NOVEMBER 1, 2018

STORMWATER QUALITY MANAGEMENT PLAN

BARDSTOWN

CITY OF BARDSTOWN
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AI # 3246

City of Bardstown
Stormwater Quality Management Plan

AI # 3426

This document contains the City of Bardstown's revised Stormwater Quality Management Plan (SWQMP) that reflects the updated requirements of the Municipal Separate Storm Sewer System (MS4) discharge permit received from the Kentucky Division of Water (KDOW) in 2018. This SWQMP was prepared by staff in the Engineering Department responsible for overseeing the implementation of the Permit.

Community Background

Bardstown, the county seat of Nelson County, is located approximately 40 miles south of Louisville in Central Kentucky. The City has a total area of approximately 12.1 square miles and a population of 11,700 per the 2010 Census. More recent surveys in 2017 estimate the population to be around 13,165. Major connecting roadways in the City include the Bluegrass Parkway (State Route 9002), US 31E, US 150, and US 62.

Bardstown is best known for its historic district and being a major center of the Bourbon Industry. Both attract a number of visitors, nationally and internationally, every year. Historic preservation guidelines limit development within the downtown area, but the City's growth continues in other areas of town. The majority of commercial and industrial development in recent years has taken place along KY 245 and in industrial parks east of town. Most new residential subdivision development is occurring outside the City limits to the northwest of town along KY 245 in the Cox's Creek area and to the east of town along Poplar Flat Road. For a summary of existing and future land uses, see Appendix A for maps from the Joint City-County Planning Commission's *Nelson County 2035: A Comprehensive Plan for the Cities of Bardstown, Bloomfield, Fairfield, and New Haven and Nelson County*. For a summary of land cover, see Appendix B.

The City has been a Phase II MS4 since 2005 and currently does not operate a separate stormwater utility. Instead the stormwater program is funded by the Roads Department, General Fund, and revenue generated from Land Disturbance Permit fees.

Local Water Resources

The City obtains most of its water from Sympson Lake, located west of downtown and outside city limits. During months with little rainfall, the Beech Fork River is used as a supplemental water source. The City operates a 4 MGD water plant which supplies water to almost all homes within the City as well as large areas of Nelson County. In addition to these, the City sells water to Larue County, Bloomfield, New Haven and North Nelson Water Districts which supply the remaining areas of the City, Nelson County, and portions of surrounding counties.

Based on the National Hydrological Dataset, all but a few small areas of the City are located in the Lower Beech Fork watershed. In addition to the Beech Fork River there are 4 named streams that pass through the City Limits for a total of around 7.4 miles of waterways that break down as follows:

Name	Length (Miles)
Beech Fork River	0.05
Coxs Creek	0.43
Rowan Creek	2.25
Town Creek	3.17
Withrow Creek	1.47

According to the most recent information available from the Kentucky Division of Water (Integrated Report to Congress dated 2016), there are a total of 5 named stream on the 303d list of impaired waters within Nelson County. Of those streams, only one passes through the City Limits (shown highlighted in the table below). A map is provided in Appendix C showing the Watersheds within the City and the location of all named streams.

Segment	Location	Designated Uses	Pollutant	Suspected Source(s)
Caney Fork 0 to 4.0	From Mouth to Headwaters	Warm Water Aquatic Habitat	Nutrient/Eutrophication Biological Indicators	Agriculture, Non-Point Source, Unrestricted Cattle Access, Urban Runoff/Storm Sewers
Chaplin River 0 to 23.1	Mouth to Beaver Creek	Primary Contact Recreation Water	Escherichia coli	Agriculture
Cox Creek 11.4 to 18.6	From Froman Creek to Caney Fork	Warm Water Aquatic Habitat	Nutrient/Eutrophication Biological Indicators	Agriculture, Animal Feeding Operations (NPS), Non-Point Source
Cox Creek 18.6 to 23.8	From Caney Fork to Headwaters	Warm Water Aquatic Habitat	Nutrient/Eutrophication Biological Indicators	Agriculture, Crop Production (Crop Land or Dry Land), Non-Point Source
Wilson Creek 0 to 2.2	Mouth to UT	Warm Water Aquatic Habitat	Oxygen, Dissolved	Commercial Districts (Industrial Parks), Impervious Surface/Parking Lot Runoff, Municipal (Urbanized High Density Area), Urban Runoff/Storm Sewers
Wilson Creek 0 to 2.2	Mouth to UT	Warm Water Aquatic Habitat	Sedimentation/Siltation	Commercial Districts (Industrial Parks), Impervious Surface/Parking Lot Runoff, Municipal (Urbanized High Density Area), Urban Runoff/Storm Sewers
Wilson Creek 0 to 2.2	Mouth to UT	Warm Water Aquatic Habitat	Total Kjehldahl Nitrogen (TKN)	Commercial Districts (Industrial Parks), Impervious Surface/Parking Lot Runoff, Municipal (Urbanized High Density Area), Urban Runoff/Storm Sewers
Withrow Creek 0 to 3.9	Mouth to Headwaters	Warm Water Aquatic Habitat	Nutrient/Eutrophication Biological Indicators	Other Spill Related Impacts
Withrow Creek 0 to 3.9	Mouth to Headwaters	Warm Water Aquatic Habitat	Oxygen, Dissolved	Other Spill Related Impacts

Minimum Control Measures (MCMs)

The objective of the City of Bardstown's MS4 program is to maintain or improve the quality of the waters of the Commonwealth of Kentucky to the Maximum Extent Practicable (MEP). To accomplish this objective, several goals were established to serve as a fundamental basis for the stormwater management program. These goals include:

- Develop and maintain program activities and focus new endeavors to benefit and protect the City of Bardstown's stormwater resources.
- Emphasize public and staff education, awareness and reporting as the primary management practices.
- Engage in a collaborative effort with KYTC to cost effectively develop resources and programs to address the requirements of the MS4 program.
- Enforce erosion prevention and sediment control (EPSC) practices and programs pursuant to the City's ordinances.
- Promote effective use of appropriate structural and non-structural stormwater management practices for new development and redevelopment.

This SWQMP will outline programs and measures that the City of Bardstown will implement in the 2018-2023 permit cycle in order to meet these goals.

MCM 1: Public Education and Outreach

Summary

Among the accomplishments within the previous permit cycle the City was able to:

- Improve Public Outreach through a dedicated section on the City's website
- Improve education and awareness through numerous informational brochures and guides targeted at specific audiences such as local construction and landscaping contractors
- Educated City leaders on stormwater issues and requirements of Permit
- Participate in regular local school STEAM Day events
- Actively participate and attend Kentucky Stormwater Association (KSA) meetings and conferences (>75%)

Challenges and issues faced included the following:

- Time and resources: Daily workload for the Engineering Department makes it difficult to devote adequate time to formulate effective outreach initiatives. In addition, Engineering Department personnel do not have proper skillset or expertise in this area. This leads to the view that this MCM could be better served by other more qualified agencies.

Narrative

- Explore partnerships with other agencies e.g. schools, watershed watch agency, and Agricultural Extension Office to assist with meeting the requirements of the MCM.
- Utilize City's Media and Communications Specialist for design and creative components of public outreach.

BMP's

Task 1.A.1 – Partner with Kentucky Agricultural Extension Offices to provide education and outreach activities

An initiative proposed by Brad Lee with the Kentucky Cooperative Extension Service to work on a regional basis to provide education and outreach services on behalf of partnering MS4 Communities. Proposed initiative is in the developmental stages of implementation.

Task 1.A.2 – City Stormwater Website

The City's website includes pages for each department, including Stormwater, which is managed by the Engineering Department. The Engineering Department will continue to improve and develop the Stormwater section of the website to communicate stormwater education messages and information about water quality.

Task 1.A.3 – Provide targeted outreach messaging to population segments/industries

The City has used fliers and brochures in previous years to provide targeted outreach messages to certain population segments and/or industries. In this permit cycle, the City will continue using these methods, but will also incorporate the use of social media and its Marketing and Communications Specialist to assist in outreach efforts.

Task 1.A.4 – Present Stormwater Program topics to City Council members

The City Engineering staff will continue to coordinate with current and newly elected officials and educate them on the MS4 program regulations and implementation. The engineering staff will make use of committee meetings to provide updates and education.

Task 1.A.5 – Provide Kentucky Erosion Prevention and Sediment Control (KEPSC) or equivalent classes to Public Works crews and local contractors

In order to better educate City personnel and local contractors, the Engineering Department plans to offer a KEPSC or equivalent class as budget allows. The class would be provided at a local location to allow maximum attendance and participation.

Task 1.A.6 – Source Water Protection grant application

The City has applied for and will continue to apply for source water protection grants in order to fund special projects for improving the City's water supply and water quality.

Task 1.A.7 – Utilize local news media to get message out

With the help of local media, stormwater issues and projects will be published or aired for stormwater education efforts. The intent would be to highlight the benefits of the stormwater program and ways the public can be proactive in preventing stormwater pollution.

Task 1.A.8 – Continue participation in local schools

As part of the active education efforts, the City of Bardstown will visit schools to educate students on stormwater issues. Engineering staff will continue to take part in local school events, such as St. Joseph School's annual STEAM day.

Task 1.B.1 – Participation with Kentucky Stormwater Association (KSA)

City employees will participate in quarterly KSA meetings and the annual conference. The KSA is a non-profit corporation with membership from the Kentucky MS4 Workgroup. The meetings provide a forum for discussion and exchange of information, facilitate partnerships with public entities and communities, and seek to develop stormwater program consistency across the Commonwealth. Attendance at regular meetings allow for material development, educational benefit and MS4 community collaboration.

Measureable Goals

The success of public education and outreach efforts will be measured by the following:

- Partner with the Kentucky Agricultural Extension Offices as budget allows and subject to enough interest and support from other surrounding MS4 communities
- Routine annual reviews of information on website to ensure that information is accurate and up-to-date
- Outreach materials created and distributed as often as budget allows within 5 year permit timeframe
- Increased understanding by elected officials of the MS4 program through presentations at committee meetings
- KEPSC or equivalent certification of all attendees to classes provided for Public Works employees and/or local contractors
- Secure funding through the grant process
- Production of newspaper articles, radio/TV spots, and other stormwater information featured on local media platforms
- Continued participation in St. Joseph School annual STEAM Day and participation

in other local school activities
- Participation in at least 75% of KSA Meetings and/or Annual conference

MCM 2: Public Involvement/Participation

Summary

Among the accomplishments within the previous permit cycle the City was able to:
- Successfully implement a program offering Tree Limb, Leaf and Bulky Item Pickup service to all residents within the City Limits reducing waste dumping around the City
- Community rain garden constructed in 2013
- Helped support community cleanup events around town and Sympson Lake by providing dumpsters and other logistics

Challenges and Issues faced included the following:
- It is difficult to find time to perform public involvement/participation activities particularly those that occur outside of regular working hours.

Narrative

- Explore and develop new partnerships with other agencies e.g. schools, Watershed watch agency, and Kentucky Agricultural Extension Offices to assist with meeting requirements of MCM.

BMP's

Task 2.A.1 – Tracking water quality and stormwater related issues

Through the use of the City's work order system, water quality issues can be logged for investigation by the City's Stormwater Inspector or City Engineer. Residents can contact City Hall by phone, email, etc. to notify the city of any water quality problems and/or concerns. Over time, these incidents can be mapped to assist in eliminating causes of water quality degradation.

Task 2.A.2 – Re-develop City Hall parking lot as demonstration project for community

The parking lot at City Hall is in need of re-development and the City has a concept plan in place to re-develop the parking lot making use of modern green infrastructure technologies. The project would provide a real example of effective BMPs and techniques to show the community and local contractors and designers.

Task 2.A.3 – Promote local projects on the City website

The City updated its website in 2018 and in the future, the Engineering Department plans to add a section to the Stormwater portion of the website in order to promote local projects that improve water quality or display successful stormwater BMPs.

Task 2.B.1 – Partner with Salt River Watershed Watch organization

The City will partner with the Salt River Watershed Watch organization to promote and facilitate community clean-up events and annual stream monitoring.

Task 2.B.2 – Increase partnerships with local organizations

The City will continue to partner with local groups and extend partnerships to new organizations within the community to support and sponsor event for increased public participation.

Measureable Goals

- Continue to track residents' concerns regarding stormwater problems and incorporate these into long-term improvement plans and budgets
- Ensure all plans for improvements to City owned facilities to include green infrastructure elements that can serve as an educational tool for developers
- Create new section on City website that promotes water quality and local projects
- Promote and facilitate at least one community clean-up event per year by providing dumpsters and dumpster pick-up
- Increase public participation in stormwater activities

MCM 3: Illicit Discharge Detection and Elimination

Summary

Among the accomplishments within the previous permit cycle the City was able to:

- Assigned a Public Works employee to the position of Stormwater Inspector 2 days a week to perform inspections required under City's Illicit Discharge ordinances
- Reduced/Minimized Illicit discharges through continued investment in Sanitary Sewer rehabilitation and capital improvements
- Provided public with multiple ways in which to report illicit discharges including phone number and through a form on the City Website
- Maintained accurate records of any illicit discharges and sewer overflows reported to the City in specialized stormwater management software
- Continued to update and improve stormwater system map
- Enforce all permit and state/federal requirements regarding IDDE through City Ordinance including citing instances of concrete washout occurring on constructions sites within the City

- Successfully identified and targeted select industries (e.g. construction, concrete and landscaping) with information on laws and prevention of illicit discharges

Challenges and Issues faced included the following:

- Challenge of personnel and time to walk streams and pro-actively search for illicit discharges
- Difficulty in raising public awareness of need for and mechanisms for reporting illicit discharges

Narrative

- Maintain high standard of record keeping, where possible use history to identify problem areas and target remediation/enforcement on those areas
- Promote public awareness to encourage reporting of illicit discharges
- Continue with capital improvement projects to reduce SSO's
- Review Ordinance and compare to other MS4 Communities to ensure compliance with new Permit
- Renew focus on walking streams and completing outfall mapping

BMP's

Task 3.A.1 – Illicit Discharge Ordinance Review

The City will enhance, if necessary, the illicit discharge detection and elimination program by reviewing and modifying the ordinance.

Task 3.A.2 – Completion of MS4 Map

The City will incorporate newly detected major outfalls into the MS4 stormwater system map and complete remainder of existing outfalls to be mapped. The City requires new storm sewer infrastructure as-builts are provided to the City electronically to facilitate maintenance of the storm sewer system map and to reduce the need for re-mapping activities.

Task 3.A.3 – Develop and Update IDDE Plan

The City has developed an IDDE Plan per the new permit to describe screening, tracking, and response to any illicit discharges within the City. The plan will be revised and updated as necessary.

Task 3.A.4 – Assess Drainage Systems near Potential Pollution Sources

Sites that have the greatest potential for illicit discharges, such as distilleries and know sewer overflow problem areas will be evaluated for a better understanding of the City's

risk areas.

Task 3.A.5 – Major Outfall Dry Weather Screening

The City will follow the IDDE Plan for screening procedures for 20% of major outfalls per year. The inspections will be tracked using stormwater management software and include dates, observations, and photos.

Task 3.A.6 – Provide Mechanism for Public Illicit Discharge Reporting

The City will continue to track public reports of illicit discharges. A new online reporting tool will be implemented for public use. The public can use the online form or report any illicit discharge via phone. These reports will be logged in the stormwater management software.

Task 3.A.7 – Illicit Discharge Training for City Staff

City staff will continue to receive training to identify illicit discharges and connections. The City will maintain sign-in sheets of cross-training workshops.

Task 3.A.8 – Capital Improvements for SSO Reduction

Through the City's sanitary sewer evaluation survey (SSES) work and tracking of SSOs, capital improvement projects for the City's sewer collection system will continue to be developed to reduce SSO events. Projects could include point repairs, manhole replacement or rehab, or full sewer upgrades and replacement.

Task 3.B.1 – Promotion of Shared Illicit Discharge Reporting with Other Agencies

The City will promote the sharing of illicit discharges with other agencies such as the Fire Departments and 911 Services. This will improve reporting of illicit discharges and response to hazardous discharges.

Measureable Goals

- Revised Ordinance as necessary
- Completion of MS4 Mapping and outfall locations
- Developed and implemented IDDE plan and reduced illicit discharges within the community
- Better understanding of illicit discharge and/or potential pollution sources within the City's drainage system
- Conduct dry weather screening for 20% of major outfalls per year or all outfalls within permit cycle
- Online illicit discharge reporting form readily available to the public
- Staff trained to identify and properly report illicit discharges

- Continued planning and investment in SSES projects leading to reduction in SSOs

MCM 4: Construction Site Runoff Control

Summary

Among the accomplishments within the previous permit cycle the City was able to:

- Ensure compliance through Regulatory Mechanisms (City Ordinance passed May 2006, updated 2011 and 2018) requires land disturbance permit for all construction within the City Limits. Builders cannot obtain a Building permit or permanent Certificate of Occupancy without the LD permit.
- Assigned a Public Works employee to the position of Stormwater Inspector 2 days a week to perform monthly inspections of ALL construction sites covered by City Land Disturbance permit to ensure compliance under the City's drainage ordinances
- Ensured compliance with permit through thorough review of all Building Site plans and SWPPP plans for sites over 1 acre in size including review of BMP selection and drainage calculations
- Both Stormwater Inspector and Staff Engineer trained and KEPSC certified
- Maintained thorough records of all construction site inspections and enforcement in specialized Stormwater Management software
- Revised Ordinances relating to drainage control and construction to ensure Bonds accurately reflected costs for site work and BMPs and also revised the fee schedule to help cover program costs
- Developed our own training materials made available to developers at time of permit issue detailing common issues and best practices when it comes to erosion control and stormwater

Challenges and Issues faced included the following:

- Challenges of enforcing permit without discouraging development or being overly burdensome on developers/industries
- County is not an MS4 – disparity between City/County regulations and requirements
- Changing mindset and habits of developers

Narrative

- Continue to develop software approach to managing Plan Review and Land Disturbance permits, improving efficiencies to allow more time for other MCM requirements
- Gradual strengthening of LD permit requirements and enforcement to change mindset/habits

- Greater cooperation with other agencies e.g. County Code Enforcement/Building Inspector to ensure Permanent COs are not issued until LD Permit is released
- Regular reevaluation of fees to ensure they are in line with other communities
- Renewed emphasis on education e.g. offer/require KEPSC classes to developers

BMP's

Task 4.A.1 – New Stormwater Compliance Software

The Engineering Department will merge existing construction site data to new stormwater management software to assist with management of permits, inspections, and plan review.

Task 4.A.2 – Inspect and Track Construction Projects

City's Stormwater Inspector will continue to perform monthly inspections of all active construction sites. Inspections and any enforcement actions will be tracked using new stormwater management software.

Task 4.A.3 – Review Existing Land Disturbance Permit and Fees

The City will review land disturbance permit requirements and fees every other year and compare with other communities. Fees will be set to reflect actual City expenses for plan review, inspection, and enforcement procedures.

Task 4.A.4 – Review SWPPPs for Development Sites

All SWPPPs for development sites will continue to be reviewed during the plan review process. Review status and comments will be tracked using new stormwater management software.

Task 4.A.5 – Review BMP Design Criteria

City will review design criteria for BMPs and evaluate effectiveness of existing BMPs throughout the community. BMP design criteria will be revised based on the review and a list of effective BMPs will be created for designers and contractors.

Task 4.A.6 – Update Website

The City's website will be updated regularly for revised stormwater requirements, review fees etc. Successful stormwater projects will be highlighted for educational purposes and other educational links will be provided for designers and developers' reference.

Task 4.B.1 – Local Contractors, Designers, and Planners Training

The City will provide a KEPSC or equivalent class to local contractors, designers, and/or planners as budget allows. Class may encourage attendance by waving permit or review fees for future projects.

Measureable Goals

- Successful implementation of new stormwater management software
- Continued/expanded role of stormwater inspector to perform monthly construction site inspections and use of computer software to track open permits and inspections
- Review of existing Ordinances, LD Permit and fees
- Continued review of SWPPPs and tracking using new stormwater management software
- Development of Guidance Materials (website, handouts) and BMP design criteria
- Up-to-date website with current stormwater requirements, fees, and educational material
- Training class held and local contractors, designers, and planners attend
- Increased cooperation with County agencies

MCM 5: Post-Construction Stormwater Management in New Development and Redevelopment

Summary

The City of Bardstown has post-construction stormwater management requirements in their Drainage Control Ordinance. These requirements are in place to safeguard the general health, safety, and welfare of the public residing in watersheds within the City of Bardstown. The goal is to maintain or improve the quality of all streams within the MS4 boundaries and corporate limits, to meet their designated use. Previous accomplishments and challenges with this MCM are listed as follows:

Among the accomplishments within the previous permit cycle the City was able to:

- Ensure post-construction regulations were consistent with Permit, through Regulatory mechanism created with City Ordinance (passed 2011), that developed water quality strategy, enforcement mechanisms and maintenance agreements.
- Maintained thorough records of location and type of all Post Construction BMPs constructed within the Permit cycle in specialized Stormwater Management software and GIS Map
- Obtained Engineer's certification for post-construction BMPs constructed per plans and specifications
- Performed limited inspections on all post-construction BMPs before LD permits were released

Challenges and Issues faced included the following:

- Sheer number of BMP's (over 150 with 20-30 additional being added each year) makes inspecting all of them a demanding undertaking in terms of time and resources
- Difficult to ensure bioretention areas are constructed properly (problems with soils not draining well, lack of experience, plant selection and maintenance)
- Post-construction BMP inspections and annual reports from property owners have been difficult to obtain.
- Difficult to enforce maintenance agreements
- City has enforced removal/failure of major BMPs (e.g. filling in detention and infiltration areas), but has had problems enforcing degradation of minor BMPs in need of maintenance (e.g. removal of weeds from bioswales, etc.)
- Few if any resources to help guide BMP selection/construction in this part of the State

Narrative

- Make serious attempt to inspect all post-construction BMPs within Permit Cycle
- Pursue responsible parties where BMPs are failing/require maintenance to maximum extent possible under ordinance and maintenance agreements
- Provide training opportunities to contractors to help promote successful BMP selection/implementation

BMP's

Task 5.A.1 – Review of Post-Construction Stormwater Requirements

The City will review post-construction stormwater requirements and revise as necessary to meet requirements consistent with new Permit.

Task 5.A.2 – Focus on Impaired Waters

The City will emphasize more stringent review of development plans within watershed of an impaired water.

Task 5.A.3 – Track Post-Construction Facilities

The City will continue to track post-construction stormwater facilities, maintenance, and enforcement using new stormwater management software. Staff will be trained to merge existing data and operate the new system.

Task 5.A.4 – Develop Post-Construction Stormwater Inspection Form

An inspection form for post-construction inspections will be developed for use in the new stormwater management software.

Task 5.A.5 – Review Post-Construction BMP Considerations

Post-construction BMPs will be reviewed for compliance during plan review process and long-term considerations will be noted.

Task 5.A.6 – Inspect Post-Construction BMPs

All post-construction BMPs will be inspected during the permit cycle. All inspections will be logged using the new stormwater management software.

Task 5.B.1 – Post Construction Evaluation

The City will network with other MS4s and consultants to address common post-construction BMP selection, effectiveness, maintenance, etc.

Measureable Goals

- Revised post-construction requirements to meet new permit requirements
- Improved impaired waters within the City
- Existing database merged, staff trained, and system effectively implemented
- New post-construction BMP inspection form created
- Post-construction BMPs continued to be reviewed during plan review process
- All post construction BMPs inspected during permit cycle
- Better understanding of post-construction BMPs through discussions with other communities and consultants

MCM 6: Pollution Prevention/Good Housekeeping for Municipal Operations

The purpose of the Municipal Operation Pollution Prevention Program is to develop and maintain practices that bring the City of Bardstown's municipal facilities into compliance with the KDOW Phase II NPDES Stormwater permit. The stormwater strategy for MCM 6 has the ultimate goal of preventing or reducing pollutant run-off from Municipal Operations. In previous permit cycles, the City has encountered accomplishments and challenges with this MCM which are listed as follows:

Among the accomplishments within the previous permit cycle the City was able to:

- Developed comprehensive SWPPPs for all City facilities (Water plant, Recreation Department, Public Works Shop, Sewer Plants, etc.).
- Added a wash bay at the Public Works Shop for cleaning vehicles and equipment.

Wash water is contained and treated before being discharged to aid in water quality and quantity controls.
- Fleet management and pollution prevention at facilities.
- Regular street sweeping operations.
- Catch basin cleaning and Storm sewer cleaning conducted upon request or complaint calls.
- Pollution prevention for deicing through calibration of salt-spreading equipment, cover for salt storage and runoff control at salt loading and unloading areas.
- Education and training opportunities for employees.

Challenges and Issues faced included the following:

- Changing mindset and habits of City workers in other departments who are not familiar with Permit requirements

Narrative

- Develop and implement a written operation and maintenance plan that shall include an inventory of municipally-owned facilities with the ultimate goal of preventing or reducing pollutant runoff form municipal operations into the storm sewer system.
- Using training materials available from the EPA, the Division, or other organizations, the O & M should include employee training to prevent and reduce stormwater pollution resulting from activities such as parks and open space maintenance, fleet and building maintenance, new construction and land disturbances, stormwater system maintenance, and green infrastructure maintenance.

Best Management Practices (BMPs)

Task 6.A.1 – Facilities Management SWPPP's

The City of Bardstown will continue to follow SWPPPs for municipal facilities. The SWPPP for the Public Works shop will be revised to include improvements that will be made to newly acquired property adjacent to the existing shop. The new property will be used for additional storage of materials and other daily operations for the Public Works Department. The SWPPP for the Fire Department will also be revised as they transition to a new facility. The new SWPPP will be specific to the new facility and operations of the Fire Department.

Task 6.A.2 – Street Cleaning

The City will continue regular street sweeping operations and litter abatement activities on City streets.

Task 6.A.3 – Review Groundwater Protection Plans

The City will review the groundwater protections plans for City operated wastewater treatments plants and update as needed.

Task 6.A.4 –General MS4 and Stormwater Management Training

The City will revise educational materials and educate City employees about the requirements of the City's MS4 program and basic stormwater management.

Task 6.B.1 – KYTC Environmental Handbook

The City will utilize the KYTC Environmental Handbook and fact sheets for SWPPP revisions, as available from KYTC.

Measurable Goals

- Implement and revise existing SWPPPs as needed and conduct internal evaluations to determine the effectiveness of their implementation.
- Maintain log sheets of streets cleaned and litter abatement activities
- No illicit discharges from wastewater treatment plants in accordance with groundwater protection plans
- Revised educational materials for City employees and training sessions held
- KYTC Handbook referenced in SWPPP revisions

Certification

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

Executed on the 24 day of October 2018.

Mayor Richard Heaton, City of Bardstown

SWQMP Measurable Goals Table

Task	BMP - Activity Description	Milestone Product/Measurable Goal	Measure(s) of Success	Contributing Parties	Year 1 PY 18-19	Year 2 PY 19-20	Year 3 PY 20-21	Year 4 PY 21-22	Year 5 PY 22-23
1. MCM 1 PUBLIC EDUCATION AND OUTREACH									
	A. Local MS4 Activities								
1	Partner with Kentucky Agricultural Extension offices to provide Education and Outreach activities*	Initiative proposed by Brad Lee with the Kentucky Cooperative Extension Service to work on a regional basis to provide Education and Outreach service on behalf of partnering MS4 Communities.	Currently in development (in 2018). Will be subject to budget and initiative obtaining enough interest and support from other surrounding MS4 Communities.	Engineering Dept., Kentucky Agricultural Extension Office	✓	✓	✓	✓	✓
2	Website	Continue to improve and develop the Stormwater section of the City of Bardstown's website to communicate stormwater education messages and information about water quality.	Routine (annual) review of information on website to ensure that information is accurate and up-to-date	Engineering Dept.	✓	✓	✓	✓	✓
3	Provide targeted outreach messaging to population segments / industries*	Develop outreach materials (e.g. brochures/flyers/social media posts) that can be provided to population segments / industries identified as having greatest potential for pollution (e.g. landscaping companies or subdivisions with flusheable wipe problem). These can be included in utility bills or sent out as seperate mailers.	Outreach materials will be created and distributed as often as budget allows within 5 year permit timeframe	Engineering Dept., Marketing & Communications Specialist	✓	✓	✓	✓	✓
4	Present Stormwater Program topics to City Council members	City Council election in 2018 may result in new City council members, some of whom may not be familiar with City's Stormwater Permit obligations. Stormwater program will be discussed at Committee meetings following the election years.	Increased understanding by elected officials of the MS4 program	Engineering Dept., City Council		✓		✓	

5	Provide KEPSC or equivalent classes to Public Works crews and local contractors*	Provide a Kentucky Erosion and Sediment Control Class (KEPSC) to public works employees from Superintendent down to Foremen level. Class will also be offered to local contractors	KEPSC Certification of all attendees.	Engineering Dept., Public Works Dept.					✓
6	Source Water Protection grant application	Apply for grant from Source Water Protection Assistance Program (Kentucky Division of Water)	Secure funding through the grant process	Engineering Dept. SWPAP		✓			
7	Utilize local news media to get message out*	Offer local newspaper/radio/TV stations opportunity to feature stormwater program as a feature. Use opportunity to highlight benefits of program and ways public can be proactive in preventing stormwater pollution	Newspaper Articles, and Radio/TV spots	Engineering Dept., Marketing & Communications Specialist			✓		
8	Continue participation in local schools*	Continue participation in St. Joseph School annual STEAM Day and expand to other Schools in the community. (Extension service partnership may be able to take this on if it happens)	Continued participation in St. Joseph School annual STEAM Day (typically held toward the end of the school year).	Engineering Dept.	✓	✓	✓	✓	✓
*Refer to Task 1 if partnership happens									
	B. Cooperative Efforts with copermittees or other partners								
1	Continue participation with KSA	Participate in Kentucky Stormwater Association (KSA) through attendance in quartlery Meetings and Annual conference. Invite City officials (Counsel Members, Mayor) to attend meetings to learn about stormwater issues.	Have a City representative attend at least 75% of KSA Meetings and/or Annual conference	Engineering Dept. KSA	✓	✓	✓	✓	✓

2. MCM 2 PUBLIC INVOLVEMENT/PARTICIPATION									
	A. Local MS4 Activities								
1	Continue tracking water quality and stormwater related issues	Residents can contact City Hall to notify City of water quality problems and/or concerns. Calls are typically logged in Work Order system for investigation by Stormwater Inspector or in some cases routed directly to City Engineer.	Continued response to residents concerns and documentation of action taken through work order system	Engineering Dept., Public Works	✓	✓	✓	✓	✓
2	Re-develop City Hall parking lot as a demonstration project	Re-develop City Hall parking lot making use of modern green infrastructure technologies to provide a real life example of BMP's and techniques.	Improved understanding to the development and construction communities	Engineering Dept.					✓
3	Promote local projects on the City website	Open up a section of the City Stormwater website to the community to prote local projects that improve water quality	Showing the community that improved water quality practices can be achieved	Engineering Dept.			✓		
	B. Cooperative Efforts with copermittees or other partners								
1	Partner with Salt River Watershed Watch organization to organize annual stream monitoring and/or cleanup events	Promote and facilitate community clean-up events organized by the Salt River Watershed Watch group	Increased public participation	Engineering Dept., Salt River Watershed Watch Group					✓
2	Increase Partnerships with local organizations	Partner with other local organizations e.g. Ag Extension, boaters club, master gardeners club and other civic groups to support and sponser events	Increased public participation	Engineering Dept., Local Civic Organizations	✓	✓	✓	✓	✓

3. MCM 3 ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE)									
	A. Local MS4 Activities								
1	Ordinance Review	Review existing ordinances to determine if revisions are necessary to meet new permit requirements.	Revised Ordinance as necessary	Engineering Dept., City Clerk, and Attorney	✓				
2	Complete MS4 Map and identify any new Outfalls	Review and update the Stormwater infrastructure map developed during the last permit cycle. Any newly constructed/identified major outfalls will be cataloged and added to the stormwater GIS map.	Update stormwater GIS map annually with newly constructed/ identified outfalls.	Engineering Dept.	✓	✓	✓	✓	✓
3	Develop and update City IDDE Plan	Develop and review IDDE Plan as required within first 90 days of permit to describe screening, tracking and response to any Illicit Discharges within City.	Reduce Illicit Discharges within the community	Engineering Dept.	✓				
4	Assess Drainage Systems near potential pollution sources	Evaluate sites that have the greatest potential for IDDE such as distilleries and known sewer overflow problem areas.	Better understanding of risk areas	Engineering Dept.	✓	✓	✓	✓	✓
5	Major Outfall Dry Weather Screening	Follow the IDDE Plan for screening procedures for 20% of major outfalls (as defined in the new permit) per year. Track inspections, dates, and observations.	Documented inspections for all major outfalls within Permit Cycle	Engineering Dept. City Stormwater Inspector	✓	✓	✓	✓	✓
6	Provide mechanisms for public to report Illicit Discharges	Provide reporting form on City website as a way residents can report illict discharges and improper waste disposal into MS4 and waterways. Document all detected illicit discharges in MS4 Front software.	Form on City website that alerts the appropriate City personel	Engineering Dept.	✓	✓	✓	✓	✓
7	Training on IDDE with City Staff	Review procedures regarding spills and detection and reporting of illicit discharges with Public Works and City employees.	Improved procedures and accounting of program progress	Engineering Dept. Public Works				✓	
8	Continue work on capital improvements to reduce SSOs	Utilize SSES and SSO data to develop Capital improvements to City's Sewer Collections System to reduce SSO events	Reduced SSOs	Engineering Dept. Public Works	✓	✓	✓	✓	✓

	B. Cooperative Efforts with copermittees or other partners								
1	Promote sharing of IDDE detection/reporting from other agencies e.g. Fire Department and other 911 Services	If the illicit discharge is deemed hazardous to the public health and safety, the City shall contact the City fire department. The City Fire Department will report any incidents that they respond to that result in illicit discharge.	Better documentation of Illicit discharges	Engineering Dept. City Fire Deparment and other emergency responders	✓	✓	✓	✓	✓

4. MCM 4 CONSTRUCTION SITE STORMWATER RUNOFF CONTROL									
	A. Local MS4 Activities								
1	New stormwater compliance software	Merge existing construction site data to new MS4 Front software. New software will help employees manage construction applications, permitting, and inspections.	Merge database in PY 1, training in PY 2, and continued use in PYs 3-5.	Engineering Department	✓	✓	✓	✓	✓
2	Inspect and track construction projects	Continue monthly inspections of all active construction sites following construction site inspection and enforcement procedures using MS4 Front to document inspections and enforcement.	Inspector reviews sites weekly and inspects each site once per month.	City Stormwater Inspector	✓	✓	✓	✓	✓
3	Review existing LD permit and fees	Conduct review of existing land disturbance permit requirements and fees and compare with other communities.	Evaluate fees every two years to ensure accurate and fair pricing that reflects City's expenses.	Engineering Department		✓		✓	
4	Review SWPPPs	Conduct review of each SWPPP for approval.	Use MS4 Front software to track SWPPPs reviewed and status of the review.	City Engineer, City Staff Engineer	✓	✓	✓	✓	✓
5	Review BMP design criteria	Review design criteria for BMPs including examinations of effectiveness of recently constructed structural and non-structural BMPs.	Compile list of effective BMPs within the City for designers and contractors reference.	Engineering Department		✓			✓
6	Update Website	Update City stormwater website with success stories to highlight successful BMP implementations developers can view within the City. Provide links to educational materials about construction site runoff control and best management practices.	Promote website and direct designers, contractors, and developers to website for questions or further explanation of BMP techniques	Engineering Department	✓		✓		✓

	B. Cooperative Efforts with copermittees or other partners								
1	Training for local construction contractors, designers, planners and/or developers	Provide KEPSC or equivalent classes to local contractors, designers, planners, and/or developers for education purposes. Encourage attendence by waiving permit or review fees for future project.	Promote training sessions as available and record attendance.	Engineering Department				✓	
2	Cooperation/Partnership with County Agenices	Increase cooperation with County Code Enforcement to ensure permanent Certificate of Occupancy is withheld until sites are compliant or released from permit.	Contact County Building Inspector regularly to coordinate site close-outs.	Engineering Department, County Building Inspector	✓	✓	✓	✓	✓

5. MCM 5 POST-CONSTRUCTION STORMWATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT									
	A. Local MS4 Activities								
1	Review and enhance post-construction stormwater management requirements	Review new Permit and Require new development and redevelopment to address long-term water quality management consistent with KYG20.	Enhance existing regulations. Review post-construction BMP maintenance regulations to meet new permit requirements.	Engineering Department, City Attorney		✓		✓	
2	Focus on Impaired waters	More stringent review of development plans within the watershed of an impaired water.	Improvement in the condition of the designated water.	Engineering Department	✓	✓	✓	✓	✓
3	Track post-construction facilities	Merge existing database for inventory of post-construction facilities, maintenance, and City enforcement actions to new MS4 Front Software. Train staff on how to merge data and operate new software.	Merge database in PY 1, training in PY 2, and continued use in PYs 3-5.	Engineering Department	✓	✓	✓	✓	✓
4	Develop post-construction stormwater management inspection form	Develop inspection form to be used with new MS4 Front Software for post-construction inspection tracking and compliance.	Develop form and incorporate in new MS4 Front software.	Engineering Department	✓				
5	Review post-construction considerations	Continue to review post-construction BMPs for compliance as part of plan review process.	Track post-construction considerations during review process.	City Engineer, City Staff Engineer	✓	✓	✓	✓	✓
6	Inspect post-construction BMPs	Use new MS4 Front software to identify projects requiring inspections, track compliance, and assist in enforcement actions.	Conduct inspections for required BMPs 20% per year using inspection form and new software. Enforce as determined from inspections.	City Stormwater Inspector	✓	✓	✓	✓	✓
	B. Cooperative Efforts with copermittees or other partners								
1	Post Construction Evaluation	Network with other MS4's and consultants to address common Post Construction BMP selection, effectiveness, maintenance, short and long term cost and other considerations.	Improved functionality of Post Construction BMPS's and maintenance compliance from the private sector	Engineering Department, other MS4's, consultants, and stakeholders		✓		✓	

6. MCM 6 POLLUTION PREVENTION/GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS									
	A. Local MS4 Activities								
1	Facilities management SWPPP	Continue to implement SWPPP for each municipal building including the City Hall Main Campus, Water Treatment Plant, Wastewater Treatement Plants, and Public Works and Electric Shop. Make revisions to existing SWPPPs as necessary and develop and implement SWPPP for new Fire Department location and additional Public Works shop property acquired in 2018.	Make revisions to existing SWPPPs as needed and develop SWPPP for Fire Department in PY 1 and conduct Internal evaluations in PYs 2 and 4 to determine effectiveness of implementation.	Engineering Department	✓	✓		✓	
2	Street Cleaning	Continue street sweeping and litter abatement activities on City streets with curb and gutter.	We will maintain a log of streets cleaned and litter abatement activities with dates	Public Works	✓	✓	✓	✓	✓
3	Review Groundwater Protection Plans	Review Groundwater Protection Plans for City operated Wastewater Treament Plants and update as needed.	No illicit discharges from the facilities.	Engineering Department, Wastewater Treatment Plant Operators				✓	
4	General MS4 and stormwater management training	Revise educational materials and educate City employees about the requirements of the City's MS4 program and the basics of stormwater management.	Make revisions to the educational material in PY 2 and record attendance of each City employee for presentations in PYs 3 and 5.	Engineering Department		✓	✓		✓
	B. Cooperative Efforts with copermittees or other partners								
1	KYTC Environmental Handbook	Utilize the KYTC Environmental Handbook and fact sheets for SWPPP revisions, as available from KYTC. Coordinate with KYTC to incorporate any new Environmental Handbook facts.	Utilize Environmental Handbook in SWPPP revisions in PY 2. Coordinate with KYTC annually with any updates.	Engineering Department	✓	✓	✓	✓	✓

APPENDIX A

- Professional Office
- Open Space/Parks & Recreation
- Central Business
- Commercial
- Industrial
- Community Facilities
- Mobile Home Park
- Mobile Home Subdivision
- Single Family Residential
- Multi Family Residential
- Undeveloped
- Urban Boundary Line

N
W E
S

0 1,500 3,000 Feet

Projection = Kentucky State Plane Single Zone (NAD 83)
Base data source(s) - KYOGIS, LTADD
Land Use data source(s) - JCCPNC, Nelson County PVA

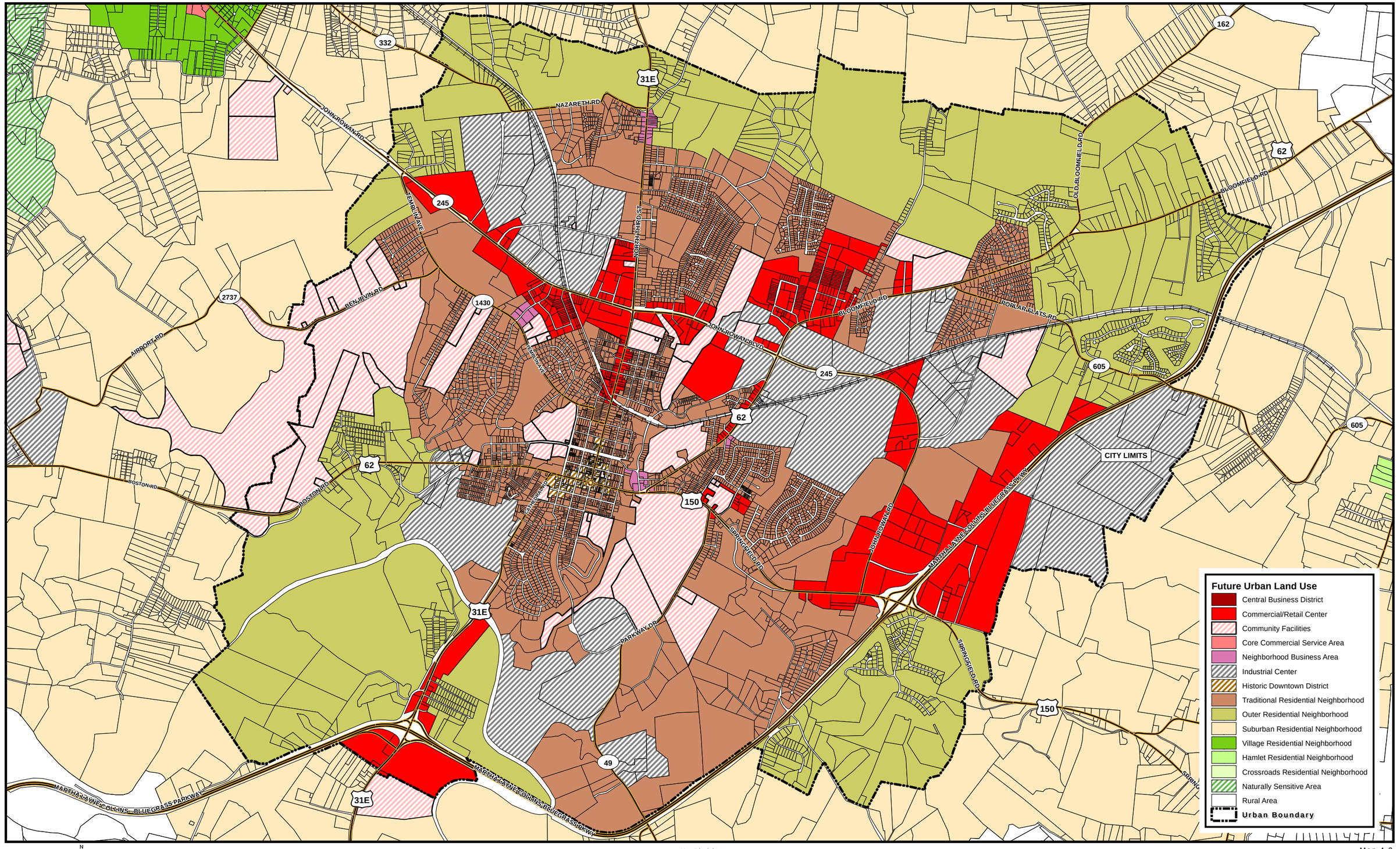
Map Disclaimer

This map is an integral part of the Nelson County 2035: A Comprehensive Plan and must be used in conjunction with the text and other maps included in the Plan. The parcel lines shown hereon have not been verified and are shown for reference and convenience only. The Planning Commission assumes no liability for errors, omissions, or inaccuracies in the parcel line data and information.

Map 2-1

EXISTING LAND USE MAP
URBAN COMMUNITY CHARACTER AREA

Nelson County 2035
A Comprehensive Plan for Cities of
Bardstown, Bloomfield, Fairfield, New Haven and Nelson County
REV 8/11



N
W E
S

0 1,500 3,000 Feet

Projection = Kentucky State Plane Single Zone (NAD 83)
Base data source(s) - KYOGIS, LTADD
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Map 4-2

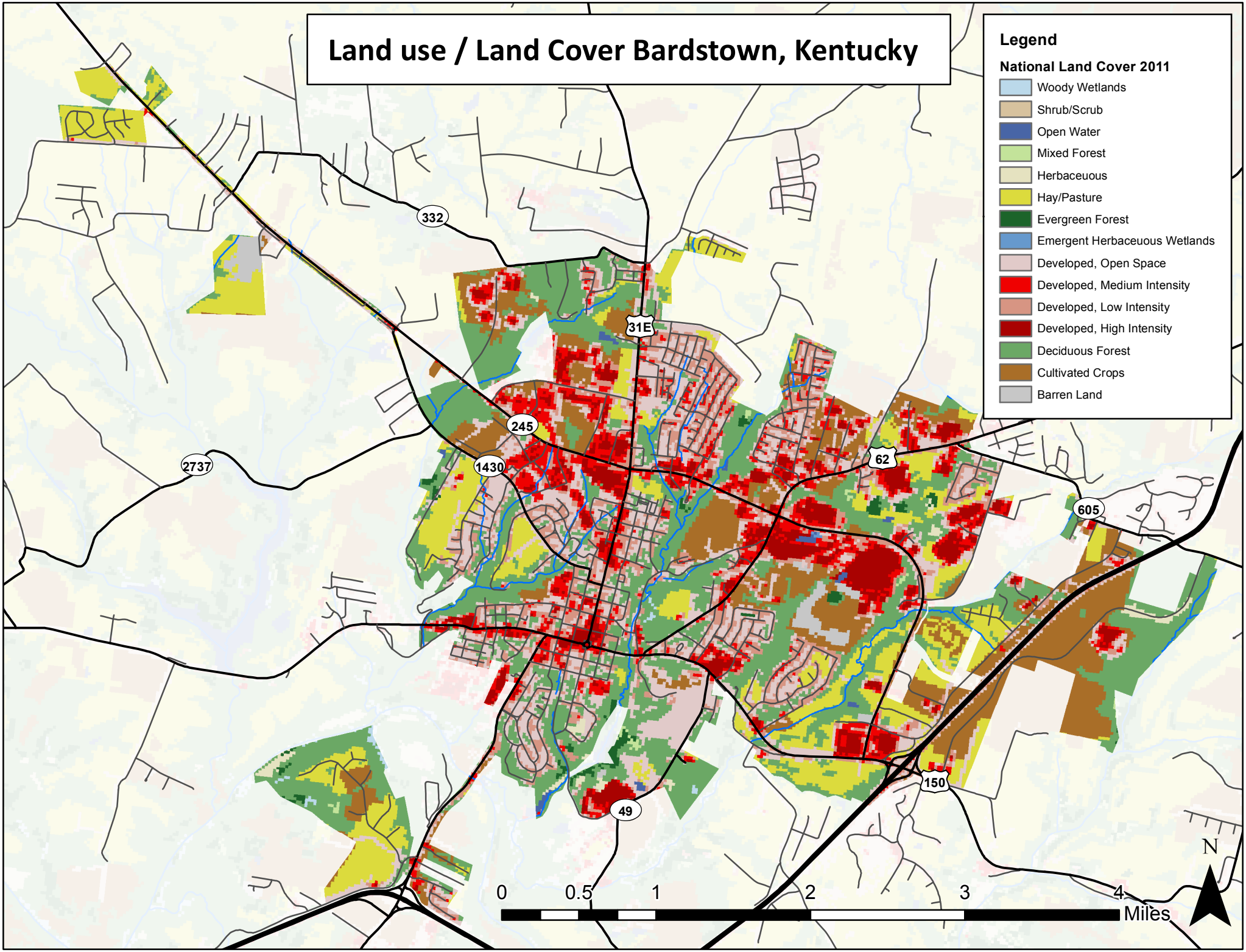
FUTURE LAND USE MAP
URBAN COMMUNITY CHARACTER AREA

Nelson County 2035

A Comprehensive Plan for Cities of Bardstown, Bloomfield, Fairfield, New Haven and Nelson County

REV 8/11

APPENDIX B


Land use / Land Cover Bardstown, Kentucky
Legend
National Land Cover 2011
Woody Wetlands
Shrub/Scrub
Open Water
Mixed Forest
Herbaceuous
Hay/Pasture
Evergreen Forest
Emergent Herbaceuous Wetlands
Developed, Open Space
Developed, Medium Intensity
Developed, Low Intensity
Developed, High Intensity
Deciduous Forest
Cultivated Crops
Barren Land
332
31E
245
1430
2737
62
605
150
49
0
0.5
1
2
3
4
Miles
N

APPENDIX C

City of Bardstown 303 (d) Impaired Water Ways Based on 2016 DoW Integrated Report

Legend

- 303(d) Water lines
- Water lines
- Water body
- Municipal Boundaries
- BG Parkway
- US / KY Roads
- City County
- Private
- Railroads
- <all other values>

Watershed

- Barton
- Beechfork
- Boones Creek
- Buffalo Creek
- Cane Run
- Caney Fork
- Coes Creek
- Coxs Creek
- Edgewood-Heritage Hills
- Froman Creek
- Mill Creek
- Murray Run
- Rowan Creek
- Samuels Creek
- Town Creek
- Withrow Creek