

Riverwest Elementary School

Conceptual Schoolyard Redevelopment Plan

December 2023

Acknowledgments

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Community Partners

Arts @ Large
Boys & Girls Club of Greater Milwaukee
Girls on the Run
Milwaukee Art Museum
Milwaukee Bucks
Milwaukee Spurs Official Supporters' Club (OSC)

Riverwest Neighborhood Association
Riverworks Development Corp
Skylight Opera Theater
Urban Ecology Center
Victory Garden Initiative
Woodland Pattern

Special thanks to those supporting the schoolyard redevelopment planning:



Kevin Shafer
Bre Plier
Lisa Sasso
Jay Feiker

**Conceptual
Planning Sponsor**



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Maddy Day
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Table of Contents

1	Introduction and School Story
2	Redevelopment Process Timeline and Components
3	Planned Curricular Connections Benefits of Green and Healthy Schoolyards
4	Maintenance and Stewardship
5	Fundraising Targets
6	Project Timeline and Next Steps Supporting Organizations

Conceptual Plan Drawings:

Existing Site Plan

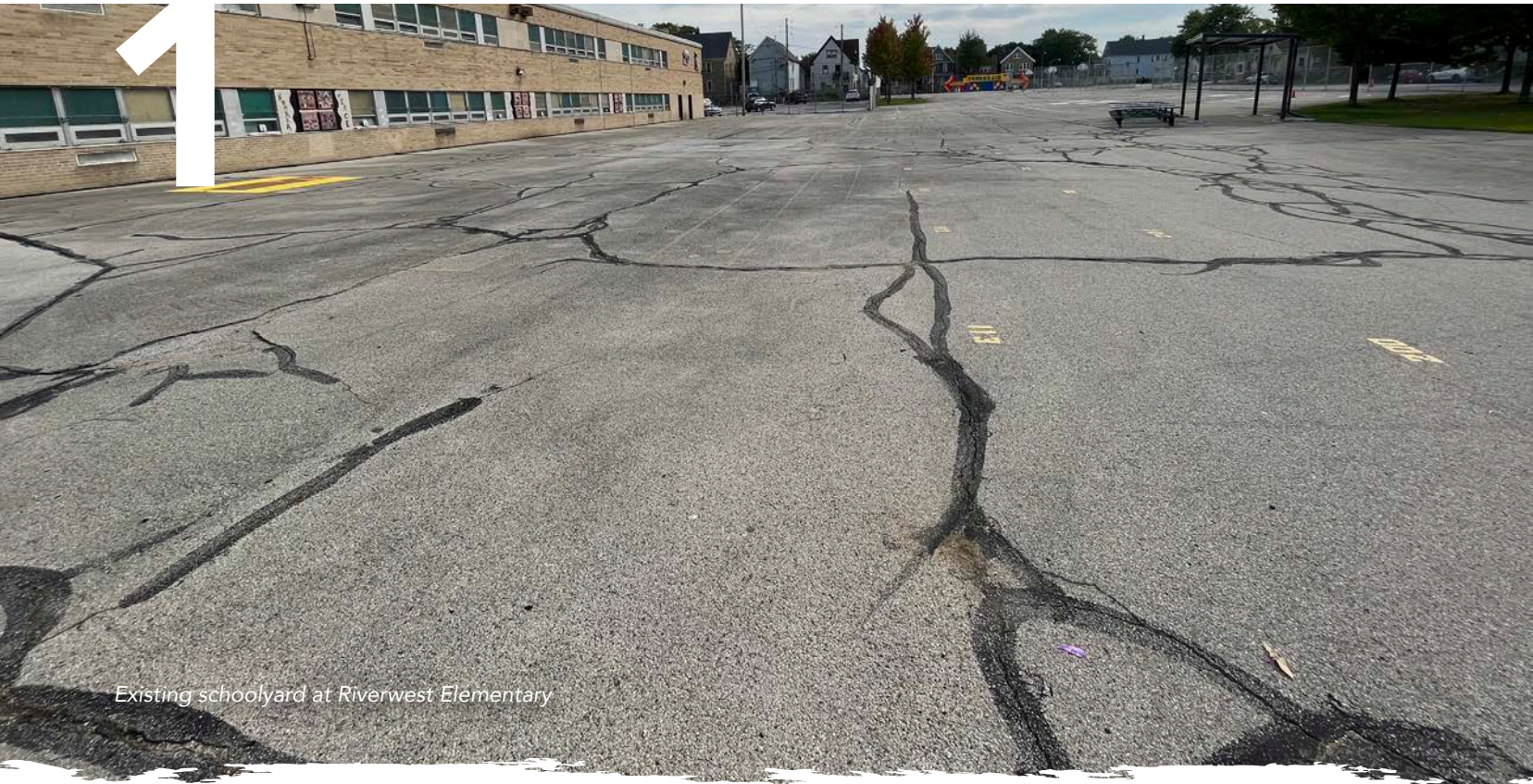
Proposed Site Plan

Stormwater Green Infrastructure Plan

Arts, Outdoor Education, and Community Engagement Plan

Land Acknowledgment

We acknowledge that Milwaukee lies on traditional Menominee, Potawatomi, and Ho-Chunk homeland along the southwest shores of Lake Michigan, part of North America's largest system of freshwater lakes. On this site, the Milwaukee, Menominee, and Kinnickinnic rivers meet, and the people of Wisconsin's Menominee, Ojibwe, Ho-Chunk, Oneida, and Mohican sovereign nations remain present to this day.

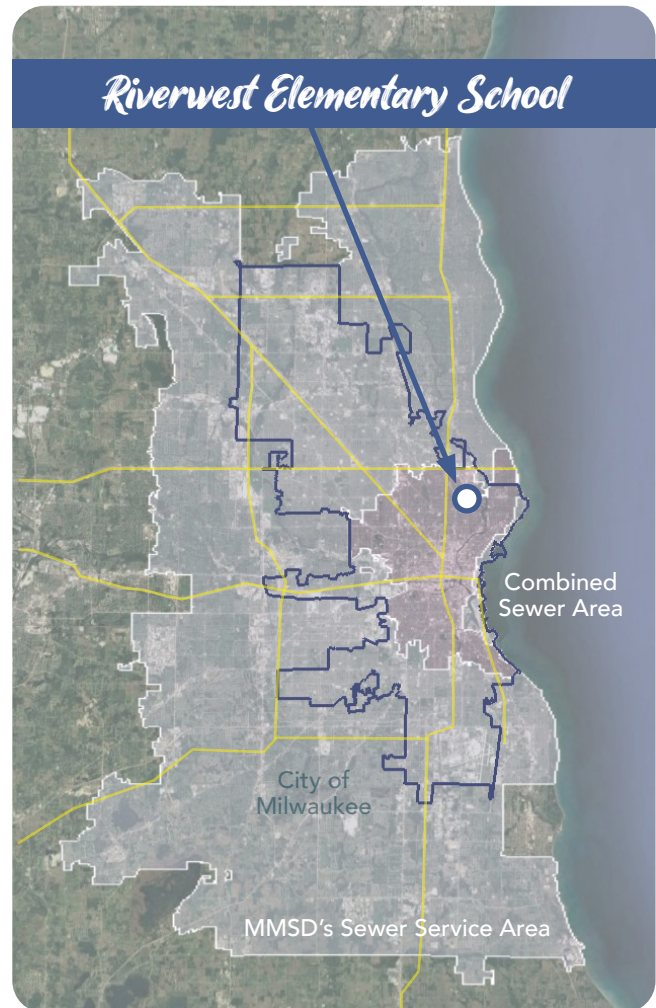


Existing schoolyard at Riverwest Elementary

Introduction

Impervious surfaces (hardscapes including asphalt and concrete) characterize so much of our built environment that we no longer even notice how they shape the contours of our urban communities. Excessive imperviousness leads to sewage overflows and basement backups, degrades the quality of our rivers and lake, and costs us millions each year in economic losses and infrastructure repair, all of which deter investment and impede socioeconomic progress. Schools surrounded by seas of splintering asphalt offer opportunities to replace imperviousness with beautiful, nature-inspired landscapes that increase urban biodiversity, educate, and inspire.

Through funding provided by the Milwaukee Metropolitan Sewerage District and the Fund for Lake Michigan, the nonprofit Reflo and its partners collaborate with five schools annually to develop conceptual schoolyard redevelopment plans that holistically address the issue of each school's imperviousness. This document compiles over a year of conceptual planning in order to provide a single, feasible vision for redeveloping a greener, healthier schoolyard. These projects also provide a multitude of STEAM (science, technology, engineering, arts, and mathematics) curricular connections as well as triple-bottom-line (social, environmental, and economic) benefits for the students, school, and community.



School Story

Riverwest Elementary School is a multi-ethnic, Title I school located in the Riverwest neighborhood of Milwaukee serving students in K3 Head Start through 5th Grade. At Riverwest, we create an inclusive environment to educate all students in our community while upholding the highest of academic and social emotional standards and supports. This is done in a culturally responsive manner, preparing all students for success above and beyond the classroom without remediation.

We believe that all students and families should feel valued, safe, and respected. Riverwest Elementary staff are committed to providing a safe learning environment, promoting respect for others, developing critical thinking, creating an appreciation of the arts and encouraging parent and community involvement.

We believe that all students can learn and value the diversity of our students' family background, socio-economic status, race, and gender. High expectations are held for all students and we achieve excellence in academics and advanced levels of performance through a curriculum that supports high standards. These values are represented by our school motto, the **Riverwest Way - Peaceful, Productive and College Bound.**

Through this commitment, support, and collaboration of families, educators, and community members, we believe our students will be empowered and inspired to be lifelong learners and our next generation of leaders. The opportunity to provide our students with these green spaces will allow us to further prepare our students to be future stewards of their environment.



Riverwest Elementary School

2765 N FRATNEY STREET,
MILWAUKEE, WI 53212

- Milwaukee Public School
- Grades: K3 through 5th
- 279 students
- 85% economically disadvantaged
- 21% special education
- Combined sewer area
- Milwaukee River watershed

2



Conceptual Redevelopment Plans

On an annual basis, the nonprofit Reflo and its partners, with the support of the Milwaukee Metropolitan Sewerage District (MMSD), works through the Green Schools Consortium of Milwaukee (GSCM) to select and collaborate with schools that are interested in redeveloping their schoolyards. Planning efforts incorporate creative applications of stormwater green infrastructure, outdoor educational elements, and other features that improve the social, environmental, and economic health of the school and community. With the approval of school and district administrators, schools apply for and are selected to receive conceptual planning support. The over year-long collaborative planning process has resulted in the production of this

conceptual planning document, which is intended to guide the multi-year redevelopment.

Riverwest Elementary's conceptual plan includes many stakeholder perspectives including those of students, parents, teachers, administrators, maintenance staff, neighborhood residents, and project partners. The plans are intended to be feasible and to support the school's and project stakeholders' needs and interests. Significant care was taken to consolidate project ideas and coalesce around one unified project vision. As the project progresses through the fundraising and detailed design phases, project components will be further defined and best fit to the amount of funds raised.

Riverwest Elementary School's Mission:

We believe that all students can learn and value the diversity of our students' family background, socio-economic status, race and gender. High expectations are held for all students: we achieve excellence in academics and advanced levels of performance through a curriculum that supports high standards.

Network of Support

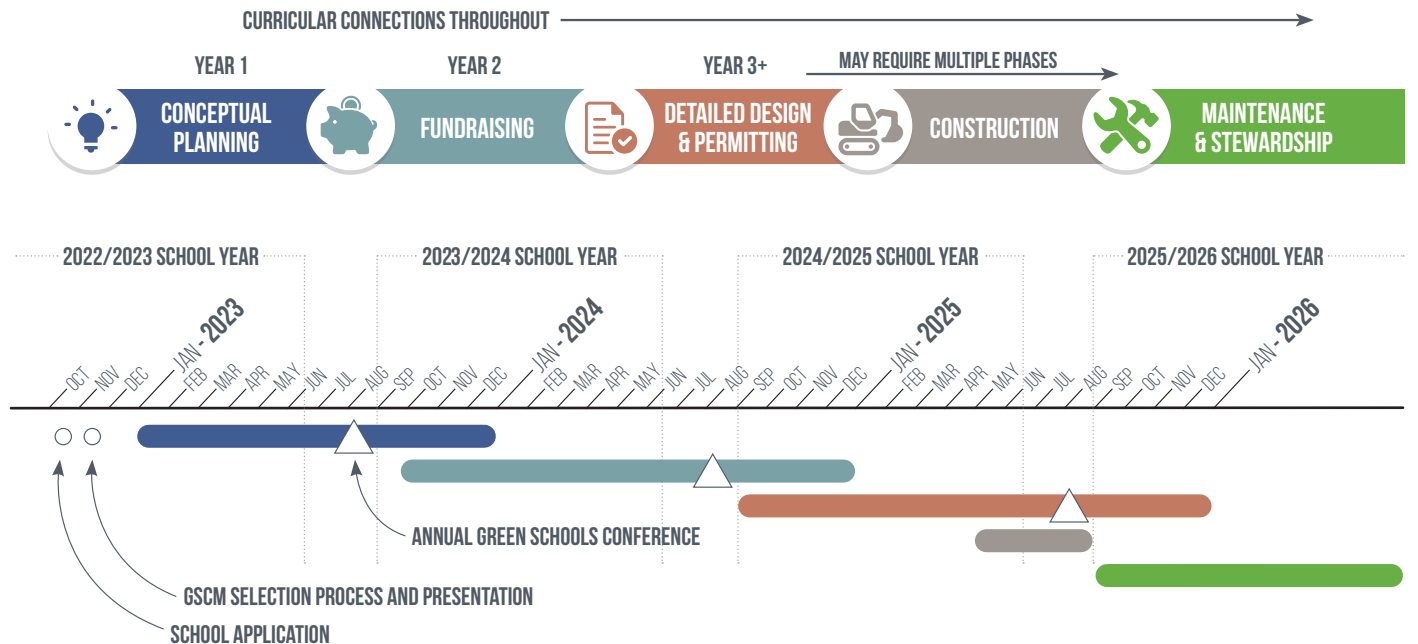
The GSCM is a local network of practitioners, agencies, and funders that are committed to supporting greener, healthier schools and ecoliteracy in the Milwaukee area. The GSCM gathers on a bimonthly and annual basis to share resources and lessons learned. The 7th Annual Green & Healthy Schools Conference hosted more than 600 participants and over 80 exhibitors. Each year the GSCM also hears from schools that are interested in schoolyard redevelopment projects and collectively decides which projects to support, in part, based on need and enthusiasm.



Project Development Process and Timeline

The following process diagram and timeline visualizes the major project development phases that a typical schoolyard redevelopment project in the Milwaukee area undertakes when supported by Reflo and the Green Schools Consortium of Milwaukee. The process begins in October with schools applying to receive a conceptual planning grant provided by Reflo and the

Milwaukee Metropolitan Sewerage District. Schools that advance to the second stage are then asked to present to the GSCM's Project Selection Committee on their need and enthusiasm. Following the selection, five schools are awarded the planning grant and begin the conceptual planning process with monthly Green Team meetings starting in January the following year.





Stormwater Green Infrastructure

Green infrastructure is a strategy that diverts stormwater runoff from entering the sewer system and **manages stormwater where it falls** through a more sustainable means, mimicking natural water systems. Green infrastructure can also provide creative opportunities to incorporate STEAM (science, technology, engineering, arts, and math) concepts in student learning and promote community engagement. The school grounds currently contribute a significant amount of stormwater runoff that can lead to area flooding and impaired water quality for our rivers and lake. The conceptual redevelopment plan includes multiple green infrastructure strategies to manage as much stormwater as feasible on the school grounds.

Riverwest Elementary School's conceptual plan calls for removal of approximately **27,200 sq. ft.** of asphalt and replacing it with new green space and mixed-use recreation and educational areas. The design includes two outdoor classrooms areas, an underground cistern, bioswales, and the addition of over 30 stormwater trees. The inclusion of a variety of native plantings allow for unique spaces on the schoolyard that can represent natural Wisconsin ecosystems, complete with student-created signage. The vision also includes a porous, synthetic turf soccer field to further manage rainwater where it falls. The plan manages approximately **137,615 gallons** of stormwater per rain event.

I believe in the power of learning through play. Riverwest's schoolyard redevelopment will be a revitalizing game changer for not only our students and families, but also our broader community. The greener schoolyard will allow for teaching of skills at a developmentally appropriate level, differentiation, and supporting a variety of sensory needs for all learners.

Helen Brusky – Speech Pathologist





Asphalt Removal

Hard surfaces like asphalt and concrete are the primary sources of stormwater runoff. Replacing hardscapes with more porous landcovers and other types of green infrastructure helps infiltrate stormwater into the ground and prevent it from running off into the sewer system. These changes promote better stormwater management, reduce the heat island effect, improve social-emotional outlook, improve urban habitats, and increase biodiversity.



Bioswales

Bioswales typically capture polluted stormwater runoff from roads and parking lots, infiltrating that water into the ground and cleaning it naturally. They are planted with vegetation that helps to soak up and clean the polluted runoff. They can be installed as meandering or straight channels depending on the land that's available, and are designed to maximize the time rainwater spends in the swale.



Porous Groundcover

Built surfaces that allow for stormwater to pass through them and infiltrate into the soil below, come in many varieties including synthetic turf, pavers, concrete, rubber, or asphalt. These surfaces allow for play or other uses while also supporting stormwater management that may otherwise be difficult to accomplish in areas that are heavily used.



Native Plantings

Vegetation native to Wisconsin has adapted to the region's climate and soils. Native plants typically have deeper root systems that help them withstand both droughts and heavy rains and also allow for greater stormwater infiltration. These native plant sensory gardens also promote biodiversity and provide habitat for pollinator species.



Rendering of Riverwest Elementary School's conceptual schoolyard redevelopment by CDS



Outdoor Education and Healthy Food Access

As illustrated in the infographics produced by Children & Nature Network and Cream City Conservation Corps (found in the Planned Curricular Connections section of this document), access to outdoor classrooms on school grounds can significantly **enhance learning** outcomes and social-emotional well-being. Raised bed gardens also offer the opportunity to provide low-cost, **healthy food** options to students, their families, and the surrounding communities. Successful Green Teams use school gardens as **educational opportunities** to explore topics such as water and life cycles, ecosystems, economics, geometry, conservation, and social studies.

Riverwest Elementary's schoolyard redevelopment includes **two outdoor classrooms** complete with seating and materials to support outdoor learning. A shade structure will cover one of the classroom areas. Raised beds and **mindfulness gardens** will provide pollinator habitat and a calm, relaxing area to support social-emotional well-being and other curricular connections. Nearby green infrastructure including stormwater trees, bioswales, and native plantings also serve as unique learning spaces. **Interpretative signage** throughout the schoolyard will support student-curated tours and encourage learning through self-guided exploration.

Green schoolyards promote academic achievement through hands-on, experiential learning and by enhancing the cognitive and emotional processes important for learning.

I'm most excited for the nature play area because you get to literally play with wood and you don't have to worry about falling off and hurting yourself. I also can't wait for the new climbing playground!

Demeria Johnson – Fourth grade student

I can't wait for the mindfulness garden and digging beds. I love to dig and I will be able to meditate in a safe, peaceful place where the other kids won't bother me.

Deasia Johnson – Fourth grade student





School Gardens

School gardens range in scale from the typical 4-by-8-foot raised bed garden, to hoop houses, to larger-scale greenhouses. Milwaukee-area schools have successful demonstrations of each scale of school garden and are best sized based on the interest level and capacity of the school's Green Team to manage the gardening operations.



Healthy Food Access

Some communities do not have easy access to low-cost, healthy foods. On top of providing engaging outdoor learning opportunities, school gardens are excellent opportunities to provide fresh, locally grown produce. Culinary arts lesson plans and tasting programs can demonstrate how healthy food can also be tasty food.



Culturally Relevant Curricular Connections

Developing lesson plans that are culturally relevant to students can help to create a sense of inclusiveness and promote positive learning outcomes for all students. For example, school gardens can include a diversity of crops that support exploration of different cultures and can demonstrate that food production is an important component of all cultures.



Outdoor Classrooms and Interpretative Signage

Outdoor classrooms can include natural green space and/or built shade structures. Seating and shade elements are common design features to accommodate longer class periods outdoors. Interpretative signage can serve to engage local artists and support learning not only by students, but also by the surrounding community.



Arts and Community Engagement

The arts can be a simple yet profound way to address **educational equity** in our communities. Through the use of arts-enhanced and arts-integrated classroom methodologies, teachers can implement strategies that support curricular connections, maximize student engagement, and further academic success. Green and healthy themes can be explored through visual and performing art forms as students build their knowledge, investigate human impacts on the environment, analyze perceptions, and enhance personal connections to the natural world.

Green and healthy schools provide a unique opportunity to support the development of **social-emotional learning** (SEL) through the integration of the arts and environmental education. Arts @ Large and Milwaukee Public Schools are committed to designing programs that promote SEL while creating supportive learning environments that address the needs of the whole child. School staff receive training about the impacts of trauma, explore ways to meaningfully **engage families**, and support youth through experiential learning to better position them for potential future careers.

Natural areas promote child-directed free play that is imaginative, constructive, sensory rich and cooperative.

Riverwest Elementary's new playground development is very exciting for both the students and the neighborhood. It's bringing the ability for new activities, and gathering space all while helping the environment. I expect to see pick up fútbol/soccer games, various community get togethers and several families utilizing the space during the Riverwest Farmers Market.



Ruth Weill – Community Member & Community Engagement Coordinator, Riverworks Development Corp



Social-Emotional Learning

The arts can be an incredible vehicle to model best practices in Social-Emotional Learning (SEL). SEL is the process of developing fundamental skills for life success within supportive, participatory learning environments. These skills include recognizing, managing emotions, setting/achieving goals, feeling/demonstrating empathy for others, establishing/maintaining positive relationships, and making responsible decisions.



Visual Arts

The use of visual arts strategies in the classroom can lead to greater engagement and deeper learning by the student. When paired with a project such as a schoolyard redevelopment, the works of art created by the students will not only beautify the space, but also provide a sense of ownership and accomplishment to celebrate with the students and their families. With the visual arts, the invisible becomes visible!



Performing Arts

The performing arts can be an incredible tool to activate spaces within the school environment. Theatrical performances and activities are a great way to explore a space and learn how to create meaningful interactions between students and nature, develop empathy for other forms of life, and learn to embrace sustainability as a community practice.



Exhibition

Creating student-led exhibitions is a great way to build an understanding of how nature sustains life. Through research and design, students can learn from content experts and share their experiences and knowledge through docent-led exhibits.



Rendering of Riverwest Elementary School's conceptual schoolyard redevelopment by CDS



Recreation and Other Site Improvements

Naturalized spaces provide opportunity for cooperative play and help children **develop resilience** skills as they navigate novel environments and encounter new challenges. Well-supported and engaging recreational opportunities can also help increase attention spans, improve social-emotional learning, and encourage team building. Creative applications of **visual arts** on walls and ground coverings can help guide students in independent and group physical fitness activities. These recreational improvements can enhance critical thinking and problem-solving skills, reduce instances of childhood obesity, and promote other **positive health outcomes**.

Riverwest's conceptual plan includes a **synthetic turf soccer field**, gaga ball pits, nature play areas, and colorful asphalt markings. The plan calls for **balance logs** and stumps to support gross motor development and the addition of musical instruments to provide a variety of play experiences. To increase accessibility to the schoolyard, **artistically designed** benches are intended to help beautify the space and provide areas for rest. Significant thought was put into the flow of how students move through the various spaces with special consideration for activities such as soccer, tag, and pavement marking activities like four square and hopscotch.

Meaningful, positive experiences in nature guide children, youth and adults toward care for nature.

I am excited for the soft ground soccer field / play area, and the short funnel ball game. The softer field will allow our older children to play soccer, flag football, and organize team games with less fear of injury than playing on concrete. The funnel ball will allow multiple smaller children to practice basketball shots safely in the tot area and give new options for children while they play at recess and after school hours.



Rodney Bourrage – Paraprofessional & Community Member



Nature Play

The incorporation of balance beams, loose parts, boulders, play mounds, and other nature-inspired features encourages imaginative, cooperative free play as students work together to explore their environment. These naturalized play features support the physical, social-emotional, and motor skill development of youth while promoting creativity and critical thinking.



Outdoor Recreation

Green schoolyards support a wide range of recreation activities that provide additional opportunities for student choice compared to traditional schoolyards. Youth may participate in quiet, solitary explorations or opt for organized group play. Varied recreation components allow children to build cooperation and negotiation skills and strengthen the connection between play and learning.



Game Play

Organized game play can provide students with the structure and support needed to approach challenges with confidence and build negotiation skills. Popular playground games like hopscotch and four square are often maintained while new games are also introduced through structured play activities. Youth are encouraged to experience the green schoolyard through free play and create new games led by their curiosity and imagination.



Mindfulness

Mindfulness practices encourage us to be present, attentive, and accepting. They provide an opportunity to learn how to be peaceful and kind while also reducing anxiety and promoting happiness. Areas designed for quiet play, sensory exploration, and reflection help students build self-awareness and emotional regulation by connecting with the natural world.

3



Planned Curricular Connections

It is important that the schoolyard redevelopment include plans for actively using the redeveloped space. This section provides a high level overview of how the school plans to make the most out of the new schoolyard components and connect the exciting redevelopment to the curriculum.

The envisioned outdoor spaces will help build strong school communities, promote Social-Emotional Learning (SEL), provide dedicated spaces for conflict resolution, and support a variety of curricular activities. These spaces may improve academic performance, and also positively impact a person's mental well-being. Children will be able to experience hands-on learning in natural areas while supporting their growth and development and drawing meaningful connections

to our neighborhood community. The green spaces will also provide a variety of structured and free-form learning activities including creative play and multi-sensory experiences in a vibrant, natural classroom.

Students will be excited to express what they've learned because they will have continuous exposure to plants, animals, and insects they have experienced within their school environment, providing opportunities to extend this learning at home. These safe and dynamic play environments will allow our students to practice and develop the social communication skills they need as they grow into adolescents and adults and provide learning opportunities that can inspire a love and appreciation for nature.

Riverwest Elementary has a great community within the school, and I think this updated playground would invite the greater community in. The students and staff are wonderful and it would just be fantastic to be able to provide them with this beautiful outdoor space. It would also enhance the beauty of the block and be an asset to the businesses along Center Street and the neighborhood community.



Jen Harter – Parent & Community Member

Early Childhood (K3 - K5)

The redeveloped schoolyard offers many opportunities to enhance our students' literature and language skills. Students will be encouraged to **observe** and make direct connections with their environment as they learn new **vocabulary**, science concepts, and how to communicate with each other.



Early childhood students will learn to embrace their **unique identities** while also celebrating their friends' differences as they build their social skills and develop their understanding of community. Children learn about **community helpers** and the role they play in keeping people, animals, and our environment safe and healthy.

Our youngest students will be encouraged to develop their **letter recognition** and writing skills through outdoor alphabet and writing games and **read alouds**. Children will investigate science concepts through play and curiosity. Children will search for evidence of **biodiversity** such as animal tracks, pollinator species, and a variety of colors found in nature, extending their learning of seasonal changes with nearby nature on the schoolyard. The vibrant, living classrooms will provide a variety of enrichment activities to support hands-on learning that activate the **curiosity and engagement** of our students.

The outdoor spaces will allow the teachers to take students outside for both hands on activities as well as large and small motor skill development. Large motor skills such as **climbing, jumping, hopping and running** are also key at this age level, and explored and strengthened with outdoor educational opportunities.

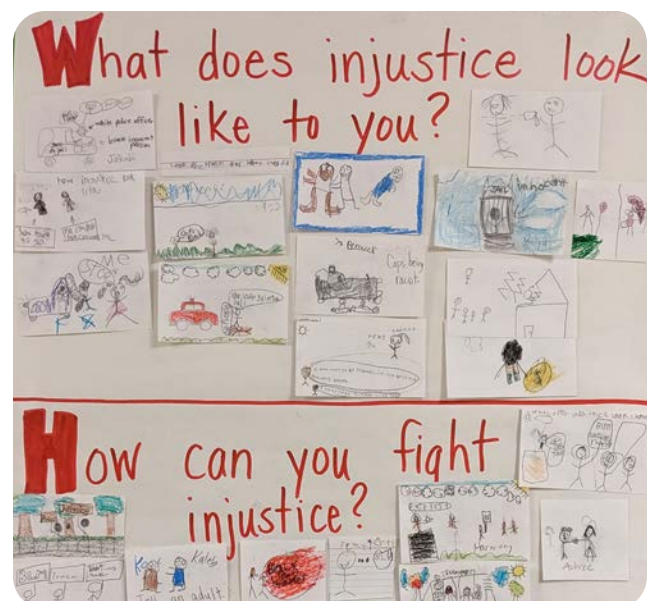
Lower Elementary (1st-3rd)

Children in grades 1 - 3 will use the green spaces while studying earth and physical science concepts such as **weather**, climate, and the water cycle. Children will plant, maintain, and observe a variety of species as they grow and see firsthand how they help manage stormwater in the area and **change throughout the seasons**.

Students will investigate the **ecosystem** around them as well as how a city works. The interactive play areas, native Wisconsin plants and trees and outdoor classroom will allow the various classes to study the **life cycles** of living things as they **grow and develop**.

Children will further develop their **descriptive language** skills as they engage all five senses to explore nature on the playground. Children may practice their **creative writing** through poetry with inspiration from nature as they observe native plants, insects, and varied textures on the schoolyard. They will also benefit from engaging with **reading buddies** in a relaxing reading location.

Students will further develop their connections with the environment through their geography units. After studying important landmarks in their communities and identifying features on schoolyard maps, students will investigate themes of **environmental justice**, community engagement, and discuss examples of how individuals can work together to create **positive changes** in their communities.



Upper Elementary (4th-5th)

The outdoor classroom and the green schoolyard will transform Riverwest Elementary School. The project will make physical changes to our outdoor environment that will create curricular and **experiential learning** opportunities that have never been possible on the school grounds before.

Children will discover living examples of **geometry, symmetry, and patterns** that support math curriculum across grade levels. Students will explore **green infrastructure** and the water cycle using the schoolyard as their classroom. These naturalized areas mimic Mother Nature to absorb rain water, showing the connection between our built environment and water resources, creating a safer play environment, and providing real-life examples of native species and their **adaptations**.



Students will dive into life science concepts of ecology, **food webs**, and species relationships as they observe nature on the schoolyard. In addition, children can learn the science of **sustainability** and environmental science by studying the living aspects of the new green spaces.



In grades 4-5, Social Studies instruction expands from students' **local community** to their city and state, the nation, and world. Children may use the schoolyard maps to identify states and their capitals. As the curriculum shifts to focus on Wisconsin, students will observe the **indigenous plants** throughout the schoolyard as part of their First Nations units of study.

Children will develop a deeper understanding of complex vocabulary and continue to build their background knowledge that is important for **reading comprehension**. They will meet with reading buddies, create **poetry** inspired by the nature found on the schoolyard, and have the ability to take a **"sensory field trip"** focused on using descriptive language to enhance their creative writing skills.

Our new playground will allow for every student to engage in outdoor activities that inspire them. Not every student wants to play sports and our plan is that this redeveloped playground will meet the needs of all of our students in a safe and creative manner.

Leticia Washington – Principal





Art Connections

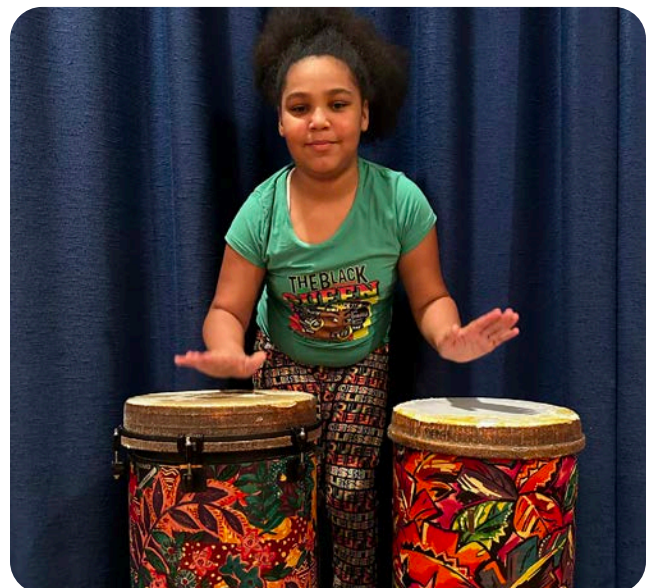
The arts will come to life with the redeveloped schoolyard. Children will be encouraged to exercise their visual art skills through observational drawings and learn the different **components of art** including texture, line, space, and color. Students will be able to use the natural outdoor spaces to experience and better express their **visual and auditory senses** through art media.



Emphasizing **experiential learning**, the revitalized schoolyard encourages movement and exploration of nature for inspiration in various artistic endeavors, from creative writing to poetry. Our youngest students may expand their **creative expression** throughout the schoolyard with chalk drawings and the creation of colorful murals with paint. Additionally, the green areas will host **performing arts** experiences, fostering positive community connections.

Students may even turn natural elements into captivating **art installations** and **sculptures** using found objects. These immersive experiences in nature are designed to significantly contribute to student development and connection to their community.

Riverwest Elementary School's commitment to a **culturally responsive** environment is exemplified by the accessible public spaces created through the redevelopment. The expansion of creative outlets beyond the school building not only benefits students and their families but also nurtures **empathy** and understanding of the wider world. Expanding a student's art and cultural experience is essential to making youth more compassionate to the wider world and these enhancements will make Riverwest's public spaces **inclusive** and accessible for all to enjoy.





Community Engagement

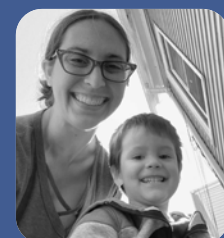
Riverwest Elementary works to provide family and community engagement opportunities in a safe and supportive climate. Collaboration with many **community partners** and neighborhood residents will enhance the opportunities to use the green spaces for events, classes, programming, and other activities. We envision our families experiencing the space during school events and volunteering to help with **maintenance and stewardship** activities, where everyone can enjoy a calming, natural environment.

Partnership with the Boys and Girls Clubs of Greater Milwaukee provides after school and summer camp experiences with **extended learning** opportunities through the Community Learning Center (CLC). After school, academics, homework help, tutoring, athletic, **recreational and art activities** are offered to the students who attend CLC programs. Children also may attend creative writing and poetry classes at Woodland Pattern Book Center and also work with Victory Garden who teaches the children about **gardening** and farm to table foods. In addition, Riverwest provides an after-school **Wellness Program** which focuses on health, exercise, and nutrition.

The redeveloped schoolyard will **welcome the community** to use the improved recreational facilities, and gathering spaces. Neighbors may stop by the Riverwest **Farmers Market** and enjoy the beautiful green spaces found on the school grounds. Cyclists and bike enthusiasts will enjoy a new site during the **Riverwest 24** annual bike ride. **Community members** and intramural teams will be able to use the new soccer fields and basketball courts to support team-building and skill-development activities while providing a health and wellness destination in the community.

Our hope is that through this investment in the Riverwest Elementary Schoolyard, youth will feel empowered to **advocate** for their own health and access to healthy spaces in their community. Continued collaboration with partners will provide rich connections with the neighbors and local businesses that will bring additional opportunities for engagement, **relationship-building**, and a strong sense of support in our community.

Currently we visit the schoolyard fairly often. Not only does my child attend Riverwest, but it's also one of the closest playgrounds to our home. We're excited about the project, especially the nature play and music play areas as we currently have to visit other neighborhoods for these types of play facilities. The addition of new green space on Center Street will also be a health and wellness boost to the neighborhood.



Health & Physical Wellness

At Riverwest Elementary, our goal is that students develop their overall fitness and learn to enjoy physical activity. Students will acquire much-needed motor skills in the new green spaces which will allow them to run, skip, jump, dance, and play with **fewer injuries** than they experienced before the redevelopment.

Children will learn to take turns, build patience, and follow rules as they practice **healthy risk-taking** and gain confidence through play and physical education classes on the revitalized schoolyard. They will learn game rules and procedures and participate in cooperative play in the gaga ball pit, basketball court, and soccer field.

The **synthetic turf field** will provide a safe, dedicated place for our community to play soccer and other team sports. Reorientated **basketball courts** will provide multiple play spaces to support games out-of-school times. Grassy areas will be available for yoga, mindfulness activities, and group games. A traffic garden will teach our learners **bike and pedestrian safety**, supporting physical education standards and building vital life skills.



Students will participate in creative and imaginative play as they practice their balance and coordination when playing on the **agility pathways**, logs, and stumps placed throughout the schoolyard. Teachers from all grade levels will lead **team-building** activities outdoors and use the variety of seating and natural spaces for learning.

The **gardens** will continue to impact students and the community's lives by promoting healthy eating. The addition of bike racks will assist with the promotion of a healthy, active lifestyle.

Social-Emotional Well-Being

The holistic schoolyard redevelopment supports our vision that all students will grow and learn within a safe, respectful, and responsible environment. **Self-confidence** and **self-worth** will develop as each student's **cultural identity** is both recognized and valued.



Our students practice **self-regulation** and mindfulness activities every day. Fresh air, green space, and native planting areas will support creative **mindfulness activities**, encouraging students to connect to their environment through sensory experiences enriched with bright colors, scents, and textures.

The natural spaces will provide calm environments where students can **reflect**, develop independent skills related to managing their feelings, and reset. **Buddy Benches** and social seating areas will help promote social skills, problem solving, and build friendships.

Students in all grades will benefit from taking brain breaks outdoors, practicing **yoga** on an open grass field, and enhancing their communication skills through turn-taking, participating in **restorative circles**, and cooperative play.

Benefits of Green and Healthy Schoolyards

Nature Can Improve Academic Outcomes

Spending time in nature enhances educational outcomes by improving children's academic performance, focus, behavior, and love of learning.

BETTER ACADEMIC PERFORMANCE

Learning in natural environments can:



BOOST PERFORMANCE
in reading, writing, math, science and social studies
1, 2, 3, 4, 5



ENHANCE
creativity, critical thinking and problem solving⁹

Seeing nature from school buildings can foster academic success^{6, 7, 8}

ENHANCED ATTENTION

Spending time in nature can help children focus their attention:



FOCUS AND ATTENTION
10, 11, 12, 13



ADHD SYMPTOMS
14, 15

The greener the setting, the better the focus^{14, 15}

INCREASED ENGAGEMENT & ENTHUSIASM

Exploration and discovery through outdoor experiences can promote motivation to learn:



INCREASED ENTHUSIASM FOR LEARNING
1, 16



GREATER ENGAGEMENT WITH LEARNING¹⁷



MORE IMPULSE CONTROL¹⁰



LESS DISRUPTIVE BEHAVIOR
20

Nature-based learning is associated with reduced aggression and fewer discipline problems:^{18, 19}



ADDITIONAL RESEARCH ON THE BENEFITS OF NATURE AVAILABLE AT childrenandnature.org/research

SUPPORTING RESEARCH

Lieberman & Hoody (1998). Closing the achievement gap: Using the environment as an integrating context for learning. Results of a Nationwide Study. *San Diego: SEER*.² Chawla (2015). Benefits of nature contact for children. *J Plan Lit*, 30(4), 433-452.³ Berezowitz et al. (2015). School gardens enhance academic performance and dietary outcomes in children. *J School Health*, 85(8), 508-518.⁴ Williams & Dixon (2012). Impact of garden-based learning on academic outcomes in schools: Synthesis of research between 1990 and 2010. *Rev Educ Res*, 83(2), 211-235.⁵ Wells et al. (2015). The effects of school gardens on children's science knowledge: A randomized controlled trial of low-income elementary schools. *Int J Sci Edu*, 37(17), 2858-2878.⁶ Li & Sullivan (2016). Impact of views to school landscapes on recovery from stress and mental fatigue. *Landscape Urban Plan*, 148, 149-158.⁷ Wu et al. (2014). Linking student performance in Massachusetts elementary schools with the "greenness" of school surroundings using remote sensing. *PLoS ONE* 9(10): e108548.⁸ Matsuoka, R. H. 2010. Student performance and high school landscapes. *Landscape and Urban Planning* 97 (4), 273-282.⁹ Moore & Wong (1997). Natural Learning: Rediscovering Nature's Way of Teaching. Berkeley, CA: MIG Communications.¹⁰ Faber Taylor et al. (2002). Views of nature and self-discipline: Evidence from inner-city children. *J Environ Psy*, 22, 49-63.¹¹ Mårtensson et al. (2009). Outdoor environmental assessment of attention promoting settings for preschool children. *Health Place*, 15(4), 1149-1157.¹² Wells (2000). At home with nature effects of "greenness" on children's cognitive functioning. *Environ Behav*, 32(6), 775-795.¹³ Berto et al. (2015). How does psychological restoration work in children? An exploratory study. *J Child Adolesc Behav* 3(3).¹⁴ Faber Taylor et al. (2001). Coping with ADD: The surprising connection to green play settings. *Environ Behav*, 33(1), 54-77.¹⁵ Amoly et al. (2014). Green and blue spaces and behavioral development in Barcelona schoolchildren: The BREATHE Project. *Environ Health Perspect*, 122,1351-1358.¹⁶ Blair (2009) The child in the garden: An evaluative review of the benefits of school gardening. *J Environ Educ*, 40(2), 15-38.¹⁷ Rios & Brewer (2014). Outdoor education and science achievement. *Appl Environ Educ Commu*, 13(4), 234-240.¹⁸ Bell & Dymont (2008). Grounds for health: The intersection of green school grounds and health-promoting schools. *Environ Educ Res*, 14(1), 77-90.¹⁹ Nedovic & Morrissey (2013). Calm, active and focused: Children's responses to an organic outdoor learning environment. *Learn Environ Res*, 16(2), 281-295.²⁰ Ruiz-Gallardo & Valdés (2013). Garden-based learning: An experience with "at risk" secondary education students. *J Environ Educ*, 44(4), 252-270.

Green Schoolyards Can Provide Mental Health Benefits

Green schoolyards can enhance mental health and well-being and promote social-emotional skill development.

GREEN SCHOOLYARDS HELP KIDS FEEL:

CALMER & LESS STRESSED^{2,3}

Views of green landscapes from classroom windows helped high school students recover more quickly from stressful events.⁴

POSITIVE & RESTORED³

Forest schools enhanced positive and decreased⁵ negative emotions.

RESILIENT²

Natural areas enhanced feelings of competence and increased supportive social relationships that help build resilience.²



GREEN SCHOOLYARDS PROMOTE SOCIAL-EMOTIONAL SKILLS

PRACTICE RELATIONSHIP SKILLS² *****

Children demonstrated more cooperative play, civil behavior and positive social relationships in green schoolyards.^{6,7}



DEVELOP SELF-AWARENESS & SELF-MANAGEMENT

Green schoolyards can reduce aggression and discipline problems.^{6,7}
Gardening at school helped students feel proud, responsible & confident.²



SUPPORTING RESEARCH

¹www.nlm.nih.gov/health/statistics/prevalence/any-disorder-among-children.shtml ²Chawla et al. (2014). Green schoolyards as havens from stress and resources for resilience in childhood and adolescence. *Health Place*, 28, 1-13. ³Kelz et al. (2015). The restorative effects of redesigning the schoolyard: A multi-methodological, quasi-experimental study in rural Austrian middle schools. *Environ Behav*, 47(2), 119-139. ⁴Li & Sullivan (2016). Impact of views to school landscapes on recovery from stress and mental fatigue. *Landscape Urban Plan*, 148, 149-158. ⁵Roe & Aspinall (2011). The restorative outcomes of forest school and conventional school in young people with good and poor behaviour. *Urban For Urban Gree*, 10(3), 205-212. ⁶Bell & Dymont (2008). Grounds for health: The intersection of green school grounds and health-promoting schools. *Environ Educ Res*, 14(1), 77-90. ⁷Nedovic & Morrissey (2013). Calm, active and focused: Children's responses to an organic outdoor learning environment. *Learn Environ Res*, 16(2), 281-295.

ADDITIONAL RESEARCH USED FOR THIS INFOGRAPHIC AVAILABLE AT childrenandnature.org/gsybibliographies

C&NN recognizes that not all studies support causal statements.

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INFOGRAPHICS PROVIDED BY THE CHILDREN & NATURE NETWORK

Supporting references and research on the benefits of nature can be found at childrenandnature.org/research



Green Schoolyards Encourage Beneficial Play

Natural areas promote child-directed free play that is imaginative, constructive, sensory-rich, and cooperative.



ENCOURAGING IMAGINATIVE, COOPERATIVE FREE PLAY

GREEN SCHOOLYARDS CAN:

- Accommodate different ages & abilities ^{2,3}
- Sustain children's interest ^{4,5}
- Offer a variety of options that appeal to a wide range of play interests ²
- Promote cooperation & negotiation ^{4,6}
- Strengthen links between play & learning ^{2,3,4}

GREEN SCHOOLYARDS CAN SUPPORT DIFFERENT TYPES OF PLAY ^{2,4,7,8}

DRAMATIC PLAY

Loose parts—such as sticks, stones, acorns & pinecones—engage the imagination.

EXPLORATORY PLAY

Natural areas provide opportunities for children to explore.

SOLITARY PLAY

Areas under bushes or other nooks allow children to engage in alone time and contemplation.

CONSTRUCTIVE PLAY

Building things out of natural materials helps children learn hands-on skills.

LOCOMOTOR PLAY

Natural items such as logs and rocks can be carried. Looping paths allow walking, running and biking.



SUPPORTING RESEARCH

¹Rideout et al. (2010). Generation M2: Media in the lives of 8-18 year olds. Kaiser Family Foundation <https://kaiserfamilyfoundation.files.wordpress.com/2013/01/8010.pdf> ²Dyment & Bell (2008). Grounds for movement: Green school grounds as sites for promoting physical activity. *Health Educ Res*, 23(6), 952-962. ³Stanley (2011). The place of outdoor play in a school community: A case study of recess values. *Child Youth Environ*, 21(1), 185-211. ⁴Dennis et al. (2014). A post-occupancy study of nature-based outdoor classrooms in early childhood education. *Child Youth Environ*, 24(2), 35-52. ⁵Luchs & Fikus (2013). A comparative study of active play on differently designed playgrounds. *J Adven Educ & Outd Learn*, 13(3), 206-222. ⁶Acar & Torquati (2015). The power of nature: Developing pro-social behavior towards nature and peers through nature-based activities. *Young Children*, 70(5), 62-71. ⁷Chawla (2015). Benefits of nature contact for children. *J Plan Lit*, 30(4), 433-452. ⁸Cloward Drown & Christenson (2014). Dramatic play affordances of natural and manufactured outdoor settings for preschool-aged children. *Child Youth Environ*, 24(2), 53-77.

Green Schoolyards Can Increase Physical Activity

Green schoolyards can promote physical activity by offering a variety of active play options that engage children of varying fitness levels, ages, and genders.

85%

OF EDUCATORS AND PARENTS

said green schoolyards support a wider range of play activities than other types of schoolyards.²

MORE OPTIONS, MORE ACTIVITY

PROMOTE

running
jumping
climbing
lifting²

trees
logs
shrubs
rocks

Variety in landscaping increases variety in active play.²

MEETING DIVERSE & CHANGING NEEDS

GREEN SCHOOLYARDS COMPLEMENT CONVENTIONAL PLAYGROUNDS WITH OPPORTUNITIES FOR

LIGHT & MODERATE PHYSICAL ACTIVITY

that are more appealing to some children.^{3,4}

GREEN SCHOOLYARDS CAN CONTRIBUTE TO

GIRLS' PHYSICAL FITNESS ★★★★★

Physical activity decreases as children grow, especially for girls. Green schoolyards sustain activity as children age and preferences change.^{5,6,7}

SUPPORTING RESEARCH

¹www.cdc.gov/physicalactivity/data/facts.htm ²Dymnt & Bell (2008). Grounds for movement: Green school grounds as sites for promoting physical activity. *Health Educ Res*, 23(6), 952-962. ³Barton et al. (2015). The effect of playground- and nature-based playtime interventions on physical activity and self-esteem in UK school children. *In J Environ Health Res*, 25(2), 196-206. ⁴Dymnt et al. (2009). The relationship between school ground design and intensity of physical activity. *Child Geogr*, 7(3), 261-276. ⁵Brink et al. (2010). Influence of schoolyard renovations on children's physical activity: The Learning Landscapes Program. *Am J Public Health*, 100(9), 1672-1678. ⁶Mårtensson et al. (2014). The role of greenery for physical activity play at school grounds. *Urban For Urban Gree*, 13(1), 103-113. ⁷Pagels et al. (2014). A repeated measurement study investigating the impact of school outdoor environment upon physical activity across ages and seasons in Swedish second, fifth and eighth graders. *BMC Public Health*, 14(1), 803.

4



Maintenance and Stewardship

Green infrastructure features require varying levels of maintenance and offer opportunities to engage youth in active environmental stewardship, raise awareness of environmental impacts, and make meaningful curricular connections. Some maintenance activities such as weeding, debris pickup, inspection of plant health, crop harvesting, watering, etc. can further engage faculty, students, parents, and the surrounding neighborhood in school activities and outdoor learning, while also sharing the responsibility of maintaining the new green space. It should be noted that generally, the school's Green Team will be responsible for additional maintenance needs.

To promote the longevity and active use of the redeveloped schoolyard, recommendations were made to provide features that match the maintenance capacity and planned curricular connections of the school and community. The following section provides a summary of seasonal and monthly maintenance needs for the school's new green features. Comprehensive maintenance plans will need to be developed in the project's detailed design phase to fully support the new elements.



Well-maintained green infrastructure and play spaces can help reduce the potential need for costly repairs.





Asphalt Removal

Ongoing/Monthly Considerations:

Depending on the groundcover replacement such as grass, woodchips, permeable pavement, etc., the replacement may require additional maintenance such as grass cutting, woodchip replacement, vacuuming, etc.

Seasonal/Annual Considerations:

Some asphalt areas at schools are used in winter as snow management locations. Confirming the seasonal use of the asphalt areas can help with determining the feasibility of asphalt removal and/or ways to adjust snow management.



Tree Plantings

Ongoing/Monthly Considerations:

Newly planted trees will require protection from children wanting to play around them for the first few years. Strategies such as temporary or permanent fencing, signage, or planting boxes can help allow the trees space and time to grow.

Seasonal/Annual Considerations:

Berries, leaves, sticks, and branches often fall from trees during spring or fall. The litter may not need to be actively managed. However, large amounts may need to be composted or discarded.



Porous Groundcover

Ongoing/Monthly Considerations:

Debris and sediment washing into pavement pores can lead to clogging — monthly inspection is recommended to remove leaves, woodchips, and other debris. Also monitor for turf sections that need to be pinned down or replaced due to damage/heavy use.

Seasonal/Annual Considerations:

Reapplication or raking of the rubber pellets may be needed to keep the synthetic turf weighed down. Replacing sections of turf or re-securing to the perimeter edging by trained technicians.



Native Plantings

Ongoing/Monthly Considerations:

Similar to raised bed gardens, native plantings will require ongoing weeding (weekly) as they mature. Determining who will be responsible (ideally multiple people/groups/classrooms) beyond planting is important, especially over summer months.

Seasonal/Annual Considerations:

Native plants are more resilient and require less ongoing maintenance as they mature. One to three years of weeding is required initially, but long-term expected maintenance is minimal.

5



Rendering of Riverwest Elementary School's conceptual schoolyard redevelopment by CDS



Fundraising Targets

An important component of the conceptual planning effort was to develop plans that are feasible. Estimates of funding requirements were discussed throughout the planning effort in order to keep the designs within reasonable cost ranges. The following table of estimated costs are presented in terms of "fundraising targets" to better represent the approximate budgetary nature of the numbers.

It should be noted that the following funding targets represent conceptual, high-level estimates with many assumptions, not consultant or contractor bids based on detailed design work, which would be more accurate.

The following estimates are expected to vary from actual incurred expenses. However, significant consideration and review of the fundraising targets were provided from engineers, contractors, and school administrators with experience in schoolyard redevelopment projects.

Although the following fundraising targets are intended to incorporate reasonable cost expectations for schoolyard redevelopment, changes to the design, contracting requirements, or amount of in-kind contributions can significantly impact the following numbers either upward or downward.



It's ideal to raise enough funds to be able to complete the schoolyard redevelopment in one pass; however, in some cases, projects can take several years to be completed due to funding constraints.

Invitation for Support

We invite your enthusiastic review of this conceptual plan document and welcome any questions you may have on the schoolyard redevelopment. Please visit Reflo's website for status updates and how to donate to the schoolyard redevelopment project:

www.RefloH2o.com



Conceptual Redevelopment Plan Fundraising Targets

	Apx. Fundraising Targets	Apx. In-kind Contribution
Stormwater Green Infrastructure		
Asphalt removal, sawcutting, mobilization, etc.	\$ 175,000	
Soil, grass, and other porous resurfacing	\$ 60,000	
Trees (and protective fencing)	\$ 30,000	
Bioswales (native plantings and protective fencing)	\$ 100,000	
Porous Pavement - Syn. Turf Soccer Field	\$ 150,000	
Underground cistern	\$ 85,000	
Engineering, surveying, and construction admin.	\$ 55,000	
Facilities project management	\$ 10,000	\$ 28,000
Continued Reflo project development support	\$ 25,000	\$ 25,000
Project signage	\$ 10,000	\$ 7,500
Demonstrations, workshops, tours		\$ 5,000
Water-focused curricular activities	\$ 10,000	\$ 10,000
Vegetation establishment	\$ 10,000	\$ 5,000
Stormwater Green Infrastructure Subtotal	\$ 720,000	\$ 80,500
School Gardens & Healthy Food Access		
Raised bed gardens	\$ 2,500	\$ 5,000
School Gardens & Healthy Food Access Subtotal	\$ 2,500	\$ 5,000
Recreational Improvements		
Gaga Ball pit (1) with ADA door	\$ 5,000	
Asphalt crackfilling and striping	\$ 35,000	
Tot lot improvements	\$ 10,000	
Short funnel ball	\$ 2,500	
Nature play area (embedded logs and stumps)	\$ 50,000	
Loose parts play area	\$ 10,000	
Recreational Improvements Subtotal	\$ 112,500	\$ -
Educational Elements		
Arts programming	\$ 25,000	\$ 5,000
Musical instruments and sensory boards	\$ 25,000	
Communications board	\$ 5,000	
Outdoor classroom		
Surfacing	\$ 25,000	
Seating	\$ 25,000	
Amenities	\$ 7,500	
Educational Elements Subtotal	\$ 112,500	\$ 5,000
Other Site Improvements		
Bike parking equipment	\$ 2,500	
Storage shed	\$ 40,000	
Pathways and fencing	\$ 25,000	
Schoolyard benches and other amenities	\$ 35,000	
Other Site Improvements Subtotal	\$ 102,500	\$ -
Total Estimated Fundraising Target: \$ 1,050,000 \$ 90,500		



Project Timeline and Next Steps

Although there has already been a significant amount of time and energy invested in the schoolyard redevelopment project by Riverwest Elementary School and its partners, the compilation of this conceptual plan document realistically represents step one of a multi-year, major construction-focused redevelopment project.

The next phase of project development is fundraising, which is intended to conclude by the end of 2024. The scope of the construction is based on the funds obtained through budget allocations, grants, donations, and school fundraisers. Engineering, surveying, and

architecture firms are typically hired in fall to support the detailed design and permitting process. To minimize disruption to regularly scheduled school functions, it is preferred to conduct construction over a relatively short time frame in summer months.

Big changes like this project require a great deal of time, resources, and, most of all, commitment. Accomplishing this conceptual redevelopment plan is a major milestone itself. This plan shows the school's desire and ability to focus its efforts on meaningful outdoor education and healthy learning spaces for their students and community.



For information on how to support Riverwest Elementary School's schoolyard redevelopment:

Please go to Reflo's website: www.RefloH2o.com or send an email to: lisa.neeb@RefloH2o.com

Supporting Organizations



The Milwaukee Metropolitan Sewerage District (MMSD) is a regional government agency that provides water reclamation and flood management services for about 1.1 million people in 28 communities in the Greater Milwaukee Area. MMSD is a strong supporter of green infrastructure, with many available resources.



Milwaukee Public Schools is committed to accelerating student achievement, building positive relationships between youth and adults, and cultivating leadership at all levels. Many departments are engaged on an ongoing basis to support the multifaceted schoolyard redevelopment projects.



The mission of the Milwaukee Public Schools Foundation is to inspire and motivate the community, including philanthropic partners, businesses, families, and former and current staff and students in the support of Milwaukee Public Schools and the academic achievement of its students.



As a nonprofit, Reflo partners with Milwaukee-area schools, neighborhood associations, community garden groups, and local governments to promote sustainable water management such as green infrastructure through education, research, and the implementation of community-based water projects.



Community Design Solutions (CDS) is a funded design center in the UWM School of Architecture & Urban Planning (SARUP) that assists communities, agencies, civic groups, and campuses throughout Wisconsin. CDS provides preliminary design and planning services to underserved communities and agencies.



The Environmental Collaboration Office (ECO) strives to make Milwaukee a world class eco-city. ECO develops practical and racially equitable solutions that improve people's lives and the economy while working to protect and restore the natural ecosystems that support our long-term prosperity. ECO collaborates with the community, develop global partnerships, offer award-winning programs, and implement the Milwaukee Climate and Equity Plan.



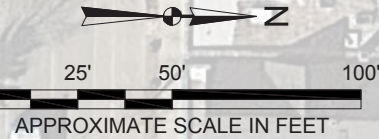
The Green Schools Consortium of Milwaukee (GSCM) is a robust local network of schools and resource providers that are motivated to promote greener, healthier schools. Through bimonthly meetings and an annual conference, hundreds of local participants have collectively shared ideas, resources, and lessons learned.



The Fund for Lake Michigan (FFLM) provides grants to support organizations and communities committed to enhancing the Lake's health through projects with both immediate and long-term benefits. The FFLM has been a longtime partner of the green and healthy schools movement and continuously promotes its expansion.

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STRONG COMMUNITY CONNECTIONS

Riverwest Elementary School serves as a community hub for the Riverwest Neighborhood. The schoolyard is used for recreation during and after school hours and hosts community events on the weekends and other out-of-school times.



EXISTING GREEN SPACE

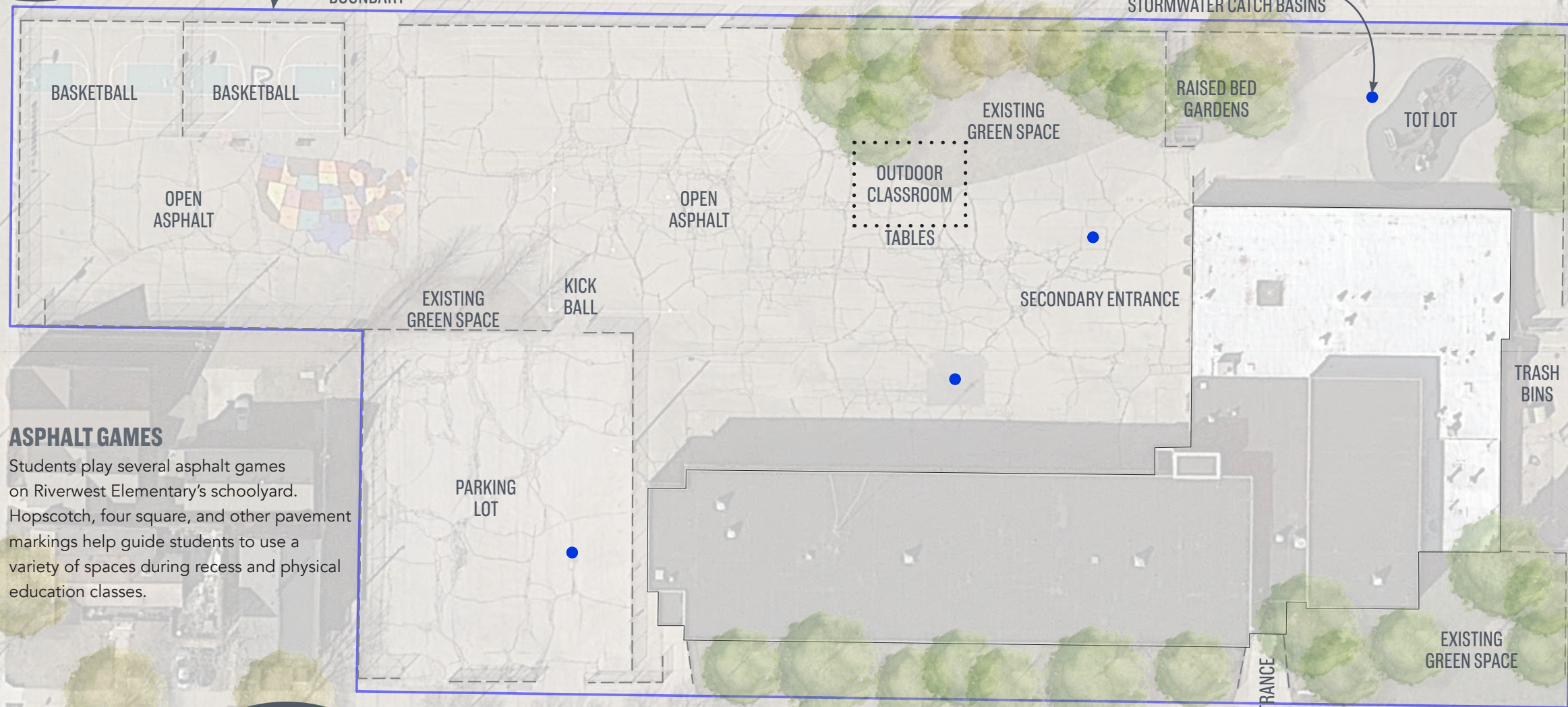
Riverwest Elementary has several patches of green space on the schoolyard. These existing green spaces provide an opportunity to optimize outdoor learning, support physical play, and promote social-emotional health and wellness beneath the shade of the tree canopy with additional design considerations.

E CENTER STREET

N PIERCE STREET

N FRATNEY STREET

E HADLEY STREET



ASPHALT GAMES

Students play several asphalt games on Riverwest Elementary's schoolyard. Hopscotch, four square, and other pavement markings help guide students to use a variety of spaces during recess and physical education classes.



NEED FOR STORMWATER MANAGEMENT

Stormwater flows across the playground causing asphalt erosion and icy conditions in the winter months. There is opportunity to install green infrastructure and divert stormwater into bioswales and an underground cistern on Riverwest Elementary's schoolyard to further manage stormwater where it falls.

DIVERSE LEARNING COMMUNITY

Riverwest Elementary School incorporates culturally responsive teaching to support its multicultural school community. Curriculum and peer to peer interactions emphasize acceptance of each others' unique qualities and environmental and social justice themes.



EXISTING SITE PLAN

Drawing Title:

Project: Riverwest Elementary School
2765 N Fratney Street,
Milwaukee, WI 53212

Project No: C7.MPS.36

Figure No:

Designed By: Reflo, CDS, and Riverwest's Green Team
Drawn By: Justin Hegarty

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STORMWATER GREEN INFRASTRUCTURE

Green infrastructure including bioswales, native plantings, and a synthetic turf field with an underground cistern beneath it will help to better manage stormwater on the school grounds, where it falls, improving the aesthetics, biodiversity, recreational facilities, and the health of local watersheds.



NATURE PLAY ELEMENTS

Riverwest Elementary School would like to incorporate natural playscape elements and loose parts play features that nurture childhood creativity, foster wonder and imagination, and inspire healthy risk-taking.

E CENTER STREET

N PIERCE STREET



ADDITIONAL GREEN SPACE AND RECREATIONAL IMPROVEMENTS

Reducing the amount of asphalt on the school grounds is a central component of the redevelopment plan. Along with new green space, earthen mounds, and tree plantings, Riverwest Elementary would like to add a synthetic turf soccer field, colorful pavement markings, and gaga ball pits to support physical activity, team building, and cooperative play.



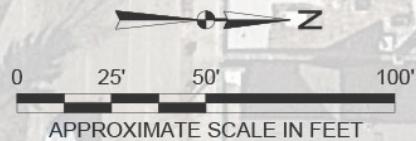
MULTIPLE ARTS OPPORTUNITIES

There are many opportunities to include artistic elements throughout the schoolyard including art posts, murals, and educational signage to support the redevelopment project. The outdoor classrooms will also provide a setting for the performing arts.



OUTDOOR CLASSROOMS

To help facilitate ecoliteracy and all of the sensory exploration that comes with outdoor learning, Riverwest Elementary would like to enhance their current outdoor learning spaces and build an additional outdoor classroom, completed with natural seating options.



Reflo

PROPOSED SITE PLAN

Drawing Title:

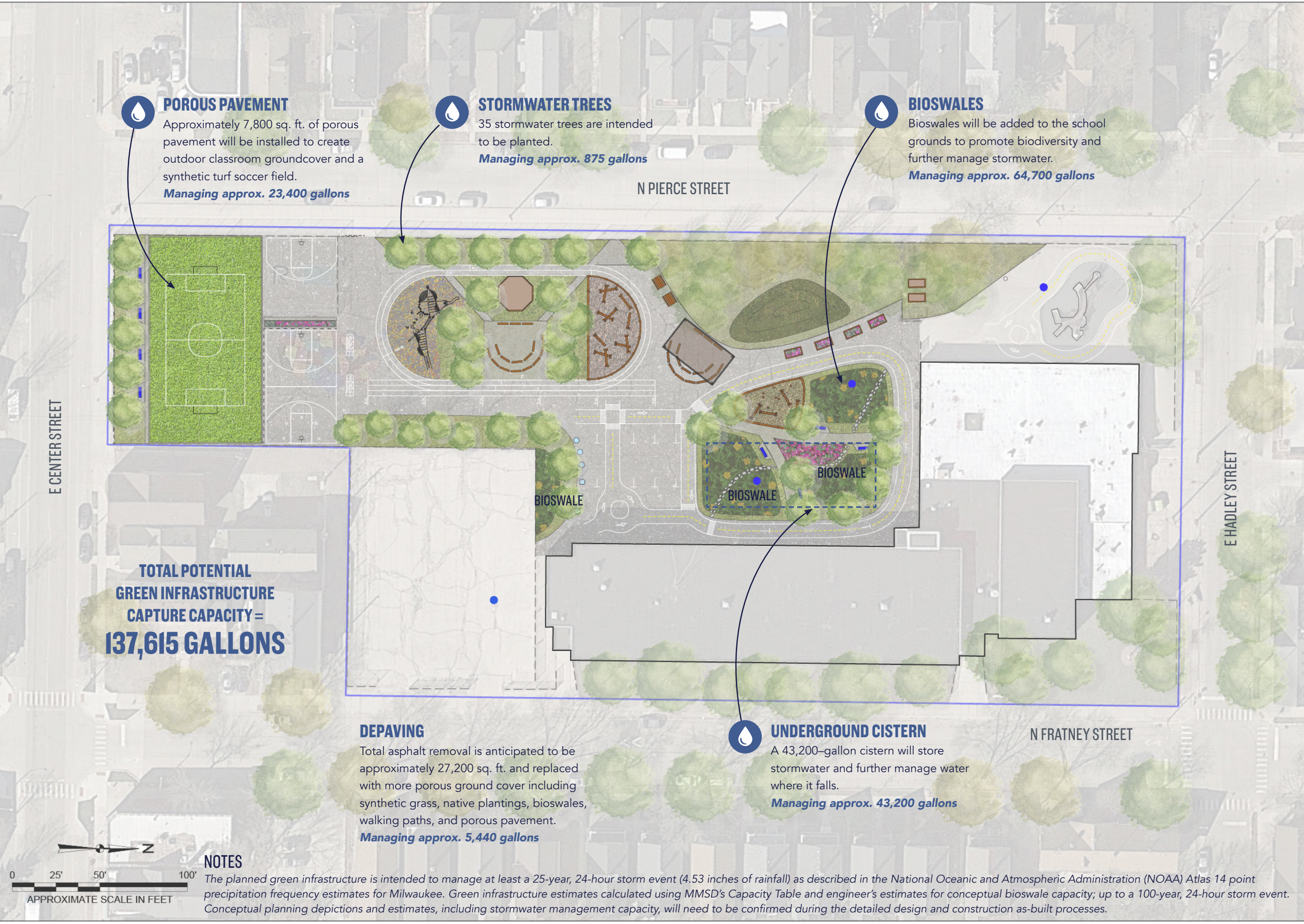
Project: Riverwest Elementary School
2675 N Fratney Street,
Milwaukee, WI 53212

Project No: C7.MPS.36

Figure No:

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POROUS PAVEMENT
 Approximately 7,800 sq. ft. of porous pavement will be installed to create outdoor classroom groundcover and a synthetic turf soccer field.
Managing approx. 23,400 gallons

STORMWATER TREES
 35 stormwater trees are intended to be planted.
Managing approx. 875 gallons

BIOSWALES
 Bioswales will be added to the school grounds to promote biodiversity and further manage stormwater.
Managing approx. 64,700 gallons

TOTAL POTENTIAL GREEN INFRASTRUCTURE CAPTURE CAPACITY = 137,615 GALLONS

DEPAVING
 Total asphalt removal is anticipated to be approximately 27,200 sq. ft. and replaced with more porous ground cover including synthetic grass, native plantings, bioswales, walking paths, and porous pavement.
Managing approx. 5,440 gallons

UNDERGROUND CISTERN
 A 43,200-gallon cistern will store stormwater and further manage water where it falls.
Managing approx. 43,200 gallons

NOTES
 The planned green infrastructure is intended to manage at least a 25-year, 24-hour storm event (4.53 inches of rainfall) as described in the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 point precipitation frequency estimates for Milwaukee. Green infrastructure estimates calculated using MMSD's Capacity Table and engineer's estimates for conceptual bioswale capacity; up to a 100-year, 24-hour storm event. Conceptual planning depictions and estimates, including stormwater management capacity, will need to be confirmed during the detailed design and construction as-built processes.



STORMWATER GREEN INFRASTRUCTURE PLAN

Drawing Title:

Project: Riverwest Elementary School
 2765 N Fratney Street,
 Milwaukee, WI 53212

Project No: C7.MPS.36

Figure No: 3

Designed By: Reflo, CDS, and Riverwest's Green Team
 Drawn By: Justin Hegarty

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MURALS AND PAVEMENT MARKINGS

Riverwest Elementary would like to further activate the schoolyard through the visual arts. There are opportunities to add murals and colorful pavement markings to support sensory and curricular connections. Adding professionally developed murals with themes that reflect the schoolyard redevelopment can help to make the space feel more welcoming and connected while also providing an opportunity for local artists.

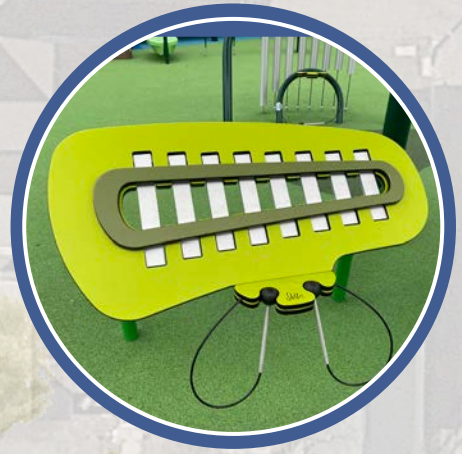


EDUCATIONAL SIGNAGE AND EXHIBITION

Looking at the redeveloped school grounds through the lens of exhibition, there are several opportunities to display educational themes through artistic means. Students can participate in the original creation of the signs and if panels are to be easily replaceable, portions of the signs could be refreshed with new thematic student art on a regular basis.

Potential Sign Themes

- ① Bioswales and Stormwater Management
- ② School Gardens and Healthy Food Access
- ③ Outdoor Classroom - Use Schedule
- ④ Benefits of Nature Play
- ⑤ Project Partners and Site History
- ⑥ Native Plantings and Pollinator Species



MUSICAL PLAY ELEMENTS

To enhance the learning experience and create a full sensory experience, Riverwest Elementary would like to add secured musical instruments to provide students the opportunity to hone their creativity by freely creating music on the schoolyard.



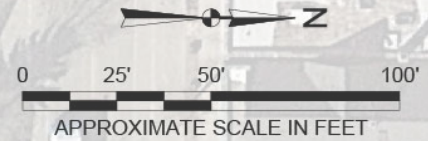
OUTDOOR SEATING

Currently there are limited seating options throughout the schoolyard. Seating is important for students that would like to socialize, quietly read or journal during outdoor free time, as well as for parents waiting for their children during dismissal. Benches also provide an opportunity for visual arts and sponsor recognition.



OUTDOOR CLASSROOMS

The outdoor learning areas will serve as an important focal point in the schoolyard. These spaces can support classroom learning objectives, relaxation and mindfulness activities, and serve as an intimate locations for smaller scale performing arts and community-based activities.



For more information on how to support the
Riverwest Elementary School
schoolyard redevelopment project please contact:

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