Stormwater Advisory Committee
Summary of Committee Activities & Recommendations

City of Lodi
Columbia County, Wisconsin

MSA Project No. 0800702

November 19, 2007

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Executive Summary

In September and October 2007, Mayor Paul Fisk convened a Stormwater Stakeholder Advisory committee comprised of residents, business owners, and representatives from the school district and a local environmental group to identify stormwater management priorities and explore the possible creation of a stormwater utility in the City of Lodi. The citizen committee (see Appendix 2) met four times with staff from MSA Professional Services, Inc., to learn more about stormwater issues, existing and potential stormwater management activities in the City of Lodi, and a stormwater utility as a possible financing tool for future activities relating to stormwater management. Throughout the process, committee members shared their experiences, opinions about what should be included under Lodi's municipal stormwater management program, and how these activities should be funded. This report provides an overview of the materials presented and discussed at the series of meetings, and general conclusions reached by the Stormwater Stakeholder Advisory committee.

Overview of Committee Meetings

At the first meeting, MSA provided an introduction to general stormwater issues, and participants discussed their knowledge of stormwater management in Lodi. Each participant worked with a map of the City area to pinpoint particular stormwater management issues or needs.

The second meeting focused on results of a photolog exercise, for which participants were given disposable cameras to record and make notes on stormwater issues in and around the City. MSA shared a list of Lodi's current stormwater management activities for participants to review. Participants asked MSA to share available data on the Spring Creek Watershed to gain a better understanding the affects of urban stormwater runoff/

At meeting three, MSA began by providing a summary of available information on the Spring Creek Watershed. Using estimates provided by the City of Lodi Public Works Department and experiences from other commuities, MSA shared cost estimates for several types of existing and potential stormwater management activities. Members worked in groups with the cost estimates to define an ideal stormwater management program for the City of Lodi.

The emphasis of meeting four was to gain an understanding of how municipalities use stormwater utilities as alternative funding mechanisms for stormwater management, and ultimately come to a committee recommendation as to whether the creation of a stormwater utility was right for Lodi at this time. Annual budget estimates for existing and "ideal" stormwater management programs in Lodi were reviewed. MSA staff explained the differences between funding stormwater management with property tax versus a stormwater utility, sharing data from other communities across the state. MSA shared an overview of how property owners annual stormwater fees would be derived in Lodi based on the relative amount of impervious surface on the property. After discussion, participants were asked to share in writing their recommendation regarding the creation of a stormwater utility in Lodi.

Meeting 1, September 20, 2007

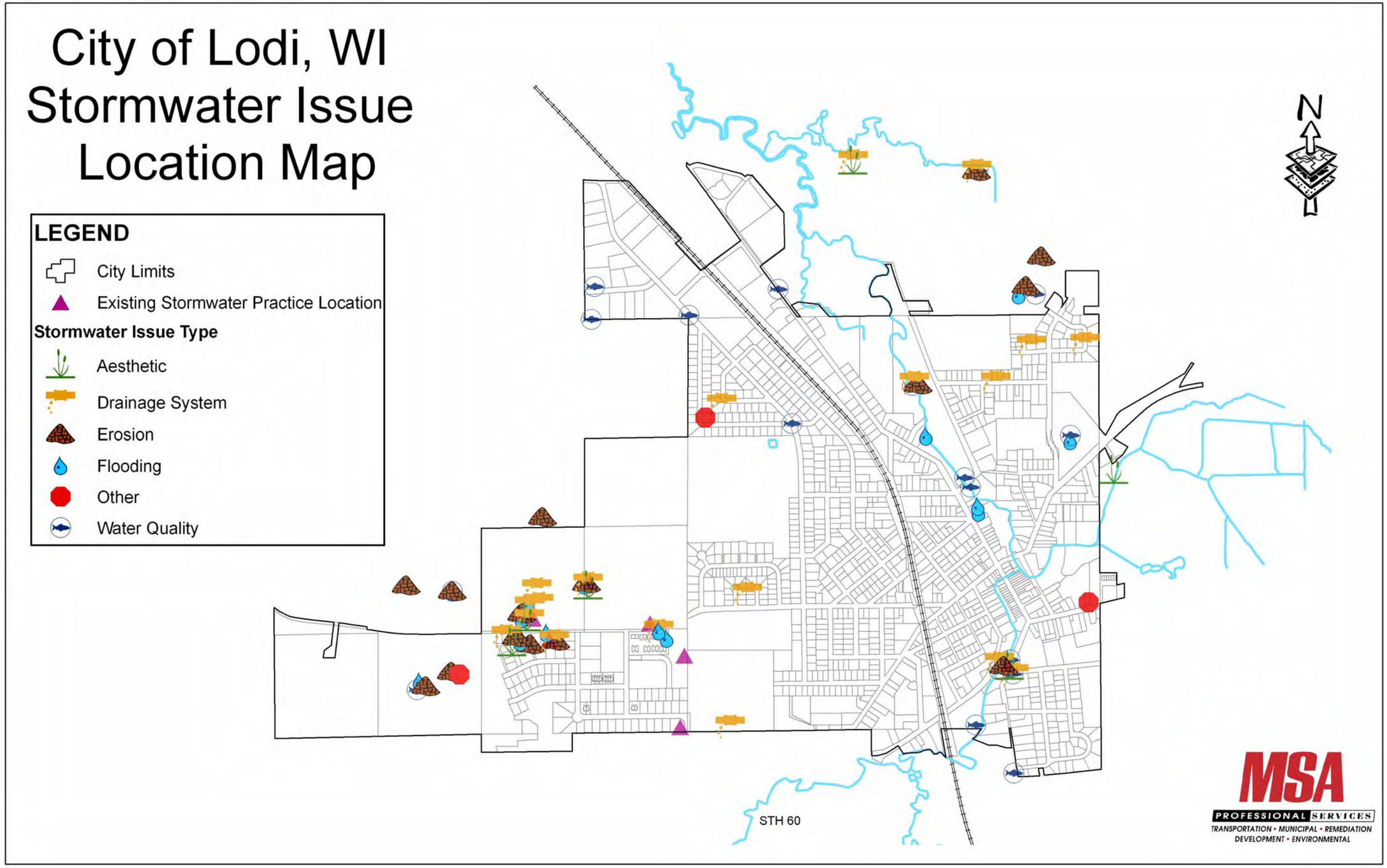
After a round of introductions, MSA staff gave a "Stormwater 101" presentation, an introduction to the basic principles, science and engineering of stormwater management.

Following this, MSA staff provided an overview of municipal stormwater management activities, and outlined a range of funding mechanisms including property tax, stormwater utilities, exactions, fees-in-lieu, fees, and special assessments. This included information on how municipalities across the U.S. are involved in stormwater management in a variety of ways, including the funding and maintenance of public infrastructure, regulations and incentives relating to on-site stormwater management on private property, public education, and municipal operations such as street sweeping and leaf collection.

Participants were then given maps of the City and surrounding area, and asked to share their knowledge and perceptions of local stormwater issues by pinpointing locations with flooding and erosion problems, areas with poor water quality, infrastructure maintenance issues, and innovative on-site stormwater management practices. Table 1 and Figure 1 on the following pages represent the results of this exercise.

At the end of meeting 1, MSA distributed disposable cameras and a photolog sheet to each committee member. Each member was give the assignment to take photos of stormwater issues they observe in and around the city, and asked to return their exposed film to MSA via a pre-paid envelope so MSA could develop the photos prior to meeting 2.

Figure 1: Stormwater Issues Identified by Participants



Stakeholder Stormwater Issue Identification Results

Name	Problem Description	Issue Type				
		Flooding	Water Quality	Erosion	Drainage	Aesthetics
Jeff B.				YES		
Jeff B.			YES			
Jeff B.			YES			
Jeff B.			YES			
Jeff B.			YES			
Allison	Station runoff 113 & Fair St.		YES			
Allison	Pebble Stone Development	YES				
Allison	Lack of silt fences construction sites			YES		
Allison	Development runoff creating deep trench			YES		
Allison	Creating a waterway				YES	
Allison	DNR trout stream restoration - good					YES
Allison	Rain Garden		YES			
Allison	City Maintenance runoff -oil		YES			
Aerb Carberry	Vilas Hibbard				YES	
Aerb Carberry	Elizabeth St				YES	
Aerb Carberry	Meadow Views				YES	
Aerb Carberry	Market St					
Aerb Carberry	High School	YES				
Aerb Carberry	North Hills				YES	
MJ Hansen	Possible Subdivision Development				YES	
MJ Hansen	Rain Garden (Good Thing)		YES			
Kurt Calkins	School Runoff Flooding Issures	YES				
Kurt Calkins	Outlying cropland (many areas)			YES		
Kurt Calkins	Future Development	YES				
Kurt Calkins	Future Development	YES				
Kurt Calkins	Soil Erosion					
Kurt Calkins	Future Development	YES				
Kurt Calkins	Soil Erosion					
Bill Welch	Development	YES				
Bill Welch	Swlaes/whatever don't work well; will be overloaded by new devel.	YES				
Bill Welch	Swlaes/whatever don't work well; will be overloaded by new devel.	YES				
Bill Welch	Rain Garden	YES				
Bill Welch	City Limits					
Bill Welch	Everywherer the storms enter the creek					
Beanie Ludlum	Main St. Floodplain	YES				
Beanie Ludlum	Sauk St.				YES	
Beanie Ludlum	Hwy J (64 House Development)	YES				
Beanie Ludlum	Compost Site					
Beanie Ludlum	No storms					
Beanie Ludlum	Concern for Future					
Lynda	Golf Course		YES			
Lynda	Pesitcide runoff		YES			
Lynda	Farmland pesticide runoff		YES			
Lynda	Farmland pesticide runoff		YES			
Lynda	Farmland pesticide runoff		YES			
Lynda	New construction	YES				
Lynda	All school have a lot of parking lots, etc...				YES	
Lynda	Flooding	YES				
Craig Ness	Floodplain Area	YES				
Craig Ness	No drain system				YES	
Craig Ness	Compost Pile					
Craig Ness	School Lot				YES	
Jeff B.					YES	
Jeff B.				YES		
Allison	Rain Garden				YES	
Aerb Carberry	High School				YES	
MJ Hansen	Possible Subdivision Development					YES
Kurt Calkins	School Runoff Flooding Issures		YES			
Kurt Calkins	Future Development		YES			
Kurt Calkins	Future Development		YES			
Kurt Calkins	Future Development		YES			
Bill Welch	Development			YES		
Bill Welch	Swlaes/whatever don't work well; will be overloaded by new devel.			YES		
Bill Welch	Swlaes/whatever don't work well; will be overloaded by new devel.			YES		
Bill Welch	Rain Garden		YES			
Beanie Ludlum	Sauk St.	YES				
Beanie Ludlum	Hwy J (64 House Development)		YES			
Jeff B.					YES	
Kurt Calkins	Future Development			YES		
Kurt Calkins	Future Development			YES		
Kurt Calkins	Future Development			YES		
Bill Welch	Development				YES	
Bill Welch	Swlaes/whatever don't work well; will be overloaded by new devel.				YES	
Bill Welch	Swlaes/whatever don't work well; will be overloaded by new devel.				YES	
Bill Welch	Rain Garden				YES	
Beanie Ludlum	Hwy J (64 House Development)			YES		
Bill Welch	Development					YES
Bill Welch	Swlaes/whatever don't work well; will be overloaded by new devel.					YES
Bill Welch	Swlaes/whatever don't work well; will be overloaded by new devel.					YES
Bill Welch	Rain Garden					YES
Beanie Ludlum	Hwy J (64 House Development)				YES	
Bill Welch	Rain Garden			YES		

Meeting 2, October 4, 2007

At meeting 2, all the photos taken by stakeholder committee members were posted on in the front of the room. Each committee member was then given the opportunity to talk about one or more of their photos and explain why the image was significant to them. Photos included leaves and grass-clippings along residential curbs, examples of erosion occurring within the city, parking lots, new construction and associated stormwater impacts, a rain garden, marshlands near the city, and more. See Appendix 1 for complete record of the photolog exercise, including all images taken by stakeholders.

After committee members shared knowledge and opinions about local stormwater issues through photographs, MSA staff facilitated a discussion about current and potential future stormwater management activities performed by the City of Lodi, which can be categorized into three types:

1. Procedural (street sweeping, cleaning storm drains)
2. Capital (building stormwater infiltration systems and/or storm drains)
3. Regulatory (ordinances regarding stormwater management during construction or post construction)

Based on information gathered from the Department of Public Works, MSA compiled and distributed a list of current municipal stormwater management activities performed in the City of Lodi and supported by property tax dollars, as summarized in Table 2.

When asked to suggest changes or improvements to the existing stormwater program, committee members mentioned the following items

- Leaf Pickup
- Increased Public Education
- Improved enforcement of existing regulations
- Capital improvements to mitigate erosion occurring behind high school
- Infiltration/bioretention facility at the Department of Public Works site

Importantly, members wanted to know which options would be most cost effective and have the most actual impact (reducing and or improving the quality of stormwater run-off). Also, several members asked many questions about relative impacts to the Spring Creek Watershed coming from the City of Lodi when compared to surrounding rural areas.

Table 2: City of Lodi Stormwater Management Activities

Procedural	
1. Catch Basin Cleaning	All sumped catch basins cleaned every 2 years
2. Catch Basin Repair	As needed
3. Outfall Repair	2 per year
4. Ditch Maintenance/Brush	Industrial park ditches cleaned every 5 years
5. Detention Pond Cleaning	Each public pond cleaned every 25 years
6. Storm Sewer Main Cleaning	Jetting as needed
7. Refuse Cleanup & Disposal	After rain events; approximately 2 weeks of staff time per year
8. Storm Sewer Televising	As needed
9. Curb & Gutter Repair	As needed
10. Storm Sewer System Mapping	Currently working with consultant to convert paper maps into GIS database and mapping; approximately 10 hours staff time per year thereafter for updates
11. Stormwater Master Planning	City has hired a consultant to develop 10-year plan
12. Leaf/Grass Removal	Residents take to city compost site, or sweep into street and City sweeps with sweeper
13. Mowing	6 weeks seasonal staff time per year
14. Storm Sewer Stenciling	Decals installed during development
15. CIP Development and	6 week per yr staff time
16. Grant Writing and	As needed
17. Street Sweeping	Weekly downtown; monthly elsewhere
Capital	
18. Capital Improvements	Storm infrastructure and curb and gutter for street projects; other storm improvement projects
Regulatory	
19. Erosion control and stormwater management permit review	2 reviews per year
20. Erosion control and stormwater mgmt site inspection	Building Inspector inspects residential sites
21. Erosion control and stormwater mgmt site enforcement	1 per year

Table 3: Detailed Stormwater Management Programs Suggested by Participants

		Group A				Group B			
	Description *[current level of service]*	QTY	Unit Cost	Total Cost	Comments	QTY	Unit Cost	Total Cost	Comments
Existing Program Elements	Catch-Basin Cleaning *[$10 per catch basin]*	212.00	$10	$2,120		212.00	$10	$2,120	
	Mowing *[6 weeks seasonal staff time]*	6.00	$1,100	$6,600		4.00	$1,100	$4,400	
	Pond Excavation *[each of the 4 public ponds cleaned every 25 yrs [1 per 6.25 yrs]*	0.16	$25,000	$4,000		0.16	$25,000	$4,000	
	Refuse Clean Up & Disposal *[$300 per cleanup]*	8.00	$300	$2,400		8.00	$300	$2,400	
	Ditch Maintenance/Brush Control *[$5,000 per cleaning of industrial park ditches, every 5 yrs]*	0.20	$5,000	$1,000		0.20	$5,000	$1,000	
	Leaf & Grass Clipping Management *[2 weeks per year staff time]*	2.00	$1,100	$2,200		2.00	$1,100	$2,200	
	Curb & Gutter Repair *[$20 per lineal foot]*	54.00	$20	$1,080		54.00	$20	$1,080	
	Outfall Rapair *[$900 per repair]*	2.00	$900	$1,800		2.00	$900	$1,800	
	Street Sweeping *[$150 per downtown sweep. City sweeps downtown every week April-Nov]*	28.00	$150	$4,200		28.00	$150	$4,200	
	Street Sweeping *[$1500 per Citywide Sweep, excluding downtown. Entire City swept monthly]*	7.00	$1,200	$8,400		7.00	$1,200	$8,400	
	Stormwater Master Plan *[$10,000 per 10-year plan]*	0.10	$10,000	$1,000		0.10	$10,000	$1,000	
	Storm Sewer Sytem Map Updates *[Annual update]*	1.00	$1,800	$1,800		1.00	$1,800	$1,800	
	Stormwater/Erosion Site Enforcement *[$250 per action]*	1.00	$250	$250		3.00	$250	$750	Increase, but charge to developer
	Capital Improvements *[Storm infrastructure for street projects]*	1.00	$40,000	$40,000		1.00	$40,000	$40,000	
	Capital Improvements [Storm infrastructure construction or improvements]	1.00	$10,000	$10,000		1.00	$10,000	$10,000	
	CIP Development and Maintenance *[$1700 per week of staff time]*	6.00	$1,700	$10,200		6.00	$1,700	$10,200	
	Subtotal Cost for Existing Elements			$ 97,050				$ 95,350	
Potential Add-On Elements	Street Sweeping - *[Replace Mechanical Sweeper with a vacuum sweeper, financed over 10-yrs]*	1.00	$15,000	$15,000		1.00	$15,000	$15,000	
	Leaf Removal *[Purchase vacuum truck for leaf collection, financed over 15 years]*	0.20	$15,000	$3,000	Instead of purchasing a vacuum truck, pick up bagged leaves from curbside twice annually in the fall	0.00	$15,000	$0	
	Inlet Inspection & Cleaning *[$3,500 per Citywide Cleaning]*	0.20	$3,500	$700	Requires further investigation; budgeted 20%	0.00	$3,500	$0	
	Construction Site Erosion Control *[Ordinance Adoption, one-time cost]*	0.50	$2,300	$1,150	Grant funded at 50%	0.00	$2,300	$0	
	Post-Construction Stormwater Management *[Ordinance Adoption, one-time cost]*	0.50	$2,300	$1,150	Grant funded at 50%	0.00	$2,300	$0	
	Illicit Discharge Detection and Elimination *[Ordinance Adoption, one-time cost]*	0.50	$2,300	$1,150	Grant funded at 50%	0.50	$2,300	$1,150	
	Erosion Control Plan Review/Inspection *$500 per site*	0.00	$500	$0	City should do this, and increase inspection/enforcement program, but all costs should be charged back to the developed	0.00	$500	$0	costs for construction inspection should be charged to developers
	Stormwater Plan Review/Inspection/Enforcement *$500 per site*	0.00	$500	$0	City should do this, and increase inspection/enforcement program, but all costs should be charged back to the developed	0.00	$500	$0	costs for construction inspection should be charged to developers
	Illicit Discharge Program Implementation *[min. program is 20% of the outfalls/yr; $3500/yr]*	0.43	$3,500	$1,505		1.00	$3,500	$3,500	
	Capital Improvement Projects *[outfall treatment between railroad and Pleasant St.]*	0.02	$40,000	$800	Requires further investigation; budgeted 20%, finance over 10 years	0.00	$40,000	$0	
	Capital Improvement Projects *[outfall treatment near Portage and Spring St.]*	0.02	$40,000	$800	Requires further investigation; budgeted 20%, finance over 10 years	0.00	$40,000	$0	
	Capital Improvement Projects *[outfall treatment near Main and Fair Street]*	0.02	$40,000	$800	Requires further investigation; budgeted 20%, finance over 10 years	0.00	$40,000	$0	
	Capital Improvement Projects *[Middle School Rain Garden]*	0.50	$15,000	$7,500	Reduce costs by involving Middle School Students	0.00	$15,000	$0	
	Capital Improvement Projects *[Stormwater MANAGEMENT DEVICE behind City public works building]*	0.02	$30,000	$600	Requires further investigation; budgeted 20%, finance over 10 years	0.05	$30,000	$1,500	
	Capital Improvement Projects *[Stabilize eroding areas behind high school]*	0.02	$50,000	$1,000	Requires further investigation; budgeted 20%, finance over 10 years	0.00	$50,000	$0	
	Storm Sewer Stenciling *[$10 per inlet, 500 inlets Citywide]*	100.00	$10	$1,000	Reduce costs by getting volunteer students/organizations	0.00	$10	$0	
	Public Information/Education *[Educational website, $4,000, start-up]*	0.50	$4,000	$2,000	Instead of an expensive website, just add one page to existing City site, and send out educational article 2x per year with utility bill	0.50	$4,000	$2,000	Instead of an expensive website, just add one page to existing City site, and send out educational articles with utility bill
	Public Information/Education *[School program, $2,500]*	0.50	$2,500	$1,250	Reduce costs by combining with other programs	1.00	$2,500	$2,500	Education could be partially funded and/or accomplished by non-profit, recommended a focus on public education with regard to composting
	Public Involvement/Engagement *[Educational sign for rain garden, $2,500]*	0.50	$2,500	$1,250	Reduce costs by having Middle School Students design sign and finding a donor to construct it	1.00	$2,500	$2,500	
	Grant Writing and Admin. *[$2,000 per grant]*	1.00	$2,000	$2,000		1.00	$2,000	$2,000	
	Subtotal Cost for Add On Elements			$ 42,655				$ 30,150	
	Total Cost for "Ideal" Stormwater Management Program			$139,705				$125,500	

Table 3: Summary of Suggested Stormwater Management Programs for Lodi

Program Element	Group A Suggested Cost	Group B Suggested Cost
Existing Elements	$97,050	$95,350
Potential Add-Ons	$42,655	$30,150
Total Program	**$139,705**	**$125,500**

As summarized in Table 3 above, the annual cost of the "ideal" stormwater management programs designed by participants ranged from $125,500 to nearly $140,000 roughly 30% to 50% greater than the estimated cost of the current program (see Table 4 for details and participants' comments).

Meeting 4, October 18, 2007

Meeting four began with presentation of the results of the budgeting exercise from meeting three, followed by a presentation about how municipalities use stormwater utilities as alternative funding mechanisms for stormwater management. Annual budget estimates for existing and "ideal" stormwater management programs in Lodi were reviewed. MSA staff explained the differences between funding stormwater management with property tax versus a stormwater utility, sharing data from other communities across the state. MSA shared an overview of how property owners annual stormwater fees would be derived in Lodi based on the relative amount of impervious surface on the property. A copy of the complete presentation made by MSA can be found in Appendix D.

After discussion, participants were asked to share in writing their recommendation regarding the creation of a stormwater utility in Lodi. The results are summarized below and in the Table 4. Additionally, Table 5 is a list of meeting attendees and summary of dates attended by each attendee.

Stakeholder Advisory Committee Member Recommendations
Results of the participants' recommendations regarding the creation of a stormwater utility in Lodi are summarized as follows:

5 members oppose the creation of a stormwater utility
1 member opposes the creation of a stormwater utility at this time
3 members neither oppose nor support the creation of a stormwater utility
1 member would support a utility under certain conditions

Committee members *undecided about and/or conditionally supportive* of the creation of a stormwater cited the following concerns/conditions:

- A stormwater utility should only be created in the context of implementing a comprehensive plan that addresses stormwater concerns on both a citywide and watershedwide basis.
- Before developing a stormwater utility, the City needs to begin tracking and budgeting stormwater program activities and expenses separately so that there is more and better information on how much the City is actually spending on stormwater.
- The utility should offer credits to customers that attenuate the impacts of stormwater coming off of their property, and discounts to seniors and handicapped customers.
- The City needs to focus more on educating the public about stormwater issues and step up enforcement of existing stormwater and erosion control regulations.
- Any future stormwater utility should be governed directly by the City Council and Public Works Board, rather than a new board or commission.

Among committee members that were *opposed to the creation of a stormwater utility*, the following concerns were most commonly cited:

- Tracking stormwater activities and expenses separately would give City stronger case to develop utility at a later time.
- A comprehensive, watershedwide study and plan is needed before a utility can/should be implemented.

- The City of Lodi is only 10% of the Spring Creek watershed, so anything the City does to improve the quality of its runoff will have negligible impact if the surrounding townships don't do their part.
- The City needs better enforcement of existing regulations.
- The City should focus on public education to address runoff concerns.
- The City should not add a new utility fee unless property taxes are decreased by proportional amount.

Table 4. City of Lodi Stormwater Advisory Committee Attendees

Name (Title)	Representing	Meeting 1	Meeting 2	Meeting 3	Meeting 4
Mary Jane Hansen (Controller)	Alkar-Rapidpak	X	X	X	X
Bill Welch	Friends of Scenic Lodi Valley	X	X		X
Jeff Blankenship	Lodi Chamber/L.O.D.I.	X	X	X	X
Irene "Beanie" Ludlum	Main St. Liquor	X	X	X	X
Craig Ness	Ness Auto Sales	X	X		X
Herbert Carberry	__	X	X	X	X
Allison Seaton	Friends of Scenic Lodi Valley	X	X	X	X
Bob Goeres	Lodi Canning		X	X	X
Chris Conlon	Anteco Phorms		X	X	X
Bruce Bushnell	Bushnell Ford		X	X	X
Lynda McGinnity (Board Member)	Three Bats in the Belfry/Chamber	X		X	
Kurt R. Calkins	LWCD Columbia County	X			
Ken Paul	School District of Lodi		X		

Follow-Up Watershed Planning Meeting, November 14, 2007

In response to the strong consensus among City Stormwater Stakeholder Advisory Committee members regarding the need for a watershed-wide study and planning effort to better understand the nature and magnitude of factors contributing the impairment of Spring Creek, and the most effective and economical means of addressing these factors, Mayor Paul Fisk called a meeting of watershed stakeholders. The meeting was held on Tuesday, November 14, in City Hall, and was attended by representatives of each of the following entities:

- City of Lodi (Paul Fisk, Mayor; Ann Dansart & Eric Thompson, MSA Professional Services, City Consulting Engineer)
- Town of Lodi, (Roger Wetzel, Town Board Chair)
- Dane County (Susan Jones, Lakes and Watershed Commission Director)
- WDNR Fisheries Management Program (Tim Larson)
- WDNR Lower Wisconsin River Basin Team (James "Andy" Morton, Basin Supervisor & Jean Unmuth, Water Quality Specialist)

  (Columbia County Conservationist Kurt Calkins also planned to attend the meeting, but was unable to make it at the last minute due to a work emergency. Mr. Calkins has also indicated an interest in being involved in runoff issues within the watershed. Columbia County UW-Extension staff agreed by phone to be involved in the upcoming watershed planning efforts.)

The meeting agenda primarily consisted of addressing of the following questions:

- *Is their interest among group members in working on watershed-wide planning effort?*

- *If so, how would this be accomplished?*

The consensus of the group was strongly in favor of working together a watershed planning effort. All entities were willing to support and/or participate in the effort at some level.

The short-term plan developed by the group at this meeting consists of two parts:

1. Undertake a preliminary watershed management study, to be used as the basis to apply for additional grant funding for more in-depth watershed planning, and/or the implementation of the planning study's recommendation
2. Facilitate the formation of a watershed planning consortium to oversee the initial watershed planning effort and subsequent plan implementation and/or future targeted planning efforts.

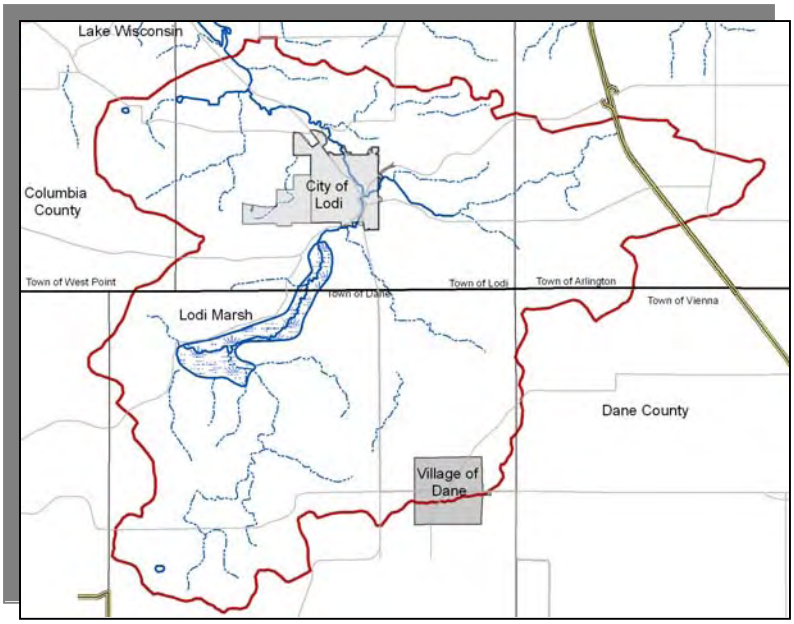
The preliminary watershed planning effort would involve using existing available data to characterize the current state of the Spring Creek stream, and identify and quantify current threats to the stream's status as a coldwater stream able to support a trout fishery. The planning study would also attempt to identify alternative approaches towards addressing these threats in cost-effectiveness manner.

The watershed planning consortium would consist of broad stakeholder representation, including representative from of each municipality, township, and county in the watershed. Additionally, representatives of local watershed organizations, (such as the Friends of Scenic Lodi Valley and

Meeting 3, October 11, 2007

MSA staff began this meeting by sharing and presenting information collected from the WI DNR and other sources on the Spring Creek Watershed to begin to address participants' questions about water quality data and the urban versus rural contribution to problems in Spring Creek. The presentation also included information about the types of activities and practices that could be implemented to reduce the impact of runoff on the Creek. A copy of the complete presentation can be found in Appendix C.

Figure 2: The Spring Creek Watershed



This presentation sparked a lengthy discussion about shared responsibility among residents and farmers in the City of Lodi and surrounding area. While existing studies in the Spring Creek area to not reflect ecological crisis or severely degraded water quality, participants generally agreed that it is very important to protect as viable trout habitat and a treasured natural resource for area residents. Participants understood the importance of proactive planning for stormwater management, especially as urban development continues in the Lodi area. However, some participants were concerned that the City of Lodi may increase funding for stormwater management activities, yet have a minimal affect on the overall quality of Spring Creek. Others suggested monitoring water flow, water quality, and water temperature at various locations in the creek over time, in order to measure the affects of both existing and new stormwater management practices.

Following this discussion, MSA facilitated a budgeting exercise to begin to define priorities for stormwater management in the City of Lodi. Participants were divided into two groups for the exercise, and each group was provided two sets of cards. The first set described *existing elements* of the municipal stormwater program, including their frequency and estimated annual cost to City of Lodi taxpayers. Participants were first asked to assess these activities and decide whether or not they were important to maintain (or enhance) within an ideal stormwater management program. Next, participants were given a set of cards representing *potential add-on elements* stormwater management activities, along with estimated annual costs based on research and experience in other Wisconsin communities. Participants were asked whether they would like to see any of the potential activities included in a future Lodi stormwater management program.

Trout Unlimited), the WDNR, the City Stakeholder Committee, and one or more local high school student(s) would be invited to participate. The group would be facilitated by Columbia County UW-Extension.

As previously mentioned, each entity represented at the meeting agreed to support the watershed planning and restoration process. Listed below are specific tasks to be undertaken by each.

- Dane County- will compile and summarize all of its water quality, runoff and land use/cover information on Spring Creek watershed and provide this information to the City of Lodi and its consulting engineer for incorporation into the overall watershed-wide planning effort. The County will also investigate and follow-up on rural or agricultural lands within Dane County found to be contributing excessively to water quality impairment of Spring Creek.

- WDNR Fisheries Management Program - will compile, and summarize all information on Spring Creek fisheries and past habitat restoration efforts, and provide this information to the City of Lodi and its consulting engineer for incorporation into the overall watershed-wide planning effort.

- WDNR Lower Wisconsin River Basin Team - will compile, and summarize all of its water quality data and watershed information and provide this information to the City of Lodi and its consulting engineer for incorporation into the overall watershed-wide planning effort.

- City of Lodi-will work with its consulting engineer to compile the information provided by Dane County and WDNR, and refine the scope of its current stormwater analysis and planning efforts to include an analysis of the impact of Lodi runoff on Spring Creek within the context of the entire Spring Creek Watershed, including areas outside the City. The City will also assist in the formation of the watershed consortium.

- Town of Lodi-A representative of the town will serve on the watershed consortium.

UW-Extension-Columbia County/Southern Counties Community Partner Advisory Group Liason Kathleen J. Haas has agreed to assist with the formation of the watershed consortium, and facilitate their ongoing meetings.

Name	I support the creation of a stormwater utility	I oppose the creation of a stormwater utility	I neither support nor oppose the creation of a stormwater utility
Anonymous	*I conditionally support the creation of a utility if* credits provided for personal remediation and control of stormwater utility is controlled and governed directly by City Council, i.e. public works committee, not an "extra" board or commission.	*I oppose the creation of a utility if* city does not create short and long range plans for management. City needs to enter into intergovernmental efforts to create a comprehensive watershed plan. The City needs to "pull out" stormwater management budget for better monitoring and control of activities.	
Anonymous		Throughout the meeting we discussed issues on current problems and improvements we can make. We all agreed that although we may not have pressing problems we should stay in control and move forward. I think that to move forward more than a utility to fund it we need a good plan. That plan should include education and ideas on the actual costs of the projects other than guessing. I think with 90% of the runoff being produced by outside the city, the city could only make a very small difference in water quality even with a utility. I think they could produce better results by focusing on education and enforcement of current subject, but a decision like this requires a lot more information than we were given.	
Jeff Blankenship		Not enough data. No stated problem potential for adding fees that don't directly offset taxes. More explanation of existing plans and enforcement issues. Need to identify the actual causes of real problems, i.e. if property owners are responsible for their runoff issues, how much of the problem goes away? What are the true areas of impact vs. perceived? You cannot add a utility fee without reducing property tax the same amount. Look for ordinance and enforcement solutions, as well as incentive based solutions, i.e. tax credit for rain gardens, or other systems to cool or filter runoff.	
Bruce Bushnell		City of Lodi does not need a separate stormwater utility. Points: The City is only 10% of Spring Creek watershed. I do not want to see another department created as I feel the City Council then looses part control of money spent. It appears the City does a good job of controlling growth of subdivisions and water runoff. Several holding ponds have been built to help control and collect runoff, public education could be an important aspect of keeping Spring Creek water clear at little cost to City of Lodi taxpayers.	
Herbert Carberry		*I do not see the need for this at this time.* What I do see is an education and policy problem i.e. construct site water retainers are knocked down by their equipment. Need better control over the problem of leaves in storm sewer, suggest limiting planting of trees near streets. Overall the City is doing a fine job and I see no need for additional depts and expense.	
Chris Conlon			*Eventually a stormwater utility should be established* based on the following criteria. 1) Educating and informing the proposed participants of the current effort and cost. 2) Establishing a concise plan stormwater mgmt. highlighting the benefits. 3) Outline the benefits by eliminating or reducing capital costs. 4) Have public input and support.
Bob Goeres			The city needs to meet and/or exceed the WPDES standards. A comprehensive plan for stormwater needs to be formulated – short term and long term. With the City of Lodi at 10% of watershed the total watershed area needs to address and be involved with forming a plan. Education of public is important. To inform what the city currently does i.e., street sweeping, grate/gutter cleaning and what more is needed i.e., leave removal by residents, not grass into street gutter…market the idea to public.
Mary Jane Hansen		*I oppose the creation of a utility at this time.* Planning future development is critical to maintaining the current quality of life which makes Lodi and area desirable. Plan should include maintaining and improving Lodi's contribution to the watershed. Current budget/spending should be reviewed monitored for actual costs related to stormwater without adding excessive additional administrative costs. If in the event a utility is addressed, seniors, handicapped etc. should be given special consideration and relief so they may continue to live here. Concern with a utility is yet another fee which could become out of control.	
Irene "Beanie" Ludum		I believe that the city needs to educate people on the issues of storm water. There needs to be a plan for the entire watershed for Spring Creek, not just the City of Lodi which only makes up 10% of the watershed. The public works department has been doing a great job with a lot of the stormwater issues. I think that tracking there time spent on stormwater may give the City a stronger case to develop another utility, but at this time there is no need.	
Allison Seaton			Would like to see a Spring Creek watershed in depth study that includes Dane County, DATCAP, DNR! This should involve developers, farmers, municipalities, townships, shoreline residents.

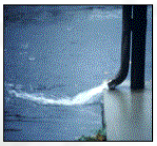
Appendix 1A

Stormwater 101 Presentation Slides

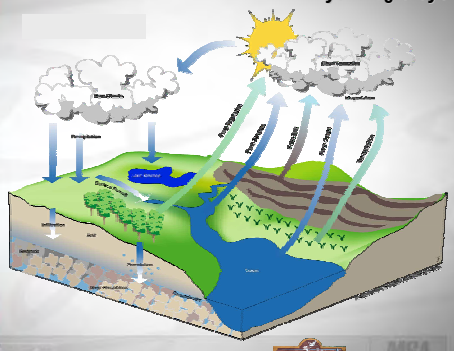
Stormwater 101

An Introduction to Stormwater Runoff & Management

Stormwater Runoff

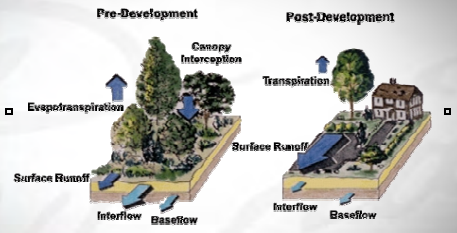


Hydrologic Cycle



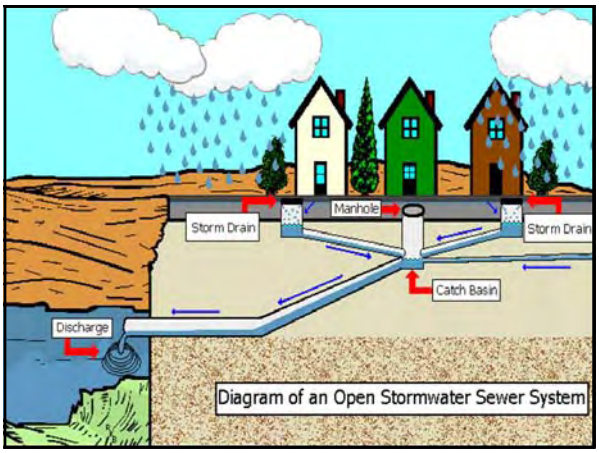
Development creates new impervious area which increases the volume of runoff

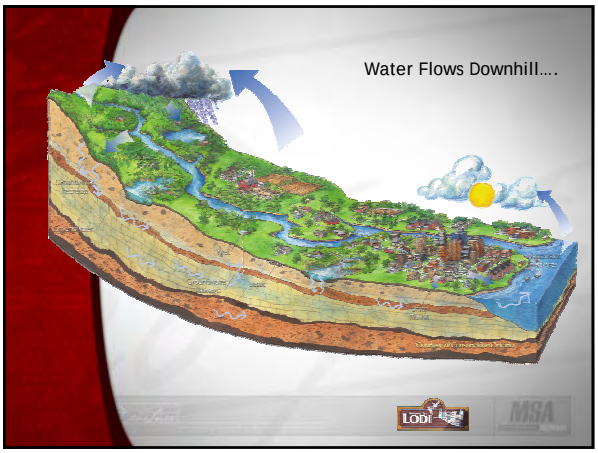
Development Increases Runoff



Stormwater runoff is *not* treated.

Runs off impervious surface → Enters storm drain system → Discharged to creek or lake

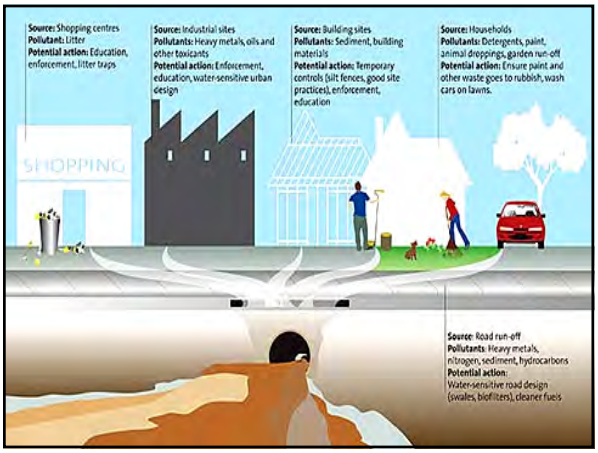

Manhole
Storm Drain
Storm Drain
Catch Basin
Discharge
Diagram of an Open Stormwater Sewer System


Water Flows Downhill….


Upstream development increases *the volume* of downstream runoff…


….and the *discharge rate* of downstream runoff

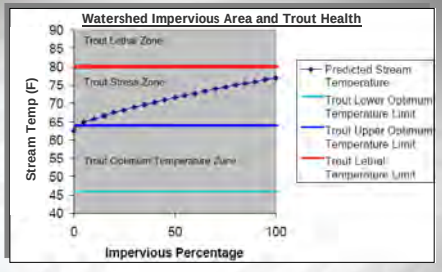

Pollution from industrial facilities is now strictly regulated. Today, pollution from diffuse sources is the leading cause of water quality impairment in the U.S.


Source: Shopping centres
Pollutants: Litter
Potential action: Education, enforcement, litter traps
Source: Industrial sites
Pollutants: Heavy metals, oils and other toxicants
Potential action: Enforcement, education, water-sensitive urban design
Source: Building sites
Pollutants: Sediment, building materials
Potential action: Temporary controls (silt fences, good site practices), enforcement, education
Source: Households
Pollutants: Detergents, paint, animal droppings, garden run-off
Potential action: Ensure paint and other waste goes to rubbish, wash cars on lawns.
SHOPPING
Source: Road run-off
Pollutants: Heavy metals, nitrogen, sediment, hydrocarbons
Potential action: Water-sensitive road design (swales, biofilters), cleaner fuels

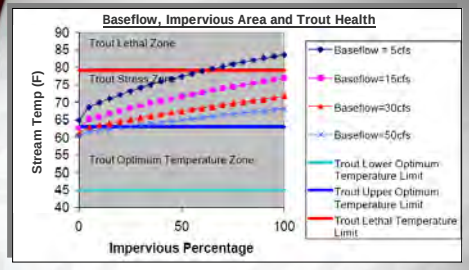
WHEN YOU'RE WASHING YOUR CAR IN THE DRIVEWAY, REMEMBER YOU'RE NOT JUST WASHING YOUR CAR IN THE DRIVEWAY.

All the soap, scum, and oily grit runs along the curb. Then into the storm drain and directly into our lakes, streams, and bays. And that causes pollution which is unhealthy for fish. So how do you avoid the whole mess? Easy. Wash your car on the grass or gravel instead of the street. Or better yet, take it to a car wash where the water gets treated and recycled.

A cooperative effort of the **Alabama Clean Water Partnerships.**



Hot pavement heats up runoff and increases *thermal pollution*. Thermal pollution can have lethal effects on trout fish populations.

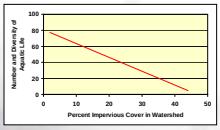


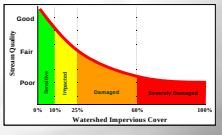
Impervious surfaces also decrease infiltration, thereby decreasing *baseflow*, the flow of cool underground water to a stream.

Decomposing yard clippings and leaves release nutrients that promote the growth of aquatic weeds and algae and can harm fish.

Leaf and grass clipping management also helps prevent storm sewer/inlet clogging.

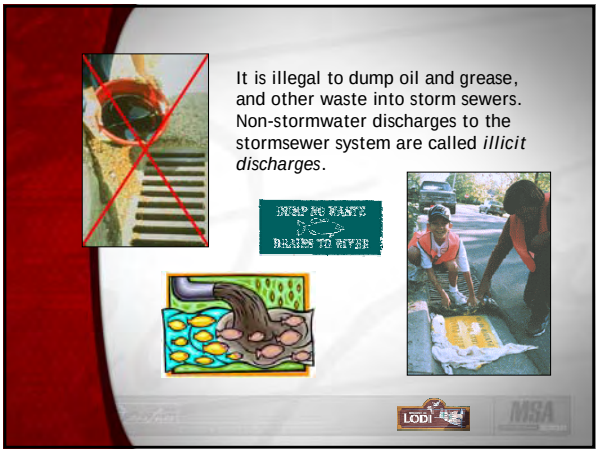
Impervious Area and Watershed Health






Storm infrastructure includes pipes, inlets, manholes, ponds, ditches, and curb and gutter


Street sweeping reduces the amount of pollutants washed into Spring Creek and other waterways.
Mowing swales and ponds is also part of the City's stormwater management program


It is illegal to dump oil and grease, and other waste into storm sewers. Non-stormwater discharges to the stormsewer system are called *illicit discharges*.


Thank You!

Appendix 1B

Municipal Stormwater Management &
Funding Mechanisms Presentation Slides



Municipal Stormwater Management

City Programs Elements and Financing Mechanisms

Stormwater Funding Alternatives

	Plan, Design, Admin.	Operation & Maintenance	Capital Improvements: Existing Development	Capital Improvements: New Development	Water Quality (NPDES)
General Fund	X	x	x		x
Special District		x	x		
Bonds		x	x		
Sinking Fund			x		x
Exactions & Fees-in-Lieu				x	
Grants	x		x		x
Fees/Fines	x				x
Stormwater Utility	x	x	x		x

Stormwater Program Activities

- Capital Improvements
  - Existing development
  - New development
- Operation and Maintenance
- Planning, Design, & Administration
- Water Quality (NPDES Permit Activities)

Capital Improvements

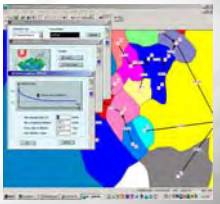
- Storm sewer
- Curb and gutter
- Manholes
- Catch basin/Inlet
- Ponds
- Swale/ditches
- Water quality Best Management Practices (BMPs)

Operation and Maintenance

- Storm sewer cleaning
- Inlet and catch basin cleaning and repair
- Outfall inspection
- Mowing
- Storm sewer televising
- Snow and ice control
- Refuse cleanup and disposal

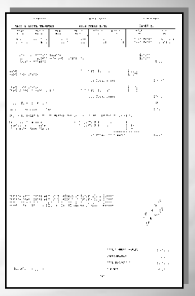
Planning and Design

- Stormwater master planning & updates
- Capital improvements plan
- Plan review
- Engineering Design
- Grant writing



Administration

- Permitting
- Inspection
- Enforcement
- Ordinance



Water Quality Activities

- Storm sewer stenciling
- Public information & education
- Public Involvement
- Illicit discharge detection & elimination

Water Quality Activities (cont'd)

- Construction site erosion control
- Post-construction stormwater management
- Spill response
- Street Sweeping
- Leaf and grass clipping removal

Stormwater Funding Alternatives

- General Fund
- Special Districts
- Bonds
- Sinking Fund
- Fees-In-Lieu
- Exactions
- Grants
- Fines/Permit Fees

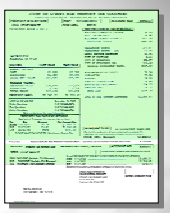
General Fund (Property Tax)

Who pays:

Property Owners
(not including tax exempt)

Basis of Charge:

Property Value



Applications:

Planning, design, administration, existing infrastructure maintenance, water quality activities

Special Districts

Who pays:

Property owners located within a district benefited by a specific project or activity

Basis of Charge:

Level of benefit

Applications:

Maintenance, upgrade or addition of infrastructure for flood control or to improve water quality

Bonds

Who pays:
- Taxpayers and/or utility users

Basis of Charge:
- Property value and/or level of utility use

Applications:
- Large capital improvement projects and/or major equipment purchases

Sinking Fund

Who pays:
- Taxpayers and/or stormwater utility users (if utility exists)

Basis of Charge:
- Property value, level of storm infrastructure use

Applications:
- Large capital improvement projects and equipment purchases, such as a street sweeper

Fees-In-Lieu

Who pays:
- Developers

Basis of Charge:
- Size/intensity of development

Applications:
- Regional stormwater infrastructure

Exactions

Who pays:
- Developers

Basis of Charge:
- Size/intensity of development

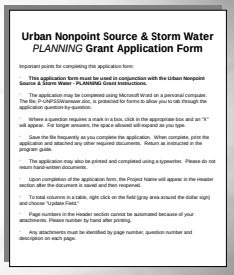
Applications:
- Stormwater infrastructure for new development

Grants

Who pays:
- Varies; typically state taxpayers in WI

Basis of Charge:
- Varies

Applications:
- Typically project specific. Most commonly in WI, water quality infrastructure and planning projects.



Urban Nonpoint Source & Storm Water
PLANNING **Grant Application Form**

Important points for completing this application form:

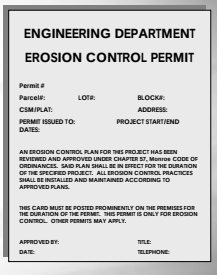
- **This application form must be used in conjunction with the Urban Nonpoint Source & Storm Water - PLANNING Grant Instructions.**
- The application may be completed using Microsoft Word on a personal computer. The file, P-UNPSWfarmwer.doc, is protected for forms to allow you to tab through the application question-by-question.
- Where a question requires a mark in a box, click in the appropriate box and an "X" will appear. For longer answers, the space allowed will expand as you type.
- Save the file frequently as you complete the application. When complete, print the application and attached any other required documents. Return as instructed in the program guide.
- The application may also be printed and completed using a typewriter. Please do not return hand-written documents.
- Upon completion of the application form, the Project Name will appear in the Header section after the document is saved and then reopened.
- To total columns in a table, right click on the field (gray area around the dollar sign) and choose "Update Fields"
- Page numbers in the Header section cannot be automated because of your attachments. Please number by hand after printing.
- Any attachments must be identified by page number, question number and description on each page.

Permits Fees/Fines

Who pays:
- Typically developers, contractors, builders.

Basis of Charge:
- Varies; typically fees are structured to cover the cost of a specific operational activity, such as design review and/or site inspection

Applications:
- Design review, permit administration, site inspection, enforcement action



ENGINEERING DEPARTMENT

EROSION CONTROL PERMIT

Permit #
Parcel#: LOT#: BLOCK#:
CSM/PLAT: ADDRESS:
PERMIT ISSUED TO: PROJECT START/END DATES:

AN EROSION CONTROL PLAN FOR THIS PROJECT HAS BEEN REVIEWED AND APPROVED UNDER CHAPTER 57, Monroe CODE OF ORDINANCES. SAID PLAN SHALL BE IN EFFECT FOR THE DURATION OF THE SPECIFIED PROJECT. ALL EROSION CONTROL PRACTICES SHALL BE INSTALLED AND MAINTAINED ACCORDING TO APPROVED PLANS.

THIS CARD MUST BE POSTED PROMINENTLY ON THE PREMISES FOR THE DURATION OF THE PERMIT. THIS PERMIT IS ONLY FOR EROSION CONTROL. OTHER PERMITS MAY APPLY.

APPROVED BY: TITLE:
DATE: TELEPHONE:

Stormwater Utility

Who pays:

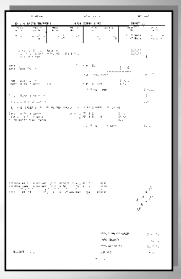
- Stormwater infrastructure users

Basis of Charge:

- Level of use

Applications:

- Design, planning, administration, operation and maintenance of existing infrastructure, capital improvements serving existing development, water quality (NPDES) activities



Thank You!

Appendix 2

Photolog Activity Results

Appendix 2: Photolog Exercise

Participants were asked to take photos and provide descriptions of stormwater issues in and around the City of Lodi. Information provided by participants is provided in the table below, and corresponds with photos on the following pages.

Camera #	Photo #	+/-	Subject of Photo	Location of Photo
17	1	-	Construction Sites	Lack of Erosion Control
	2	-	Construction Sites	Lack of Erosion Control
	3	-	Construction Sites	Lack of Erosion Control
	4	-		Increased impervious areas
	5	-		Loss of infiltration duct to growth
18	1	-	Grass clippings in street	216 Millston Ave.
	2	+	Roof drainage to Park lot	208 S. Main
	3	-	Park lot lacks storm drainage	Lot eastside Main Street on Spring Street
	4	-	Silt on sidewalk from street runoff	220 Sauk Street
	5	-	Grass clippings	514 Seminary Street
	6	-	Improper drainages	Main Street Centre
	7	-	No storm sewer	Piggly Wiggly
	8	-	Tree leaves in street	116 Washington Ave.
	9	-	Leaves plugging drain	Grant & Market
	10	-	Grass clippings in street	204 Lodi Street
	11	+	Parking lot drain	105 1st Street
	12	+/-	Park and trees over hanging creek	City Park
	13	+	Park land	City Park
	14	-	Leaves in creek	At City Park
	15	+/-	Trees and weeds over hanging creek	Vets Memorial Park
19	1	+	Marsh	N. Main Street Great Natural Filtration
	2	+	Park	Natural Filtration
	3	+	Sea lever gauge in creek	Behind treatment plant
	4	+	Rain gauge	Treatment plant
	5	-	Field 62 house development	Hwy J
	6	-	Field 62 house development	
	7	+	Runoff natural filtration	Behind 216 N. Main
20	1	-	Slope runoff	City Park
	2	-	Slope runoff	Apart & Landscape runoff
	3	-	Slope runoff	Issue from above
	4	-	Slope runoff	Drainage and where bark is if grass not cut bark in lawn
	5	-	Parking lot runoff	
	6	-	Back corner lot	Problem from runoff
	7	-	Runoff no grade	End of curb Dev. Drive
	8	+/-	Runoff area/grass clippings	Opposite side of road (Dev Drive
	9	-	Runoff site in road	Dev Drive & Vilas Hubbard
	10	+	Erosion Control rocks & ditches	North end Lodi Golf Course/Industrial Park Road
	11	+/-	Potential issue plugged culvert	Can't dry out on top
	12	+	Gully ditch for runoff	Golf course

Camera #	Photo #	+/-	Subject of Photo	Location of Photo
21	1	+	Home rain garden	116 Merton Ave.
	2	-	Clogged drain	
	3	-	Sink where sewage	
	4	-	Drainage washout behind HS	
	5	-	Over development	
	6	+/-	Retention pond/ditch pebblestone dev	
	7	+/-	Rain garden/outlet into creek	
	8	+	Wastewater plant	
22	1	-	High School Parking lot	
	2	-	New construction	Condo construction across from Middle School
	3	+	Middle School Prairie Garden	On Golf Course Hill
	4	?	Good or Bad? Runoff from Golf course	Strangeway pours onto street
	5	-	Storm	Runs downhill into picture
	6	-	Runoff swale/birm from golf course plus farmland chemicals	
	7	-	Main Street Bridge construction	
	8	-	Gas stations next to creek	
	9	-	Different directions parking lot	Hwy 60
	10	+	New rain garden	Main Street
25	1	-	Downspout tiled to Street	53 Vilas Hubbard
	2	-	Grass/pesticide sign	Stop sign Strangeway & Vilas Hubbard
	3	-	Unsecured construction site	Fieldstone Drive
	4	-	Storm sewer grid	Fieldstone Drive
	5	-	Storm sewer gutter grid	Fieldstone Drive
	6	-	Secured and unsecured sites	W. Sunset
	7	-	Poor engineering	Ellie Rae Drive
	8	-	Construction site erosion	W. Sunset Drive
	9	-	Unsecured dirt pile	W. Sunset Drive
	10	-	Dumpsters on SC bank	Spring Creek Tavern
	11	-	Unique roof drain	Gausers
	12	-	Golf Course drain	Strangeway
	13	-	BP oil slick to drain	Portage
	14	-	Assco. Bank lot runoff	#60 and #118
	15	-	Bank lot gully into creek	" and "
	16	-	Okee Bay	Okee #113 Spring Creek
	17	-	Green algae Okee Bay	Okee #113 Spring Creek
	18	-	Lodi Public Works runoff	#60 Public Works garage area
	19	-	Lodi Public Works runoff	#60 Public Works garage area
	20	-	Canning Co. culvert	#60 across from Col. Cty garage
	21	+	Rain garden over flow	#60, 113 Pleasant St.
	22	-	Pebblestone runoff to marsh	#60 between Canning Co and Mc Cully Road
	23	-	Pit detention runoff to marsh	#60 next to Canning Co. driveway
	24	-	Pit detention and spillway	Behind 330 Lodi St. Public Works site

Camera 17

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Camera 18

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Camera 19

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Camera 20

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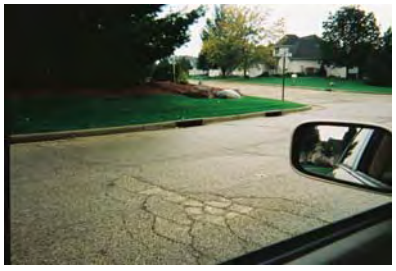

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Camera 25

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Appendix 3A

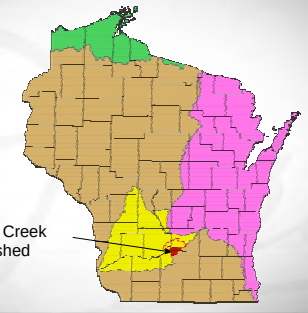
Spring Creek Watershed Presentation Slides

Lodi Spring Creek

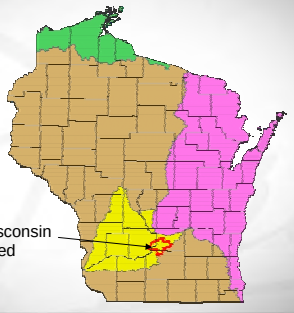
An Overview of the Creek and its Watershed

Spring Creek Watershed

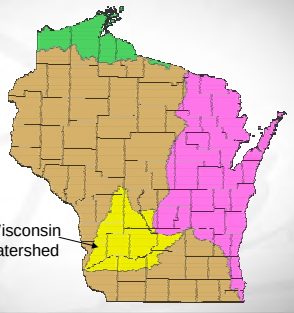
Spring Creek Watershed



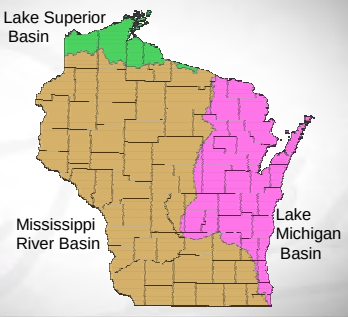
Lake Wisconsin Watershed



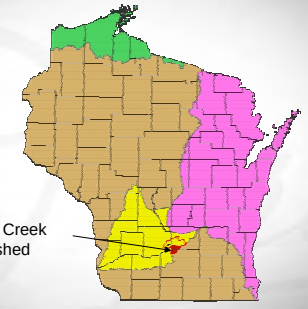
Lower Wisconsin River Watershed



Wisconsin Major Drainage Basins

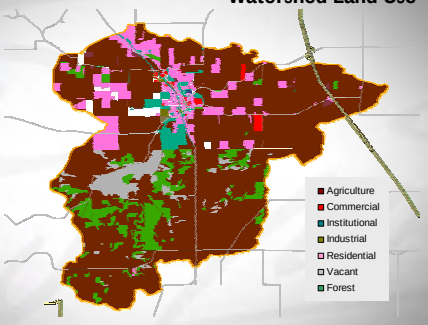


Spring Creek Watershed

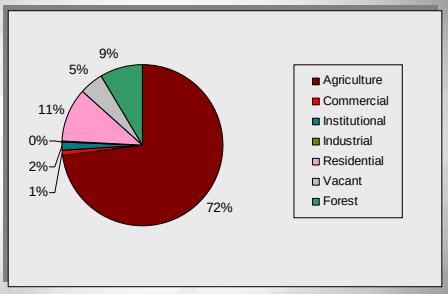


Spring Creek Watershed

Watershed Land Use



Watershed Land Use



Spring Creek

- Boasts some of the best trout populations per mile in the three county area.
- Classified as a Cold II Stream– *"a cold water stream capable of supporting coldwater fish and other coldwater aquatic life, with some natural reproduction, however, some stocking is necessary to maintain fisheries."*
- In 1985 the stream within and downstream of Lodi was determined to be the best portion of the stream for trout.
- Between 1985-1988 the DNR completed over a mile of habitat improvement work between the sewer plant and the park.

Sources:
WDNR, Lower Wisconsin State of the Basin Report, July 2002
Larson, Tim, Management of Trout Fishery of Lodi Creek, January 2005.

Stream Impairment

Stream Impairment Impacts

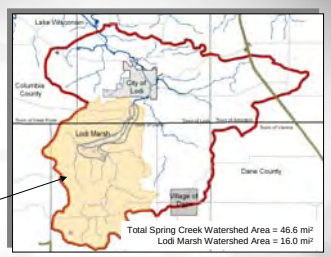
- Habitat
- Temperature

Stream Impairment Sources

- Nonpoint Source Pollution
- Cropland Erosion
- Point Source Pollution
- Hydrologic Modification (dams, ditching)
- Streambank Pasturing

Sources: WDNR, Lower Wisconsin State of the Basin Report, July 2002

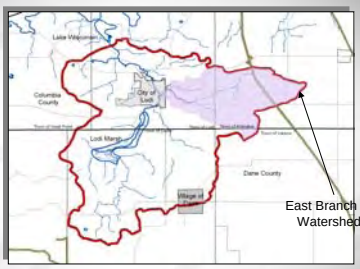
Lodi Marsh Area



- *Lodi Marsh drains 34% of Spring Creek watershed.*
- *Soil loss in rural areas has been estimated to be 6.1 tons/acre/year.*
- *Within and upstream of Lodi Marsh, the creek is well buffered from agricultural impacts.*

Source: WDNR, Lower Wisconsin State of the Basin Report, July 2002.

East Branch



- *Has the coldest water temperatures, which seldom exceed 60°F.*
- *Supports native brown trout population.*

Source: Schlimgen, Jason. Spring Creek Watershed, 2003.

Creek Segments

- Miles 1 through 4 are classified as an exceptional water resource
- Miles 7 through 11 are classified as "threatened", meaning that there is a *"clear and imminent threat to existing use"*
- Downstream of Lodi there is a decline in natural reproduction of trout.
- When the watershed exceeds 8% pavement, the water temperature will be too warm to support a trout fish population
- Macroinvertebrates are generally indicative of good water quality, yet below the City, are indicative of stream disturbance.

Sources: -WDNR, Lower Wisconsin State of the Basin Report, July 2002.
-Tim Larson, DNR Fisheries, personal communication.

Appendix 3B

Stormwater Best Management Practices Presentation Slides



Stormwater Best Management Practices

An overview of structural practices for attenuating stream impacts

MSA

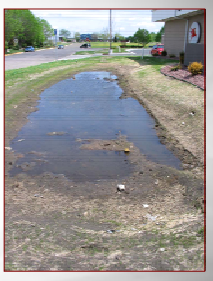
Rain Gardens

Drainage Area:
Rooftops

Typical Size:
200 ft²

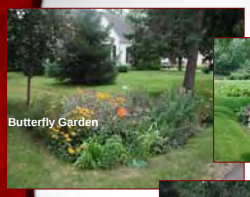
Primary purpose:
Rooftop runoff infiltration

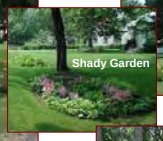
Rain Gardens

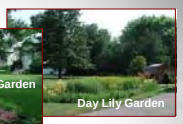


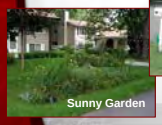
Case Study

Maplewood, MN Right-of-Way Rain Gardens









Rain Barrels

Drainage Area:
Rooftops

Typical Size:
55+ gallons

Primary purpose:
Rooftop runoff collection and re-use

Rain Barrels

Bioretention

- *Landscaping features adapted to treat stormwater runoff*
- *Commonly located in parking lot islands or within small pockets of residential land uses.*

- *Shallow, landscaped depressions designed to incorporate many of the pollutant removal mechanisms that operate in forested ecosystems*

Bioretention

Drainage Area:
0.5-2 acres

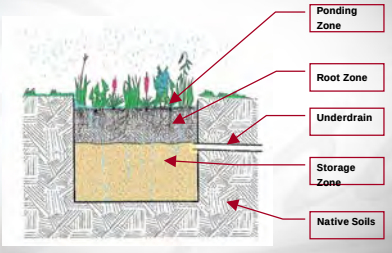
Typical Size:
1,500-3,000 ft²

TSS Attenuation:
Up to 100%

Primary purpose:
Infiltration and pollutant attenuation

Bioretention

Bioretention



Bioretention

Vegetated Swales

Similar to bioretention but a swale is longer than it is wide and also acts as a conveyance device.

Vegetated Swales

Drainage Area:
Low-medium density residential, along roads or other linear features

Primary purpose:
Infiltration and pollutant attenuation

Vegetated Swales

Case Study

Seattle Street Right-of-Way Drainage

Before

Case Study

Seattle Street Right-of-Way Drainage

After

Case Study

Seattle Street Right-of-Way Drainage

Aerial View

Swale Detail

Wet Detention Pond

Drainage Area:
> 5 acres

TSS Attenuation:
80%

Typical Size:
1%-3% of drainage area

Primary purpose:
Pollutant attenuation and runoff rate control

Wet Detention Pond

Dry Detention Pond

Drainage Area:
> 10 acres

TSS Attenuation:
50-60%

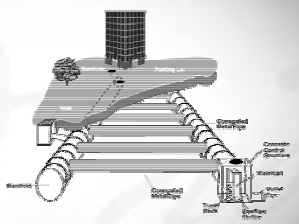
Typical Size:
2%–3% of drainage area

Primary purpose:
Pollutant attenuation and runoff rate control

Dry Detention Pond

Underground Detention System

- *Detention storage located in underground tanks or vaults designed to provide water quantity control through detention of stormwater.*
- *Intended for space-limited applications*
- *Typically used in combination with other practices that provide water quality treatment.*



Underground Detention System

Drainage Area:
High-density urban areas, <25 acres

TSS Attenuation:
Low

Primary purpose:
Runoff rate control

Infiltration Basin

Drainage Area:
Rooftop runoff; pretreated street & parking lot runoff

TSS Attenuation:
*Up to 100%**

Typical Size:
up to 1-2% of drainage area

Primary purpose:
Runoff Infiltration

* *Pretreatment of 60% of TSS in runoff is required before discharge to an infiltration devices*

Infiltration Basin

Infiltration Trench

Drainage Area:
Rooftop runoff; pretreated street & parking lot runoff

TSS Attenuation:
Up to 100%

Typical Size:
Varies

Primary purpose:
Runoff Infiltration

* Pretreatment of 60% of TSS in runoff is required before discharge to an infiltration devices

Infiltration Trench

Inlet Filtration Devices

Drainage Area:
<1 acre streets & parking areas

TSS Attenuation:
up to 20%

Primary purpose:
Pollutant attenuation

Manhole Filtration Devices

Drainage Area:
<10 acres, storm sewer tributary area

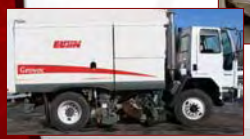
TSS Attenuation:
up to 20%

Primary purpose:
Pollutant attenuation

Street Sweeping

Service Area:
Local Streets

TSS Attenuation:
up to 15%



Primary purpose:
Pollutant attenuation

City of Lodi, WI

An overview of programs and regulations for attenuating stream impacts

Public Education & Involvement

Audiences

- General public
- Targeted audiences

Public Education

Potential Topics

- Illicit discharge
- Household waste management (fertilizer, pet waste, etc.)
- Leaves, grass clippings, fertilizer and pesticide management
- Stream bank and shoreline management
- Rooftop runoff infiltration

Public Education

Potential Program Elements

Press

Contractor Workshop

Website

High School Education Program

•Educational DVD
•Logo Design Contest

Rain Garden Workshop

Illicit Discharge Detection and Elimination

Program Elements

- Illicit Discharge Ordinance
- Outfall Inspection
- Illicit discharge investigation
- Corrective Actions
- Enforcement Procedures
- Spill Response
- Storm Sewer System Map

Construction Site Erosion Control

- Develop standards
- Incorporate standards into ordinance
- Administer ordinance
  - Plan review
  - Permitting
  - Site Inspection
  - Enforcement Action

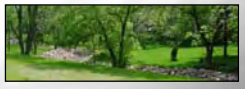
Post-Construction Stormwater Management

- Develop standards
- Incorporate standards into ordinance
- Administer ordinance
  - Plan review
  - Permitting
  - Site Inspection
  - Enforcement Action
  - Maintenance

Municipal Pollution Prevention

- Municipal source area controls
- Municipal lawn and garden chemical management
- Leaf and grass clipping management
- Street sweeping
- Snow and de-icer management

Thank You!



Wisconsin Rapids

Appendix 3B

Stormwater Utility
Presentation Slides



Stormwater Program Financing

City of Lodi Stormwater Utility Feasibility Study Results

Stormwater Utility – What Is It?

A Stormwater Utility, like other utilities, provides a *service* to the public supported by charging *fees* to its customers.

Service – Stormwater Management

- **Drainage**
- **Flood Damage Prevention**
- **Water Quality Management**
- **Erosion and Sediment Control**

Fee – Runoff Volume

Stormwater Utility - A step in the evolution of Public Services

Water Utility – 1950s
Waste Water Utility – 1970s
Solid Waste Utility – 1980s
Stormwater Utility - Now

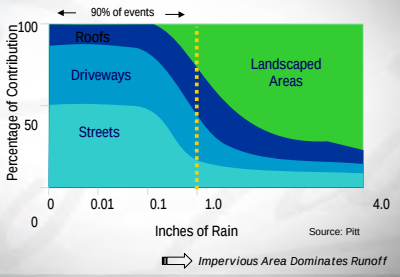
Need for Expanded Services with Improved Quality Provided by an Aging System = Increased Cost

Utilities - Funded Through User Fees

Water Utility – Volume of Water Used
Waste Water Utility – Volume of Water Used
Solid Waste Utility – Weight of Refuse Generated
Stormwater Utility - Stormwater Runoff

User Fees directly related to contribution to problem and/or benefit received from program

Basis of User Fee



Impervious Area Dominates Runoff

Basis of User Fee

- **Single Family** → Flat Fee = 1 ERU per Living Unit
- **Duplex** / **Multi-Family** → Flat Fee = ≤1 ERU per Living Unit
- **Commercial** / **Industrial** / **Tax Exempt** → Parcel Impervious Area / ERU Size(Sq. Ft.)* = # ERUs

* WI Average — 2,500 to 3,500

Determining Impervious Area
Residential

Single Family

Statistically Significant Random Sample

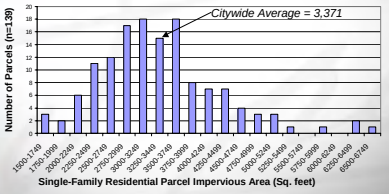
Multi-Family

All parcels >1 living unit

Determining Impervious Area - Residential

Determine ERU Size

Impervious Area Associated with Single Family Residential Parcels



Determining Impervious Area - Residential

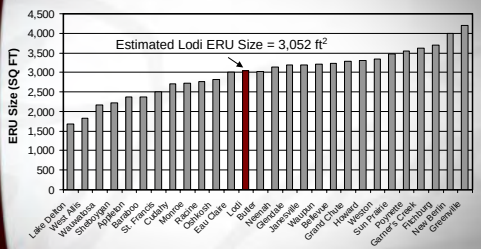
Determine ERU Size

Impervious area associated with all residential parcels:

	Average Impervious Area Per Living Unit	Approximate Number of Units Citywide
Single-Family	3,371	774
Duplexes	2,594	60
Multi-Family	1,915	193
	Weighted Average = 3,052	Total Living Units = 1,027

** WI Average — 2,500 to 3,500*

Wisconsin Stormwater Utility ERU Size



** WI Average — 2,500 to 3,500*

Determining Impervious Area
Non-Residential

For the feasibility study, the number of nonresidential ERUs was estimated based on city land use & parcel mapping

45.7 Ac. Commercial x 85% Impervious	= 38.8 Ac Commercial Imp.
18.2 Ac. Manufacturing x 72% Imp.	= 13.1 Ac. Industrial Imp.
116.2 Ac. Tax-Exempt x 60% Impervious	= 69.7 Ac.Tax-Exempt Imp.
Total Non-Residential Impervious	= 121.6 Acres

⇒ ***121.6 Acres Impervious / 3,052 sq.ft / ERU = 1,736 ERUs***

Determining Impervious Area
Non-Residential

If a utility were implemented, non-residential impervious areas would be measured using aerial photos

Create Rate Structure

Determine Charge –
Recommended Budget Group A $139,705

$$\text{Charge} = \frac{\$\text{Expense}}{\text{Units}} = \$/\text{Unit}$$

$$\frac{\$139{,}705 \text{ annual stormwater budget}}{2{,}763 \text{ Units (ERUs)}} = \$50.56/\text{ERU}/\text{YR}$$

ERU = Equivalent Residential Unit

Create Rate Structure

Determine Charge –
Existing City Budget $97,050

$$\text{Charge} = \frac{\$\text{Expense}}{\text{Units}} = \$/\text{Unit}$$

$$\frac{\$97{,}050 \text{ annual stormwater budget}}{2{,}763 \text{ Units (ERUs)}} = \$35.12/\text{ERU}/\text{YR}$$

ERU = Equivalent Residential Unit

Create Rate Structure

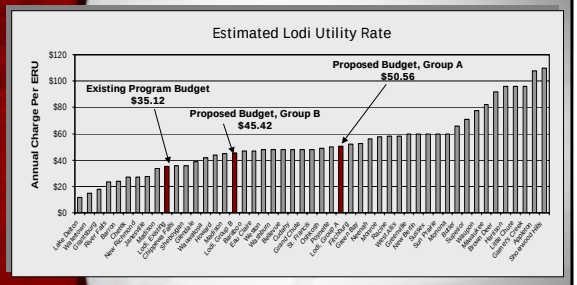
Determine Charge –
Recommended Budget Group B $125,500

$$\text{Charge} = \frac{\$\text{Expense}}{\text{Units}} = \$/\text{Unit}$$

$$\frac{\$125{,}500 \text{ annual stormwater budget}}{2{,}763 \text{ Units (ERUs)}} = \$45.42/\text{ERU}/\text{YR}$$

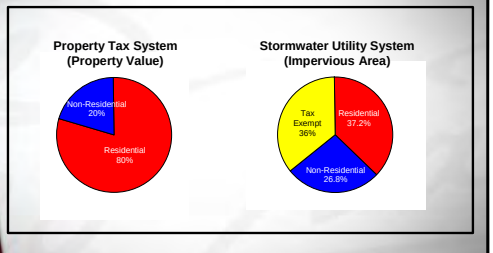
ERU = Equivalent Residential Unit

Wisconsin Stormwater Utility Rates



State Average = $53.45/yr
State Median = $48.44/yr

Reallocation of Charge Among Users



Stormwater Utility Credits

Possible Credits Types

- Direct Discharge to Waters of the State
  - ⇒*Does not utilize City storm infrastructure*
- Water Quality
  - ⇒*Reduce pollutants in runoff*
  - ⇒*Reduce temperature of runoff*
- Water Quantity
  - ⇒*Reduces Runoff Rate*
  - ⇒*Reduces Runoff Volume, (infiltration)*

Possible Credit-Eligible Customers

- Residential
- Non-Residential


Thank You!
MSA