

DRAFT Pollutant Reduction Plan

AKRON BOROUGH, LANCASTER COUNTY

C.S. DAVIDSON, INC.

Introduction

The 2023 Revised Akron Borough Pollutant Reduction Plan has been modified to reflect revised loading calculations and PRP BMP project changes regarding both location and scope. Changes to this PRP have been highlighted in red text.

Akron Borough is located in northern Lancaster County, PA within both the Cocalico Creek and Conestoga River Watersheds. Akron Borough is comprised of approximately 832 acres; and includes—but is not limited to—residential, commercial, institutional, recreational and agricultural land uses. The Borough is within the Susquehanna River Watershed and therefore drains into the Chesapeake Bay. The entire area of the Borough is located within the 2010 Urbanized Area (47530-Lancaster, PA). The Borough is located northeast of the City of Lancaster and is bisected by PA Route 272. 100% of the Urbanized Area includes components of the MS4 (e.g. piping, outfalls, etc.). The regulated MS4 discharges to the following waterways:

- Cocalico Creek (western side of the Borough)
- Conestoga River (eastern side of the Borough)

Approximately 562 acres of the Borough drain to the Cocalico Creek Watershed while the other 270 acres drain to the Conestoga River.

A. Public Participation

Public participation is an important component of a successful MS4 program. The enclosed combined Pollutant Reduction Plan for the impaired waters of Cocalico Creek and the Chesapeake Bay was initially published for public review and comment on July 26, 2017. Notice of the public review period was advertised in the Ephrata Review on July 26, 2017. A copy of the public notice is provided in Appendix A. The public was provided with 30 days to review and comment on the Pollution Reduction Plan at which point the comments were considered and a copy of the Borough's record of consideration is included in Appendix B. Comments were also accepted at a public meeting held by the Borough on August 14, 2017.

The revised PRP public review and comment period will commence on Monday, June 26, 2023, and close on Tuesday, July 25, 2023. The Akron Borough Council will be taking public comments regarding the revised PRP at their regularly scheduled Monday, July 24, 2023 meeting at 7 P.M.

The public participation component of this revised PRP will be added following the end of the public comment period on Tuesday, July 25, 2023.

B. Map

A copy of the Borough's MS4 Map including outfalls, delineated watersheds for each outfall, and the entire stormwater conveyance system is included in Appendix H. A copy of the Land Use Map is provided on the next page.

C. Pollutants of Concern

Surface Waters

The Borough is situated on the top of a hill which results in the Borough being located in two (2) different watersheds. Areas of Akron Borough drain to both the Cocalico Creek Watershed and the Conestoga River Watershed. The Cocalico Creek flows into the Conestoga River which then flows into the Susquehanna River and ultimately into the Chesapeake Bay. The western side of the Borough drains into the Cocalico Creek Watershed via several Unnamed Tributaries and the eastern side of the Borough drains to unnamed tributaries of the Conestoga River.

Cocalico Creek Watershed

The portion of the Borough that drains to the Cocalico Watershed is approximately 562 acres. The Cocalico Creek Watershed includes portions of Lebanon and Lancaster Counties. It is located within Hydrologic Unit Code (HUC) 02050306 and is a tributary of the Conestoga River. The source of the creek is located near Stricklerstown in Millcreek Township, Lebanon County. The creek flows into the Conestoga River in Talmage in West Earl Township, Lancaster County. The Cocalico Creek Watershed is approximately 140 square miles (89,600 acres) in size. Tributaries to the Cocalico Creek Watershed include Hammer Creek, Middle Creek, Meadow Run, Indian Run, Cooper Run, Stony Run, and Little Cocalico Creek. Cocalico Creek is approximately 27 miles in length.

Approximately 52.3 miles of stream within the Cocalico Creek Watershed are listed as impaired in the 2012 Pennsylvania Integrated Water Quality Assessment Report 303(d) list. Sources of impairments listed are primarily crop and grazing-related agriculture resulting in nutrients and siltation. There are also small tributaries impaired by siltation and habitat alteration by urban runoff and storm sewers as well as nutrients from small residential runoff. A Total Maximum Daily Load (TMDL) has not been established.

The Unnamed Tributaries and Cocalico Creek have multiple agricultural-related impairments which do not apply to the Borough due to the lack of agricultural areas within the urbanized area. The Borough has some impairments for small residential runoff nutrients.

Conestoga River Watershed

The other approximate 270 acres of the Borough drain into an Unnamed Tributary to the Conestoga River. The Conestoga River Watershed is approximately 491 square miles (314,200 acres) in size and includes major tributaries such as the Cocalico Creek, Mill Creek, and Little Conestoga River. The source of the Conestoga River is in Berks County and is approximately 61.6 miles long. Refer to the Conestoga River Watershed Map. The Unnamed Tributary to the Conestoga River is listed as impaired for agricultural-related pathogens; urban runoff storm sewers and agricultural siltation. The Borough has very few agricultural uses within the urbanized area but does have urban runoff/storm sewers.



Susquehanna River Watershed

The Susquehanna River Watershed is approximately 27,100 square miles (17,344,000 acres) in size. The watershed includes areas in New York State, Pennsylvania, and Maryland and eventually discharges into the Chesapeake Bay. Tributaries to the Susquehanna River include the Swatara Creek, the Conestoga River, the Chemung River, the Juniata River, and more.

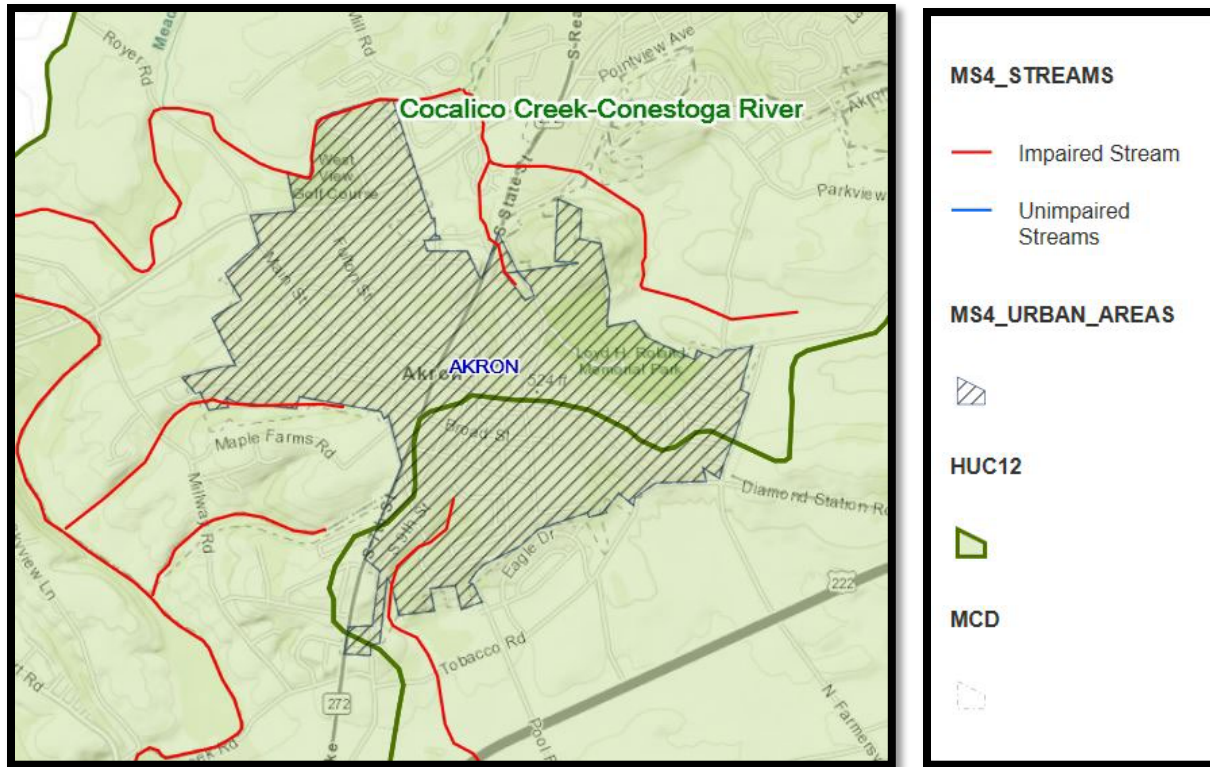


Figure 2. Akron Watershed Map

D. Existing Loading for Pollutants of Concern

Baseline Study

As required in the 2018 MS4 Permit, a baseline study is to be prepared to establish the existing sediment, phosphorus, and nitrogen loads within the Borough’s MS4 planning area. The entire Borough limits are the extent of the planning area. As described in Section C, Cocalico Creek, and the Conestoga River are listed as impaired streams which drain to the Susquehanna River and ultimately the Chesapeake Bay. The baseline study and proposed BMPs are located in both the Cocalico Creek and Conestoga River drainage areas. Cocalico Creek drains into the Conestoga River downstream of the Borough. Per the Pollution Reduction Plan instructions, the BMPs have been placed in areas that will benefit the impaired waters in the Borough.

Methodology

The simplified method was used in the derivation of the baseload calculations for the Borough. The watersheds were delineated based on current PASDA topographical information and the Borough’s mapped stormwater sewer system. Each outfall was delineated with a contributing drainage area, and the area of the delineated watershed for each outfall system was then analyzed for the amount of impervious and pervious area contributing to the outfall. The watershed’s impervious vs. pervious area delineation was based on the cover percentages from PADEP’s Statewide MS4 Land Cover Estimates in Appendix C. The calculated impervious and pervious areas were then used to determine the base load for each watershed using the Development Land Loading Rates for PA

Counties in PADEP Document 3800-PM-BCW0100k last dated 3/2017 (Appendix D). Per DEP’s comment letter and follow-up training and clarification regarding parsing and roadway drainage, the Borough’s outfalls and watershed were re-evaluated and revised. DEP staff reviewed the revised mapping with outfalls and delineated watersheds and approved the mapping/parsing revisions. The baseline analysis was for Sediment, Phosphorus, and Nitrogen loadings and was updated to reflect the DEP-approved map.

Due to its small drainage area, aerial imagery was utilized to estimate the land cover with the rain gardens drainage area. That information is as follows:

- Total Drainage Area - 5.26 acres
- Total Acres Impervious - 0.55 acres
- Total Pervious Area – 4.70 acres

Results

The baseline study analyzed 37 outfall watersheds for the Borough of Akron, Lancaster County. Each watershed was examined for the existing Sediment, Phosphorus, and Nitrogen. Table 1 in Appendix E calculates the Sediment loading for the planning areas within the Borough. Table 2 analyzes the Phosphorus loading and Table 3 includes the Nitrogen load calculations. The following Figures show the resulting total load for Sediment, Phosphorus, and Nitrogen and the associated reductions required to be achieved.

The revised baseload¹ in pounds for Sediment within the Borough’s planning area is 352,991.56 lbs., which per the 2018 Permit, is required to be reduced by 10%. The Borough is required to show a reduction in the Sediment load of 35,299.16 lbs. over the 5-year permit.

Total Sediment Loading (lbs.)	Required Reduction	Required Lbs. Reduction
352,991.56	10%	35,299.16

The baseload in pounds for Phosphorus within the Borough’s planning area is 412.38 lbs., which per the 2018 Permit, is required to be reduced by 5%. The Borough is required to show a reduction in Phosphorus load of 20.62 lbs. over the 5-year permit.

Total Phosphorus Loading (lbs.)	Required Reduction - CBPRP	Required Lbs. Reduction
412.38	5%	20.62

The baseload in pounds for Nitrogen within the Borough’s planning area is 13,993.82 lbs., which per the 2018 Permit, is required to be reduced by 3%. The Borough is required to show a reduction in Nitrogen load of 419.82 lbs. over the 5-year permit.

Total Nitrogen Loading (lbs.)	Required Reduction	Required Lbs. Reduction
13,993.85	3%	419.82

¹ Includes watershed 039.

Per the Permit Application Package, permittees are encouraged to select BMPs to achieve the 10% Sediment loading reduction objective, as DEP expects that overall within the Bay Watershed, the TP (5%) and TN(3%) goals will be met. The Borough is listed as having the impaired Cocalico Creek requirements for Appendix E- Nutrients, Siltation and for the impaired Unnamed Tributaries to Conestoga River requirements for Appendix E - Siltation. The Chesapeake Bay impairments are in Appendix D for Nutrients and Siltation.

E. Proposed BMPs

In order to meet the required reductions of the Impaired Stream Pollutant Reduction Plan and the Chesapeake Bay Pollutant Reduction Plan the Borough has planned for projects within the Borough. The projects are described in detail in Appendix G. The reduction efficiencies credited for each proposed BMP have been derived from the PA DEP National Pollutant Discharge Elimination System (NPDES) Stormwater Discharges from Small Municipal Separate Storm Sewer Systems BMP Effectiveness Values Table (refer to Appendix F). A summary of proposed BMPs and their reduction capacity is found at the end of Appendix F. The proposed projects include the rain garden and a 1,440 ft. streambank restoration project in the Lloyd H. Roland Memorial Park. Below is the summary of the reduction achieved after the above projects are installed in the Borough, the 10% sediment and 5% phosphorus reduction requirements are satisfied and the 2018 permit requirements have been satisfied.

Akron Borough Pollutant Loading			
	Prior to BMPs	Post-CBPRP	Status
TSS	35,299.16	-65,992.86	Met plus 30,693.7
TP	20.62	-99.83	Met plus 79.21
TN	419.82	-196.10	223.71 ²
Source: C.S. Davidson, Inc.			

Please note that all final designs for stream restoration BMPs should be in general accordance with DEP’s “Considerations of Stream Restoration Project” document, available at www.dep.pa.gov/ms4.

F. Funding

Borough Building Rain Garden – Funding from Borough Funds and possible grant funding through local, state, and federal programs.

Streambank Restoration – Cocalico Creek – Funding from Borough Funds and possible grant funding through local, state, and federal programs.

² Per the Permit Application, the Borough is to focus on the 10% Sediment reduction and the 5% TP reduction as the local impaired waters have siltation and nutrient impairments. The 10% reduction requirement for the impaired streams also applies to the overall Chesapeake Bay 10% reduction requirement.

G. Operation and Maintenance Responsibilities

The Operation and Maintenance responsibilities are outlined in the specific project descriptions in Appendix G. The Borough will be responsible for the maintenance of the rain garden on the Borough Office Lot and Streambank Restoration in Lloyd H. Roland Memorial Park. The Streambank restoration project is planned to be on Borough-owned property. Should the restoration extend onto a privately-owned property the Borough will work with the property owner. The design plans will include the detailed operation and maintenance requirements for the Streambank restoration project.

Summary

Akron Borough plans to complete the planning, permitting, and construction stages of the listed projects starting after DEP's approval of this Impaired Stream and Chesapeake Bay Pollutant Reduction Plan. With the installation of the projects listed in this plan, the impaired stream reduction requirements have been met and; therefore, the Chesapeake Bay reduction requirements have been met and the Borough will have met the reduction requirements for their 2018-2023 MS4 Permit.

References

1. "Conestoga River." Wikipedia: The Free Encyclopedia. Wikimedia Foundation, Inc. 13 May 2016. Web.
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4. Land Studies. Cocalico Creek Watershed CBPRP Baseline Study and Implementation Strategies: Lancaster County, Pennsylvania. November 2014.
5. "Cocalico Creek." Wikipedia: The Free Encyclopedia. Wikimedia Foundation, Inc. 8 December 2016. Web.
6. Conestoga River Watershed Act 167 Stormwater Management Plan: Section III. Berks County, Pennsylvania website. <http://www.co.berks.pa.us/Dept/Planning/Pages/Conestoga%20River%20Act%20167%20Plan.aspx>. June 2005.
7. Pennsylvania Department of Environmental Protection MS4 Requirements Interactive Map Akron Borough. Retrieved July 2017. <http://www.depgis.state.pa.us/MS4/index.html>
8. Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at <http://websoilsurvey.sc.egov.usda.gov/>. Accessed [07/15/2017].