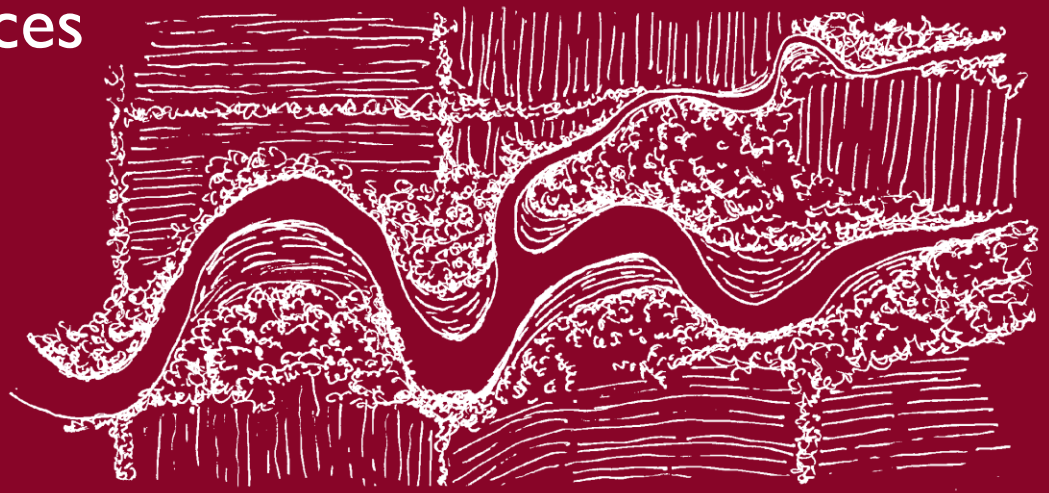
2012 IAFSM Annual Conference

Village of Orland Park
Basin Best Practices Program

Presented By:

Greg Wolterstorff, P.E.
Director of Natural Resources
V3 Companies



Outline of Topics

1. Village of Orland Park Basin Categorization
2. Historic Maintenance Practices
3. Basin Best Practices Program
4. Results of 2011 Basin Assessment
5. Improvements for 2011 & 2012

Basin Categorization

Over 550 Stormwater Basins in Orland Park

187 Basins Owned & Managed by the Village

<u>Three Categories</u>

A. High Impact

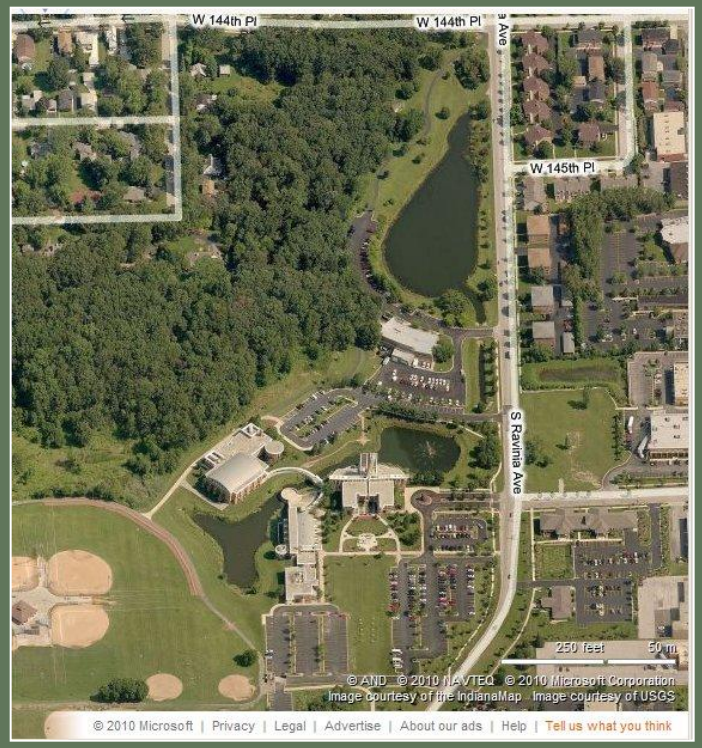
B. Intermediate Impact

C. Low Impact

Examples of Category A

Village Center Pond	14500 Ravinia
Police Pond	14650 Ravinia
Orland Square Pond	9100 W. 151st
Colonades Pond	7500 W. 157th
Caro Vista Pond	13799 84th
Tallgrass Pond	13621 Tallgrass

Village Center Pond
And Police Pond



Basin Categorization

Categorization Based on the following:

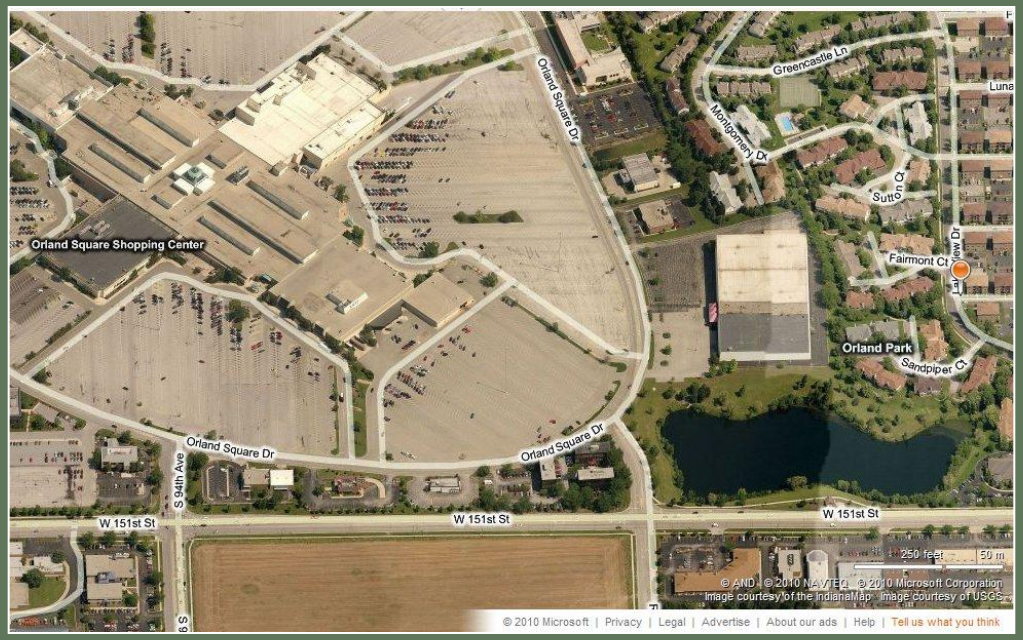
- Visibility, Maintenance Requirements, Resident Complaints, Functionality and Invasive Species Presence

High Impact = 24 Basins

Intermediate Impact = 59 Basins

Low Impact = 104 Basins

Orland Square Pond – Category A



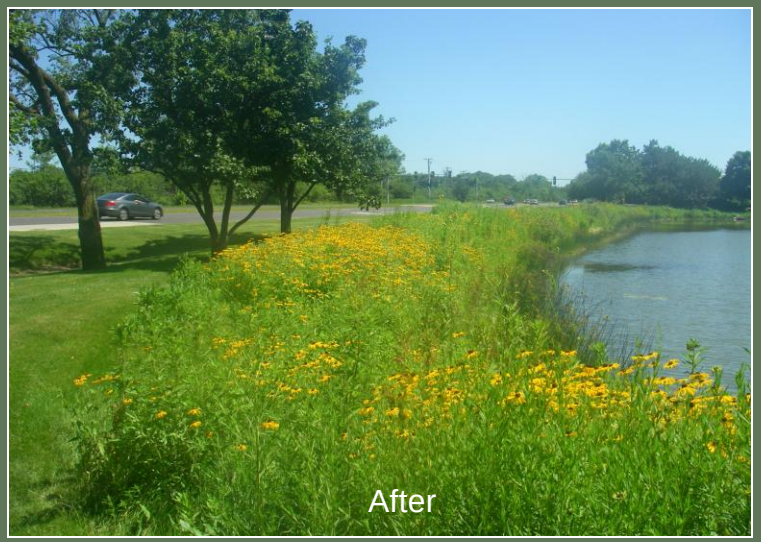
Examples of Complaints

Severe Erosion
Invasive Weeds
Algae Blooms
Trees/Bushes
Floating Debris
High Water
Wildlife

Basin Categorization

Basin Best Practices Program: Desired Outcome

A. High Impact – Reduce Maintenance & Complaints on ALL **24** Basins
B. Intermediate Impact – Reduce Maintenance & Complaints on **29** Basins
C. Maintain Conditions for Remaining Intermediate & Low Impact Basins = 134 Basins
D. Implement Best Practices by PW & Parks Departments



Historic Maintenance Practices

Village of Orland Park Accepted Ownership of Stormwater Basins During Residential Boom Days

187 Basins (AND Growing)

1. Multiple Departments Involved in Maintenance
   - Parks Department
   - Public Works Department
   - No Clear Ownership Internally
2. Maintenance of Stormwater Facilities Driven by Resident Complaints
   - Cut Down Weeds/Trees
   - Treat Basins for Algae Blooms
   - Install Biologs at Eroding Shorelines
   - Establish Turf Grass & Enter Mowing Contracts

Historic Maintenance Practices

Typical Maintenance Activities Over the Past Decade

Turf Grass Mowing

Over 200 Acres Mowed Weekly on Pond Properties

Turf Grass Mowing by Contractor Resulted in "Mower Creep"

Residential Encroachment Mowing on Village Property

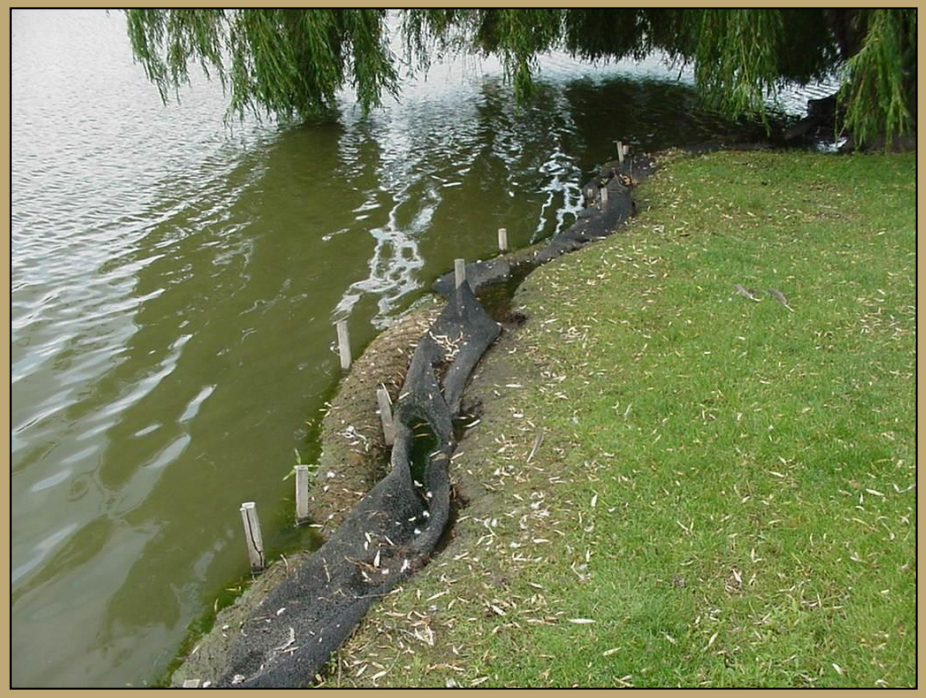
Historic Maintenance Practices

Typical Maintenance Activities Over the Past Decade

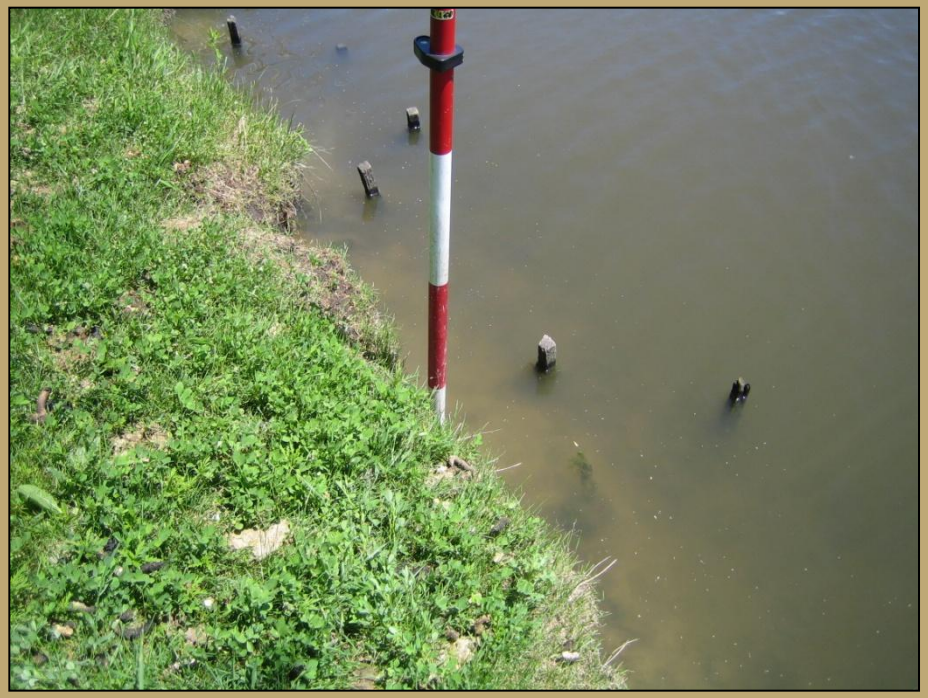
Install Biologs at Eroded Shorelines

Over 22,000 Feet of Biolog Installed in last 10 years

Biolog Installation Performed
By Public Works Staff



Restored Shoreline
Years after Work Performed



Historic Maintenance Practices

Typical Maintenance Activities Over the Past Decade

Remove Trees & Shrubs

Willow Stand Around Basin Removed
By Public Works Staff

1 Year after Removal
Erosion & Algae Problems Appear

Historic Maintenance Practices

Typical Maintenance Activities Over the Past Decade

Fertilizer/Herbicide Application & Algae Treatment

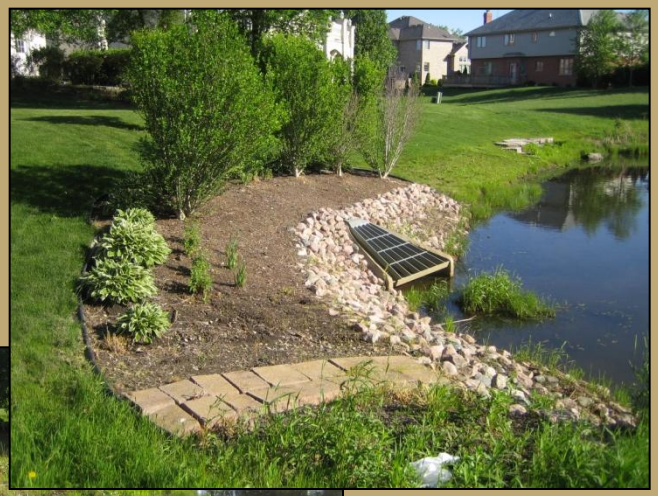
Residential Fertilizer Application
Down to Shoreline

Algae Control Treatment
Occurs Every Two Weeks

Historic Maintenance Practices

Typical Maintenance Activities Over the Past Decade Dealing With Residential Encroachment

Decorative Landscaping



Landscape Lighting

"Fishing" Location

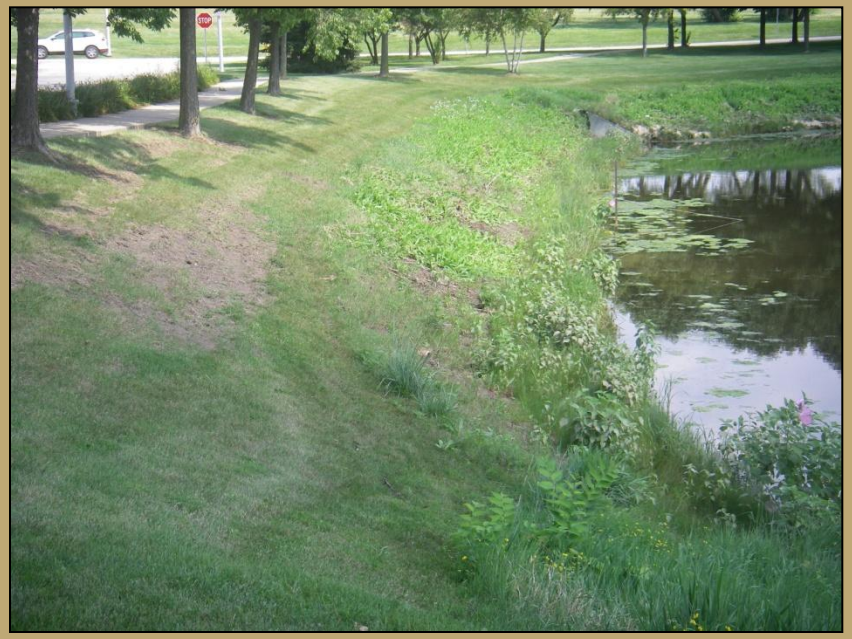
Private Gardens

Historic Maintenance Practices

RESULTS

- Minimal Improvement in Sustainable Maintenance of Basins
- Minimal Reduction in Resident Complaints
- Increasing Costs for Mowing, Weed Control & Algae Treatment
- Degraded Appearance of Natural Features in the Village

Village Hall Basin – Before Restoration



Basin Best Practices Program

PURPOSE

The Village selected V3 to provide assessment and recommendations for a long term basin management strategy for best practices implementation on the Village owned stormwater basins and properties.

GOALS

1. Establish a comprehensive Village-wide approach
2. Provide consistency in expectations among all stakeholders
3. Utilize the right resources at the right time provided by qualified parties
4. Follow industry best practices for ecological restoration and maintenance

Basin Best Practices Program

INITIAL TASKS

1. Stormwater Basin Assessment – 24 Category A Basins
2. Stormwater Basin Prioritization – Define 2011 Implementation
3. The Basin Bulletin Newsletter – Create a 4 Piece Newsletter for Orland Park Residents
4. Prepare Staff Education Training Presentation & Conduct Training Days

Basin Best Practices Program

STORMWATER BASIN ASSESSMENT

1. Site Assessment Forms – Basin Vegetation Conditions, Maintenance/Design Problems, Erosion Problems, Resident Use of Basin

SITE ASSESSMENT AND MANAGEMENT PLAN FORM

PROJECT: Orland Park – Basin Best Practices Program

DATE OF FIELD VISIT: 5/31/11

SITE INFORMATION:

NAME: Caro Vista Pond Category: Type A

BASIN VEGETATION CONDITIONS:

TYPE: WET X DRY WETLAND ONLINE
SEDIMENT BASIN PRESENT NO

BASIN BOTTOM – VEGETATION: TURF GRASS X
NATIVE VEGETATION/WETLAND X
CONCRETE LINED CHANNEL
OTHER

NATIVE VEGETATION (IF APPLICABLE)

DOMINANT SPECIES (list top five): Open H_O

PRIORITY WEEDS: Grass Carp
TOTAL VEGETATIVE COVER ESTIMATE: (0 - 25%) 26 – 50% 51 – 75% 76 – 100%
NATIVE RELATIVE COVER ESTIMATE: (0 - 25%) 26 – 50% 51 – 75% 76 – 100%
ADVENTIVE RELATIVE COVER ESTIMATE: (0 - 25%) 26 – 50% 51 – 75% 76 – 100%
ADDITIONAL COMMENTS ON VEGETATION:

SIDE SLOPES: TURF GRASS X RIP-RAP
NATIVE VEGETATION (see below) OTHER

NATIVE VEGETATION (IF APPLICABLE)

DOMINANT SPECIES (list top five): Poa pra, Pyc vir, Pha aru, Canada thistle, mulberry

PRIORITY WEEDS: Pha aru, Poa pra, Thistle spp., mulberry
TOTAL VEGETATIVE COVER ESTIMATE: 0 - 25% 26 – 50% 51 – 75% (76 – 100%)
NATIVE RELATIVE COVER ESTIMATE: (0 - 25%) 26 – 50% 51 – 75% 76 – 100%
ADVENTIVE RELATIVE COVER ESTIMATE: 0 - 25% 26 – 50% 51 – 75% (76 – 100%)
ADDITIONAL COMMENTS ON VEGETATION: Natives present from prior restoration. Turf 1° component of buffer/slope. Muskrats have heavy presence, but trapped. Slopes gentle on west and southwest side. Steep eroded slopes on remaining sides. Good to do vegetative swale in northwest.

MAINTENANCE/DESIGN PROBLEMS:

NUMBER OF INLETS: STORM SEWER 8 TYPE RCP SIZE Various
CHANNEL/SWALE TYPE SIZE
INLET PROBLEMS: Erosion is exposing FES. Rebar used to hold them in place. Failed FES should be repaired
OUTLET TYPE: CULVERT Restrictors - 10" PVC and 12" PVC SURFACE WEIR
OUTLET PROBLEMS: None
OVERFLOW CONDITIONS/PROBLEMS: -Overflow gate 2' X 5' to 60"RCP
SHORT-CIRCUITING (YES/NO): No

WET/WETLAND BASINS ALGAE (LOW/MODERATE/HIGH): Low

DRY BASINS: POOR DRAINAGE IN AREAS INTENDED TO BE DRY N/A
CONCRETE CHANNELS
STILLING BASIN(s) PRESENT

OTHER: EXCESS LITTER/DEBRIS No EXCESS SEDIMENT ACCUM. No.
EXCESS WOODY VEGETATION No

IF NATURALIZED BASIN, DOES HYDROLOGIC CONDITION APPEAR APPROPRIATE FOR VEGETATION (YES/NO). IF NO, EXPLAIN.
Yes

EROSION PROBLEMS:

RILLS AND/OR GULLIES PRESENT (YES/NO): Yes - several
LOCATION: Locations of sump pump discharge at top of bank
SHORELINE EROSION PRESENT (YES/NO): Yes – severe – east
IF YES WHAT IS S COURING HEIGHT: 0 – 3" 4 – 6" 7 – 9" >9" (3'- 4')
SHORELINE EROSION APPEARS STABLE OR UNSTABLE: Unstable
MUSKRAT DAMAGE OBSERVED (YES/NO): Yes - Various, 5 Muskrats trapped recently

RESIDENT USE OF BASIN:

TOT LOT PRESENT (YES/NO): Yes LOCATION: South of basin
TURF PLAY AREA PRESENT (YES/NO): Yes LOCATION: Park & surrounding edge
RESIDENT USE OBSERVED (YES/NO): Yes – use of park area and surrounding edge
ADDITIONAL COMMENTS ON USE: Resident mowing of village property to gain more turf area.
Typical 25'- 35' of mow with 5'- 10' of buffer

Basin Best Practices Program

STORMWATER BASIN ASSESSMENT

The Good

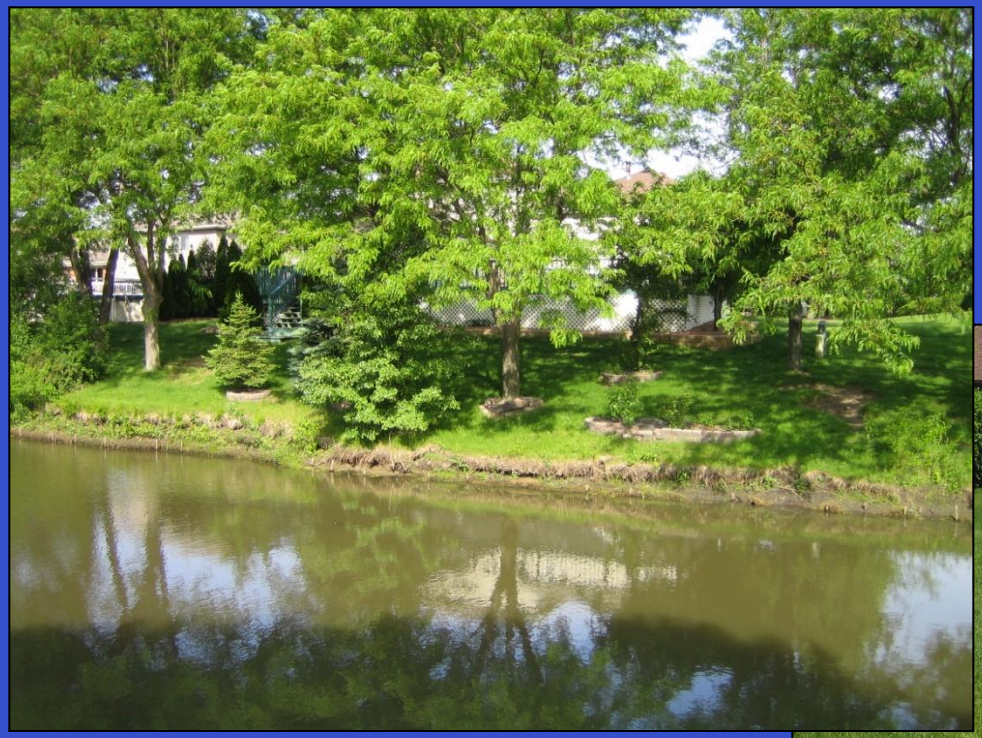
Tallgrass Pond

Legend Trail Pond

Basin Best Practices Program

STORMWATER BASIN ASSESSMENT

The Bad



Parkhill Pond #1

Parkhill Pond #3

Basin Best Practices Program

STORMWATER BASIN ASSESSMENT

Village Hall Pond

The Ugly

Police Pond

Basin Best Practices Program

STORMWATER BASIN ASSESSMENT

2. Management Plan Exhibits – Proposed Maintenance/Restoration

V3 Companies
7325 Janes Avenue
Woodridge, IL 60517
630.724.9200 phone
630.724.9202 fax
www.v3co.com

TITLE: Proposed Management Plan		Project and Site Location: Orland Square Pond, 9100 W. 151st Street, Orland Park, IL, Cook Co.		
Base Layer: AirPhoto USA 2008		Project No.: 10165.BASIN	FIGURE: Orland Square	SHEET 1 OF 1
Client: Village of Orland Park, Village Hall, 14700 Ravinia Drive, Orland Park, Illinois 60462		QUADRANGLE: N/A	DATE: 05/16/11	SCALE: See scale bar

Basin Best Practices Program

STORMWATER BASIN ASSESSMENT

3. Cost Estimates for 3-Yr Management Plan – Narrative & Line Item Activities

#3 Legend Trail Pond

Engineers Opinion of Probable Construction Cost

Narrative: **Legend Trail Pond is a naturalized stormwater basin that was recently received by the Village out of stewardship by a developer. The basin shoreline and slopes are in excellent condition. The desgin of this basin should be incorporated into the design of every new basin with a safety (wetland) shelf that ranges from 0-3 inches above normal water elevation. The fish and aquatic species appear healthy and vibrant and the algae growth is not a concern to the Village or residents that live in this community. There is a woodland buffer to the south of this basin that is expanding into the slopes and tree control is recommended. V3 recommends ongoing stewardship to keep this basin in excellent condition.**

Short-Term Management Recommendations
YEAR 1 - 3

YEAR 1 - 2						
ACTIVITY	EXPLANATION	COST ESTIMATE				
		Quantity	Unit	Cost/Unit	Events	Total Cost
Weed Control (spot spraying)	2 people, 1 day (2 per year)	1.0	EA	$1,000	2	$2,000
Woody Species Control	Cut & Herbicide buckthorn and willow from pond slopes (Fall/Winter)	1.0	EA	2,000	1	$2,000
Prescribed Burn	Years 1 Coordination & 5 person crew	1.0	EA	2,500	1	$2,500
Site Inspections/Meetings	1 each year	1.0	EA	$600	1	$600
					TOTAL:	$7,100
YEAR 2 - 3						
ACTIVITY	EXPLANATION	COST ESTIMATE				
		Quantity	Unit	Cost/Unit	Events	Total Cost
Weed Control (spot spraying)	2 people, 1 day (2 per year)	1.0	EA	$1,000	4	$4,000
Prescribed Burn	Years 3 Coordination & 5 person crew	1.0	EA	2,500	1	$2,500
Site Inspections/Meetings	each year	1.0	EA	650	2	$1,300
					TOTAL:	$7,800
					Contingency (10%):	$1,490
					GRAND TOTAL YEAR 1-3:	$16,390

Notes:
Earthwork wages are per Union Rates. Restoration is based on non-prevailing wage labor.
Prescribed Burn pricing is based on single site burn. May be able to obtain cost efficiencies if grouped together.

Basin Best Practices Program

STORMWATER BASIN PRIORITIZATION

1. Provided Summary of Costs & Recommendation for 2011 Budget Allocation

BASIN PRIORITIZATION

Narrative: The following is V3's assessment of the priorities for implementation with the 2011 Budget. Ffive basins are in excellent condition and stewardship is the only recommendation, therefore these basins are the highest priority in order to maintain these conditions The next level of attention should be given to the basins that have extreme erosion that needs to be addressed. V3 has ranked these by the visibility from major public areas (primary roadways or Village Hall). Next, V3 believes the buffer expansion sites will have a beneficial impact on water quality and stabilization, but these basins are functioning well and are fairly stable. The basins within this category have been lined up according to visibility and highest priority need. Finally, the dry ponds have some recommended improvements, but they are very low on the priority list.

Priority	ID Number	Basin Name	Recommendation	Construction Start	Total Cost
1	15	Colette Pond	Stewardship	July 1, 2011	**$36,740**
2	2	Tallgrass Pond	Stewardship	July 1, 2011	**$15,840**
3	3	Legend Trail Pond	Stewardship	July 1, 2011	**$16,390**
4	16	Anthony Drive Pond	Stewardship	July 1, 2011	**$14,280**
5	5	Persimmon Meadow	Stewardship	July 1, 2011	**$21,230**
6	9	Village Center Pond	Stabilization & Restoration	Ongoing	**$67,850**
7	8	Police Pond	Stabilization & Restoration	October 1, 2011	**$83,070**
8	1	Caro Vista Pond	Stabilization & Restoration	October 1, 2011	**$124,920**

Basin Best Practices Program

STORMWATER BASIN PRIORITIZATION

2. VOP Committee selected eight (8) priority basins for 2011 implementation
   - Activities include the following:
   - Stewardship (4 Basins) = Weed control, woody species cutting, prescribed burning, inter-seeding
   - Landscape Enhancement (1 Basin) = Prairie garden installation
   - Stabilization & Restoration (2 Basins) = All of the above plus earthwork & installation of shoreline plugs
   - Stormwater Function Repair (1 Basin) = Replacement of outlet structure to provide positive outlet from basin plus restoration of vegetation on basin slopes that had been drowned.

Basin Best Practices Program

THE BASIN BULLETIN NEWSLETTER

Name
Company
Address 1
Address 2
City, State Zip

Company
Return Address
Return Address2
City, State Zip

Look Inside for Information on an Important New Village Public Improvement

Learn more about Orland Park's just-launched efforts to create:

- *Water Quality Improvements*
- *Pond & Basin Enhancements*
- *Green Infrastructure Best Management Practices*
- *Low-Maintenance, High-Quality Natural Areas*

In following issues, you'll discover:

- *How You Can Help Improve our Water*
- *The Ins & Outs of Native Vegetation & Invasive Weeds*
- *Program Components & Next Steps ...*

Legend Trail Pond: slope & toe protected with native vegetation

THE BASIN BULLETIN
Village of Orland Park, Illinois
...where you want to be
issue 1

New Program Launched to Improve Village Ponds

It may come as a surprise to Orland Park residents that your Village is home to more than 550 ponds and basins. Together with streams, lakes and wetlands, these basins perform essential stormwater management control as well as provide a natural enhancement that gives our Village its unique character and quality.

The Village owns and maintains 172 of these ponds and basins. Some are wet-bottomed facilities – meaning they constantly hold water – while others are dry-bottomed basins that are designed to fill with water only following large storm events. The maintenance and upkeep of these basins is managed by your Department of Public Works.

Varying levels of stormwater basin maintenance and stewardship have been performed by differing departments and contractors, resulting in uneven application of stewardship efforts and inconsistent results. Recognizing this and the impact it has on the appearance and performance of Village-owned stormwater basins, Orland Park has embarked on developing a comprehensive strategy to improve and maintain sustainable natural areas.

Orland Square Pond

So welcome to the first issue of "The Basin Bulletin." Over the course of the next few issues, you'll be provided with information on the program and its implementation along with key suggestions of how you can help the Village and your neighbors make the most of our stormwater basins and improve our water quality in the process.

Seeing the Need for Action ...

Understanding and acknowledging the need for a program wasn't difficult. A visit to your Village Hall – with the declining condition of the pond outside our own front door – illustrates the issue. Realizing that the conditions of our ponds would only worsen if the problem was not addressed, the Village Staff presented a management strategy to the Board of Trustees for its consideration. One of the first recommendations was a request that a professional consultant be hired to assist the Village with implementing a systematic plan to assess the 24 Village-owned Category A (*see next page*) stormwater facilities to achieve a consistent level of service and appearance. Following a detailed Request for Proposals for qualified consultants, the Village has engaged V3 Companies of Woodridge, IL to provide professional guidance. V3 ecologists and stormwater specialists already have begun efforts to assess and prepare management plans for the Village's Category A stormwater management basins.

Village Hall

Basin Best Practices Program

THE BASIN BULLETIN NEWSLETTER

Outline

- Issue 1 – Program Introduction & Explanation; Fall 2011
- Issue 2 – Best Management Practices; Winter 2012
- Issue 3 – Homeowner Role in Water Quality; Spring 2012
- Issue 4 – Native Landscaping; Summer 2012

Basin Best Practices Program

STAFF TRAINING PRESENTATION

Prepare 1 Hour Staff Training Presentation on Basin Best Practices

Conduct Training Day in Field to Perform Hands On Work

Basin Best Practices Program

STAFF TRAINING PRESENTATION

Basin Best Practices

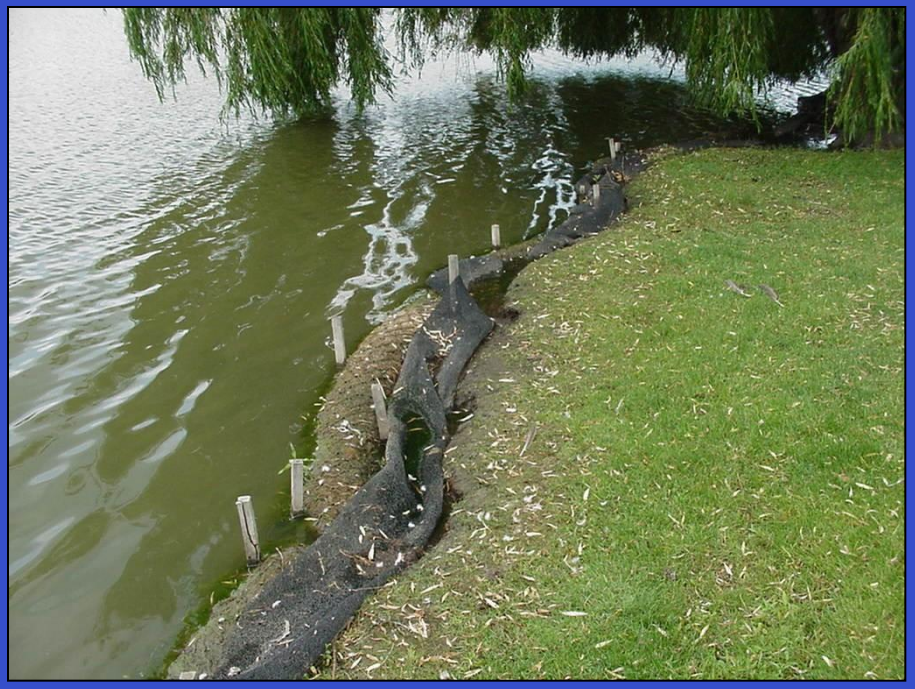
- Pond Design – No Mow Turf, Shallow Slopes w/ Natives, Zero Elevation Shelf, Emergent Wave Break

Basin Best Practices Program

STAFF TRAINING PRESENTATION

Basin Best Practices

- Installing Plugs and Plantings with Biologs is Critical



Basin Best Practices Program

STAFF TRAINING PRESENTATION

Basin Best Practices

- Cutting Woody Species – Winter Window, Apply Herbicide and Implement Alternate Stabilization Method

Basin Best Practices Program

STAFF TRAINING PRESENTATION

Basin Best Practices

- Green Grass promotes Green Ponds
- Algae treatment will increase where turf is fertilized to shore

Basin Best Practices Program

STAFF TRAINING PRESENTATION

Basin Best Practices

- Expanding Buffers – Reduce Mowing Areas

Basin Best Practices Program

IMPLEMENTATION

Spring 2011 Restoration of Village Hall Basin – Pilot Project

Before

1st Year Condition

Basin Best Practices Program

IMPLEMENTATION

Spring 2011 Restoration of Village Hall Basin – Pilot Project

Before

1st Year Condition

Basin Best Practices Program

IMPLEMENTATION

Spring 2011 Restoration of Village Hall Basin – Pilot Project

Before

1st Year Condition

Basin Best Practices 2011 Budget

Orland Park 2011 Budget = $500,000

Anticipated Use of 2011 Dollars

1. Basin Best Practice Program Consulting
   - $35,470
2. Village Hall Basin – Pilot Project
   - $67,850
3. Three (3) Additional Stormwater Basin Implementation Projects
   - $195,000
4. Remaining Budget to Be Allocated in 2012
   - $201,680

Basin Best Practices Outcomes

1. Assessment & Management Plans Completed for All 24 Category A Basins
2. Restoration & Enhancement of Four (4) Priority Basins in 2011
3. Communication & Education of Village Residents
4. Training for Basin Best Practices of PW & Parks Staff
5. Improved Allocation of VOP Manhours and Resources Toward Sustainable Practices
6. Long Term Strategy Outlined for Management of Village Owned Ponds

QUESTIONS?