PRESENTERS

Keith Jones
- V3 Companies since 1999
- Project Manager / Senior Ecologist
- Eastern Illinois University (BS)

Jonathon Zabrocki
- PE, CFM, CPESC, LEED (BD+C)
- Robinson Engineering since 2001
- Vice President / Director of Operations
- Romeoville’s Village Engineer since 2002
- Northwestern University (MS/BS)
Village of Romeoville

- Approx. 15 square miles
- 40,000 people (+12,000 in unincorporated areas)
- Part of the Des Plaines and the DuPage River watersheds
- Home of O’Hara Woods
  - A natural prairie grove containing undisturbed mesic upland forest and savanna once typical of the Northeastern Morainal Natural Division.
- Several significant intermediate water courses cut through the community including…
  - Mink Creek
  - Lily Cache Slough
ROMEOVILLE’S HISTORICAL POND PHILOSOPHY

Late 80’s / Early 90’s – please come to town
  ▶ Village accepted any and all pond designs

Mid-to-late 90’s – Village started having to provide long-term maintenance of these ponds (what do you mean we can’t mow everything?)
  ▶ Even worse, economic hard times limited the Village’s ability to properly maintain them and staff turnover even caused some to be forgotten about

Early 2000’s – Village started requiring the property owners to keep and provide for long-term maintenance (via Business Park Associations or HOAs)
  ▶ And all of you bugs and bunny people were selling the magical “no maintenance” wetland pond!!!
POPULAR RIDGE SUBDIVISION

Plans dated June 1989 (“as-constructed” plans 2000)

Two stormwater ponds were constructed

- North Basin
  - Isolated wetlands that were considered non-jurisdictional, but appear to have been augmented during the construction of the subdivision as part of a USACE permit

- South Basin - Shallow “wet bottom basin”

- Little or no know maintenance from construction to 2004
FAST FORWARD TO 2002 – 2003

Started to get resident complaints …

- “overgrown weeds”
- “too many critters”
- “mosquitos all the time”
- “collects trash”

Realize from my perspective (engineering) – the ponds worked great
Those we have held in our arms for a little while, we hold in our hearts forever.

5-19-93 – 8-3-01
In the fall of 2004, we brought in the experts...

V3 conducted field investigations to evaluate the naturalized stormwater management facilities.

**South Basin**
- The South Basin was intended to be a wet-bottom basin, however the facility currently functions as a naturalized dry bottom stormwater management facility with a very limited area of standing water. The shallow slopes of the South Basin are structurally sound with no evidence of erosion or instability. Visual observations indicate a stable hydrologic condition with limited fluctuation and draw-down times.

**North Basin**
- The basin exhibits 100% vegetative coverage along the prairie/turf-grass slopes and in the basin's wetland bottom. Currently, the facility supports a low quality plant community, dominated with mowed turf grasses on the slopes and weedy emergent species within the wetland basin. Kentucky Blue Grass (Poa pratensis) and Canada Blue Grass (Poa compressa) are the two dominant plant species along the slopes, while Common Reed (Phragmites australis) and Narrow-leaved Cattail (Typha angustifolia) make up the largest majority of the wetland plant community in the bottom of the basin (see Appendix II for the complete Floristic Quality Inventory).
5-YEAR MANAGEMENT PLAN

- Village needed to stop mowing everything

Goal was 2-fold:
- Be aesthetically pleasing
- Stop the resident complaints
  (and if we improved water quality and wildlife habitat – that would be great too – did I mention I am just an engineer?)

Plan for 2005 through 2010
- General Maintenance
- Supplemental Seeding / Planting
- Weed Control
- Controlled Burns
- Vegetation Monitoring / Reporting
- $50,000 budget
SO HOW DID WE DO?

- #1 – no more calls
- FQI of the South Basin…
  - 2005 = 14.0
  - 2009 = 28.3
  - 2019 = 34.56 with a mean C of 4.19 and 75% native species
  
  (this means basically nothing to me)
AFTER POPULAR RIDGE...

- We had issues in Nottingham Ridge… then Mather Park… then Lakewood Estates… and so on, and so on.
- Also, the Village had taken ownership / long-term responsibility for several large tracts of land (usually floodplains, wetlands, etc.) and we wanted to do something with them.
- Decided on a village-wide approach in 2011 utilizing V3…
FOUR STEPS PROCESS

- Evaluation
- Site Selection
- Execution
- Expansion
1. EVALUATION

2011 – Nine sites

- Native areas, “native areas”, mitigation areas, detention
- 3-100 acres/site

Stormwater and Native Areas Evaluation Report

- Site Evaluations
- Photographs
- Cost Estimate

Results

- Stormwater Function
- Ecological Function
Built 5-year restoration & maintenance cost schedule per site

- Engineer’s Opinion of Probable Construction Costs (EOPCC)
- Ecologist’s Opinion of Probable Maintenance & Restoration Cost (EOPMRC)

Basic annual maintenance costs

- Weed control
- Controlled burning
- Monitoring and reporting

Restoration costs

- Targeted weed control (woody clearing, common reed control, etc.)
- Planting
- Seeding
- Earthwork
## MARQUETTE'S CROSSING EAST
### Short-Term Management Recommendations
#### YEARS 1 - 5

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>EXPLANATION</th>
<th>SIZE (ACRES)</th>
<th>COSTS</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>TOTAL COST</th>
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</thead>
<tbody>
<tr>
<td>Prescribed Burn</td>
<td>Prescribed burn</td>
<td>4.50</td>
<td>$4,000</td>
<td>$0</td>
<td>$4,000</td>
<td>$4,000</td>
<td>$4,000</td>
<td>$4,000</td>
<td>$18,000</td>
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<tr>
<td>Annual Weed Control: Yrs 1-5</td>
<td>General chemical and mechanical weed control</td>
<td>4.50</td>
<td>$800/acre</td>
<td>$3,600</td>
<td>$3,600</td>
<td>$3,600</td>
<td>$3,600</td>
<td>$3,600</td>
<td>$18,000</td>
</tr>
<tr>
<td>Mowing</td>
<td>Mow in reseeding areas</td>
<td>2.70</td>
<td>$1,000</td>
<td>$2,000</td>
<td>$1,000</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$3,000</td>
</tr>
<tr>
<td>Supplimental Prairie Seeding</td>
<td>Establish prairie in weedy wet meadow areas</td>
<td>2.70</td>
<td>$2,500/acre</td>
<td>$6,750</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$6,750</td>
</tr>
<tr>
<td>Meetings &amp; Correspondence</td>
<td>Meetings &amp; correspondence</td>
<td>7.70</td>
<td>$1,000</td>
<td>$1,000</td>
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<td>$1,000</td>
<td>$1,000</td>
<td>$1,000</td>
<td>$5,000</td>
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<td>Annual Site Monitoring</td>
<td>Field evaluation of site</td>
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<td>$2,000</td>
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<td>$2,000</td>
<td>$2,000</td>
<td>$2,000</td>
<td>$10,000</td>
</tr>
<tr>
<td>Annual Report</td>
<td>End of year management &amp; monitoring report</td>
<td>7.70</td>
<td>$2,000</td>
<td>$2,000</td>
<td>$2,000</td>
<td>$2,000</td>
<td>$2,000</td>
<td>$2,000</td>
<td>$10,000</td>
</tr>
<tr>
<td><strong>Grand Totals:</strong></td>
<td></td>
<td></td>
<td></td>
<td>$17,350</td>
<td>$13,800</td>
<td>$12,600</td>
<td>$12,600</td>
<td>$12,600</td>
<td>$68,750</td>
</tr>
<tr>
<td><strong>Discresionary Spending Totals:</strong></td>
<td></td>
<td></td>
<td></td>
<td>$8,750</td>
<td>$3,000</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$9,750</td>
</tr>
<tr>
<td><strong>Manditory Stewardship Totals:</strong></td>
<td></td>
<td></td>
<td></td>
<td>$8,600</td>
<td>$12,600</td>
<td>$12,600</td>
<td>$12,600</td>
<td>$12,600</td>
<td>$50,000</td>
</tr>
</tbody>
</table>

**Notes:**
1. Items in red indicated discresionary tasks that can be eliminated, reduced, or spread over multiple years.
2. Annual manditory stewardship costs for years 2015-2019 are identical to year 2014; this assumes no major site changes discovered beyond 2009.
2. SITE SELECTION: THE THREE PILES APPROACH
THE THREE PILES APPROACH

Pile A – Doing Fine
  ▶ Fund First
  ▶ Ongoing maintenance or newly constructed

Pile C – Horrible
  ▶ Fund Second
  ▶ Targeted weed control

Pile B – Mixed Condition
  ▶ Fund Third
  ▶ Maintenance first, then restoration if budget allows
FINALIZE YOUR PLAN

- Group Discussion
- Site Selection
- Total Budget
- Annual Maintenance Cost
- Restoration Plan
  - Goals
  - Timeframe
3. EXECUTION
VILLAGE HALL

History

- Built in 2008/09
- Three Years of management, then left alone
- Common misperception: “Self-Maintaining”
- What was built?
- Starting Point: Floristic Data 2015

- Visually: Weedy
- Native Species: 47
- % Native Species: 70%
- Native FQI: 19.25
- Native Mean C: 2.81
- Natives w/ C-value >2: 24
VILLAGE HALL

Restoration & Maintenance Plan: 2015-2019

- Goals:
  - Begin annual weed control
  - Target invasive species
  - Restore existing native areas
  - Create prairie buffers
  - Stay within annual budget
  - Complete within 5-years

- Restoration of Area A
Basic Weed Control & Targeted Weed Control
- Common reed, purple loosestrife, and cattails
VILLAGE HALL: 2016

- Prescribed Burn: Spring
- Basic Weed Control & Targeted Weed Control
  - Common reed, purple loosestrife, and cattails
  - Woody Invasives
- Converted Turf to Prairie
- Drill Seed & Hydromulch
VILLAGE HALL: 2017

- Basic Weed Control & Targeted Weed Control
  - Common reed and cattails
- Partial Wetland Planting
- Mowing
VILLAGE HALL: 2018

- Prescribed Burn: Spring
- Basic Weed Control & Targeted Weed Control
  - Common reed and cattails
- Mowing
- Completion of Wetland Planting
VILLAGE HALL: 2019

- Basic Weed Control & Targeted Weed Control
  - Cattails
VILLAGE HALL

Results: 2015-2018

- Restoration of 14.13 acres
- Extension of existing walking path
- Eliminated erosion
- Condemnation to compliments

Floristic Data 2015-2018

- Weedy Dominance to Native Dominance
- Native species increased from 47 to 91
- % Native species increased from 70% to 72%
- Native FQI increased from 19.25 to 34.17
- Native Mean C increased from 2.81 to 3.58
- Natives w/ C Value >2 increased from 24 to 55
Basin A
4. EXPANSION

Two kinds

- Hold site
- New property

2005

- 1 site
- 3.4 total acres

2020

- 3 new sites
- 118 acre
We thought we were getting smarter by keeping the pond with the subdivisions. For the most part, that worked. Some HOAs provided maintenance. Some HOAs dealt with issues that came up. Some HOAs looked at their basins as an amenity.

But some did not....
WE STARTED TO GET BASINS BACK.

Various reasons…

- the entities went out of business
- the HOA disbanded
- the owners knew the right people

What we found is that the ponds we were getting back had similar issues

- Landscaping did not match the original intent of the designs
  - Planted incorrectly vs. poor maintenance practices (likely both)
- Now, the designs were surely getting better in the early- to mid-2000’s, but it was also a time of unprecedented growth. In 2006, the Village issued something like 1,500 single family home permits
  - In our defense, there wasn’t enough Village resources (staff, consultants, etc.) to watch every basin get planted and stay on it to verify that the responsible entity did what they were supposed to do with respect to yearly pond maintenance
We needed a new plan...

**Problem #1** - we had to solve was to be sure the ponds were being designed correctly

- Hydraulic design vs. planting plans
  - Generally this would be 2 different people if it was going to be done right – civil engineer and wetlands consultant

- So we started requiring developments that were proposing to use naturalized basins to use design professionals

- We also started requiring things that would give the pond a better chance of success....

We needed a new plan...
Table 2: Emergent Plugs - to be planted as depicted on the Native Landscape Plan Sheet 1.  

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Plugs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acorus calamus</td>
<td>Sweet Flag</td>
<td>1444</td>
</tr>
<tr>
<td>Sagittaria oedipus</td>
<td>Duck Potato</td>
<td>1444</td>
</tr>
<tr>
<td>Sorbus americana</td>
<td>Great Burdock</td>
<td>1444</td>
</tr>
<tr>
<td>Sorbus acutifolia</td>
<td>Hard Stem Burdock</td>
<td>1444</td>
</tr>
<tr>
<td>Spartina cynosuroides</td>
<td>Bur Reed</td>
<td>1444</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>7,200</td>
</tr>
</tbody>
</table>

Table 3: Upland Nurse Crop (Temporary Matrix Seed Mixture) - to be planted with Table 1 above.  

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>lbs per acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avena sativa</td>
<td>Seed Oats</td>
<td>30.0</td>
</tr>
<tr>
<td>Elymus canadensis</td>
<td>Canada Wild Rye</td>
<td>4.00</td>
</tr>
<tr>
<td><em>Elymus virginicus</em></td>
<td>Virginia Wild Rye</td>
<td>4.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>38.0</td>
</tr>
</tbody>
</table>

Table 4: No-Mow Fescue Seed Mix - to be planted as depicted on the Native Landscape Plan Sheet 1.  

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>lbs per acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Festuca rubra</td>
<td>Longfellow II Chewings Fescue</td>
<td>50</td>
</tr>
<tr>
<td>Festuca ovina</td>
<td>Nodding Fescue</td>
<td>50</td>
</tr>
<tr>
<td>Festuca arundinacea</td>
<td>Sheep's Fescue</td>
<td>50</td>
</tr>
<tr>
<td>Festuca rubra</td>
<td>Creeping Red Fescue</td>
<td>50</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>200.0</td>
</tr>
</tbody>
</table>

*All plant and seed substitutions must be approved by the Village prior to installation.*

#1 – Plant Materials by region
#2 – Site Preparation Requirements
#3 – Installation Requirements
#4 – Monitoring and Maintenance Plan that includes the following:
- Annual survey
- Compare to performance standards
- Reporting to the client AND the Village
- Management Requirements
- Generally a 3-year “period”

#5 – Cost Estimates (more on that later)
# 2019 Annual Plant Community Monitoring Report

## Table of Contents

- **Location, Introduction & Objectives**
- **Monitoring Methods & History of Plantings and Management**
- **Existing Conditions**
- **Performance Criteria**
- **Recommendations & Conclusions**

<table>
<thead>
<tr>
<th>Item</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location, Introduction &amp; Objectives</td>
<td>1</td>
</tr>
<tr>
<td>Monitoring Methods &amp; History of Plantings and Management</td>
<td>2</td>
</tr>
<tr>
<td>Existing Conditions</td>
<td>3</td>
</tr>
<tr>
<td>Performance Criteria</td>
<td>4</td>
</tr>
<tr>
<td>Recommendations &amp; Conclusions</td>
<td>6</td>
</tr>
</tbody>
</table>

**Attachments:**
- Exhibit A: Location Map
- 2019 Floristic Quality Data
- 2019 Site Photographs
- Exhibit B: Photograph Location Map
- Native Landscape Plan (2 sheets)
- Seed/Plug Tags
Sets the pond up for success by doing our best to be sure it is:

- Designed properly
- Built properly to some standard
- Managed properly

Also, the developer understands what is being required of them for a longer-term cost and maintenance perspective

SO WHAT DOES THIS DO FOR THE VILLAGE?
Likely there will be 2 landscape plans

- One for the site
- One for the basins
- We send this out to our specialized consultants for their review and comment
- The experts go back and forth to arrive at final design

A few caveats...

1. Not all basins are created equal
2. Balance BMPs vs. impact
3. Aesthetics vs. functionality vs. location

ALL OF THIS IS PREPARED AND REVIEWED IN THE DESIGN / APPROVAL PHASE
WE NEEDED A NEW PLAN...

**PROBLEM #2** - we had to pay for our high-priced specialized consultants for development in Romeoville...

- Every project has an EOPC prepared (unit price / unit quantity) from which the Village collects 4.5% for review/inspection fee.

- EOPC includes...
  - Water
  - Sewer
  - Storm
  - Pavement
  - Mass Grading
  - Stormwater Management
  - Erosion Control
  - Misc. Items including lighting, landscaping, etc.
To solve our problem, we started asking requiring the EOPC to include a few more items.

- Specifically call out items for naturalized basins (we would end up with 2 landscape estimates – site and pond.
- Specifically call out items associated with the 3-Year Maintenance and Monitoring
- Yearly Inspections
- Yearly Reporting
- Yearly Maintenance activities like burns, supplemental seeding, etc.

<table>
<thead>
<tr>
<th>6.0</th>
<th>ELECTRICAL</th>
<th>QUANTITY</th>
<th>UNITS</th>
<th>UNIT PRICE</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.01</td>
<td>SITE LIGHTING W/CONNECTIONS</td>
<td>1</td>
<td>Unit</td>
<td>$130,000.00</td>
<td>$130,000.00</td>
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</table>

<table>
<thead>
<tr>
<th>7.0</th>
<th>RETAINING WALLS</th>
<th>QUANTITY</th>
<th>UNITS</th>
<th>UNIT PRICE</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.01</td>
<td>RETAINING WALLS</td>
<td>2,793</td>
<td>sf</td>
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<table>
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<th>8.0</th>
<th>STORMWATER BASIN PLANTINGS</th>
<th>QUANTITY</th>
<th>UNITS</th>
<th>UNIT PRICE</th>
<th>COST</th>
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<td>1</td>
<td>LS</td>
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<td>$15,000.00</td>
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</tbody>
</table>

Subtotal Division 8.0: $111,160.00

| TOTALS:                           |          | 627,332.71 |
| 1.0     | EARTHWORK & EROSION CONTROL       |          |
| 2.0     | SANITARY SEWER SYSTEM             |          | $99,357.20 |
| 3.0     | WATER SUPPLY SYSTEM               |          | $263,560.00 |
| 4.0     | STORM SEWER SYSTEM                |          | $1,035,702.00 |
| 5.0     | PAVING                            |          | $821,081.25 |
| 6.0     | SITE LIGHTING                     |          | $130,000.00 |
| 7.0     | RETAINING WALLS                   |          | $50,274.00 |
| 8.0     | STORMWATER BASIN PLANTINGS        |          | $111,160.00 |

TOTAL: $3,138,487.16
CASE STUDY - ROMEOVILLE GATEWAY DEVELOPMENT

- Former Dump Site at IL 53 and Joliet Road
2018 REDEVELOPMENT

Several naturalized basins

- BMPs for water quality

Designed / Reviewed / Approved

Overall 4.5% Fee

- $141k +/-
  - For these improvements = $5,000 +/-

Bond also established for project that will cover the 3-year period
SUMMARY...

- Romeoville started down this path by reacting to resident complaints.
- We saw the proof that proper maintenance could make these types of basins an amenity to our community if they were constructed, managed, and maintained properly.
- We needed outside assistance to ensure our basins were being addressed correctly but we also needed that outside assistance to make sure the designs being proposed were going to be designed / built / managed in a fashion that would also make them an amenity to our community.
  - To do this, we needed to place the financial burden on the development itself which we were able to do by requiring the right items to be added to the EOPC.
QUESTIONS?

Contact Information

Keith Jones
Senior Ecologist, V3 Companies
KJones@V3co.com

Jonathon Zabrocki, P.E.
Consulting Village Engineer, Village of Romeoville
JZabrocki@Romeoville.org