

The Lower 1 Rouge River Subwatershed Advisory Group established long-term goals for its watershed management plan. Long-term goals were identified to establish a framework to guide long-term efforts to protect the existing values of the river and restore the impaired uses. Under each goal, short-term objectives were developed to identify the conditions or activities that were expected to be completed within five years, as interim steps in achieving the long-term goals. The long-term goals are listed below, along with highlighted successes. The complete list of short-term objectives can be found at www.rougeriver.com.

Rouge River Watershed Measuring Our Success



www.rougeriver.com

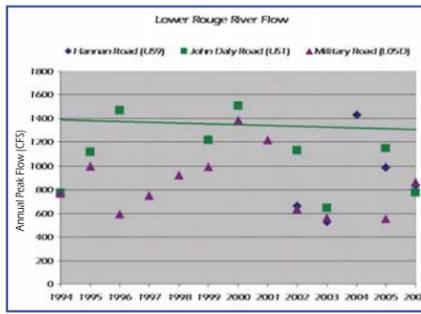
Goal: Reduce flow variability

Canton Township designed and constructed a regional storm water wetland adjacent to the south side of the Fellows Creek and Green Drain in Flodin Park. Streambank and in-stream habitat enhancements were designed and constructed to improve approximately 1,000 feet of stream corridor. A walking path was constructed around the perimeter of the wetland with access points to areas of the streams where in-stream habitat is enhanced. Educational signage was installed describing in-stream habitat enhancements, descriptions of fish and macroinvertebrates species that might be observed, wetland features and other habitat that may exist in the wetland. A footbridge was constructed to provide access between the north and south sides of the creek.



From 1990 to 2000, residential, commercial and industrial land use in the upstream communities of the **Lower Rouge River** have increased while forest and agricultural areas have decreased by approximately 23 percent. Urban development typically results in an increase in impervious area, leading to increased runoff during storm events. Moderate, stable river flows are generally best for aquatic life and stream habitats. Extreme variations of the river flow rate during storm events can result in severe bank erosion, which can significantly degrade game fish habitats.

The figure shows that peak river flows are decreasing at John Daly Road (US1) and remaining fairly consistent at Hannan Road (US9) and Military Road (LO5D) in the Lower Rouge River despite increasing development. This indicates that the measures taken to manage storm water runoff as upstream areas are developed are helping to protect the Lower Rouge River ecosystem.



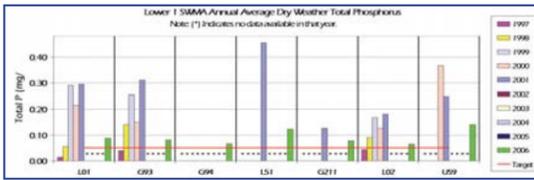
Two rain gardens have been planted in **Ypsilanti Township** with volunteers providing education through signage and presentations to various groups.



Fowler Creek, Superior Township, Washtenaw County

Lower 1 Subwatershed

Goal: Reduce nutrient loading



Elevated levels of phosphorus in our lakes and streams can contribute to nuisance algae blooms and excess aquatic plant growth, sometimes to the detriment of animal life. The **Lower 1 Subwatershed Advisory Group** has set a target to maintain total phosphorus levels below 0.05 mg/L. Mean values at all seven locations sampled in the Lower 1 in 2006 exceeded this target level. The Ypsilanti Community Utility Authority (YCUA) provides wastewater treatment services for the Townships of Canton, Northville, and Plymouth and discharges to the Lower Rouge in the upstream end. The six-month (May through October) average YCUA effluent concentration reported for total phosphorus in 2006 was 0.24 mg/L. Most of the locations sampled in the Lower 1 Subwatershed are tributaries to the Lower Rouge or were upstream of the YCUA discharge. One location, Hannan Road (US9) was located in the Lower Rouge downstream of the YCUA discharge.

Wayne County is conducting a \$1.4 million sewer system evaluation study on the North Huron Valley/Rouge Valley Sewerage Transport System (NHV/RV) which will ultimately lead to the correction of sanitary sewer overflows (SSOs) in the system. The NHV/RV serves seven Lower Rouge River communities.

The **Washtenaw County** and **Wayne County** Conservation Districts used Rouge River National Wet Weather Demonstration Project (Rouge Project) grant funding to develop the Abatement of Agricultural Runoff project which promoted nutrient management techniques and conservation practices for predominantly agricultural land use areas. The grant also paid for soil testing, development of conservation plans and woodlot management.

Wayne and **Washtenaw** counties have a time-of-sale inspection for onsite sewage disposal systems (OSDS).

Goal: Reduce soil erosion and sedimentation



The **Alliance of Rouge Communities (ARC)** developed a detention pond maintenance manual and presented workshops for Rouge River Watershed residents.

Plymouth Township conducts street-sweeping activities twice a year on its local roads which reduces storm water pollution from oils, dirt and debris.

Van Buren Township's Environmental Department continues to work with lakefront property owners to consider more naturalized, environmentally friendly designs when developing their lake frontage.

Canton Township and **Plymouth Township** conducted the Fellows Creek Regional Detention Program to inventory storm water detention facilities located in residential, commercial and industrial developments. The most common problems included lack of wetland vegetation, excessive sediment build-up and evidence of bank erosion. The inventory provided maintenance and/or retrofitting recommendations as well as providing a basis to determine future basin design.



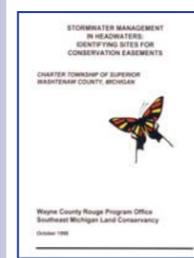
Volunteers, including local Eagle Scouts, prepared live fascines to help stabilize the stream banks along the Lower Rouge River in **Canton Township**. Streambank stabilization prevents soil erosion and sedimentation in streams and rivers.



Goal: Protect and mitigate the loss of natural features

Canton Township's Lower 1 Wetland Resource Protection Plan Project utilized a wetland inventory to develop a subwatershed-wide wetland resource protection plan. Funded by the Rouge Project, this project also developed a strategy for implementing the plan which was presented to representatives from local communities to build consensus for plan implementation.

Van Buren Township has adopted a Woodland Ordinance which protects woodland areas and requires a permit to remove, transplant, damage or destroy trees in designated areas.



Superior Township and **Washtenaw County** used Rouge Project grant funding to identify and promote conservation easements along Fowler Creek to protect the headwaters of the Rouge River. Landowners were provided with educational materials and had the opportunity to meet and discuss the many advantages of conservation easements.

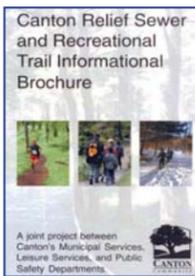
Van Buren Township has included information on its web site regarding the value and benefits of wetlands and how to protect them. There is also information on the website about woodland preservation and native plants that should be planted in the area.

During Rouge Rescue 2007, **Boy Scouts in Ypsilanti Township** prepared a riparian area for the installation of 100 native plants and helped install a Grow Zone Sign on site.



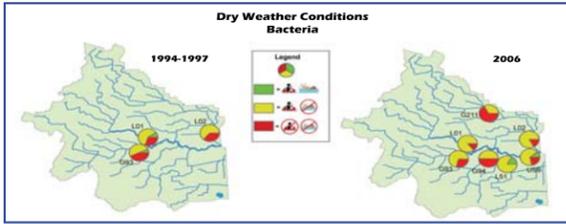
Goal: Increase opportunities for passive and active recreational uses

Canton Township is using Rouge grant funding to construct a non-motorized recreational trail from the International Transmission Corporation (ITC) Corridor west to Canton Center Road. In addition, the money will also be used to construct a trail head at the ITC Corridor and Morton Taylor Road for parking and trail access.



Van Buren Township used a Michigan Natural Resources Trust Fund grant to develop a natural area, including trails, benches and overlooks, across from the township hall.

Recent dry weather water quality monitoring in the **Lower 1 subwatershed** shows that the river is not always suitable for recreational activities like swimming, boating and wading, but conditions have improved. Three of the locations sampled in 2006 were also sampled during 1994-1997. The chart shows the percent of the time conditions were suitable for swimming, boating and wading based on state water quality standards for bacteria.

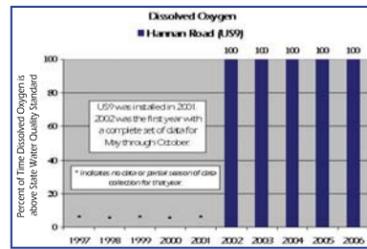


Goal: Increase water quality, water quantity and biological monitoring in the subwatershed to measure progress

Stoneflies are indicators of a healthy stream. Friends of the Rouge (FOTR) volunteers conducted the 2007 Winter Stonefly Search at six sites in the Lower 1 Subwatershed. Fowler Creek in **Superior Township** had stoneflies at the upstream site near Cherry Hill and Prospect, but none further downstream near Geddes Road. Stoneflies were found at two sites at Fellows Creek in **Canton Township**: Napier and Joy Roads and Ford and Ridge Roads. Stoneflies were also found at Cherry Hill and Ridge Roads in **Canton Township**. However, no stoneflies were found at Truesdell Creek near Lilley Road south of Cherry Hill in **Canton Township**.

In 2005, **Van Buren Township** created a system for monitoring the maintenance of storm water quality devices like ponds, sedimentation forebays and mechanical sedimentation units. The Storm Water Best Management Practice Tracking System will track who is responsible for maintenance; a schedule of recommended maintenance activities and periodic re-certification that the units are operating correctly.

Dissolved oxygen in the river is important to the survival of fish and other aquatic life. Insufficient dissolved oxygen limits ecosystem diversity and can result in fish kills and produce foul odors from the decomposition of organic materials. Michigan water quality standards require a minimum of 5.0 mg/L of dissolved oxygen to support warm water fish populations. The figure shows the percent of the time dissolved oxygen concentrations met the State standard in the **Lower Rouge River** at Hannan Road (US9) and indicates that conditions have been protective of warm water fish populations 100 percent of the time since monitoring began. Monitoring in 2006 was funded by the ARC.



Goal: Increase public understanding of their role in protecting water quality

The **Wayne County** Nutrient Reduction Program features workshops on riparian corridor management, river friendly lawn care and detention pond maintenance. The county also features an earth-friendly fertilizer program through nine local lawn care retailers who offer slow release fertilizers to customers in the Lower Rouge River Subwatersheds.



Seven of the eight known frog and toad species in the Rouge River Watershed were heard in the Lower 1 in 2006 - Wood Frogs, Western Chorus Frogs, Spring Peepers, American Toads, Northern Leopard Frogs, Gray Treefrogs and Green Frogs. **Canton Township** hosted a 2007 Frog and Toad workshop and 95 volunteers participated. An average of 43 blocks are surveyed for calling frogs and toads every year by volunteers trained by FOTR.

"Ours to Protect" road signs have been installed at numerous Lower 1 subwatershed tributary crossings by **Lower 1 communities, Wayne County** and **Washtenaw County**.

Canton Township developed a detention pond maintenance video that provides background on storm water management as well as step-by-step information on what type of maintenance is necessary to keep detention ponds functioning properly.

Canton Township, Superior Township and **Ypsilanti Township** sponsored sites in the Lower 1 Subwatershed during FOTR's Rouge Rescue 2007. Activities included invasive species removal, native plantings, nature walks and trash removal.

More than 54,000 pounds of electronic waste was collected at the **Wayne County Department of Environment E-Waste Collection** in May, 2007 in **Canton Township**.

Van Buren Township hosted an OSDS maintenance workshop for residents in 2007.



Goal: Integrate storm water management in planning and land use approval process

The **Washtenaw County Drain Commissioner, Wayne County**, and several **Lower 1 communities** have adopted storm water management programs to help minimize flooding problems, streambank erosion and other impacts to natural resources downstream of development projects. These programs require that management measures be implemented as part of development projects to reduce peak river flows and remove pollution from storm water runoff. To date, storm water management measures have been implemented in thousands of projects under these programs.



Ypsilanti Township encourages low impact development techniques such as infiltration trenches, dry wells, and retention ponds where feasible during site plan reviews.

Ypsilanti Township requires that all new developments refrain from using fertilizer containing phosphorus and maintain a 25-foot buffer from all rivers, lakes, ponds, streams, and regulated wetlands.

In 2006, **Canton Township** took a proactive approach to environmental stewardship with the creation of the Environmental Stewardship Committee (ESC). The ESC is composed of staff members from the Municipal Services, Finance, Budget and Leisure Services Departments. The ESC was created to educate the community on the township's practices as well as motivate residents into environmental awareness.

Superior Township adopted a growth management plan to preserve and manage natural features; protect the quality of surface and groundwater, woodlands, open space and steep slopes and to permanently protect strategic open space and agricultural lands from development.

Goal: Establish financial and institutional arrangements for the fulfillment of the management plan

The ARC was founded in 2003 to enable Rouge River Watershed communities to lead watershed management activities into the future. In 2005, thanks to efforts spearheaded by the ARC and supported by other watershed entities, government officials and environmental organizations, legislation was signed by Michigan's governor to institutionalize watershed alliances such as the ARC.



The ARC conducts river health monitoring activities and has sponsored workshops on detention pond maintenance, public education tools and techniques, and septic system maintenance.



The **Van Buren Township** Environmental Commission acts as an advisory and recommending body to the Township Board of Trustees on all matters pertaining to the environment.

Canton Township received a \$3,075 grant from the Michigan Volunteer River, Stream and Creek Cleanup Program (VRSCCP) to conduct 2007 River Day activities. Volunteers were able to choose from a number of different activities including guided nature walks, birdhouse building, constructing worm boxes for composting, and river cleaning efforts.

The **Lower 1 communities** participate in the Southeast Michigan Partners for Clean Water which produces and widely distributes materials on "Seven Simple Steps to Clean Water." The materials discuss proper fertilizer use, car washing techniques, pet waste disposal and other river-friendly behaviors.

Van Buren Township worked with Visteon Corporation in 2005 to design and construct a wetland fringe for an existing 36-acre lake. This project was completed in order to protect water quality, mitigate the impact of storm water pollutants on the lake and provide fish and wildlife habitat for the lake.

Goal: Enforce action plans and increase accountability for storm water management

The majority of **Lower 1 communities** and the counties require inspections and certification of constructed Best Management Practices (BMPs) such as detention basins. This ensures that these BMPs are functioning properly for the property owners following construction activities.

Plymouth Township initiated an innovative approach to storm water education by creating neighborhood-specific presentations that include images and techniques unique to each neighborhood, while addressing actions that can be taken by homeowners to reduce storm water pollution entering the Rouge River.



In 2006, **Canton Township** implemented a Detention Basin Landscaping Ordinance that details specific native plant requirements including wetland plants and riparian buffer vegetation for any new or retrofitted detention basins within the community.

Canton Township completed numerous detention pond enhancements that have empowered local residents to take ownership and encourage stewardship in their maintenance activities.



Rouge River Subwatershed

Lower 1

The Lower 1 Rouge River Subwatershed covers approximately 62.16 square miles or 39,785 acres of the Rouge River Watershed. The Lower 1 Rouge River Subwatershed makes up about 20% of the Rouge River Watershed and is located in western Wayne County and eastern Washtenaw County. It is comprised of parts of Canton Township, Plymouth Township, Salem Township, Superior Township, Van Buren Township and Ypsilanti Township. The Lower 1 Subwatershed is currently one of the most undeveloped in the Rouge River Watershed. Over 50% of the subwatershed remains in agricultural use, forested or in streams and wetland areas. The Lower 1 Subwatershed contains many tributaries including the Johnson Creek, Fellows Creek and Fowler Creek.

As part of the subwatershed management planning process, long-term goals and short-term objectives were established in the 2001 Lower 1 Rouge River Subwatershed Management Plan. The long-term goals of the Lower 1 Rouge River Subwatershed management plan are, in order of importance:

1. Reduce flow variability.
2. Reduce nutrient loading.
3. Reduce soil erosion and sedimentation.
4. Protect and mitigate the loss of natural features.
5. Increase opportunities for passive and active recreational uses.
6. Increase water quality, water quantity and biological monitoring in the subwatershed to measure progress.
7. Increase public understanding of their role in protecting water quality.
8. Integrate storm water management in planning and land use approval process.
9. Establish financial and institutional arrangements for the fulfillment of the management plan.
10. Enforce action plans and increase accountability for storm water management.

The subwatershed management planning process and subwatershed projects that fulfilled Subwatershed Advisory Group goals couldn't have been completed without partnerships between the communities, the counties, non-profit organizations, stewardship groups, citizens, local schools, colleges and universities.



The Washtenaw County Drain Commissioner's Office sponsors the River Safe Homes program. Community Partners for Clean Streams and the "Don't Rush to Flush" program which advocates the proper disposal of prescription drugs and personal care products.



Wayne County continues to promote the use of its 24-hour Environmental Hot Line (888-223-2363) for water quality complaints extensively throughout the County.



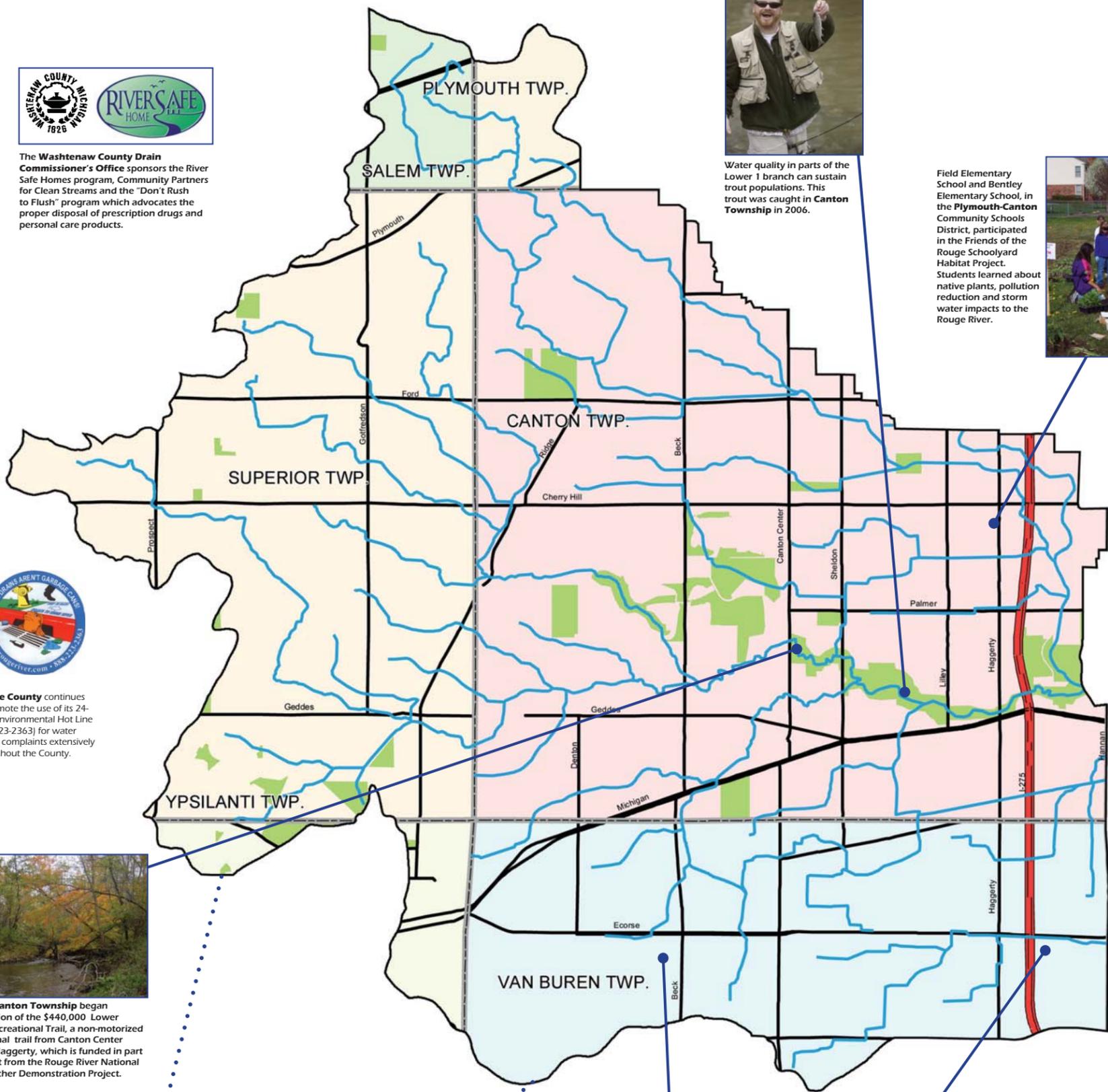
In 2007 Canton Township began construction of the \$440,000 Lower Rouge Recreational Trail, a non-motorized recreational trail from Canton Center Road to Haggerty, which is funded in part by a grant from the Rouge River National Wet Weather Demonstration Project.



Water quality in parts of the Lower 1 branch can sustain trout populations. This trout was caught in Canton Township in 2006.



Field Elementary School and Bentley Elementary School, in the Plymouth-Canton Community Schools District, participated in the Friends of the Rouge Schoolyard Habitat Project. Students learned about native plants, pollution reduction and storm water impacts to the Rouge River.



Wayne County Airport Authority is a member of the Alliance of Rouge Communities and provides ongoing educational information to their airport tenants and staff.



In 2005, Van Buren Township constructed a recreational and interpretive area within a historically important wooded wetland complex. The recreational trail weaves in and around featured ecosystems to showcase native forest communities, amphibian and avian species habitat, profiles of native soils and other aspects of the unique woodland.



Demographics

Size: 62.16 square miles
Population (2005): 84,207
Miles of stream: 120
Jurisdictions: Washtenaw and Wayne counties and 6 townships

Some photos provided by: Friends of the Rouge, Wayne County Department of Environment, Washtenaw County Drain Commissioner, Canton Township, Kurti Kuban, Ypsilanti Township, and Environmental Consulting & Technology.

Legend

- Rouge River & Tributaries
- Lake
- Highway
- County Road
- Recreation Area

Communities

- CANTON TWP.
- PLYMOUTH TWP.
- SALEM TWP.
- SUPERIOR TWP.
- VAN BUREN TWP.
- YPSILANTI TWP.

Land Use Category	Percentage of Total Drainage Area
Medium density residential	30%
Forest/rural open	22%
Agricultural	16%
Water/wetlands	9%
Industrial	7%
Commercial	6%
Urban open	4%
High density residential	3%
Highways	3%