PUBLIC COMMENTS
ON THE
DRAFT PEARSON CREEK TMDL

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Pearson Creek
WBID # 2373

Greene County, Mo.

Watershed Committee
of the Ozarks, Inc.

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September 29, 2010

WQMB Rec'd OCT 7 2010

William A. Spratlin, Director
Water, Wetlands and Pesticides Division
U.S. EPA
901 N. 5th Street
Kansas City, KS 66101

Dear Mr. Spratlin,

The Watershed Committee of the Ozarks is a 501-c-3 not-for-profit corporation in the state of Missouri established to protect the sources of public drinking water for the Springfield-Greene County community. In support of that mission, we have reviewed the TMDL document for Pearson Creek (MO_2373) in Greene County, Missouri, and would like to offer comments. In preparation for our comments, we also reviewed the draft comments from the Stormwater Division of the Springfield Public Works Department.

While public drinking water is not specifically listed as a beneficial use for Pearson Creek, the quality of that waterbody is of great interest to us since the creek discharges into the James River less than 300 yards above the Blackman Public Drinking Water Intake. Although Pearson Creek typically provides a relatively small portion of the flow of the James River at the intake (probably about 10-20%), its proximity to the intake increases its significance in terms of potential impacts on the public water supply.

The Watershed Committee first began examining water quality issues in the Pearson basin in detail in the early 1990s, when Norm Youngsteadt, a biologist working for City Utilities of Springfield (our municipal water provider), began analyzing long term trends in macroinvertebrate populations at several sites along the stream. His work suggested a decrease in biotic diversity from similar surveys done in the 1960s. Further work indicated a rather marked decrease in diversity below Jones Branch, where the "urban influence" was thought to have been a contributing factor.

There is no doubt that there have been significant increases in urban and suburban development in the Pearson Creek Watershed since the 1960s. The initial reaction to the loss of biotic diversity was to suspect some sort of "toxin" in urban runoff that selectively killed or suppressed the more sensitive species of stream life. Only later did we come to understand that land-use changes can lead to a whole suite of problems for streams in urbanizing areas, including alterations in flow regime, increased bank erosion, sedimentation and substrate infilling and compaction, and temperature and water chemistry fluctuations. This could be said of any "urban" stream in Missouri, all of which are probably "impaired" due to these types of factors. It would be very surprising if any urban stream in the state was not due for a TMDL similar in its intent to that which will be required for Pearson Creek.

For this reason, the development of a TMDL for Pearson Creek needs to be thoughtfully and carefully considered. It needs to be clearly articulated, flexible in its application and broad-based in its approach. Too prescriptive of a TMDL could cause the expenditure of resources, including manpower and dollars, toward solutions that could very well miss the mark in terms of actual improvements to the stream. At the same time, the natural setting of Pearson Creek is significantly different from streams in Kansas City or St. Louis. That is why several of the technical "errors" in the draft TMDL for Pearson Creek need to be addressed.

Perhaps the biggest flaw in the Pearson TMDL is not recognizing the karstic nature of the Pearson Creek watershed. A significant portion of the stream's flow comes from outside its surface watershed. The recharge area of Jones Spring, which has been significantly delineated, reaches more than a mile westward from the surface watershed divide into the highly urbanized portion of the city of Springfield. In the past, sinkholes in this recharge area, as in other parts of the city, were modified to accept higher volumes of storm flow. It could logically be argued that these "improved" sinkholes provide significant "volume reduction" in surface runoff, since much of the surface water is quickly shunted underground into the Jones Spring Complex (there are several interconnected spring systems along Jones Branch). These springs provide base-flow to Pearson Creek, which would otherwise be dry much of the year. Therefore, water quality management within the recharge areas of these springs takes on added significance in terms of the aquatic health of Pearson Creek.

This is not just speculation. Jones Spring has been contaminated several times in the past. During one event, the spring was contaminated with organic chemicals and smelled like shoe polish and fish were killed below the outfall. The problem was traced by Missouri DNR to a spill or leak at a chemical company located in a sinkhole area. Another fish kill in the lakes below Jones Spring occurred when a railroad tanker car overturned, releasing creosote into the waterway. And landowners along Jones Spring branch have complained for years about the amount of sediment discharged from the spring and spring branch upstream, which has largely filled the lakes along the branch. Because of problems such as these, the city of Springfield and Greene County have both developed sinkhole ordinances, which prevent the filling of sinkholes (since they are natural drains) and the excavation or modification of sinkholes as allowed in the past. For new development, water quality detention is now required before discharging stormwater to sinkholes. Both the city and county have also gotten more aggressive about erosion and sediment control at construction sites.

As in Jones Spring Branch, flow in the upper part of Pearson Creek, above the primary "urban influence," is also sustained by springflow. The Danforth Springs, the combined flows of which begin the normal perennial flow section in the creek near Farm Road 213, may also receive a significant portion of their recharge from outside the surface watershed of Pearson Creek (the recharge areas have not been extensively delineated, but probably include the I-44 corridor and developed areas near the city of Strafford). And like Jones Spring, the Danforth Springs have suffered contamination problems in the past. For example, land application of wastewater from a dairy lagoon resulted in the pollution

of a few springs and individual water supply wells in the upper watershed of Pearson Creek. A spray nozzle on irrigation equipment became clogged and during repairs, a pool of high BOD wastewater was allowed to pond in a sinkhole. In another case, the apparent application of herbicide near the creek resulted in the killing of streamside vegetation in several hundred feet of riparian area. These kinds of problems illustrate that spills or improper practices in agricultural areas, as well as in urban and suburban zones, can have serious water quality consequences for Pearson Creek.

In general, the infiltration of stormwater in urban areas is a good idea for reducing runoff volumes and providing for soil and vegetative filtration and treatment. However, in a karst setting, where stormwater sometimes infiltrates or drains too quickly, further induced infiltration can create water quality problems for the shallow groundwater and therefore impact the quality of the base flow of local streams. Induced infiltration in localized areas can also accelerate karst collapses, as we have seen numerous times in stormwater basins and wastewater lagoons. Furthermore, the additional infiltration of stormwater in the urbanized section of Springfield could create additional wastewater problems as this city, like many others, is attempting to reduce I & I problems in an aging sewer system.

Finally, we would also caution against too much emphasis on the "impervious area ratio" as a tool to measure stream "impairment." Studies in the Northwest have shown that as little as 5% impervious cover can negatively impact salmon stocks. While the Center for Watershed Protection has provided a useful service by calling attention to the issue of imperviousness and the so-called 10% rule, even this group attaches significant caveats to such generalizations. To our knowledge, there have been very few detailed studies that track impairment levels against imperviousness in watersheds that have been developed with widespread best management practice implementation. Almost all of the studies relating imperviousness to impairment have been done "post development" in watersheds with few water quality BMPs.

With this as a background, we would like to make the following suggestions with respect to the draft TMDL for Pearson Creek:

1) Given that all streams in urban sections of the state probably have had "impairment" as defined by loss of biodiversity for many decades, it may be unrealistic to expect that the biotic health of Pearson Creek, given its current level of imperviousness, can be restored to that of a "pristine" or even relatively "unimpaired" reference stream within a reasonable period of time (say, twenty years). Therefore, it might make more sense to set as a goal the restoration of diversity to some portion of the level of the "unimpaired" reference stream. With vigorous applications of better management practices, a more realistic biodiversity goal might be accomplished in a twenty year period.
2) While the radical fluctuations in flow typical of flashy urban streams certainly pertain to Pearson Creek, the flow regime of this stream is not that of a typical surface watershed. Instead, it exhibits a surface/subsurface water "budget" created and highly influenced by karst topography. We need to go slow in approaching

the issue of flow management in karst watersheds to make sure that the quality of both surface and subsurface waters can be protected and improved through our management processes. Attempting to force improvement through surface flow regulation may not be as feasible in a karst watershed as in surface flow dominated watersheds.

3) With Pearson Creek, restoring the flow regime to that approaching a "pristine" or "unimpaired" watershed is probably unrealistic. We simply cannot infiltrate, particularly in karst, a large enough portion of the runoff generated in urban settings to achieve both "unimpaired" surface flow conditions and high surface/groundwater quality. Perhaps a better goal is to manage runoff quality and channel conditions in ways that will restore some of the basic watershed functions and allow for a moderate recovery of stream life. This would involve the use of not only better management practices, but also stream buffers and better engineering techniques for channels (e.g. "soft" techniques like natural drop structures, bioengineered bank stabilization, etc.), which could accommodate the high frequency, high flow events typical of urban streams, while at the same time improving in-stream water quality and aquatic habitat.
4) As mentioned earlier, in the past some of the most serious water quality and toxicity problems in Pearson Creek have been traced to spills or leaks of materials in industrial or agricultural areas, particularly into sinkholes. Understandably, this issue is not addressed in the draft TMDL, at least partly because these kinds of events are infrequent. However, such events do have a higher probability near urban centers and can have severe detrimental impacts when they occur, including the potential to at least partially "undo" the water quality progress made through other means.
5) PAHs are being increasingly recognized for their potential toxicity in urban streams. These chemicals are found in coal-tar based parking lot sealants used throughout the eastern United States. At the current time, there are no regulatory restrictions on the use of these chemicals at either the state or federal level. Springfield is in the process of taking a closer look at the levels of these chemicals and their potential effects on the local aquatic environment. This is an issue on the regulatory "horizon," and restricting or banning the use of PAHs in the urban environment is a potential regulatory solution. The TMDL needs to be flexible enough to recognize that practices may need to be added or modified in the future as more information becomes available, but not specifically mandated in case further research determines the problem is not significant.
6) The TMDL is the process whereby water quality is intended to be improved and watershed functions restored. This, in fact, is the goal of all of the water resource agencies and organizations working together in the Springfield area, including the city and county Stormwater Divisions as well as the James River Basin Partnership and the Watershed Committee of the Ozarks. For this reason, these entities have jointly submitted a proposal for a Clean Water Act Section 319 project. This project, which is currently ranked #1 in the state for funding in the incremental category, will allow us to try some new ideas and techniques in the area of urban stormwater management. We need to have the opportunity to locally

develop and test some of these ideas before they are forced upon our community as "regulatory fixes."

7) The TMDL is partly a regulatory tool. But water management in urban environments is an evolving science. Our fear is that we could be forced into "regulatory fixes" before the problems and their most appropriate solutions are thoroughly understood and sensibly and broadly approached. It remains to be seen what some of the actual "best" management practices will be. Therefore, we would ask that the Pearson TMDL in particular, and any new TMDL for "urban" or "urbanizing" streams in general, be provided with the flexibility to change course or adapt as new ideas and methods are tried and tested, and either discarded as inefficient or ineffective, or adopted for wider use in the watershed.

Respectfully,

Loring Bullard, Executive Director

Pearson and Wilson/Jordan Creek TMDLs

Wagner, Todd to: R7TMDL, Debby White, Debby White, R7TMDL 09/30/2010 03:17 PM

Follow Up: Normal Priority.

Ms. White,

Please find attached comment letters on these two TMDL's. We are also faxing them to 913-551-9886 and mailing the originals today.

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Response Letter EPA Wilson Creek1.pdf Response Letter EPA Pearson Creek1.pdf

CITY of SPRINGFIELD

September 29, 2010

U.S. Environmental Protection Agency, Region 7
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901 N. 5th Street
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Attn: Ms. Debby White, Water Quality Management Branch, Pearson Creek
Fax: 913-551-9886
Email: R&TMDL@epa.gov

Re: Public Comment for Pearson Creek Draft TMDL

Ms. White:

The City of Springfield Stormwater Services Division has completed its review of the Draft TMDL of Pearson Creek and offers the following comments on behalf of our community and citizens. As with any document produced by the EPA or Missouri DNR where the City of Springfield is named as a significant, or in this case the primary contributor to watershed pollution, we are disappointed that we were not given the opportunity to work with you on development of the document prior to it being placed on public notice. In fact, a specific request was made to review the document prior to going on public notice that was not granted. This is of particular concern with this TMDL where urbanization is named as the primary source of pollution and the stated implementation plan is exclusively through enforcement through MS4 permits. In addition, the document has several inaccuracies, omissions and errors that could have been avoided had local agencies and other local entities been consulted, as we have a wealth of information and a better knowledge of local watershed conditions.

The City believes that having only 30 days to conduct an in-depth review of this document and prepare comments is an inadequate timeframe and burdensome to agencies and citizens. This is particularly problematic when two TMDL's, both affecting the City (and Greene County) are placed on public notice simultaneously, in effect cutting our time to review each document in half. For this reason, these comments may not be complete and further comments and opinions may be developed in the future. It is requested that in the future this burden on the public would be taken into account when placing documents on public notice.

Upon review, our general opinion of the document is that it has been prepared hastily with a lack of quality control, perhaps due to the legal time limitations that have been placed on the EPA/MDNR to produce the TMDL. We believe the document lacks adequate and accurate background information, overlooks numerous potentially significant sources of pollution, oversimplifies the solution by using flow as the surrogate for all potential pollution sources, uses reference streams that are inappropriate and unattainable and has a bias toward placing an undue amount of the cause of impairment on urbanization as opposed to other significant sources such as agriculture. For these reasons we believe the proposed approach to Pearson Creek reaching full attainment of beneficial uses and state Water Quality Standards will very likely be unsuccessful unless major modifications are made to the document and implementation plan. Due to all of the deficiencies listed above and detailed below,

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we believe it should have very limited applicability in the future without a significant amount of additional study and refinement.

We believe that the TMDL runoff reduction targets and the rationale used to identify those targets are not well supported by the data and analyses provided. Areas of concern identified during our review include:

- The Lack of a Defined Stressor-Effect Relationship. The draft TMDL does not establish causality between runoff and beneficial use attainment. Information presented in the TMDL does not provide any assurance that benthic macroinvertebrate metrics or habitat will positively respond to decreased runoff.
- Feasibility of Attaining Runoff Reductions. Runoff reduction targets outlined in the TMDL have not been developed with appropriate consideration of effect on groundwater and drinking wells in the area. Furthermore, the TMDL has not considered the effects that increased infiltration would have on accelerating the formation of sinkholes and collapses in the area's karst geology.
- Limited Data are Presented and Conclusions are Not Well Supported. The TMDL does not provide raw water quality, biological, or flow data and does not present quantitative analyses of those data to support the TMDL's conclusions.
- Comparability of Reference Streams. The draft TMDL relies on reference stream watersheds that have a significantly different size and land use composition than Pearson Creek. The rationale supporting selection of these streams is not clear.
- The Impacts from Jones Spring Branch are Not Adequately Considered. Jones Spring Branch is known to have historical water quality issues (MDNR 2010b) however its effects on use attainment on Pearson Creek is not independently presented or evaluated.

Please consider the following specific comments:

1. We believe the aquatic invertebrate data that was used to place the stream on the 303(d) List should be included in an appendix. Not only would this make this critical data more accessible, but viewing and comparing all the data in its entirety would be helpful in determining trends, identifying variations among data sets, determining the degree of impairment and would allow for other possible observations. Understanding the degree of impairment would allow for a corresponding degree of action necessary to address the impairment. This approach has apparently not been used in this proposed TMDL.
2. The TMDL does not establish causality between runoff and beneficial use attainment in either the TMDL streams or the chosen reference streams. Information presented in the TMDL does not provide any assurance that benthic macroinvertebrate metrics will respond to changes in stormwater runoff.
    a. The TMDL does not present data and analyses to support the TMDL assumption regarding biological attainment in Pearson Creek. Because only a general summary of biological and habitat data is presented on page 26, it is difficult to determine whether the data support the TMDL's assumption that runoff results in a decrease in community health and stream habitat. The City requests that the TMDL present all biological and hydrology data as well as a quantitative analysis of the assumed relationship between the variables. If data indicate the relationships are weak or do not exist, the City believes that the underlying TMDL assumptions are not supported.
    b. The TMDL has not demonstrated that habitat is degraded in Pearson Creek. According to MDNR (2003), a habitat score is considered to be comparable to reference streams if it is at least 75% of the reference score. The City would like to point out that in a recent report (2005) MDNR concluded that habitat conditions in Pearson Creek ***were comparable*** to those in Bull Creek

(section 4.1, page 15). The City requests that efforts be made to compare habitat scores collected from Pearson Creek to habitat scores from appropriate reference waterbodies to determine if any habitat degradation has occurred. Should degradation be detected, the City requests that the TMDL provide a quantitative analysis of the habitat data to determine the cause of the degradation. If the analyses do not show that runoff runoff are weak or do not exist, the City believes that the underlying TMDL assumptions are not supported.

c. The TMDL does not present data and analyses to support the TMDL assumptions that changes in hydrology have degraded habitat. On page 28, the TMDL states "the negative effects on water quality from urbanization within a watershed include loss of habitat, increased temperatures, sedimentation and loss of fish populations (EPA, 2005). These effects can be explained in large part by the increase in the magnitude, frequency and duration of storm flows in urban watersheds relative to flows in watersheds with less impervious area and the chemical pollutants that are carried by storm water." The TMDL goes on to say (pg. 28), "Specific data collected in Pearson Creek demonstrate that storm water impacts described in the literature are present. The chemical and physical data linking storm water impacts to decreased aquatic life are described below." However, the TMDL does not present specific data demonstrating these impacts. It only quotes conclusions from an MDNR habitat assessment survey which says that "some habitat category scores (pg. 30)" scored poorly. From these statements, the TMDL then concludes (pg. 31) that "Poor ratings for these habitat categories are linked to changes in hydrology of Pearson Creek caused by urban storm water as a result of urbanization." The City believes that this conclusion is not supported by the data provided. MDNR's habitat assessment procedures (2003) were designed to "identify obvious constraints on the attainable biological potential of the site, assist in the selection of appropriate sampling stations and provide basic information for interpreting biological survey results (MDNR 2003, page 4)" and were "not intended as a stand-alone product for problem identification (MDNR 2002, page 11)". It is apparent that the habitat assessment procedures were not designed to identify specific sources of habitat degradation. The City requests that the TMDL present an analysis of the data which does support the conclusion that habitat degradation is linked to changes in hydrology caused by storm water. If data indicate the relationship is weak or does not exist, the City believes that the underlying TMDL assumptions are not supported.

d. The biological attainment requirements outlined in the TMDL are unnecessarily stringent. On page 34, the TMDL states that "MDNR believes a target of 100 percent of all sites surveyed receiving a fully supporting rating can be accomplished through actions and BMPs used to reduce storm water runoff and stream restoration." The City is concerned that attainment requirements described in the TMDL are more stringent than those described by MDNR in the 2010 303(d) listing procedures (MDNR 2010a) and would like clarification regarding this requirement.

3. It would be beneficial if the water quality data in Appendix A were compared to Water Quality Standards or benchmarks that would relate the levels to aquatic invertebrate health. This could help determine if any specific pollutants are possibly contributing toward the toxicity. It would also give some sense as to whether the stream is severely impaired or only moderately impaired.

4. Water quality data presented in Appendix A and discussed, but not presented, in section 4.4.2. are grouped from many monitoring sites on both Pearson Creek and Jones Spring Branch. Presenting the data in this manner precludes in-depth analysis of the data with respect to applicable water quality criteria and identifying potential sources of the impairment. This is particularly important since Jones Spring

Branch is known to have historical water quality issues (MDNR 2010b). The City requests that the raw data and their sources be included in the TMDL.

5. Data in Appendix A appear to be missing critical metadata (detection limits, parameter codes, sampling locations, etc). The lack of metadata makes interpretation unclear and limits any useful analysis.
6. Jones Branch and Jones Spring are mentioned as possible significant sources of pollution based on water quality data taken above and below the Jones Branch tributary. Yet no information is provided regarding the recharge area of Jones Spring in the TMDL and it is not shown on the map or included in drainage area and runoff calculations. The recharge area of Jones Spring has been well-documented through dye tracing and has been identified primarily as an internally drained area west of U.S. 65, at least two square miles in size, making it a significant part of the watershed that has been overlooked in this study. Without the recharge area for the Jones Spring added to the total Pearson watershed area, the unit runoff calculations and other related calculations are in error.
7. Several potential sources of toxic material exist in the watershed and were not mentioned in the TMDL. These include long-time industrial uses along the U.S. 65 corridor that could be a source of old groundwater or surface water contamination, an old landfill northeast of U.S. 65 and Catalpa Street with a documented history of environmental impacts and the remnants of old lead mining operations within the watershed including a mound of lead tailings just east of U.S. 65. The EPA or DNR should have records of these potential sources. Refer to Enclosure A which is a scan of a U.S.G.S quad map showing old mines circled in red. Also drawn in red is the approximate location of the landfill. These are all in close proximity and up-gradient to Jones Spring and Jones Branch. Addressing these sources would likely occur at the federal or state level as they would be beyond the typical regulatory authority of a city's MS4 permit.
8. In reviewing USGS water quality data at Highway D it was found that an extremely high dissolved lead content was measured on July 12, 2000, the date of a major flood event in and east of Springfield. This is somewhat unusual and should cause interest in further study as to the cause, given the existence of lead mine tailings and historic existence of lead mines in this area. In addition, review of MDNR sediment data on Jones Spring Branch reveals a lead content about 50 percent above the Probable Effect Level measured in one sample. Again, these lead levels are unusually high considering the moderate level of urbanization and may point to the existence of a point source. Existing data of this type is very limited and these results should warrant further testing.
9. In reviewing the very limited data available on the presence of PAH's in sediment, MDNR data on Jones Spring Branch shows levels of all 5 PAH's tested at a level approximately 10 times the Probably Effect Level. Again, this is much higher than expected in a watershed with moderate urbanization and would point to the possibility of point source. Both this and the previous comment are specific examples that cause reason to believe point sources of toxic materials may play a significant role in the cause of toxicity in Pearson Creek, and that the strategy of addressing toxicity simply by reducing runoff flows from urban area very possibly will not address the problem, and in fact, increasing infiltration and subsurface flow in areas of soil contamination could worsen the problem.
10. It is a significant statistic that the human population of the Pearson Creek watershed is estimated at 8,160 whereas the livestock population in the watershed is estimated at 7,000. Human sewage is treated through public sewer systems or on-site treatment while the vast majority of the livestock sewage is left untreated and is occurring in or near water bodies where animals tend to congregate. This illustrates the necessity of improved livestock management practices which has been overlooked as part of the implementation plan.

11. It is very confusing how the report addresses the MS4 permits of the City of Springfield and Greene County. The City has a Phase 1 permit which is within the City limits. Greene County has a Phase 2 permit which applies to urbanized areas outside the City limits. References throughout the document vary in how these permits are used and described. For instance, on page 14 it states the Greene County MS4 covers the Springfield urban area but does not mention the Springfield MS4. Table 6, Permitted Facilities in the Pearson Creek Watershed, lists the Greene County small MS4 but does not list the Springfield large MS4. Yet on page 48, Implementation Plans, it is stated that the TMDL will be implemented primarily through the City's MS4 permit and does not mention the Greene County MS4 permit. Nowhere is there any determination of the respective areas within both the City and County MS4 permit area nor has any attempt been made to estimate the approximate contribution of flow or pollution from the respective areas. Without this information it would be impossible to effectively implement the TMDL through the two separate and independent MS4 permits.
12. Reference is made to the rule of thumb that 10 percent impervious area in a watershed is the threshold for aquatic life degradation (although many in the industry would debate whether that rule of thumb applies in all situations). According to data in the report there is approximately 10.3 percent impervious area in the watershed attributed to urban area. A closer look at the broad MoRAP data and assumptions used to estimate impervious area, it is apparent that the estimates are probably high based on comparison to the City's high resolution aerial photos. It appears the actual amount of impervious is likely in the 5 to 10 percent range. Regardless of whether the actual total is slightly above or below the threshold rule of thumb, it would seem that the existence of impaired aquatic populations in a watershed that is merely near the threshold level of urbanization beginning to cause impacts would point to the likelihood that there are other significant sources of pollution that must be addressed and the proposed implementation plan solely through reducing urban runoff volume through MS4 permits will not effectively accomplish the stated goals.
13. We believe the significance of on-site wastewater treatment systems may be significantly higher than stated. The number of systems may be underestimated due to the rural nature of the watershed and the number of subdivisions that are not on public sewer system. We believe the rate of failure to be higher than estimated and there are many undetected "failures" due to the karst nature of the watershed provide many direct paths for wastewater to reach area springs and the stream. There are readily available data from local agencies to better assess these conditions and more study could result in a better definition of the significance of this source.
14. Referring to Table 8, identifying stream stressors and their sources, why were urban sources highlighted as opposed to categorizing all significant sources including agriculture? Some of the information in this table is misleading and it appears there is an unfounded bias toward building a case for urbanization being the sole primary cause of impairment. Following are concerns with the information in this table:
    a. Why are high peak flows attributed solely to urban sources and impervious area when only 10 percent or less of the watershed is impervious? Deforestation due to agricultural uses is also a significant contributor to increased stormwater flows. This watershed contains only approximately 15% forest compared to 60 – 75% forest in the reference streams. Based on historical aerial photos the deforestation occurred many years ago for agricultural purposes and lead to the initial degradation of the stream at some point in the past. All of the causes of high peak flows including agricultural deforestation must be identified to accurately capture all of the significant sources to the impairment.

b. Why are agricultural practices not mentioned as a potential source of toxic contaminants? The use of agricultural chemicals, fertilizers, pesticides and the untreated sewage from approximately 7,000 large livestock should at least be considered as a potentially significant source of toxic contaminants and should be addressed in the implementation plan.

c. Impaired stream habitat may be due to increased runoff (from both urban and agricultural sources) but the statement that it is caused by "Increased urban runoff volume" is again biased toward urbanization impacts and ignoring other sources of increased runoff.

d. Showing "Riparian land cover alteration" as being related to impervious area is incorrect and another example of a biased representation. Aerial photos show the vast majority of riparian alterations have occurred in rural farming areas, likely to utilize the most fertile farming land and give livestock access to water. Table 7 very clearly supports this position. It states that the land within 30 meters of the stream is approximately 50 percent unforested but only 10 percent low intensity urban and **0.2 percent impervious**. In other words, approximately 80 percent of the unforested area along the stream is agricultural in nature rather than urban. How can it be concluded that this condition is associated with impervious area?

15. Under section 4.4.3, item #4, it should be noted that none of the stessors listed exist along Pearson Creek to any significant degree or as a result of urbanization.
16. On Figures 9 and 10, the label of the x axis should be clarified. Percent exceedance is often calculated as annual exceedance but in this case it would appear the data was daily average and, therefore, the label should be Percent Daily Exceedance.
17. For the reasons stated above we disagree with the statement in Section 4.4.3, "Poor ratings for these habitat categories are linked to changes in hydrology of Pearson Creek caused by urban storm water as a result of urbanization." We do not believe it has been shown nor is it reasonable to assume that the marginal amount of urbanization in the watershed is the sole cause of degraded habitat as this section states.
18. Apparent typos in Appendix B include reference to Wilsons Creek rather than Pearson and reference to Christian County rather than Greene.
19. There are several concerns regarding the reference stream approach and the specific reference streams used:

    a. The reference steam watersheds vary in size from 191 square miles to 570 square miles. Pearson Creek has a watershed of 23 square miles (or 25 square miles, see comment 3). The watershed sizes are far too dissimilar in size to be comparable due to the spatial effects of localized rainfall events and karst effects. Larger watersheds typically have a lower storm runoff rate but a higher base flow rate per unit area. Scientific literature suggests that appropriate reference streams should have a watershed area that is within an order of magnitude of the test stream (Hughes et al. 1986). For a more reliable comparison, data from nearby watersheds of similar size, underlying geology and background land use should be used.

    b. The reference streams have watersheds that are 60 to 75 percent forested. The Pearson Creek watershed is approximately 30 percent urban/suburban, 15 percent forest and 55 percent open fields/agriculture. The land use is far too dissimilar to use the reference stream flow characteristics as a realistic goal for Pearson Creek. Data from nearby watersheds of similar background land use but minimal urbanization should be used. If watersheds of this type that support beneficial uses and Water Quality Standards do not exist then either the goal is not

attainable or stormwater controls on agricultural land uses must also be implemented to achieve the goals.

c. Plotting the Flow Duration Curves on a log scale gives the impression that the unit flows in the reference streams are very similar to each other when in fact they are not. For instance, at 5 percent exceedance, Bryant is approximately 2, North Fork is approximately 3 and Bull is approximately 4 cfs/square mile. The recommended flow for Pearson in the proposed TMDL, the average of the three, is approximately 3 cfs/square mile. Therefore, the TMDL is stating that at this point of the Flow Duration Curve, Pearson must have a flow of 3 cfs, 25 percent lower (better or less flashy) than Bull Creek, a pristine creek with a mostly forested watershed. Given the level of urban and agricultural activity in Pearson Creek this would seem excessive and virtually impossible to achieve. And the question must be asked, is this level of flow control really necessary to achieve the water quality goals for this watershed?

d. The aquatic invertebrate indices of the reference streams should be provided. The TMDL assumes that the Flow Duration Curves must be matched to achieve acceptable water quality? Is this really true? Could the Flow Duration Curve of Pearson be improved to a lesser degree and still achieve water quality goals? More information needs to be provided in the TMDL so that the entities affected by the TMDL can more fully understand the level of flow control that is really necessary to achieve goals.

20. There are numerous concerns related to the proposed approach of massive, widespread runoff volume reduction in an urbanized area underlain with karst geology. One of the primary concerns is pollution of groundwater and private drinking water wells. Another is the acceleration of the formation of sinkholes and collapses that could threaten streets, utilities and private structures. It has been well-documented by City and County staff that sinkholes and collapses are more prone to occur in detention basins and other natural stormwater management features. It is requested that these potential unintended consequences be clearly stated in the report so all costs and risks can be assessed. It is requested that a variety of Best Management Practices be encouraged using site-specific selection criteria that could rule out volume reduction as a feasible solution where particular potential risks are identified.

21. Appendix A should compare the data in the data summary table to water quality standard limits or levels believed to impact aquatic life so that specific toxins can be identified as the most likely cause of toxicity. This would be necessary for proper design of controls to minimize the impacts of that particular pollutant. For instance, if specific sources such as sediment from construction sites or PAH's from parking lot sealants were identified as probable causes of toxicity due to high levels in stream samples, relatively cheap actions could first be taken to begin to address those particular pollutants of concern rather than spending many millions of dollars that would be necessary to reduce runoff volume and change the Flow Duration Curve as described in the proposed TMDL and implementation plan.

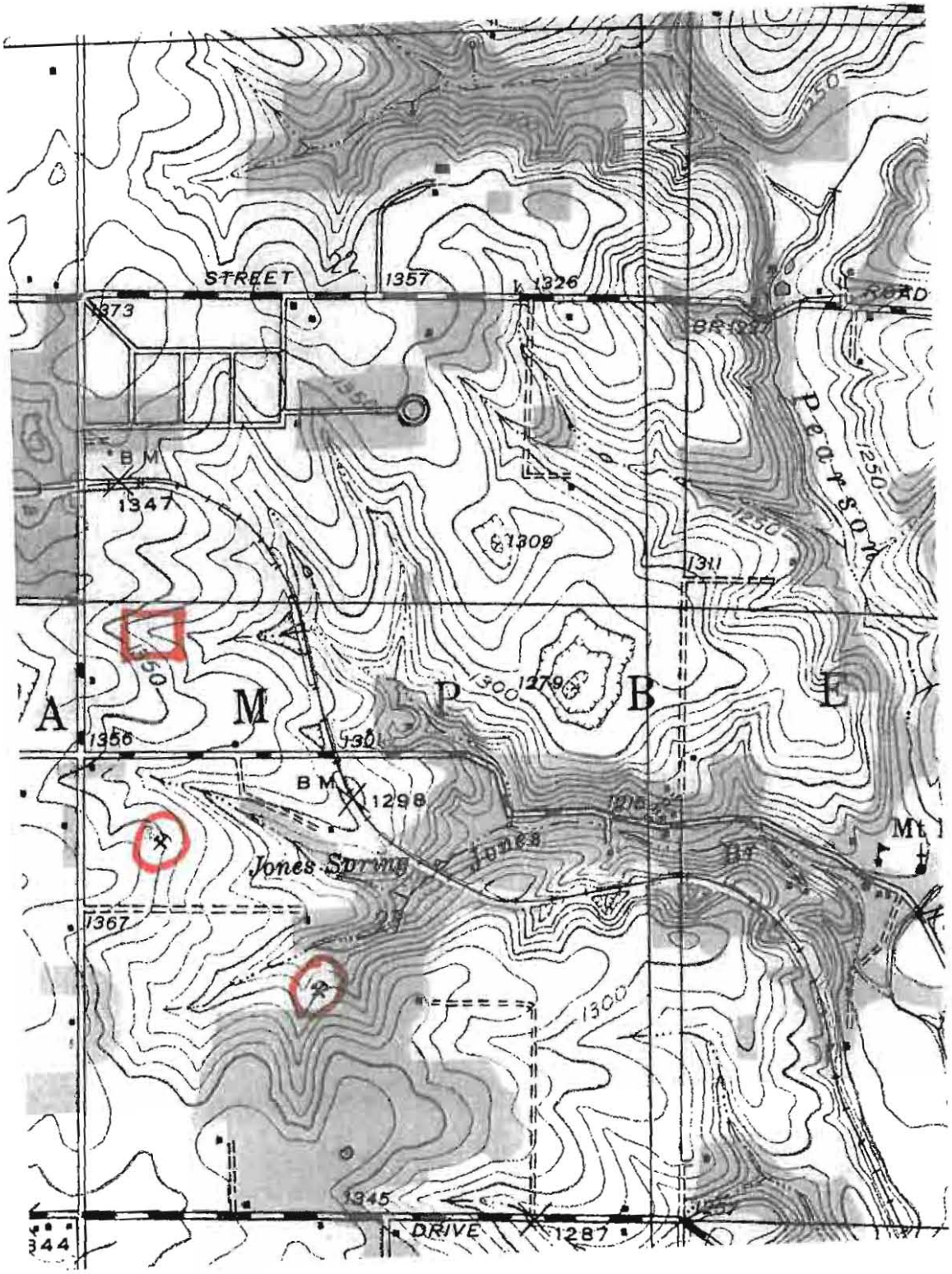
Thank you for the opportunity to comment on the draft Pearson Creek TMDL. We believe that much more background research and consideration of all potential sources are needed. We believe a more comprehensive implementation plan is necessary for the plan to be feasible and more likely to achieve the stated goals. We request that ALL potential pollutant sources be considered, studied in more depth and included in the implementation plan. It is requested that much more flexibility be provided in the implementation plan so that all the burden for water quality improvement is not placed on just urban runoff, but rather the responsibility is spread equitably among all potential pollutant sources. We request that the solution not be limited to just one narrow approach to pollution reduction, in this case stormwater runoff flow reduction, but rather be a palette of potential

measures to address a variety of pollutant sources that occur in varied environmental conditions throughout the Pearson Creek Watershed. Please feel free to contact me if you have any questions or would like to discuss. You can reach me at 417-864-1901 or twagner@springfieldmo.gov.

Sincerely,

Todd G. Wagner, PE
Principal Stormwater Engineer
Stormwater Services Division

Enclosure A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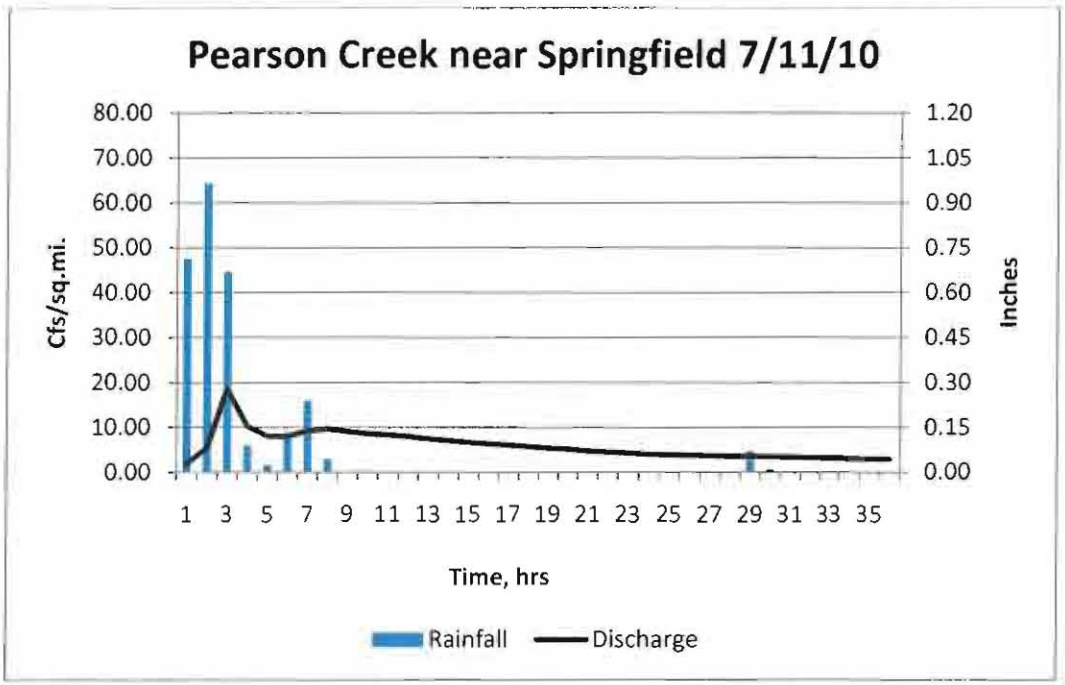
Enclosure B


Pearson Creek near Springfield 7/11/10
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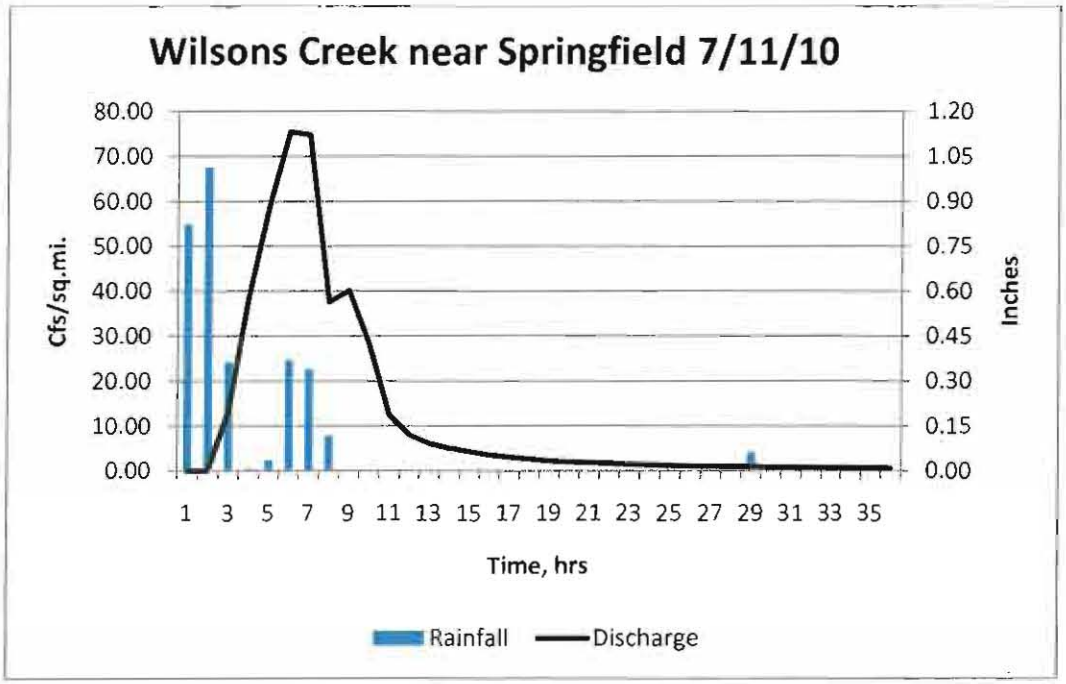
Wilsons Creek near Springfield 7/11/10
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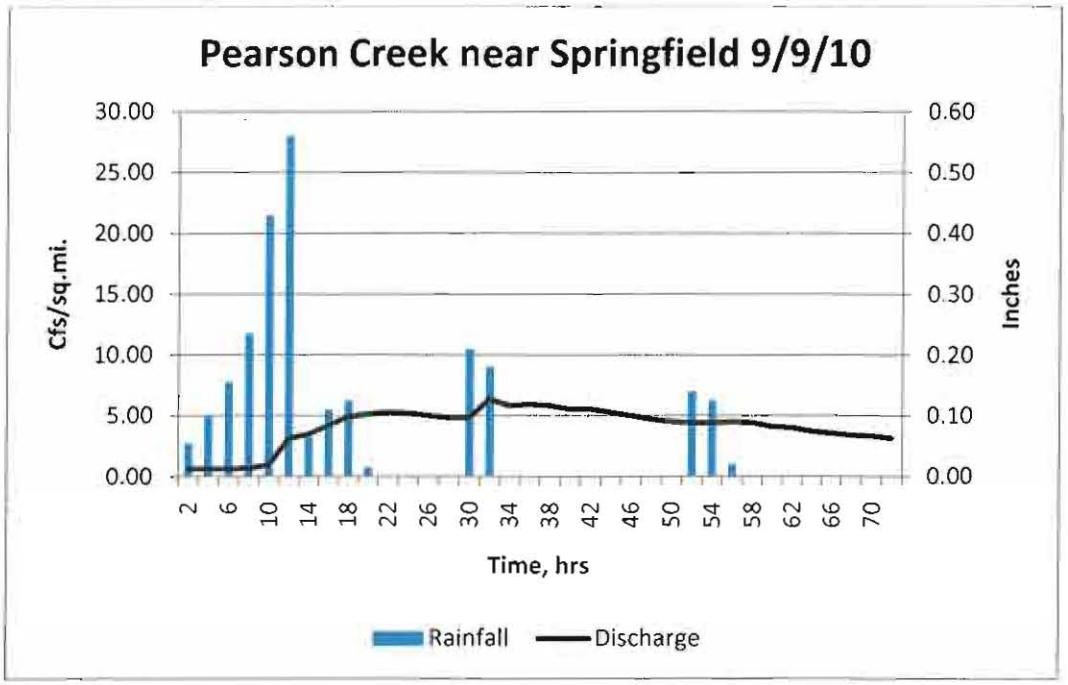
Enclosure C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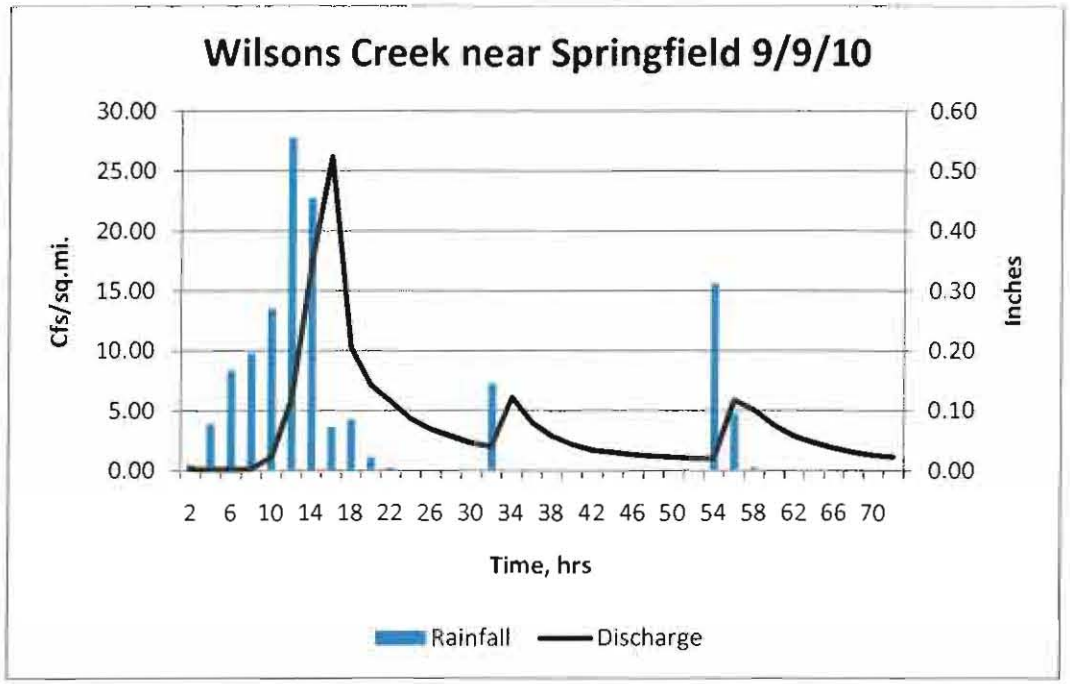
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Time, hrs
Rainfall
Discharge

Enclosure D

Old landfill site

Remains from lead mining operation in Cinnamon Square common area

Enclosure E

References

MDNR 2002. Biological Criteria for Wadeable/Perennial Streams of Missouri. Environmental Services Program. Jefferson City, Mo.

MDNR 2003. Stream Habitat Assessment Project Procedure. Environmental Services Program. Jefferson City, Mo.

MDNR. 2005. Pearson Creek Biological Assessment Study 2004-2005. Environmental Services Program. Jefferson City, Mo

MDNR. 2010a. Methodology for the Development of the 2010 Section 303(d) List in Missouri. Water Protection Program. Jefferson City, Mo.

MDNR. 2010b. Pearson Creek TMDL Information Sheet. Water Protection Program. Jefferson City, Mo.

Hughes, R., D. Larsen, and J. Omernik. 1986. Regional Reference Sites: a Method for Assessing Stream Potentials. Environmental Management 5:629-635.

CITY of SPRINGFIELD

September 29, 2010

U.S. Environmental Protection Agency, Region 7
Water, Wetlands and Pesticides Division
901 N. 5th Street
Kansas City, Kansas 66101
Attn: Ms. Debby White, Water Quality Management Branch, Pearson Creek
Fax: 913-551-9886

Re: Public Comment for Wilsons Creek/Jordan Creek Draft TMDL

Ms. White:

The City of Springfield Stormwater Services Division has completed its review of the Draft TMDL of Wilson Creek/Jordan Creek and offers the following comments on behalf of our community and citizens. As with any document produced by the EPA or Missouri DNR where the City of Springfield is named as a significant, or in this case the primary contributor to watershed pollution, we are disappointed that we were not given the opportunity to work with you on development of the document prior to it being placed on public notice. In fact, a specific request was made to review the document prior to going on public notice that was not granted. This is of particular concern with this TMDL where urbanization is named as the primary source of pollution and the stated implementation plan is exclusively through enforcement through MS4 permits. In addition, the document has several inaccuracies, omissions and errors that could have been avoided had local agencies and other local entities been consulted, as we have a wealth of information and a better knowledge of local watershed conditions.

The City believes that having only 30 days to conduct an in-depth review of this document and prepare comments is an inadequate timeframe and burdensome to agencies and citizens. This is particularly problematic when two TMDL's, both affecting the City (and Greene County) are placed on public notice simultaneously, in effect cutting our time to review each document in half. For this reason, these comments may not be complete and further comments and opinions may be developed in the future. It is requested that in the future this burden on the public would be taken into account when placing documents on public notice.

Upon review, our general opinion of the document is that it has been prepared hastily with a lack of quality control, perhaps due to the legal time limitations that have been placed on the EPA/DNR to produce the TMDL. We believe the document lacks adequate and accurate background information, overlooks numerous potentially significant sources of pollution, oversimplifies the solution by using flow as the surrogate for all potential pollution sources, uses reference streams that are inappropriate and unattainable and has a bias toward placing an undue amount of the cause of impairment on urbanization as opposed to other significant sources such as agriculture. For these reasons we believe the proposed approach to Wilson Creek/Jordan Creek reaching full attainment of beneficial uses and state Water Quality Standards will very likely be unsuccessful unless major modifications are made to the document and implementation plan. Due to all of the deficiencies listed above and detailed below, we believe it should have very limited applicability in the future without a significant amount of additional study and refinement.

DEPARTMENT OF PUBLIC WORKS
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phone: (417) 864-1900
homepage: www.springfieldmo.gov e-mail: city@springfieldmo.gov

Please consider the following specific comments:

1. We believe the aquatic invertebrate data that was used to place the stream on the 303(d) List should be included in an appendix. Not only would this make this critical data more accessible, but viewing and comparing all the data in its entirety would be helpful in determining trends, identifying variations among data sets, determining the degree of impairment and would allow for other possible observations. Understanding the degree of impairment would allow for a corresponding degree of action necessary to address the impairment. This approach has apparently not been used in this proposed TMDL.
2. It would be beneficial if the water quality data in Appendix A were compared to Water Quality Standards or benchmarks that would relate the levels to aquatic invertebrate health. This could help determine if any specific pollutants are possibly contributing toward the toxicity. It would also give some sense as to whether the stream is severely impaired or only moderately impaired.
3. Figures 4 and 6 are missing most of the map graphics.
4. Tables 5 and 6 title refers to "Wilson Creek Impaired Watershed" which is misleading as the stream is impaired rather than the watershed.
5. Using data from Table 6, the urbanized part of the MS4 area (the top three rows) has a composite impervious area percentage of over 57 percent. This far exceeds any detailed estimates the City has developed to estimate impervious area percentages in the City. Detailed studies of fully developed watersheds such as Fassnight Creek using high resolution aerial photos show a composite impervious area percentage of no more than 45 percent in areas of mixed uses of residential, multifamily and industrial/commercial. We believe the MoRAP data is a rough estimate that overestimates impervious area significantly.
6. It is confusing how the report addresses the MS4 permits of the City of Springfield and Greene County. The City has a Phase 1 permit which is within the City limits. Greene County has a Phase 2 permit which applies to urbanized areas outside the City limits. References throughout the document vary in how these permits are used and described. For instance, on page 15 it states the Greene County MS4 covers the Springfield urban area but does not mention the Springfield MS4. Table 7, lists the Greene County small MS4 but does not list the Springfield large MS4 as a general permit within the watershed. The first paragraph under Section 3.1.1 incorrectly describes the boundary of the City MS4 permit. Yet on page 48, Implementation Plans, it is stated that the TMDL will be implemented primarily through the City's MS4 permit and does not mention the Greene County MS4 permit. Nowhere is there any determination of the respective areas within both the City and County MS4 permit area nor has any attempt been made to estimate the approximate contribution of flow or pollution from the respective areas. Without this information it would be impossible to effectively implement the TMDL through the two separate and independent MS4 permits.
7. We believe the significance of on-site wastewater treatment systems may be significantly higher than stated. The number of systems may be underestimated due to the rural nature of the southern and western portions of the watershed and the number of subdivisions that are not on public sewer system. We believe the rate of failure to be higher than estimated and there are many undetected "failures" due to the karst nature of the watershed provide many direct paths for wastewater to reach area springs and the stream. There are readily available data from local agencies to better assess these conditions and more study could result in a better definition of the significance of this source.
8. Section 4.2 states Brewery Spring is polluted as clearly shown by odor, observance and the data summarized in Table 3 showing Benzene and Naphthalene above Missouri drinking water and

groundwater standards. Yet, the final paragraph states no pollutants have been identified and, therefore, stormwater flow will be used as a surrogate.

9. Referring to Table 11, identifying stream stressors and their sources, why were urban sources highlighted as opposed to categorizing all significant sources including agriculture? Some of the information in this table is misleading and it appears there is an unfounded bias toward building a case for urbanization being the sole primary cause of impairment. Following are concerns with the information in this table:
    a. Why are agricultural practices not mentioned as a potential source of toxic contaminants? The use of agricultural chemicals, fertilizers, pesticides and the untreated sewage from large livestock should at least be considered as a potentially significant source of toxic contaminants and should be addressed in the implementation plan.
    b. Impaired stream habitat may be due to increased runoff (from both urban and agricultural sources) but the statement that it is caused by "Increased urban runoff volume" is again biased toward urbanization impacts and ignoring other sources of increased runoff.
    c. Showing "Riparian land cover alteration" as being related to impervious area is incorrect. Aerial photos show much of the riparian alteration has occurred in rural farming areas, likely to utilize the most fertile farming land and give livestock access to water. Table 9 very clearly supports this position. It states that the land within 30 meters of the stream is approximately 60 percent unforested but only 8 percent low intensity urban and **2.9 percent impervious.** In other words, approximately 80 percent of the unforested area along the stream is agricultural in nature rather than urban. How can it be concluded that this condition is associated with impervious area?
10. Section 4.4.2 mentions historical pollutants including TSS, turbidity and nutrients, all pollutants commonly found in agricultural runoff. This should be mentioned in the text.
11. On Figures 8 and 9, the label of the x axis should be clarified. Percent exceedance is often calculated as annual exceedance but in this case it would appear the data was daily average and, therefore, the label should be Percent Daily Exceedance.
12. What data was used to establish the Wilson Creek Flow Duration Curve in Figure 9. Wilson Creek above the SW WWTP is a dry losing stream most of the time. This is not reflected in the FDC. It appears this data is erroneous.
13. There are several concerns regarding the reference stream approach and the specific reference streams used:
    a. The reference streams have watersheds that are 60 to 75 percent forested. The Wilson Creek watershed is approximately 33 percent urban/suburban, 12 percent forest and 55 percent open fields/agriculture. The land use is far too dissimilar to use the reference stream flow characteristics as a realistic goal for Wilson Creek. Data from nearby watersheds of similar background land use but minimal urbanization should be used. If watersheds of this type that support beneficial uses and Water Quality Standards do not exist then either the goal is not attainable or stormwater controls on agricultural land uses must also be implemented to achieve the goals.
    b. The log scale graphs in Figures 8 and 9 are misleading in showing the level of change in flows between the actual creek flows and the synthetic flows that are the goal for the TMDL. The 80 percent flow (typical dry conditions) would need to be increased by 2 to 4 times in both creeks. We do not believe this is a realistic goal.
    c. The aquatic invertebrate indices of the reference streams should be provided. The TMDL assumes that the Flow Duration Curves must be matched to achieve acceptable water quality? Is

this really true? Could the Flow Duration Curve of Wilson be improved to a lesser degree and still achieve water quality goals? More information needs to be provided in the TMDL so that the entities affected by the TMDL can more fully understand the level of flow control that is really necessary to achieve goals.

14. Section 5.1 states "Since Wilson Creek is a losing stream comparing the lower flow categories to the synthetic reference FDC is not an applicable comparison." Later it states only the 10 percent highest flows are important. Yet the graphs show the full range of flow as though the goal is to match the entire FDC. It would be much more clear if only the higher 10 percent flows were shown on the FDC's and the WLA graphs (Figs. 15 and 16).
15. There are numerous concerns related to the proposed approach of massive, widespread runoff volume reduction in an urbanized area underlain with karst geology. One of the primary concerns is pollution of groundwater and private drinking water wells. Another is the acceleration of the formation of sinkholes and collapses that could threaten streets, utilities and private structures. It has been well-documented by City and County staff that sinkholes and collapses are more prone to occur in detention basins and other natural stormwater management features. It is requested that these potential unintended consequences be clearly stated in the report so all costs and risks can be assessed. It is requested that a variety of Best Management Practices be encouraged using site-specific selection criteria that could rule out volume reduction as a feasible solution where particular potential risks are identified.
16. The source of the data presented in Table 10 of the TMDL is unclear. Although the data appears to be from the MDNR database, the TMDL references several potential data sources. Furthermore, Table 10 appears to group data from many monitoring sites on both Wilson and Jordan Creek. Presenting the data in this manner precludes in-depth analysis of the data with respect to applicable water quality criteria and identifying potential sources of the impairment. The City requests that the raw data and their sources be included in the TMDL.
17. Data in Table 10 appear to be missing critical metadata (parameter codes, sampling locations, etc). The lack of metadata makes interpretation unclear and any useful analysis difficult.
18. The TMDL does not establish causality between urban runoff and beneficial use attainment in either the TMDL streams or the chosen reference streams. Information presented in the TMDL does not provide any assurance that benthic macroinvertebrate metrics will respond to changes in stormwater runoff.
    a. On page 31, the TMDL presents only a general summary of biological and habitat data which makes it is difficult to determine whether the data support the TMDL's assumption that increased runoff decreases community health and stream habitat on Wilson and Jordan Creek. The City requests that the TMDL present a quantitative analysis of this assumed relationship. If the relationship is weak or does not exist, the City believes that the underlying TMDL assumptions are not supported.
    b. On page 34 the TMDL states, "The negative effects on water quality from urbanization within a watershed include loss of habitat, increased temperatures, sedimentation and loss of fish populations (EPA, 2005)." However, the TMDL does not present data showing that loss of habitat, increased temperature, sedimentation, or loss of fish data are a problem in the streams or that they were caused by urbanization. In fact, the TMDL states that the habitat scores were high at Site 7 and that Site 5 on Jordan Creek had the highest rated riffle and rootmat habitat (pg. 31). Furthermore, Site 5 on Jordan Creek had the "greatest community/stream health" for rootmat and pool habitats (pg. 31).

c. The TMDL has not demonstrated that habitat is degraded or that presumed degradation is attributed to changes in hydrology. According to MDNR (2003), a habitat score is considered to be comparable to reference streams if it is at least 75% of the reference score. Given that the highest possible score is 200, it is likely that the score from site 7 (143) will be at least 75% of a reference stream. Because scores from the other sites were not presented in the TMDL, it is yet unclear how they would compare to a reference score. The City requests that an effort be made in the TMDL to compare habitat scores collected from Wilson and Jordan Creek to habitat scores from appropriate reference waterbodies to determine if any habitat degradation has occurred. Furthermore, if the TMDL determines that habitat degradation has occurred, the City requests that the TMDL present and analyze data that demonstrate that degradation has been caused by changes in hydrology.

d. The TMDL does not provide any data showing that any difference between the biological scores from the reference streams and Wilson and Jordan Creeks are due solely to differences in hydrology. While the literature (Hughes et al. 1986) and USEPA guidance (Barbour et al. 1996) support the reference approach when evaluating regional stream differences, the TMDL does not provide sufficient data to quantify the assumed cause-effect relationship between runoff and biological health in any of the study streams. No information is presented in the TMDL to suggest that biological scores in Wilson Creek, Jordan Creek, or the reference streams are directly linked to runoff. Because this information is lacking, there is no support for the assumption that decreasing runoff will ultimately increase biological health in Wilson and Jordan Creek. At a minimum, the City requests that the TMDL present a quantitative analysis of this assumed relationship. If the relationship is weak or does not exist, the City believes that the underlying TMDL assumptions are not supported. Furthermore, the City requests that the TMDL reconsider comparing biological metrics from Wilson and Jordan Creek to the reference streams if results of the habitat comparison (see previous comment) indicate that habitat in Wilson and Jordan Creek are less than 75% of the reference stream as this may indicate the biology in the streams is habitat limited and not comparable to reference streams.

19. Conclusions drawn from the habitat and macroinvertebrate data presented on page 31 are inconsistent throughout the document. It appears as though the TMDL has reached opposing conclusions from the same data. For example:

a. On page 31, the TMDL states that Reach 5 (on Jordan Creek) had the highest rated riffle and rootmat habitat. On page 36, the TMDL states that Jordan Creek had an absence of riffles. It is unclear how both of these statements can be true. It appears as if, on page 31, the TMDL is attempting to support the argument that the habitat ***is*** of high enough quality to support a "healthy" community but cannot due to a ***water quality*** issue. Then, on page 36, it is attempting to argue that the habitat ***is not*** of high enough quality to support a "healthy" community due to a ***hydrology*** issue. These conclusions appear to be in opposition to one another.

b. On page 36, the TMDL states that both Wilson and Jordan Creeks ***had an absence of pools***. On page 31, it says that of all the sites, Jordan Creek had the greatest overall community/stream health ***for the pool habitat***. Furthermore, the TMDL states that reach/site 7 on Wilson Creek had that highest habitat score and "some of the highest metric values for macroinvertebrates ***for the pool habitat***." These conclusions appear to be in opposition to one another.

c. On page 36, the TMDL states that Wilson Creek had little brush or woody debris suitable for aquatic life habitat. On page 31, the TMDL says that Wilson Creek had the highest rated habitat

at Site 7 and the greatest rootmat community/stream health at Site 2. It is unclear how Site 7 on Wilson Creek could have high habitat scores and rootmat community health and still be considered to have little brush or woody debris suitable for aquatic life habitat. Again, it appears as if the TMDL has reached opposing conclusions from the same data in order to support TMDL assumptions

20. On page 40, the TMDL states that "MDNR believes a target of 100 percent of all sites surveyed receiving a fully supporting rating can be accomplished through actions and BMPs used to reduce storm water runoff and stream restoration." The City is concerned that attainment requirements described in the TMDL are more stringent than those described by MDNR in the 2010 303(d) listing procedures (MDNR 2010) and would like clarification regarding this item.

Thank you for the opportunity to comment on the draft Wilson Creek/Jordan Creek TMDL. We believe that much more background research and consideration of all potential sources are needed. We believe a more comprehensive implementation plan is necessary for the plan to be feasible and more likely to achieve the stated goals. We request that ALL potential pollutant sources be considered, studied in more depth and included in the implementation plan. It is requested that much more flexibility be provided in the implementation plan so that all the burden for water quality improvement is not placed on just urban runoff, but rather the responsibility is spread equitably among all potential pollutant sources. We request that the solution not be limited to just one narrow approach to pollution reduction, in this case stormwater runoff flow reduction, but rather be a palette of potential measures to address a variety of pollutant sources that occur in varied environmental conditions throughout the Wilson Creek/Jordan Creek Watershed. Please feel free to contact me if you have any questions or would like to discuss. You can reach me at 417-864-1901 or twagner@springfieldmo.gov.

Sincerely,

Todd G. Wagner, PE
Principal Stormwater Engineer
Stormwater Services Division

C: File
Law Department
Missouri Department of Natural Resource – John Madras

Enclosure A

References

MDNR 2003. Stream Habitat Assessment Project Procedure. Environmental Services Program. Jefferson City, Mo.

MDNR. 2010. Methodology for the Development of the 2010 Section 303(d) List in Missouri. Water Protection Program. Jefferson City, Mo.