



**AGENDA ITEM EXECUTIVE SUMMARY**

Agenda Item number: 3.c

Title: Natural Resources Commission Minutes – Information only

Presenter: AJ Reineking

Meeting: Government Services Committee

Date: October 22, 2018

Proposed Cost: \$ N/A

Budgeted Amount: \$ N/A

Not Budgeted:

**Executive Summary** *(if not budgeted please explain):*

A duty of the Natural Resources Commission is to advise and consult with the Government Services Committee. The September 13, 2018 Natural Resources Commission meeting minutes are attached.

**Attachments** *(please list):*

\* Natural Resources Commission Minutes – September 2018 meeting minutes.

**Recommendation/Suggested Action** *(briefly explain):*

For information only.

**MINUTES  
CITY OF ST. CHARLES  
NATURAL RESOURCES COMMISSION MEETING  
RALPH GRATHOFF, CHAIRMAN  
SEPTEMBER 13, 2018**

**Members Present:** Chairman Ralph Grathoff, Valerie Blaine, Kathy Brens, Jon Duerr, Heather Goudreau, Lee Haggas, Ray Hauser, Suzi Myers, Loren Nagy, Pam Otto, Caroline Wilfong

**Members Absent:** None

**Others Present:** Jeremy Craft, AJ Reineking

**Visitors Present:** None

**1. Call to Order & Pledge of Allegiance**

The meeting was convened by Chair. Grathoff at 7:02 p.m.

**2. Minutes Review and Approval**

Motion to approve and place into the public record the minutes of the August 9, 2018 Natural Resources Commission [NRC] meeting. Motion by Comm. Duerr, second by Comm. Brens to approve the minutes. Voice vote: unanimous; nays – none. Motion carried at 7:03 p.m.

**3. Old Business**

**A. Pumpkin Composting Event**

Comm. Goudreau confirmed the NRC's pumpkin composting event will be held on Saturday, November 3rd from 8:00 a.m. to 12:00 p.m. in the City's Public Works parking lot. Lakeshore Recycling Systems will drop off a container on Friday, November 2nd. The event will be publicized via flyers and on social media; the City's Communications Division will assist with publicity. Chair. Grathoff thanked Comm. Goudreau for coordinating this event.

**B. Storm Drain Stenciling/Medallions**

Comm. Goudreau provided a sample of one of the storm drain medallions obtained by SCARCE [School and Community Assistance for Recycling and Composting] via grant funding. The medallions are placed on top of storm drains or on the curb next to the storm drain with adhesive supplied with the medallions. Comm. Otto noted some of the storm drains in the City have the wording "No Dumping Drains to River" cast into the metal drains. The subject of storm drain stenciling was brought up by America in Bloom (AIB) judges during their visit to the City in July. Comm. Otto explained the medallions are generally made from plastic, aluminum or brass at a cost of \$4 - \$7 each. Comm. Blaine added that educating the public on where storm drain water drains would be an important part of this initiative. Mr. Reineking suggested the NRC may consider posting a short article on the City's website and/or blog with a link to additional information about the storm drain placards. Comm. Myers suggested using a diagram of the storm sewer system so residents can see where the water actually goes. Chair. Grathoff summarized by requesting the City obtain cost information including installation for 50 – 100 storm drain placards to determine if this would be budgetable or if a grant should be pursued. In the meantime, the NRC can utilize its social media presence for storm drain education.

**C. Social Media Presence Memorandum of Understanding**

Mr. Reineking explained the content of NRC's Facebook page is required to adhere to certain standards based on the "*Memorandum of Understanding, The City of St. Charles and St. Charles Boards and Commissions, Maintaining a Board or Commission Social Media*

*Presence.*” The NRC is the first City Commission to utilize social media. The City’s Communications Division Manager is the administrator of the NRC’s Facebook page, but any member of the NRC may have editing rights within the parameters of the above-referenced memo. Several Commissioners have photos to post. Chair. Grathoff requested a link to the NRC’s Facebook page from the City’s website; Mr. Reineking will find out how this is handled. A copy of the memo of understanding is attached to and made a part of these minutes.

#### **4. New Business**

##### **A. Urban Forestry Management Plan Review**

The following amendments will be made:

- Wording with the [former] Tree Commission will be amended to reflect the Natural Resources Commission.
- Reference and links to the Morton Arboretum website with regard to recommended trees species for planting by residents will be included in the Plan and on the NRC’s Facebook page.

Comm. Nagy requested clarification and provided suggestions regarding:

- Mulching – timing, completion City-wide, ongoing mulching.
- Preservation of private trees in construction zones – Mr. Reineking confirmed this is accurate and set forth in City Code.
- Invasive trees versus recommended tree species and the number of these types of trees to be planted in the City – specifically Callery Pear trees, Amur Cork trees, Mountain Ash trees and Fringe trees.
- Amend to include revised OSHA standards that require electric line clearing and arboriculture certifications for work done by arborists and contractors.

Chair Grathoff requested the inclusion of photos taken by Graf Tree Care into the Plan.

Chair. Grathoff noted none of the amendments to the UFMP are substantive as to require review or approval by City Council and/or Government Services Committee.

##### **B. Retention Pond Clean-Up**

Comm. Otto explained this topic is also related to AIB’s visit to the City. The site at the southwest corner of Route 38 and Randall Road is the location of a future Wahlburgers restaurant. There is a retention pond at this location that needs clean-up as there are overgrown reeds, the seeds of which are a concern as they may be drawn into the adjacent storm drains; stigmite plants and buckthorn are also overgrown.

Comm. Duerr expressed concern regarding adherence to City Code with regard to storm water retention. Mr. Reineking noted the development plans were approved by City Council; the restaurant building will be on the west side of the pond facing east toward Randall Road. Comm. Duerr stated the owner of the land should be responsible for pond clean-up. Comm. Brens suggested the NRC’s role could be advisory to the property owners with regard to pond clean-up. Comm. Otto asked if the City has any jurisdiction in terms of requiring clean-up of the retention pond. Mr. Reineking explained the City’s Community Development was involved in the project. Chair. Grathoff and Comm. Duerr noted the City’s construction permitting process will include stormwater management, etc., and the City’s Building and Code Enforcement Division will ensure the project adheres to City Code standards.

Comm. Otto restated there appears to be an opportunity for the NRC to ensure the retention pond area is cleaned-up and the right mix of plants are included in the plantings around the pond. Mr. Reineking will contact the City's Community Development Department to obtain additional information on the formal plans for the retention pond in connection with the restaurant project. This topic will be further discussed at the October NRC meeting.

## **5. Committee Reports**

### **A. Education Committee**

Comm. Myers reported she and Comm. Haggas attended a presentation regarding bioreactors; a copy of informational materials was distributed to all present. The Kane County Farm Bureau is interested in nutrient loss reduction, specifically nitrate loss. A bioreactor was installed on Silver Glen Road, and processes water through wood chips to retain nutrients. The bioreactor requires gravity, not electricity, and is buried underground so no crop acreage is lost. A copy of the informational materials are attached to and made a part of these minutes.

In connection with the City's solar plant, Comm. Myers provided information on a type of no-maintenance landscape grass specifically for solar plants called "solar farm mix." Perhaps these grasses can be included with the City's landscaping around the solar plant. The Kane County chapter of Pheasants Forever may be willing to partner with the NRC on a possible initiative for solar landscaping.

### **B. Langum Woods Clean-Up Committee**

Comm. Otto – no information reported.

## **6. Public Services Division Tree Activity Reports July 2018**

Motion by Comm. Nagy to approve the Public Services Division Tree Activity Reports and place into the public record, second by Comm. Brens. Voice vote: unanimous; nays – none. Motion carried at 8:06 p.m.

## **7. Additional Items**

### **A. Commissioners**

Comm. Hauser commented on the importance of milkweed in relation to the monarch butterfly. Comm. Blaine noted there will be a monarchs and milkweed event held by the Forest Preserve District of Kane County on June 2, 2019.

Comm. Goudreau informed the NRC there will be a green fair at the DuPage County fairgrounds this weekend, which will include monarch information, an enviroscape watershed model and a recycling event.

Comm. Blaine shared information and recommended a book entitled *The American Canopy – Trees, Forests and the Making of a Nation*. Comm. Blaine will give a talk on this book in November at the Batavia Public Library.

Comm. Nagy shared information on the second annual Impact Conference on Building Sustainable Landscapes. The event will be held October 16, 2018, at the Chicago Botanic Garden.

Comm. Brens shared information on an upcoming St. Charles History Museum event, Grave Reminders, which will be held October 6, 2018.

The NRC thanked Mr. Craft for the removal work and tree trimming recently completed.

**B. City Staff**  
None.

**8. Adjournment**

Motion by Comm. Brens to adjourn the meeting, second by Comm. Myers. Voice vote: unanimous; nays – none. Motion carried at 8:12 p.m.



RAYMOND P. ROGINA *Mayor*

MARK KOENEN, P.E. *City Administrator*

## Memorandum of Understanding

### The City of St. Charles & St. Charles Boards and Commissions Maintaining a Board or Commission Social Media Presence

#### Purpose

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This Memorandum outlines the expectations and responsibilities for developing and hosting a social media account(s) representing a City of St. Charles Board or Commission.

#### Objective of a Board or Commission on Social Media

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Members of City of St. Charles Boards or Commissions are appointed to advance the purpose of the Board or Commission as outlined in the City of St. Charles Municipal Code. Content on a Board or Commission social media account(s) shall support this purpose only.

#### Social Media Roles

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##### *Board or Commission Member*

Member(s) of the Board or Commission shall serve as editors/contributors, with authority to post comments, photos, graphics, video, audio and links on the social media account(s) that advance the purpose of the Board or Commission as outlined in the City of St. Charles Municipal Code.

##### *City of St. Charles*

The City of St. Charles Staff Liaison to the Board or Commission and/or the Communications Division Manager shall be the primary administrators of the Board or Commission social media account(s). As administrators, these City representatives have final oversight over the account(s) and may remove any posts, comments, photos, graphics, video, audio or links that do not meet City of St. Charles standards of professionalism. Administrators also have the authority to revoke the role of an editor/contributor or delete the account(s).

*Heritage. Community. Service. Opportunity.*

## Term

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The agreement outlined in this memorandum shall remain in place for the duration of the social media account(s).

## Signatures

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Name of Board or Commission

Board or Commission Representative

Date

City of St. Charles Department Director

Date

*Heritage. Community. Service. Opportunity.*

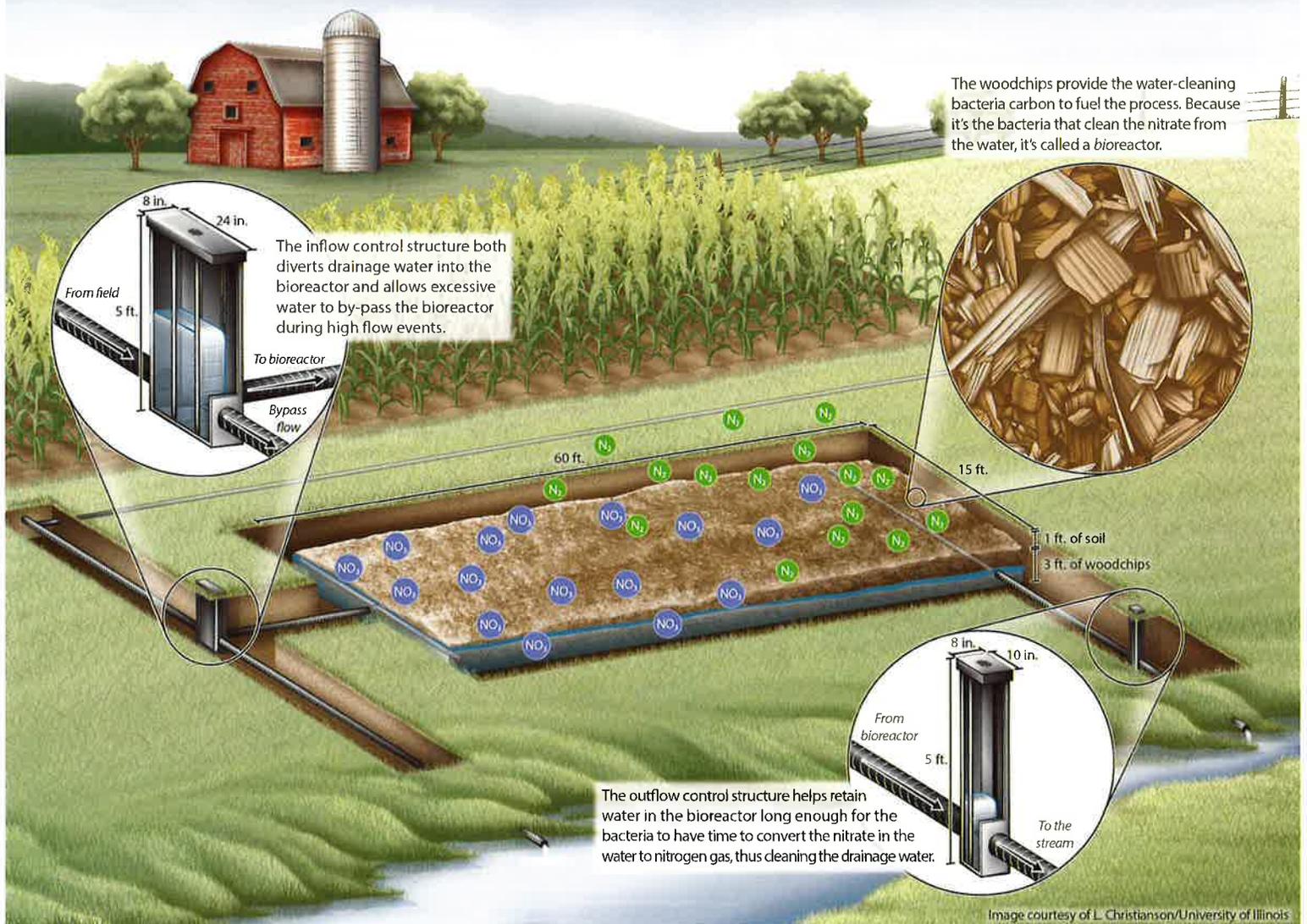
# Woodchip Bioreactors

## A science-based option to reduce nitrate loss

This fact sheet answers some of the most common questions about woodchip bioreactors using a recent survey of all published bioreactor research.

Woodchip bioreactors remove nitrate from subsurface (“tile”) drainage water without significantly impacting production ground or crop yield. At the edge of a field or between adjacent fields, tile drainage water is routed to a carbon-filled excavated hole or trench—the bioreactor. The carbon media, typically woodchips, provides fuel for natural bacteria to convert nitrate in the water to harmless nitrogen gas. This conversion is a natural part of the nitrogen cycle called the process of *denitrification*. Water control structures, typically located at the inlet and outlet of the bioreactor, manage the water flow. These structures help to provide the anoxic (low-oxygen) conditions required to enhance the conversion of nitrate to nitrogen gas. Understanding and acceptance of woodchip bioreactors has grown rapidly in the past five years due to work by and interest from researchers, state and federal agencies, and private agricultural and environmental groups.

The woodchips provide the water-cleaning bacteria carbon to fuel the process. Because it's the bacteria that clean the nitrate from the water, it's called a *bioreactor*.



The inflow control structure both diverts drainage water into the bioreactor and allows excessive water to by-pass the bioreactor during high flow events.

The outflow control structure helps retain water in the bioreactor long enough for the bacteria to have time to convert the nitrate in the water to nitrogen gas, thus cleaning the drainage water.

Image courtesy of L. Christianson/University of Illinois

## What impacts how much nitrate a bioreactor can remove?

The amount of nitrate removed from the water entering a bioreactor often depends on the retention time—how long the water stays inside. Because denitrification is a biological process, the bacteria need enough time to do their job well. For instance, water that stays in a bioreactor less than 6 hours has less nitrate removed from it compared with longer time periods (see graph). Retention time depends on both how fast the water is flowing and the size of the bioreactor.

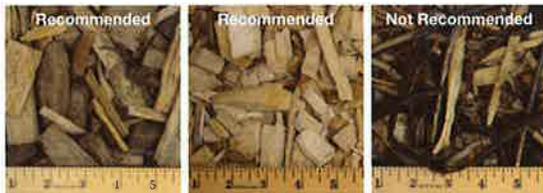
Water temperature also plays a major role in how quickly bacteria can remove nitrate. Cooler temperatures, like during springtime drainage, slow denitrification.

## What kind of woodchips are best in a bioreactor?

Softwood and hardwood chips have similar potentials to remove substantial nitrate in bioreactors. There is no significant difference between the two types (see graph). However, some kinds of wood, such as faster-growing species including willow, might leach more organics (that is, create more undesirable tea-colored outflow water) when a bioreactor is new. And some kinds of wood, such as cedar, may have antimicrobial or antifungal properties that have not fully been tested in a woodchip bioreactor.

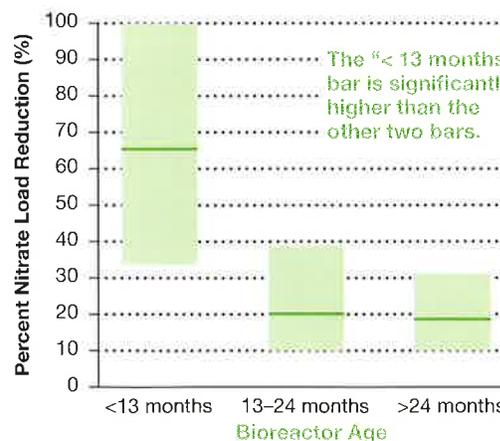
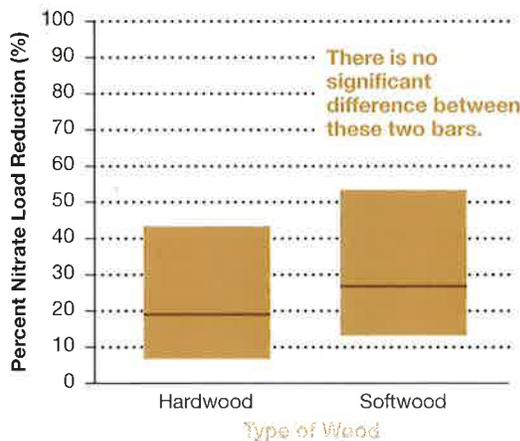
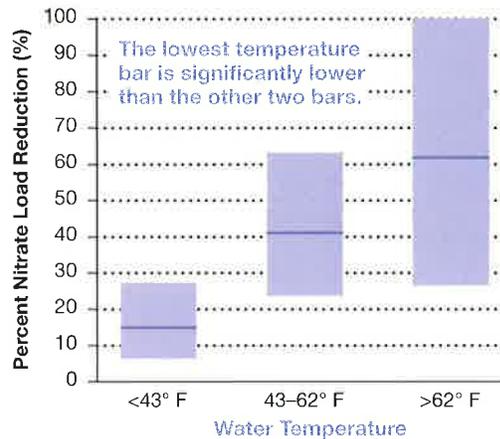
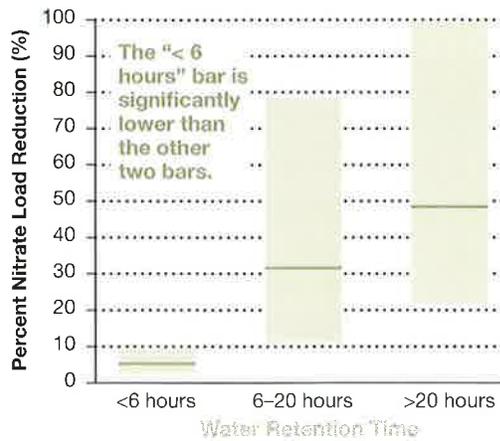
The size and shape of the woodchips used in a bioreactor are typically more important than the kind of wood. The best woodchips have these characteristics:

- Relatively free of fines and debris
- About 0.5–2 inches in size
- Square in shape



## Does the age of a bioreactor matter?

Bioreactors within about one year of construction remove more nitrate than older bioreactors (see graph). When the woodchips are new, they initially contribute more carbon to fuel nitrate removal. First-year performance can be misleading, so bioreactors are designed with longer-term performance in mind.



## Methods for Developing Scenarios

We assumed an average bioreactor size of 150 cubic yards, average bioreactor drainage treatment area of 50 acres, and average nitrate loss of 21 pounds of nitrogen per acre. Tile drainage was assumed to flow ten months of the year. We applied these assumptions to a wide inspection of the scientific literature that reported bioreactor nitrate removal in terms of the amount of nitrate removed from the water per the volume of the bioreactor per day (that is, pounds of nitrate-nitrogen removed per cubic yard of woodchips per day). This metric is useful to scientifically compare the performance of different bioreactors. We converted the scientific values using these assumptions to report values in terms of percent nitrate load reduction, a figure more useful for land owners, watershed planning, and creating policy. On the graphs, the line within the bars represents the average nitrate load reduction percent; the edges of the bars represent the 5th and 95th percentiles.

For more information on the original analysis, see this publication: Addy, K., A.J. Gold, L.E. Christianson, M.B. David, L.A. Schipper, and N.A. Ratigan. 2016. Denitrifying bioreactors for nitrate removal: A meta-analysis. *J. Environ. Qual.* 45(3): 873-881.

For more information, contact Dr. Laura Christianson, University of Illinois (LEChris@illinois.edu)

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Funding for this fact sheet was provided by The Illinois Nutrient Research and Education Council.