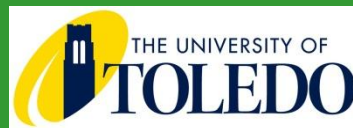


# **A Multifaceted Urban Stream Restoration Project for the Ottawa River at the University of Toledo Progress Report**

**Submitted to Ohio EPA Section 319(h) Nonpoint Source Program  
July 6<sup>th</sup>, 2012**



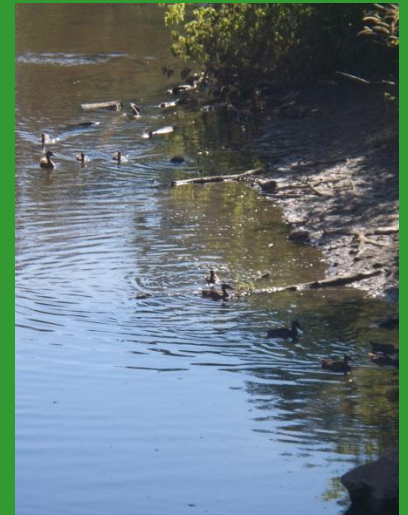
**University of Toledo**



**Presidents Commission on the River**

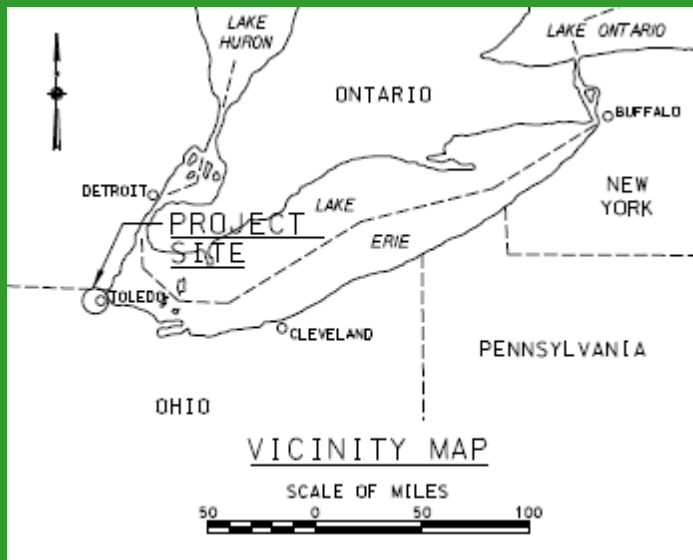
**Chair: Dr. Patrick Lawrence**

**[patrick.lawrence@utoledo.edu](mailto:patrick.lawrence@utoledo.edu)**



# Introduction

- This report contains images, maps and photographs in support of the semi-annual July 2012 progress report for the Ohio 319 grant funded restoration project for the 3,700 feet of the Tenmile Creek/Ottawa River location on the main campus at the University of Toledo .
- It is intended to accompany the Semi-Annual project report and associated workplan revision, both of which provide specific details on the project activities over the last 6 months and updated expenditures and budget, submitted to the Ohio EPA Section 319(h) Nonpoint Source Program on July 6<sup>th</sup>, 2012.
- In summary, this grant - along with other additional funding provided by USFWS - are funding habitat improvements to a section of the Tenmile Creek/Ottawa River located in NW Ohio and within the Maumee Area of Concern on the main campus of the University of Toledo.
- These improvements are to include stream restoration and stream bank/riparian restoration with the aim to address existing habitat and hydromodification and to restore impaired waters.
- Planning and overall project management has been underway since 2009 by the UT Presidents Commission on the River (with a supporting grant from the Stranahan Foundation) and with assistance from various partners including the Maumee RAP, TMACOG, and Partners for Clean Streams.
- Since 2010 the U.S. Army Corps of Engineers, Buffalo District, has been assisting with the preparation of restoration concepts and design plans (and associated data collection, analysis and technical support) for this river restoration under authority granted to the ACOE by Congress to provide expertise for restoration efforts within Great Lakes Areas of Concern . In addition, Dave Derrick (AOCE) has provided additional external review and assessment of the proposed river restoration concepts.
- Funded under the FY2011 Section 319(h) Nonpoint Source Project Grant awarded to this project , Matt Horvat (Maumee watershed coordinator, TMACOG) has been subcontracted as project manager.



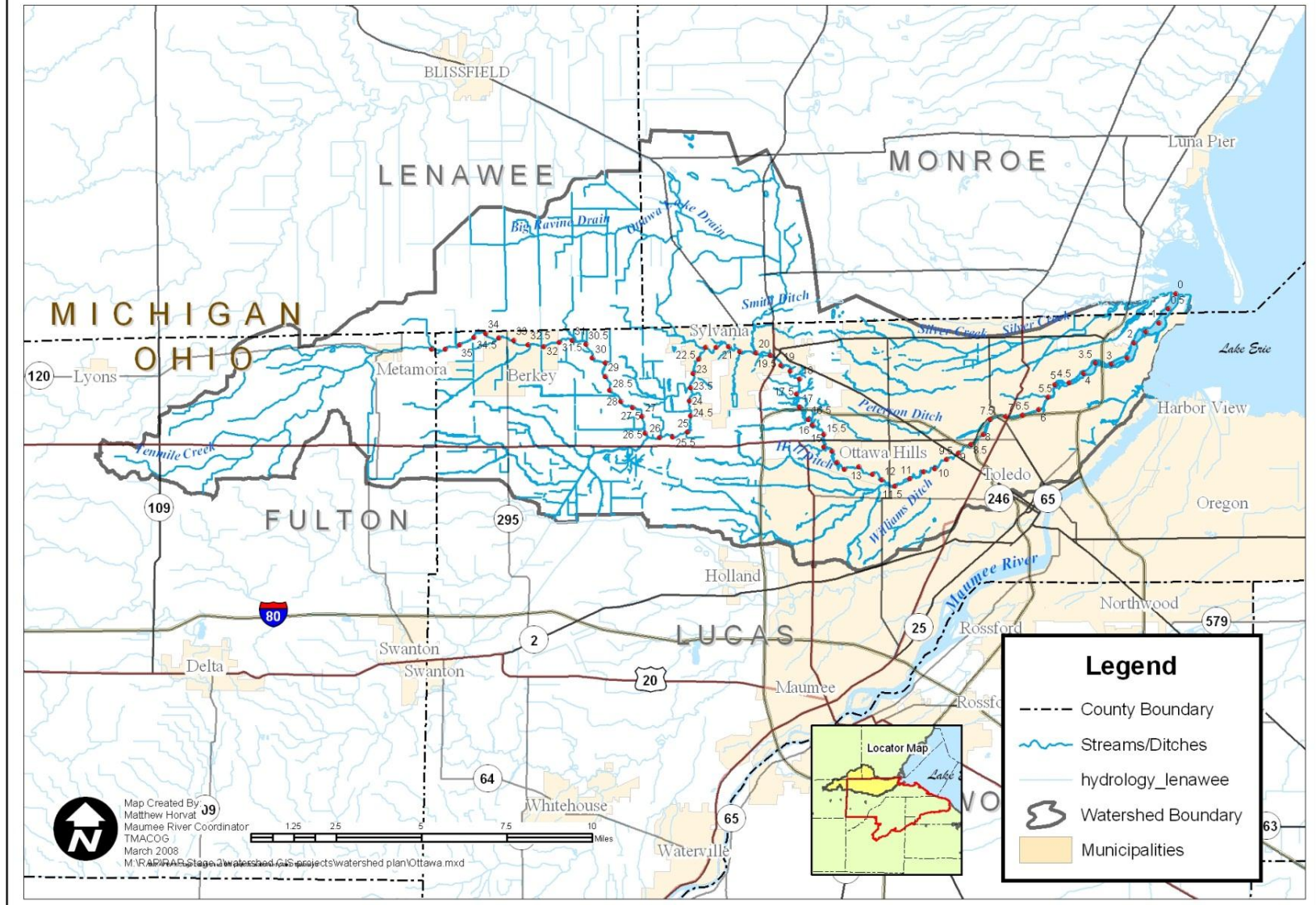
UT Tenmile Creek/Ottawa River Project Site (Region)



Figure 1

# Ottawa River/Ten Mile Creek Watershed

HUC 0410001 020



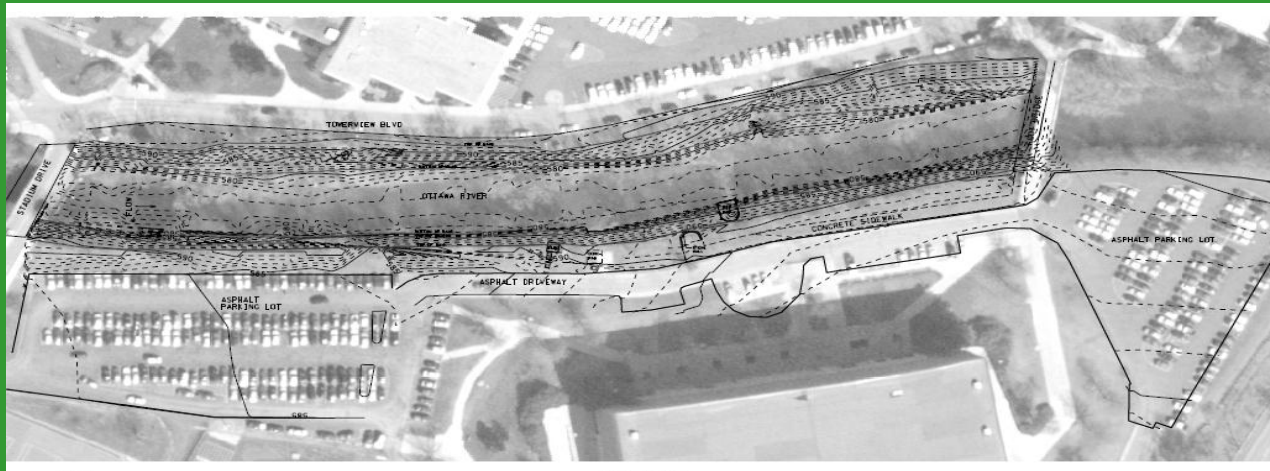
Tenmile Creek/Ottawa River Watershed



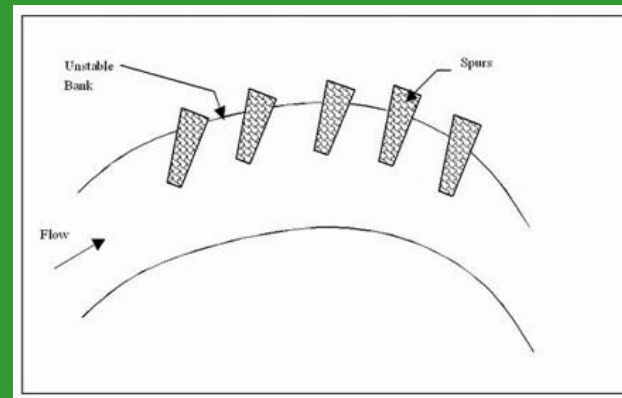
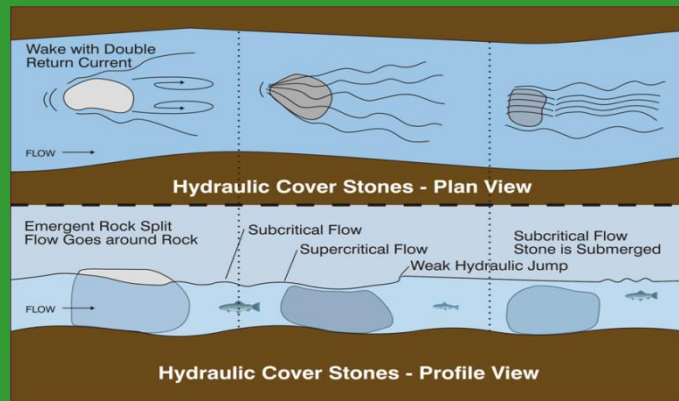
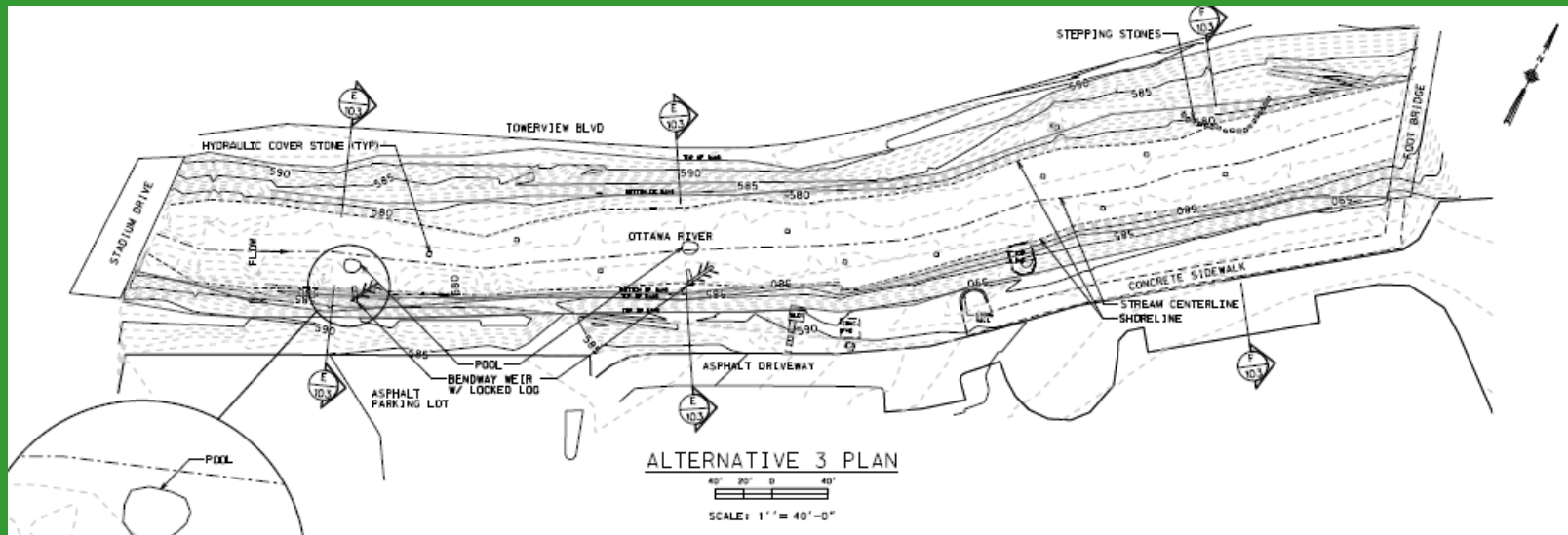


UT Tenmile Creek/Ottawa River Project Site





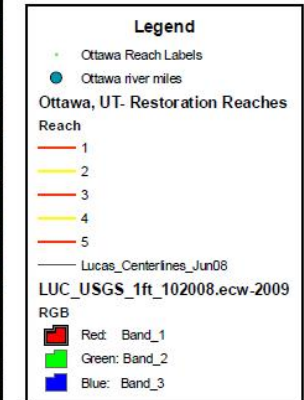
With funding secured from Stranahan Foundation in 2009 planning started on proposed in-stream and bank restoration for selected reach on UT campus, 900 feet adjacent to Savage Area, UT entered into agreement with ACOE Buffalo in FY11 to complete necessary survey, hydrological modeling and draft concept plans



Initial concept plans for river restoration of river reach 5 (900 feet adjacent to Savage Arena) as presented by ACOE Buffalo at March 2011 workshop



# Habitat Restoration at University of Toledo Ottawa River Reach Map Toledo, Ohio



Map Created By:  
Matthew Horvat  
Maumee River Coordinator  
TMACOG  
3-3-2011

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Additional funding secured from Ohio EPA (\$235,195) and U.S. Fish and Wildlife Service (\$114,132) in 2011 allowed for expansion of river restoration to include entire length of Ottawa River on the main campus of the University of Toledo, ACOE Buffalo District under agreement with University of Toledo for FY 2012 to complete design concepts and final plans for all 3,700 feet on campus.



In order to determine the best choice of aquatic and bank plant species to install at the UT river restoration site, a series of test plantings were installed at a selected sample site with a mix of species including live stakes and plants placed in May/June 2011 with monitoring of their growth success ongoing from the Summer of 2011 to Summer 2012

Species planted included Button Bush, Dogwood, Sycamore, Pin Oak and River Bank Wild Rye



In the summer of 2011 OEPA conducts sampling within the Tenmile/Ottawa River watershed including on the UT campus and for pre-assessment of existing aquatic ecosystem conditions at the UT 319 river restoration project





# Ottawa River grant to help sustain wildlife

By [Casey Cheap](#)

IC News Editor

**Published:** Thursday, September 22, 2011

**Updated:** Thursday, September 22, 2011 03:09

The 3,700-foot stretch of the Ottawa River that runs through Main Campus will have a different look by August of 2012.

A \$235,000 grant from the Ohio Environmental Protection Agency will be used to clean up a large section of the river.

This grant will allow UT to clear out some of the dead trees along the river, making a more beneficial environment for the wildlife.

UT will also make in-stream habitats using natural stone and tree trunk-like material to create shelters for fish swimming in the river and adjust rock placement to alter the flow of the river.

Patrick Lawrence, chair of the Department of Geography and Planning, said one of the goals of construction along the river is to make the water ripple more, creating a better aquatic habitat.

"Right now there is not a lot of diversity in the river's habitats," he said. "We want to recreate some of the river's natural habitats and diversify species."

Phase one of the grant was originally to just address a section of the river near Savage Arena.

"We got a grant from the Stranahan Foundation, had planning from the U.S. Army Corps of Engineers and had additional funding from U.S. Fish and Wildlife [Service]," Lawrence.

The annual grant from the Ohio EPA will be used to expand upon a previous grant from the Stranahan Foundation awarded two years ago.

Lawrence said money from the Ohio EPA is actually federal money that the state disperses for local projects.

Lawrence said the work will only take about two week; but because of some of the pre-construction planning, construction on the river will not start until Aug. 2012.

Lawrence wanted to stress that although there would be construction along the river, there would not be



Nick Kneer/ IC

The \$235,000 grant will help UT make the river a more suitable aquatic habitat for fish.

rerouting of the river channel because the current bank structure offers flood control.

"We are not going to move the river channel or anything," he said. "Back in the 1940s and 1950s the river used to flood until the river was diked in 1960."

He said much of the construction on the river is going to be carried out by subcontractors and professionals, but the department of geography and planning is in charge of the grant money.

"Some of the people working on this are graduate students from the department of geography and planning and from the department of environmental sciences," he said.

The month of August was selected because it will be a relatively calm time of year before the fall semester starts, fish migration and spawning will be minimal and the river will be relatively low.

There has been relatively little work done on the river since 1960. "There was a design report done in 1981, but there was no follow-up done on that," he said. "It wasn't until former UT President Don Johnson formed the President's Commission on the River in 2005 that there has been progress."

The grant also came just in time for the "Celebrate Our River Week" on campus last week.

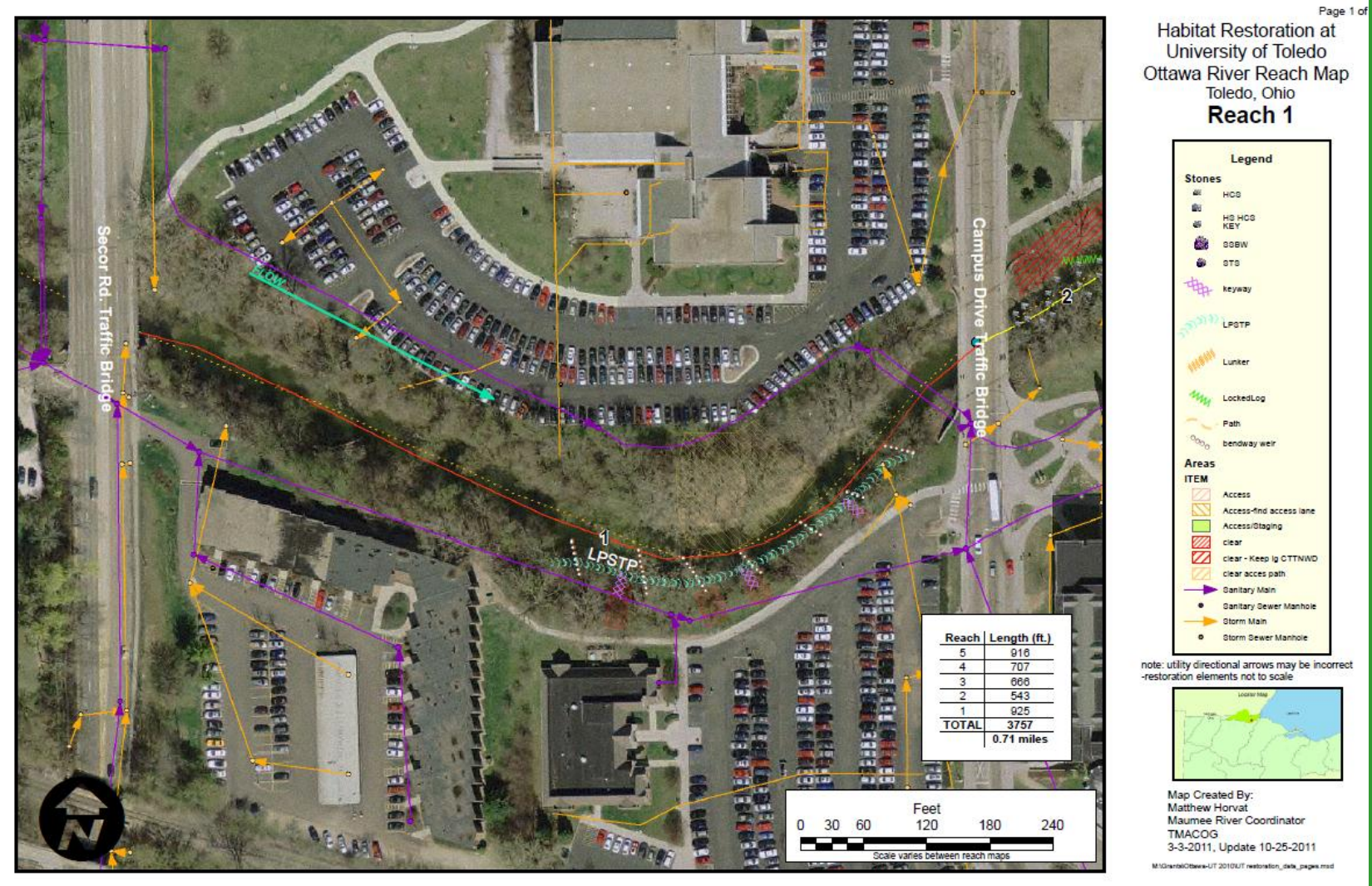
Lawrence said 196 volunteers helped clean up the stretch of the Ottawa river that runs through Main Campus and river about 650 people volunteered to clean the river throughout other parts of Toledo.

"We are working to do our share on campus to address water quality of the river," he said.



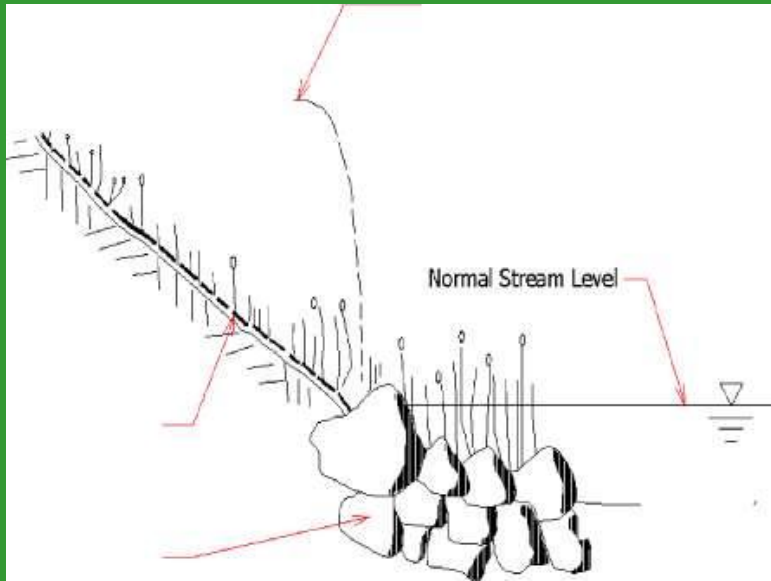


# ACOE Buffalo preliminary design concepts presented for Reaches 1-5, UT Ottawa River Project site (November 2011)

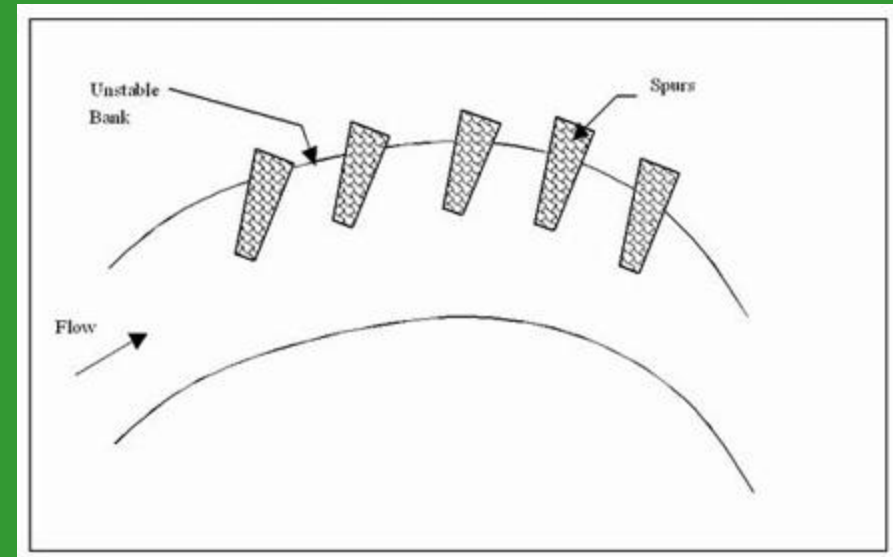


## Reach 1 Concept Plan





Longitudinal Stone Toe Protection



Bendway Weirs

## Reach 1: Proposed In-stream Restoration Features

# Habitat Restoration at University of Toledo Ottawa River Reach Map Toledo, Ohio Reach 2



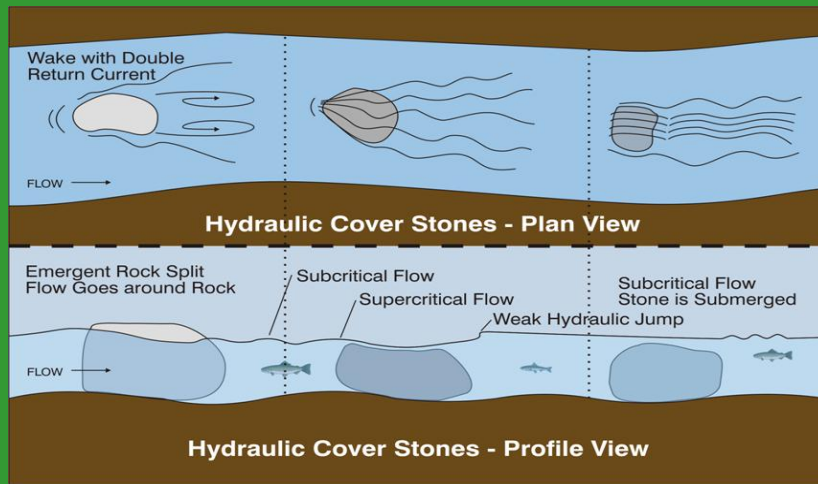
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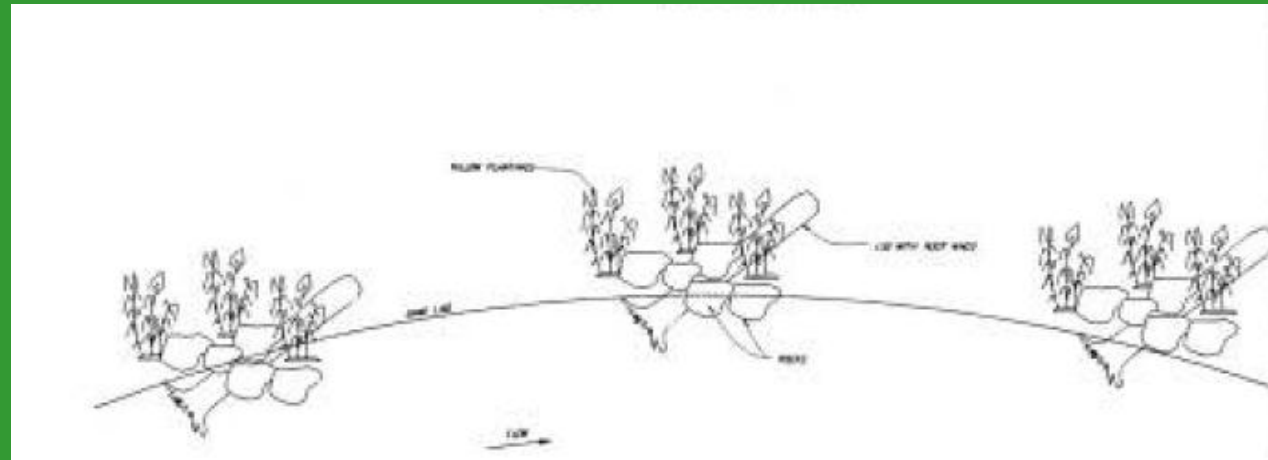
Map Created By:  
Matthew Horvat  
Maumee River Coordinator  
TMACOG  
3-3-2011, Update 10-25-2011

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## Reach 2 Concept Plan



## Hydraulic Cover Stones

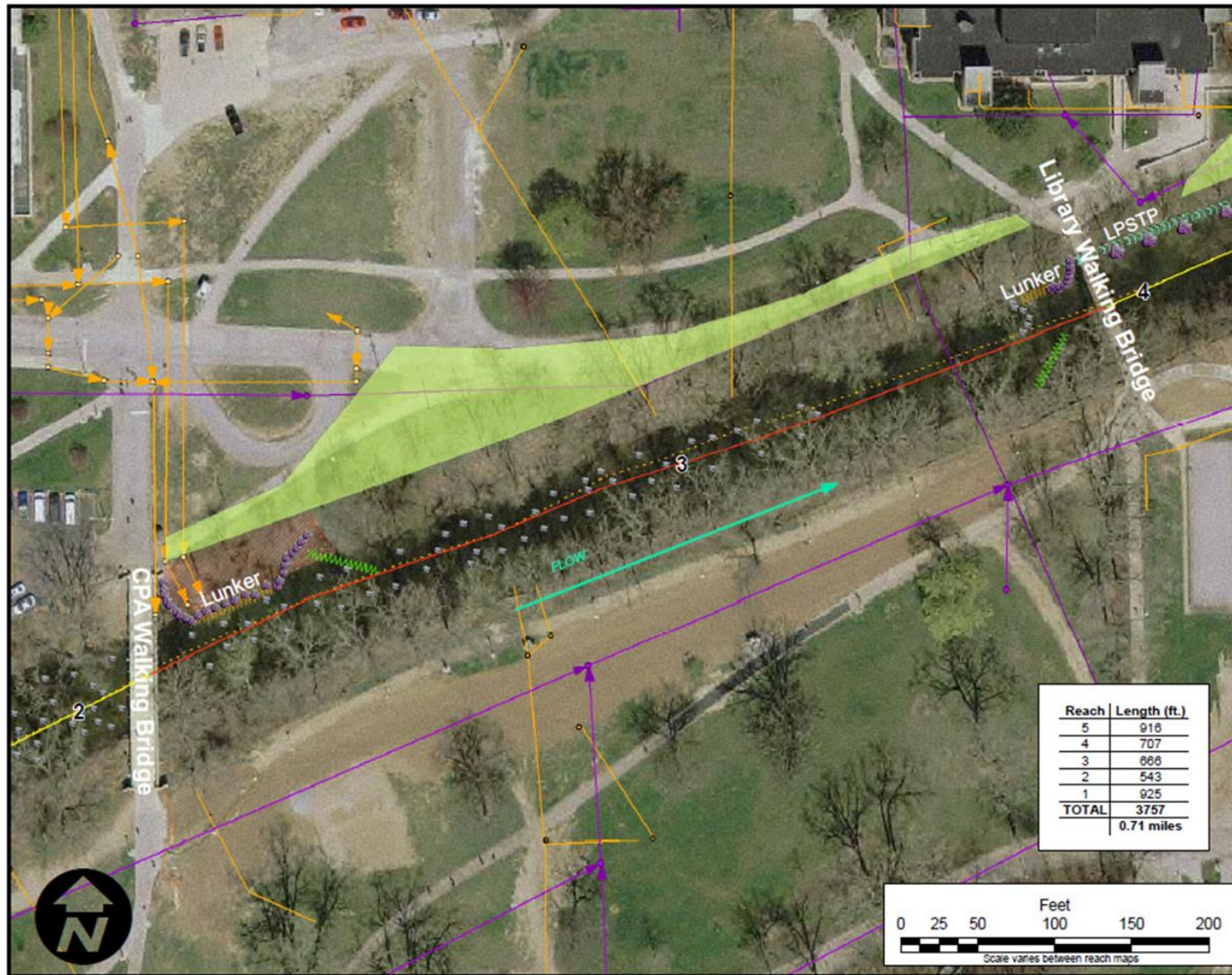


## Locked Logs

# Reach 2: Proposed In-stream Restoration Features



Habitat Restoration at  
University of Toledo  
Ottawa River Reach Map  
Toledo, Ohio  
**Reach 3**



#### Legend

##### Stones

HCG

H2 HCG

KEY

GGBW

GTS

keyway

LPSTP

Lunker

LockedLog

Path

bendway weir

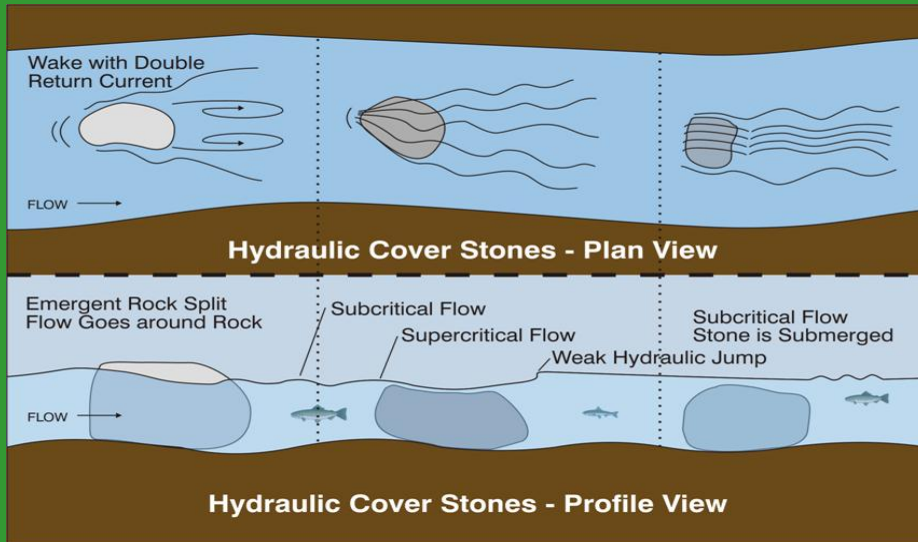
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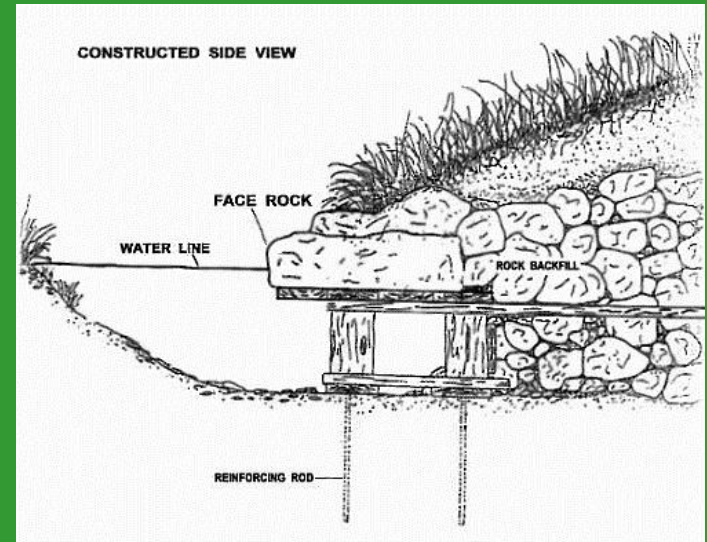
Map Created By:  
Matthew Horvat  
Maumee River Coordinator  
TMACOG  
3-3-2011, Update 10-25-2011

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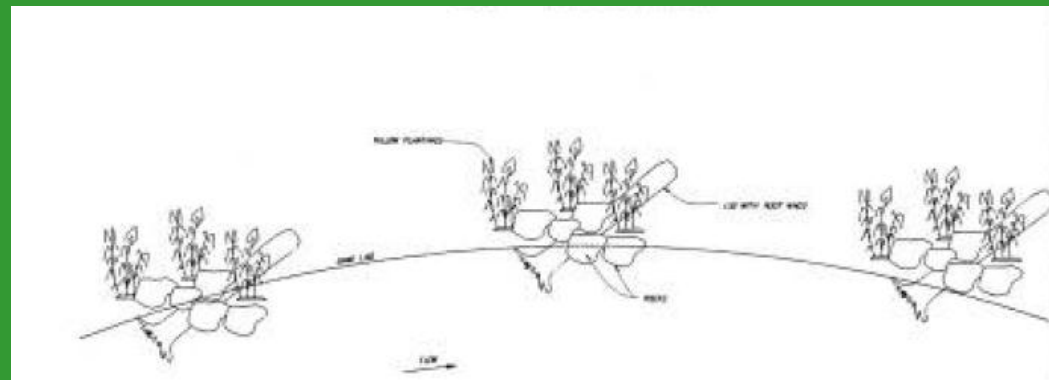
## Reach 3 Concept Plan



Hydraulic Cover Stones



Lunker

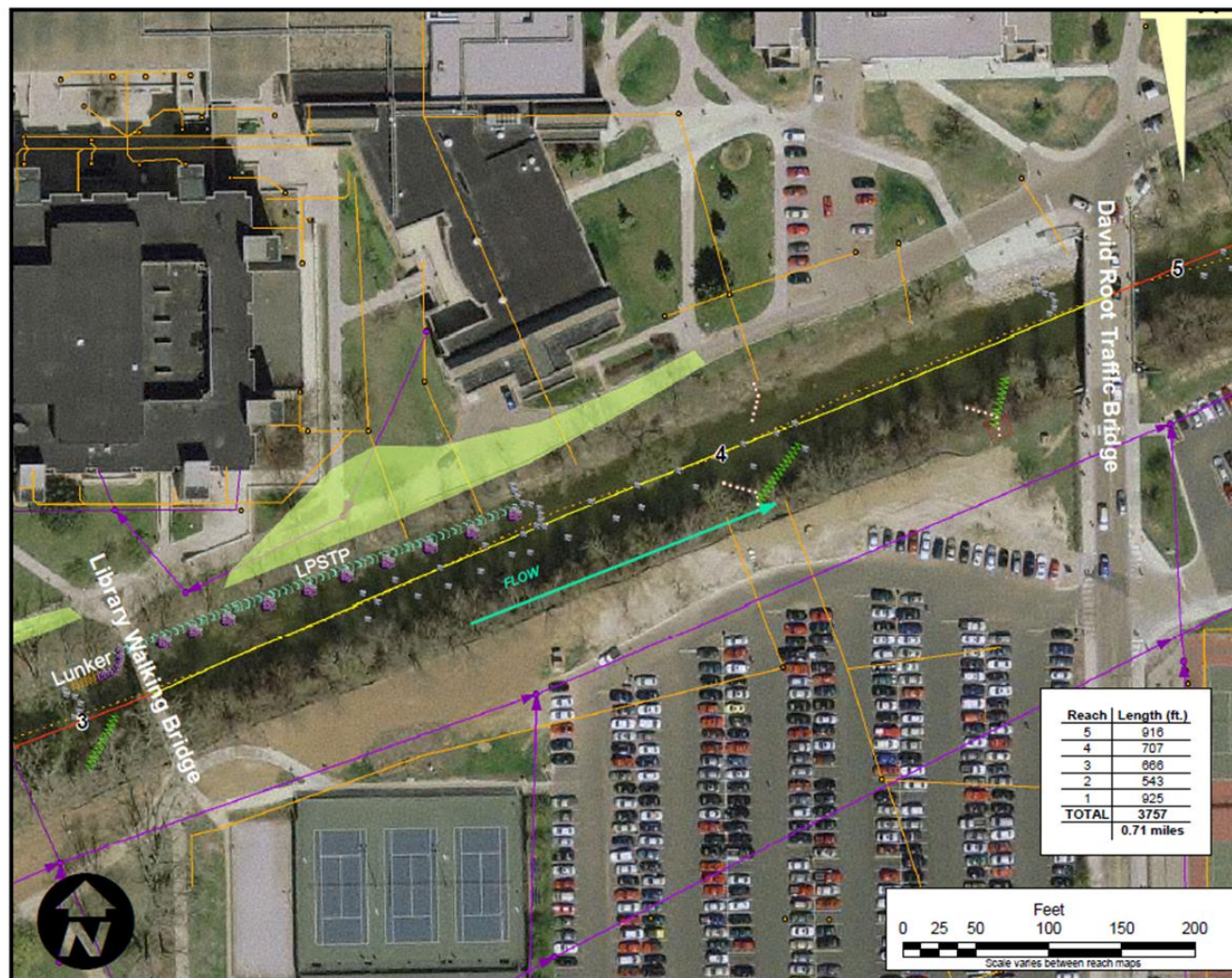


Locked Logs

## Reach 3: Proposed In-stream Restoration Features



# Habitat Restoration at University of Toledo Ottawa River Reach Map Toledo, Ohio Reach 4



## Legend

### Stones

- HCO
- HS HCO
- KEY
- DOBW
- DTG

### keyway

### LPSTP

### Lunker

### LockedLog

### Path

### bendway weir

### Areas

### ITEM

### Access

### Access-find access lane

### Access/Staging

### clear

### clear - keep lg CTTNWD

### clear access path

### Sanitary Main

### Sanitary Sewer Manhole

### Storm Main

### Storm Sewer Manhole

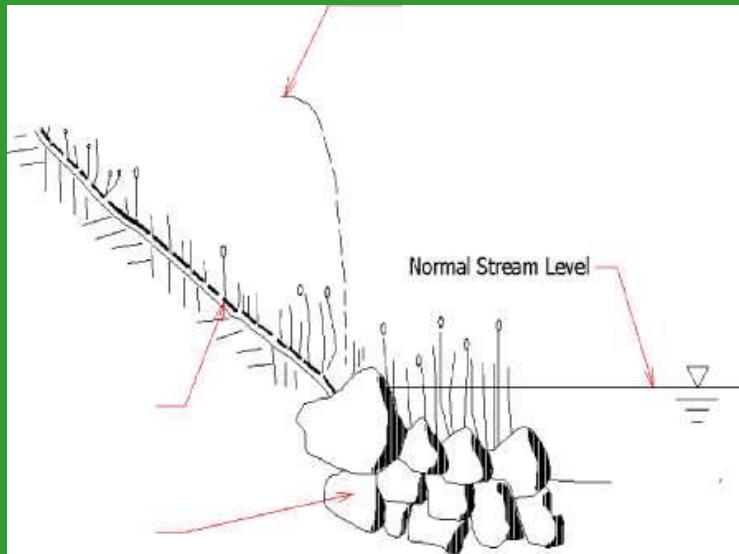
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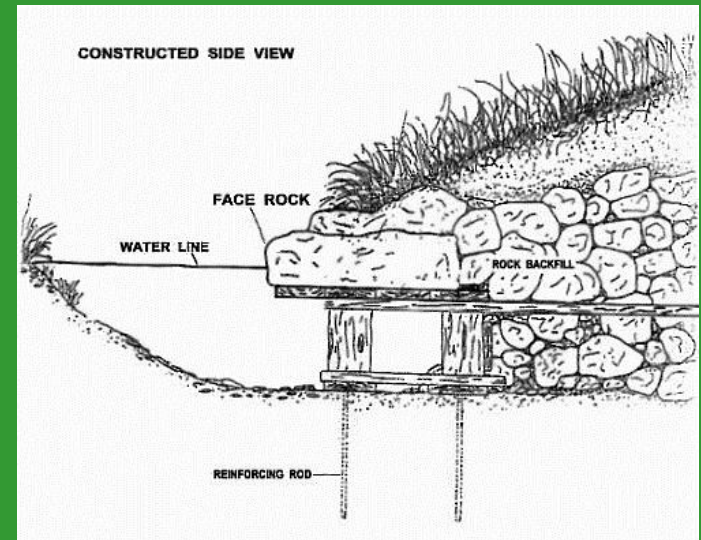
Map Created By:  
Matthew Horvat  
Maumee River Coordinator  
TMACOG  
3-3-2011, Update 10-25-2011

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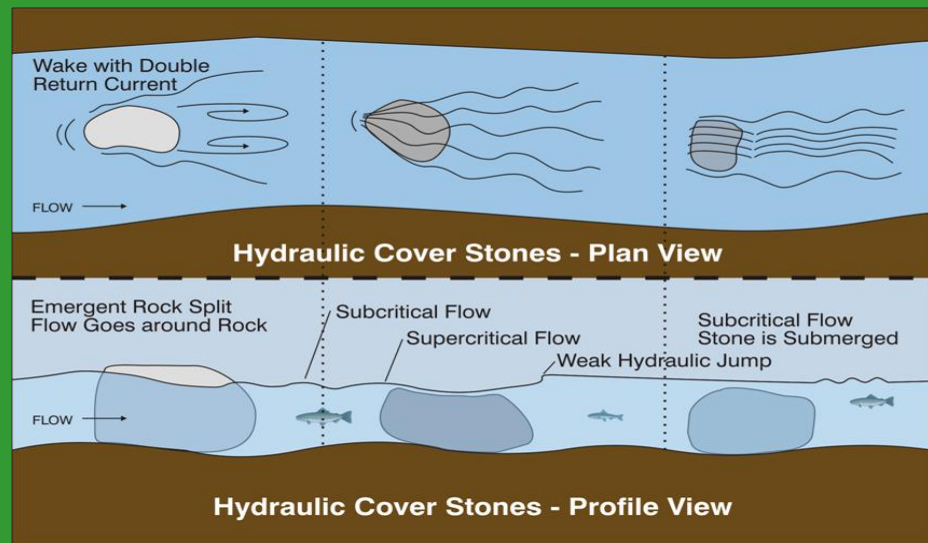
## Reach 4 Concept Plan



Longitudinal Stone Toe Protection



Lunker

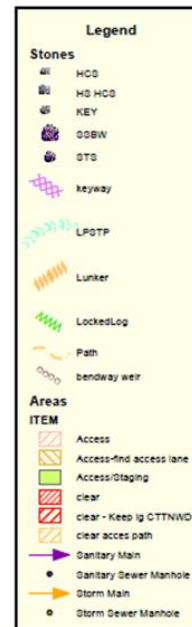
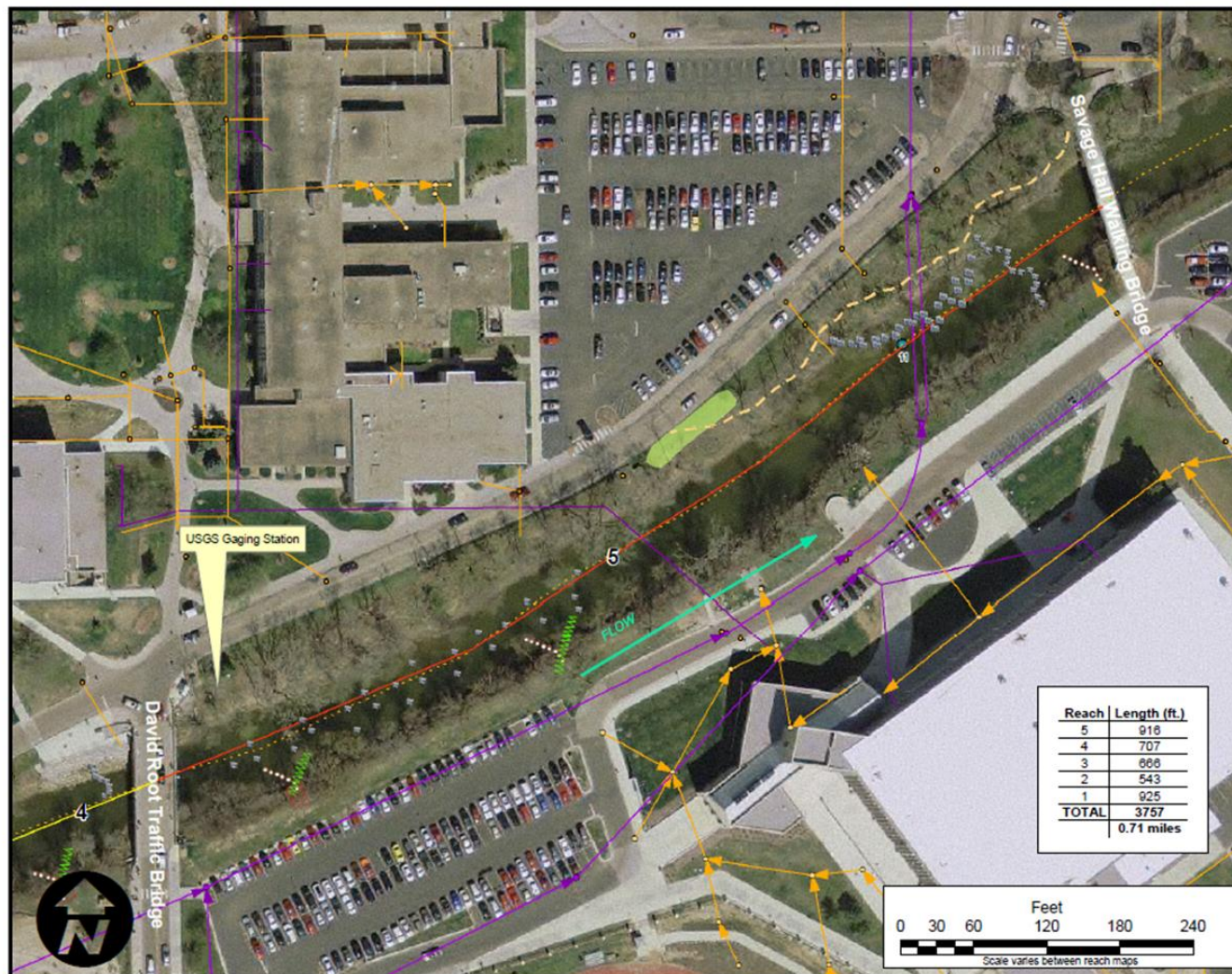


Hydraulic Cover Stones

## Reach 4: Proposed In-stream Restoration Features



Habitat Restoration at  
University of Toledo  
Ottawa River Reach Map  
Toledo, Ohio  
**Reach 5**



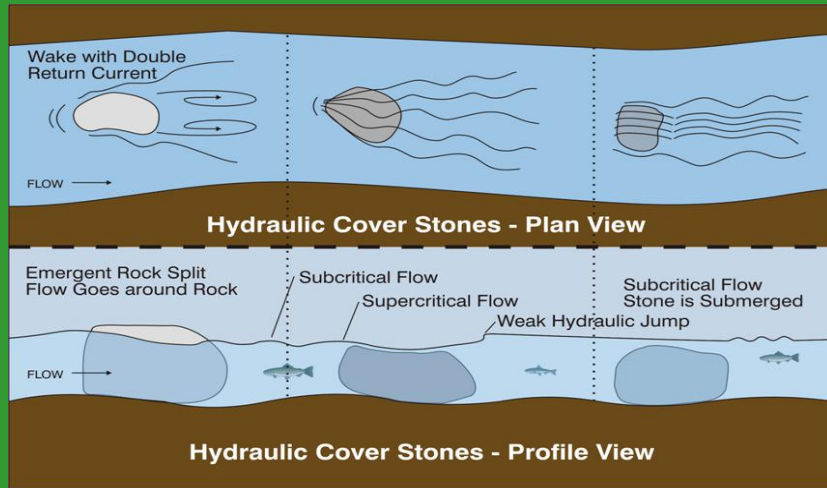
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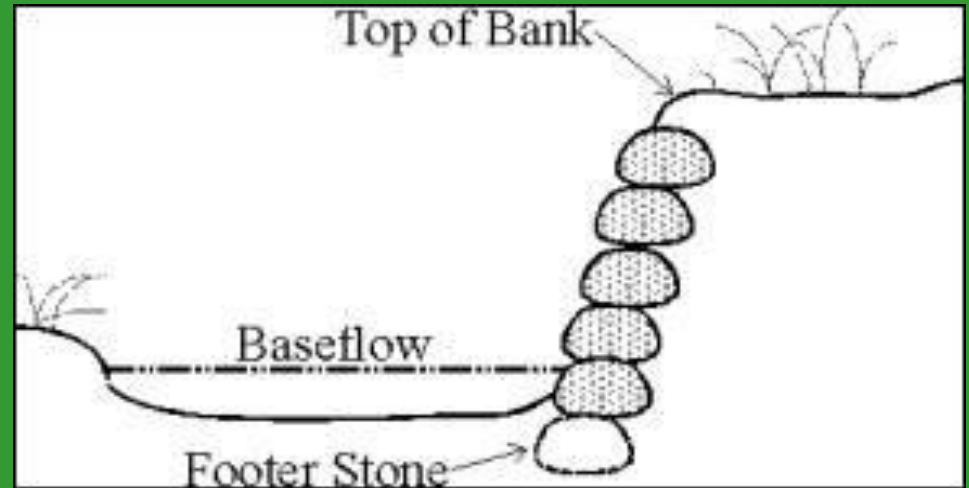
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Maumee River Coordinator  
TMACOG  
3-3-2011, Update 10-25-2011

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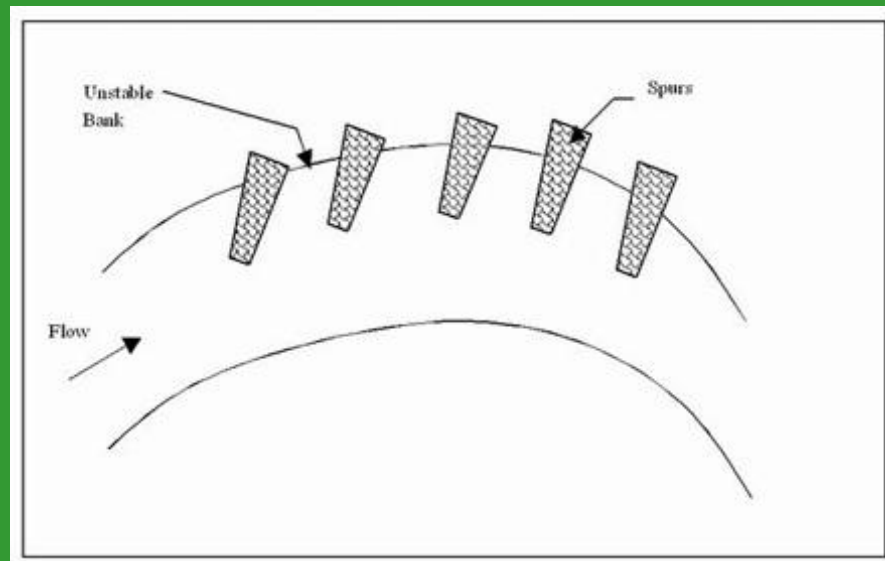
## Reach 5 Concept Plan



Hydraulic Cover Stones



Structural Transitioning Stones



Bendway Weirs

## Reach 5: Proposed In-stream Restoration Features



# University of Toledo Ottawa River Restoration and Improvement Information Meeting

February 14, 2012

9:00am – 2:30pm

University of Toledo Student Union Room 2591

Registration is limited

RSVP by February 10 [patrick.lawrence@utoledo.edu](mailto:patrick.lawrence@utoledo.edu)

Join us for a discussion on restoration plans for the Ottawa River that runs through the University of Toledo's main campus. The aim of these plans is to improve aquatic habitats with the use of natural materials and native plants.

This workshop would be of interest to university staff and students, professionals, and the community.

## Agenda

- 9:00am Welcome and Introductions: Lawrence
- 9:15am Project Overview: Lawrence and Horvat
- 9:30am Presentation on concept plans and questions: ACOE Buffalo team
- 10:30am Break
- 10:45am Vegetation plantings and plan: Horvat and Walters
- 11:00am Open forum and discussion
- 12:pm Lunch (provided)
- 1:00pm Project schedule and timelines: Lawrence and Horvat
- 1:30pm Site visit (weather permitting)



Hosted by the University of Toledo President's Commission on the River



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of Engineers®



**OhioEPA**



## Restoration plan unveiled for portion of Ottawa River in UT's campus

Posted: Feb 14, 2012 1:56 PM EST

Updated: Feb 14, 2012 6:21 PM EST

By Joe Stoll - email

Posted by Mackenzie Duncan - email

WEST TOLEDO, OH (WTOL) – Work to clean up the Ottawa River in Toledo has entered a new chapter. On Tuesday, plans to restore the portion of the river that flows through the University of Toledo's campus were unveiled to the public.

Nearly three-quarters of a mile of the Ottawa River runs through the middle of UT's campus. For two years, a commission has been working to create a restoration plan using several grants.

"It's to create habitat in the river for fish and aquatic organisms, the critters and bugs that fish eat," said Patrick Lawrence, Ph.D.

Lawrence is the commission chairman and said restoration efforts will make the river cleaner. It has been home to contaminated sediments along with a lack of fish and wildlife for years.

The commission brought in the U.S. Army Corps of Engineers to design a plan of attack. Their plan includes building a number of structures in the river and along its banks.

"We're trying to recreate what nature would provide. Again, we're using all natural materials: stone and wood," explained Lawrence.

Hans Gottgens, an ecology professor at UT attended Tuesday's presentation. Gottgens said his students use the river as a lab and have found more than 40 species of fish in it.

"People were really surprised to see how much life and how much diversity exists in this river. It was always considered a dead ditch, but it's not," said Gottgens.

Gottgens even said one species was on a state list facing extinction.

The goal is to save more and Lawrence feels the Corps' plan will help.

"It looks interesting, a lot of unique ideas and I think we're well on the path to getting this work underway," said Lawrence.

The restoration plans are expected to be finalized in a couple of weeks. The first changes in the river could be notable by August.

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Courtesy of The University of Toledo



# Restoring the Ottawa River

Plans for Ottawa River renovation include techniques to restore aquatic habitat

By [Vincent D. Scebbi](#)

Managing Editor

**Published:** Thursday, February 16, 2012

**Updated:** Thursday, February 16, 2012 05:02

UT unveiled renovation plans Tuesday for the approximate three-quarter mile section of the Ottawa River that cuts through campus.

These renovations will be funded by a \$235,000 grant UT recieved from the Ohio EPA in September.

"The plan is to use the grant money to change the habitat to allow for more diversity," said Johan Gottgens, professor of ecology. "[And to] create a habitat that mimics what might have existed here naturally with our limitations."

Patrick Lawrence, professor and chair of the Department of Geography and Planning, said some of the engineering designs are being worked out but the goal is to begin construction during the second or third week of August.

He said those weeks are the most opportune because of low water flow and they are before most students arrive to start classes.

Lawrence said the purpose of the renovations are to help restore aquatic habitats while attempting to mimic the river's natural appearance.

The goal is to use different techniques to slow the water flow in addition to creating small pools in the current which would allow aquatic life to settle.

Some of the techniques discussed include using flat rocks called "Hydraulic Cover Stones" that create pools behind the rocks.

A second method involves using stones to slow the river at its bends. Lawrence said the rocks will create a "little pier" and over time, soil and plants will cover the stones, giving the river a more natural appearance.

Lawrence said the renovation techniques will use only natural tools such as wood and stone to help "put back what nature had" before the 1960s.

In order to control floods in the area of campus that stretches from the Glass Bowl to University Hall,



the river was levied and part of the river was artificially straightened to help increase water flow. A repercussion of the construction was a decrease in wildlife.

Despite this, the river still holds a diverse population of fish and fresh water mussels, according to Gottgens.

"It's not a hotspot for wildlife, but my students found 40 different species of fish in the river," he said. "It's a river under stress. Nonetheless, fish have found a way to deal with it."

Gottegns said the river's fish populations are high, as over 100 are typically collected per sample.

One of the species found, Gottegns said, is the Least Darter which is on the list of "species of special concern." According to the Ohio Division of Natural Resource's website, the 101 species on this list "might become threatened in Ohio under continued or increased stress."

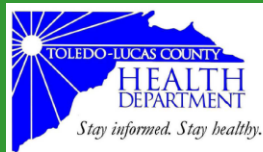
Despite the river's reputation of being polluted on campus, Lawrence said data and recent monitoring by the EPA indicate an improvement in habitat, water cleanliness and overall quality of the river.

He said other projects in discussion will address runoff pollution from parking lots at UT.

Lawrence said this renovation project is just "one piece of the puzzle" in cleaning and improving the quality of the river.

"It's a challenging and complex problem," he said. "It's a large river and there are large sources of contamination. We can't tackle every issue at once but we can piece by piece, and this is one of them."

# On February 29<sup>th</sup>, 2012 Ohio EPA and the Toledo-Lucas County Health Department announce partial lifting of the fish consumptions for the Ottawa River in the City of Toledo (for additional information contact Cherie Blair, OEPA)



Main Office  
635 N. Erie St.  
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Fax: (419) 213-4017

Western Clinic Site  
330 Oak Terrace Boulevard  
Holland, Ohio 43528-8993  
(419) 213-6255  
Fax: (419) 213-6266

Email: [boardofhealth@co.lucas.oh.us](mailto:boardofhealth@co.lucas.oh.us)

David Grossman, M.D.  
Health Commissioner

Larry J. Vasko, R.S., M.P.H.  
Deputy Health Commissioner

## Lucas County Regional Health District Board Members

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A. Debra Nicotra, RN, PhD

Jane Ringlein, MSN, RN, FNP  
Theodore M. Rowen, JD  
Christopher A. Sherman, MD, MBA

## For Immediate Release

February 27, 2012

David Grossman, MD, Health Commissioner  
(419) 213-4018

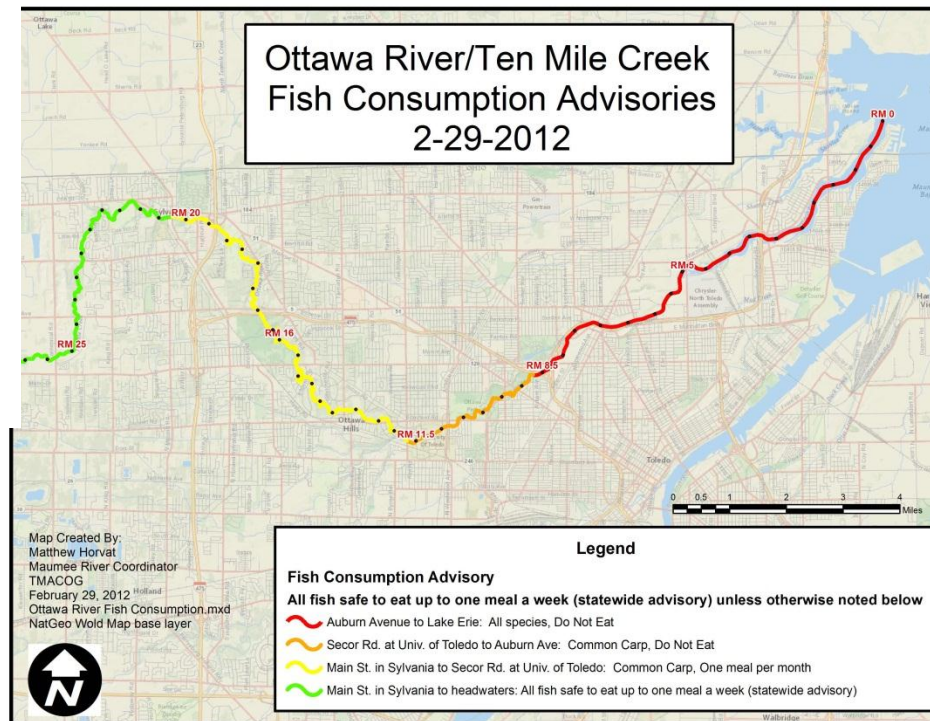
### Health Advisory: Advisories lifted for Ottawa River in Toledo

TOLEDO, Ohio (February 27, 2012) - The fish consumption advisory, with the exception of carp for the Ottawa River in Toledo, including the portion that flows through The University of Toledo, has been ordered lifted by the Ohio Department of Health and the Toledo-Lucas County Health Department.

This advisory was originally issued by the Ohio Department of Health in 1991. It resulted from the decades of manufacturing activity and improper waste disposal of hazardous substances in the Ottawa River and its watershed.

The "do not wade or swim" contact advisory had been previously lifted for the western half of the Ottawa River, which includes the portion that flows through The University of Toledo Main Campus, in 2010. An advisory to not eat the carp in any section of the Ottawa River remains in effect.

Officials with the Toledo-Lucas County Health Department, The University of Toledo, and the Ohio Environmental Protection Agency will gather at 1:15 pm Wednesday, February 29 to remove an existing yellow warning sign located on the north side of the Ottawa River by the footbridge behind the Carlson Library. In the event of rain, the press conference will be held in the Student Union, room 2582. (see attached map)

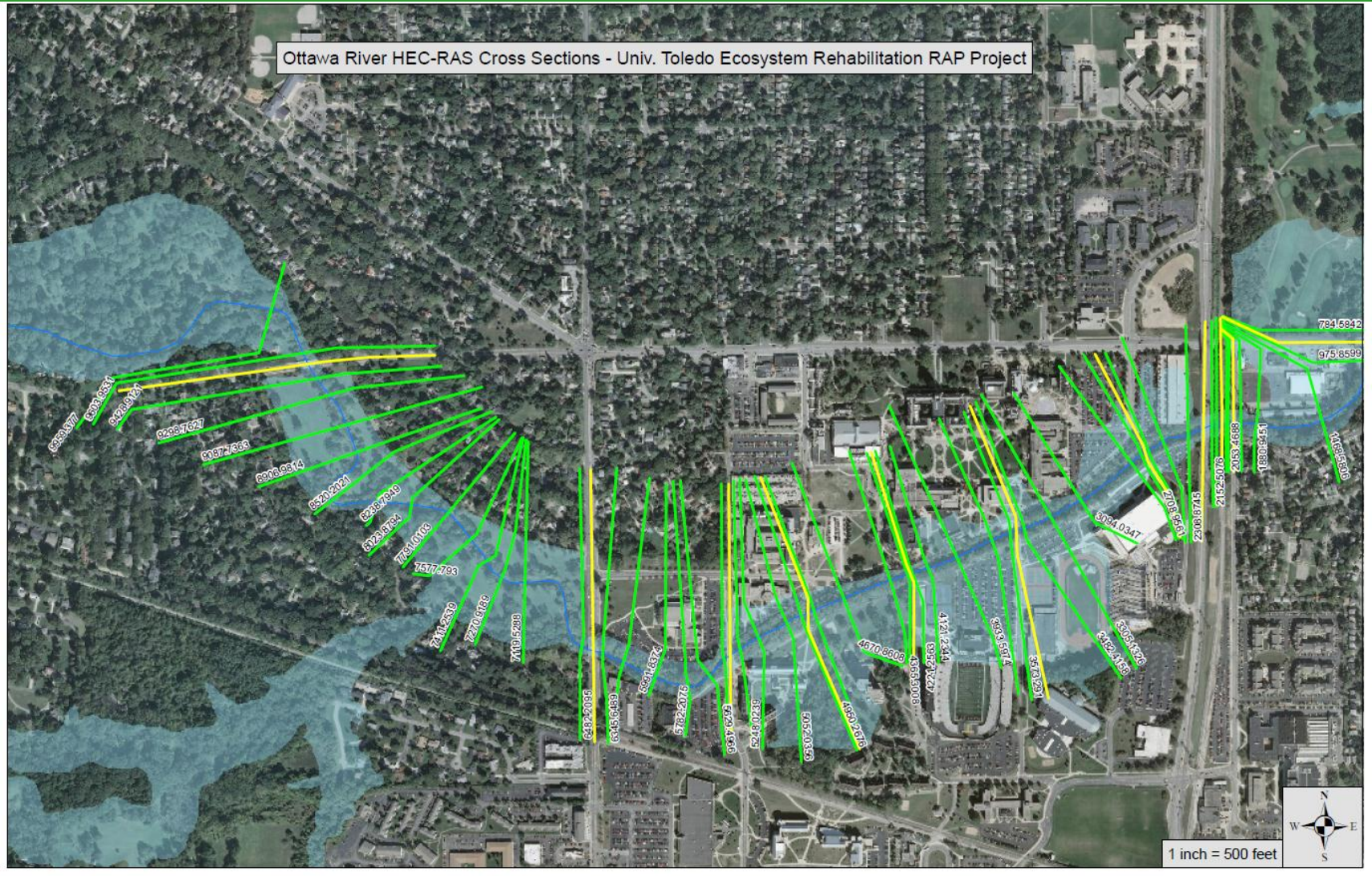




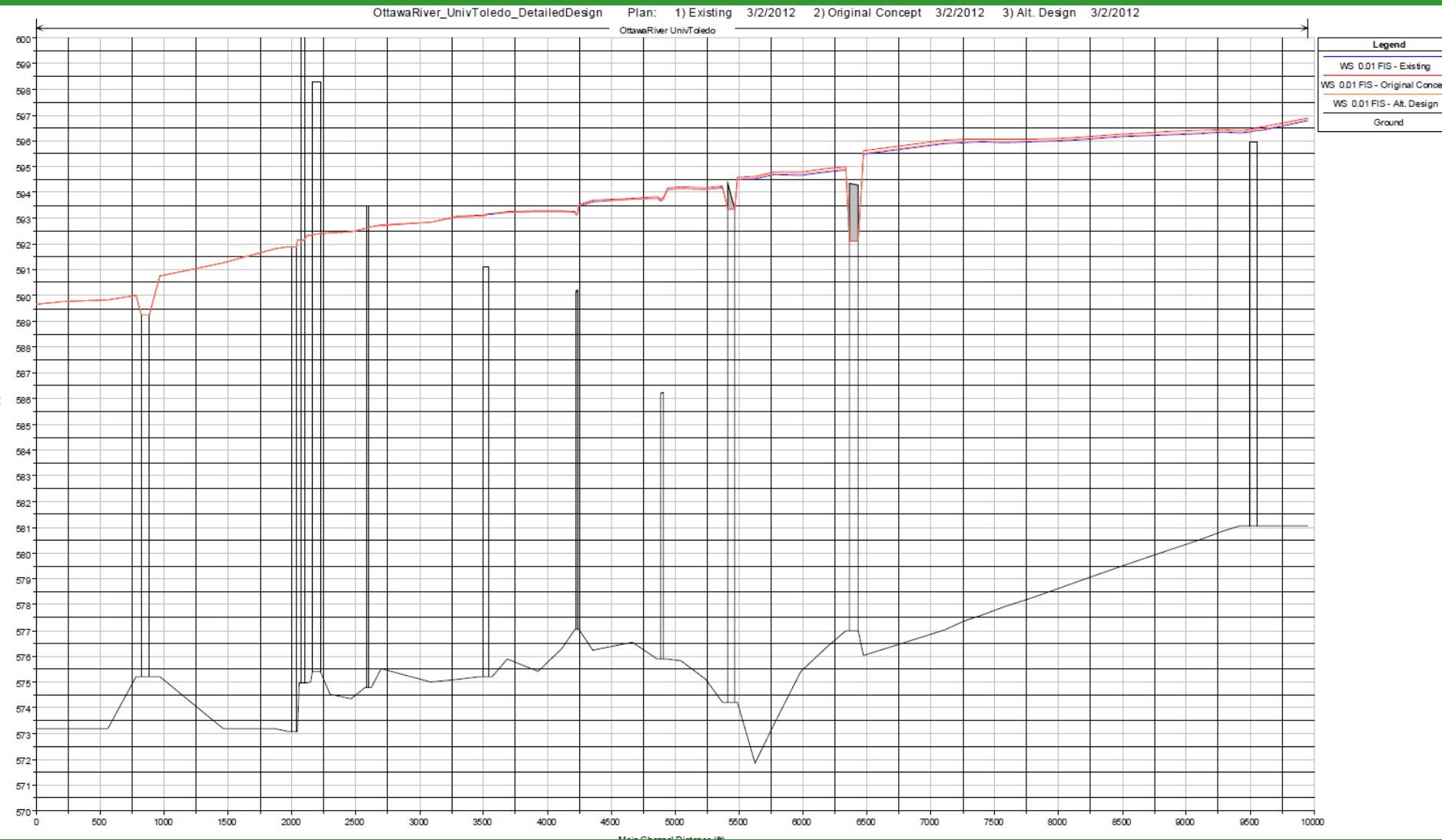
Ottawa River HEC-RAS Cross Sections - Univ. Toledo Ecosystem Rehabilitation RAP Project

1 inch = 500 feet

Stationing labels on the map include: 8228.877, 8208.881, 8428.878, 8208.7627, 8087.7689, 8908.6614, 8320.2221, 8238.7849, 8123.8784, 7834.0163, 7617.793, 8037.7142, 8319.0742, 8214.528, 8008.2873, 8039.5123, 8287.8283, 8107.2475, 879.4936, 8520.8129, 853.0353, 4839.2915, 4670.8606, 8367.1247, 4121.2441, 8383.814, 8508.251, 8304.0347, 8305.4288, 8152.0459, 2308.6715, 2152.6715, 2053.4668, 1880.4451, 4165.8306, 784.5842, 975.8590.



100 year flow elevations from ACOE Buffalo HEC-RAS model runs showing existing conditions --- preliminary (original concept plans --- and alternative design --- with reduction in number of in-stream structures





Preliminary results from the HEC-RAS indicated a net rise in the 100 flood elevation from 0.006 to 0.10 feet starting in reach 3 and increasing *upstream* through reach 1 and into Village of Ottawa Hills (Secor to Bancroft Street)

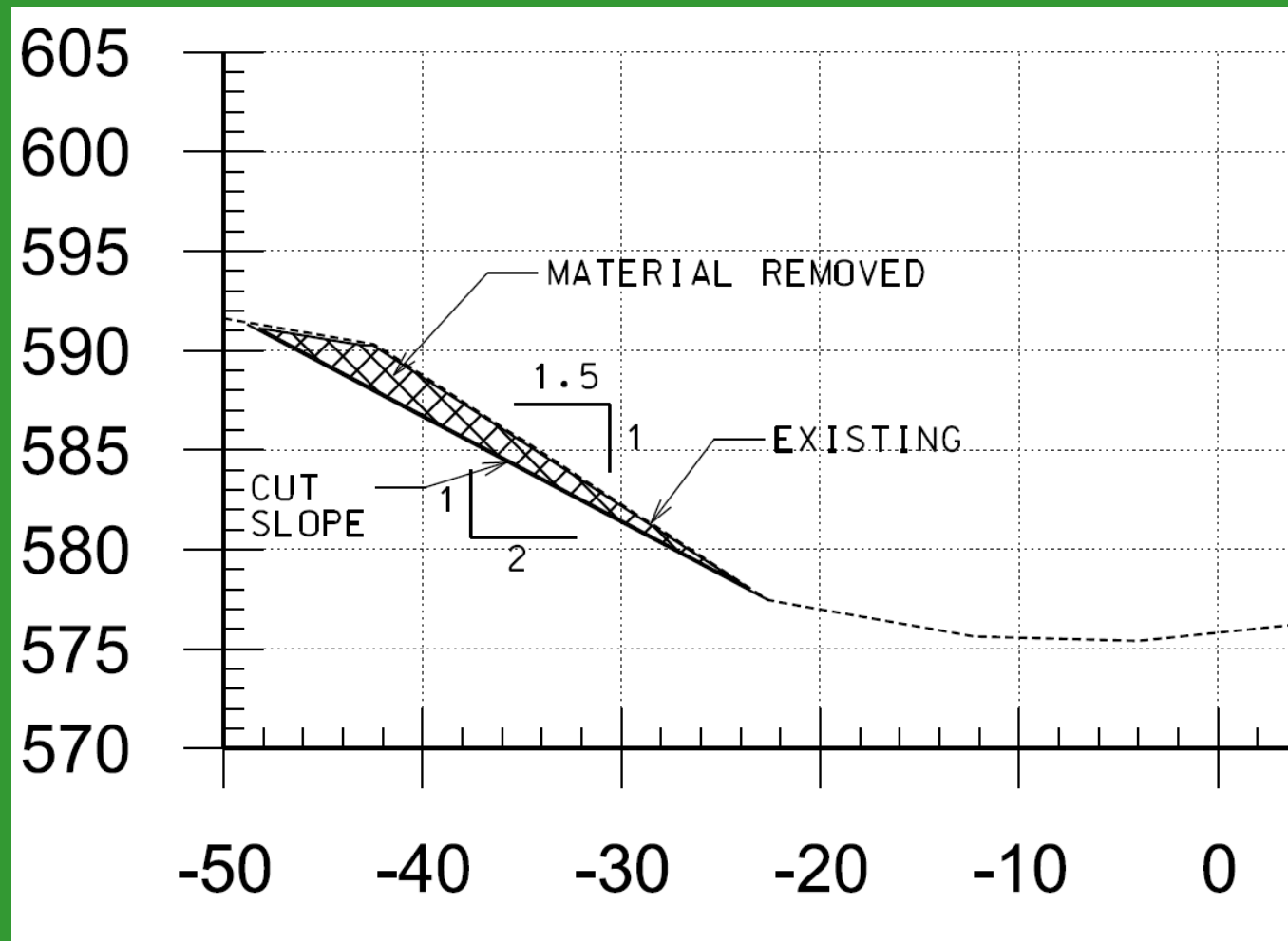
FEMA federal regulations and Lucas County will not allow for ***any*** rise in 100 year floor levels with placement of structures in the river channel, without full public approval

ACOE Buffalo begins to run alternative models starting with reducing size and number of proposed structures in the original concept plan to a more minimal design

For more details on the technical aspects of the HEC-RAS modeling for this project refer to the July 2<sup>nd</sup>, 2012 report prepared by ACOE Buffalo

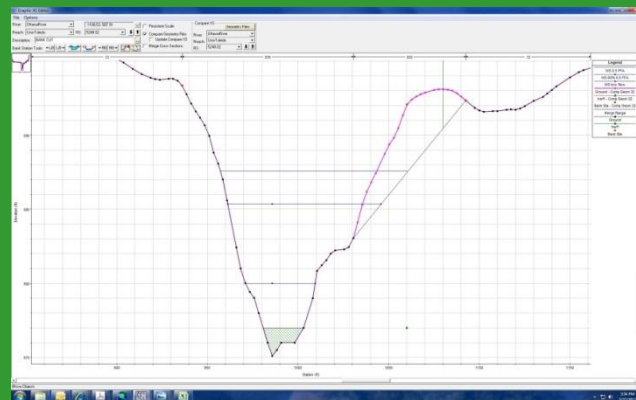
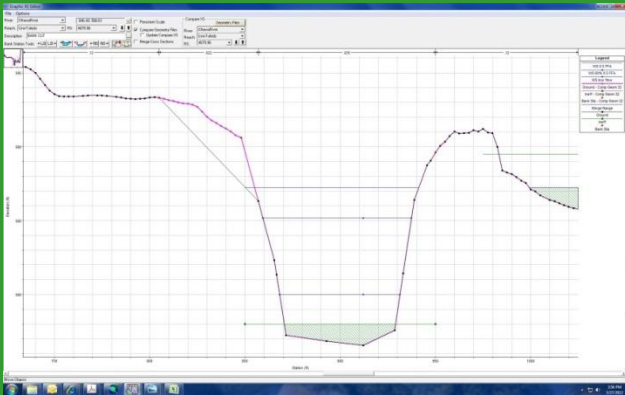
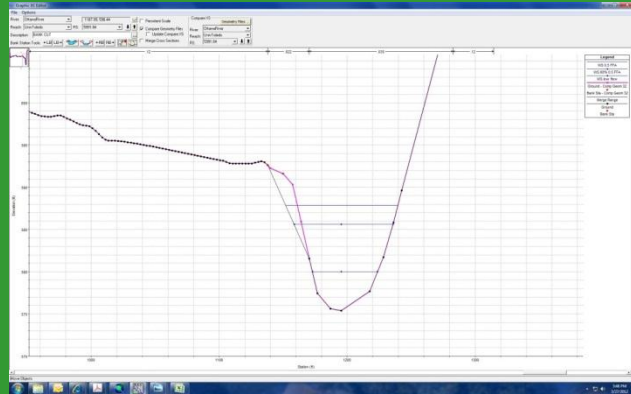
PRELIMINARY Results from hydraulic model								
Existing			Original Concept			Minimal Design		
River Sta	Q Total	W.S. Elev		W.S. Elev	Δ		W.S. Elev	Δ
	(cfs)	(ft)		(ft)	(ft)		(ft)	(ft)
9959.38	6160	596.78		596.88	0.1		596.8	0.02
9603.95	6160	596.42		596.53	0.11		596.44	0.02
9530.45	Bancroft St (Ottawa Hills)							
9428.91	6160	596.29		596.4	0.11		596.31	0.02
9298.76	6160	596.33		596.44	0.11		596.35	0.02
9087.74	6160	596.28		596.39	0.11		596.3	0.02
8906.98	6160	596.25		596.36	0.11		596.27	0.02
8520.2	6160	596.16		596.28	0.12		596.18	0.02
8238.79	6160	596.04		596.16	0.12		596.06	0.02
8023.88	6160	595.99		596.11	0.12		596.01	0.02
7791.01	6160	595.95		596.07	0.12		595.97	0.02
7577.79	6160	595.93		596.05	0.12		595.95	0.02
7411.25	6160	595.95		596.07	0.12		595.97	0.02
7270.92	6160	595.94		596.06	0.12		595.96	0.02
7119.53	6160	595.9		596.03	0.13		595.92	0.02
6482.21	6160	595.47		595.61	0.14		595.5	0.03
6405.92	Secor Dr							
6345.65	6160	594.88		595.01	0.13		594.9	0.02
6208.25	6160	594.78		594.91	0.13		594.81	0.03
5991.84	6160	594.67		594.81	0.14		594.7	0.03
5782.21	6160	594.69		594.81	0.12		594.71	0.02
5629.5	6160	594.51		594.62	0.11		594.54	0.03
5496.63	6160	594.48		594.59	0.11		594.5	0.02
5450.59	W. Campus Dr							
5378.73	6160	594.18		594.24	0.06		594.21	0.03
5248.02	6160	594.11		594.18	0.07		594.12	0.01
5052.04	6160	594.14		594.21	0.07		594.15	0.01
4950.27	6160	594.11		594.18	0.07		594.12	0.01
4906.21	CPA							
4866.86	6160	593.76		593.82	0.06		593.78	0.02
4670.86	6160	593.72		593.77	0.05		593.73	0.01
4365.3	6160	593.64		593.7	0.06		593.65	0.01
4253.44	6160	593.46		593.52	0.06		593.48	0.02
4235.67	Library							
4221.26	6160	593.21		593.25	0.04		593.22	0.01
4121.23	6160	593.25		593.3	0.05		593.26	0.01
3933.6	6160	593.25		593.29	0.04		593.26	0.01
3693.87	6160	593.23		593.26	0.03		593.23	0
3573.29	6160	593.16		593.19	0.03		593.17	0.01
3532.95	Stadium Dr							
3482.42	6160	593.08		593.11	0.03		593.09	0.01
3305.13	6160	593.05		593.08	0.03		593.06	0.01
3094.03	6160	592.84		592.85	0.01		592.84	0
2708.96	6160	592.73		592.7	-0.03		592.72	-0.01
2627.12	6160	592.69		592.68	-0.01		592.68	-0.01

Another approach is proposed by ACOE Buffalo to create a series of cut bank features (see concept below) in reaches s 1-3 to provide for additional excess flood capacity storage in addition to continued reduction in the number, type and size of in-stream structures especially in reaches 1-3.





# ACOE Buffalo runs further series of HEC-RAS models with variations in number and length of three proposed cut banks with original restoration plans in place



## PRELIMINARY Results from hydraulic model

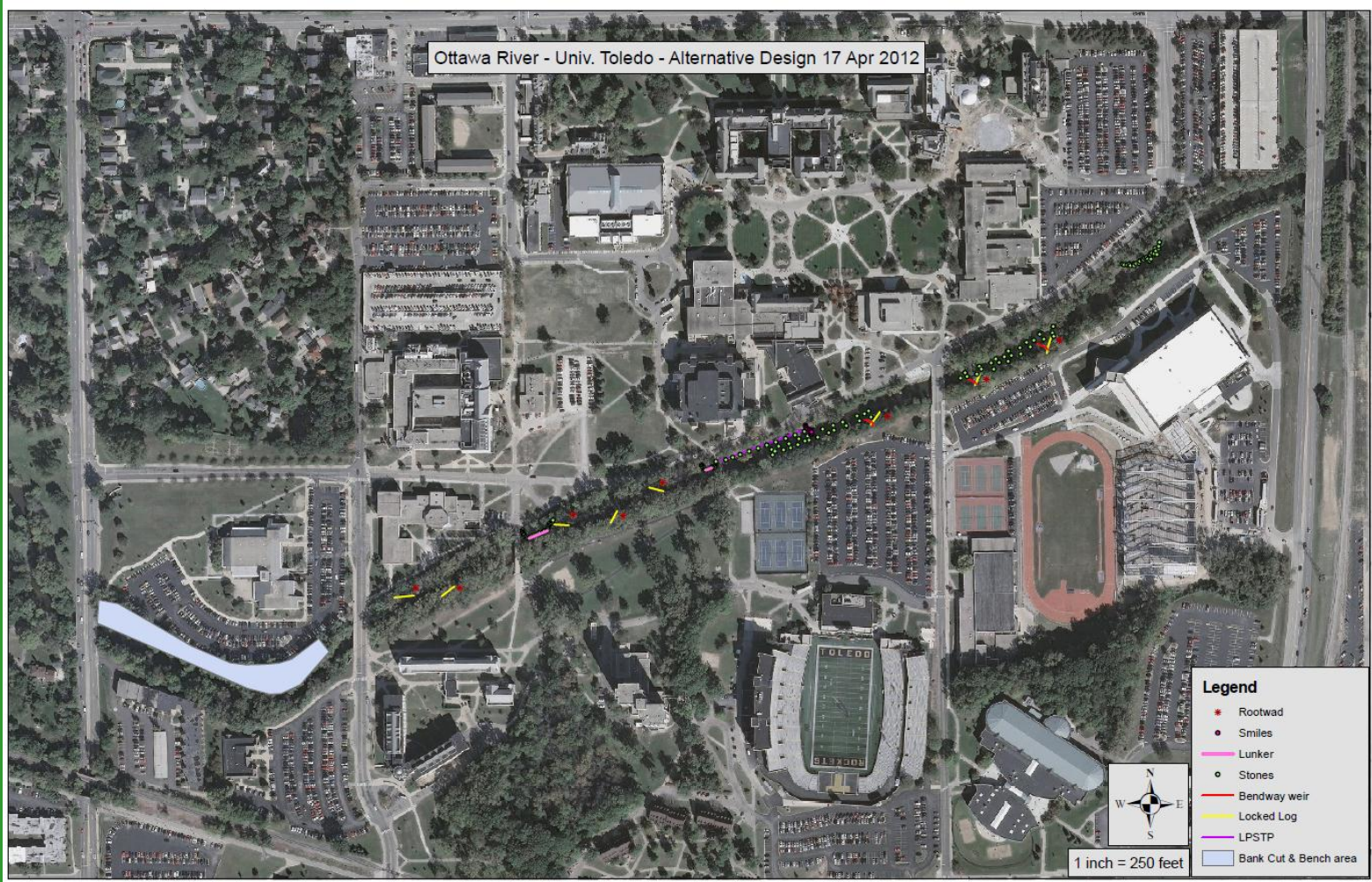
River Sta	Existing		Original Concept	
	Q Total (cfs)	W.S. Elev (ft)	W.S. Elev (ft)	Δ (ft)
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9603.95	6160	596.42	596.53	0.11
9530.45	Bancroft St (Ottawa Hills)			
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8238.79	6160	596.04	596.16	0.12
8023.88	6160	595.99	596.11	0.12
7791.01	6160	595.95	596.07	0.12
7577.79	6160	595.93	596.05	0.12
7411.25	6160	595.95	596.07	0.12
7270.92	6160	595.94	596.06	0.12
7119.53	6160	595.9	596.03	0.13
6482.21	6160	595.47	595.61	0.14
6405.92	Secor Dr			
6345.65	6160	594.88	595.01	0.13
6208.25	6160	594.78	594.91	0.13
5991.84	6160	594.67	594.81	0.14
5782.21	6160	594.69	594.81	0.12
5629.5	6160	594.51	594.62	0.11
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5450.59	W. Campus Dr			
5378.73	6160	594.18	594.24	0.06
5248.02	6160	594.11	594.18	0.07
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4253.44	6160	593.46	593.52	0.06
4235.67	Library			
4221.26	6160	593.21	593.25	0.04
4121.23	6160	593.25	593.3	0.05
3933.6	6160	593.25	593.29	0.04

Original Concept with BankCuts	
W.S. Elev (ft)	Δ (ft)
596.77	-0.01
596.42	0
596.29	0
596.33	0
596.28	0
596.25	0
596.16	0
596.04	0
595.98	-0.01
595.95	0
595.93	0
595.94	-0.01
595.93	-0.01
595.9	0
595.47	0
594.87	-0.01
594.84	0.06
594.77	0.1
594.76	0.07
594.61	0.1
594.57	0.09
594.23	0.05
594.22	0.11
594.22	0.08
594.19	0.08
593.82	0.06
593.79	0.07
593.7	0.06
593.52	0.06
593.25	0.04
593.3	0.05
593.29	0.04

Focus moves to considering one cut bank features to be constructed along north bank of reach 1 with aim to reach a balance between maximizing size (length/width) of the cut bank with the total number of in-stream restoration structures to be placed in reaches 2-5 (and with no in-stream structures in reach 1) in order to result in zero (0) foot rise in upstream 100 year flood elevations in Ottawa Hills







In April 2012 ACOE Buffalo completes final analysis and proposes a 900 foot cut bank in reach one along with alternative plan for in-stream restoration structures in reaches 2-5.

Draft design plans for Phase II: In-Stream Restoration features, currently in final review with scheduled construction in August 2013



# Ottawa River Restoration Project

## At the University of Toledo

### *Pre-project Fact Sheet*



The President's Commission on the River at the University of Toledo is undertaking a habitat restoration project for the 3,700 feet of the Ottawa River on the main campus. The overall intent of the project is to enhance the natural habitat within the Ottawa River on the main campus and contribute to overall improvement efforts underway along the river within our community.

Restoration efforts are aimed to enhance current stream and stream bank conditions and stabilization efforts while addressing the critical issue of aquatic habitat loss that have been identified as significant environmental concerns for the river on the UT main campus. The approach is to use innovative techniques for this urban stream ecosystem that also have potential for application at other sites in Toledo and in other similar streams in Ohio.

The project concept design calls for the installation of the following in-stream restoration elements, riffles and hydraulic cover stones, LUNKERS for fish habitat, locked logs and aquatic plantings, and cutbanks all making use of natural materials (stones, logs and others).

Stream restoration will incorporate some grade work in areas adjacent to in-stream structures to restore a more natural stream channel and bank and to avoid erosion while maintaining flood control.

The stream channel will be restored to incorporate stream function and design principles including riffle and pool structures, low flow concentration and erosion control features as needed. Bank shape and stability will be assessed and addressed as in-stream elements are constructed. Bioengineering techniques will be utilized to protect infrastructure as this is a very urban and visible area. Additional work will focus on stream and slope vegetation and replanting of native plants.

This project will serve as a demonstration of the possibilities available for restoration in a very altered and modified urban river system.

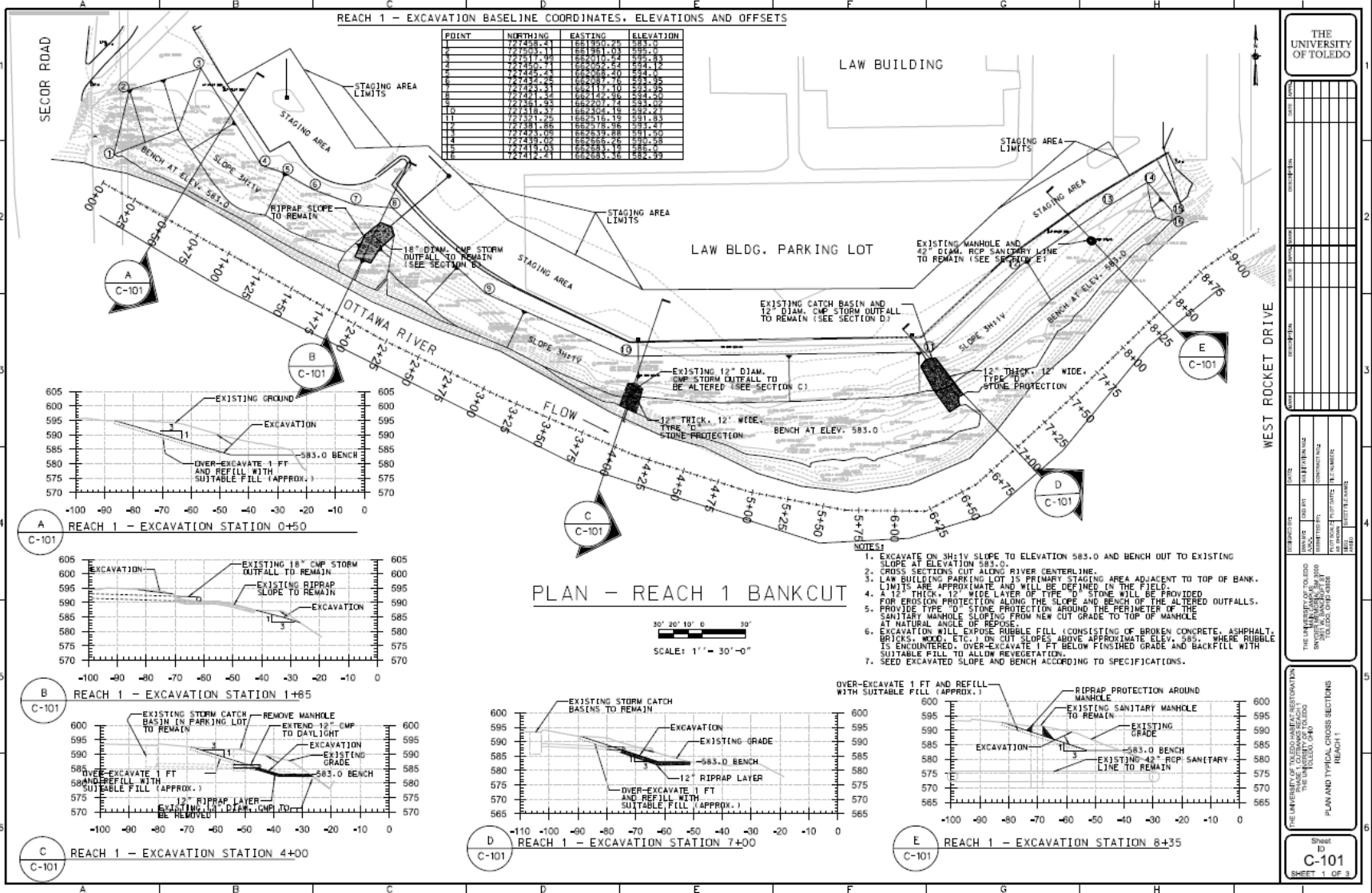
Several restoration elements will be constructed on-site starting in August 2012, the remaining elements and completion of the full restoration of the in-stream and banks in August 2013.

For more information on the project contact Dr. Patrick Lawrence, Chair, UT Presidents Commission on the River at [patrick.lawrence@utoledo.edu](mailto:patrick.lawrence@utoledo.edu) or visit [www.utoledo.edu/commissions/river](http://www.utoledo.edu/commissions/river).

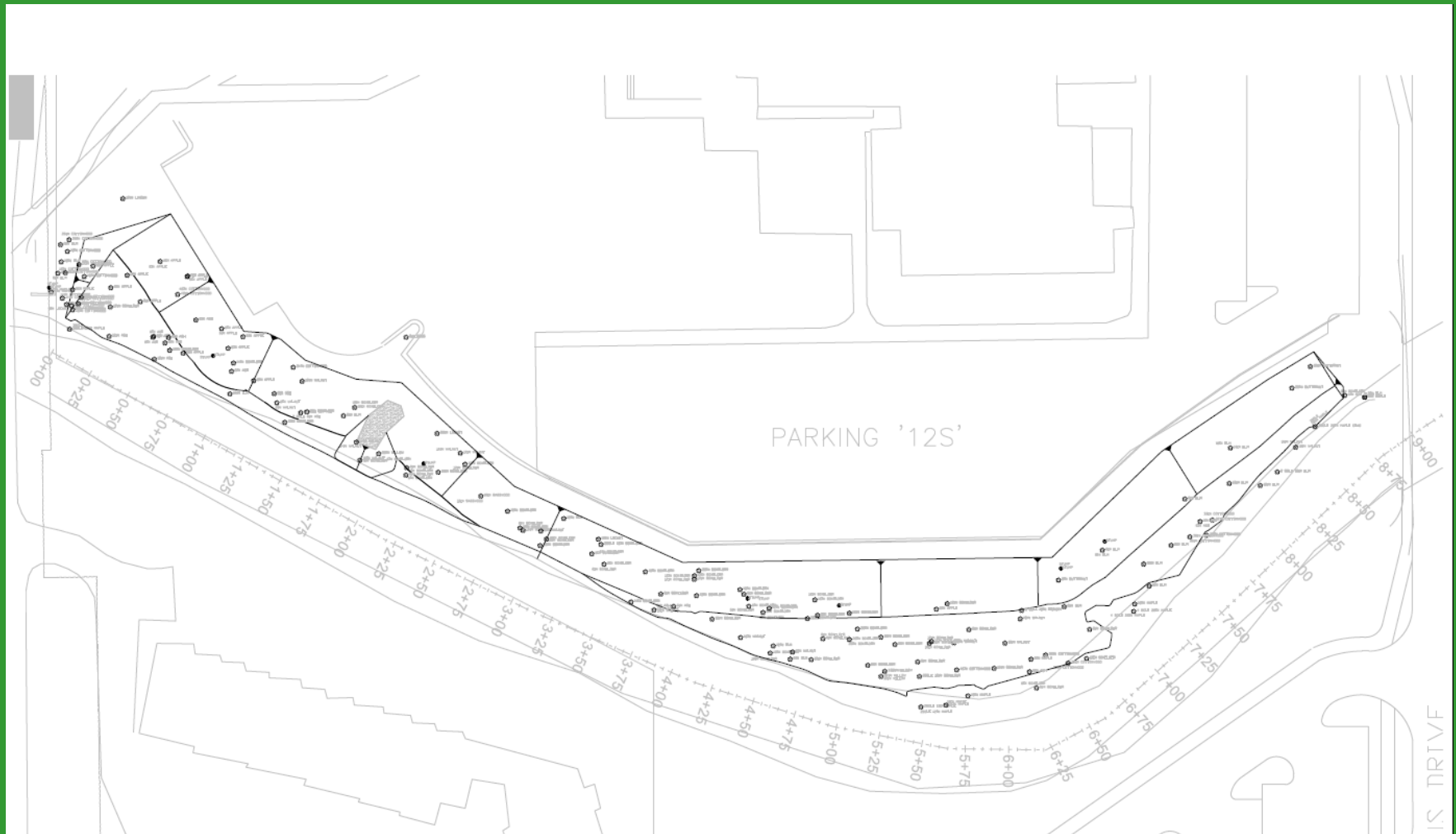


Project fact sheet prepared for public outreach and presentations to the University Faculty Senate (April 2012) and UT Board of Trustees (June 2012)





**Final design for Phase I of the UT Ottawa River Restoration Project:  
construction of a cut bank in reach 1, north bank adjacent to the UT  
Law School (June 2012)**



In order to prepare for the construction of the cut bank, plans are prepared for the identification and mapping of the approximate 118 trees that will need to first be removed from the site

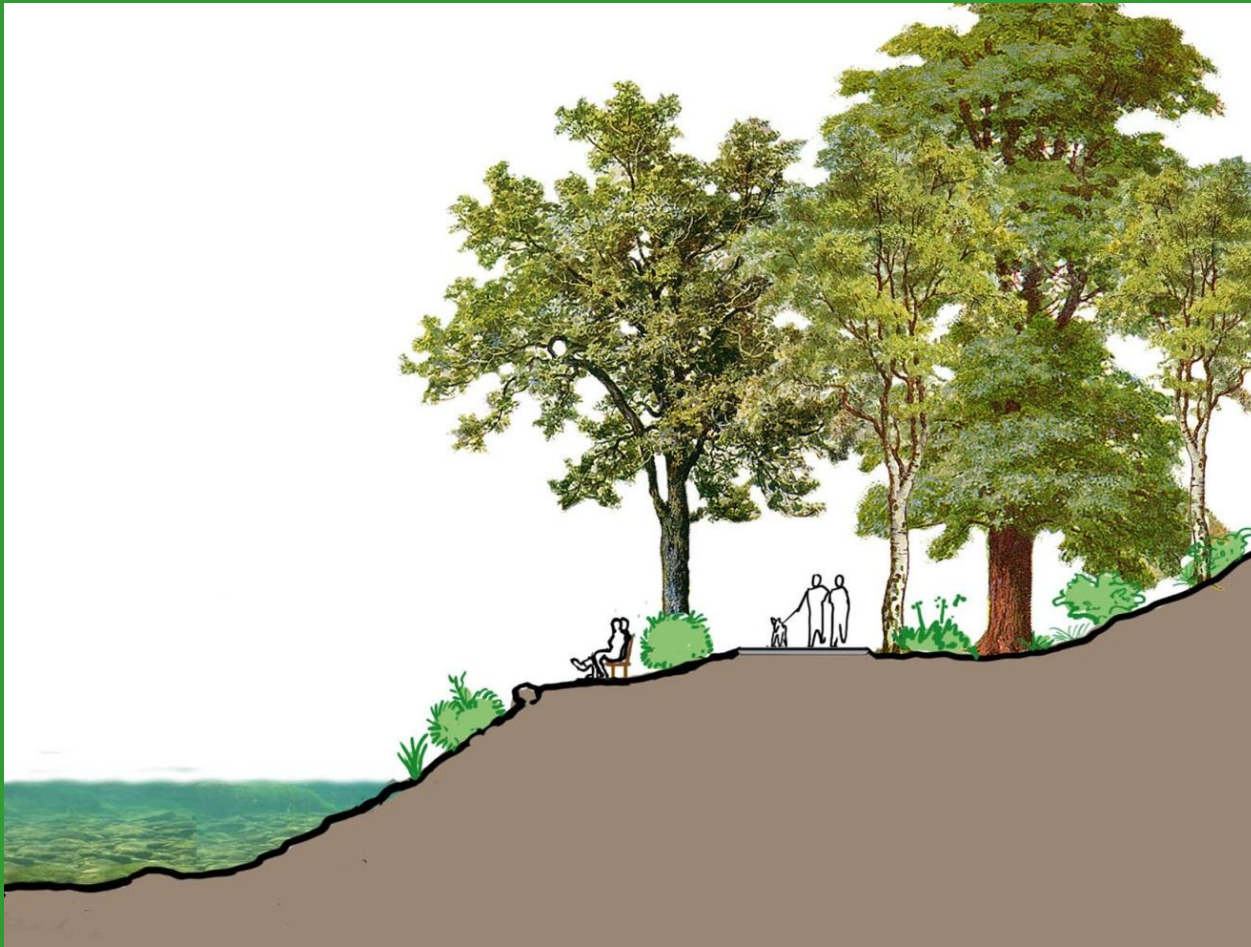




**Site of future cut bank feature (April 2012)**







**Artistic rendering of the cut bank feature**

## Trees to come down as Ottawa River restoration project continues

By Nick L. Kroll

Approximately 100 trees on the banks of the Ottawa River near the Law Center on Main Campus will be cut down in the coming weeks as work continues on the waterway's restoration.

"The trees range in size from six inch in diameter to some larger cottonwoods three feet in diameter," said Dr. Patrick Lawrence, professor and chair of the Department of Geography and Planning, and chair of the President's Commission on the River. "Some of these trees are dead or dying, and there are some ash trees that will be coming down."

Aaron Tree and Lawn of Toledo will undertake the clearing project.

"Initial design work on the river restoration determined that we need to create a cut bank area that will allow for more water storage during higher river levels," Lawrence said. "We didn't anticipate this when the project started, but it's a requirement for a federal permit."

"Removing these trees is a necessity, not a choice," he emphasized. "This area adjacent to the Law Center parking lot is the only site requiring extensive tree removal for the river restoration project. And replanting — from grasses to small trees and shrubs — is part of the overall plan."

A \$235,000 grant from the Ohio Environmental Protection Agency and a \$111,000 grant from the U.S. Fish and Wildlife Service are funding the Ottawa River restoration.

Once the trees are cleared, a section will be dug out to create the cut bank and widen the land on the north side of the river at that site.

Lawrence explained that phase two of the restoration calls for adding in-stream elements with natural materials — rock, tree trunks, wood — to create changes in water flow, and that has the potential to affect the 100-year flood level in the river.

"When you do work like that in a river, you can't raise the water level more than it would rise naturally," he said. "We haven't had an event like that for decades, but you have to design for it just in case."

The cut bank will have long-term benefits.

"The area will be more open and accessible to people. It'll be a great opportunity to have an overlook to the river on the north bank by the Law Center and maybe put in a trail and benches," Lawrence said. "There's no funding for those now in



Photo by Daniel Hiler

Trees on the north bank of the Ottawa River by the Law Center parking lot will be cleared this summer so that a cut bank can be created as part of the waterway's restoration.

this project, but we are optimistic for the future to search for grants and other means."

Phase two of the restoration will begin in August 2013 when the in-stream elements are added to create diversity in the river. Interpretative signage will be placed along the waterway to explain the work to the campus community and visitors.

This demonstration and education project will mean more fish and wildlife.

"We have more than 40 fish species in the river. This summer we've also been noting muskrats, deer, turtles, frogs, blue heron, mallard ducks and Canada geese," Lawrence said. "This is a living river, a natural corridor that we're lucky to have on our campus."

"The Ottawa River has its issues and challenges, but it has a lot of potential if we can improve the aquatic and forest habitat along the 3,700 feet through Main Campus."





**Tree removal completed at the cut bank site June 2012 funded by grant from USFWS, with further construction of cut bank scheduled for July 2012**

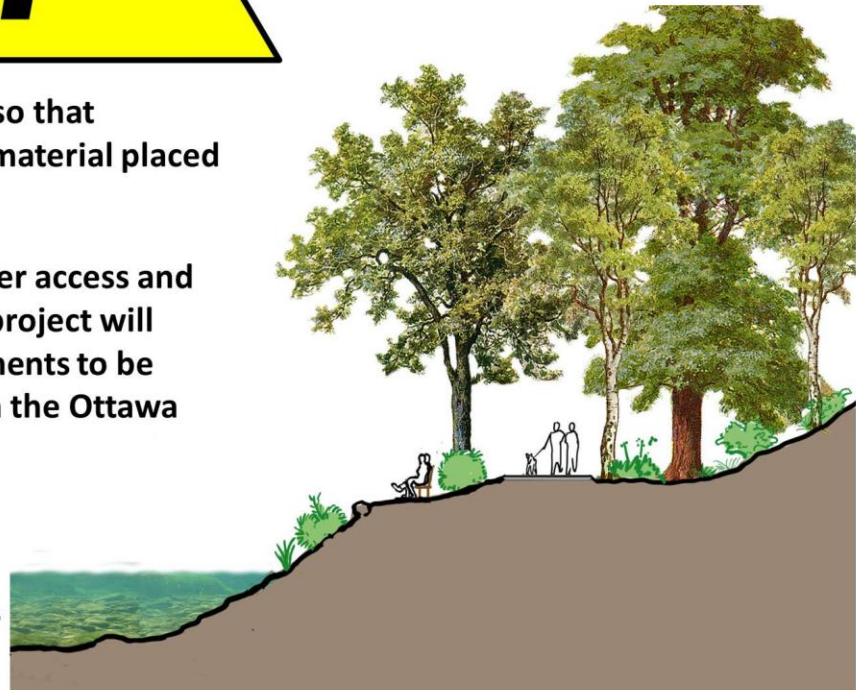
**Improvements in Progress**



The trees were removed from this site so that approximately 4,700 cubic yards of fill material placed here in the 1960's can be removed.

The riverbank will be reshaped for better access and planted with native tree species. This project will enable other in-stream habit improvements to be made throughout the entire campus on the Ottawa River

For more information contact:  
Dr Patrick Lawrence  
UT Presidents Commission on the River  
[patrick.lawrence@utoledo.edu](mailto:patrick.lawrence@utoledo.edu)



Temporary information sign placed at cut bank site (June 2012)



# Proposed Project Timeline (July 2012 – December 2013)

July-August 2012: Construction of cut bank in reach 1

August-September 2012: Seeding and initial replanting at cut bank site

August-October 2012: Final concept plans and designs for in-stream restoration features

October 2012: Public Meeting on in-stream restoration plans

October 2012-March 2013: Securing federal and state permits for in-stream restoration

April 2013: University releases RFBs for construction of in-stream restoration features

May-June 2013: Additional bank clearing and pre-construction preparation for equipment access and staging areas

July 2013: Construction mobilization and preparation

August 2013: Construction of in-stream restoration features

August -September 2013: Post-construction reseeding and planting along banks and at additional plantings at cut bank site

October – December 2013: Placement of signs and informational kiosk

November-December 2013: Preparation and submission of final project grant reports

# Proposed Project Construction Budget (June 2012 – December 2013)

## **Revenue as reflected in original awarded grants (construction only):**

- Ohio EPA 319 = \$150,000
- USFWS = \$114,132
- TOTAL = \$264,132

## **Expenses (construction only):**

- Indian Bat Survey in cut bank= \$2,700 (completed June 2012, USFWS funded)
- Tree removal in cut bank = \$32,000 (completed June 2012, USFWS funded)
- Cut bank construction = \$99,512 (includes 15% contingency)
- In-Stream restoration = \$115,000 (includes 15% contingency)
- Plants = \$7,200
- Signage = \$7,000
- TOTAL = \$263, 412

NOTE: There are no changes to the OEPA 319 and USFWS grant budgets as estimated construction costs are within budgeted line items for construction, the only change is in the proposed timeline for construction activities planned for summer 2012 but now spread between two phases (cut bank August 2012 and in-stream restoration August 2013)



Appreciation is extended to all the  
project partners and funders:

