



# Windy City Biosolids/Compost

Fall 2022

## Micronutrients in Biosolids

Have you ever thought about plants taking their vitamins? Micronutrients for plants can be as critical as vitamins are for humans. Micronutrients are required in extremely small amounts by plants, but they play important roles, including DNA building and many biochemical processes, helping root and shoot growth. A recent study by the Metropolitan Water Reclamation District of Greater Chicago (MWRD) (T. Johnston, G. Tian, T. Voigt, P. Lindo, A. Cox, T. Granato, H. Zhang, and E. Podczerwinski (2022), "Assessment of availability of trace elements in turf soil after biosolids application", *Agronomy Journal*, 1–13, <https://doi.org/10.1002/agj2.21155>) highlighted that the use of biosolids can improve the copper (Cu) and zinc (Zn), and sometimes, iron (Fe) and molybdenum (Mo) nutrition of turfgrass.

This fascinating insight means biosolids will help the health and appearance of turfgrass. Biosolids provide organic matter to soil. Organic matter can improve so many soil health parameters, some of which might increase plant micronutrient uptake.

Trace elements were more accessible due to the chemistry of biosolids or because microbial populations were happier and shared their micronutrients with plants. This new research finding further supports our efforts to use air-dried biosolids as a topdressing for golf courses and athletic fields to improve the nutrition of turfgrass.



**Cover Image, Volume 114, Issue 5**  
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On the cover: North Shore Country Club in Glenview, IL routinely uses biosolids to improve turfgrass and soil health. In the article, "Assessment of availability of trace elements in turf soil after biosolids application" by Johnston et al., the lawn outside the clubhouse was used as a site in their micronutrient study, but biosolids are used throughout the golf course as well.

*Photo credit: Dr. Theresa Johnston*



## Mary Schmidt Community Sanctuary Biosolids help transform new greenspace in Alsip



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What was once an aging, underused parking lot with a truck center and I-294 border in the northeastern edge, supplying a deafening roar of traffic, is now a tree-lined channel, rippling with the movements of birds, fish, and boaters. *(continued on next page)*

## Mary Schmidt Community Sanctuary, *continued*

The juxtaposition of industry and nature is harsh. Each rain is a reminder of this abrupt contrast, as droplets would fall to the ground, pooling and flooding areas throughout the parking lot and truck center as they found a way to the Calumet-Saganashkee (Cal-Sag) Channel.

The Village of Alsip recognized a need for change and partnered with the Morton Arboretum and the MWRD to transform this space from moonscape to green space. The collaboration provided insights into community needs, ecosystem restoration, stormwater management, and biosolids reuse, resulting in a park that contains native prairie plants, trees, and shrubs with a walking path that meanders throughout the 2.5-acre space. Pools of rainwater are no longer flooding the pavement as they move toward the channel, but filter through the soil, which acts like a sponge.



*The parking lot at the Alsip boat ramp in March 2021 and transformed into the Mary Schmidt Community Sanctuary by August 2022.*

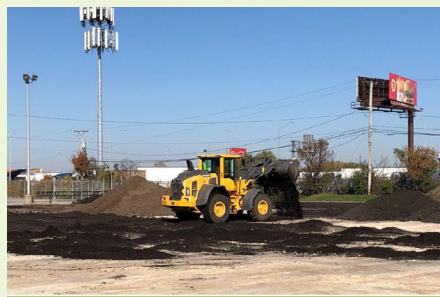
Construction began in October 2021. The pavement was removed, leaving a depression and compacted clay soil. The MWRD provided over 1,000 tons of EQ Compost and air-dried biosolids to the site to mix into 650 cubic yards of imported topsoil. This created a supportive growth medium for plants. Prairie and cover crop seeds were spread throughout the site in November and covered with straw erosion control blankets. Native trees and shrubs were planted to provide a future canopy and shaded park space.

The efforts began to show in May 2022, when the trees leafed-out and the grasses began growing through the blanket. The site quickly transformed into a green gateway next to the truck center. The improved stormwater management was observable immediately. The site, an ideal example of green infrastructure, served as a venue for the Chicago Region Tree Initiative to hold a workshop. The training at the Alsip Boat Ramp was geared toward landscapers, engineers, and others working in stormwater management from throughout the Chicago area attended. The training covered site restoration concepts from the design stage, to choosing native plants through site maintenance. Information on programs to improve stormwater in residential and urban areas by increasing permeability through added greenspace and plant selection was presented by MWRD stormwater engineer, John Watson.

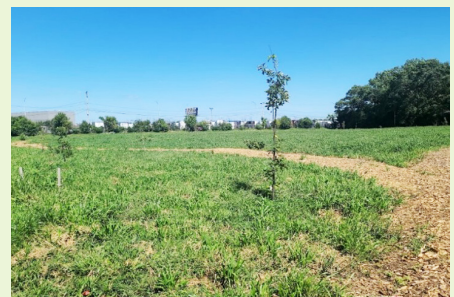
Today, a walk through the former parking lot is different than it was one year ago. *(continued on page 4)*



*Green Infrastructure Installation and Maintenance Training May 18, 2022 at the Alsip Boat Ramp. Sponsored by a grant from Great Lakes Restoration Initiative (GLRI).*



*Over 1,000 tons of air-dried biosolids and EQ Compost were used to create a fertile soil medium for establishment of native plants at the new park.*



*Paths wind through the former parking lot, inviting visitors to enter and enjoy the transformed space.*

**Zach Wirtz****Morton Arboretum  
Lisle, IL**

**MWRD:** You helped lead conversion of the parking lot into a native landscape at the Alsip Boat Ramp. How did you get involved in this project?

**Zach:** The Morton Arboretum, Chicago Region Trees Initiative (CRTI), Village of Alsip, and a number of partner organizations successfully applied for a Great Lakes Area Restoration Grant from the USDA Forest Service to do this work. As the CRTI Community Manager, one aspect of my work focuses on Green Infrastructure, which was relatively new to me when I joined the project in 2021. The experience has been wonderful, and our partners have undoubtedly made the project a success.

**MWRD:** What were the goals for the site?

**Zach:** The site goals were to reduce stormwater runoff into the Cal-Sag channel, add canopy cover to the area, and to train Green Infrastructure managers. This restored site has enough capacity to completely store a rainfall of about 2 inches, or 199,627 gallons, over the entire site. Based on our average weather, this equates to a runoff reduction of 531,276 gallons per year. That's approximately 9,660 bathtubs, or about one Olympic size swimming pool every year.

**MWRD:** Why did you choose to use biosolids and EQ Compost from MWRD in this project?

**Zach:** Over 200 trees and shrubs were planted, and the entire site was seeded with native prairie plants to create a unique Green Stormwater Infrastructure (GSI) site. Without the EQ biosolids and other soil amendments, this site would not be able to sustain the types of vegetation that will be most beneficial to the community.

**MWRD:** Will you consider using biosolids or EQ Compost in future projects?

**Zach:** We would absolutely consider using biosolids and EQ Compost in future projects. Everyone who worked with the soil component of this process lauded the products and we can see from the plant growth on site that they have vastly improved the existing soils.



**Zach Wirtz** is the Chicago Region Trees Initiative Community Manager at The Morton Arboretum. He has dedicated his professional career to working with trees and people.

**MWRD:** How did you select the plants for this site?

**Zach:** We worked with a landscape architect, Amanda Arnold from Plant Landscape Perspectives, and used our resources and knowledge at The Morton Arboretum to plant the right tree in the right place. We recorded soil conditions and soil moisture observations throughout the process to ensure we put the right trees and shrubs into spaces they would thrive.

**MWRD:** Will there be any monitoring efforts to determine the stormwater and/or ecosystem benefits of this project?

**Zach:** The site has been modeled a few times throughout the process to update the numbers as changes to the design have taken place. CRTI will continue to monitor tree survival and health into the future to learn more about how this rehabilitated soil has performed.

**MWRD:** Have you done similar projects in the Chicago area?

**Zach:** This is our first parking lot transformation of this type outside of The Morton Arboretum grounds. We do, however, have plans to replicate this project in other communities that face similar water issues as Alsip.

**MWRD:** What is the Chicago Region Trees Initiative and how does this project fit in with it?

**Zach:** CRTI is a partnership of communities, individuals, organizations, green industry, businesses, and governments working together to develop and implement strategies for a healthier, more diverse, more equitable urban forest by 2050.

Chicago's regional forest is critical infrastructure, a community asset that needs protection and improvement. Trees clean our air and water, reduce flooding, save energy, improve property values, provide habitat for wildlife, and contribute significant social and health benefits to people. In short, trees improve our quality of life. The GSI project at the Alsip Boat Launch is a great representation  
*(continued on next page)*

# TENTH ANNUAL SUSTAINABILITY SUMMIT 2022

## The 10th Annual Sustainability Summit highlighted green infrastructure, the anniversary of Calumet Water Reclamation Plant and Cal-Sag Channel, biosolids and more!

The 10th Annual Sustainability Summit was held on October 21 at the Ford Calumet Environmental Center, 11555 S. Stony Island Ave., Chicago, IL. Presenters covered environmental issues and winners of the Biosolids Beneficial Reuse and Sustainable Landscaping awards were announced. Dr. Theresa Johnston, MWRD Senior Environmental Soil Scientist, discussed biosolids and compost use as a sustainable practice; Bona J. Heinsohn, MA, CAE, Director of Governmental Affairs & Public Relations, discussed the work of the Illinois Farm Bureau; Rich Fisher, Principal Civil Engineer, discussed MWRD Partnership Programs, the role of green infrastructure, flood prone property buyouts, and how to apply for grants from Public Sector Resources and former MWRD Exec. Director Dick Lanyon talked about the history of the Calumet Water Reclamation Plant.

The top award for Sustainable Landscaping went to the Village of Elmwood Park. The village implemented a green infrastructure treatment train consisting of a detention basin, rain garden, and bioswales to manage overland flow stormwater runoff. The second award for Sustainable Landscaping went to the Village of Brookfield. The village implemented an initiative for paving its alleys with permeable brick pavers along the center of the alley and including aggregate beneath the pavement to provide storage for runoff.

The top award for Biosolids Beneficial Reuse was shared between the Village of Alsip and the Chicago Region Trees Initiative. They worked together to use EQ biosolids and compost to reconstruct topsoil and create a new, fertile growing space for over 200 trees, shrubs, and native prairie plants at the new Alsip Boat Launch. This project used biosolids, native vegetation and other vegetative green infrastructure features to intercept rainwater and reduce runoff to protect the quality of the Cal-Sag Channel, while also making the channel an attractive and accessible destination. Read more [here](#).

### Landscapers' Corner, *continued*

of how our region can achieve these goals: an unused space turned into usable, green, healthy infrastructure.

**MWRD:** What is your advice to municipalities and organizations who wish to do a similar project?

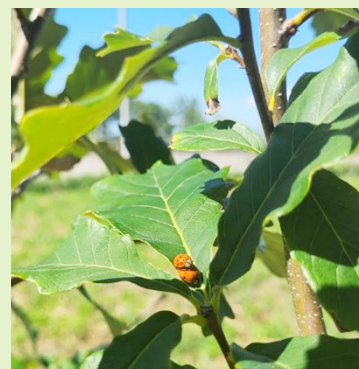
**Zach:** We know from multiple sources that our region has a high percentage of impervious surfaces that can contribute to heat, water, and air quality issues. Using Green Infrastructure to replace gray spaces is an excellent way to improve the quality of life of your residents, and we highly encourage communities to get involved. These projects take time and capital, but they are achievable, and the results are well worth the effort!



*L to R: MWRD President Kari K. Steele presents the Biosolids Beneficial Reuse Award to Village of Alsip Public Works Director Michael Fraider and Alsip Mayor John D. Ryan for Alsip's new boat launch.*



### Community Sanctuary, *continued*

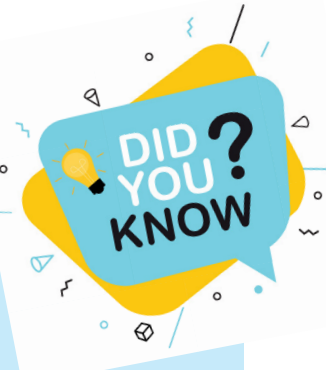


*Insects and other animals are utilizing the new habitat, which was previously a barren space.*

The highway traffic is muted by the sounds of crickets, grasshoppers, and birds. The eye is no longer drawn to the semi-trucks in the background because there is so much variety in plants and paths to see. The site has quite literally come alive. Even the air feels alive and has the aroma of fall, rather than of diesel and pavement. This area now hosts abundant life and will continue to grow into the future.

# PFAS Quiz

Poly- and perfluoroalkyl substances (PFAS), man-made chemicals used in consumer products, have been in the news lately, including stories about PFAS in biosolids. What are they and what does their presence in biosolids mean? Take the quiz below to test your knowledge and learn more.



1. Which of the following are a source for PFAS?
  - a. Cosmetics
  - b. Carpeting and furniture
  - c. Food packaging and cookware
  - d. Biosolids
  - e. A, B, and C
2. How do PFAS relate to biosolids?
  - a. There is no relationship.
  - b. PFAS, like other chemicals used in everyday life, enter wastewater and end up in biosolids. Biosolids reflect normal human activity, which includes trace amounts of these chemicals.
  - c. Biosolids concentrate PFAS from chemical manufacturing.
  - d. Biosolids have microorganisms that breakdown PFAS.
3. Why don't we incinerate biosolids to get rid of PFAS?
  - a. Incineration of biosolids can lead to PFAS entering the atmosphere, just moving the contaminants from one place to another, leading to air pollution.
  - b. Incineration adds to climate change, while land-application helps mitigate climate change.
  - c. Incineration does not solve the problem of PFAS exposure for humans because the sources of PFAS come from many areas of the modern world.
  - d. All of the above.
4. Why are biosolids land-applied?
  - a. Valuable organic matter and nutrients improve soil health.
  - b. Adding biosolids to the soil is a part of the natural system that recycles material through the ecosystem.
  - c. Landfilling of biosolids wastes this valuable resource and it makes biosolids generate greenhouse gases.
  - d. Biosolids can add to habitat by converting degraded land into usable land.
  - e. All of the above.
5. What should I tell someone if they are concerned about land applied biosolids?
  - a. The MWRD is following all state and federal regulations for biosolids and compost. They continue to participate in relevant research and to support U.S. EPA's ongoing risk assessments of PFAS in biosolids.
  - b. PFAS have been found in plant tissue and this is part of the reason the U.S. EPA is developing a risk assessment to ensure that human and environmental health are protected.
  - c. Eliminating PFAS at the source is the best way to reduce human exposure.
  - d. Ending biosolids land application and disposing of biosolids in a different manner may have a negative impact on our environment and health.
  - e. All of the above.

For more information please visit <https://mwrdd.org/biosolids-are-valuable-resource-recover> and [https://mwrdd.org/sites/default/files/documents/Pie%20Chart%20PFAS%202022%208-4-22\\_0.pdf](https://mwrdd.org/sites/default/files/documents/Pie%20Chart%20PFAS%202022%208-4-22_0.pdf).

Answers:  
1. e. Many consumer and household products are sources of PFAS, which enter our wastewater and pass into biosolids. While biosolids are a natural product, they are a reflection of regular human activities, which include traces of PFAS.  
2. b  
3. d  
4. e  
5. e

For more information on the use of EQ biosolids or to include them in your projects, please visit our website at [mwrdd.org/biosolids](https://mwrdd.org/biosolids) or contact:

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