

#### **REVISED**

#### Maumee AOC Summit Fall/Winter 2012



Thursday, December 6, 2012 9:00am to 12:30pm Toledo Botanical Garden Conference Center 5403 Elmer Dr, Toledo, Ohio 43615

NOTE: light lunch will be provided-RSVP required\*

#### AGENDA

- 9:00-9:05am Welcome (Karen Ranney Wolkins)
- 9:05-9:15am Introductions and Maumee RAP Advisory Committee Report (Patrick Lawrence)
- 9:15-9:30am Report on PCS Activities (Kristina Patterson)
- 9:30-11:10am Partner Presentations

9:30 - 9:50	The Restoration of Sylvan Prairie
	(Erika Buri, The Olander Parks System)
9:50 - 10:10	Lake Improvement and Stream Restoration at the Toledo Botanical Garden
	(Matt Horvat, TMACOG)
10:10 - 10:30	PCS & BSA Partner to Improve Lake Sawyer and the Ottawa River at Miakonda
	(Kyle Spicer, Partners for Clean Streams)
10:30 - 10:50	Adaptation is Key to Restoration of the Ottawa River at the University of Toledo
	(Patrick Lawrence, University of Toledo)
10:50 -11:10	GLRI helping to Restoring Wolf Creek
	(Kris Barnswell, University of Toledo)

- 11:20-11:30am SPECIAL AWARD PRESENTATION (Mayor Michael P. Bell)
- 11:30-11:40am Break
- 11:40-12:00pm Agency Reports

11:40 - 11:55	Ohio EPA Report (Cherie Blair, Ohio EPA RAP Coordinator)
11:55 - 12:05	TMACOG Report (Matt Horvat, Lower Maumee River Coordinator)

- 12:05-12:25pm Additional Partner Reports/Project Updates
  - Open floor for project sharing by any other partners (*i.e. Duck & Otter Creek Partnership, City of Toledo, Metroparks, TNC, DU, Waterkeeper, etc.*)
- 12:25-12:30pm Closing comments and announcements
- 12:30-1:00pm Lunch (optional-RSVP required)
- 1:00-3:30pmSite visits to Toledo Botanical Garden and Camp Miakonda (optional)<br/>Transportation not provided. Carpooling is encouraged. Sites are less than 3½ miles apart.

#### 2013 Maumee AOC Summits May 9, 2013 & Dec., 5, 2013 9:00am-12:30pm Locations: TBA



## PARTNERS FOR CLEAN STREAMS: THE PEOPLE, PLACES, AND PROGRAMS





### 2012 PCS Board of Directors & Executive Director

Patrick Lawrence, Ph.D.: President Tim Schetter, Ph.D.: Vice-President Colleen Dooley: Treasurer Andrew Curran: Board member Shawn Reinhart: Board member Phil Blosser: Board member Terry Shankland: Board member Elliot Tramer, Ph.D.: Board member











### **PCS Staff**

- Kris Patterson, Executive Director
- Paige Sloma, Program Assistant
- Ava Slotnick, Outreach Coordinator
- Kyle Spicer, Program Coordinator





### **PCS and Maumee RAP Committee**

- Formed in 2007 grew out of the Maumee RAP Program
- A separate 501(c)3 non-profit community organization
  Maumee RAP



• Supports local and regional water quality improvements

PARTNERING FOR CLEAN STREAM

• Maumee RAP Committee is nestled in PCS organization and works side-by-side with State and Federal RAP program

#### PCS is striving for

abundant open space and a high quality natural environment; adequate floodwater storage capacities and flourishing wildlife; stakeholders who take local ownership in their resources; and rivers, streams, and lakes that are clear, clean and safe.

#### Maumee AOC vs. Maumee River

Maumee AOC Boundary



# **Programs and Impact**

By Kris Patterson, Executive Director

### 10<sup>th</sup> Annual Youth Patch Day Workshop

#### Sunday, March 4, 2012

- 81 youth
- 3 adults
- 84 patches were given
- Topics included various water conservation subjects, such as water gardens, recycling, waste treatment, water cycle and agriculture
- Training for Storm Drain Marking
- Each participant received a bag of educational activities and brochures





### **Storm Drain Stenciling**

#### Saturday, April 21, 2012

- Global Youth Service Day
- Storm Drain Marking Kickoff
- 356 catch basins and 1,159 homes received door hangers throughout 10 jurisdictions with 113 participants
- Yearly total- 1,101 basins, 2,139 flyers distributed, 221 volunteers





### 8<sup>th</sup> Annual Get the Lead Out!

- 210 pounds of lead were collected
- A total of 64 volunteers, including Fort Meigs Sertoma, Toledo ZooTeens, City of Toledo employees and others
- In 10 outings, (7 private, 3 public) volunteers covered 2.5 miles of the Maumee River
- GLO was in local and international media with <u>The Blade</u> and the <u>Blog Aquatic from</u> <u>The Ocean Conservancy</u>







### 16th Annual Clean Your Streams Day

#### September 15, 2012

- A record shattering 1,175 volunteers participated
- Removed 18,822 pounds of trash with 903 trash bags and 274 tires
- Cleaned at 60 land sites, 38 miles of stream, and river banks in 5 watersheds
- Interesting & Unusual finds: lunch tray, Christmas lights, EZ Pass, bed spring, waders, bowling pin, used paint roller, cheeze grater, tanning goggles, and more.



### **Congratulations CYS winners!**









### **Other New Developments**

- New website, which has received positive feedback
- New and improved E-Newsblast called Currents!
- Ottawa River contact & fish advisory reduced signs come down in midsection of river!
- New member of Northwest Ohio Community Shares







### Where is PCS headed in 2013?

- Great Lakes Restoration Initiative
  - Continuation of Camp Miakonda restoration project
  - Implement and oversee Maumee Corps grant, under NOAA, to restore various smaller habitat projects in AOC and put people to work
- Continue Community Outreach and Education
  - PCS Patch Program, Get the Lead Out!, Storm Drain Marking, and of course, Clean Your Streams Day!
  - E-Newsletter and Increasing Membership
  - Fundraising...maintain the staff beyond the life of grants
- Maumee RAP
  - Working with Ohio EPA RAP Coordinator and active Maumee RAP partners to refresh and update watershed plan for region (a.k.a. Stage 2 plan and database)
  - Continue hosting Summits, maintaining fiscal accountability, and building committee input

# **Partner Award**

PCS Annual Award for Environmental Stewardship & Involvement

#### **Clean Streams Partner Award**

Clean Streams Partner Award was created by the Partners for Clean Streams Board of Directors in 2007 to honor individuals and/or organizations in our community that have, through their efforts, worked to improve our rivers and streams.

Previous recipients have included: 2007 - Sue Horvath 2008 - John Jaeger 2009 - Marilyn DuFour 2010- Tom Henry 2011- Steve Pollick & Matt Horvat



### THIS YEAR'S AWARD IS PRESENTED TO ...

### **Terry Shankland**

Terry has been involved with the Maumee RAP and PCS since the 1990's. He has been part of the CYS planning committee and served as the event caterer for 15 years.

Terry is also on the Board of Directors and sits on the Toledo Parks Commission Board. He has served on the TMACOG Ottawa River and Maumee River committees as a citizen member and is the former President of the Ottawa/Jermaine Park boards.

Terry was chosen to receive this award for his countless hours of volunteering and dedication to promoting clean, clear and safe waters around Toledo.



### Other Ways to Get Involved...

- Volunteer! Volunteer at events and help plan for our events year round! Talk to a staff member for more information.
- Kroger Community Rewards- Let your grocery shopping earn donations for PCS-without costing you a cent. Check out our table for more information!
- Stuff brochures at home or hand out and hang up flyers.
- Become a dues-paying Partners for Clean Streams member now!





# **THANK YOU**

PCS greatly appreciates your time, commitment, energy, and effort. We look forward to your continued support in 2013 and beyond.

# Ohio EPA Report on Activities in the Maumee AOC

RAP Fall/Winter Summit Toledo Botanical Garden December 6, 2012

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# **Today's Presentation**

- Stream Assessments
  - Ottawa River
  - Maumee River
- BUI 4: Fish Tumors or other Deformities Study
- GLLA Site Characterizations
  - Swan Creek
  - Maumee River
- What's in 2013?



### Stream Assessments – Ottawa R.

- Data collected in Summer 2011
- Study area from headwaters to Auburn Ave. and Silver/Shantee/Halfway Creeks and Detwiler Ditch
- Recreational Use (RU)(colonies E. coli/100 ml)
  - 5 samples at 10 sites, 10 samples at 2 sentinel sites over recreational season (May 1 to Oct 15)
  - Only 2 sites were in Full Attainment (Class B)
    - Ottawa R. at Central Ave.
    - Detwiler Ditch
  - Lowest geometric mean at Central Ave. (Metropark)(112)
  - Highest geometric mean at Stadium Dr. (UT) (682)

Recreational Use Criteria: Class A=126 Class B =161

## Stream Assessments – Ottawa R.

Waterway	Fish	Bugs	Attainment
Ottawa River	7 of 9 met IBI 5 of 9 met MIwb	4 of 9 met ICI	Full (3) Partial (3) Non (3)
Tenmile Creek & N. Branch Tenmile	6 of 7 met IBI 4 of 6 met MIwb	I of 3 met ICI Marginally Good(I) Good (3)	Full (3) Partial (3) Non (1)
Halfway Creek	I of I met IBI	Fair (1)	Partial (1)
<b>Ditches</b> (Prairie, Zink, Heldman, Hill)	7 of 7 met IBI	Fair (4) Low Fair (2) Poor (1)	Full (4) Partial (3)
Detwiler Creek	etwiler Creek I of I met IBI I of I met MIwb		Partial (1)
Silver & Shantee Creeks	2 of 4 met IBI* 0 of 1 met MIwb	Low Fair (1)* Poor (2)* Low Poor (1)	Partial (1)* Non (3)*

Ottawa, Tenmile, & Halfway – Warmwater Habitat (WWH) Ditches & Detwiler – Modified Warmwater Habitat (MWH) Silver & Shantee – Limited Resource Water (LRW) \* NOTE:The downstream Shantee and downstream Silver sites are MWH sites and are scored against that criteria, not LRW.

## Stream Assessments – Ottawa R.

- Overall HUC Assessment of Aquatic Life Use
  - 10 sites in FULL attainment
  - 12 sites in PARTIAL attainment
  - 7 sites in NON attainment
- 3 waterways are being assigned use designations
  - Prairie Ditch MWH (full attainment of new status)
  - Zink Ditch MWH (partial attainment of new status)
  - Detwiler Ditch MWH (partial attainment of new)
- I waterway's use designation is changing
  - Hill Ditch LRW to MWH(partial attainment of new)



### Stream Assessments – Maumee R.

- Data collected in Summer 2012
- Study area from Indiana (New Haven-USGS Gage station) to mouth
- Recreational Use (RU)(colonies E. coli/100 ml)
  - 5 samples at 22 mainstem sites over recreational season
  - Class A sites = 15 of 17 are in attainment
  - Class B sites = 5 of 5 are in attainment
  - Lowest geometric mean Maumee R at Napoleon Water Works intake (4.92)
  - Highest geometric mean on mainstem Maumee R. at Grand Rapids at St Rt 578 (163)
- All sites in the AOC were in RU attainment
  - Values ranging from 10.86 to 89.84

Recreational Use Criteria: Class A=126 Class B =161

## Stream Assessments – Maumee R.

- Lake-effected area is area downstream of RMI3 at Ewing Island
- Most of the data for the Lake-effected area is not available (which is most of the AOC ☺)
- Fish
  - All sites upstream of Lake-effect in <u>FULL</u> attainment
- Bugs
  - Data still being processed, only a few sites completed
- Water Chemistry
  - Nitrate/Nitrite: 2 of 35 sites exceeded geometric mean target (1 in Ohio, 1 in Indiana)
  - Phosphorus: 0 of 35 sites exceeded geometric mean target (1 on Auglaize, 2 on Tiffin)

# **BUI 4 Determination Study**

- Ohio EPA project funded by GLRI (FFY 2011)
- To determine if BUI 4 is impaired in Ohio AOCs
- Contracted MBI & West Virginia Histology lab
- Sampling conducted Fall 2012
- Attempted to collect brown bullheads for liver tumors and external DELTs near the mouth of each AOC stream
- Also did electrofishing for DELTs near the mouth of each AOC stream

# **BUI 4 Determination Study**

Location	# Bullheads Collected	# of DELT Sites	Notes
Ottawa River	40	5	
Maumee River & Swan Creek	40	16	
Duck Creek & Otter Creek	0	2 of 3	Attempted to access Duck Creek for the second time but low lake levels prevent passage by boat. Sampled 2 DELT sites on Otter Creek.
Wolf Creek	15	2	
Cedar Creek	0	2	
Crane Creek	0	0	Worked with USGS to gain access through Ottawa National Wildlife Refuge, with no access points discovered. Tried accessing from boat launch at Cooley Creek Marina via Lake Erie but low lake levels made passage through the mouth impassable by boat.
Turtle Creek	40	2	
Toussaint River & Packer Creek	40	2 of 3	Could not get access to Packer Creek via Toussaint due to extremely low water levels, attempted to contact private land owner about potential access with no correspondence

### **BUI 4 Determination Study-Bullhead**



### **BUI 4 Determination Study-DELTs**



## Site Characterizations



- Funded through Great Lakes Legacy Act
- Ohio EPA has to request this assistance
- Used to characterize AOC sediment contamination
- Sampling conducted by US EPA & their contractor
- Three projects have been conducted
  - Duck and Otter Creeks confluence
  - Swan Creek
  - Maumee River (Phase I)
- One project is being planned
  - Maumee River (Phase 2)
- One is project is proposed
  - Maumee River (Phase 3)





- Sampling conducted by US EPA & contractor (Weston Solutions) in Summer 2011
- Project area was from Hawley St. (RM 2.7) to the mouth



- 100 sediment samples from 35 locations using vibracore and push-probing
- Intervals were 0-6", 6-24", 24-48", 48-72"
- QHEI assessed at 6 locations every ~2,000 ft
- Issues Encountered:
  - Poor sediment recovery
  - Difficult station access/navigation









As – Arsenic:

TPAH:

PCB:

> 165 ppm (5x PEC)

I ppm (yellow dots)\*

 $(10 \times PEC)$ 

228 ppm

>

>

#### Conclusions

- Metals contamination resides in deeper sediments (> 24") especially in the downstream area,
- Total Petroleum Hydrocarbons (oil and diesel) and PAH are found throughout the project area at all depths.
- PCBs were found in the upstream portion of the project area, additional sampling needed.

#### Next Steps

- Additional sampling is needed
  - Upstream of Hawley Street
  - Data gaps to find sediment deposits
- Identify if trace compounds are of concern;
  - Antimony, Selenium

### Site Characterizations – Maumee R. (Phase I)

- Sampling conducted by US EPA (Mudpuppy II) & contractor (Weston Solutions) in Summer 2011
- Phase I Project was from near Walbridge Park (RM7.5) to I-280 (RM3.5)


## Site Characterizations – Maumee R. (Phase I)

- 320 sediment samples from 80 locations using vibracore from the R/V Mudpuppy II
- Intervals were 0-6", 6-24", 24-48", 48-72"
- Sample processing at staging area
- Issues Encountered:
  - Strong currents
  - deep sediments, refusal not reached





## Site Characterizations – Maumee R. (Phase I)



# Site Characterizations – Maumee R. (Phase I)

- Conclusions
  - Very few spatial trends or correlations, exceedances span wide range of depths
  - Arsenic (As) trend is along south bank upstream of I-75
  - Antimony trend is surficial based with linkage to Swan Creek. Lab detection was difficult.
  - TPH, Cd, Mercury associated with Oakdale Ave. CSO, at depth
  - Lead Follows west-bank downstream from High-Level Bridge
  - PAHs downstream from Swan Creek at over 200+ ppm
  - Barium east bank, possible shoreline source?
  - Cadmium/Chromium and Lead may note other hotspots
- Next Steps
  - At this time, no additional sampling is being planned for this Project Area

## Site Characterizations – Maumee R. (Phase 2)

- Sampling is expected to be conducted by US EPA (Mudpuppy II) & contractor (EA) in Spring 2013
- Phase 2 Project was from near Walbridge Park (RM7.5) to I-280 (RM3.5)
- This project will connect the 4 waterways together



#### Site Characterizations



# What's in 2013?

- Ottawa River TSD and TMDL
- Maumee TSD
- GLLA Maumee River (Phase 2)
- Completing Bullhead Study
- Updated Delisting Targets for Ohio
- Finalize DMDS & Updating of Stage 2 Report

# **QUESTIONS?**

Cherie Blair Maumee RAP Coordinator Ohio EPA – Northwest District Office 419-373-3010 Cherie.Blair@epa.state.oh.us



#### Restoration Project of the Ottawa River at the University of Toledo UPDATE





**Presidents Commission on the River** 

Chair: Dr. Patrick Lawrence patrick.lawrence@utoledo.edu



December 2012



**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



2011: 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











#### Proposed In-stream habitat design concepts and plans (January 2012)



In February 2012 ACOE Buffalo conducts hydrological modeling of stream flow conditions with proposed in-stream restoration features in place following Reach 1-5 concept plans



Peach	Evicting	Original Concent	WSE riso
Neach			(f+)
	(IL NAVDOO)	(11 NAVD88)	(11)
1	594.88	595.12	0.24
	594.48	594.71	0.23
2	594.18	594.31	0.13
	594.11	594.24	0.13
3	593.76	593.87	0.11
	593.46	593.55	0.09
4	593.21	593.28	0.07
	593.16	593.22	0.06
5	593.08	593.14	0.06
	592.69	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 additional to continued reduction in the number, type and size of in-stream structures especially in reaches 1-3.





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



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)



Artistic rendering of the cut bank feature



Site of Cutbank feature (April 2012)

In advance of the proposed tree removal, necessary as the first step in construction of the cut bank in reach I, USFWS required a survey for Indiana Bat (federally endangered species) at the site. Field survey and collection was completed on two nights at the site (June 7-8, 2012) revealing no presence of the species







Tree removal completed at the cut bank site June 2012 funded by grant from USFWS

# Stages of the Construction of the Cutbank (June to August 2012) photos below



Approximately 4,700 cubic yards of concrete fill (placed in late 1950s) was removed, screened on site with all concrete, woody debris recycled; clean sediment reused on site as topsoil









An additional benefit to the project were improvements to two existing stormwater outfalls

On October 1<sup>st</sup>, 2012 volunteers planted 317 new native trees and shrubs including . Species included Indigo Bush, Chokeberry, Hornbeam, Hackberry, Buttonbush, Redbud, Dogwood, Winterberry, Spicebush, Tulip Poplar, Sycamore, Black Cherry, several Oak species, Sumac, Rose, Sassafras, and Viburnum.

Deer repellent was applied and protective trunk wiring will be installed to prevent deer rub.







#### Fall 2012

#### **Phase II: In-stream Restoration Plans (revised)**











#### **Current Project Timeline**

**Early 2013**: Submission of Applications for federal and state permits

**Spring 2013**: UT issues call for construction bids

Spring/early Summer 2013: Site preparation/monitoring

August 2013: In-stream restoration features construction

Fall 2013: Additional bank and in-stream native plantings

2014: Post project monitoring

Appreciation is extended to all the project partners and funders:



















#### DEC. 3, 2012



Photo By Nick Bryan

**COLORFUL CATCH:** Doctoral ecology student Carson Prichard held up a rainbow trout he caught in the Ottawa River on UT's Main Campus. Nick Bryan, a graduate student in ecology, also caught a rainbow trout. The recent catches show that this species has begun using this part of the Ottawa River, according to Bryan, who is a teaching assistant in the Department of Environmental Sciences. Trout are indicators of good water and habitat quality in rivers, and until now were not seen at UT, he said. The trout are examples of the improved aquatic habitat from the Ottawa River restoration project, which began earlier this year with help from a \$235,000 grant from the Ohio Environmental Protection Agency and a \$111,000 grant from the U.S. Fish and Wildlife Service.


### Crosby Lakes and Hill Ditch Lake and Stream Restoration Project

Maumee AOC Summit 12-6-2012



# **Project History**

In Fiscal Year 2011, Toledo Botanical Garden (TBG) received \$500,000 from Ohio EPA's Section 319(h) Nonpoint Source Program to enhance the biological, chemical, and physical quality of Hill Ditch.

Local Match = \$569,525

Total Project Budget = \$1,069,525

Ohio Environmental Protection Agency



### **Project Teams**

US Army Corps of Engineers<sub>®</sub>

#### Project Mgmt Team



#### **Design Team**





(TGC Engineering, LLC



#### **Construction Team**

Woodlawn Cemetery & Arboretum Toledo Area Metroparks Lucas Soil and Water Conservation District



#### **1988 Design of Crosby Lakes**



Numbers represent pond design depths

#### **Current Conditions**



Numbers in yellow represent approximate depths today

#### **Pre-Project Conditions – Aquatic**



**Accumulated sediments** 



Hard edges provide no cover for aquatic animals



Wetlands have formed and have become overgrown with invasive species



An unstable shoreline discourages visitors from getting close to the pond

#### **Pre-Project Conditions – Aquatic**



An unstable shoreline discourages visitors from getting close to the pond

Hard edges provide no cover for aquatic animals

### **Pre-Project Conditions - Dams**



#### **Upper Dam**

- Promote sediment buildup
- Prevent the movement of aquatic life



**Lower Dam** 

#### **Pre-Project Conditions - Nuisance Species**



Common Carp – stir up sediments and destroy Aquatic vegetation Canada Geese – deposit waste/nutrients around pond, which then makes its way into the water



### Negative Impacts to Water Quality

- Increased sediment loading Increased heating/water temperatures
- Increased nutrient loading
  Decreased oxygen concentrations



# **Assessing Hill Ditch**

In the Summer of 2011, Ohio EPA sampled habitat, fish and macroinvertebrates in Hill Ditch, immediately upstream and downstream of TBG.





**GOAL:** To determine the biological health of the stream for "modified warm water habitat"

### Habitat Assessment

**RESULTS:** Habitat was found to be "good" both upstream and downstream of the TBG property, despite the fact that the stream:

- Lacks sinuosity
- Lacks in-stream cover
- Contains heavy silt deposits
- Has a high degree of embeddedness
- Has no fast current
- Is a "recovering" channel



# What About Flooding?

Lots of Data was collected

- Surveys
- Precipitation
- Watershed info
- Land use
- Flow

This data was run through a model based on current conditions and on possible modified conditions



**GOAL:** To determine if proposed changes would effect water levels or water speed/volume up or downstream of TBG.

# **Goals and Objectives**

- Improve water quality (biological & chemical)
- Restore natural stream channel
- Enhance adjacent wetlands quality
- Enhance portions of Crosby Lake
- Create a sustainable system
- Develop a plan that:
  - $\checkmark$  Adheres to TBG Master Plan
  - ✓ Educates public on sustainable natural ecosystems
  - ✓ Provides a place where people can interact directly with a high-quality natural stream, wetlands, and a rejuvenated Crosby Lake



#### **The Proposed Plan**



### Key Components – Dam Removal





#### **Upper Dam**

#### **Lower Dam**

### **Key Components – Stream Restoration**









### **Key Components – Other Features**







# **Public Involvement**

- Volunteer Opportunities
  - Harvesting Plants
  - Planting Plants
- Educational Opportunities
  - Site Visits and Tours
  - Youth/Scout Programs
  - Summer Camps
- Wetland and stream restoration workshops
- Educational signage and brochures





# **Project Schedule**

Project Milestone	Date
Design Contract Issued	January 30, 2012
Perform Preliminary Studies	February – March 2012
Preliminary Design Review	April 4, 2012
Receive Floodplain Permit from City	April/May, 2012
Partially Remove Dams	May/June, 2012
<b>Review Contractor Qualifications</b>	May/June, 2012
Obtain USACE Permit	July/August, 2012
Complete Final Design	July 7, 2012
Invite Contractors to Bid	August 1, 2012
Construct Site	Fall/Winter, 2012

# Where are We Now?

- Safety First
  - Signage to advise Guests and Staff
- Dams
  - Upper Dam Notched & Upper Lake Drained
  - Lower Dam Removed & Lower Lake being Pumped
- Stream & Lake Separation
  - Building Berm
- Stream Restoration
  - Building starting this weekend
- Lake Enhancements
  - New banks & wetland shelves in a few weeks
  - Vegetation (aquatic & upland) after construction
- Public Access
  - Changing due to construction changes
- Public Involvement
  - Watch for classes and workshops next summer

# CAUTION:

Crosby Lake is under construction. For visitor safety, several areas of TBG are closed. Please do not proceed beyond any posted sign or barrier and stay clear of any heavy equipment.

Those in violation will be cited.



#### Warning: Safety Hazard

This area is CLOSED and restricted to authorized personnel with proper protective equipment.

Those in violation will be cited.



#### Where are We Now?







#### Where are We Now?









# **Questions?**



#### **GLRI Helping to Restore Wolf Creek**

Kris Barnswell, Daryl Dwyer, Jordan Rofkar Department of Environmental Sciences, University of Toledo and Lake Erie Center



### Partners



- City of Oregon
- Toledo Metropolitan Area Council of Governments
- Lucas County Engineers
- Ohio Department of Natural Resources
- Ohio Environmental Protection Agency
- Hull and Associates, Inc.
- US Geological Survey









science for a changing world









- Lakeside and inland beaches
- Golf course
- Resort

#### **PROBLEM!!!**

**BEACH CLOSURES 19 per 100 days** each recreational season



#### USGS and University of Toledo (2003-2004)\*



#### Wolf Creek Watershed



Approximately 16 mi<sup>2</sup>

Farmlands and residencies

Sources of E. coli?

Parameters		Annual	Winter	Spring	Summe	r Fall
Discharge	Log <i>E. coli</i>	0.36	0.58	-0.14	0.61	0.23
	Total phosphorus	0.45	0.32	0.70	0.31	ns
	Suspended solids	0.45	0.54	0.48	0.51	0.37
	Turbidity	0.58	0.60	0.56	0.56	0.32
Suspended solids	Log <i>E. coli</i>	0.22	0.48	-0.21	0.76	0.70
	Total phosphorus	0.61	0.64	0.72	0.66	ns
	Turbidity	0.93	0.90	0.96	0.89	0.97
Turbidity	Log <i>E. coli</i>	0.28	0.57	-0.20	0.73	0.73
	Total phosphorus	0.66	0.63	0.75	0.62	ns
Total wheeve	Les E celi	0.00			0.40	
i otai phosphorus	LOG E. COII	0.30	ns	ns	0.49	ns



#### Berger Ditch loadings from July 2007 to July 2008

Parameter	Annual	Winter	Spring	Summer	Fall
<i>E. coli</i> (CFU)	9.19 x 10 <sup>14</sup>	1.66 x 10 <sup>14</sup>	1.96 x 10 <sup>13</sup>	6.9 x 10 <sup>14</sup>	4.18 x 10 <sup>13</sup>
Suspended solids (metric tons)	4747.52	2702.57	580.31	838.23	646.41
Total phosphorus (metric tons)	20.23	10.38	1.37	5.81	2.67

Maumee River loadings from April to June 2010\*

- Watershed is greater 6,000 mi<sup>2</sup>
- Suspended solids 377,000 metric tons
- Total phosphorus 925 metric tons

#### GLRI Funding by the US EPA

- Maumee AOC-Wolf Creek Watershed: Passive Treatment Wetland to Improve Nearshore Health and Reduce Nonpoint Source Pollutants
  - \$1.35 M
  - June 30, 2011 to June 30, 2013
  - Engineering Design and Construction

- Reduction of Sediment and Bacteria Loadings to Public Beaches at Maumee Bay State Park via Enhanced Riparian Habitat
  - \$470 K
  - October 1, 2012 to September 31, 2014
  - Engineering Design and Construction

Beneficial Use Impairment	Wolf Creek Watershed	Restoration by this project	Project Benefit to BUI
BUI 3: Degradation of fish and wildlife populations	Impaired	Yes	Reduction of sediment and nutrient load will support fish populations by decreasing impact on food chain, leading to improvement in IBI index.
BUI 6: Degradation of benthos	Impaired	Yes	Reduction of sediment load will decrease covering stream bottom with accumulated mud. Floodplain restoration will support benthos as well.
BUI 8: Eutrophication or undesirable algae	Unknown	Yes	Settling ponds and wetlands, especially subsurface flow wetlands at the Park, will reduce phosphorus loadings. Load reductions will reduce algal growth in creek and harmful algal blooms in Maumee Bay
BUI 10: Beach closings	Impaired	Yes	Restoration areas will capture sediment and destroy fecal bacteria, reducing the number of samples exceeding <i>E. coli</i> standards at MBSP
BUI 11: Degradation of aesthetics	Impaired	Yes	Sediment capture will remove many BUI "free from" objectives to improve creek conditions, i.e., suspended solids, nutrients, beach postings
BUI 14: Loss of fish and wildlife habitat	Impaired	Yes	Reduction of sediment and nutrient load will support fish by decreasing sedimentation that covers benthic habitat and spawning areas. Stream habitat, floodplain, riparian wetland, and stream corridor restoration will improve the QHEI index.



#### Wolf Creek Watershed

#### Phase 2: Constructed wetland (10 acres)

- Filtration (subsurface flow)
- Treatment (subsurface / surface flow)
- Restoration

Phase 1: Sedimentation Pond (1 acres) and Riparian habitat (3 acres)

- Retain suspended solids
- Collect agricultural runoff and drainage

#### Location of Phase 1




#### **Sedimentation Pond**





#### Streamside Systems ®

Sediment Removal without Dredging



#### **Constructed Wetland**



#### Expected completion dates

- Constructed wetland
  - Engineering Design (February 2013)
  - Construction (June 2013)
- Sedimentation pond and riparian habitat
  - Site characterization (January 2013)
  - Engineering Design (February 2013)
  - Construction (Fall 2013)

#### **Contact Information**

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# Restoration at Sylvan Prairie Park

Erika Buri, Conservation Manager, The Olander Park System



## Sylvan Prairie Park





## **Old Field**





#### It's Wet!

Water Map for Sylvan Prairie Park



Floodplain layers from Lucas County Engineer. Wetlands layers: TOPS=GPS'ed in field, UT=Univ of Toledo, OWI=Ohio Wetland Initiative. Roads, pareles, titches and aerial photo from Lucas County AREIS 2008.

<sup>0 50 100 200</sup> Meters



Restoration plans proposed by Olander staff in January 2009. Parcel, ditch, and street layers from Lucas County AREIS 2008. 0 95 190 380 Meters



Tall Grass Prairie and Wet Meadow Restoration







**Extensive** Floodplain no longer connected to streams

## Kimball Ditch Legend Quarry Ridge Bike Trail Ditches ParkRoad SPPark\_Boundary\_2010 Wetlands (TOPS) Wetlands (UT) Wetlands (OWI) Floodplain Lakes

Floodplain layers from Lucas County Engineer. Wetlands layers: TOPS=GPS'ed in field, UT=Univ of Toledo, OWI=Ohio Wetland Initiative. Roads, parcels, ditches and aerial photo from Lucas County AREIS 2008.

50 100 200 Meters 0 

Water Map for Sylvan Prairie Park



## Floodplains FLOOD

#### Good characteristics:

- Roughness
- Storage
- Groundwater recharge
- Silt deposition



## To Fix this ... Change Ditch System to Low Gradient (energy)

- Lower velocity
- More sinuosity
- More floodplain
- Wetland





#### Floodplain layers from Lucas County Engineer. Wetlands layers: TOPS=GPS'ed in field, UT=Univ of Toledo, OWI=Ohio Wetland Initiative. Roads, parcels, ditches and aerial photo from Lucas County AREIS 2008.

0 50 100 200 Meters

## 2009 Comstock Ditch-100 feet

#### Before



### After (1 year later)





2012 Kimball Ditch--2400 feet

Palmer Ditch --1200 feet



## **Kimball Ditch**

Traditional Trapezoidal Ditch – water not reaching floodplain & moving really fast

## **Palmer Ditch**

•Steep sides

•Deep ditch



## OEPA 319(h) Grant funds— Overwide restoration of Kimball and Palmer Ditches \$308,520 project, \$185,112 funded through grant

Kimball Ditch

# OEPA 319(h) Grant funds— **Overwide restoration of Kimball and Palmer** Ditches **Kimball vs. Palmer** Kimball Ditch

## **Construction October 2012**



## **Native Plant Installation**



## What it will look like





For more information: Erika Buri, Conservation Manager The Olander Park System eburi@olanderpark.com 419-882-8313 x29

# This project was funded in part with a grant from the Lake Erie Protection Fund,

a competitive grant program administered by the



Ohio Lake Erie Commission.









## CAMP MIAKONDA RESTORATION PROJECT

Partners for Clean Streams Kristina Patterson – Executive Director Kyle Spicer – Project Coordinator

### CAMP MIAKONDA & OTTAWA RIVER RESTORATION



- \$1.36 Million GLRI grant from US EPA
  - ▶ 3 year duration
  - Restore/enhance approx. 10 acres & approx. 30 acres associated wetlands.
  - Reduce erosion & stream bank restoration from 1,200' adjacent Ottawa River
  - Increase in-stream habitat for fish and macro invertebrates
  - Increase diversity of in-water habitat for Lake Sawyer, allowing fish to winter over and encourage more active use of Lake Sawyer by Scouts
  - Support educational use of wetland, lake, river, and upland habitat
  - Contribute to BUI (Beneficial Use Impairment) goals and improvements for BUI 14 – Loss of Fish and Wildlife & BUI 3 – Degradation of Fish and Wildlife Habitat



#### Reach #I – Looking DS

OTTAWA RIVER BEND #I – CAMP MIAKONDA

- Identified as a priority item from Inventory Plan.
- Stream bank stabilization & erosion control methods.
  - Bank erosion on Lake Saywer side were rapidly decreasing the amount of land between the two bodies of water.
- Numerous "Derrick" improvements.
  - Longitudinal Peaked Stone Toe Protection (LPSTP)
  - Bendway Weirs
  - Locked Logs
  - Live Siltation & Living Dykes

#### Ottawa River Draft Plans


Floodplain bench used as haul road.

- Bench did not used to exist.
- Notice point bar.

Pipe below is draining Lake Sawyer – shut off valve; silt curtain.

### Reach #1 – Looking DS

# Longitudinal Peaked Stone Toe Protection (LPSTP)

After a couple of high flow events stream has scoured at the toe & stone has self-adjusted

Sediment has deposited landward of the LPSTP

As-built

### Reach #I – Looking DS

# LPSTP lining bend #1.

Upstream key backfilled.

Live siltation along key, behind LPSTP within the floodplain bench.  Locked Log
 Pointed DS to encourage stream thalweg away from bank.

> Habitat creation from low velocity waters.

# Reach #I – Looking DS

### Reach #1 – Looking DS

# Bendway Weirs (3) Designed to encourage thalweg away from protected bank. Built into LPSTP for stabilization

THE REAL

### Reach #1 – Looking DS

Multiple rows of live siltation; living dykes. Collect sediment and other materials at high flow.

Living locked logs provide shade.

Various heights enable bank protection at high flow.

Reach #3 – Looking DS

OTTAWA RIVER BEND #3 – CAMP MIAKONDA

Series of three Bendway Weirs, like bend #1. LPSTP lining the Ottawa.

Note the clear point bar opposite the steep slopes. Reach #3 – Looking DS

### Bendway Weir is "choked" with smaller stones.

- Give Scouts fishing access for the first time.
- Steps dug into the bank.
- Thalweg clearly visible.

### Reach #3 – Looking @ BW

A CONTRACTOR AND A CONTRACT

Company & States States

Reach #3 – Looking US

DS LPSTP key (40 ft) Live siltation. Willow and dogwood poles placed in LPSTP. • Throughout river work. • Helps to lock in the rock.

# Cunningham – Looking US

# CUNNINGHAM DITCH – CAMP MIAKONDA

Concrete pad was removed.

Exposed pipe used to channel stream underground; removed.

Exposed more of the existing "bowl" to create large pool for overflow.

### Cunningham – Concrete Removal

#### Series of "steps" were created; riffle > pool > riffle > pool.

- Allows water to drop in elevation while slowing velocity.
  - Pools take the hit from water and absorb the energy.
- Riffles help filter out and collect sediment & small debris.
- Plantings installed on either side.

### Cunningham – Looking US

## Cunningham – Looking DS

Clear view of the bowl nestled around great looking existing architecture.

Already greening up – Scouts appreciated. Second pool visible > riffle.

# HARTMAN DITCH – CAMP MIAKONDA

# Erosion & sediment control methods.

- Stone bank protection
- Rock riffle; note sediment build up behind bridge.
- Coconut matting planted.
- Damn removed.

### Hartman – Looking US

V-notch weirs installed.
Angled downstream; sediment control.
Keyed into banks -10ft.
Note additional bank protection – LPSTP.

### Hartman – Looking US

Hartman made an "awkward" turn into the existing culvert. Bank protection added, and used to help turn the stream. Hartman – Looking DS

CATERPILL

Hartman was redirected into Lake Sawyer.

A pre-cast concrete culvert was installed.

Bank protection was added on both US & DS sides.

### Hartman – Looking DS

# WETLAND "A" – CAMP MIAKONDA



- Reed canary grass sprayed and then removed along with 1ft of additional sod.
  - Floating excavator used extensively – other equipment was positioned using stone pads.



VOLVO

Contra

Note stone pad under standard excavator.

Many standing dead trees remain due to our Nationwide Permit; potential Indiana Bat habitat.

KOMATSU

Link-Belt

Wetland A

Wetland A

With sod removed, wetland was significantly planted with high quality species.

Hartman re-route visible.

# LAKE SAWYER – CAMP MIAKONDA

### Lake Sawyer Draft Plans



- Hand-dug lake 70 years ago as WPA project.
- Ottawa floods frequently into the lake.
  - > 2ft deep across.
  - Cherie walked across it.
- Wetland shelves to be installed.

Excavated locations determined.

Excavator with thumb placed concrete debris along excavated area for road stability.

Fortunately we struck hard ground several thousand cubic yards later.

> ANGER STAY CLEAR

Lake Sawyer

 Drainage channels were kept lower than road.

> As water seeped through the muck, pumps removed it.

Pumps continually worked 24hrs/ day. Lake Sawyer

The "pit" was dug for excavated materials to de-water.

AN AN OF

Material was then taken off site for disposal.

Quarry hole.

# Lake Sawyer – The Pit

Excavated areas were sloped to discourage settling.

Over 10,000 cubic yards of the sediment were removed.

Lake Sawyer

and the state

We wanted a way for Lake Sawyer to empty into the Ottawa at high flow.

Important piece to get right; multiple iterations. Stone riffle > pool > river End of riffle angled into pool so water doesn't scour under structure.

### ake Sawyer – Outflow Channel

### Lake Sawyer – Outflow Channel

5 large armor stones opposite outflow channel.

Block large debris from floating into road & channel.

Note: several wetland benches visible. Small excavated lake area. Numerous wetland shelves were created around the lake.

Shelves act as filters and sediment controls.

The floating excavator was useful in shelf creation.

#### Lake Sawyer – Wetland Shelf

Link-Belt

### Lake Sawyer – Wetland Shelf

Crews had to get creative for shelf plantings; foam board walkways.

Nearly 26,000 plants were installed throughout the project.

Not including seed!

# What's Next?

- Monitoring, assessment, & evaluations continue through next year.
- Expand educational opportunities for Boy Scouts and the public.
  - Informational signage/kiosks.
  - Program expansion & cooperation.
- Create and present the BSA with a management plan.
  - Little time commitment is necessary.
- Adaptive management: plant survivability, structure maintenance, invasive species management.

