

#### A New Way

Restoring Habitat in an Urban Watershed

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Riparian Corridor Management Technical Advisory Committee

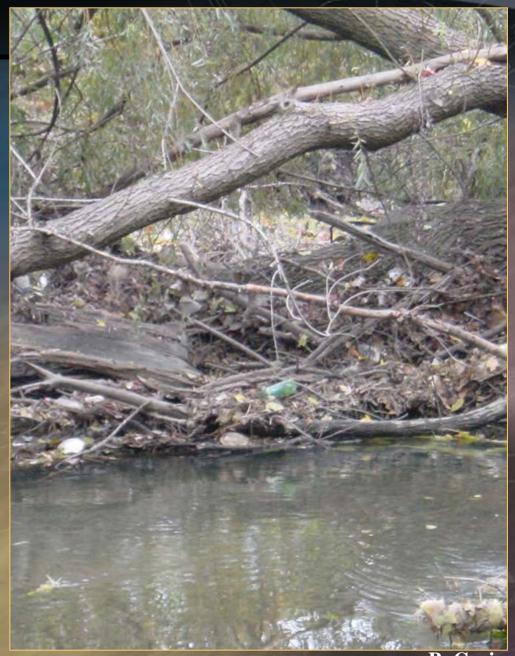


#### Contributors

- William Craig, President, Holliday Nature Preserve
- Noel Mullett Jr., Rouge Technical Coordinator, Wayne County Department of Environment
- Sally Petrella, Public Involvement Coordinator, Friends of the Rouge
- Joseph Rathbun, Water Quality Analyst, Michigan Department of Environmental Quality
- Marty Boote and Tonya Hunter, Engineers, ECT.
- Assisted by the members of the Riparian Corridor Management Technical Advisory Committee



- Urban/suburban logjams seen as significant problem
- Removal of logjams thought to be solution
- In Rouge
   Watershed, logjams
   have been removed
   for years



#### Rouge Remedial Action Plan

1992 Annual Progress Report

#### **RAP Finding:**

Variable river flows, logjams and debris contribute to degraded fish habitat aesthetics and recreational opportunities.

#### Actions:

 Since 1986, the Friends of the Rouge have organized an annual clean up of the Rouge River, known as the "Rouge Rescue". Over the past seven years, nearly 15,000 volunteers have removed over 19,000 cubic yards of debris, including approximately 500 log jams.

At least 20 communities conduct regular cleanups of the river, removing logiams and other debris, both as part of the Rouge Rescue and on their own throughout the year. Detroit, for example, removes debris several times each year.











#### Urban/Suburban Logjams/Woody Debris

#### Perceived Problems

- Erosion
- Loss of Private Property
- Aesthetics
- Expense of removal vs. expense of leaving in place
- Balance benefits of management vs. removal

#### And a crayfish jumped...



- Looked at what George Palmiter did in 1975 and on.
- Looked at what MDEQ was doing on trout streams in Northern Michigan to improve habitat.
- Looked at similar applications in the Pacific Northwest
- The same concepts could work in an URBAN watershed for habitat AND stabilization benefits.

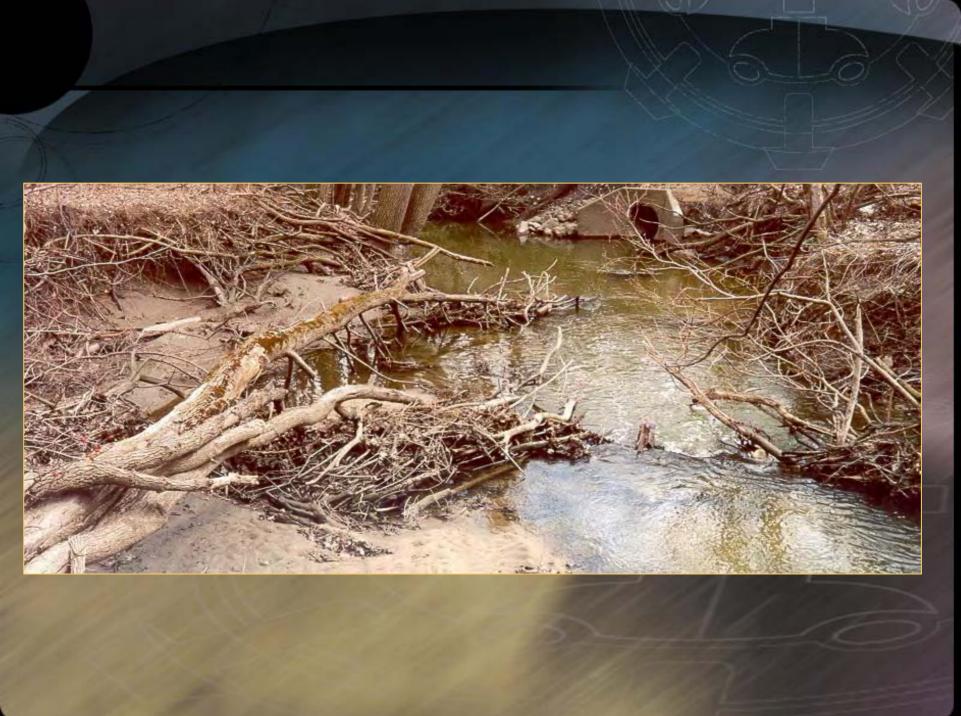
# Our understanding of the river and it's structure had changed.

# Holliday Nature Preserve Rouge Rescue 1998









#### Real Change

- In 2001, an internal policy shift at MDEQ now required a permit for activities inside high water mark, that breaks banks, bottom or affixes structure.
- Logjam removal (the main River Day activity) would require a permit.
- New methods for dealing with logiams were needed to continue river day activities.

#### Woody Debris Management

- Most Log Jams are GOOD!
- Cheaper to manage log jams and other woody debris that just "ripping them out of the river"
- Benefits of Woody Debris Management
  - Saves money and buys time
  - Habitat Creation/Preservation
  - Bank Protection
  - Flood Alleviation
  - Not Illegal!

#### Methods

- Clean and Open Method
- Habitat and Bank Protection
   Method
- Engineered Structure Method

## Evaluate logjams/woody debris by...

Size Current in-situ

Thalweg position Soil type

Safety Time

From this evaluation, look for potential impacts from...

Removal
Leaving in place
Opening center

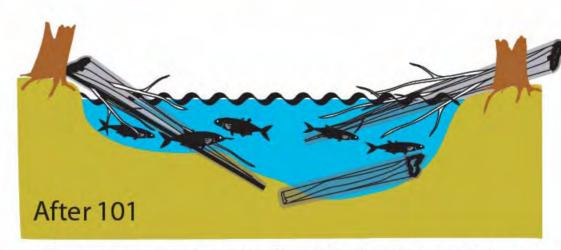
#### Clean and Open Criteria

- Must have a logjam/woody debris that is obstructing river flow
- No potential impact to human health/private property at location
- Logs are of manageable size

#### Clean and Open Method

- 1. CLEAN- Urban rubbish is removed or "cleaned"
- 2. OPEN- Center of logjam is opened at center of stream flow (thalweg)
- 3. Opening size determined by stream morphology and flow.





- Leave rooted or embedded stumps & logs.
- Remove floating or resting logs.

# Clean and Open Method (cont.)



Friends of the Rouge/Canton Township

# Clean and Open Method (cont.)

- Woody debris that is embedded in streambank or bottom is not removed.
- The opening in the logjam can be done with the use of handsaw or chainsaw
- Done by "Hand"

### Benefits of Clean and Open Method

- Does not need a MDEQ permit.
- Creates, preserves and enhances fish, aquatic invertebrate and wildlife habitat structure
- Reduces localized flooding and erosion while maintaining flow reduction and sediment deposition benefits
- Directing the flow through the logiam and the new opening, instead of around the sides of the logiam.
- Increases/maintains the river's aesthetic value

### Benefits of Clean and Open Method (cont.)

- Meets regulatory requirements. (SWPPI, SW General Permit)
  - Habitat Creation/Enhancement
  - Preserving riparian vegetation
- Inexpensive approach that saves money

#### Clean and Open Implementation

- The clean and open method has been directly applied at 6 sites in the implementation area.
- It also has been applied by NGO volunteers at over 40 sites over last 4 yrs (Rouge Rescue) These sites have maintained healthy, clear channels and woody debris has not reconstituted into a problem at these locations.
- Monitoring at these location is ongoing, specifically looking at erosion rates, aesthetics and benthic communities.



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# Holliday Nature Preserve Rouge Rescue 2000















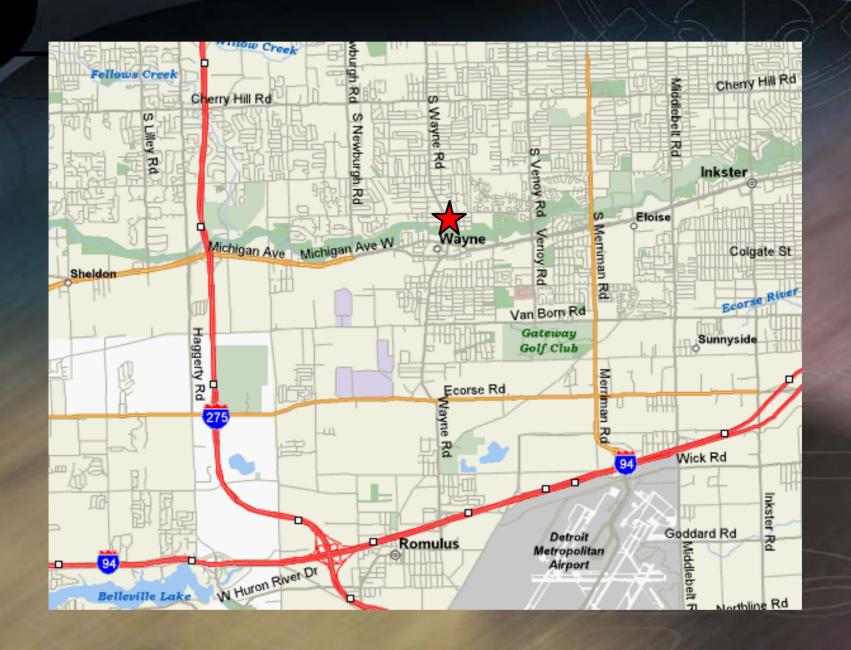
## What about areas in the river that need ...

- Habitat structure
- Bank protection from erosive, flashy flows

## Habitat and Bank Protection Criteria

- Area of occurring or potential streambank erosion and/or...
- Area that needs habitat structure
- Woody debris has the ability to be cabled securely to the bank
- Cabling logs to the bank will not completely obstruct river flow
- Debris placement has no foreseeable, potential impact to human health/private property at location

# City of Wayne Woody Debris Management 201 2002

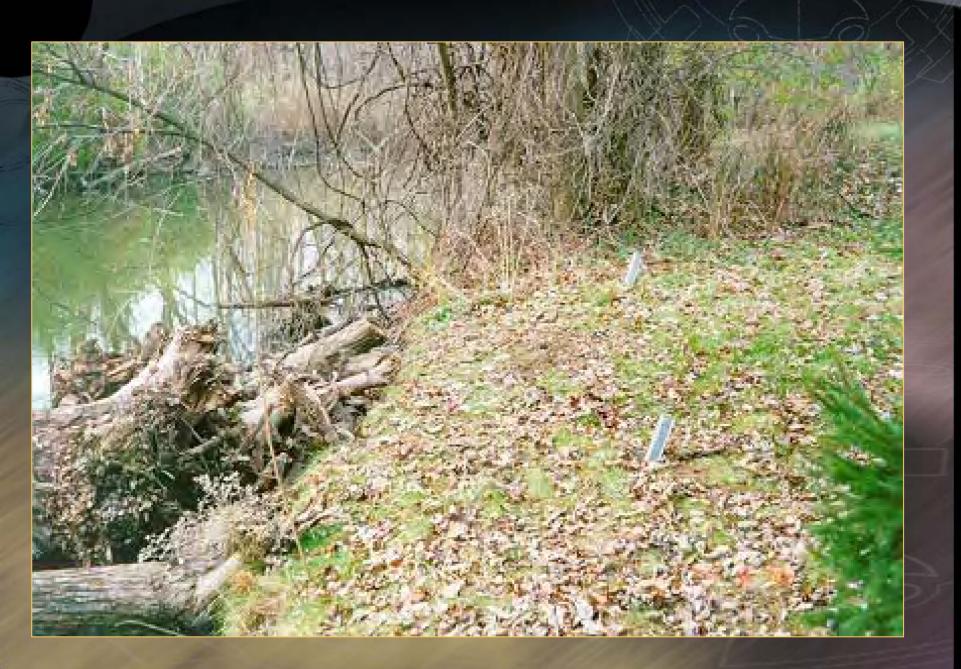




B. Craig

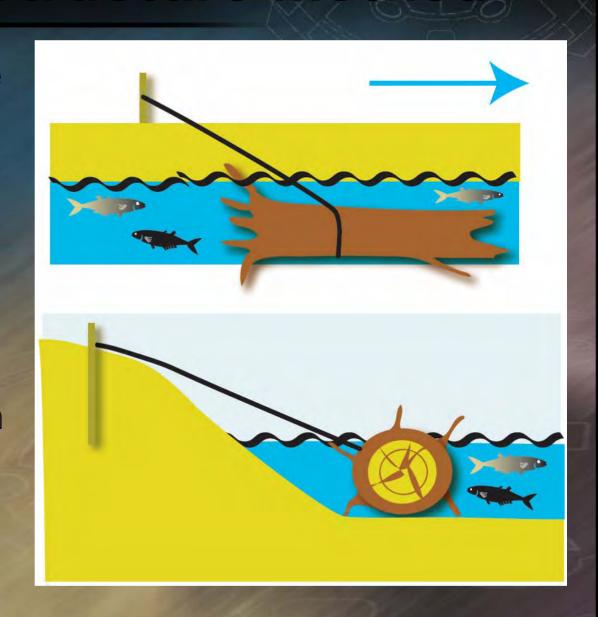


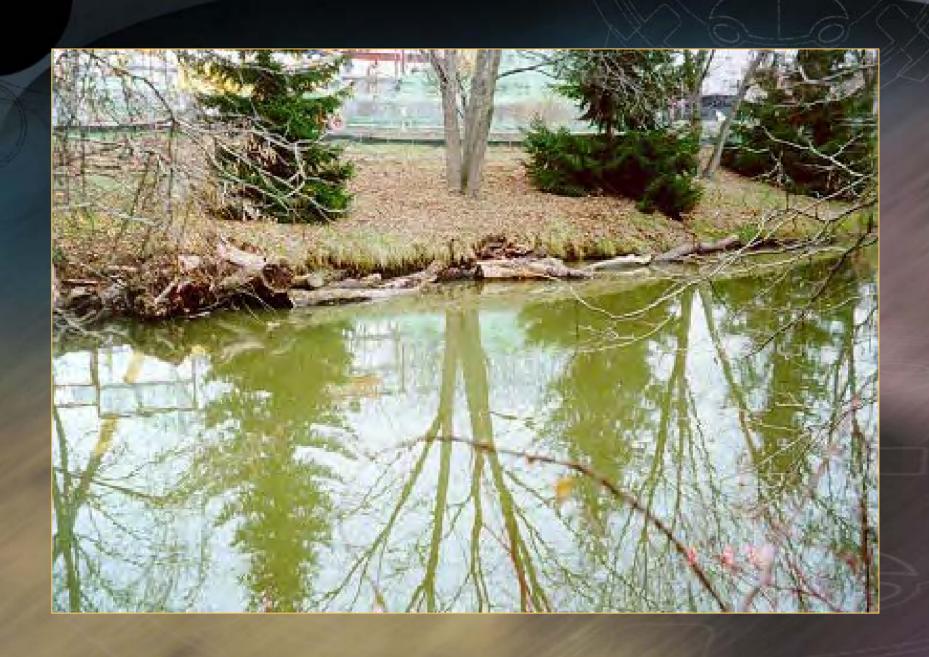


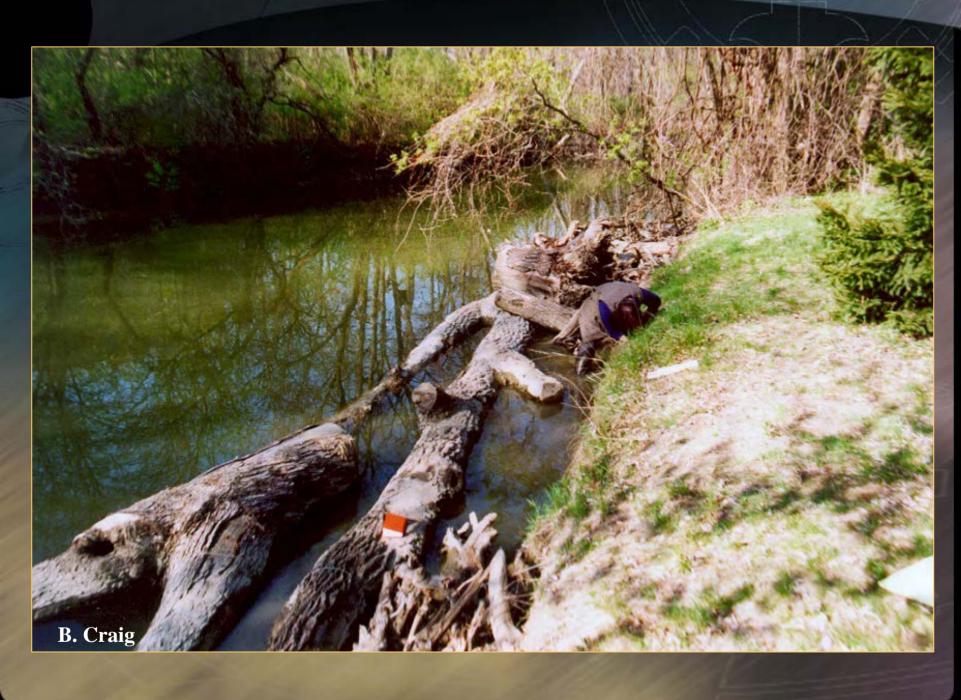


#### Habitat Structure Method

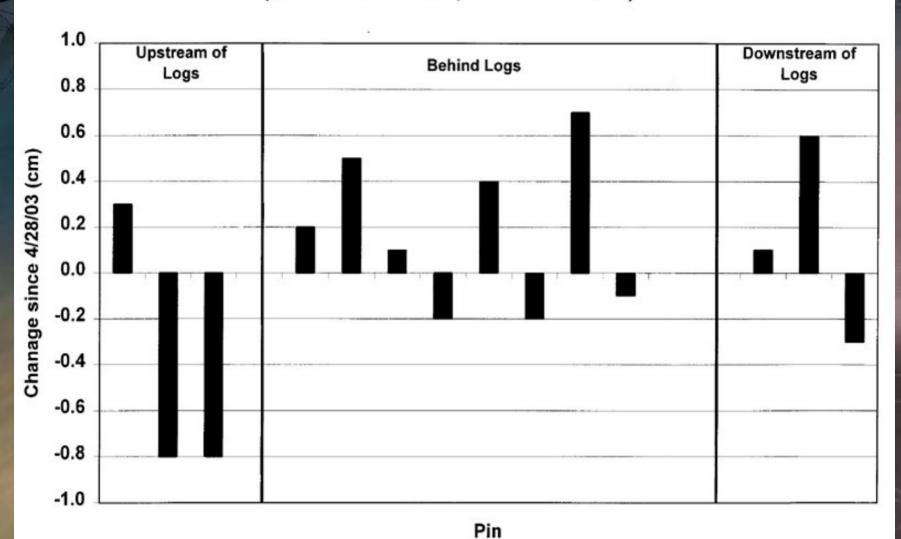
- 1. PERMIT Secure approved permit for project from MDEQ.
- 2. MOVE- Move or place selected woody debris in optimum position.
- 3. SECURE Attach woody debris to bank by using cable and post or chain.







Erosion Pin Data: Wayne Road (Pins set on 4/28/03; Data from 7/3/03)





Data and Photo from Joe Rathbun

### Benefits of Habitat and Bank Protection Method

- Creates, preserves and enhances fish and wildlife habitat
- Reduces localized flooding and erosion while maintaining flow reduction and sediment deposition benefits.
- "A River Runs Through It"
- Meets regulatory requirements.
- Inexpensive!
- Remember that these are only temporary placements.

#### More options for managing log jams in the Rouge River

By Bill Craig, Rouge River AOC

It's interesting to read the 1988 Rouge River RAP recommendations for addressing log jam problems. They state that log jams restrict recreation, are unsightly, cause erosion and worsen flooding. In order to restore the river, log jams needed to be removed, and the RAP provided detailed suggestions on how that could be done, by who and how much it would cost.

Out of those suggestions, the Friends of the Rouge made log jam removal the cornerstone of their annual river cleanup event, Rouge Rescue. More volunteer groups formed to remove log jams in streams; local governments cleared out their "drains" – ditches and former creeks; and road maintenance crews eliminated log jams when they formed at bridges. Throughout this process habitat restoration was rarely considered.

In 1995 the question was asked, "Why are you removing this log jam?" This led to discussion, arguments, and improved education and awareness that changed thoughts about log jams being "all bad" to a better appreciation for what they really are: in-stream woody debris which actually makes important contributions to channel function and habitat for fish, aquatic insects, and wildlife. As a result,



Members of the Rouge RAP and Friends of the Rouge strategically place woody debris in the Rouge River.

Friends of the Rouge stopped removing log jams and, in 2002, formally announced that they would promote woody debris management as part of their education and outreach efforts.

Also in 2002, the newly formed Woody Debris Management Technical Advisory Committee (WDMTAC) drafted the Woody Debris Management 101 - Clean and Open Method. This document establishes when work requires a permit and addresses the needs of landowners and river volunteer groups when they want to work on log jams in the river.

The Rouge River has many stretches without any woody debris or even leaf

debris. Those sections of sand bottom and bare steep banks have very little river life. The lack of woody debris led the WDMTAC to draft a second document, Woody Debris Management 201 - Habitat Method, which outlines a procedure for "recruiting" large woody debris to add habitat structure. This requires a permit, since a "structure" is "affixed" to the river bed or its bank.

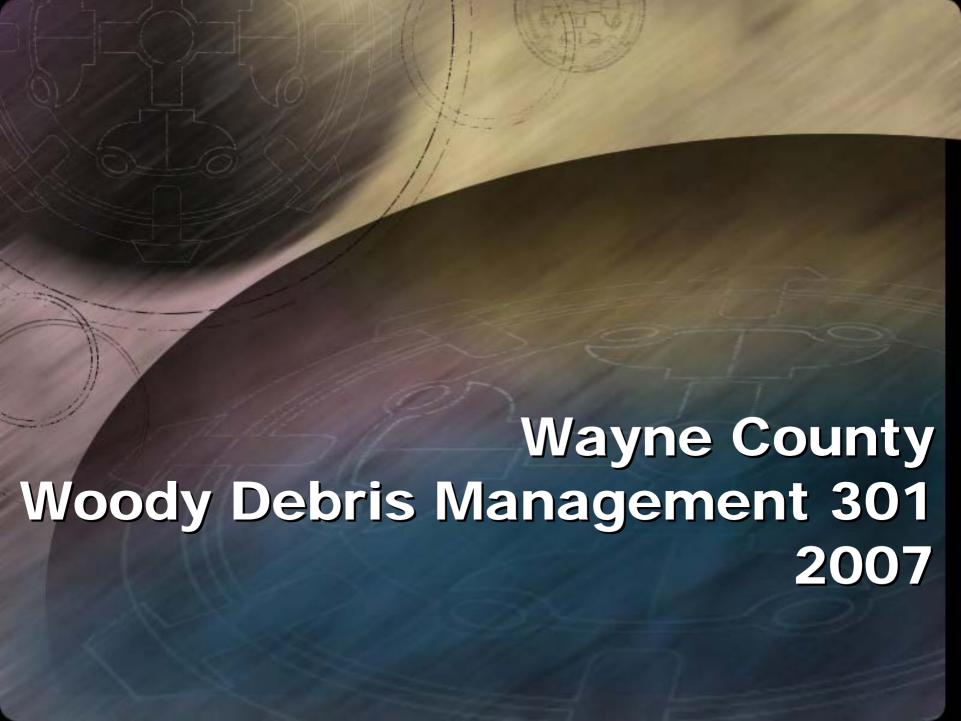
This document guided a habitat restoration project completed last November on the lower Rouge River, in the City of Wayne. Two 35-foot tree trunks were deposited in the river and secured to the riverbank. MDEQ is monitoring erosion and macroinvertebrate populations at the site to assess the project's effects. This project required a \$50 permit and was accomplished by six volunteers.

Woody debris management in the Rouge River is in its infancy. Past practices and bureaucratic barriers are still strong. We are now making progress to overcome resistance to this new, environmentallysensitive approach. With logic, reason and cost effectiveness, we hope to make log jam management part of our overall river restoration program.

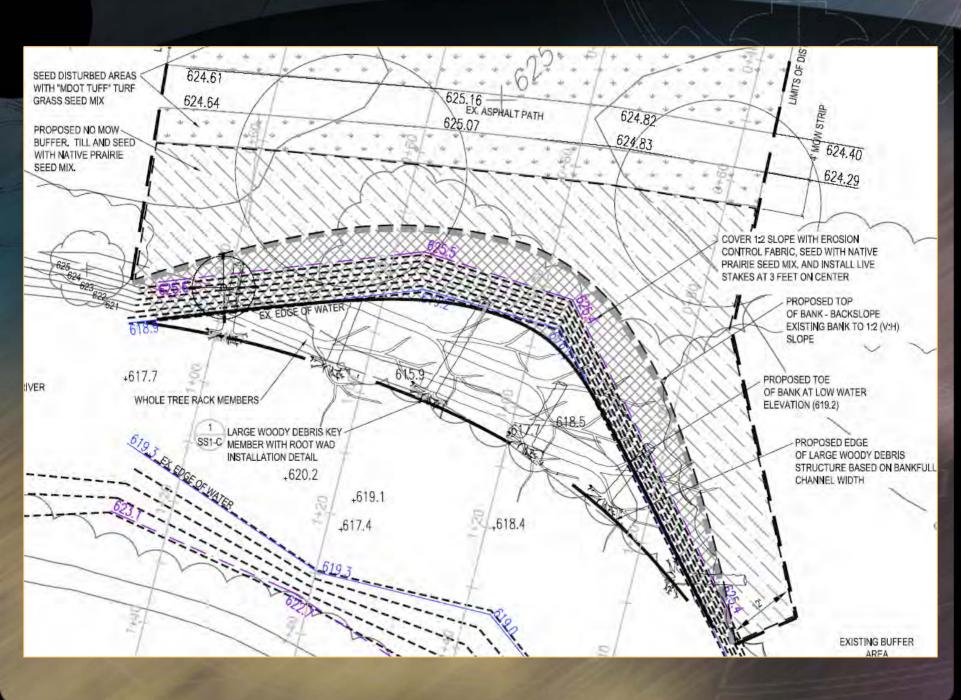
Additional information is available from Friends of the Rouge at 313-792-9900, www.therouge.org. •

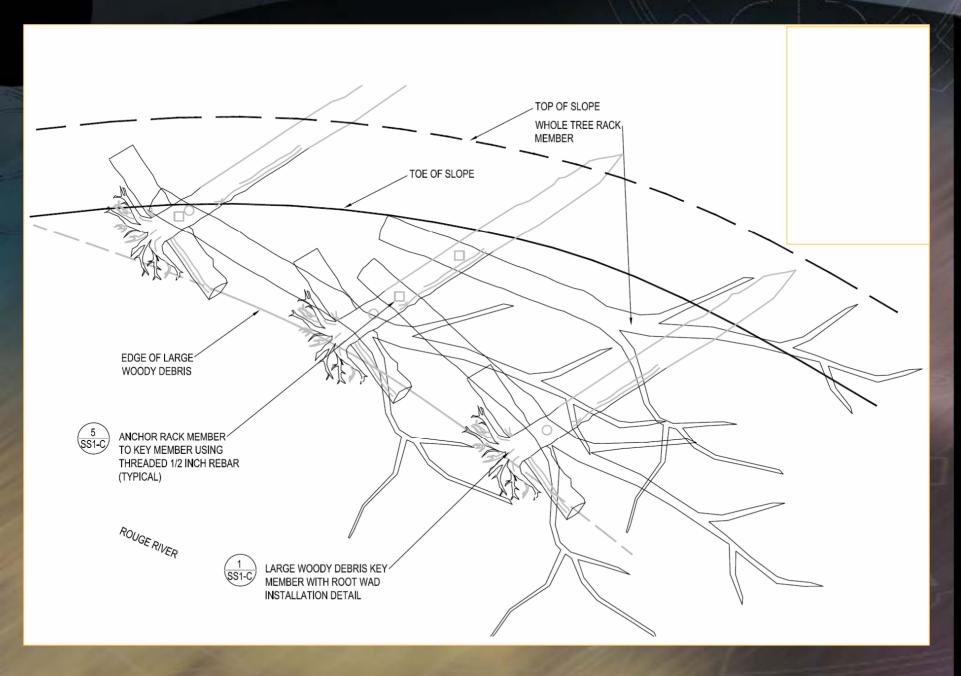
#### **Engineered Structure Criteria**

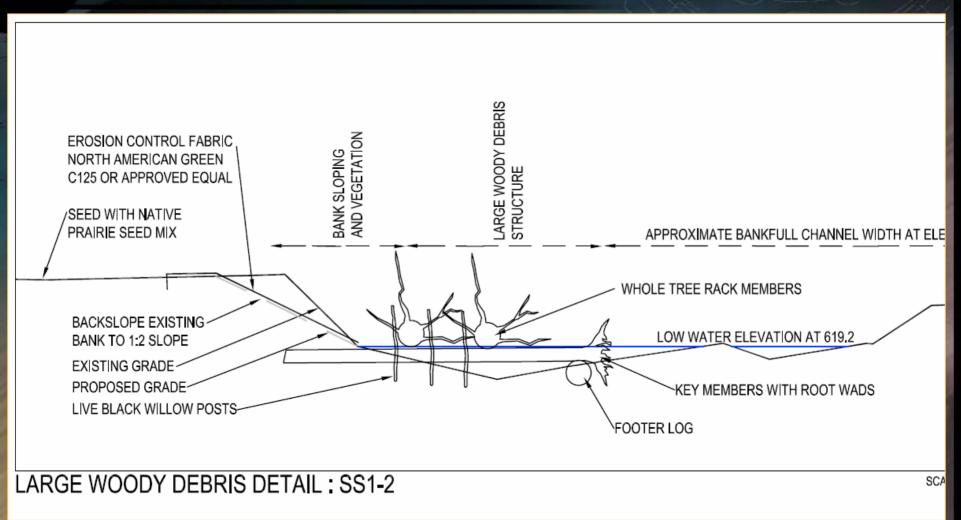
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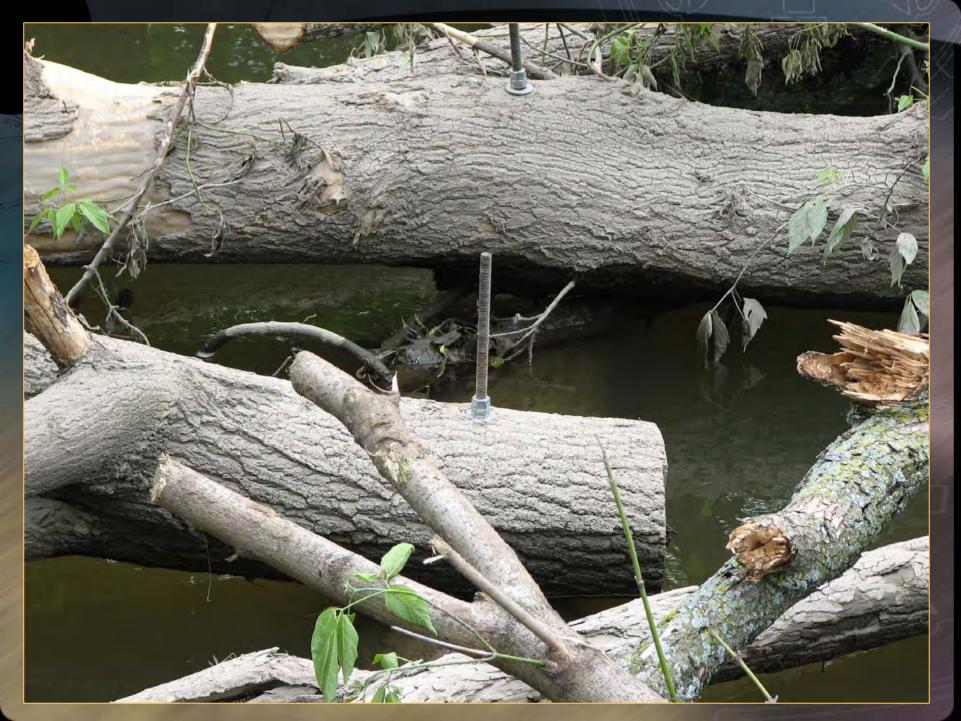


















#### Remember

- A recent study documented in their control section of stream which received large woody debris due to a storm did not see an increase in trout numbers and sizes.
- This suggests that the addition of cover by itself doesn't have much benefit. It is strategic placement of structure that increases the depth and quality of pool habitat and makes the most difference.



#### Solution

- Recognize and ACCEPT that logiams are part of the natural process
- Logjams are one of the ways that rivers adapt to land changes. Changes to the land accelerate the processes that cause logjams to occur at unnatural levels.
- Logjams, bank erosion and flooding are symptoms rather than the true cause of problems.
- Usually, the amount and velocity/energy in the water is the problem.

#### **Progress**

- WE MUST CHANGE
- Change in philosophy takes time and proof that method does what we say it does
- A "culture change" is beginning to take place in implementation areas.
- Looking at logjams and other woody debris as a valuable resource and part of healthy river system, not as a problem to be removed.

#### **Lessons Learned**

- Economic and Environmental Benefits
- These methods do not work on every logjams or situation. Sometimes traditional engineered methods are solution
- Methods used here are not permanent fixes, temporary "band-aids", requires routine maintenance. (It's a management system.)
- Initial and Yearly maintenance activity instills river stewardship from participants
- Must be implemented with a educational component for participants.
- It will take time to see the long term benefits at a regional level.

#### Future plans

- TAKE ADVANTAGE OF EAB
- Continued monitoring on existing and new sites.
- Continue implementation to try to change years of past practices
- Building woody debris management capacity at local level. (Municipalities)
- Implement at a regional level.

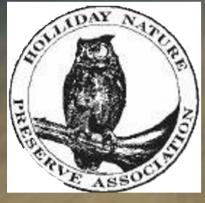
#### Questions







Riparian Corridor Management Technical Advisory Committee





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