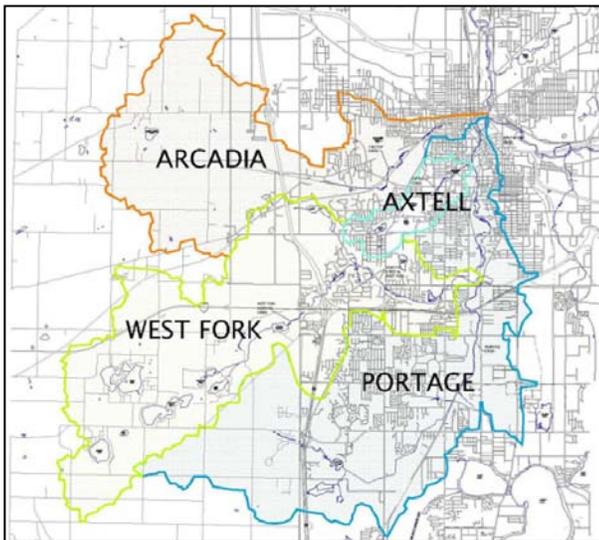


**Contact:**     **Mr. Bill Reed**  
                  **Executive Director**  
                  **The FORUM of Greater Kalamazoo**  
                  **1120 Lakeway Avenue,**  
                  **(269) 324-0512**

**Project Costs:**     **K&A: \$250,000 (2003), \$70,000 (2006)**

**Project Completion:**     **Original WMP 2003, USEPA Nine Elements Update 2006**

A Section 319 Watershed Management Planning grant from the Michigan Department of Environmental Quality was successfully written by K&A to develop a unique, Internet-based Watershed Management Plan (WMP) for Portage and Arcadia Creeks in the Kalamazoo River Basin. The plan was initially approved by MDEQ in 2003. Subsequent updates in 2006 allowed the WMP to meet all requirements for an EPA-approved plan for this largely urbanized, 43,723-acre watershed (see [www.kalamazooringer.net](http://www.kalamazooringer.net)). K&A was responsible for all technical analyses,



monitoring and modeling as well as WMP authorship and creation of the project website.

Two significant tributaries to Portage Creek (Axtell Creek and the West Fork of Portage Creek) combine with Portage and Arcadia Creeks to discharge into the Kalamazoo River in the City of Kalamazoo. The objective of the project was to obtain and compile information necessary to allow stakeholders in the affected jurisdictions to collaboratively develop the framework and documentation for this watershed management plan for these two prime drainage areas.

Portage and Arcadia Creeks drain 36,344 acres of land in Oshtemo and Texas Township, and within the cities of Portage and Kalamazoo. The upper reaches of the watersheds are predominantly rural, agriculture and suburban while the lower reaches drain more urban areas with significant storm water

runoff. Portage Creek and Arcadia Creek are significant contributors of phosphorus to the Kalamazoo River. Phase II Storm Water Regulations and federal Clean Water Act limits for a Total Maximum Daily Load (TMDL) are driving local efforts to reduce phosphorus and other pollutants flowing into the Kalamazoo River.

The General Scope of this project included the following elements:

- Elicit community stakeholder participation
- Assess water pollution concerns
- Build upon ongoing efforts
- Conduct monitoring capable of providing information necessary for effective watershed planning
- Develop solutions on a watershed basis
- Capitalize on objectives, needs and issues associated with regulatory and non-regulatory programs for participants
- Create a web-based approach for all key project elements and the plan itself, accessible to anyone
- Develop an approvable Watershed Management Plan

**PORTAGE/ARCADIA CREEKS 319 WATERSHED MANAGEMENT PLANNING AND  
CMI IMPLEMENTATION GRANTS, KALAMAZOO, MICHIGAN**

The working framework for this project targeted the following efforts:

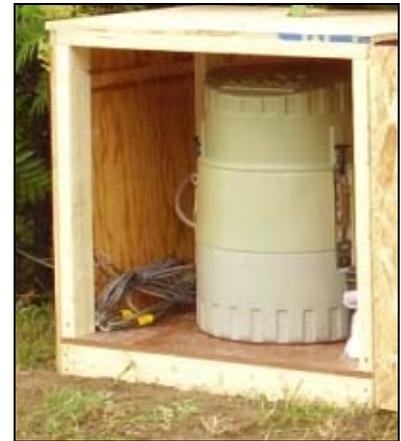
- Secure and build upon partnerships with municipalities, townships, county, MDEQ, industry, private sector, academic institutions, conservation and environmental groups, and other watershed stakeholders.
- Create and maintain a Project Steering Committee to direct and maintain the focus on both project and local objectives.
- Conduct all technical elements through private sector assistance responsible to the Steering Committee and the Project Administrator.
- Conduct monthly Steering Committee meetings.
- Create a project web page ([www.kalamazooriver.net](http://www.kalamazooriver.net)) to host all major project components for communication, dissemination and cost-effective updates.

This unique electronic format of the Watershed Management Plan facilitates lower costs for adjustments and updates as well as superior capabilities to more rapidly and cost-effectively provide any revisions to interested parties. Another unique element of this watershed planning grant will be the extensive monitoring of these surface water systems to better understand current impacts as well as to establish a baseline for existing conditions. This baseline can be used to assess the water quality benefits of future improvement efforts undertaken in the drainage basins of these streams. Surface water monitoring included:

- Continuous monitoring of flow of both streams near their confluence with the Kalamazoo River using ISCO automated samplers; water quality samples were additionally collected over several dry weather and wet weather periods.
- Four dry weather water quality surveys were completed over the four seasons at 20 locations along Portage and Arcadia Creek water courses spanning over 22 miles of stream length.
- Four wet weather water quality surveys were also completed using the same strategy for dry weather events.



*K&A operated and maintained ISCO auto-samplers to collect water quality samples for pollutant loading verification.*



The FORUM of Greater Kalamazoo was the grantee, and therefore served as the local grant administrator for the project. The primary technical consultant for the project was KIESER & ASSOCIATES, LLC (K&A). K&A was responsible for gathering new and existing information about these drainage areas and assessing water quality, erosion and sources of contamination. Research results were used by the project steering committee to formulate a comprehensive watershed management plan with priorities for corrective actions intended to serve the greater community good and support other similar local efforts. Information dissemination and public education was provided by the Kalamazoo Conservation District working with the FORUM and other project partners.

Together with substantial local in-kind contributions, the 319 grant provided funds for planning to improve water quality by reducing sources of erosion and other pollution including critical nutrients such as phosphorus. After the plan was originally approved in 2003, K&A assisted local stakeholders in acquiring additional Section 319 Grant funding in 2005 to update the WMP to meet the federal requirements of the USEPA nine elements. The updated WMP was completed by K&A and approved by MDEQ in February 2006. This comprehensive plan has opened the door for local groups and municipalities to pursue follow-up grants or funding to help implement actual

**PORTAGE/ARCADIA CREEKS 319 WATERSHED MANAGEMENT PLANNING AND  
CMI IMPLEMENTATION GRANTS, KALAMAZOO, MICHIGAN**

improvements and best management practices (BMPs) recommended in the planning process.

Subsequent to WMP approval, K&A has now written implementation grants that have brought in over \$1.7M in funding for urban stormwater and stream restoration efforts. As the design engineer, K&A has implemented WMP priorities at several sites with an array of water quality issues related to urban impacts on these streams. Projects included floodplain restoration, bank stabilization with bio-engineering, native plant buffers and wetland creation. All related aspects of biologic, ecology, hydraulics, geomorphology, engineering and construction oversight were conducted by K&A staff. Other similar grant-funded efforts are ongoing.

Completed and ongoing WMP implementation projects include (refer also to separate project summaries):

- Kalamazoo Christian High School Restoration/Stabilization (Arcadia Creek) – CMI Funding
- Western Michigan University Urban Stormwater Treatment (Arcadia Creek) – USEPA TWG Funding
- Milham Park Streambank Restoration/Stabilization (Portage Creek) – CMI Funding
- Loy Norrix High School Stormwater Bioretention (Arcadia Creek) – CMI Funding
- Western Michigan University Stormwater Treatment/Floodplain Enhancement (Arcadia Creek) – CMI Funding
- Kalamazoo Valley Community College Stormwater Treatment (Arcadia Creek) – 319 Funding
- Western Michigan University Urban Stormwater Treatment (WF Portage Creek) – 319 Funding



The BMP efforts in the Arcadia Creek basin implemented since the completion of the WMP have achieved greater than >25% load reductions of phosphorus and sediments over measured/estimated loads in the WMP. For phosphorus, this is one half of the way to achieving load reduction goals set forth in a Kalamazoo River Watershed TMDL.