%	Yes
R-8	3	522	18.5	NA	NA	NA
R-8 UP	0	NA	NA	NA	NA	NA

Table A-4

NR = Not Required by permit

NA = Not Applicable

R^2 = Coefficient of of determination = [1- (error sum of squares)/(total sum of squares)]

DATA ANALYSIS TREND DIRECTION SUMMARY

Monitor Station	# of Samples Collected	Pb				
		High	Low	Trend	% of Trend Variability	Agree w/ 2013 Average Values?
		µg/L	µg/L		$100*R^2$	
R-1	10	116	6.3	Down	1.66%	No
R-2	17	226	13.1	Down	5.09%	Yes
R-2 UP	8	NR	NR	NR	NR	NR
R-3	13	221	5	Down	3.26%	Yes
R-3 UP	7	NR	NR	NR	NR	NR
R-4	16	288	6.6	Up	4.14%	Yes
R-5	11	199	<5	Down	10.08%	Yes
R-5 UP	0	NR	NR	NR	NR	NR
R-6	1	NA	NA	NA	NA	NA
R-7	11	61.8	<5	Up	8.97%	Yes
R-8	3	245	15.6	NA	NA	NA
R-8 UP	0	NR	NR	NR	NR	NR

Table A-5

Monitor Station	# of Samples Collected	Zn				
		High	Low	Trend	% of Trend Variability	Agree w/ 2013 Average Values?
		µg/L	µg/L		$100*R^2$	
R-1	10	1,020	58.3	Up	0.37%	Yes
R-2	17	936	56	Steady	0.0002%	No
R-2 UP	8	335	<50	Down	24.8%	Yes
R-3	13	390	<50	Up	23.1%	Yes
R-3 UP	7	127	<50	Down	8.6%	Yes
R-4	16	1,140	<50	Up	14.8%	Yes
R-5	11	1,050	50.9	Up	35.2%	Yes
R-5 UP	0	NA	NA	NA	NA	NA
R-6	1	NA	NA	NA	NA	NA
R-7	11	1,610	89.8	Up	27.9%	Yes
R-8	3	1,500	66.7	NA	NA	NA
R-8 UP	0	NA	NA	NA	NA	NA

Table A-6

NR = Not Required by permit

NA = Not Applicable

R^2 = Coefficient of of determination = [1- (error sum of squares)/(total sum of squares)]

DATA ANALYSIS TREND DIRECTION SUMMARY

Monitor Station	# of Samples Collected	Hardness as CaCO3				
		High	Low	Trend	% of Trend Variability	Agree w/ 2013 Average Values?
		mg/L	mg/L		$100*R^2$	
R-1	10	12,100	75.3	Up	3.2%	Yes
R-2	17	854	38	Down	0.010%	No
R-2 UP	8	NR	NR	NR	NR	NR
R-3	13	707	38	Up	8.2%	Yes
R-3 UP	7	NR	NR	NR	NR	NR
R-4	16	1,690	99	Up	10.8%	Yes
R-5	11	1,620	41	Up	13.4%	Yes
R-5 UP	0	NR	NR	NR	NR	NR
R-6	1	NA	NA	NA	NA	NA
R-7	11	890	43.9	Up	11.6%	Yes
R-8	3	526	193	NA	NA	NA
R-8 UP	0	NR	NR	NR	NR	NR

Table A-7

Monitor Station	# of Samples Collected	Oil and Grease				
		High	Low	Trend	% of Trend Variability	Agree w/ 2013 Average Values?
		mg/L	mg/L		$100*R^2$	
R-1	10	16	<5	Down	15.8%	Yes
R-2	17	27	<4	Down	3.3%	Yes
R-2 UP	8	NR	NR	NR	NR	NR
R-3	13	9	<4	Up	1.3%	Yes
R-3 UP	7	NR	NR	NR	NR	NR
R-4	16	11	<4	Down	4.0%	Yes
R-5	11	7	<5	Down	41.9%	No
R-5 UP	0	NR	NR	NR	NR	NR
R-6	1	NA	NA	NA	NA	NA
R-7	11	NA	NA	NA	NA	NA
R-8	3	NA	NA	NA	NA	NA
R-8 UP	0	NR	NR	NR	NR	NR

Table A-8

NR = Not Required by permit

NA = Not Applicable

R^2 = Coefficient of of determination = [1- (error sum of squares)/(total sum of squares)]

DATA ANALYSIS TREND DIRECTION SUMMARY

Monitor Station	# of Samples Collected	TDS				
		High	Low	Trend	% of Trend Variability	Agree w/ 2013 Average Values?
		mg/L	mg/L		$100*R^2$	
R-1	10	2,150	56	Up	2.6%	No
R-2	17	1,660	20	Up	10.4%	Yes
R-2 UP	8	NR	NR	NR	NR	NR
R-3	13	387	35	Up	11.3%	Yes
R-3 UP	7	NR	NR	NR	NR	NR
R-4	16	776	45	Up	8.1%	Yes
R-5	11	432	46	Up	65.4%	Yes
R-5 UP	0	NR	NR	NR	NR	NR
R-6	1	NA	NA	NA	NA	NA
R-7	11	1,050	61	Down	4.3%	Yes
R-8	3	2,200	271	NA	NA	NA
R-8 UP	0	NR	NR	NR	NR	NR

Table A-9

Monitor Station	# of Samples Collected	Chloride				
		High	Low	Trend	% of Trend Variability	Agree w/ 2013 Average Values?
		mg/L	mg/L		$100*R^2$	
R-1	10	1,030	6.4	Up	1.4%	Yes
R-2	17	906	7.3	Up	11.3%	Yes
R-2 UP	8	NR	NR	NR	NR	NR
R-3	13	559	3.6	Down	6.9%	No
R-3 UP	7	NR	NR	NR	NR	NR
R-4	16	150	3.4	Up	10.1%	No
R-5	11	91.2	2.8	Up	26.7%	Yes
R-5 UP	0	NR	NR	NR	NR	NR
R-6	1	NA	NA	NA	NA	NA
R-7	11	536	2.6	Down	12.1%	Yes
R-8	3	1,070	33.1	NA	NA	NA
R-8 UP	0	NR	NR	NR	NR	NR

Table A-10

NR = Not Required by permit

NA = Not Applicable

R^2 = Coefficient of of determination = [1- (error sum of squares)/(total sum of squares)]

DATA ANALYSIS TREND DIRECTION SUMMARY

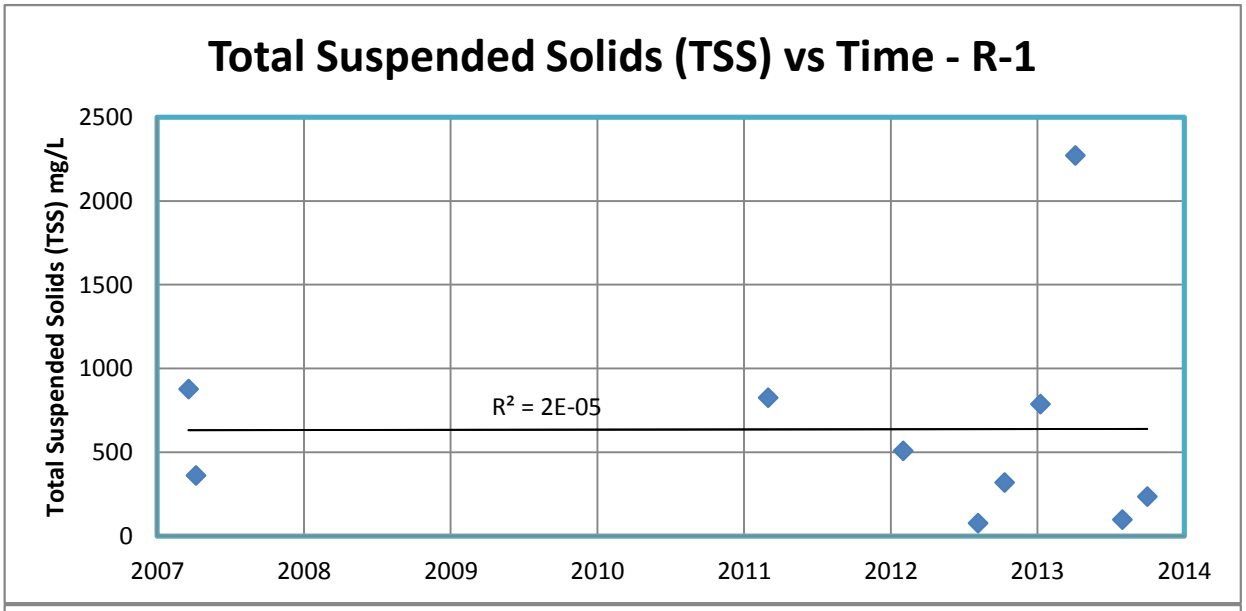
Monitor Station	# of Samples Collected	BOD				
		High	Low	Trend	% of Trend Variability	Agree w/ 2013 Average Values?
		mg/L	mg/L		$100*R^2$	
R-1	10	14.8	<2	Down	2.9%	No
R-2	17	38.4	<4	Up	1.6%	No
R-2 UP	8	18.7	<4	Up	4.1%	No
R-3	13	56.3	2.1	Up	16.8%	Yes
R-3 UP	7	48.5	<4	Up	48.7%	Yes
R-4	16	42	<4	Up	26.0%	Yes
R-5	11	488	2.7	Down	87.8%	Yes
R-5 UP	0	NA	NA	NA	NA	NA
R-6	1	NA	NA	NA	NA	NA
R-7	11	12.6	<2	Down	55.6%	Yes
R-8	3	NA	NA	NA	NA	NA
R-8 UP	0	NA	NA	NA	NA	NA

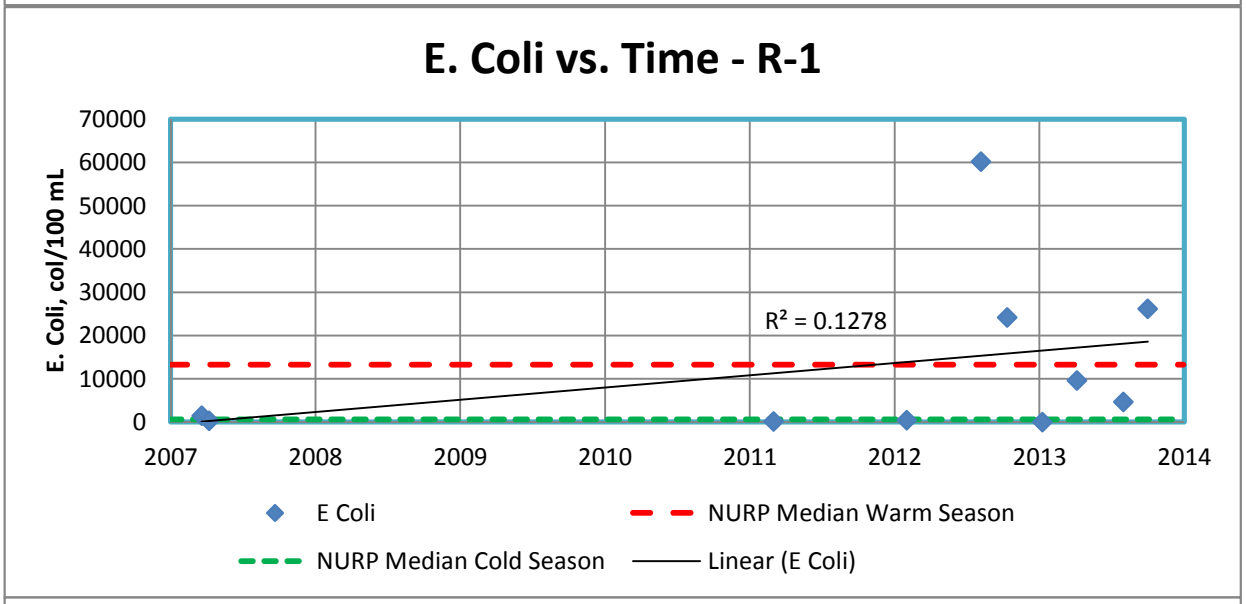
Table A-11

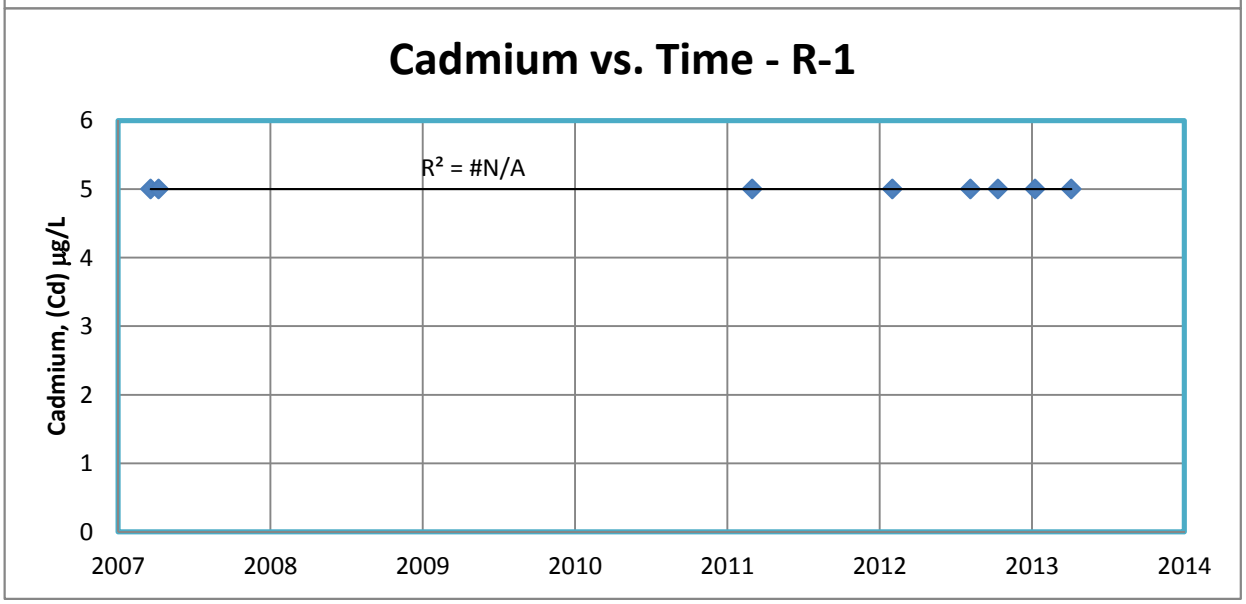
NR = Not Required by permit

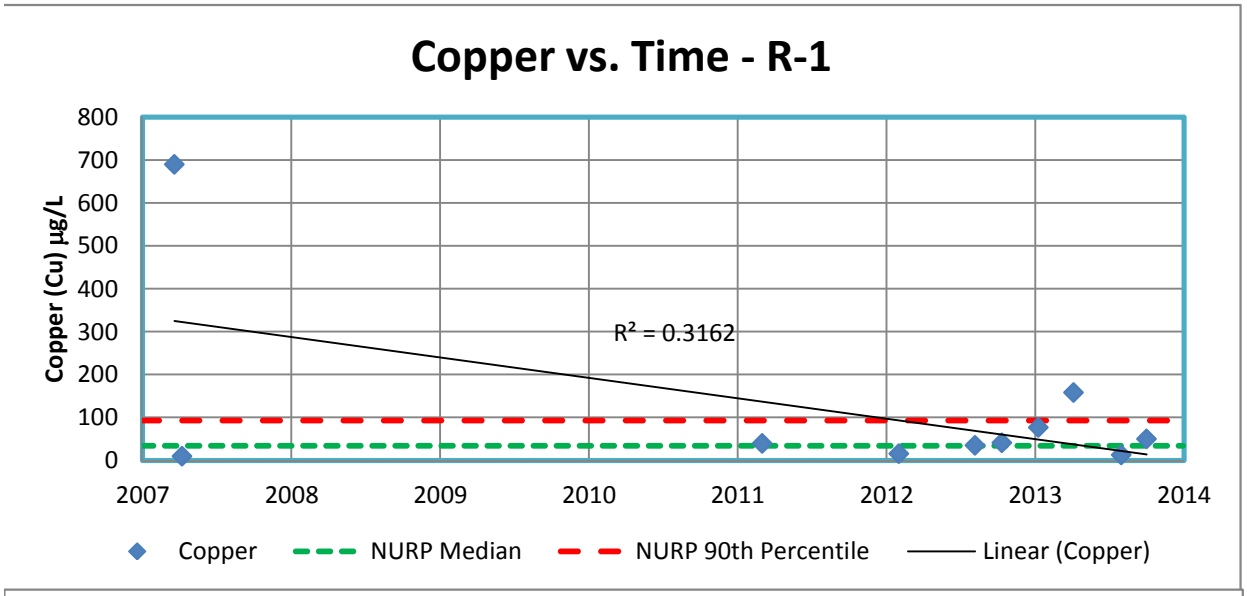
NA = Not Applicable

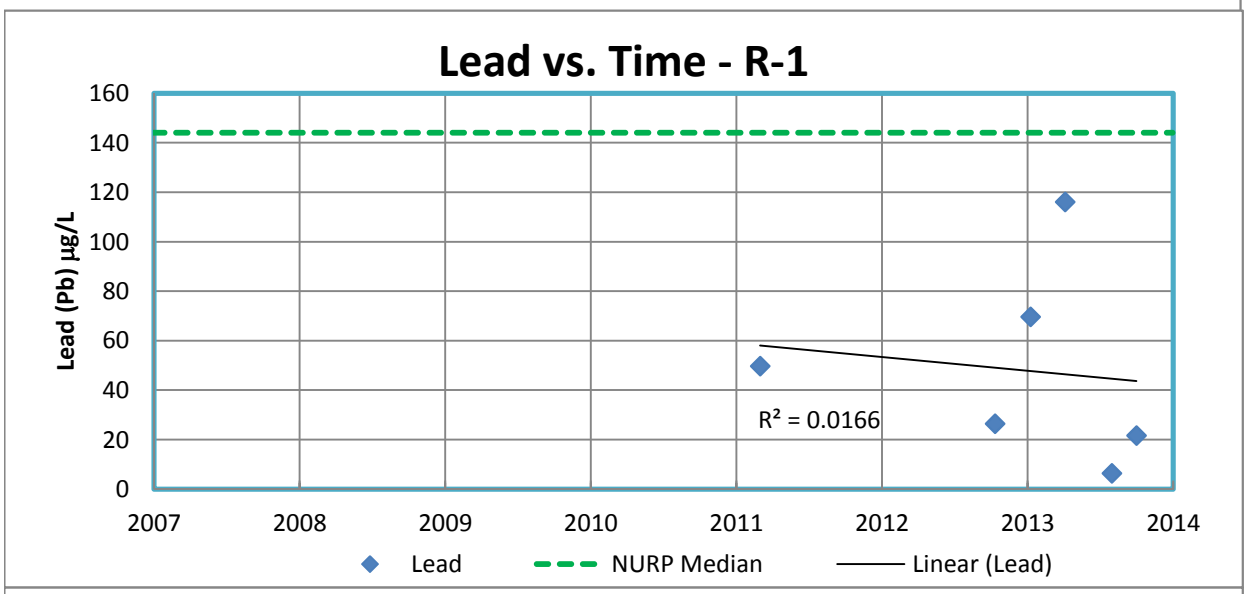
R^2 = Coefficient of of determination = [1- (error sum of squares)/(total sum of squares)]

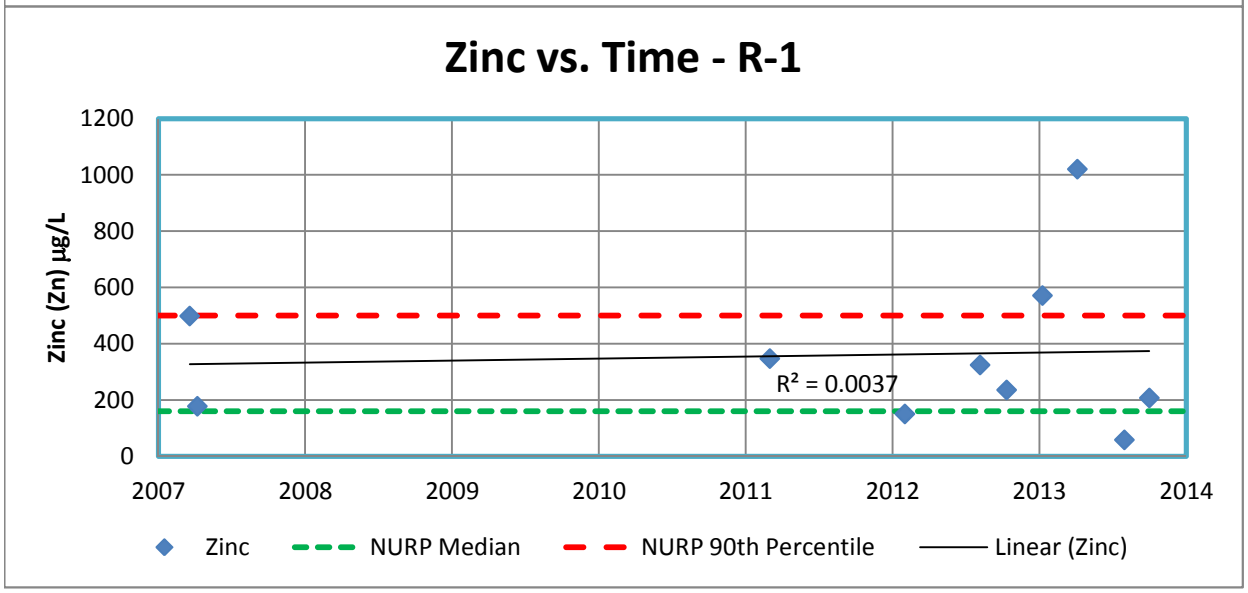

Total Suspended Solids (TSS) vs Time - R-1
Total Suspended Solids (TSS) mg/L
2500
2000
1500
1000
500
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 2E-05

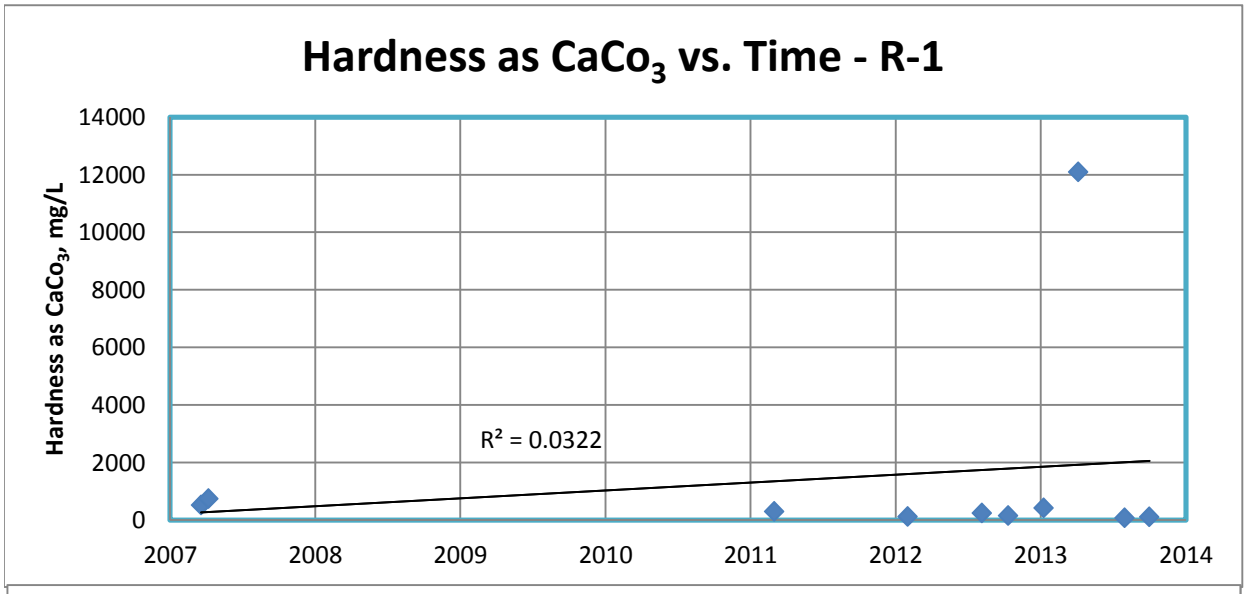

E. Coli vs. Time - R-1
E. Coli, col/100 mL
70000
60000
50000
40000
30000
20000
10000
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.1278
E Coli
NURP Median Warm Season
NURP Median Cold Season
Linear (E Coli)

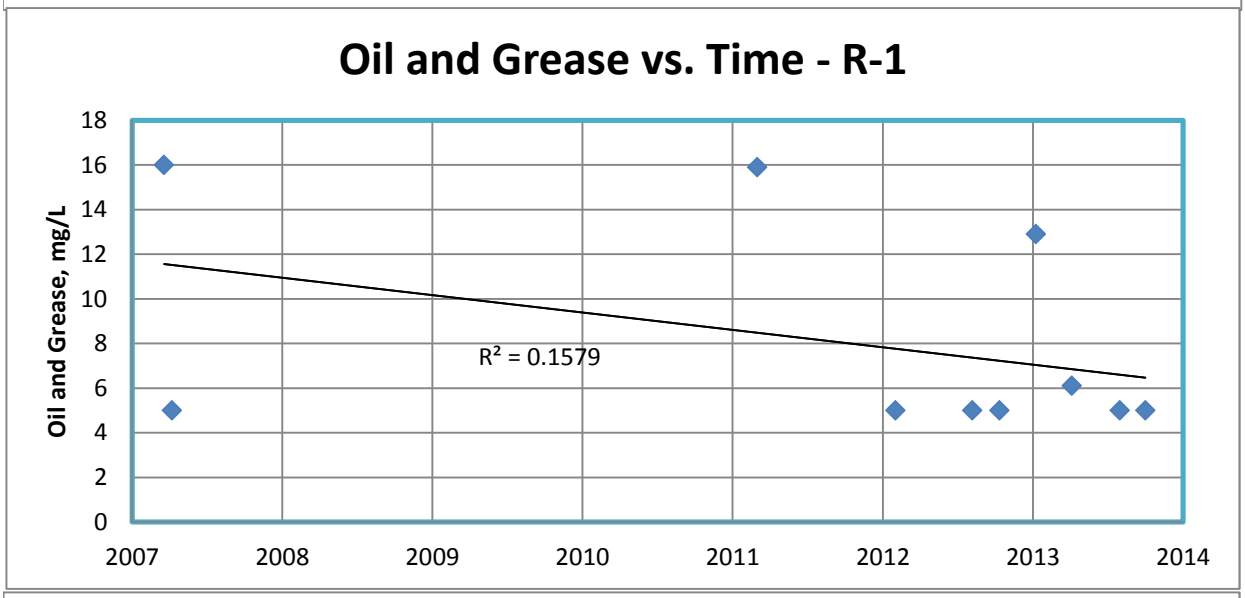

Cadmium vs. Time - R-1
Cadmium, (Cd) µg/L
6
5
4
3
2
1
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = #N/A

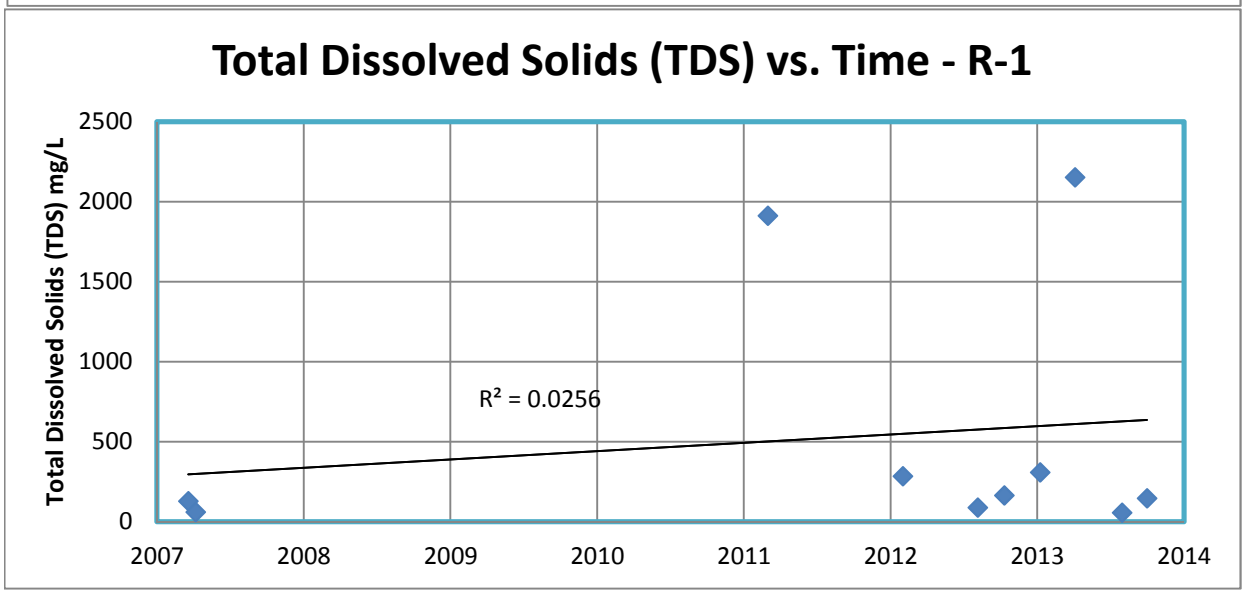

Copper vs. Time - R-1
Copper (Cu) µg/L
800
700
600
500
400
300
200
100
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.3162
Copper
NURP Median
NURP 90th Percentile
Linear (Copper)

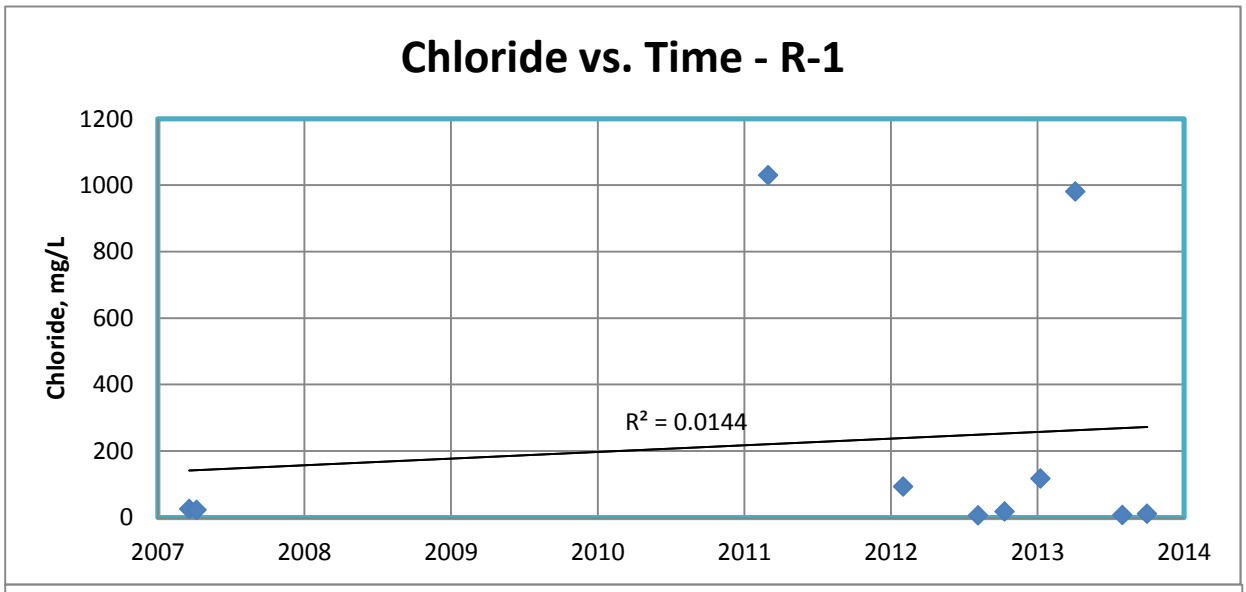

Lead vs. Time - R-1
Lead (Pb) µg/L
160
140
120
100
80
60
40
20
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.0166
Lead
NURP Median
Linear (Lead)

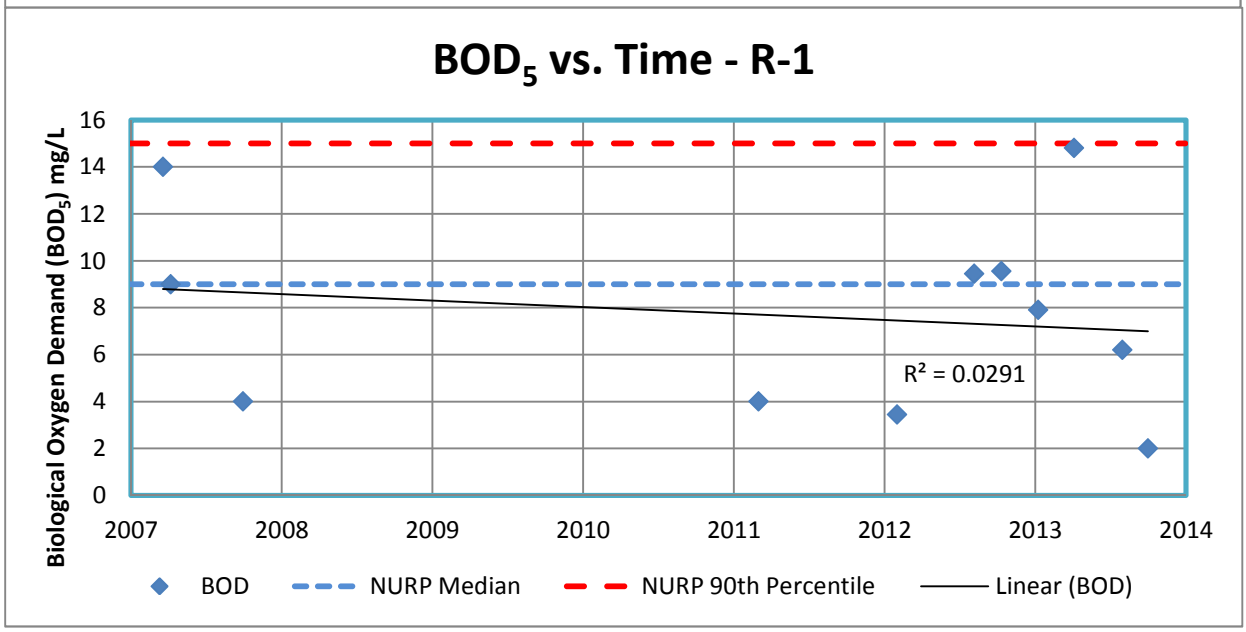

Zinc vs. Time - R-1
Zinc (Zn) µg/L
1200
1000
800
600
400
200
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.0037
Zinc
NURP Median
NURP 90th Percentile
Linear (Zinc)

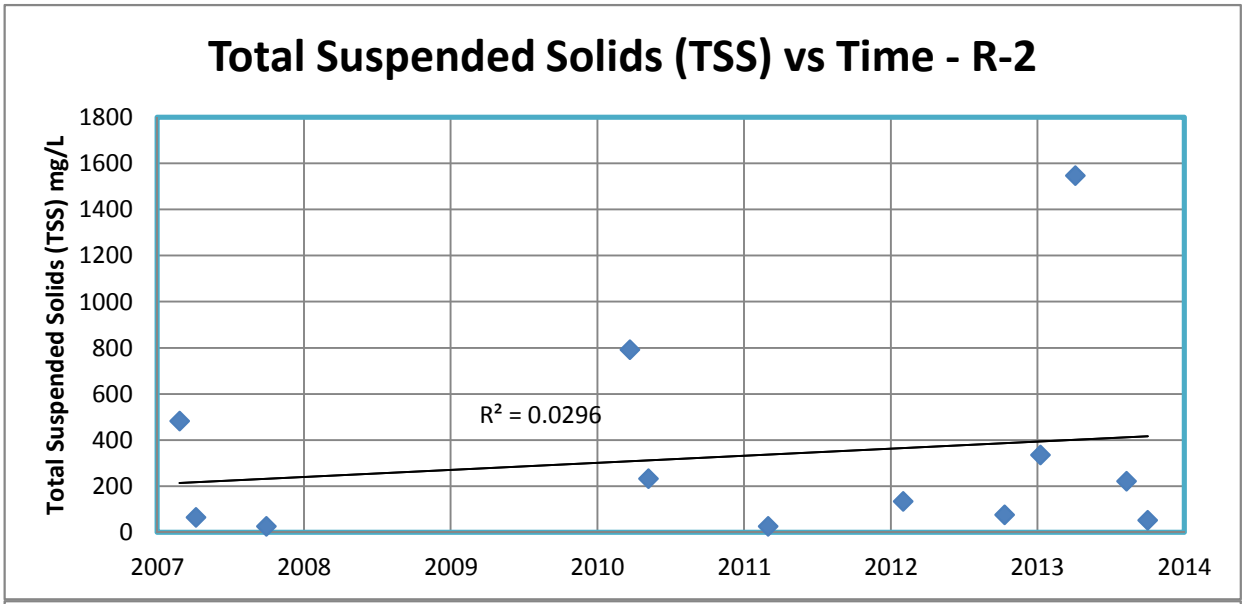

Hardness as CaCo3 vs. Time - R-1
Hardness as CaCo3, mg/L
14000
12000
10000
8000
6000
4000
2000
0
R² = 0.0322
2007
2008
2009
2010
2011
2012
2013
2014

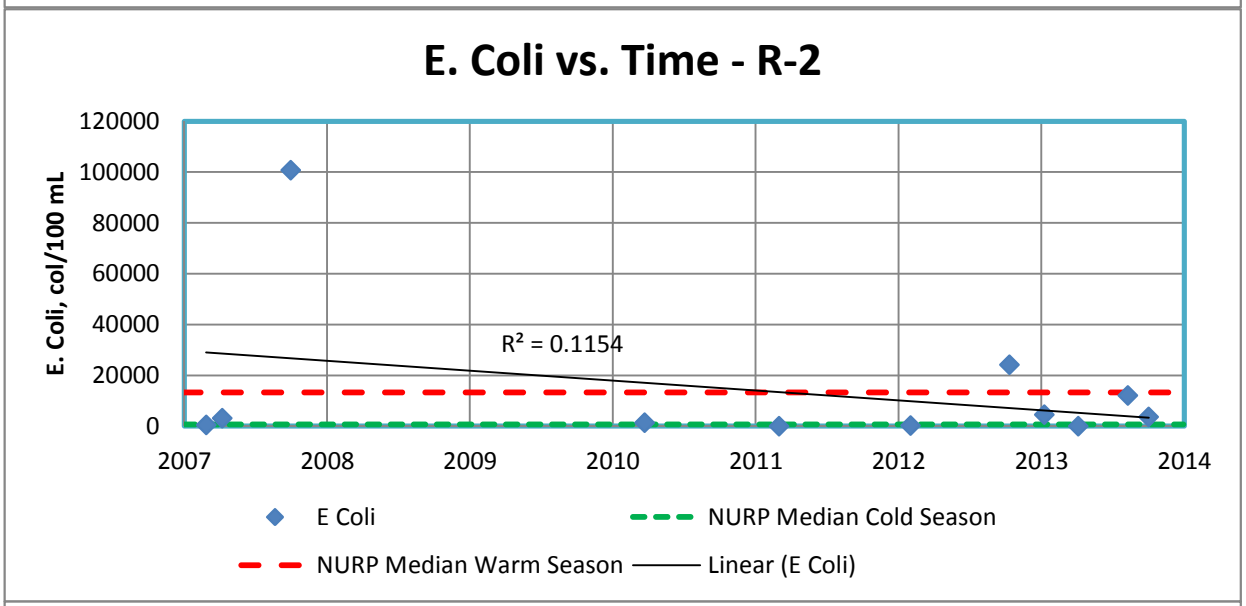

Oil and Grease vs. Time - R-1
Oil and Grease, mg/L
18
16
14
12
10
8
6
4
2
0
R² = 0.1579
2007
2008
2009
2010
2011
2012
2013
2014

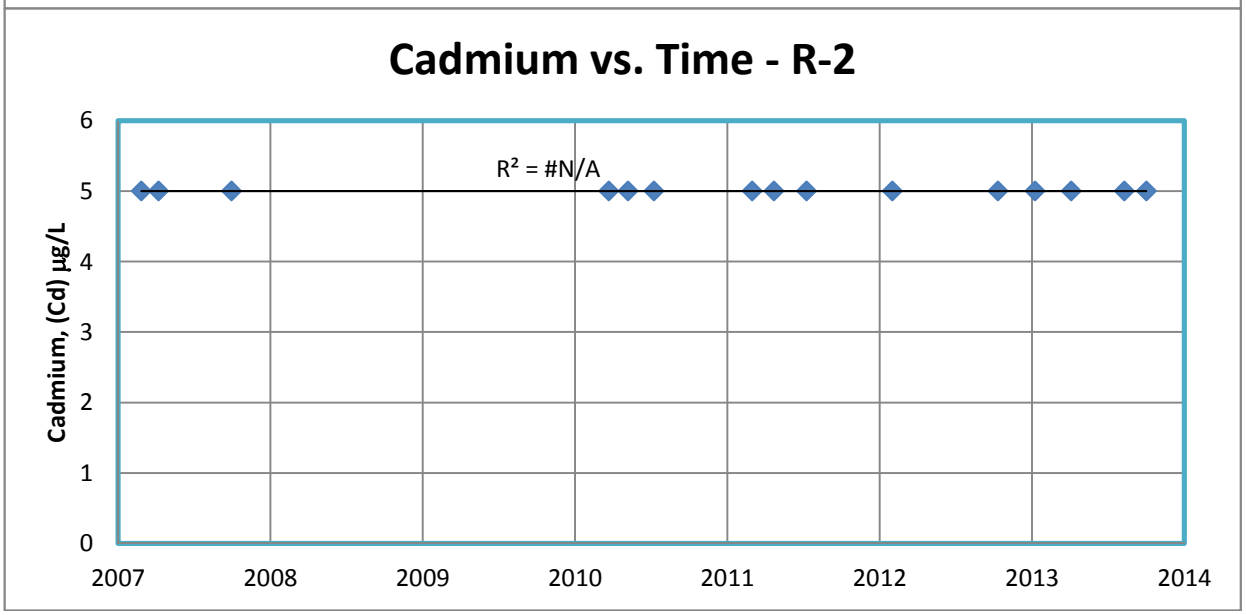

Total Dissolved Solids (TDS) vs. Time - R-1
Total Dissolved Solids (TDS) mg/L
2500
2000
1500
1000
500
0
R² = 0.0256
2007
2008
2009
2010
2011
2012
2013
2014

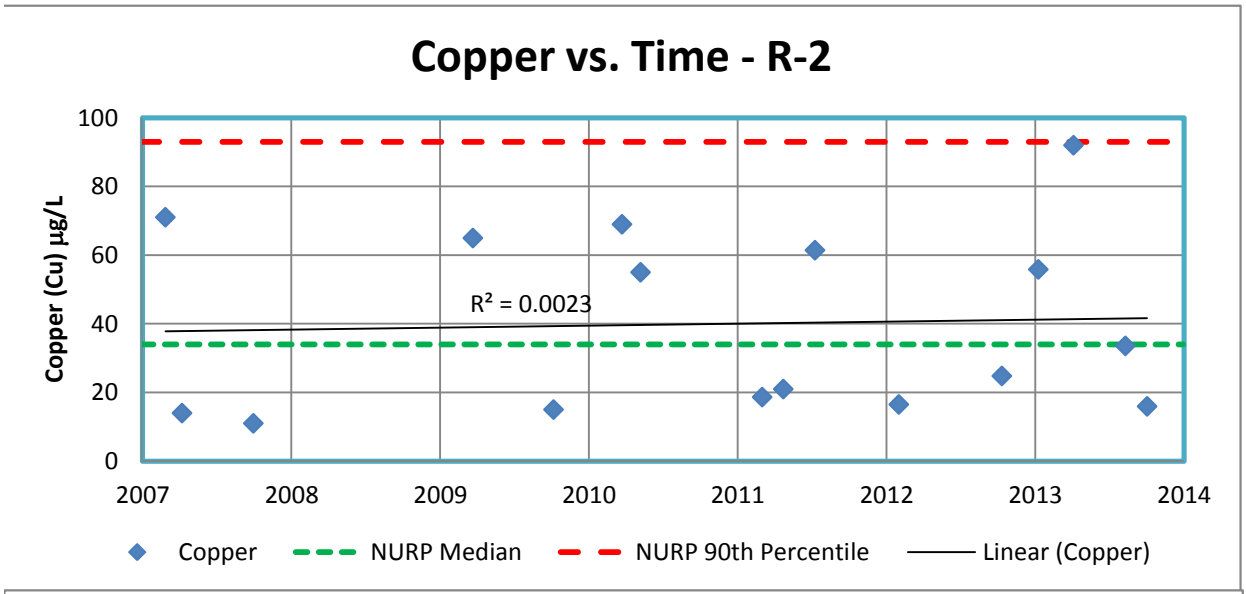

Chloride vs. Time - R-1
Chloride, mg/L
1200
1000
800
600
400
200
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.0144

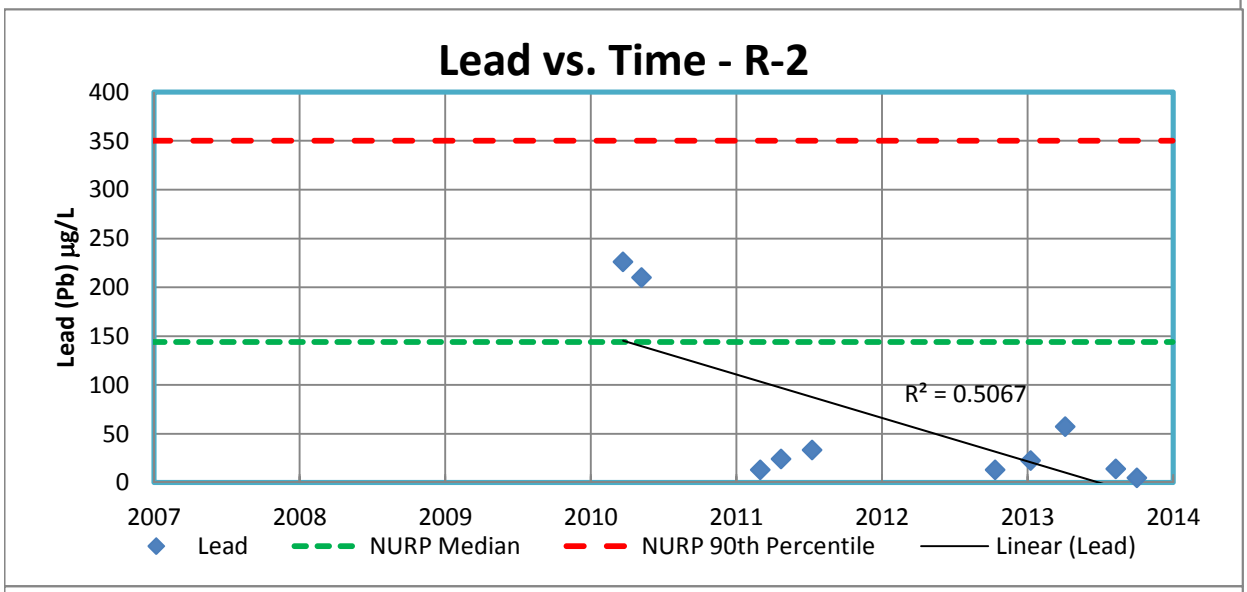

BOD5 vs. Time - R-1
Biological Oxygen Demand (BOD5) mg/L
16
14
12
10
8
6
4
2
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.0291
BOD
NURP Median
NURP 90th Percentile
Linear (BOD)

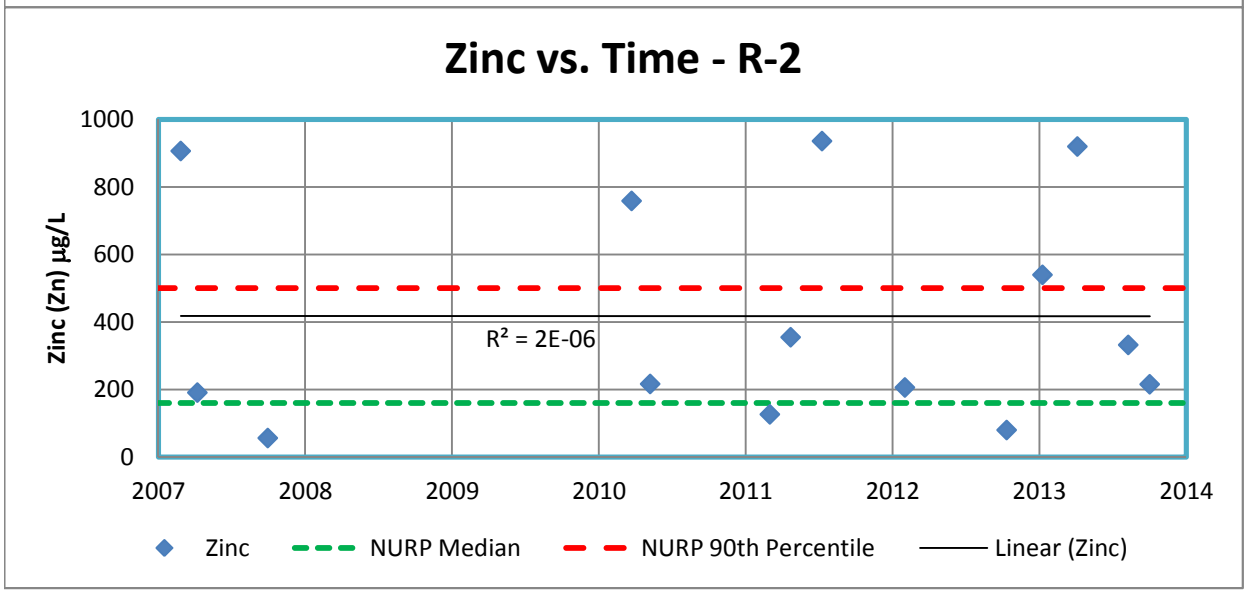

Total Suspended Solids (TSS) vs Time - R-2
Total Suspended Solids (TSS) mg/L
1800
1600
1400
1200
1000
800
600
400
200
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.0296

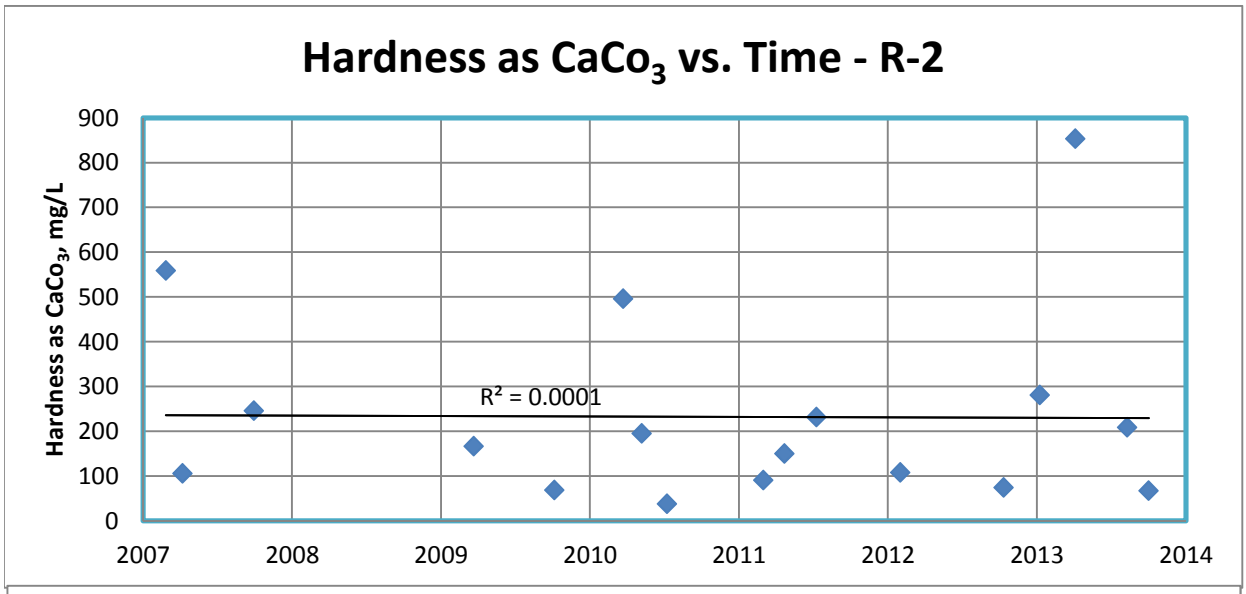

E. Coli vs. Time - R-2
E. Coli, col/100 mL
120000
100000
80000
60000
40000
20000
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.1154
E Coli
NURP Median Cold Season
NURP Median Warm Season
Linear (E Coli)

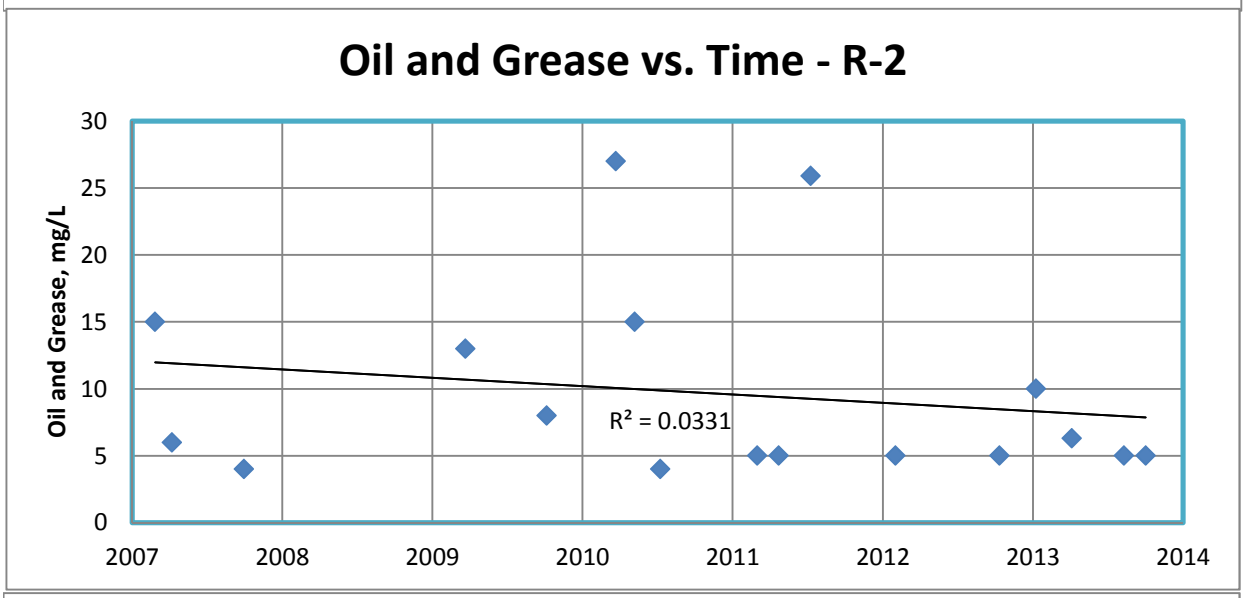

Cadmium vs. Time - R-2
Cadmium, (Cd) µg/L
6
5
4
3
2
1
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = #N/A

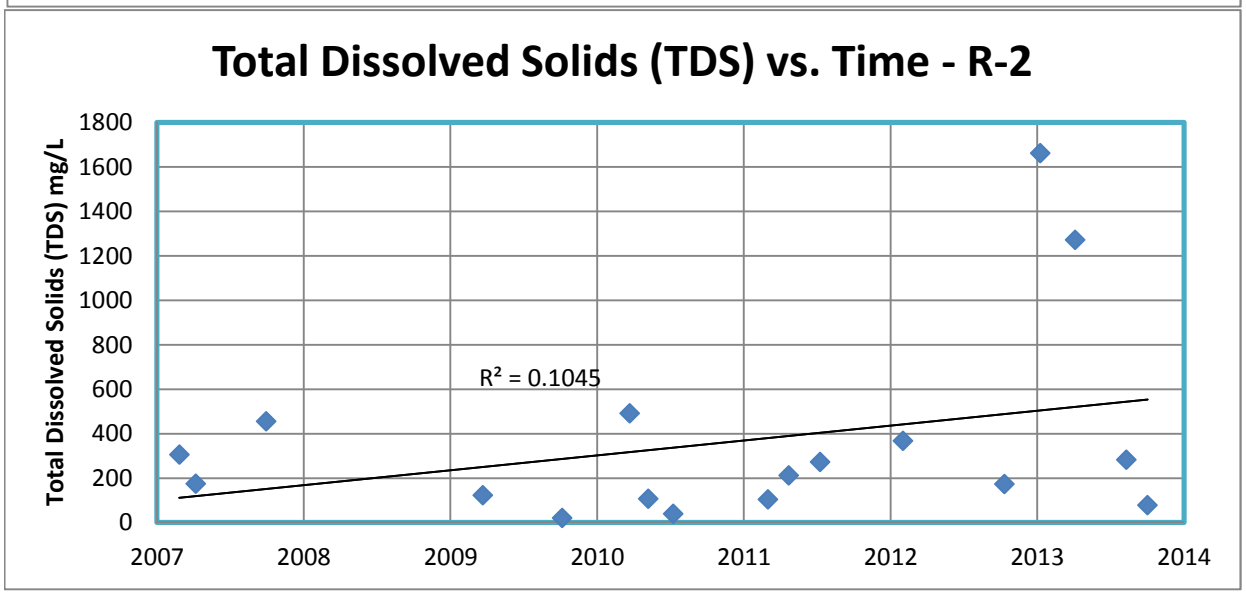

Copper vs. Time - R-2
Copper (Cu) µg/L
100
80
60
40
20
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.0023
Copper
NURP Median
NURP 90th Percentile
Linear (Copper)

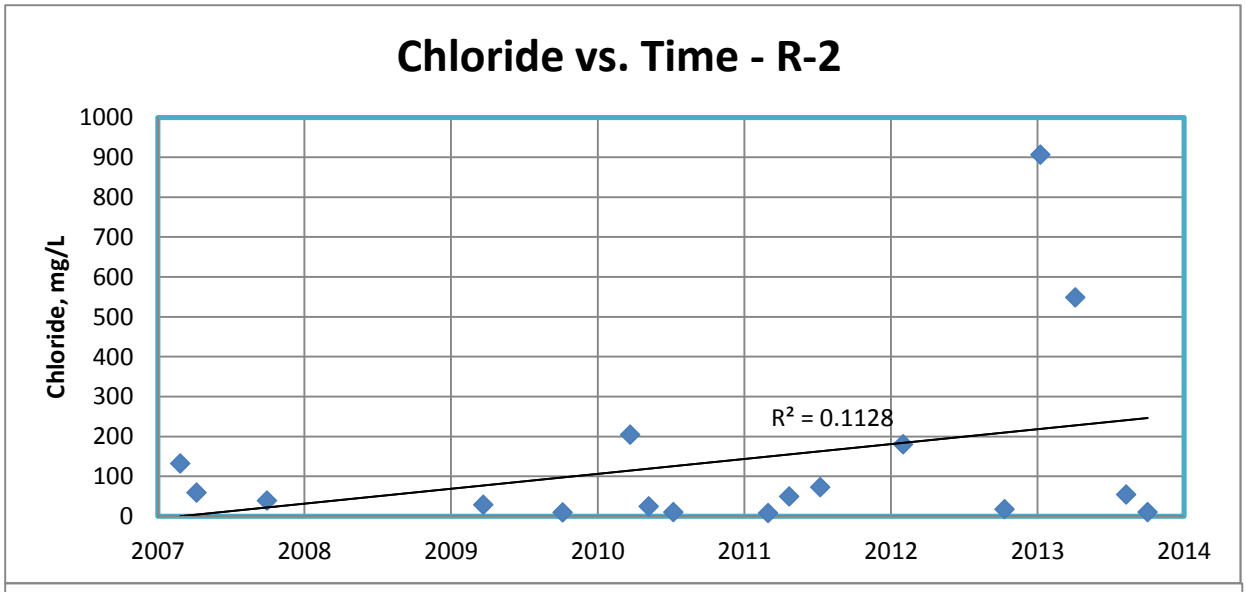

Lead vs. Time - R-2
Lead (Pb) µg/L
400
350
300
250
200
150
100
50
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.5067
Lead
NURP Median
NURP 90th Percentile
Linear (Lead)

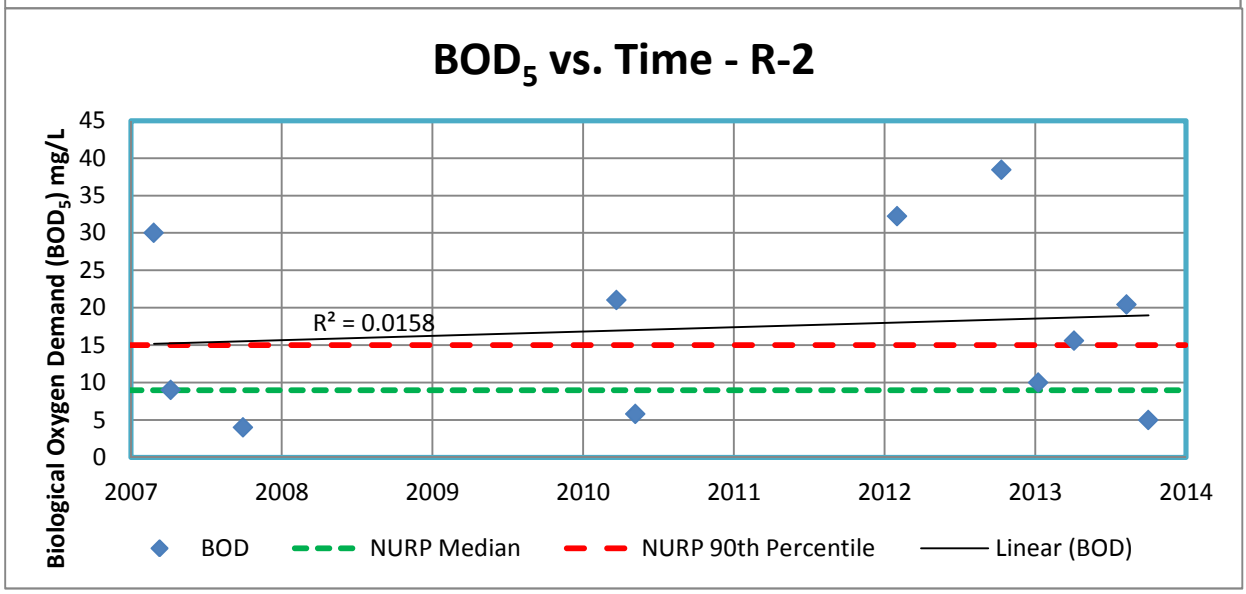

Zinc vs. Time - R-2
Zinc (Zn) µg/L
1000
800
600
400
200
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 2E-06
Zinc
NURP Median
NURP 90th Percentile
Linear (Zinc)

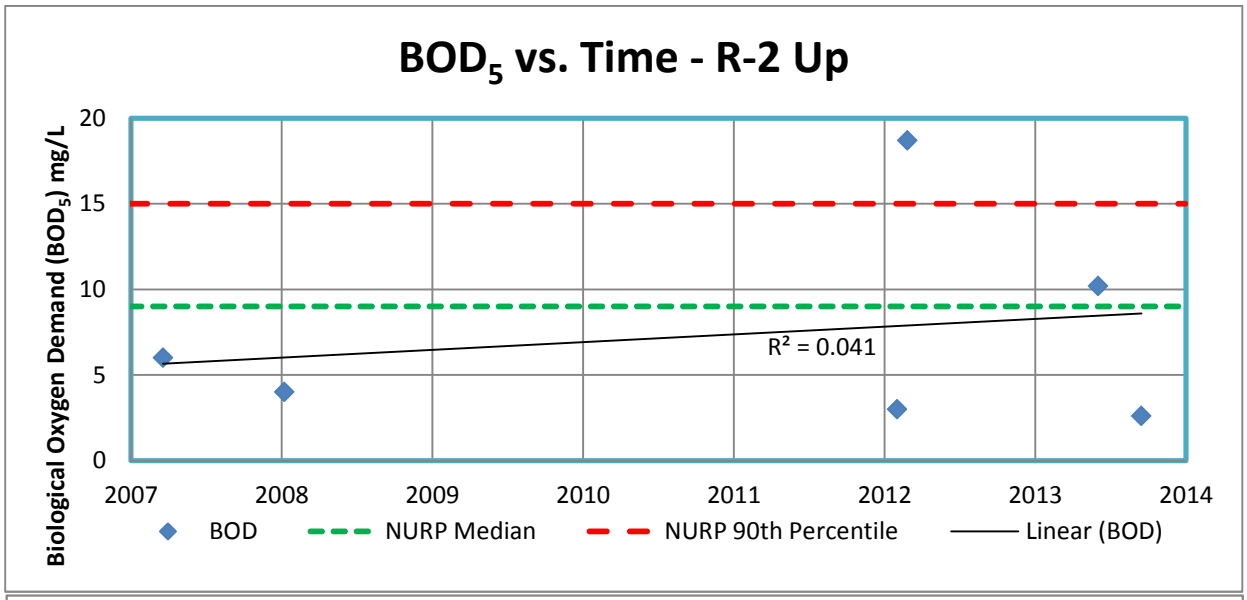

Hardness as CaCo3 vs. Time - R-2
Hardness as CaCo3, mg/L
900
800
700
600
500
400
300
200
100
0
R² = 0.0001
2007
2008
2009
2010
2011
2012
2013
2014

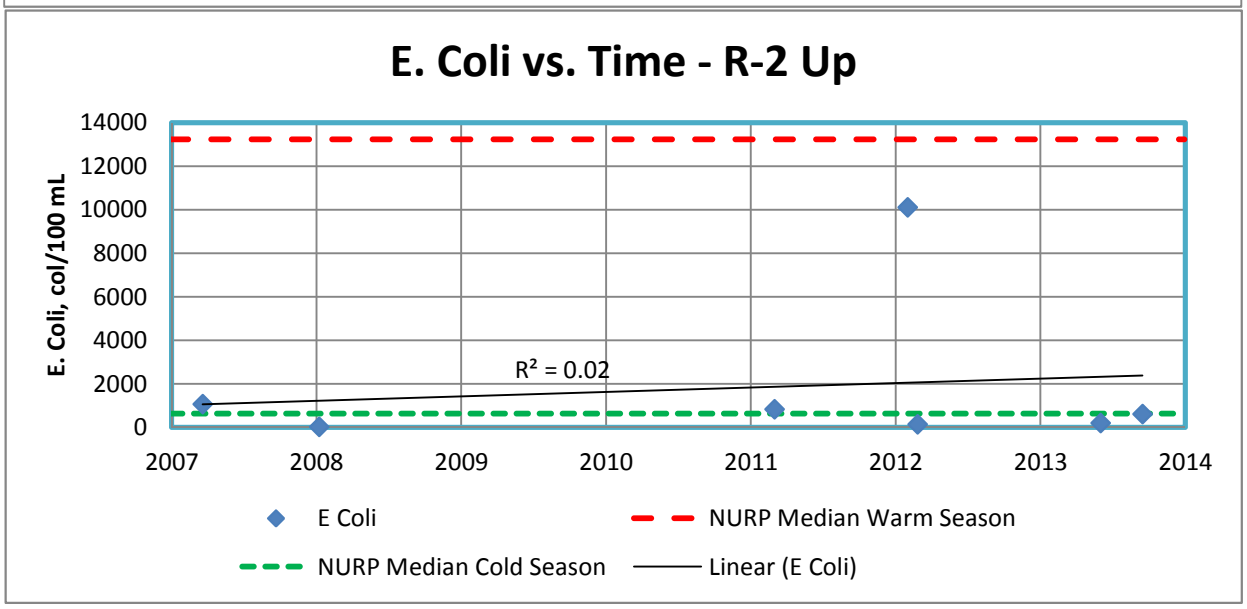

Oil and Grease vs. Time - R-2
Oil and Grease, mg/L
30
25
20
15
10
5
0
R² = 0.0331
2007
2008
2009
2010
2011
2012
2013
2014

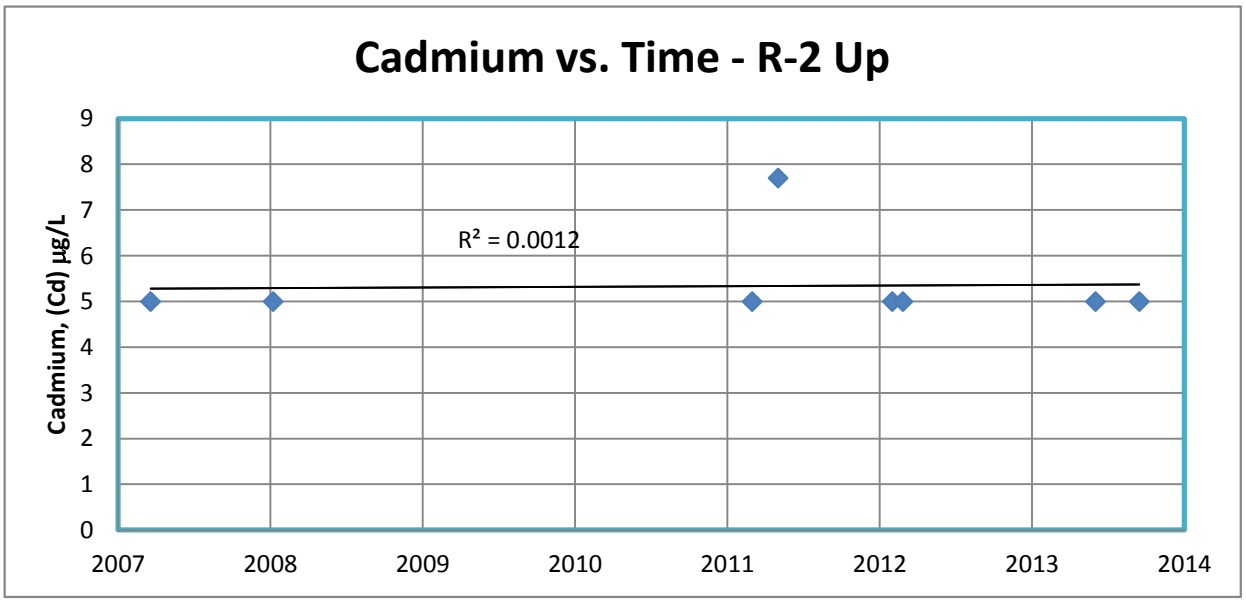

Total Dissolved Solids (TDS) vs. Time - R-2
Total Dissolved Solids (TDS) mg/L
1800
1600
1400
1200
1000
800
600
400
200
0
R² = 0.1045
2007
2008
2009
2010
2011
2012
2013
2014

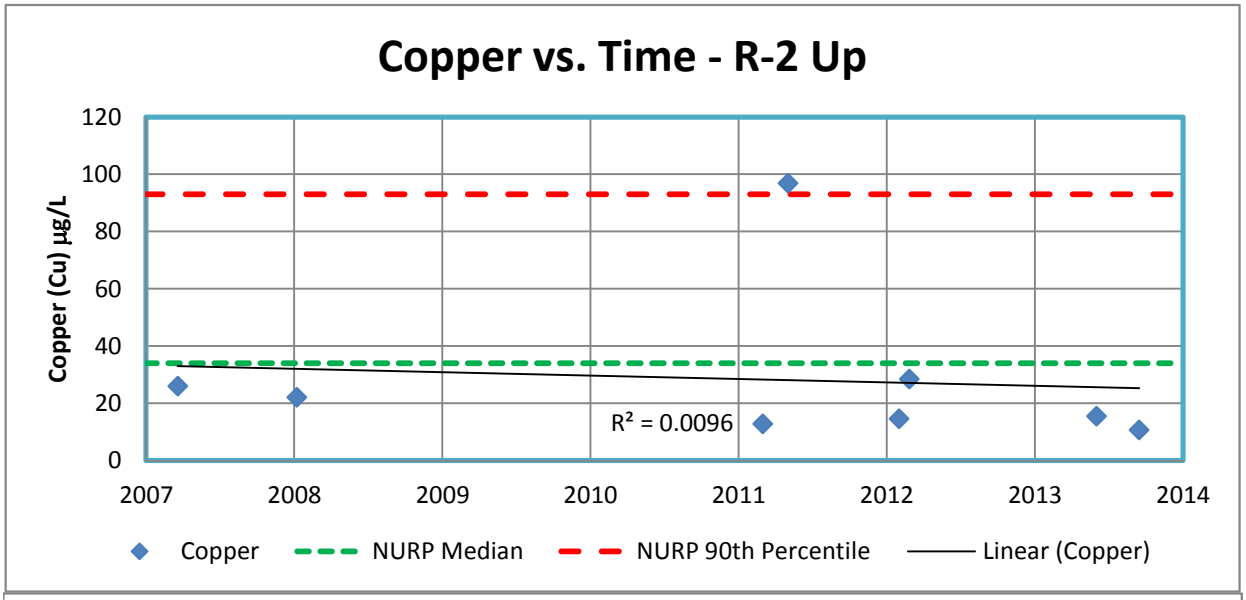

Chloride vs. Time - R-2
Chloride, mg/L
1000
900
800
700
600
500
400
300
200
100
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.1128

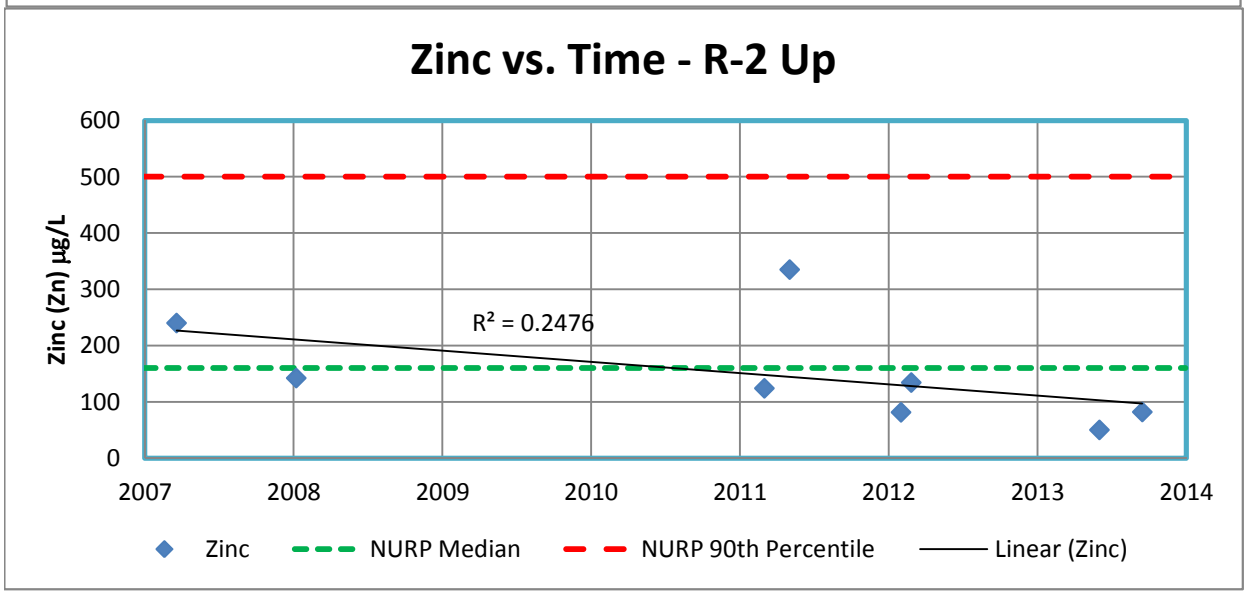

BOD5 vs. Time - R-2
Biological Oxygen Demand (BOD5) mg/L
45
40
35
30
25
20
15
10
5
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.0158
BOD
NURP Median
NURP 90th Percentile
Linear (BOD)

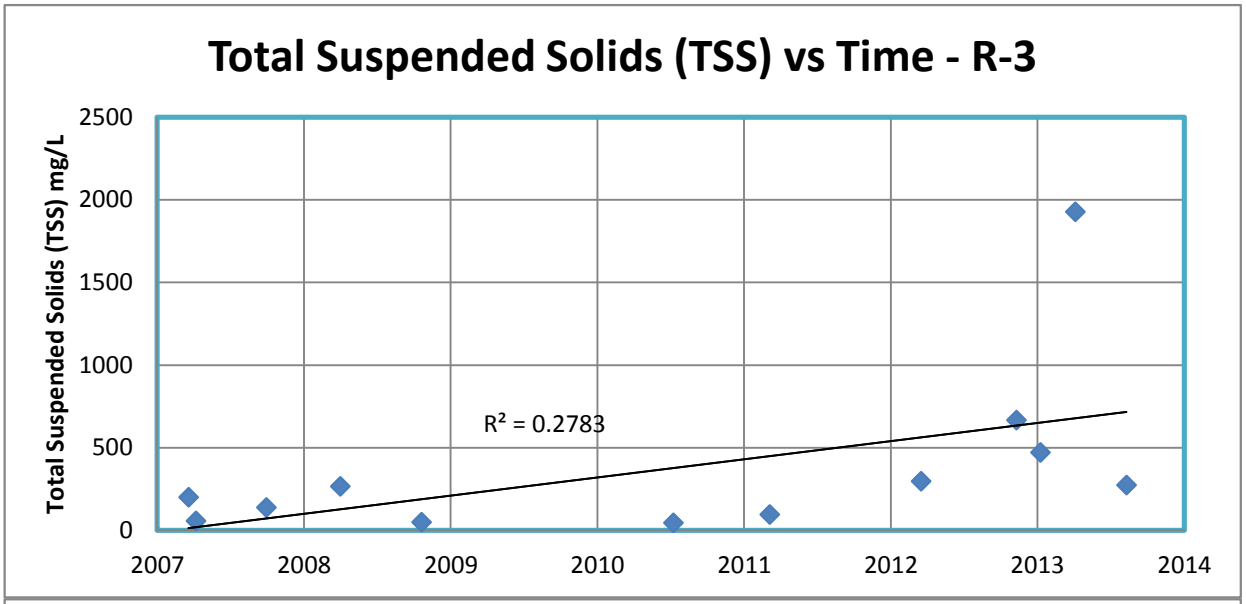

BOD5 vs. Time - R-2 Up
Biological Oxygen Demand (BOD5) mg/L
20
15
10
5
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.041
BOD
NURP Median
NURP 90th Percentile
Linear (BOD)

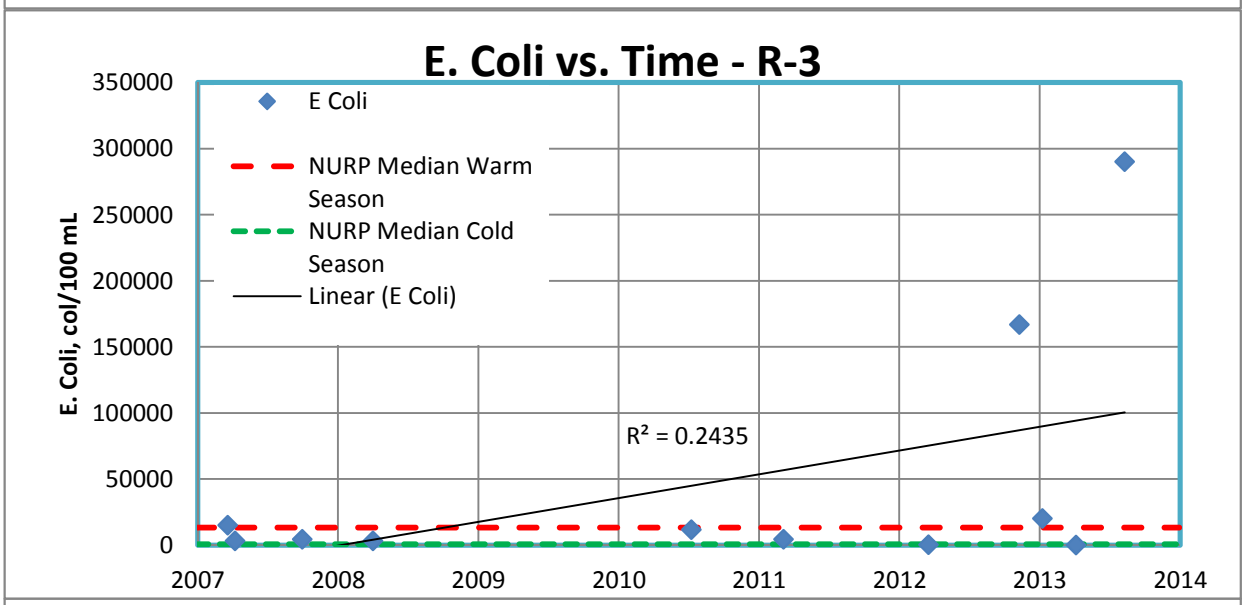

E. Coli vs. Time - R-2 Up
E. Coli, col/100 mL
14000
12000
10000
8000
6000
4000
2000
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.02
E Coli
NURP Median Warm Season
NURP Median Cold Season
Linear (E Coli)

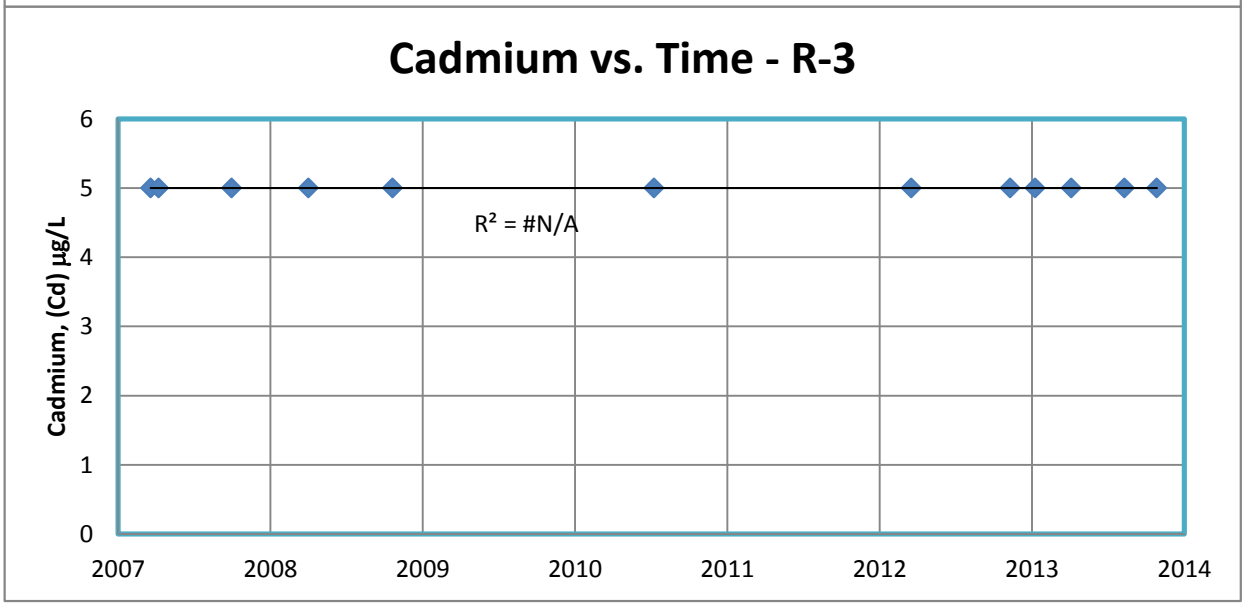

Cadmium vs. Time - R-2 Up
Cadmium, (Cd) µg/L
9
8
7
6
5
4
3
2
1
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.0012

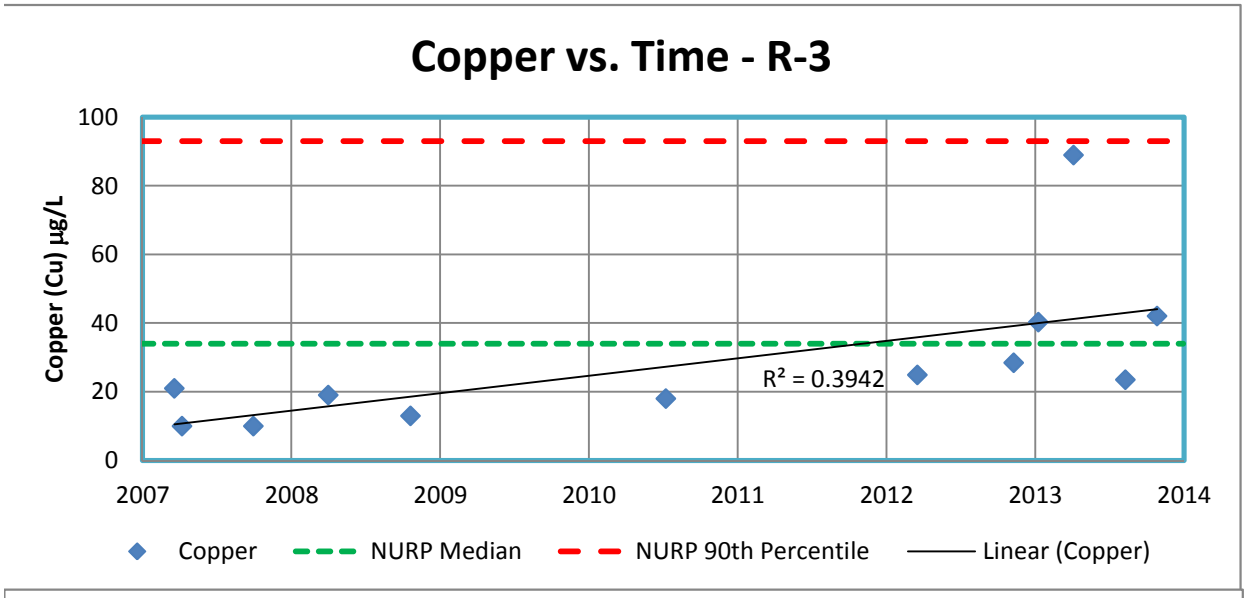

Copper vs. Time - R-2 Up
Copper (Cu) µg/L
120
100
80
60
40
20
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.0096
Copper
NURP Median
NURP 90th Percentile
Linear (Copper)

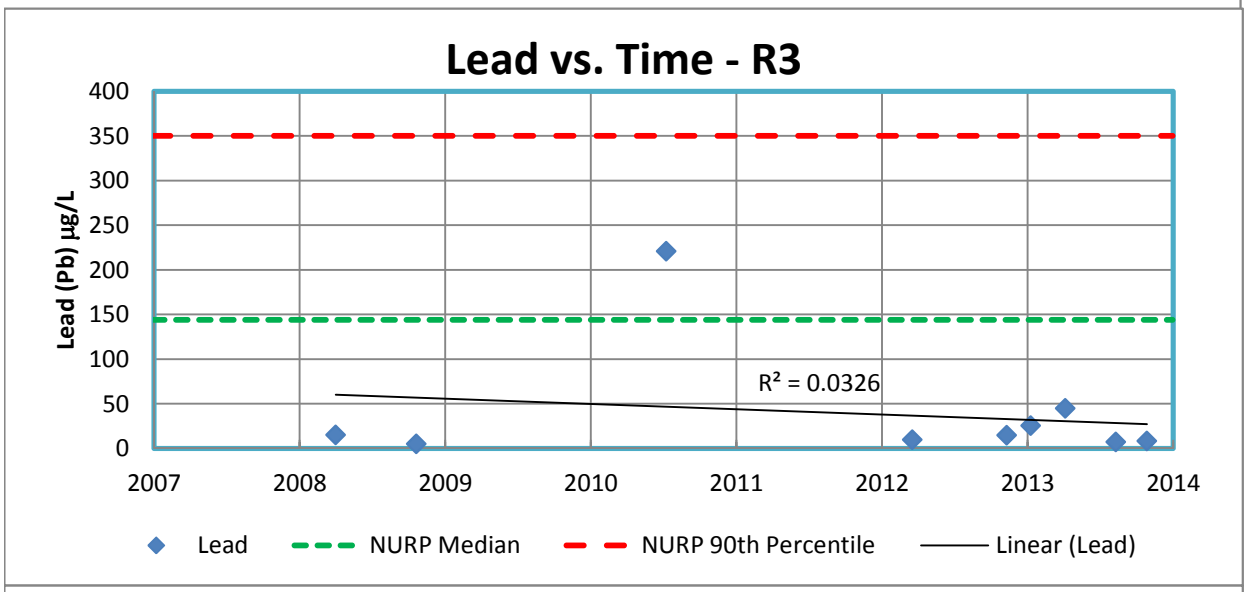

Zinc vs. Time - R-2 Up
Zinc (Zn) µg/L
600
500
400
300
200
100
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.2476
Zinc
NURP Median
NURP 90th Percentile
Linear (Zinc)

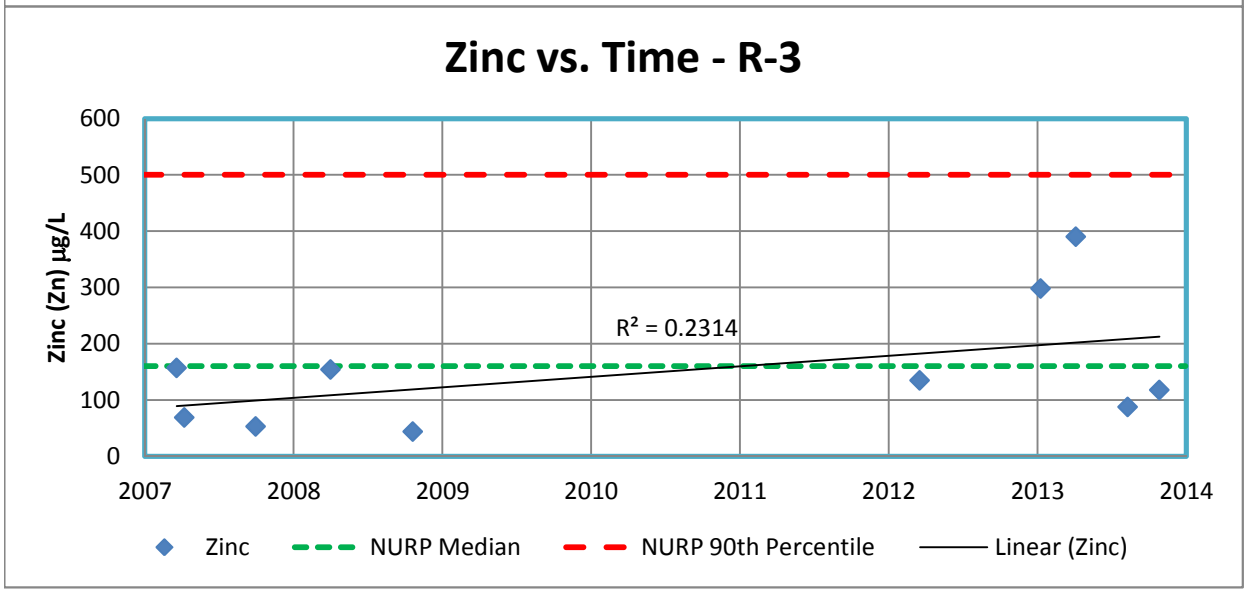

Total Suspended Solids (TSS) vs Time - R-3
Total Suspended Solids (TSS) mg/L
2500
2000
1500
1000
500
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.2783

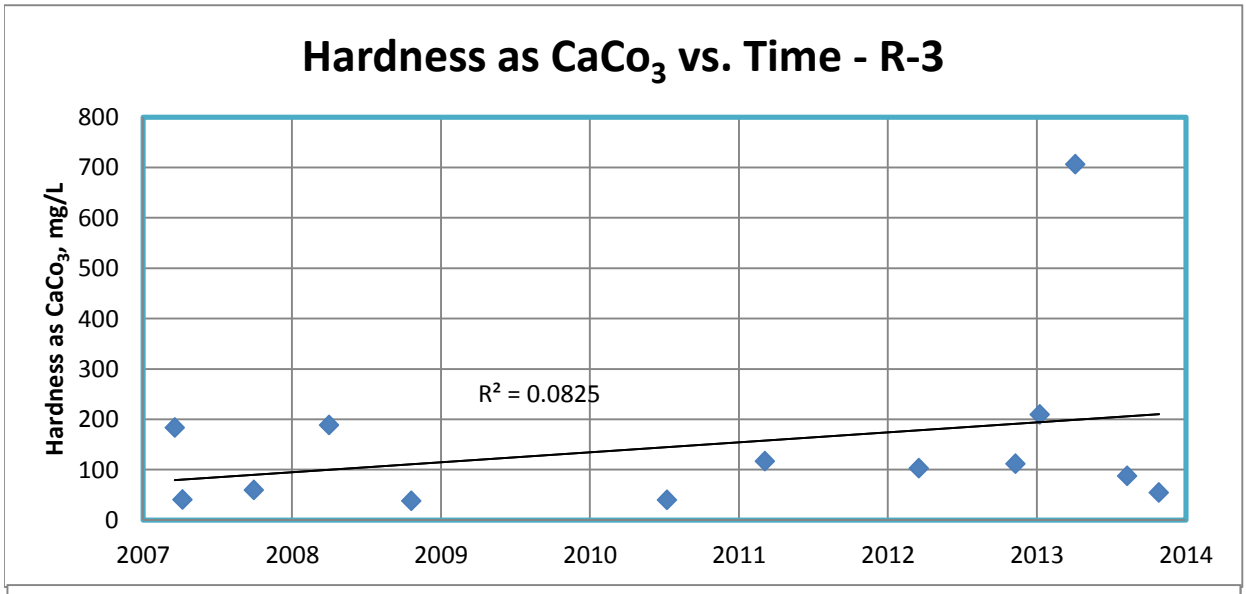

E. Coli vs. Time - R-3
E. Coli, col/100 mL
350000
300000
250000
200000
150000
100000
50000
0
2007
2008
2009
2010
2011
2012
2013
2014
E Coli
NURP Median Warm Season
NURP Median Cold Season
Linear (E Coli)
R² = 0.2435

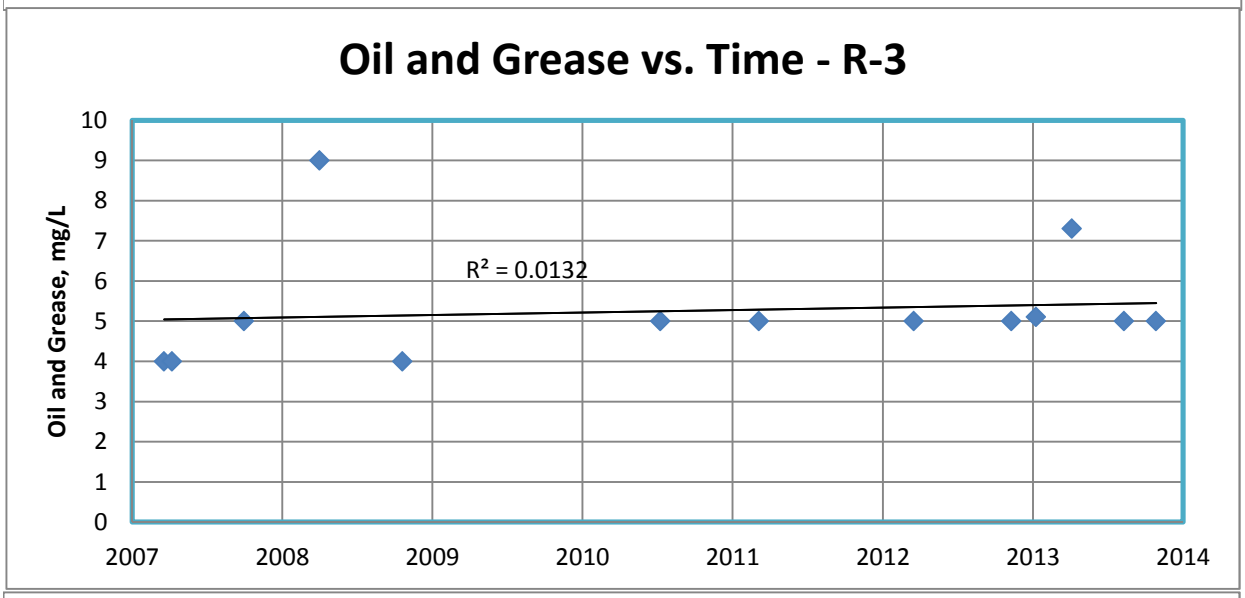

Cadmium vs. Time - R-3
Cadmium, (Cd) µg/L
6
5
4
3
2
1
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = #N/A

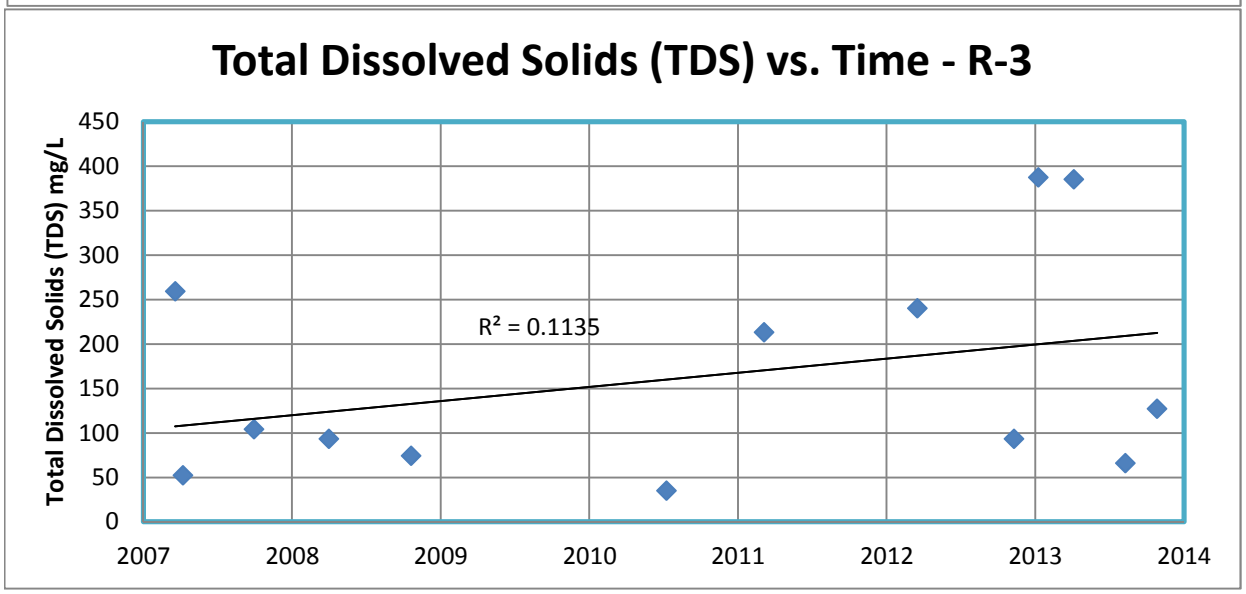

Copper vs. Time - R-3
Copper (Cu) µg/L
100
80
60
40
20
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.3942
Copper
NURP Median
NURP 90th Percentile
Linear (Copper)

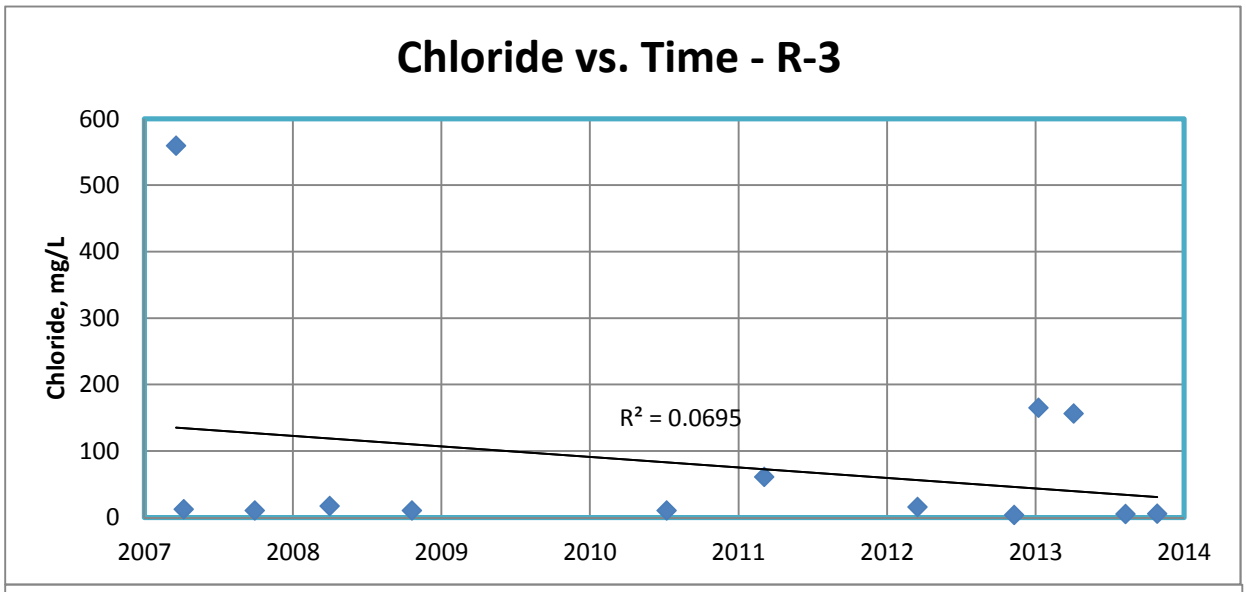

Lead vs. Time - R3
Lead (Pb) µg/L
400
350
300
250
200
150
100
50
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.0326
Lead
NURP Median
NURP 90th Percentile
Linear (Lead)

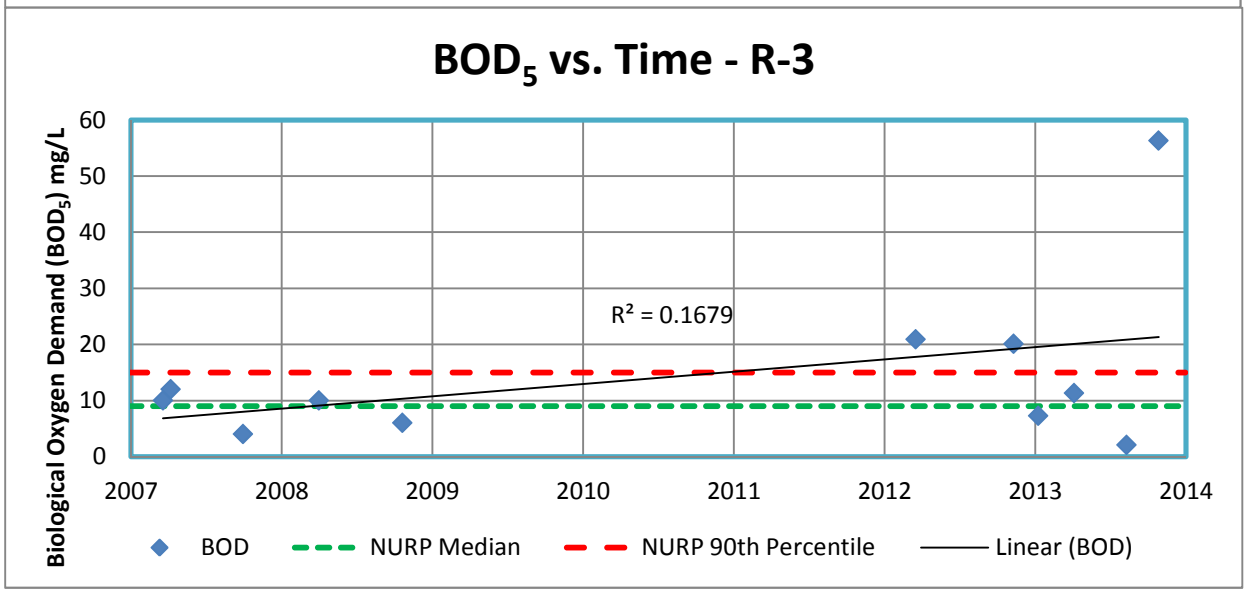

Zinc vs. Time - R-3
Zinc (Zn) µg/L
600
500
400
300
200
100
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.2314
Zinc
NURP Median
NURP 90th Percentile
Linear (Zinc)

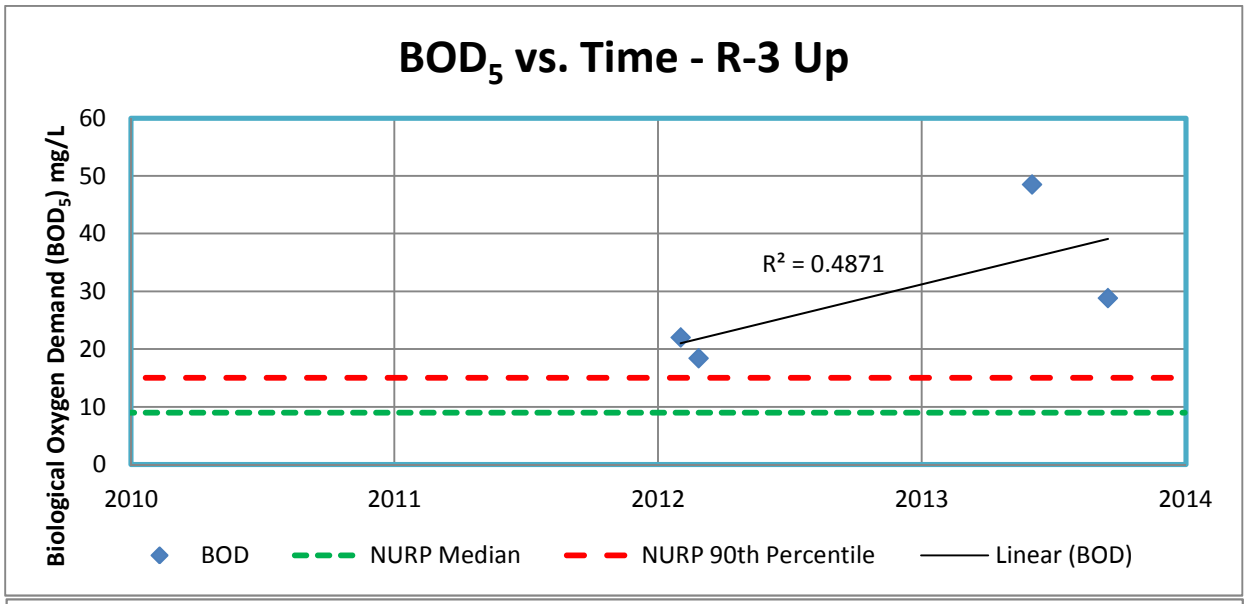

Hardness as CaCo3 vs. Time - R-3
Hardness as CaCo3, mg/L
800
700
600
500
400
300
200
100
0
R² = 0.0825
2007
2008
2009
2010
2011
2012
2013
2014

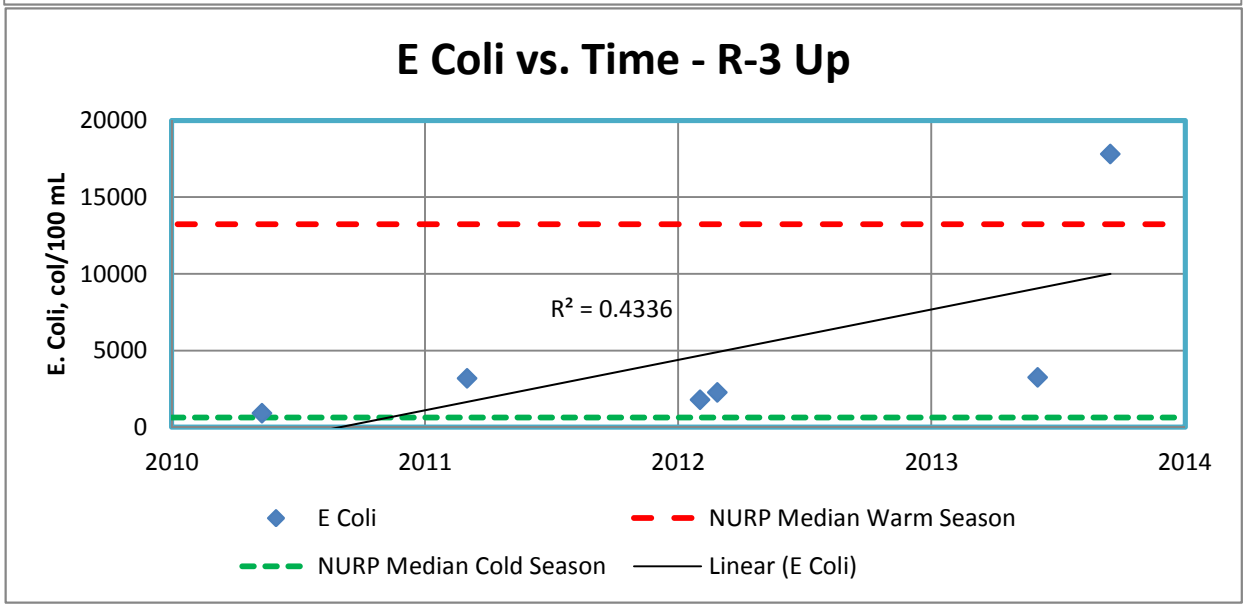

Oil and Grease vs. Time - R-3
Oil and Grease, mg/L
10
9
8
7
6
5
4
3
2
1
0
R² = 0.0132
2007
2008
2009
2010
2011
2012
2013
2014

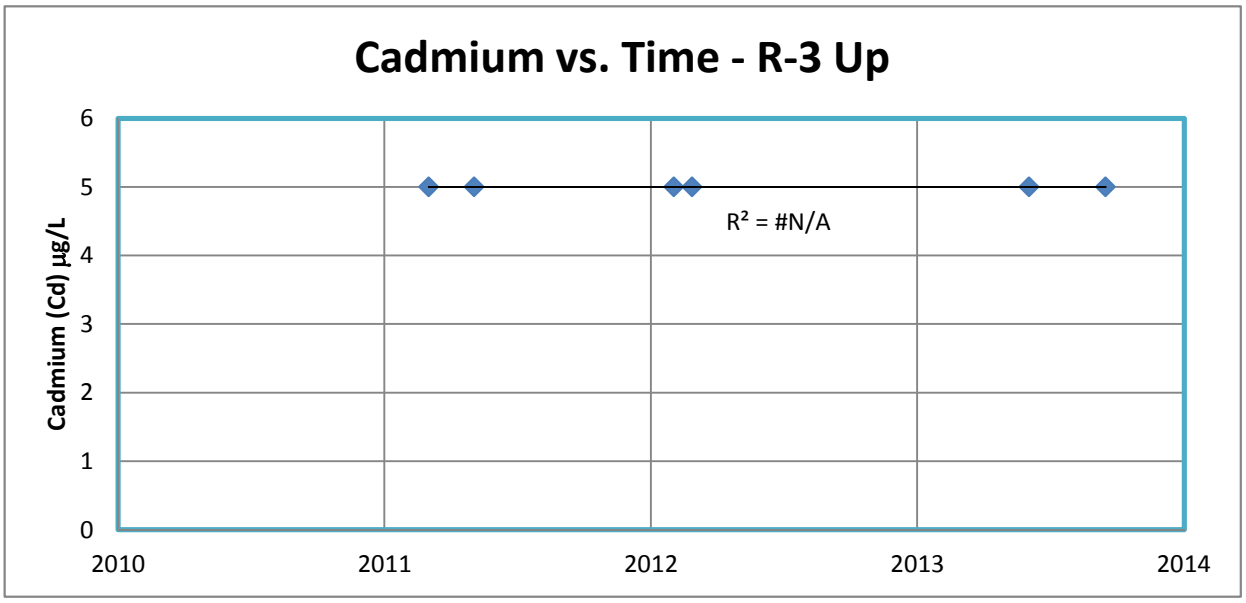

Total Dissolved Solids (TDS) vs. Time - R-3
Total Dissolved Solids (TDS) mg/L
450
400
350
300
250
200
150
100
50
0
R² = 0.1135
2007
2008
2009
2010
2011
2012
2013
2014

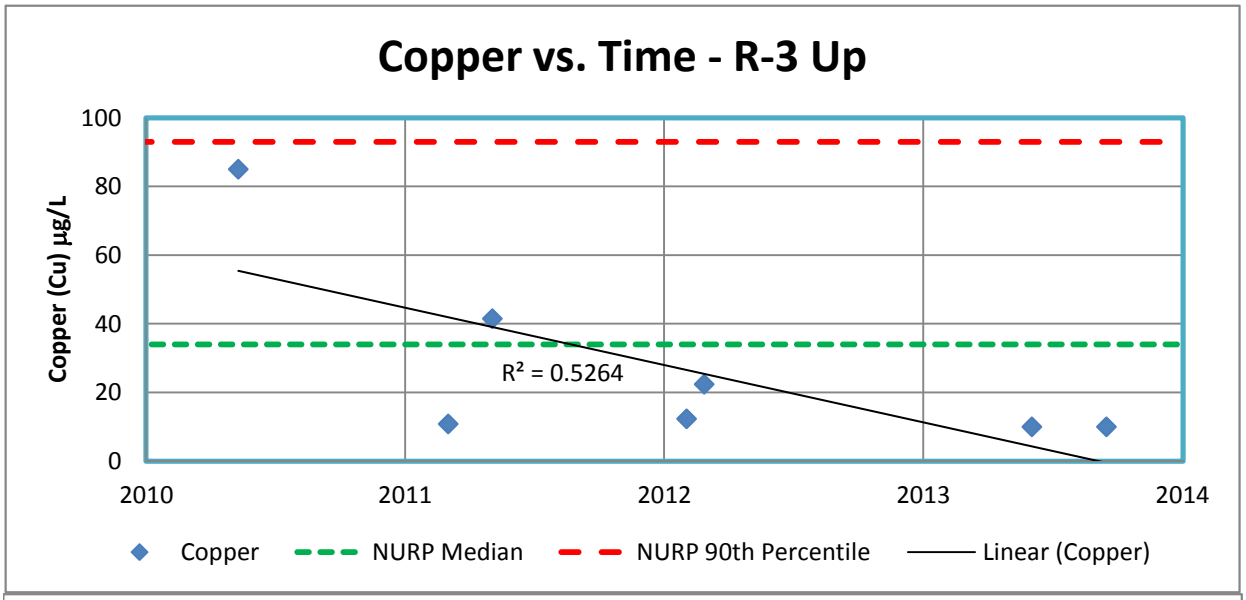

Chloride vs. Time - R-3
Chloride, mg/L
600
500
400
300
200
100
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.0695

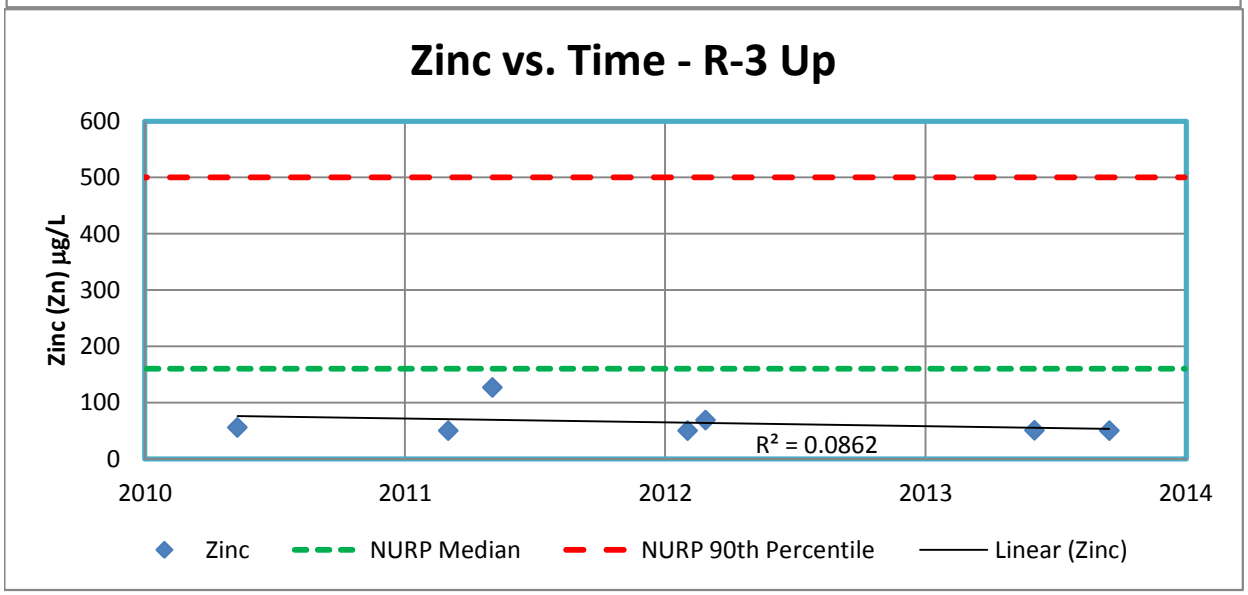

BOD5 vs. Time - R-3
Biological Oxygen Demand (BOD5) mg/L
60
50
40
30
20
10
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.1679
BOD
NURP Median
NURP 90th Percentile
Linear (BOD)

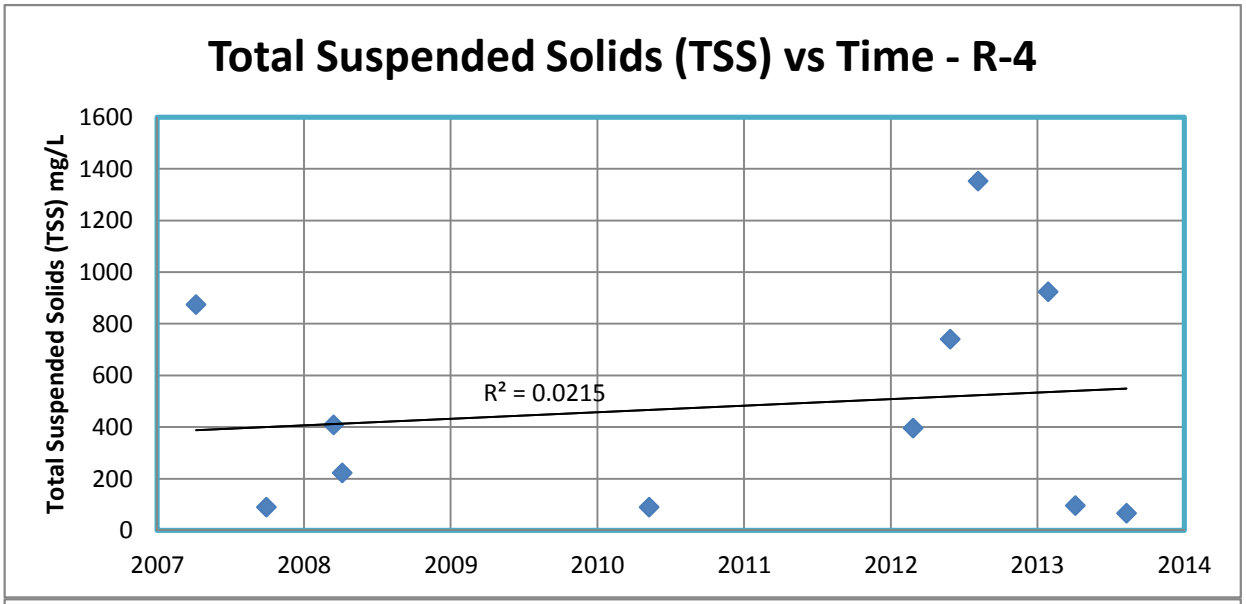

BOD5 vs. Time - R-3 Up
Biological Oxygen Demand (BOD5) mg/L
60
50
40
30
20
10
0
2010
2011
2012
2013
2014
R² = 0.4871
BOD
NURP Median
NURP 90th Percentile
Linear (BOD)

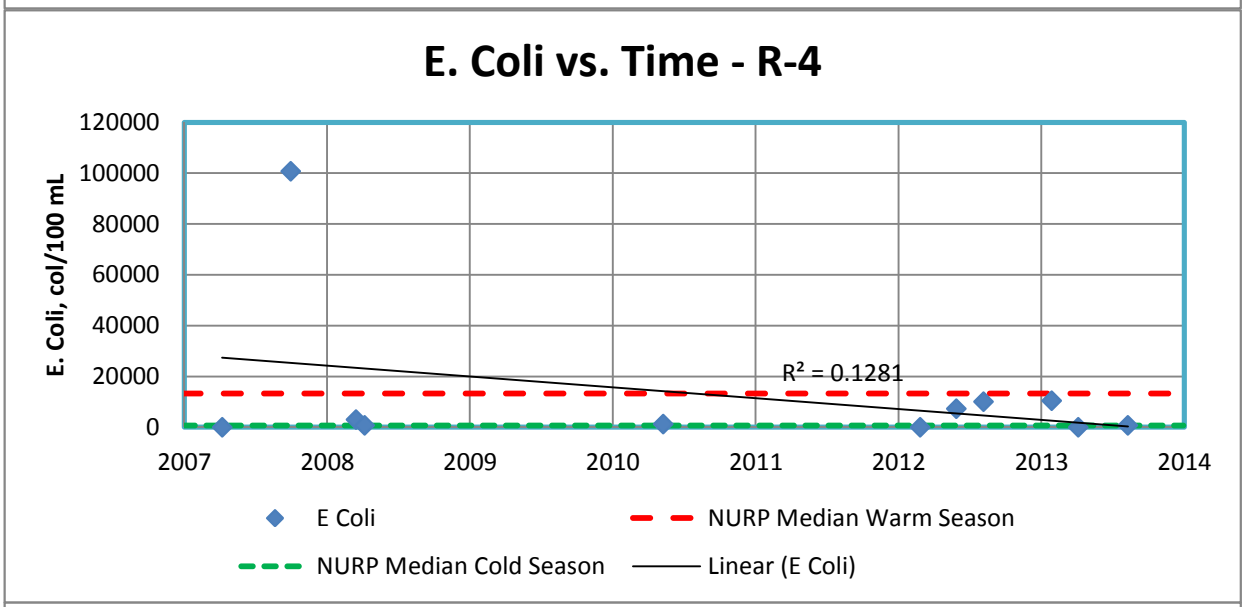

E Coli vs. Time - R-3 Up
E. Coli, col/100 mL
20000
15000
10000
5000
0
2010
2011
2012
2013
2014
R² = 0.4336
E Coli
NURP Median Warm Season
NURP Median Cold Season
Linear (E Coli)

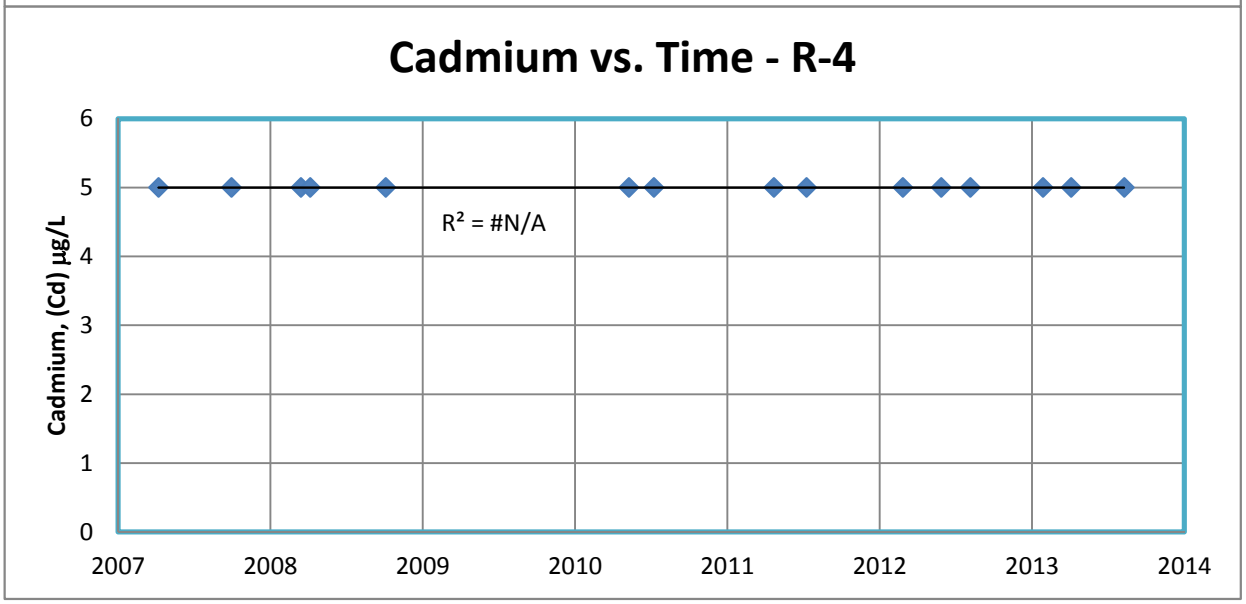

Cadmium vs. Time - R-3 Up
Cadmium (Cd) µg/L
6
5
4
3
2
1
0
2010
2011
2012
2013
2014
R² = #N/A

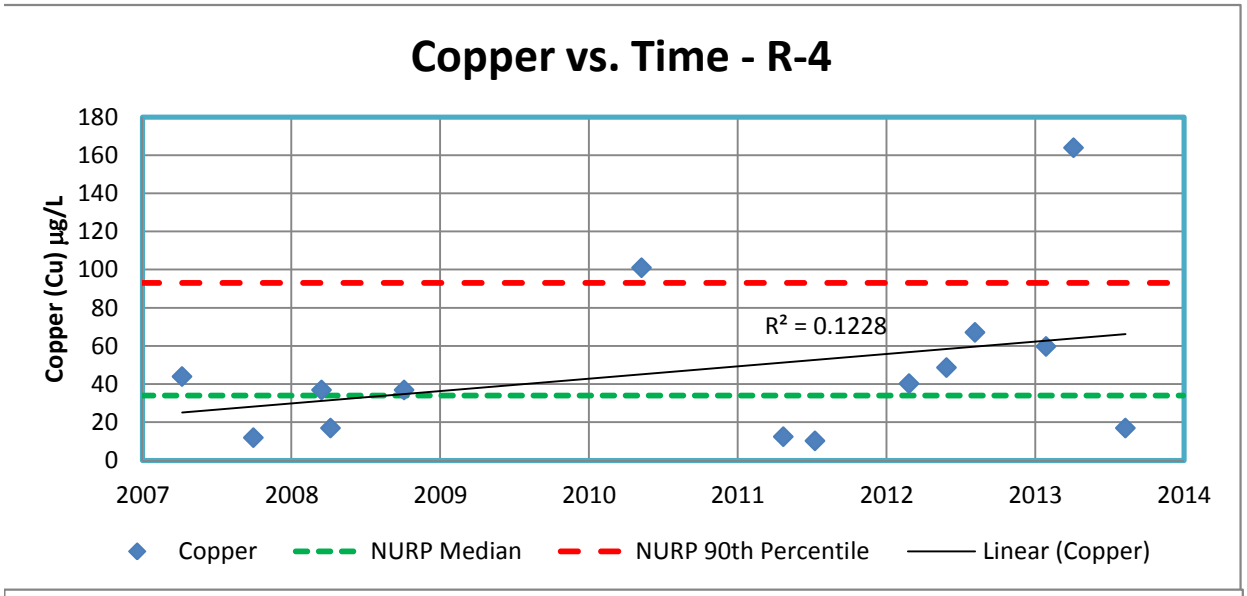

Copper vs. Time - R-3 Up
Copper (Cu) µg/L
100
80
60
40
20
0
2010
2011
2012
2013
2014
R² = 0.5264
Copper
NURP Median
NURP 90th Percentile
Linear (Copper)

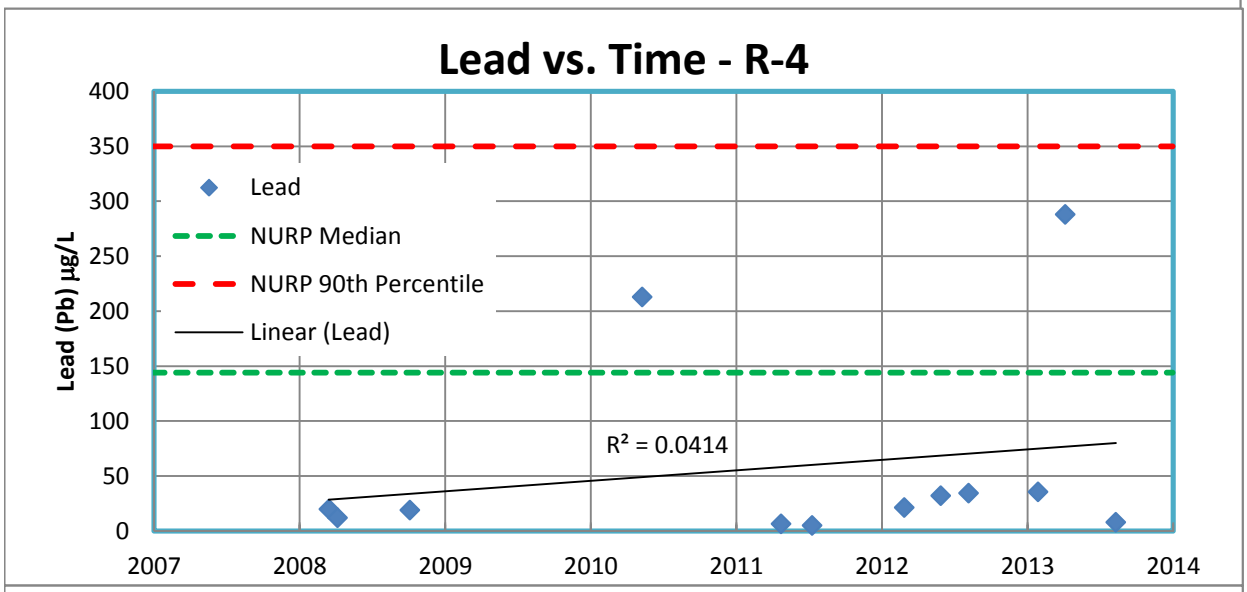

Zinc vs. Time - R-3 Up
Zinc (Zn) µg/L
600
500
400
300
200
100
0
2010
2011
2012
2013
2014
R² = 0.0862
Zinc
NURP Median
NURP 90th Percentile
Linear (Zinc)

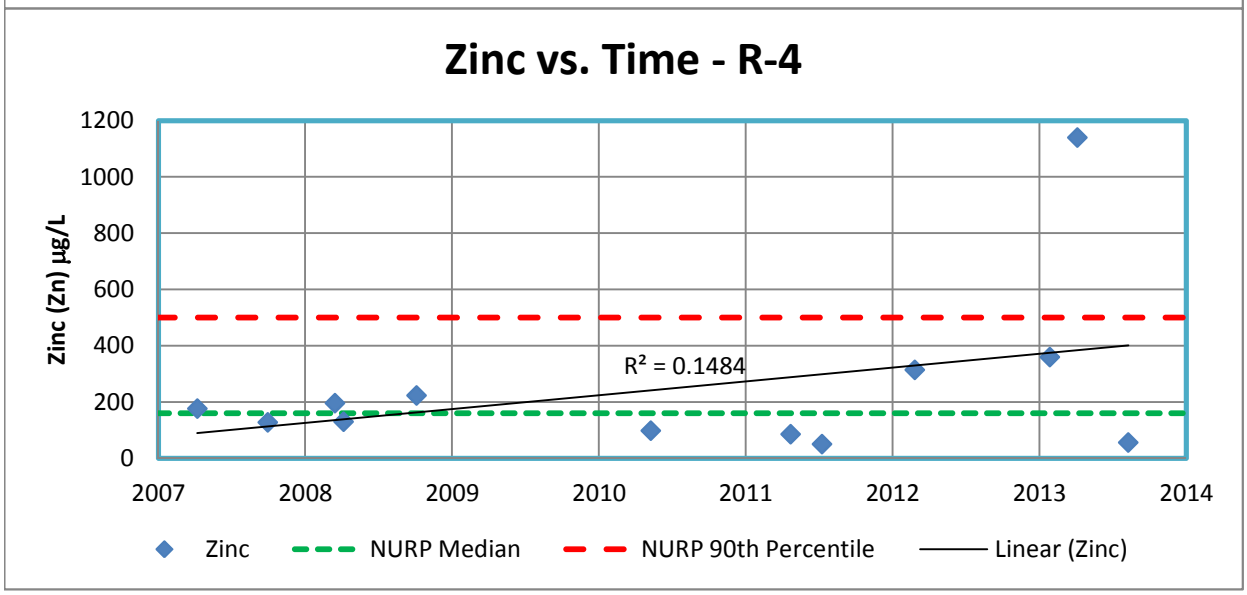

Total Suspended Solids (TSS) vs Time - R-4
Total Suspended Solids (TSS) mg/L
1600
1400
1200
1000
800
600
400
200
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.0215

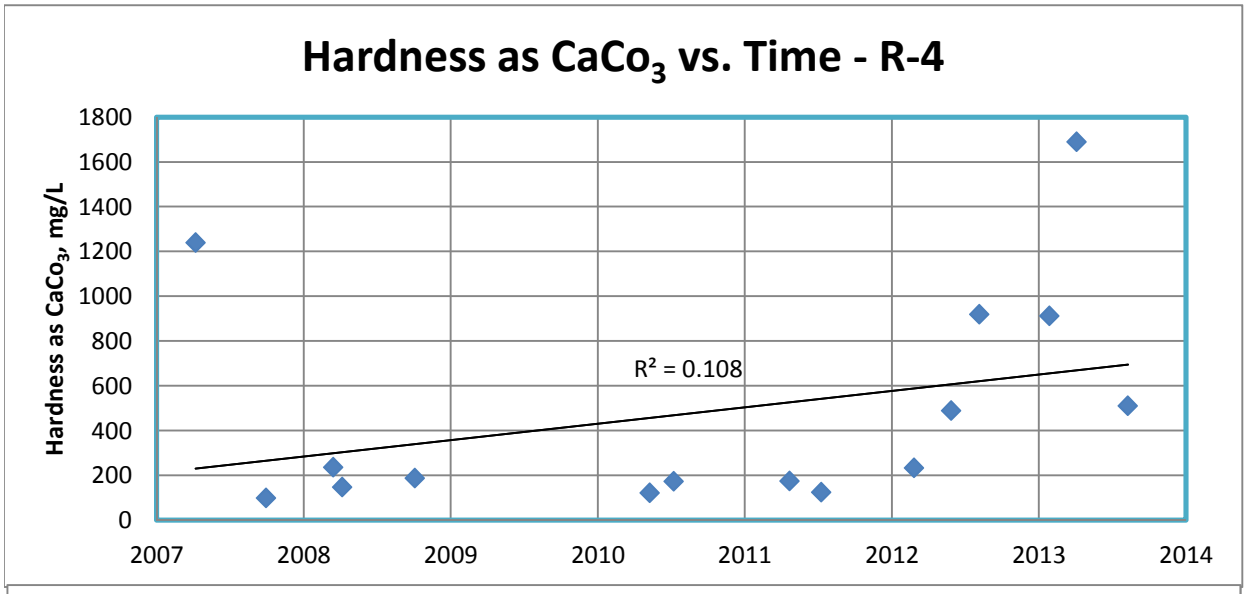

E. Coli vs. Time - R-4
E. Coli, col/100 mL
120000
100000
80000
60000
40000
20000
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.1281
E Coli
NURP Median Warm Season
NURP Median Cold Season
Linear (E Coli)

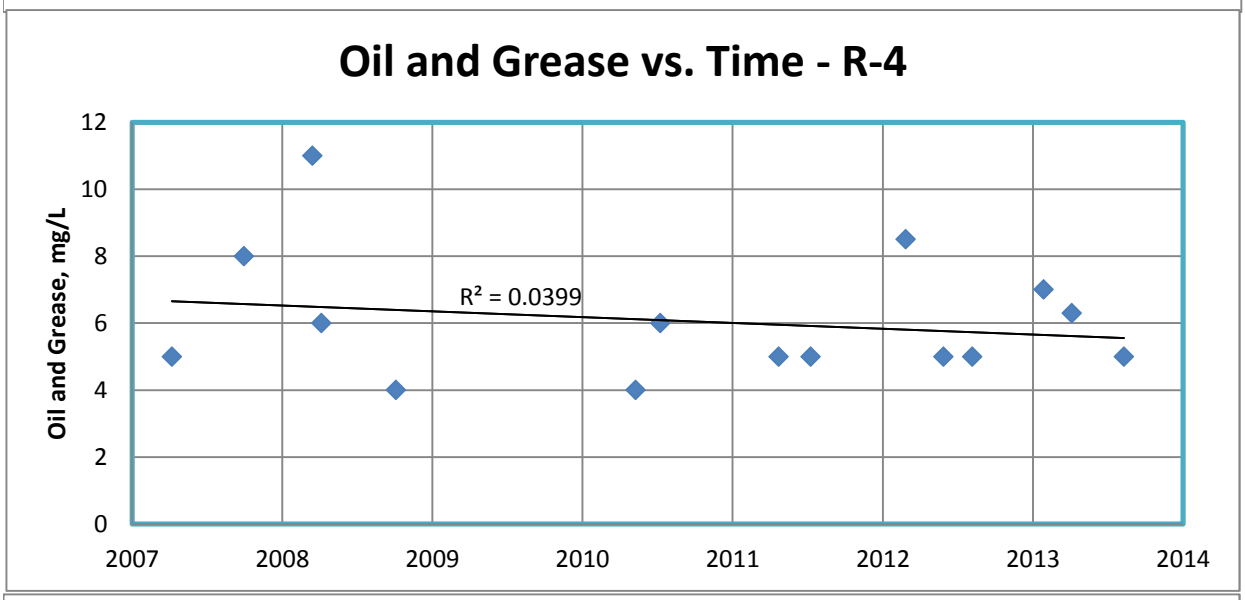

Cadmium vs. Time - R-4
Cadmium, (Cd) µg/L
6
5
4
3
2
1
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = #N/A

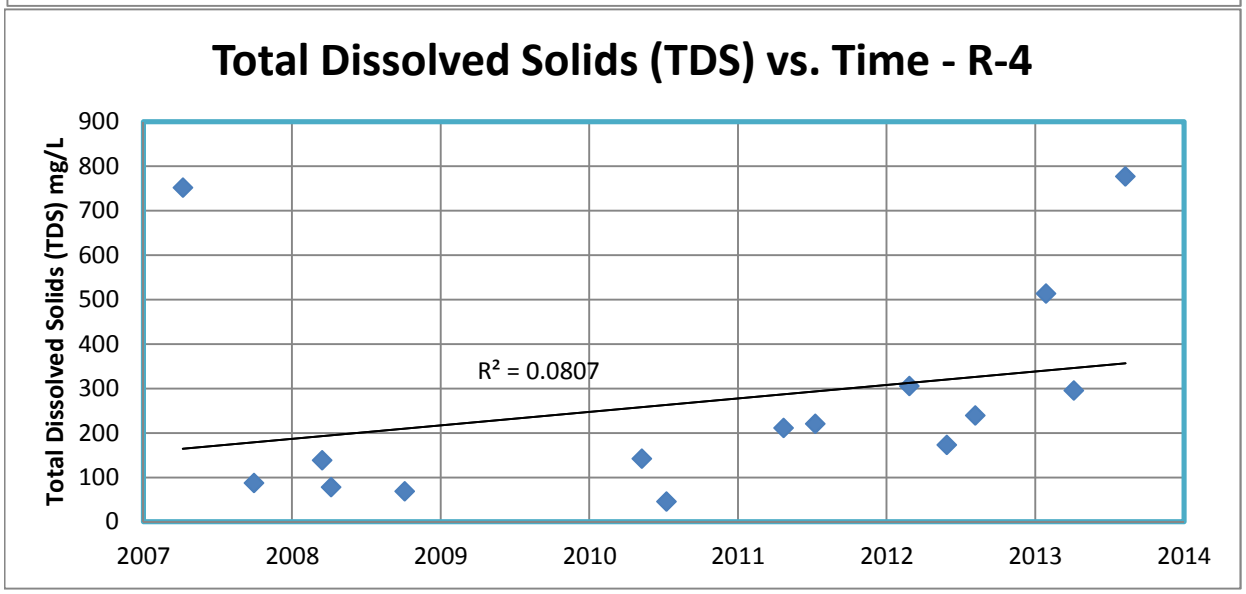

Copper vs. Time - R-4
Copper (Cu) µg/L
180
160
140
120
100
80
60
40
20
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.1228
Copper
NURP Median
NURP 90th Percentile
Linear (Copper)

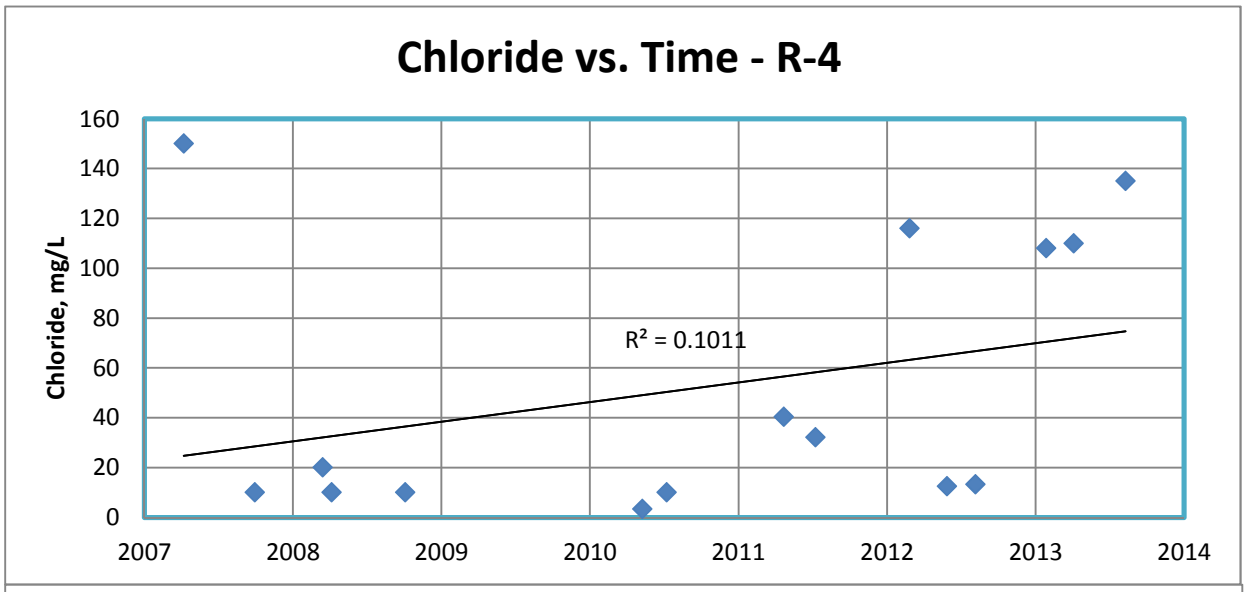

Lead vs. Time - R-4
Lead (Pb) µg/L
400
350
300
250
200
150
100
50
0
2007
2008
2009
2010
2011
2012
2013
2014
Lead
NURP Median
NURP 90th Percentile
Linear (Lead)
R² = 0.0414

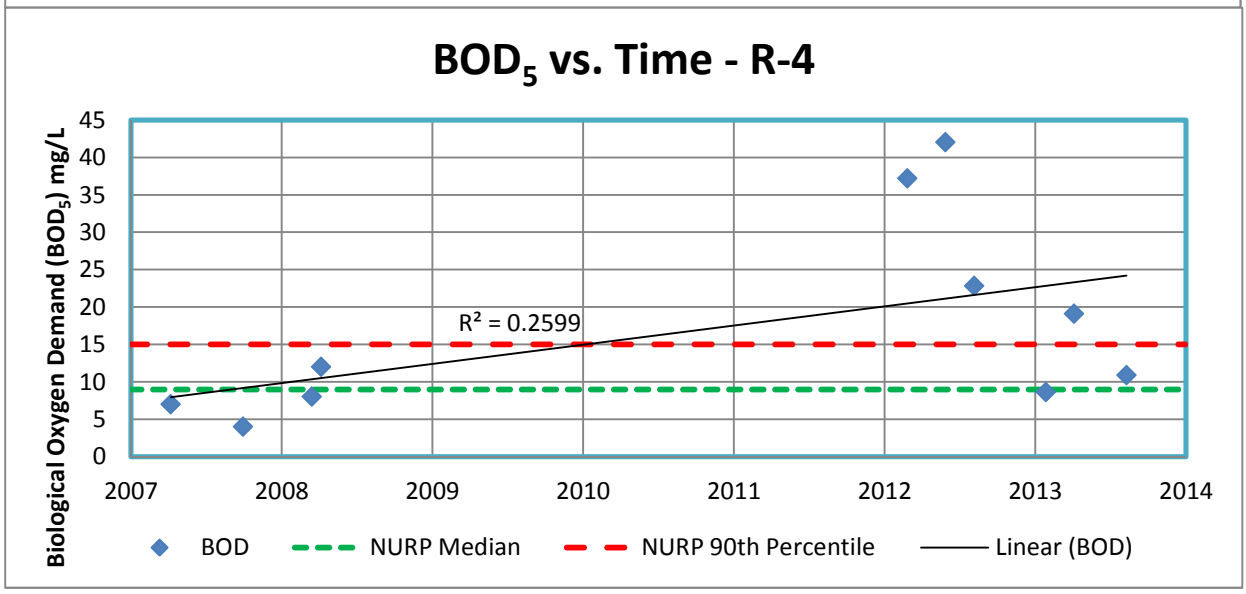

Zinc vs. Time - R-4
Zinc (Zn) µg/L
1200
1000
800
600
400
200
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.1484
Zinc
NURP Median
NURP 90th Percentile
Linear (Zinc)

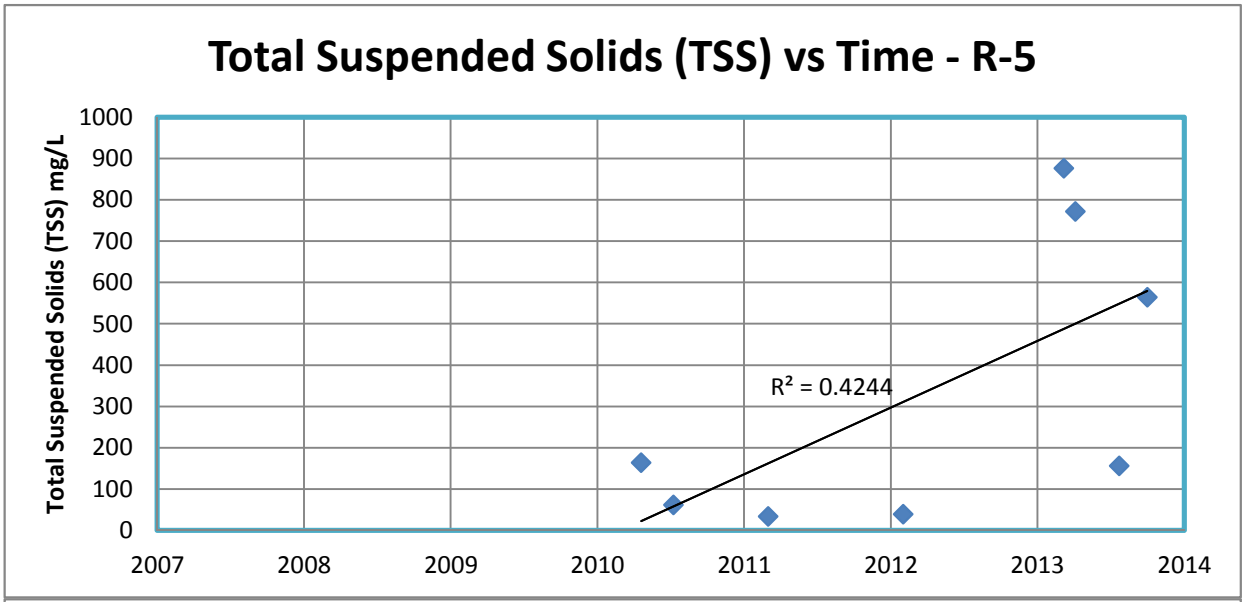

Hardness as CaCo3 vs. Time - R-4
Hardness as CaCo3, mg/L
1800
1600
1400
1200
1000
800
600
400
200
0
R² = 0.108
2007
2008
2009
2010
2011
2012
2013
2014

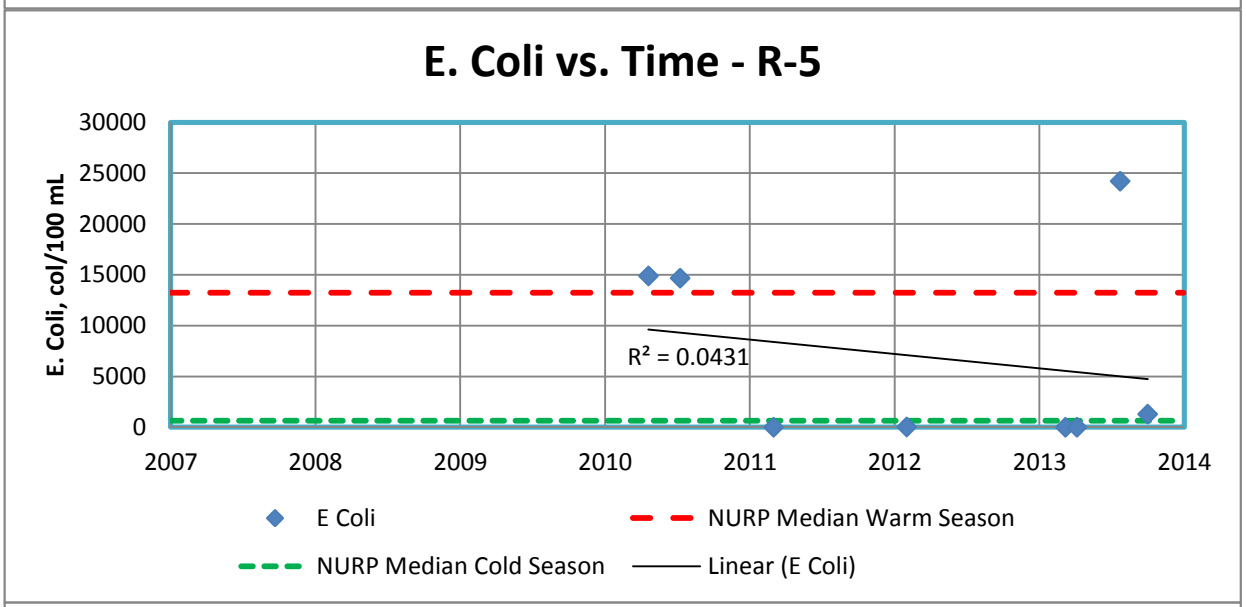

Oil and Grease vs. Time - R-4
Oil and Grease, mg/L
12
10
8
6
4
2
0
R² = 0.0399
2007
2008
2009
2010
2011
2012
2013
2014

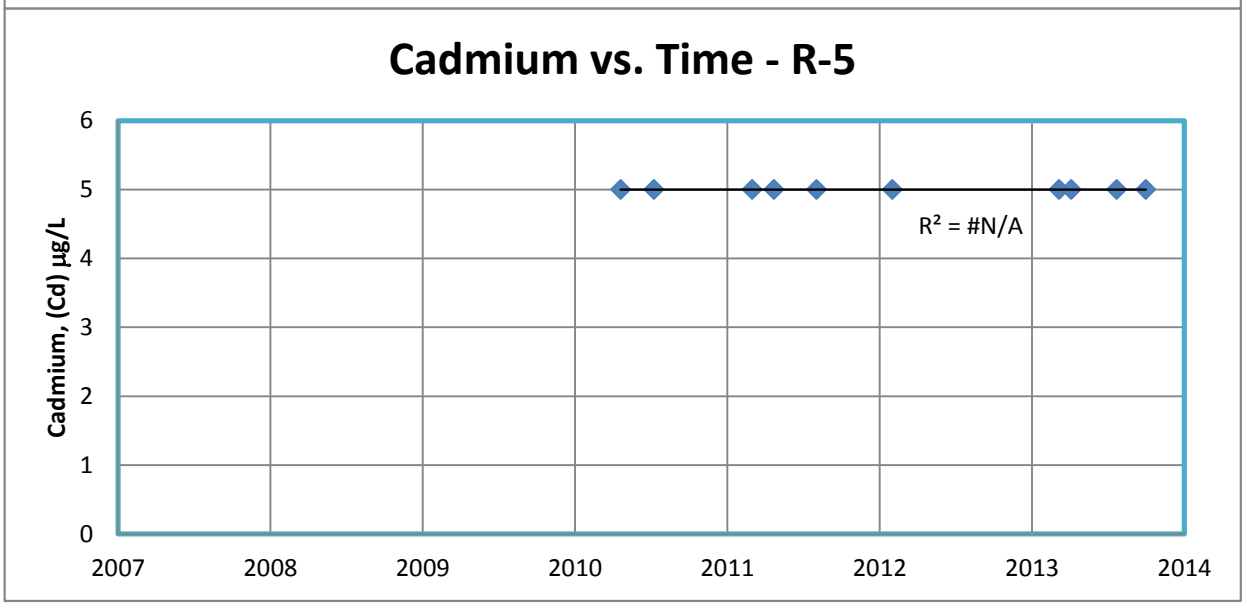

Total Dissolved Solids (TDS) vs. Time - R-4
Total Dissolved Solids (TDS) mg/L
900
800
700
600
500
400
300
200
100
0
R² = 0.0807
2007
2008
2009
2010
2011
2012
2013
2014

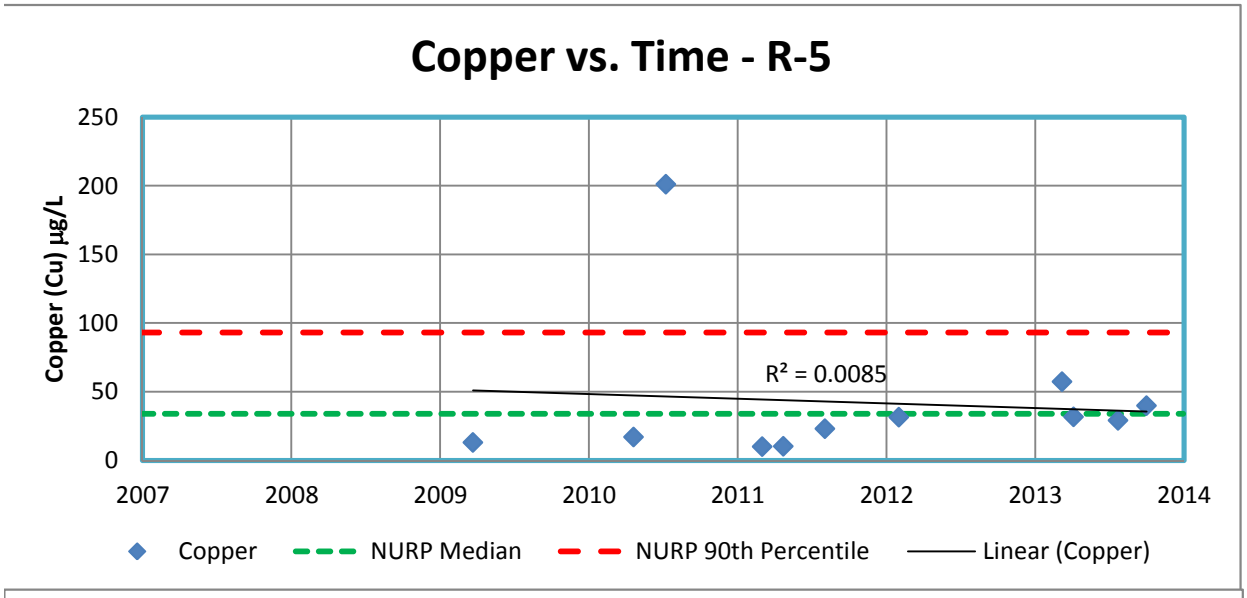

Chloride vs. Time - R-4
Chloride, mg/L
160
140
120
100
80
60
40
20
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.1011

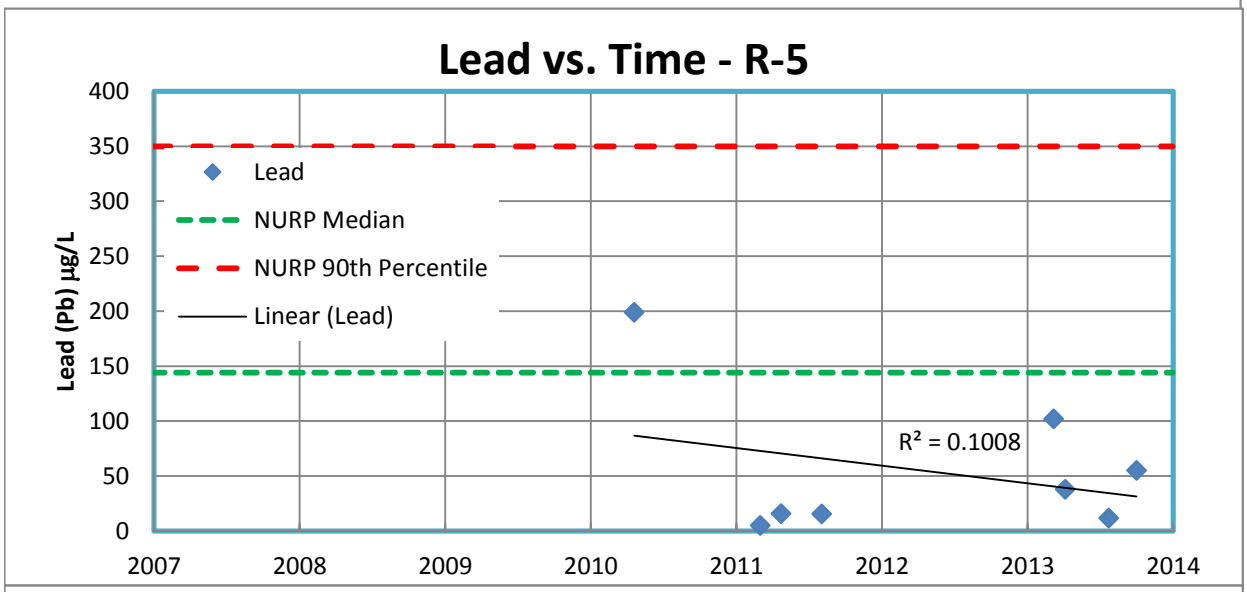

BOD5 vs. Time - R-4
Biological Oxygen Demand (BOD5) mg/L
45
40
35
30
25
20
15
10
5
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.2599
BOD
NURP Median
NURP 90th Percentile
Linear (BOD)

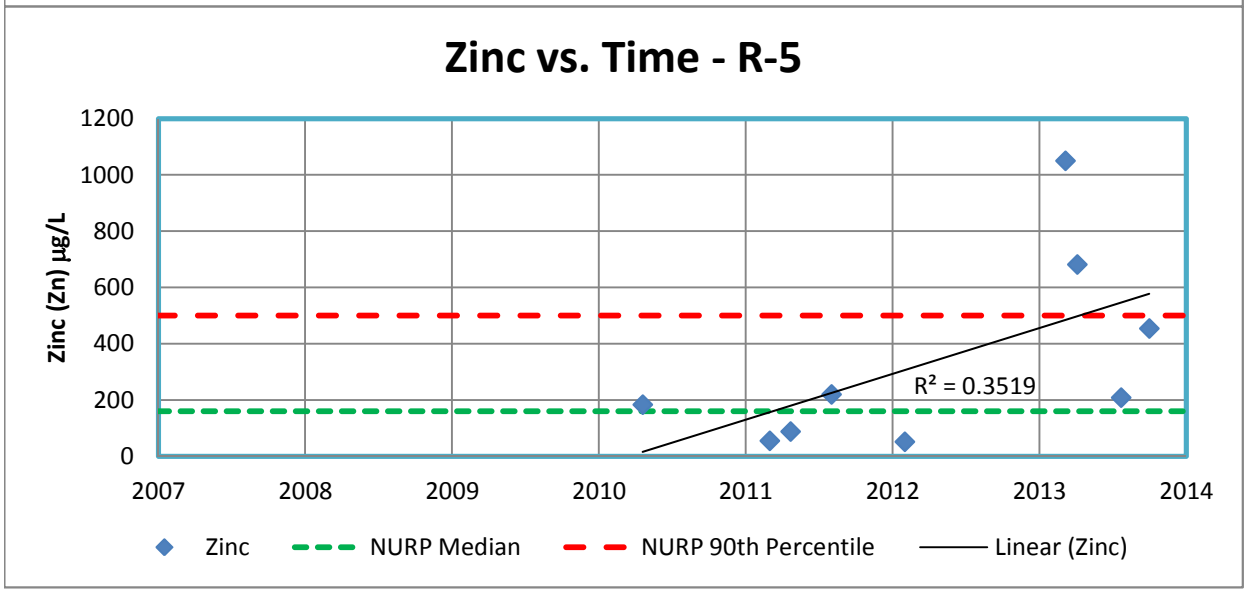

Total Suspended Solids (TSS) vs Time - R-5
Total Suspended Solids (TSS) mg/L
1000
900
800
700
600
500
400
300
200
100
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.4244

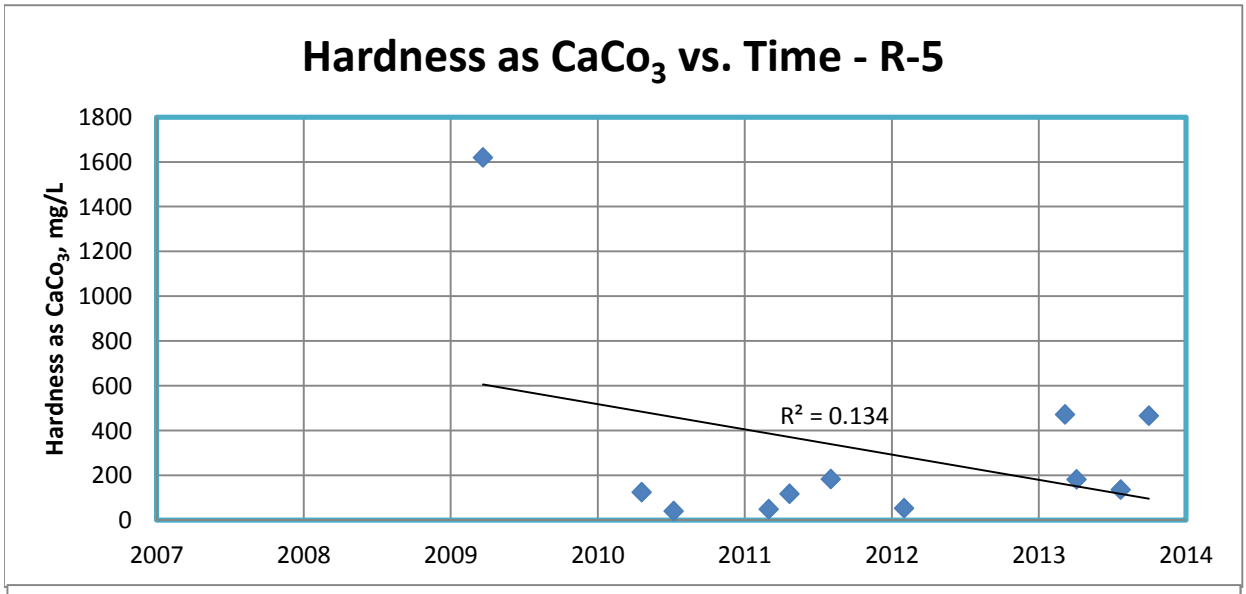

E. Coli vs. Time - R-5
E. Coli, col/100 mL
30000
25000
20000
15000
10000
5000
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.0431
E Coli
NURP Median Warm Season
NURP Median Cold Season
Linear (E Coli)

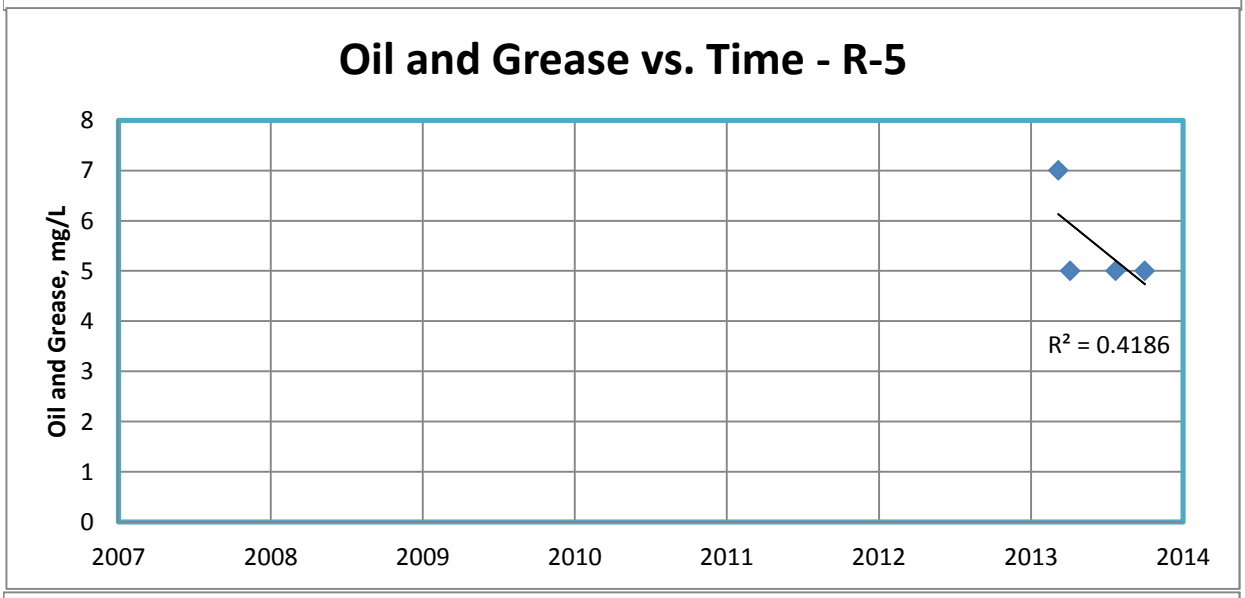

Cadmium vs. Time - R-5
Cadmium, (Cd) µg/L
6
5
4
3
2
1
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = #N/A

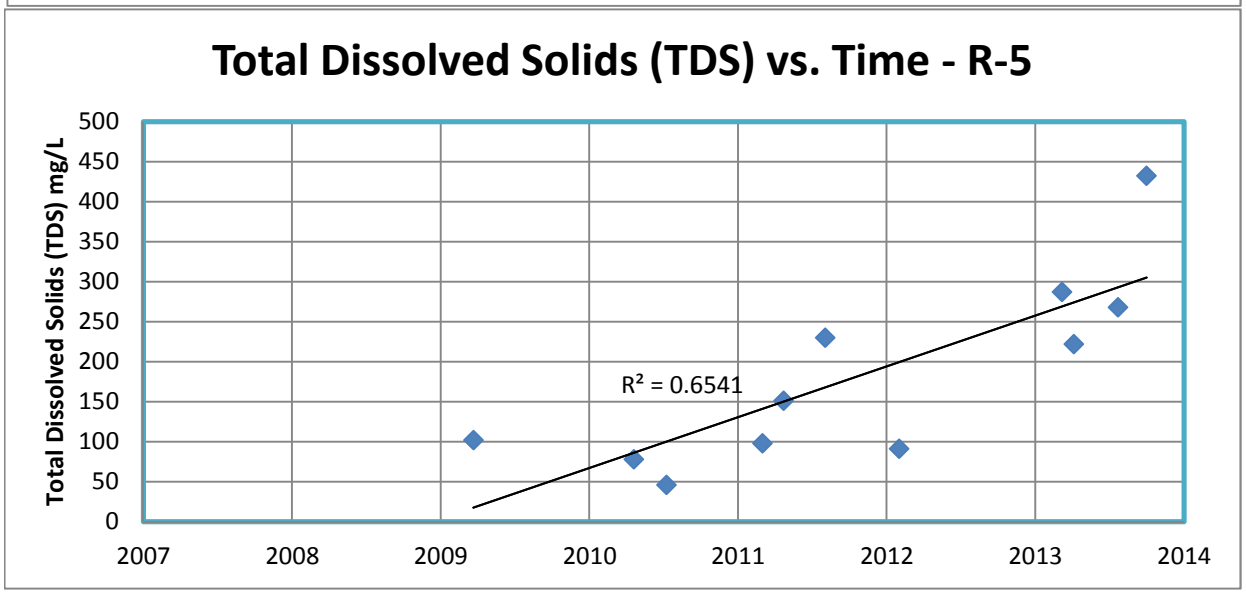

Copper vs. Time - R-5
Copper (Cu) µg/L
250
200
150
100
50
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.0085
Copper
NURP Median
NURP 90th Percentile
Linear (Copper)

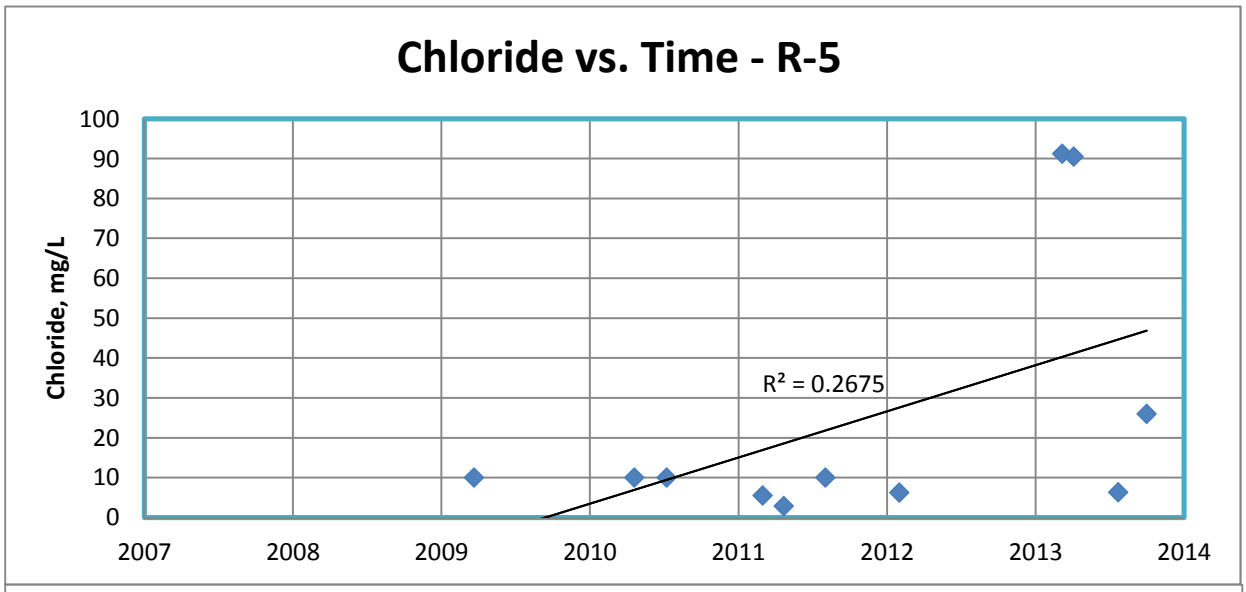

Lead vs. Time - R-5
Lead (Pb) µg/L
400
350
300
250
200
150
100
50
0
2007
2008
2009
2010
2011
2012
2013
2014
Lead
NURP Median
NURP 90th Percentile
Linear (Lead)
R² = 0.1008

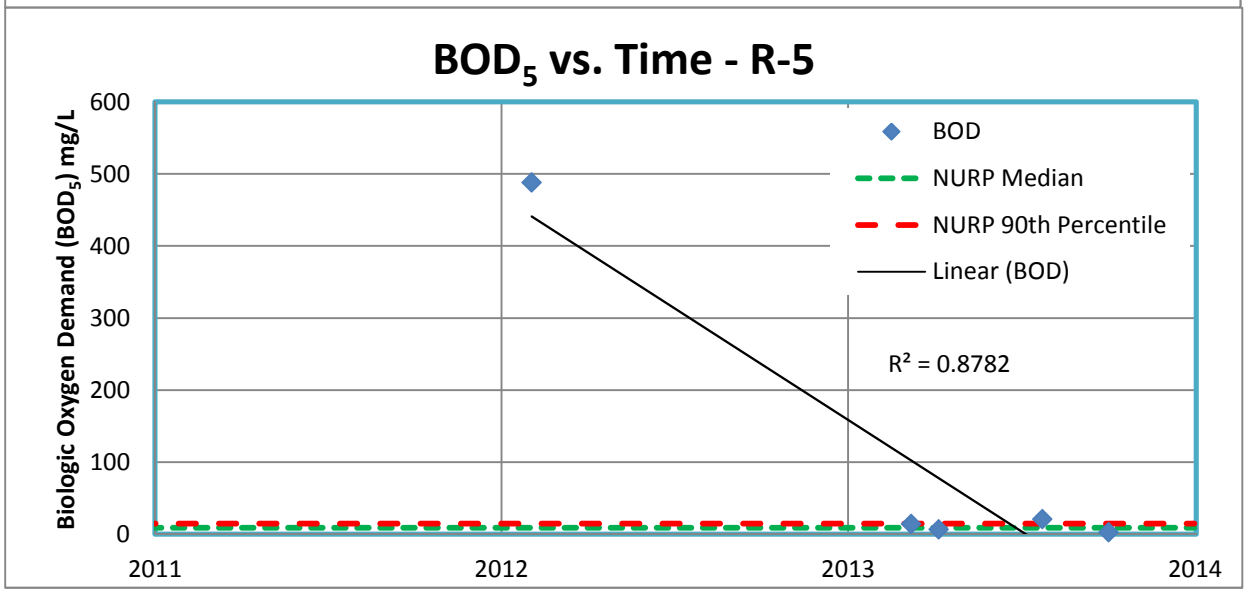

Zinc vs. Time - R-5
Zinc (Zn) µg/L
1200
1000
800
600
400
200
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.3519
Zinc
NURP Median
NURP 90th Percentile
Linear (Zinc)

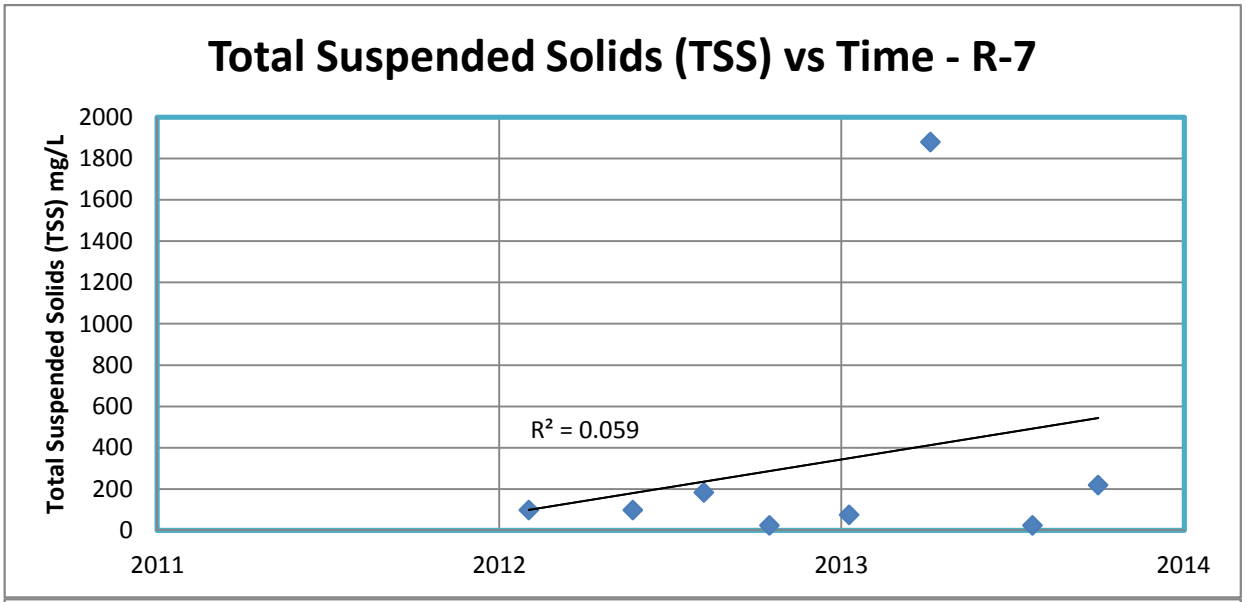

Hardness as CaCo3 vs. Time - R-5
Hardness as CaCo3, mg/L
1800
1600
1400
1200
1000
800
600
400
200
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.134

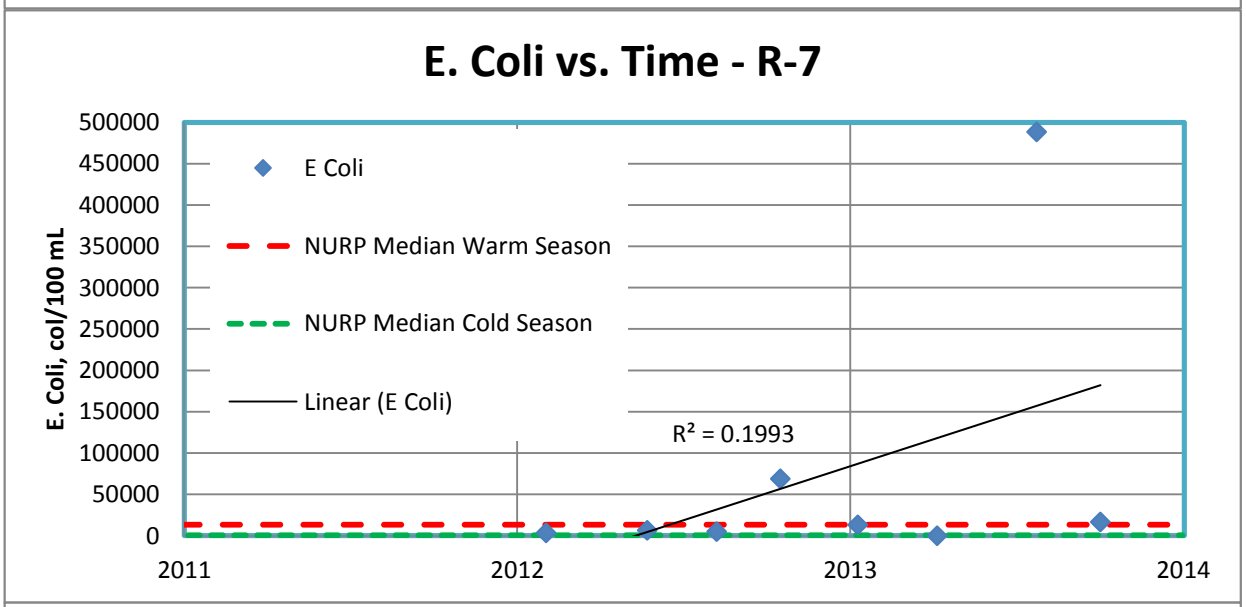

Oil and Grease vs. Time - R-5
Oil and Grease, mg/L
8
7
6
5
4
3
2
1
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.4186

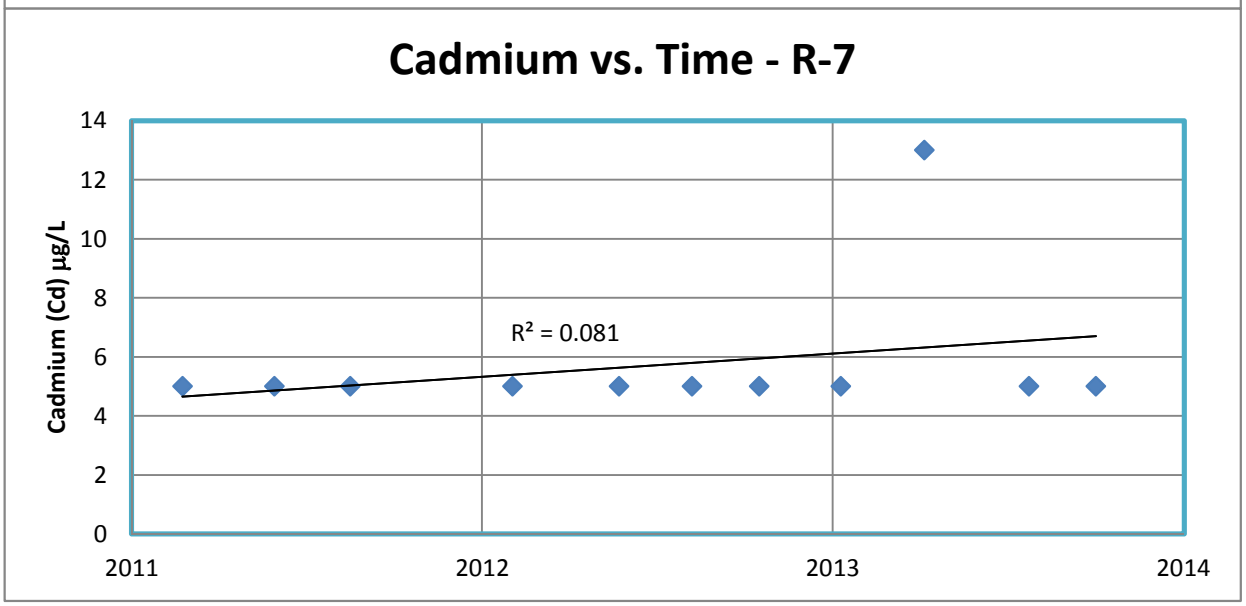

Total Dissolved Solids (TDS) vs. Time - R-5
Total Dissolved Solids (TDS) mg/L
500
450
400
350
300
250
200
150
100
50
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.6541

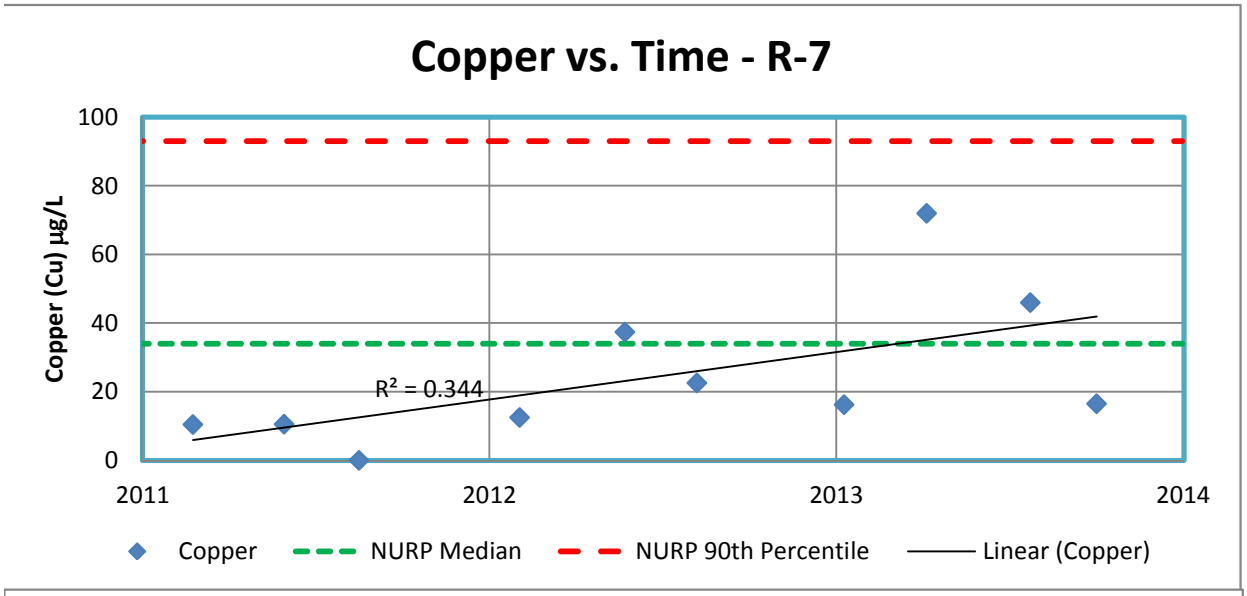

Chloride vs. Time - R-5
Chloride, mg/L
100
90
80
70
60
50
40
30
20
10
0
2007
2008
2009
2010
2011
2012
2013
2014
R² = 0.2675

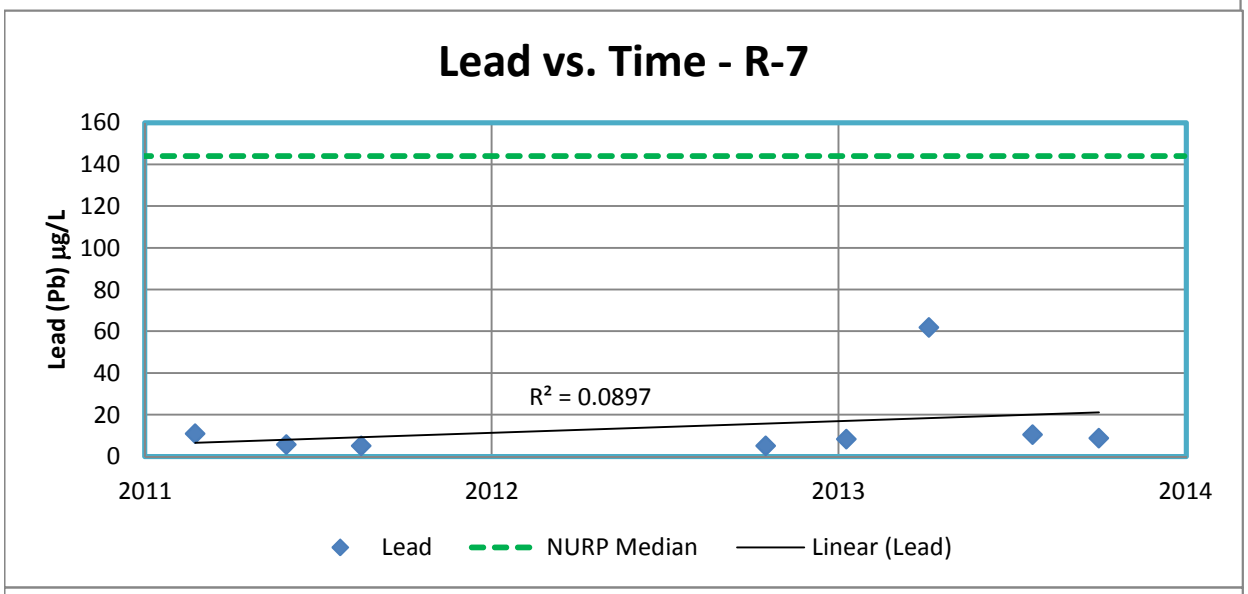

BOD5 vs. Time - R-5
Biologic Oxygen Demand (BOD5) mg/L
600
500
400
300
200
100
0
2011
2012
2013
2014
BOD
NURP Median
NURP 90th Percentile
Linear (BOD)
R² = 0.8782

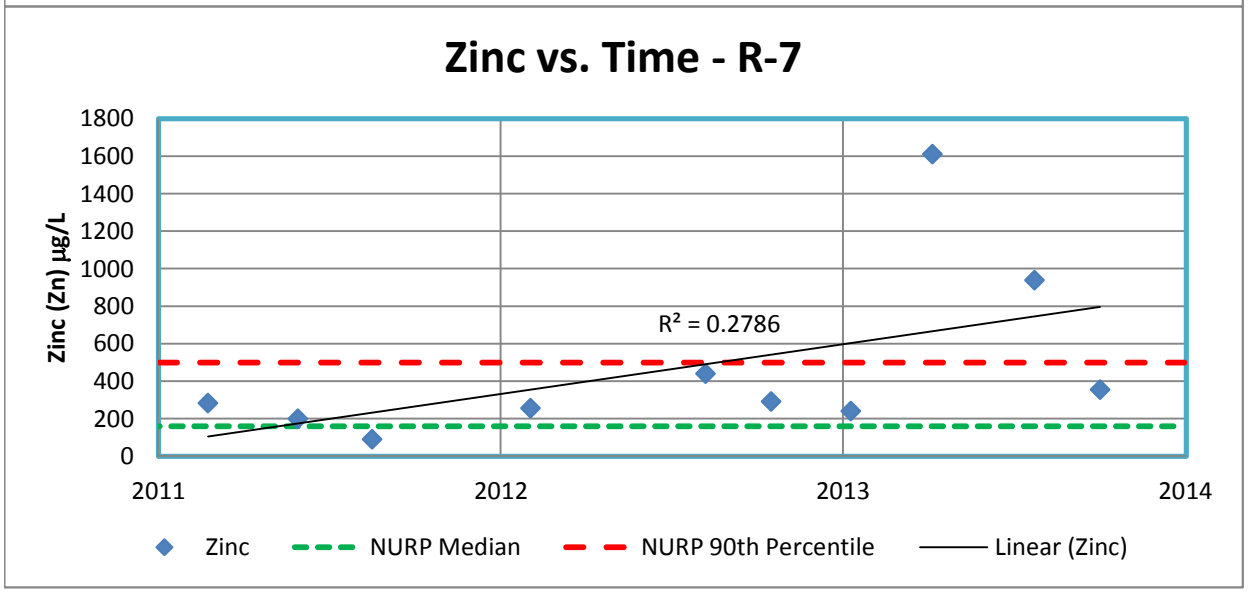

Total Suspended Solids (TSS) vs Time - R-7
Total Suspended Solids (TSS) mg/L
2000
1800
1600
1400
1200
1000
800
600
400
200
0
R² = 0.059
2011
2012
2013
2014

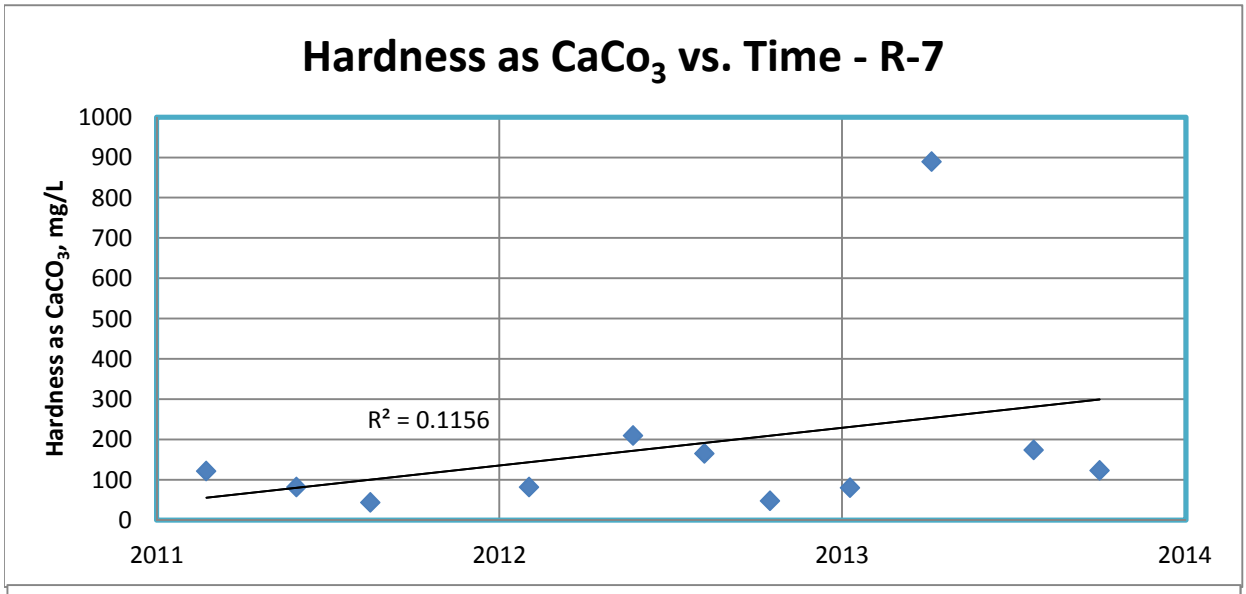

E. Coli vs. Time - R-7
E. Coli, col/100 mL
500000
450000
400000
350000
300000
250000
200000
150000
100000
50000
0
E Coli
NURP Median Warm Season
NURP Median Cold Season
Linear (E Coli)
R² = 0.1993
2011
2012
2013
2014

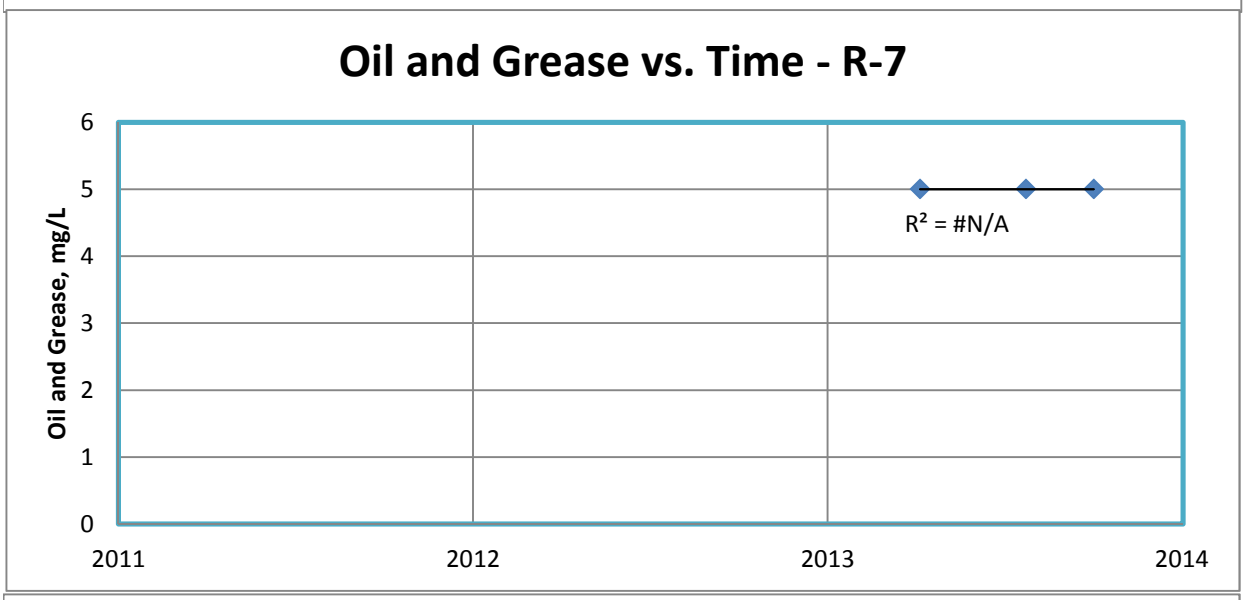

Cadmium vs. Time - R-7
Cadmium (Cd) µg/L
14
12
10
8
6
4
2
0
R² = 0.081
2011
2012
2013
2014

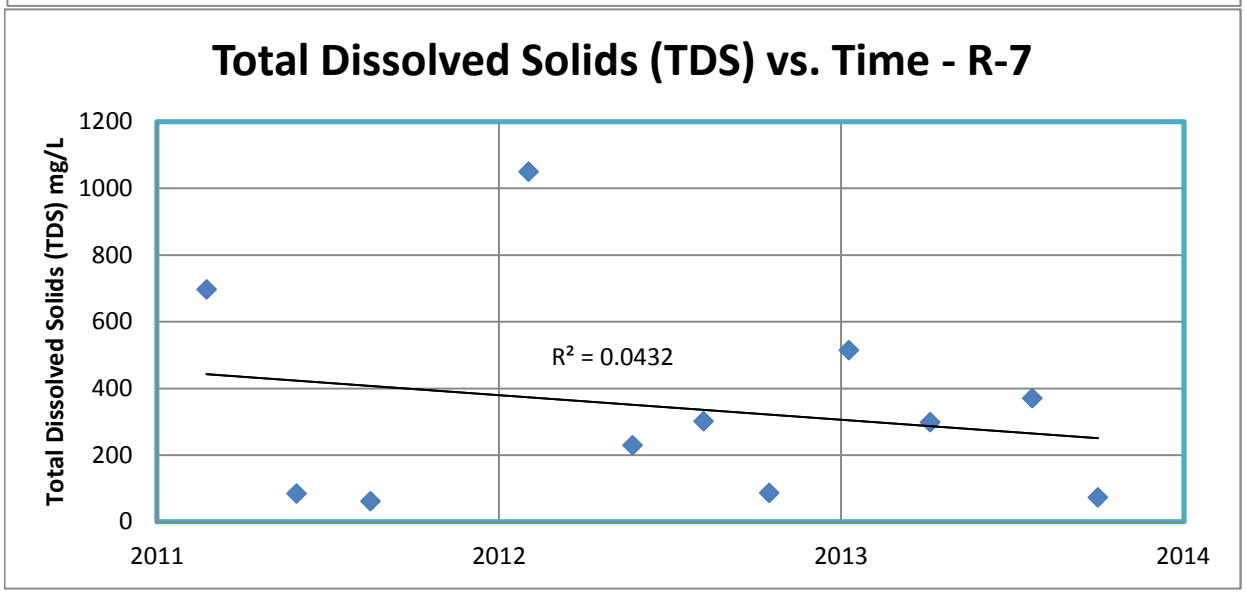

Copper vs. Time - R-7
Copper (Cu) µg/L
100
80
60
40
20
0
2011
2012
2013
2014
R² = 0.344
Copper
NURP Median
NURP 90th Percentile
Linear (Copper)

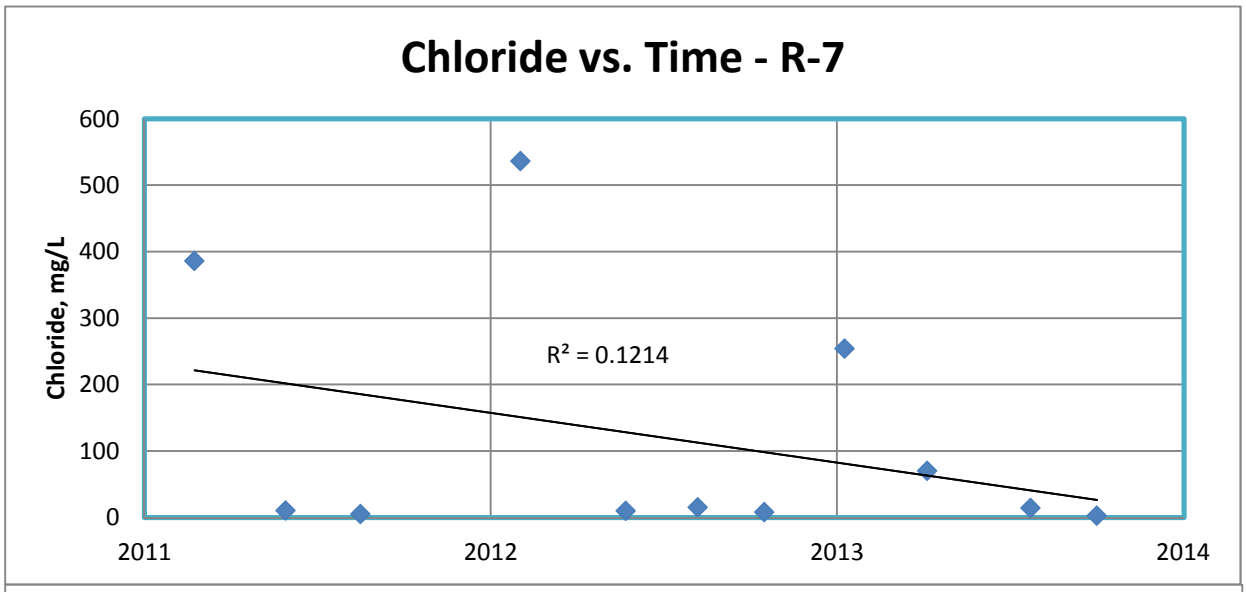

Lead vs. Time - R-7
Lead (Pb) µg/L
160
140
120
100
80
60
40
20
0
2011
2012
2013
2014
R² = 0.0897
Lead
NURP Median
Linear (Lead)

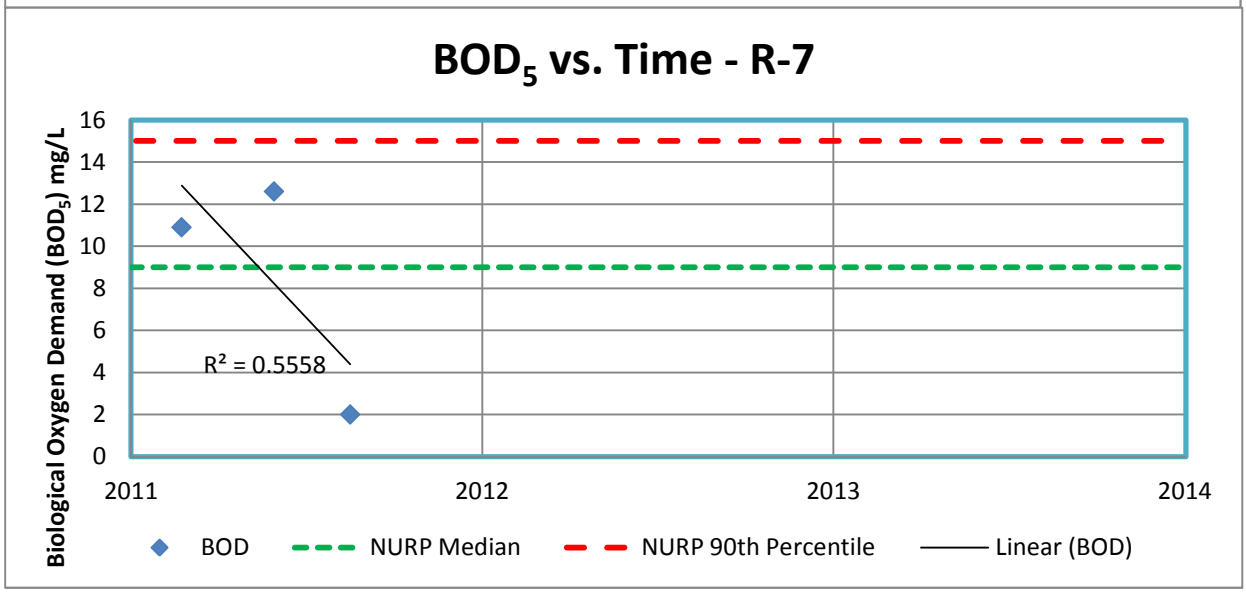

Zinc vs. Time - R-7
Zinc (Zn) µg/L
1800
1600
1400
1200
1000
800
600
400
200
0
2011
2012
2013
2014
R² = 0.2786
Zinc
NURP Median
NURP 90th Percentile
Linear (Zinc)


Hardness as CaCo3 vs. Time - R-7
Hardness as CaCO3, mg/L
1000
900
800
700
600
500
400
300
200
100
0
R² = 0.1156
2011
2012
2013
2014


Oil and Grease vs. Time - R-7
Oil and Grease, mg/L
6
5
4
3
2
1
0
R² = #N/A
2011
2012
2013
2014


Total Dissolved Solids (TDS) vs. Time - R-7
Total Dissolved Solids (TDS) mg/L
1200
1000
800
600
400
200
0
R² = 0.0432
2011
2012
2013
2014


Chloride vs. Time - R-7
Chloride, mg/L
600
500
400
300
200
100
0
2011
2012
2013
2014
R² = 0.1214


BOD5 vs. Time - R-7
Biological Oxygen Demand (BOD5) mg/L
16
14
12
10
8
6
4
2
0
2011
2012
2013
2014
R² = 0.5558
BOD
NURP Median
NURP 90th Percentile
Linear (BOD)

APPENDIX C – UPDATED STANDARD OPERATING PROCEDURES

ENGINEERING DIVISION STANDARD OPERATING PROCEDURE

Title: Industrial Activity Stormwater Runoff Management - Plan Review

SOP Identification No: SWMP-17 BMP No: 7.A.1

Revision Date: March 18, 2013 Approved Date: _____

PURPOSE:

To provide criteria for conducting industrial site stormwater runoff control plan reviews in the MS4 service area.

NOTE:

The UG does not have an established industrial runoff management program as it is not a current permit requirement to-date. The UG, however, does monitor those sites which are part of the sanitary sewerage pre-treatment program. Since the UG's jurisdiction includes industrial areas that are within the combined sewer system area (outside of the regulated MS4 service area), compliance with these pre-treatment requirements has had a positive effect on stormwater quality during rainfall events that trigger combined sewer overflows. The procedures included herein document current UG procedures for industrial facilities pursuant to UG's pre-treatment program. This SOP will be updated subsequent to the reissuance of the UG's MS4 permit.

CONTACT:

Engineering Supervisor, Urban Planning and Land Use	Telephone No. (913) 573-5723
Development Support Specialist, Urban Planning and Land Use	Telephone No. (913) 573-8664
Environmental Compliance Superintendent	Telephone No. (913) 573-1313
Industrial Pretreatment Inspector	Telephone No. (913) 573-1300

PROCEDURES:

1. When the owner of a property in the MS4 service area applies for authorization to develop the site for industrial use, Unified Government Planning Department staff will review the construction and site plans consistent with the procedures outlined in SOP ID No. SWMP-01, entitled "Construction Site Stormwater Runoff Plan Review." In addition, Planning Department staff will forward a copy of the following to the Environmental Compliance Superintendent:

   a. The Application for Industrial Discharge Permit and any associated site plans.

2. Planning Department staff shall review the submitted site plans in accordance with the Unified Government's Land Disturbance & Erosion Control Guidelines, its stormwater design criteria and the *APWA/MARC BMP Manual (2009), Appendix B – Pollution Controls for "Hot Spots"*.

3. The Environmental Compliance Superintendent shall review the application materials (Application for Industrial Discharge Permit and site plans) and shall assign an Industrial Discharge Permit number only if the industry should be covered by the UG's pre-treatment program. At the Environmental Compliance Superintendent's discretion, the Environmental

Compliance Superintendent or designee may contact the owner of the industrial site to schedule an on-site review of the plans and/or an interview with the management of the facility.

4. Based upon information sent by KDHE regarding new or reissued industrial stormwater permits, the Environmental Compliance Superintendent shall request a copy of a State-issued stormwater permit for runoff from industrial activities either from the permittee or the State for any site that has been assigned a UG Industrial Discharge Permit number (i.e., sites covered by the UG's pre-treatment program).

5. If a copy of the State-issued permit is received, the Environmental Compliance Superintendent will place the copy into the site's Industrial Discharge Permit file, and will notify the appropriate Industrial Pretreatment Inspector that the site is covered by a State-issued industrial stormwater permit. If a copy of the State-issued stormwater permit is not received from the permittee upon request, the Environmental Compliance Superintendent will contact KDHE to notify the agency that the permittee has not supplied the requested permit and to request a copy.

6. Sites covered by an Industrial Discharge Permit will be inspected on the schedule established by the Environmental Compliance Superintendent.

APPLICABLE REFERENCE INFORMATION:

1. SOP ID No. SWMP-01 – *Construction Site Stormwater Runoff Plan Review*.

2. *APWA/MARC BMP Manual (2009), Appendix B – Pollution Controls for "Hot Spots"*.

APPLICABLE FORMS:

1. Unified Government's *Application for Industrial Discharge Permit*.

2. Unified Government's *Development Application*.

3. Unified Government's *Stormwater Plan Intake Review Checklist*.

ENGINEERING DIVISION STANDARD OPERATING PROCEDURE

Title: Industrial Activity Stormwater Runoff Management - Inspection

SOP Identification No: SWMP-18 BMP No: 7.A.2

Revision Date: March 18, 2013 Approved Date: _____

PURPOSE:

To provide criteria for inspecting industrial sites in the MS4 service area.

NOTE:

The UG does not have an established industrial runoff management program as it is not a current permit requirement to-date. The UG, however, does monitor those sites which are part of the sanitary sewerage pre-treatment program. Since the UG's jurisdiction includes industrial areas that are within the combined sewer system area (outside of the regulated MS4 service area), compliance with these pre-treatment requirements has had a positive effect on stormwater quality during rainfall events that trigger combined sewer overflows. The procedures included herein document current UG procedures for industrial facilities pursuant to UG's pre-treatment program. This SOP will be updated subsequent to the reissuance of the UG's MS4 permit.

CONTACT:

Environmental Compliance Superintendent	Telephone No. (913) 573-1313
Industrial Pretreatment Inspector	Telephone No. (913) 573-1300
Stormwater Engineer	Telephone No. (913) 573-5724

PROCEDURES:

1. Before inspecting an industrial facility permitted under the UG's pre-treatment program, the Industrial Pretreatment Inspector will review the Industrial Discharge Permit file and determine whether the facility's stormwater discharges are covered by a State-issued permit.
2. During the pre-treatment inspection of the plant, the Industrial Pretreatment Inspector will note any suspected illicit discharge into the UG's MS4 on the *Water Pollution Control Division Inspection Form*. At the Industrial Pretreatment Inspector's discretion, the Inspector may also note any concerns he or she has regarding maintenance of the industrial site as those matters relate to potential discharges into the UG's MS4 (for example, piles of trash not in a covered dumpster on site located in an area near the MS4 system).
3. The Industrial Pretreatment Inspector will then contact the Stormwater Engineer for further investigation and appropriate enforcement action if an illicit discharge is confirmed.
4. The Stormwater Engineer will follow the steps outlined in SOP ID No. SWMP-13 for illicit discharge source investigation/tracking.
5. Inspections of long-term operation and maintenance of BMPs on industrial sites will be conducted consistent with SOP ID No. SWMP-6 and 7.

6. All actions, follow-up procedures, and documentation will be tracked in a database.

APPLICABLE FORMS & INFORMATION:

1. Water Pollution Control's *Inspection Report Form*.
2. SOP ID No. SWMP-6 – *Post-Construction Stormwater Management Program - BMP Inspection*.
3. SOP ID No. SWMP-7 – *Post-Construction Stormwater Management Program - Enforcement Procedure*.
4. SOP ID No. SWMP 13 – *Illicit Discharge Detection and Elimination – Illicit Discharge Source Investigation and Tracking.*
5. SOP ID No. SWMP 17 – *Industrial Activity Stormwater Runoff Management - Plan Review.*

ENGINEERING DIVISION STANDARD OPERATING PROCEDURE

Title: Industrial Activity Stormwater Runoff Management - Enforcement Actions

SOP Identification No: SWMP-19 BMP No: 7.A.3

Revision Date: March 18, 2013 Approved Date: _____

PURPOSE:

To implement an enforcement program for stormwater management on Industrial Sites in the MS4 service area.

NOTE:

The UG does not have an established industrial runoff management program as it is not a current permit requirement to-date. The UG, however, does monitor those sites which are part of the sanitary sewerage pre-treatment program. Since the UG's jurisdiction includes industrial areas that are within the combined sewer system area (outside of the regulated MS4 service area), compliance with these pre-treatment requirements has had a positive effect on stormwater quality during rainfall events that trigger combined sewer overflows. The procedures included herein document current UG procedures for industrial facilities pursuant to UG's pre-treatment program. This SOP will be updated subsequent to the reissuance of the UG's MS4 permit.

CONTACT:

Environmental Compliance Superintendent	Telephone No. (913) 573-1313
Industrial Pretreatment Inspector	Telephone No. (913) 573-1300

PROCEDURES:

1. In the event any enforcement activity is required to address a confirmed illicit discharge from an industrial site, those actions shall be undertaken in accordance with SOP ID No. SWMP-14.
2. In the event any enforcement activity is required to address failure of an owner of a stormwater treatment facility on an industrial site to file necessary inspection reports, those actions shall be undertaken in accordance with SOP ID No. SWMP-07.
3. In addition, the UG will cross-reference the file created pursuant to SOP ID No. SWMP-17 to determine whether an industrial site with a confirmed illicit discharge is covered by a state-issued stormwater discharge permit.
4. If so, the Environmental Compliance Superintendent will notify KDHE in writing (mail, fax, e-mail) within 30 business days that the UG is pursuing enforcement with regard to a state-permitted industrial site. At the Environmental Compliance Superintendent's discretion, the Environmental Compliance Superintendent may also notify KDHE of any matters of concern noted on the Water Pollution Control Inspection Form by the Industrial Pretreatment Inspector pursuant to SOP ID No. SWMP-18, paragraph 2.

APPLICABLE FORMS AND REFERENCE INFORMATION:

1. SOP ID No. SWMP-07 – *Post-Construction Stormwater Management - Enforcement Procedure.*

2. SOP ID No. SWMP-14 – *Illicit Discharge Detection and Elimination – Illicit Discharge Enforcement.*

3. SOP ID No. SWMP-17 – *Industrial Activity Stormwater Runoff Management - Plan Review*.

4. SOP ID No. SWMP-18 – *Industrial Activity Stormwater Runoff Management - Inspection*.

APPENDIX D – APWA MANUAL OF PRACTICE

(The latest version of the APWA Manual of Practice adopted by the UG can be found on the UG's Public Works Website)