



H.W. LONGFELLOW COMMUNITY SCHOOL CONCEPTUAL SCHOOLYARD REDEVELOPMENT PLAN

January 2018



MILWAUKEE PUBLIC SCHOOLS



UW Extension University of Wisconsin-Extension

zilber family foundation

TABLE OF CONTENTS

1 Introduction

2 School Background

3 Conceptual Redevelopment Plans

Green Infrastructure Plan

Outdoor Classroom and Recreational Plan

4 Planned Curriculum Connections

5 Maintenance Considerations

6 Fundraising Targets

7 Project Timelines and Next Steps

Additional Resources

Acronyms

GSCM	Green Schools Consortium of Milwaukee
STEAM.....	Science, Technology, Engineering, Arts, and Mathematics
Reflo	Reflo - Sustainable Water Solutions (nonprofit)
MMSD	Milwaukee Metropolitan Sewerage District
FFLM.....	Fund for Lake Michigan
GI.....	Green Infrastructure
MPS	Milwaukee Public Schools
sf.....	square feet
Longfellow	H.W. Longfellow Community School



Existing schoolyard at Longfellow

INTRODUCTION

City youth grow up surrounded by imperviousness. 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 retard socioeconomic progress. Yet imperviousness also has other human impacts—consider how it affects the development of a young person’s mind. 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 began collaborating with Longfellow in early 2017 to develop the following conceptual schoolyard redevelopment plan that holistically address the issue of the school’s imperviousness. This document compiles over a year of conceptual planning in order to provide the school, administrators, potential funders, and project partners with a single feasible vision for redeveloping a greener and healthier schoolyard. Redeveloping the existing outdated schoolyard also provides a multitude of potential STEAM (science, technology, engineering, arts, and mathematics) curriculum connections as well as triple-bottom-line (social, environmental, and economic) benefits for the students, school, and community.



SCHOOLYARD REDEVELOPMENT INTEREST

Longfellow is most interested in providing a safe, healthy, and educational space for their students to learn and explore through creatively designed and inspiring green space.

ACKNOWLEDGMENTS

The successes at Longfellow to date and all of the planned activities laid out in this document are the result of many individuals and organizations that have worked for several years to support the school. The following is a short list of those that we would like to thank for their contributions:

LONGFELLOW'S GREEN TEAM:

Audrey Brinks
Iraida Basabe
Kelly Quimby
Beth Domiguez
Ruth Jennaro
Ann Marlow
DeAnn Burke
Megan Tatro
Leah Leone
Marta Ewig
Jill Roskos
Lindy Boeding
Ann Raden
Evadelia Aldape
Anne Slavens
Evelyn Orta
Lisa Ramczyk

Nancy Colon
Santa Griego
Maura Donohue
Robert Zaharias
Christine Carrillo
Silvia Stanislawski
Margarita Maldonado
Yesenia Bordas-Murphy
Caryl Davis
Leticia Aldape
Jeff Burgher
Marie Carter
Carmen Rodriguez Thomas
Cheryl Bohnsack
Charmaine Schaefer
Lauren Lepold-Schiro
Karen Anderson

Kelli Hook
Emilie Dederich
Erin Kerwin
Anita Higgins
Liz Steininger
Caryn Wachsmann
Sam Camacho
Jen Berry
Mary Westemeier
Jo St.Clair
Kristi Skarie
Rebecca Riddle
Sarah Lewkowski
Rafael Figueroa
Mary Belvoir
Michelle Zunke
Marcy Hunter

Karen Steele
Tracey Ciszewski
Jennifer Morgan
Katie Kattre
Rebecca Longoria
Rosa Cerda-Castañeda
Barbara Hickling
Sandra Valadez
Drunell Lewis-Carter
Marie Carter
Tishante Farris
Lori Schoof
Jeffrey Sathe
Nestor Muro
Tiffany Markwardt

COMMUNITY PARTNERS:

Journey House
Ernst and Young
United Way
Arts @ Large
Hunger Task Force

Botanical Gardens
Froedert Medical College
Milwaukee Bucks
UW Extension
Clarke Square

Neighborhood
Safe and Sound
Reflo
STEMhero
Youth Empowerment

Seminar
Pitney Bowes
Zilber Family Foundation

SPECIAL THANKS TO THOSE INVOLVED IN THE SCHOOLYARD REDEVELOPMENT PLANNING:



Justin Hegarty
Wilniesha Smith
Michael Timm
Jose Basaldua
Barbara Richards
Denice Niebuhr
Rose Kuzj



Carolyn Esswein
Bill Noelck
Mahshid Seyedehmahshid
Kelly Seniuk



Karen Sands
Lisa Sasso



Vicki Elkin



Danielle Nabak
Ian Bautista



John Linn
Rochelle Sandrin



Ryan Schone
Dr. Michele Bria



Angeline Koch



Erick Shambarger



Sean Kiezbak

BENEFITS OF GREEN 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

IMPROVED BEHAVIOR

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



MORE IMPULSE CONTROL¹⁰



LESS DISRUPTIVE BEHAVIOR
20

SUPPORTING RESEARCH

¹Lieberman & Hoody (1998). Closing the achievement gap: Using the environment as an integrating context for learning. Results of a Nationwide Study. *San Diego: SEER*. ²Chawla (2015). Benefits of nature contact for children. *J Plan Lit*, 30(4), 433-452. ³Berezowitz et al. (2015). School gardens enhance academic performance and dietary outcomes in children. *J School Health*, 85(8), 508-518. ⁴Williams & 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. ⁵Wells 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. ⁶Li & Sullivan (2016). Impact of views to school landscapes on recovery from stress and mental fatigue. *Landscape Urban Plan*, 148, 149-158. ⁷Wu et al. (2014). Linking student performance in Massachusetts elementary schools with the "greenness" of school surroundings using remote sensing. *PLoS ONE* 9(10): e108548. ⁸Matsuoka, R. H. 2010. Student performance and high school landscapes. *Landscape and Urban Planning* 97 (4), 273-282. ⁹Moore & Wong (1997). Natural Learning: Rediscovering Nature's Way of Teaching. Berkeley, CA: MIG Communications. ¹⁰Faber Taylor et al. (2002). Views of nature and self-discipline: Evidence from inner-city children. *J Environ Psy*, 22, 49-63. ¹¹Mårtensson et al. (2009). Outdoor environmental assessment of attention promoting settings for preschool children. *Health Place*, 15(4), 1149-1157. ¹²Wells (2000). At home with nature effects of "greenness" on children's cognitive functioning. *Environ Behav*, 32(6), 775-795. ¹³Berto et al. (2015). How does psychological restoration work in children? An exploratory study. *J Child Adolesc Behav* 3(3). ¹⁴Faber Taylor et al. (2001). Coping with ADD: The surprising connection to green play settings. *Environ Behav*, 33(1), 54-77. ¹⁵Amoly et al. (2014). Green and blue spaces and behavioral development in Barcelona schoolchildren: The BREATHE Project. *Environ Health Perspect*, 122,1351-1358. ¹⁶Blair (2009) The child in the garden: An evaluative review of the benefits of school gardening. *J Environ Educ*, 40(2), 15-38. ¹⁷Rios & Brewer (2014). Outdoor education and science achievement. *Appl Environ Educ Commun*, 13(4), 234-240. ¹⁸Bell & Dymont (2008). Grounds for health: The intersection of green school grounds and health-promoting schools. *Environ Educ Res*, 14(1), 77-90. ¹⁹Nedovic & Morrissey (2013). Calm, active and focused: Children's responses to an organic outdoor learning environment. *Learn Environ Res*, 16(2), 281-295. ²⁰Ruiz-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 decreased negative emotions.⁵

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.

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> ²Dymont & 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 Advn 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

trees logs
shrubs rocks

running
jumping climbing lifting²

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.



Longfellow's and Journey House's schoolyard entrance

SCHOOL BACKGROUND

Welcome to H.W. Longfellow School! We are a proud bilingual community school, who serves over 850 Kindergarten to 8th grade students. Longfellow is one of the three oldest buildings in the public school system built, and we have grown over the past 130 years with the Clarke Square community.

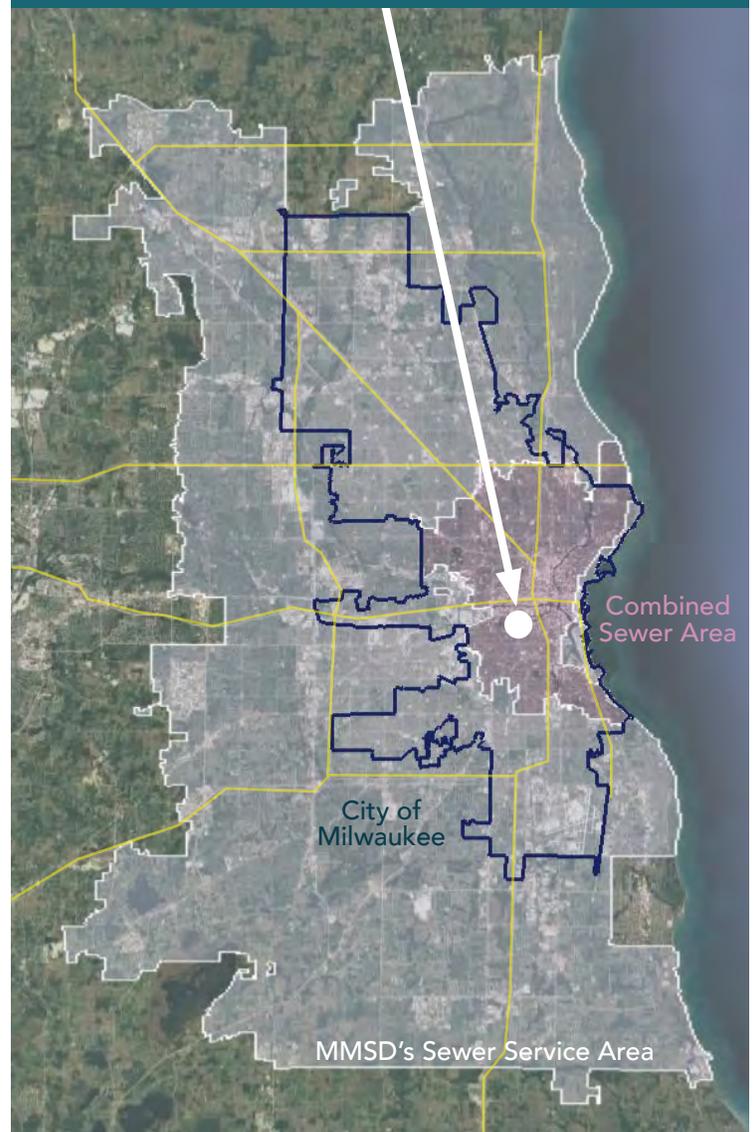
At Longfellow, we have been dedicated to enabling all students to realize their individual potential and uniqueness, while remaining committed to excellence in teaching and learning. With Longfellow educators, leading the way our green team continues to find ways to connect curriculum standards with innovative lessons that engage our students with hands on learning and inquiry.

Through our partnerships with many great organizations (see Acknowledgments Page) to name a few. Neighborhood families and students have been invited to take part in the rebuilding of our green community.

With shared ownership, Longfellow's green team will continue to build on providing lifelong learning opportunities for our students and their families. We look forward to developing and nurturing our eco-literate ambassadors, as they will be the key to redevelop and revitalize our neighborhood.

– Rosa Cerda-Castañeda, Principal
H.W. Longfellow Community School

Longfellow





Longfellow's main entrance



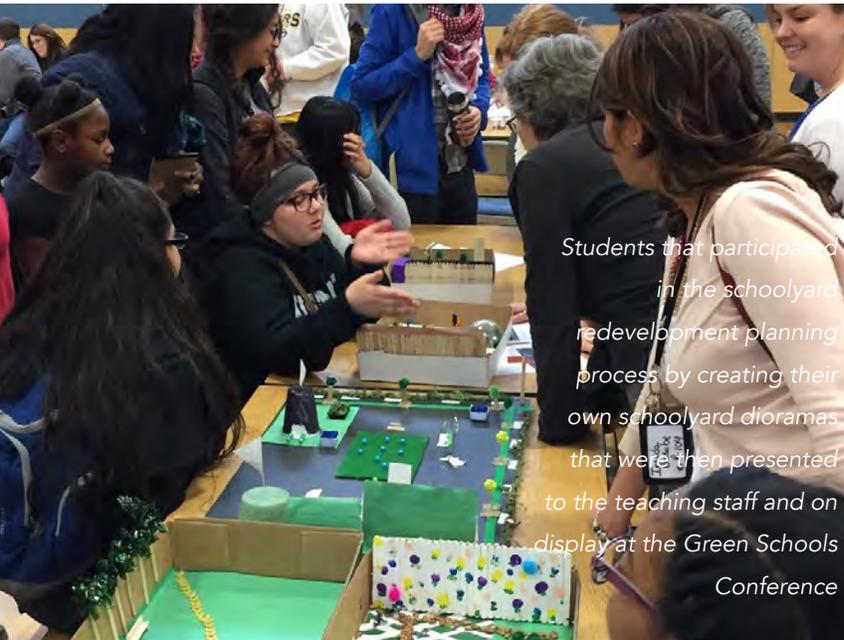
Example of Longfellow's arts programming

Longfellow School
1021 S. 21st St., Milwaukee

- Milwaukee Public School
- Grades: K through 8
- 853 students
- 96.9% economically disadvantaged
- Combined Sewer Area
- 145,000 sf of impervious surfaces
- 91% of the school site is impervious



Longfellow's entire 65 person teaching staff, participating in month Green Team meetings



Students that participated in the schoolyard redevelopment planning process by creating their own schoolyard dioramas that were then presented to the teaching staff and on display at the Green Schools Conference



Longfellow's and Journey House's raised bed gardens

ENVIRONMENTAL PROGRAMMING
 Longfellow has gone "all-in" and has committed the entire teaching staff to monthly Green Team meetings. Environmental programming includes recycling, green project field trips, Green Schools Consortium of Milwaukee engagement, raised bed gardens, tree plantings, etc.



CONCEPTUAL REDEVELOPMENT PLANS

On an annual basis, the nonprofit Reflo works through the Green Schools Consortium of Milwaukee (GSCM) to select and work with schools that are interested in conceptually redeveloping their schoolyards. Plans produced incorporate creative green infrastructure and green space that improves the social, environmental, and economic health of the school and community. With the approval of school and district administrators, Longfellow applied for and was selected to receive the conceptual planning grant. Over the 2016-'17 school year, the collaborative planning effort resulted in the production of the following conceptual redevelopment plans.

Schools submitted two-page **applications** and provided verbal **presentations** to a 20-person panel representing green school stakeholder organizations from across the Milwaukee-area.



School **Green Teams** met on a monthly basis (+) throughout the school year to collaboratively develop the redevelopment plans.



Schools presented their plans and other green school efforts at the annual Milwaukee-area **Green Schools Conference**.



CONCEPTUAL REDEVELOPMENT PLANNING ORGANIZATIONS



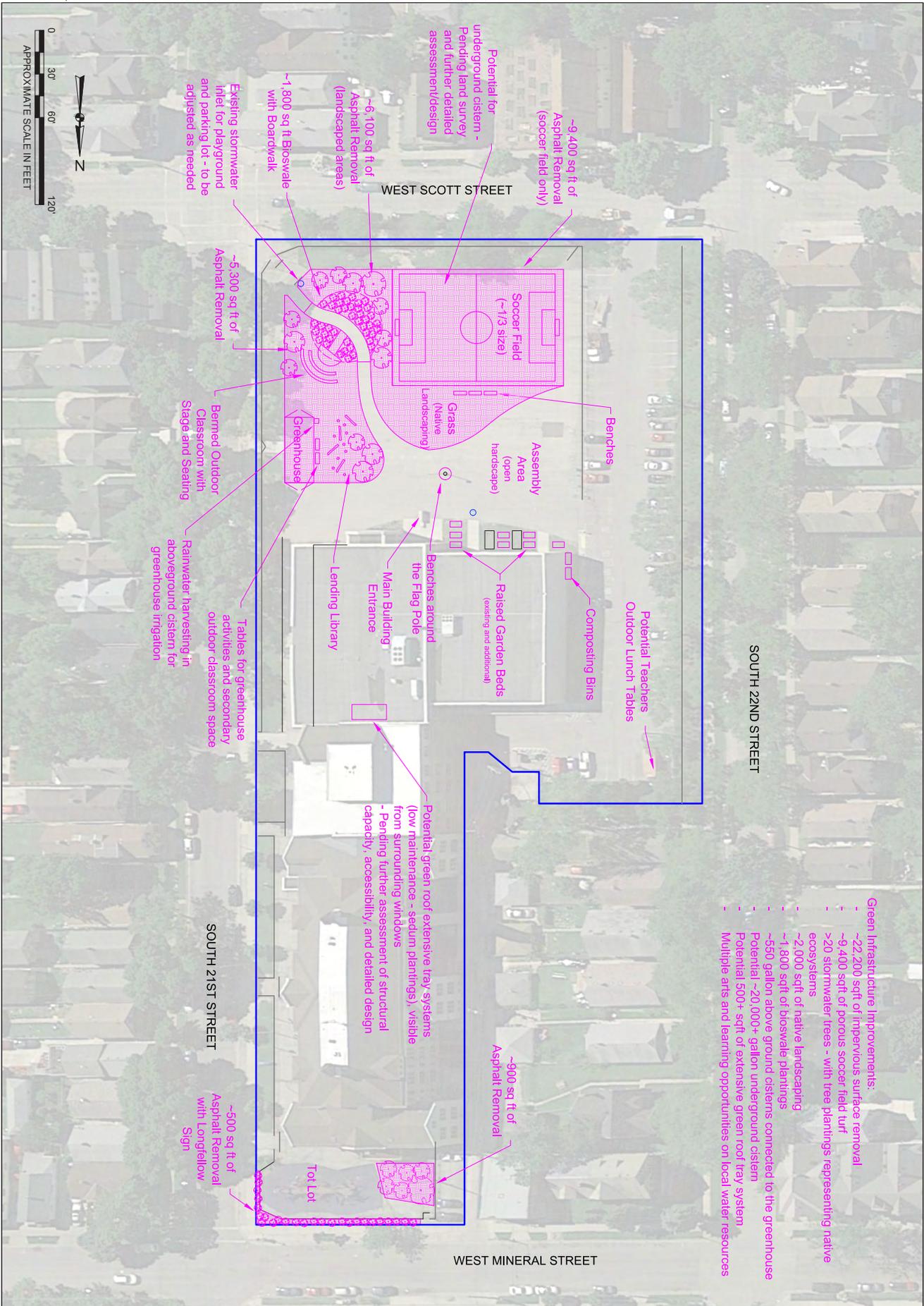
As a nonprofit, Reflo partners with Milwaukee-area schools, neighborhood associations, community garden groups, and local governments to promote sustainable water management such as green infrastructure through education, research, and the implementation of community based water projects.

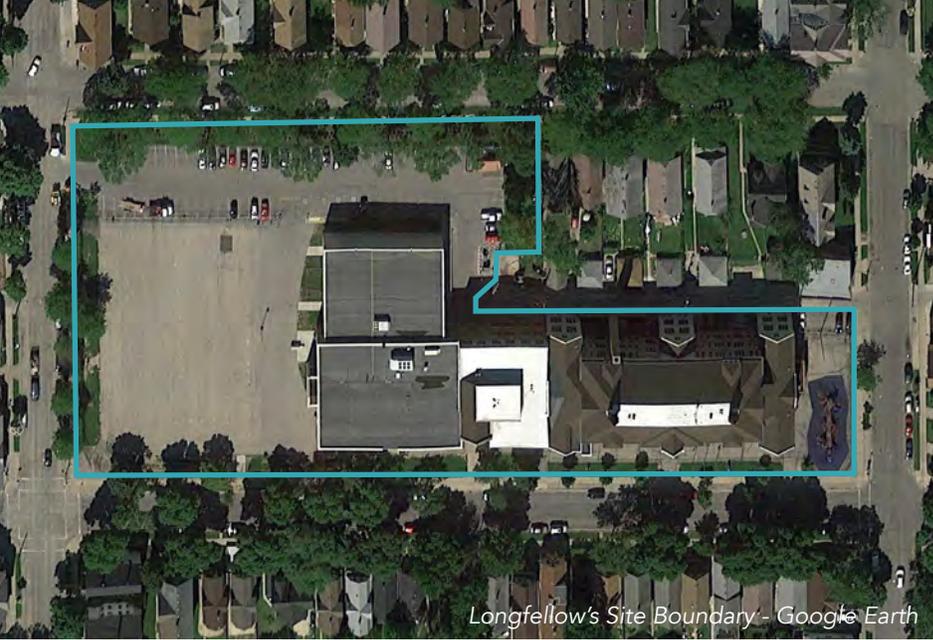


Community Design Solutions (CDS) is a funded design center in the UWM School of Architecture & Urban Planning (SARUP) that assists communities, agencies, civic groups, and campuses throughout Wisconsin. CDS provides preliminary design and planning services to underserved communities and agencies.



Journey House empowers families on Milwaukee's near Southside to move out of poverty by offering adult education, youth development, workforce readiness, and family engagement.





Longfellow's Site Boundary - Google Earth



Longfellow's main entrance



Heavily worn grass/dirt space on the schoolyard



Impervious surfaces around the tot lot



Longfellow's existing schoolyard and adjacent parking lot

SCHOOLYARD REDEVELOPMENT INTEREST

Longfellow is most interested in providing a safe, healthy, and educational space for their students to learn and explore through creatively designed and inspiring green space.



Example of synthetic and more natural grasses, key components of Longfellow's Conceptual Redevelopment Plan

GREEN INFRASTRUCTURE CONCEPTUAL PLAN



Green infrastructure is a stormwater management strategy that diverts stormwater from entering the sewer

system and manages stormwater where it falls through a more sustainable means, mimicking natural water systems. Green infrastructure can also serve as an opportunity for creative STEAM-based student and community engagement. Longfellow's building and schoolyard currently contributes 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 including asphalt removal and replacement with permeable pavement and natural ground cover, tree plantings, native landscaping, and cisterns.

The plan includes a reduction of >70% of the schoolyard asphalt, replacing it with green space and a mixed use recreation and educational space. Because of Longfellow's successful urban agriculture program, the plan also incorporates a new greenhouse with a rainwater harvesting system. Additionally, the inclusion of native plantings allows for unique spaces on the schoolyard that can represent native Wisconsin ecosystems complete with student created signage. Pending a more detailed survey, an underground cistern could also be implemented beneath the planned field and bioswale to further manage stormwater runoff.



Example of potential student engagement in planting green infrastructure



Example of student engaged arts and touring activities of green infrastructure - picture taken at Milwaukee Environmental Sciences Academy



Examples illustrating the interest to include tree planting



Example of a <1 year old bioswale, complete with a water level monitoring system and passive overflow



Example of schoolyard asphalt removal, replacement with green infrastructure, and community engagement



Example of volunteer engagement in the construction of an Aquablox(R) underground cistern



Example of a potential street stormwater diversion



Example of rainwater harvesting system (to receive artistically created banners)



Example of raised bed planters



Rendering by CDS of Longfellow's proposed outdoor classroom

OUTDOOR CLASSROOM AND RECREATIONAL PLAN



CDS proposes design details for a partly covered outdoor classroom and area surrounding the bioswale proposed by Reflo.

This portion of the site is located near a primary entrance to the schoolyard. A crushed gravel pathway is proposed to connect the entrance to the paved portion closer to the school. The pathway is interrupted with a boardwalk that traverses the bioswale, with an adjacent stage that hugs the edge of the bioswale. The stage looks out onto a berm created from soil dug up for the bioswale with concrete retaining wall benches. The benches are shaded by sun sail shades that are attached to vertical posts. Natural stump seats are added near the soccer field and the greenhouse to provide seating while also serving as natural play equipment for younger students.

Significant thought was put into the flow of students through the various spaces with special consideration for recreational activities such as soccer, tag, and pavement marking activities like foursquare. The outdoor classroom space is uniquely designed to accommodate quieter, programmed outdoor classroom activities, further supporting the greenhouse, while also serving as gross motor area during recess with seats transformed into balance beam features.



Planned greenhouse growing activities



Example of classroom activities around grown produce



Proposed conceptual layout of the outdoor classroom, greenhouse and soccer field



boardwalk over bioswale (A)



retaining wall as bench and stage over bioswale (B)



native bioswale plantings (C)



sun sail shading system (D)



Example of permanent greenhouse



Students and community partners ready to grow food at Longfellow



PLANNED CURRICULUM CONNECTIONS

It's important that the schoolyard redevelopment include plans for actually using the redeveloped space. This section provides a high level overview of how the school plans on making the most out of the new schoolyard components and connecting the exciting redevelopment into the curriculum.

Longfellow's Green Team consisted of the entire teaching staff, over 65 educators. Because of the enthusiasm for the schoolyard redevelopment, the staff was separated into five groups, each with their own unique opportunities:

- Group 1: Gardens and Green Space
- Group 2: Creative Placemaking
- Group 3: Water, Energy and Waste Conservation
- Group 4: Arts and Educational Signage
- Group 5: Student and Community Engagement

The following few pages identify major components and curricular connections for each of the Green Team groups. Each group has identified short and long term teaching objectives that connect standards as well as language, communication, and social-emotional objectives.

As a part of the conceptual planning process, Arts @ Large was identified as a potential resource for Longfellow and the school applied and received the 3+ year partnership. With the new engagement, the teaching staff will also have access to local artists that can assist with integrating the arts into the planned curricular connections.



WISCONSIN DEPARTMENT OF
PUBLIC INSTRUCTION



COMMON CORE
STATE STANDARDS INITIATIVE

PREPARING AMERICA'S STUDENTS FOR COLLEGE & CAREER



MILWAUKEE
PUBLIC SCHOOLS



Beyond Education. Beyond Expectations.



LW
Extension

University of Wisconsin-Extension

GROUP 1: GARDENS AND GREEN SPACE

Longfellow students, staff, and the community will utilize the greenhouse, raised bed gardens, and orchard in order to become more connected with where our food comes from. Students will also be able to become more familiar with native plants from Wisconsin and the benefits of being surrounded by green space. Furthermore, a **student Garden Club** will be organized to help with regular and summer maintenance.

RAISED BED GARDENS

3rd through 5th grade will also be able to actively learn about the **life cycle of plants** and the properties of good soil through **cultivating worms** (red wigglers). The students will be able to see how their soil helps all of our plants grow.

Middle school students will put their math skills to the test as they use their **measurement and data** skills to plan the arrangement of plants in the raised beds. They will also work on comprehension skills and learn how growing food builds community through **reading** stories and novels on these topics.

The **school and community** will work together to take care of these spaces throughout the summer. In the harvest season, students will be able to learn about and **taste fresh vegetables**. Possible field trips to urban agriculture locations around Milwaukee include: MATC Culinary School, Hunger Task Force garden, Alice's Garden, etc.

GREENHOUSE

8th grade can help with the **design and construction** of the greenhouse (which can be shown during Earth Day celebrations - adding a project documentation process where students take photos and videos of the greenhouse construction and first plantings.

Kindergarten through 2nd grade will be able to utilize the greenhouse to start seedlings and learn about the basics of **how plants grow** as well how to grow ingredients for salsa and pizza which can be shared with the community.

NATIVE PLANTINGS AND ORCHARD

4th grade will incorporate native Wisconsin plants in their curriculum to include plantings and research projects. They will also work with Arts @ Large to create a **walking tour** brochure of the school grounds that explains, through student created art, where native plantings can be found, and which fruit and nut bearing trees are located on the school grounds.



GROUP 2: CREATIVE PLACEMAKING

OUTDOOR CLASSROOM

K3 through **8th** grade students will be provided with an alternative learning environment to develop speaking, listening and literacy skills through **reader's theaters, presentations, experiments, data collection, observations** and **reflective writing** across the curriculum. Technology (use of a microphone) the arts (visual and performance) can be incorporated throughout with additional opportunities for **mindfulness** activities .

ATHLETIC FIELD

K3 through **8th** grade students will be able to develop **math, geography, problem solving,** and **gross motor** skills through the use of the athletic field. Students will also develop physical skills and increase their ability to work together via cooperative learning projects. Students will have access to additional recreation equipment to develop gross motor skills.

Both the outdoor classroom and athletic field will help to **strengthen relationships** and **student team building**.



GROUP 3: WATER, ENERGY, AND WASTE CONSERVATION

WATER AUDIT

K3 through 3rd grade can connect the **water cycle** to Longfellow's water sustainability interests and our local ecosystems. Students can also visit **Discovery World** to explore the water exhibit.

4th through **8th** grade can **measure** dripping faucets through STEM Hero meter reading to identify waste and **calculate**, through math curriculum, the volume of water wasted and develop comparisons, through arts programming to help understand the magnitude of water used at the school. Results can be presented by students at the school science fair.

RECYCLING AND COMPOSTING

Classrooms can be equipped with recycling containers for plastic, metal, and paper and some classrooms with composting bins for fruits and vegetables with students playing an important role in **inspecting and managing the bins**.

Discussions with students can lead to lessons on **financial, carbon, and volume** calculations regarding waste management, which can then be compared to entire school and city recycling and composting programs.

ENERGY AUDIT

Through the City's **Better Buildings Challenge**, Longfellow can enroll in the program to conduct an energy audit where students are equipped with **measurement tools** and can calculate before and after **energy savings**.

GROUP 4: ARTS AND EDUCATIONAL SIGNAGE

MURAL - EXTERIOR WALL

4th and **5th** grades can work with **Arts @ Large** and local artists to develop a Wisconsin themed mural with various panels that could include various **landforms** (lake and river systems, rocks and soils, and glacial geomorphology). They could also include clues where students are inspired to find recycled materials in the mural (like a scavenger hunt).

RECYCLED ART

Working with Arts @ Large, an additional art piece, comprised of recycled materials (plastic bags and bottles) collected by **K3** students can be created in the shape of the school mascot, an eagle. A contest can be employed to garner student ideas for the piece and to **promote recycled material collection** by multiple classrooms.

WALKING TOUR THROUGH THE SCHOOL GROUNDS

7th and **8th** grades can develop points of interest throughout the schoolyard that can be demarcated by stepping stones and can be in conjunction with the major components of the schoolyard redevelopment. Students can work with Arts @ Large to construct the points of interest and conduct **research** and **write essays** on each of the points of interest that can be included in the **site signage** and school **brochure** with reference to mindful moment activities as well.

GROUP 5: STUDENT AND COMMUNITY ENGAGEMENT

NEIGHBORHOOD OUTREACH - CLARKE SQUARE

6th, 7th, and 8th grades can develop a **Community Green News Flyer** which will contain valuable educational information for the community at large. Information can include event announcements/recipes/suggestions for home gardens/focus section on classroom activities with pictures, if possible, and science based soil research tips as well. Students can engage in **science research**, oral **speaking** to interview, informative and marketing based **writing**, **photography**/visual arts, and **technology** proficiency.

DEVELOPMENT OF A STUDENT GREEN TEAM

6th, 7th, and 8th grades can develop a **Green Buddies program** that will assist the school in the organization and running of green activities and **Earth Day**. They may also be involved in the Clarke Square Green Flyer (above). Students will serve as school green **ambassadors** to include the research and presentation of classroom green vocabulary and academics for **younger students**. They may be responsible to partner in the "care" program of the schoolyard. They can be involved in projects related to recycling, composting, care, and community clean ups, that can include **organizational**, verbal and written **presentation, research, advocacy**, and **science** curriculum connections.

SCHOOL WIDE EARTH DAY EVENT

All classrooms can participate in **Green Based Science Fair** projects that will be displayed by student representatives on Earth Day. Students organize and support booths, prior to Earth Day, research key booth connections. For Example: Soil Testing/why do it/how it works/growth of vegetables/fruits in soil research/visual aids/hand outs/community representatives bring in test kits for distribution. **Students run workshops** in connection with teacher guides. Students may take key **green based field trips** that support Earth Day and bring back experiences for **discussion** in class/Earth Day.

Arts @ Large Middle School **Photography** Project: The Ills of our Earth on display at Earth Day and can be **presented** within the school at each grade level so other children can learn about what is still necessary to do to care for Mother Earth. Key skills include: oral and written skills, marketing/visual arts/technology, and research in science.



MAINTENANCE CONSIDERATIONS

Consideration for maintenance, especially for green infrastructure, can often be overlooked. As part of the conceptual redevelopment planning process, special consideration was given to recommend easier-to-maintain features. However, many features called for in this conceptual plan require some level of maintenance. The following section provides a summary of seasonal and monthly maintenance needs for the school's new green features. Full, more in-depth maintenance requirements will need to be developed in the project's detailed design phase.

It should be noted that generally the school's engineer/janitorial staff are responsible for additional maintenance needs. However, some maintenance activities such as weeding, debris pickup, inspection of plant health, crop

harvesting, watering, etc. can provide an opportunity to further engage faculty, students, and the surrounding neighborhood in school activities and outdoor learning.



Well-maintained green infrastructure and playspaces can help reduce the potential need for costly repairs and/or replacement.



Permeable Pavement and Porous Synthetic Turf

Ongoing/Monthly Considerations:

- Debris and sediment washing into pavement pores can lead to clogging—monthly inspection is recommended to monitor pavement function and identify the source of any clogging.
- Depending on the pavement and installation, chipping can occur - monthly inspection can help identify areas of high wear or heaving and can prevent debris build-up and/or trip hazards.

Seasonal/Annual Considerations:

- Periodic vacuuming of the pavement pores using a vacuum truck will be necessary to minimize clogging.



Raised-Bed Gardens and Native Plantings

Ongoing/Monthly Considerations:

- Gardens will require ongoing weeding and watering (weekly/daily)—determining who will be responsible (ideally multiple people/groups/classrooms) beyond planting the gardens is important, especially over summer months.

Seasonal/Annual Considerations:

- Spring planting and harvest events are great ways to engage the school and prepare the garden—accounting will be needed for the cost and storage of required hoses, shovels, gloves, buckets, etc.



Tree Plantings

Ongoing/Monthly Considerations:

- Newly planted trees (first few years) will require protection from children wanting to play around them—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. Tree litter may not need to be actively managed. However, depending on amount of tree litter, it may need to be disposed of or composted.



Rainwater Cisterns/Storage

Ongoing/Monthly Considerations:

- Rainwater harvesting systems can become complex and may require site specific strategies; however, monthly inspection is typically recommended to remove debris, prevent stagnated water, and confirm that the cistern is draining as intended.

Seasonal/Annual Considerations:

- Most cisterns need to be drained in late fall to prevent winter freezing water damage. Then in spring, cisterns will again need to be adjusted to accept rainwater.



Asphalt Removal

Ongoing/Monthly Considerations:

- Depending on the groundcover replacement such as grass, wood chips, permeable pavement, etc., the replacement may require additional maintenance such as grass cutting, wood chip 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.



FUNDRAISING TARGETS

An important component of the conceptual planning effort was to develop plans that were 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 actually 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.



Most schoolyard redevelopment projects occur in phases over multiple years to allow for ongoing fundraising efforts.

A successful strategy is to develop a segregated schoolyard redevelopment account and/or school foundation that can assist with managing larger ongoing contributions.

CONCEPTUAL REDEVELOPMENT PLAN FUNDRAISING TARGETS

	Apx. Fundraising Targets	Apx. Inkind Contribution
Green Infrastructure		
Asphalt removal, sawcutting, etc.	\$ 68,000	
Soil and grass re-surfacing	\$ 15,000	
Soccer field, artificial turf replacement	\$ 100,000	
10 Stormwater trees	\$ 5,000	\$ 2,500
Native plantings	\$ 5,000	\$ 2,500
Bioswale soils and plantings	\$ 5,000	\$ 2,500
Greenhouse Cistern	\$ 2,500	\$ 2,000
(potential) underground cistern	\$ 50,000	\$ 5,000
(potential) green roof tray system	\$ 15,000	
Survey, Detailed Design and Permitting	\$ 25,000	
Detailed Design and Permitting for potential items	\$ 20,000	
Education and Outreach		
Project Coordination		\$ 10,000
Continued Reflo Support	\$ 7,500	\$ 10,000
Project Signage	\$ 5,000	\$ 2,500
Arts Programing		\$ 10,000
Demonstrations, Workshops, Tours		\$ 2,500
Water Focused Curricular Activities	\$ 10,000	
Vegetation Establishment	\$ 5,000	\$ 5,000
<i>Green Infrastructure Subtotal</i>	<i>\$ 338,000</i>	<i>\$ 54,500</i>
School Garden/Planting Developments		
New greenhouse	\$ 30,000	
Composting bins etc	\$ 1,000	\$ 1,000
Maintenance for plantings		\$ 2,500
<i>School Garden/Planting Developments Subtotal</i>	<i>\$ 31,000</i>	<i>\$ 3,500</i>
Recreational Developments		
Natural play equipment - logs, stumps etc.	\$ 5,000	
Paths and Boardwalk	\$ 25,000	
<i>Recreational Developments Subtotal</i>	<i>\$ 30,000</i>	<i>\$ -</i>
Educational Developments		
Outdoor Classroom		
Seating and Classroom Materials	\$ 5,000	
Stage space	\$ 25,000	
<i>Educational Developments Subtotal</i>	<i>\$ 30,000</i>	<i>\$ -</i>
Other Site Improvements		
Misc. benches and seating	\$ 3,500	
<i>Other Site Improvements Subtotal</i>	<i>\$ 3,500</i>	<i>\$ -</i>
Total Estimated Fundraising Targets:	<i>\$ 432,500</i>	<i>\$ 58,000</i>



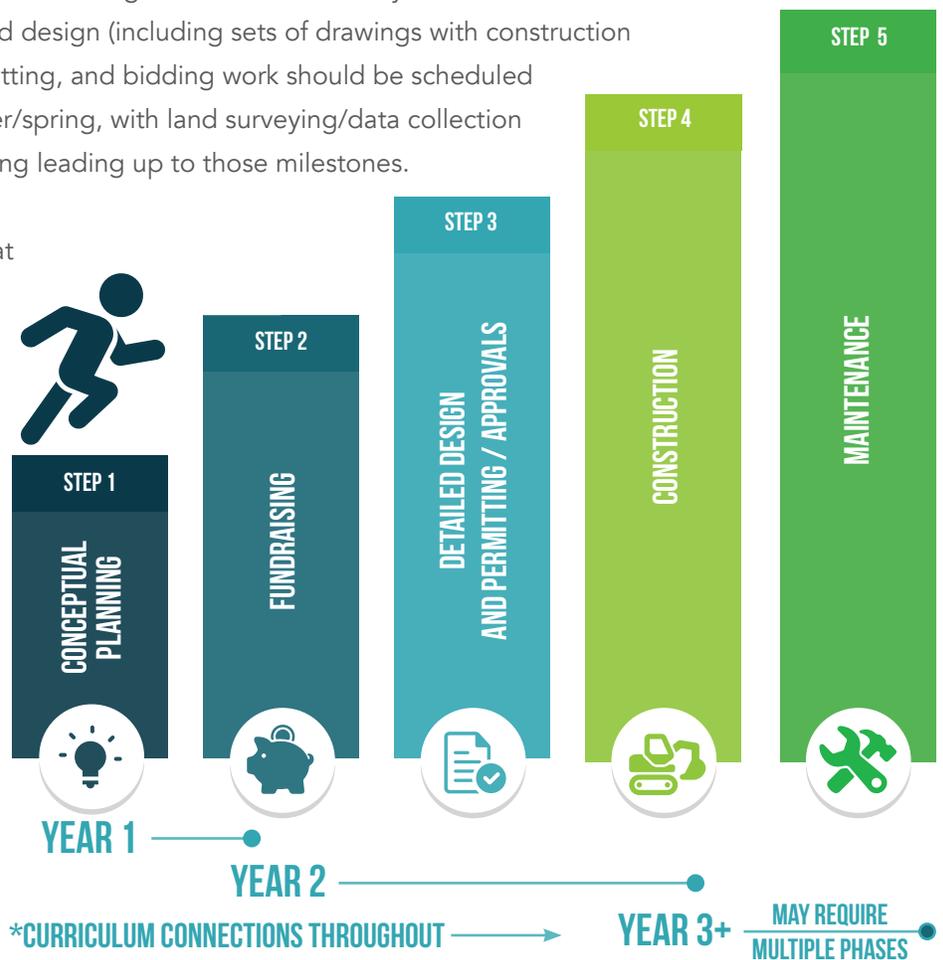
PROJECT TIMELINES AND NEXT STEPS

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

Construction season in Wisconsin typically runs from late April through November; however, most school construction takes place over summer when students are not in regular session. Generally with construction at schools taking place over summer months, detailed design (including sets of drawings with construction details, dimensions, and quantities), permitting, and bidding work should be scheduled to be completed over the preceding winter/spring, with land surveying/data collection occurring the preceding fall, with fundraising leading up to those milestones.

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.

Additional support for greening schools in the Milwaukee area can be found at the Green Schools Consortium of Milwaukee's (GSCM) website: www.gscm.refloh2o.com



ADDITIONAL RESOURCES



Green Schools Consortium of Milwaukee

Local network of green school practitioners, funders, and supporting agencies. Bi-monthly meetings, an annual conference and multiple local grants and resources can be found at: www.gscm.refloh2o.com



Reflo's Educational Page

Compilation of various water-related curricular connections including the Resource Replication Guide: Green Infrastructure for Milwaukee-Area Schoolyards: www.refloh2o.com/educational-resources/



Milwaukee Metropolitan Sewerage District

Grant opportunities and a guidebook on green infrastructure for schools: www.mmsd.com



Green and Healthy Schools Wisconsin

Compilation of green school curricular connections and a guidebook on: Growing a Green and Healthy School: www.ghswisconsin.org



Children in Nature Network

National green school news, training, and research (source for infographics used in this document's introduction): www.childrenandnature.org/learn/research/



U.S. Green Building Council - Center for Green Schools

National green school research, articles, project examples, and lesson plans. Connection to the LEED accreditation program and Green Apple Day of Service: www.centerforgreenschools.org/green-school



Green Schoolyards America

Green school research, policy, activity guides, and case studies: www.greenschoolyards.org



FOR MORE INFORMATION PLEASE CONTACT:

Rosa Cerda-Castañeda, Principal
H.W. Longfellow Community School
cerdarm@milwaukee.k12.wi.us

Ryan Schone, Food Systems Manager
Journey House
ryan.schone@ces.uwex.edu

Justin Hegarty, P.E., LEED A.P.
Reflo - Sustainable Water Solutions
justin.hegarty@refloh2o.com

