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Sustainable Water Solutions

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Clearly making a deep impact.

CLEMENT AVENUE SCHOOL'S
CONCEPTUAL SCHOOLYARD REDEVELOPMENT PLAN

May 2019

MPS MILWAUKEE PUBLIC SCHOOLS

MILWAUKEE PUBLIC SCHOOLS FOUNDATION

Green Schools Consortium of Milwaukee
A Green & Healthy Schools Wisconsin Regional Network

CREAM CITY CONSERVATION CORPS

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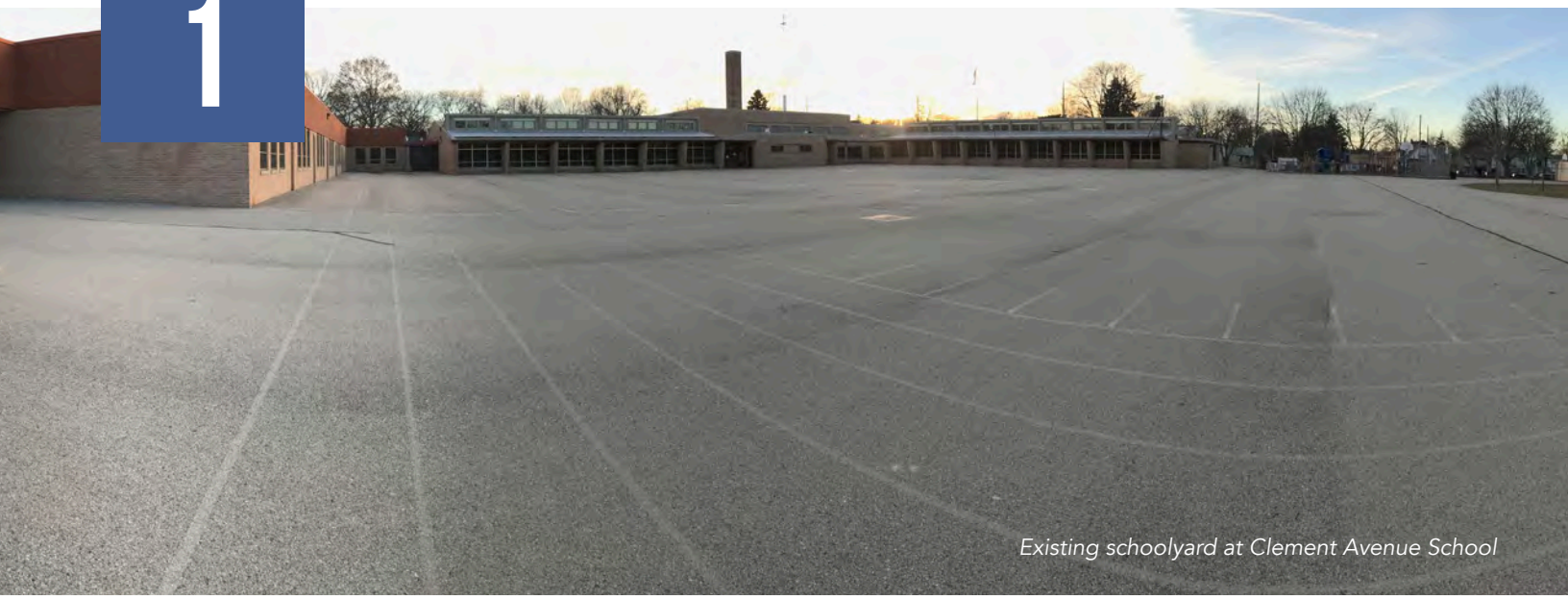
TABLE OF CONTENTS

1



Existing schoolyard at Clement Avenue School

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 collaborate with five schools annually 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 to a greener, 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 Redeveloping the existing outdated schoolyard also provides a multitude of potential STEAM (science, technology, engineering, arts, and mathematics) curriculum connections as well as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.

Clement field trip to Lake Michigan

ACKNOWLEDGMENTS

The successes at Clement Avenue School 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:

CLEMENT'S GREEN TEAM:

Steven Carnes - Principal
Ben Miles - Teacher
Andrea Mierzwinski - K4 Teacher/ Parent
Theresa Barnes - EC Sp. Ed Teacher
Monica Lopez -K5 Teacher
JoAnne Wojciechowski - Paraprofessional
Kris McLean- Parent Coordinator
Brianne Marcum - Phy Ed. Teacher

COMMUNITY LIAISONS:

Michelle Urena - Parent
Patrick Koney - Parent
Kelly Paek - Parent
Jeremia Gonzales - Parent

COMMUNITY PARTNERS:

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DentaQuest
Arts @ Large
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Vicki Elkin

CREAM CITY CONSERVATION CORPS

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ARTS @ LARGE
Beyond Education. Beyond Expectations.

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Kelly Rickman

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 solving [9]

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 LEARNING [17]

IMPROVED BEHAVIOR

Nature-based learning is associated with reduced aggression and fewer discipline problems: [18, 19]

MORE IMPULSE CONTROL [10]

LESS DISRUPTIVE BEHAVIOR [20]

children & nature NETWORK | NLC NATIONAL LEAGUE OF CITIES | THE JPB FOUNDATION

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

SUPPORTING RESEARCH

[1]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 Commun*, 13(4), 234–240. [18] Bell & Dyment (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.

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

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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 & RESTORED[3]

Forest schools enhanced positive and decreased negative emotions.[5]

RESILIENT[2]

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

GREEN SCHOOLYARDS PROMOTE SOCIAL-EMOTIONAL SKILLS

PRACTICE RELATIONSHIP SKILLS[2]

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

[1]www.nimh.nih.gov/health/statistics/prevalence/any-disorder-among-children.shtml [2]Chawla et al. (2014). Green schoolyards as havens from stress and resources for resilience in childhood and adolescence. *Health Place*, 28, 1-13. [3]Kelz 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. [4]Li & Sullivan (2016). Impact of views to school landscapes on recovery from stress and mental fatigue. *Landscape Urban Plan*, 148, 149-158. [5]Roe & 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. [6]Bell & Dyment (2008). Grounds for health: The intersection of green school grounds and health-promoting schools. *Environ Educ Res*, 14(1), 77-90. [7]Nedovic & Morrissey (2013). Calm, active and focused: Children's responses to an organic outdoor learning environment. *Learn Environ Res*, 16(2), 281-295.

INFOGRAPHICS PROVIDED BY THE CHILDREN & NATURE NETWORK

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

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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

[1]Rideout 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 [2]Dyment & Bell (2008). Grounds for movement: Green school grounds as sites for promoting physical activity. *Health Educ Res*, 23(6), 952-962. [3]Stanley (2011). The place of outdoor play in a school community: A case study of recess values. *Child Youth Environ*, 21(1), 185-211. [4]Dennis et al. (2014). A post-occupancy study of nature-based outdoor classrooms in early childhood education. *Child Youth Environ*, 24(2), 35-52. [5]Luchs & Fikus (2013). A comparative study of active play on differently designed playgrounds. *J Adven Educ & Outd Learn*, 13(3), 206-222. [6]Acar & Torquati (2015). The power of nature: Developing pro-social behavior towards nature and peers through nature-based activities. *Young Children*, 70(5), 62-71. [7]Chawla (2015). Benefits of nature contact for children. *J Plan Lit*, 30(4), 433-452. [8]Cloward 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.

MORE OPTIONS, MORE ACTIVITY

85%
OF EDUCATORS AND PARENTS
said green schoolyards support a wider range of play activities than other types of schoolyards.[2]

PROMOTE
running
jumping
climbing
lifting[2]

trees
logs
shrubs
rocks

Variety in landscaping increases variety in active play.[2]

MEETING DIVERSE & CHANGING NEEDS

GREEN SCHOOLYARDS COMPLEMENT CONVENTONAL 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

[1]www.cdc.gov/physicalactivity/data/facts.htm [2]Dyment & Bell (2008). Grounds for movement: Green school grounds as sites for promoting physical activity. *Health Educ Res*, 23(6), 952–962. [3]Barton 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. [4]Dyment et al. (2009). The relationship between school ground design and intensity of physical activity. *Child Geogr*, 7(3), 261-276. [5]Brink et al. (2010). Influence of schoolyard renovations on children's physical activity: The Learning Landscapes Program. *Am J Public Health*, 100(9), 1672–1678. [6]Mårtensson et al. (2014). The role of greenery for physical activity play at school grounds. *Urban For Urban Gree*, 13(1), 103–113. [7]Pagels 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.

INFOGRAPHICS PROVIDED BY THE CHILDREN & NATURE NETWORK
Supporting references and research on the benefits of nature can be found at childrenandnature.org/research
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DIVERSITY, EQUITY & INCLUSION LENS IN GREEN & HEALTHY SCHOOLS

As schools across the Milwaukee-area take part in greening their schoolyard for the health benefits of students and teachers alike, this segment is offered as an addendum to addressing environmental injustice and cultivating culturally relevant curricular activities.

DIVERSITY:

The unique differences between us that make a difference.

What diversity is not: a Euphemism for People of Color.

There are many facets of diversity, such as ability, socio-economics, gender identity/expression, sexual orientation, immigration status, religion, etc.

It is important for educators not to discredit the significance of their students' unique identities and lived experience. It is also important to acknowledge difference as a *value-add* to the classroom. Allowing students the opportunity to practice navigating conversations about a difference in an affirming way helps build empathy, innovation, and collaboration. Consequently, educators should be mindful of their own unique identities and experiences, consciously and unconsciously, informs how they lead the classroom.

Source: Hines, Mack T., White Teachers, Black Students, Rowman & Littlefield, 2017

EQUITY:

A process of ensuring everyone has access to what they need to thrive.

What equity is not: giving everyone the same thing, such as equality.

We all have strengths and areas of growth opportunity. Educators with a ***growth mindset*** recognize that their students can learn anything, it's a matter of identifying the teaching style that will create the most impact for each student. This also means recognizing that not all students start out at the same place, nor have access to the same resources or experiences.

Critical takeaways: Diversity is often used as a euphemism for people of color. This notion promotes the fallacious assumption that 1. A single person can be diverse and 2. White people are not racialized and therefore excluded from diversity efforts and problematically perceived as the "norm", the "baseline" that people from all other ethnicities and cultures are measured against.

CREAM CITY CONSERVATION & CONSULTING

For more information and educator support in embedding equity into curriculum connections, please email info@creamcityconservation.org

No matter how homogeneous or diverse the classroom, every student benefits from culturally relevant curricula. When educators use materials that depict characters, language, culture and more from a diversity of backgrounds, perspectives and abilities it creates a sense of belonging as students see themselves reflected in the teachings.

INCLUSION:

Celebrating, welcoming, valuing and leveraging differences.

What inclusion is not: ignoring, overcoming or tolerating difference.

WHY AN EQUITY LENS IS IMPORTANT TO SCHOOLYARD DEVELOPMENT

Climate Change – With regards to environmental injustice, people of color are hit first and worst.

The UN Climate Report 2018 states our world has 12 years to take critical action before the effects of climate change are irreversible.

Source: Climate Change Is Not A Future Problem for POCs., UN Climate Report 2018

82% of public school educators are white.

Culturally competent educators contribute positively to the social-emotional well being of students. Educators that push color-blindness and discourage exploration of difference may harm students by making them feel as though they themselves are not seen and that diversity is taboo.

Source: The State of Racial Diversity in the Educator Workforce, July 2016 US Dept. of Education; White Teacher, Black Students by Mack T. Hines III.

Critical takeaways: The health, education and economic disparities experienced by marginalized communities is not a coincidence. A firm understanding of the historical context and current policies and practices that fuel disproportionate effects of environmental injustice is paramount. Without this foundation, educators will not be empowered to systematically dismantle institutional oppression and rebuild social structures that ensure equitable access for all students to thrive.

CREAM CITY CONSERVATION & CONSULTING

2

Clement's schoolyard

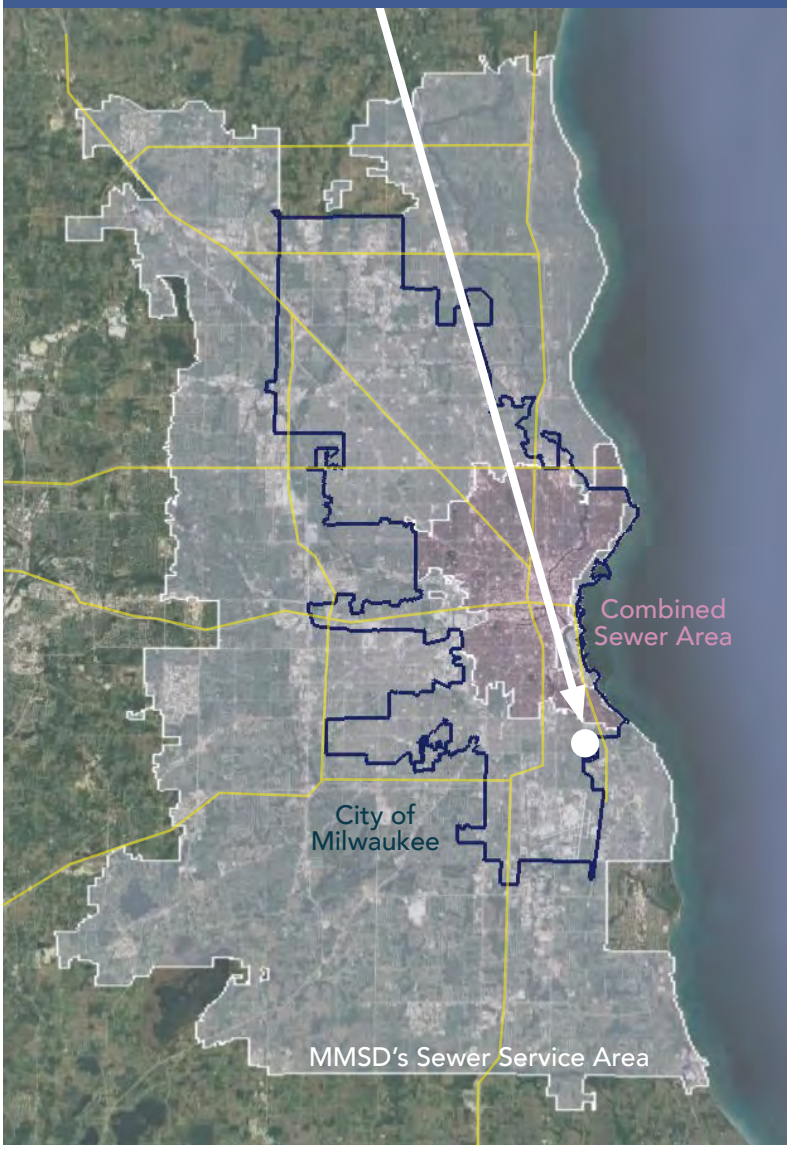
SCHOOL STORY

Clement Avenue School educates approximately 550 students every year, and is utilized by the Bay View community throughout the spring, summer and winter months. Our community is proud of our school and the tradition of excellence it represents. Community stakeholders have long considered Clement to be a safe place for our families, through our efforts in providing numerous outdoor programs and activities that engage, inspire, and transform the hearts and minds of our children, who will one day serve as the future leaders of our community.

Our outdoor space at Clement is almost entirely comprised of concrete and asphalt. These impervious surfaces dominate much of our landscape from a visual standpoint and have deteriorated over the years, resulting in much of our schoolyard being inaccessible to our students and families at Clement Avenue School.

Clement Avenue School has been a strong investment in our community and is committed to providing opportunities for our families to be actively involved in creating a purposeful and productive environment for everyone to enjoy. The information contained in this document serves as a blueprint for our vision for redeveloping a greener and healthier schoolyard for the students, families, and community of Clement Avenue School.

CLEMENT AVE. SCHOOL



Clement's main entrance

Clement Avenue School
3666 S Clement Ave., Milwaukee

- Milwaukee Public School
- Grades: K4 through 8
- 420 students
- 69.3% economically disadvantaged
- Separated sewer area
- Kinnickinnic River watershed
- 163,700 sf of impervious surfaces
- 81% of the school site is impervious

Clement Avenue's Mission is to conserve, teach and encourage healthier choices, both environmentally and physically in our community.

KAI WILLIAMS - STUDENT AT CLEMENT AVENUE SCHOOL

This playground will improve focus, and allow kids to socialize and relieve stress. I believe that test scores and focus will go up and behavior issues will go down because they wont have all this energy stored up.

ANDREA MIERZWINSKI - K4 TEACHER AT CLEMENT AVENUE SCHOOL

As an educator my passion is to get students engaged in their environment and actively involved in their learning, and what better way then by exposing them through outdoor education and physical exploration. This playground renovation project will provide all students an outstanding opportunity to learn through cross-curricular activities and investigations. They will have chances to dig deep into science concepts while implementing their individual skills, as well as improve their physical education and activity levels with having the proper equipment available to them. What an exciting transformation for everyone; students, staff, families, and community members alike!

KELLY PAEK - CLEMENT PARENT AND PARENT TEACHER ORGANIZATION

As a parent, I am very excited for the playground redevelopment. Not only will this bring an exciting and beautiful place for my kids to utilize during recess but it also opens a world of opportunities for them to learn more about nature and how to care for our environment!

CAROL VOSS - FORMER MILWAUKEE PUBLIC SCHOOL BOARD AND COMMUNITY MEMBER

As a member of the MPS School Board I'm excited about the possibility of greening playgrounds at my represented schools including Clement Avenue and at schools throughout the district. I look forward to working together to make this vision a reality.

REP. CHRISTINE SINICKI - WISCONSIN STATE LEGISLATURE

What a great improvement not only for the students at Clement Avenue School, but also, the surrounding community. The new equipment along with the outdoor classroom will help to teach young people the importance of our environment and give them a reason to turn off technology and enjoy the outdoors.

JON GREENBERG - PRESIDENT OF MILWAUKEE ADMIRALS HOCKEY CLUB

I think it's fantastic that this very unique green space is being created at Clement Avenue School. This will transform the traditional playground environment to one that gives the children and the teachers a beautiful setting to exercise their brains as well as their bodies.

3

CONCEPTUAL REDEVELOPMENT PLANS

On an annual basis, the nonprofit Reflo and its partners, with the support of the Milwaukee Metropolitan Sewerage District, 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 important 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 the 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 process.

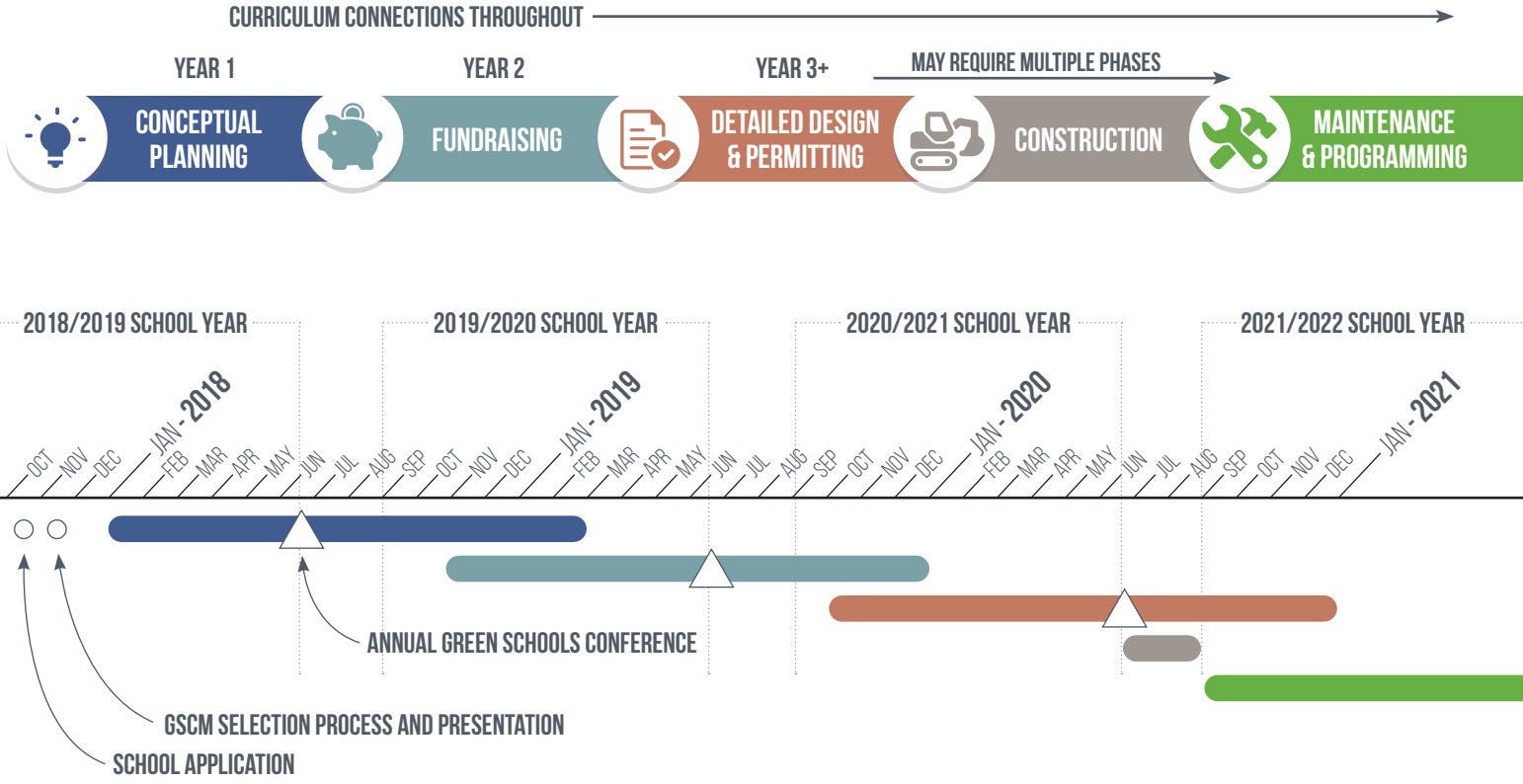
Clement's conceptual plans include many stakeholder perspectives including students, parents, teachers, administrators, maintenance staff, neighborhood residents and project partners. The plans are intended to be feasible and supportive of the school's and project stakeholders' needs and interests. Significant 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 for the project.

Green Schools Consortium of Milwaukee
A Green & Healthy Schools Wisconsin Regional Network

The GSCM is a local network of practitioners, agencies, and funders that are committed to supporting greener, healthier schools and eco-literacy in the Milwaukee-area. The GSCM gathers on a bi-monthly and annual basis to share resources and lessons learned. The 3rd Annual Green Schools Conference hosted 260 participants, 40 exhibitors, and 30 workshops/presentations. 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 GSCM. The process begins in October by 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*. From that process, five schools are awarded the planning grant and begin the conceptual planning process with monthly Green Team meetings starting in January.



Major deliverables and expectations at each phase of development include:

CONCEPTUAL PLANNING

- Conceptual Drawings and Renderings
- Inclusion in Annual Cohort Prospectus
- Presentation at the Annual Green Schools Conference
- Project Poster for Hallway
- Conceptual Schoolyard Redevelopment Plan Document
- Outreach Event(s)

FUNDRAISING

- School Fundraising Targets
- List of Fundraising Ideas
- Schoolyard Redevelopment Webpage on Reflo's Website
- Project Summary Brochure
- Project Poster for Hallway
- Outreach Event(s)

DETAILED DESIGN & PERMITTING

- Meetings with School District and Consultant Engineers and Architects
- Detailed Project Blueprints
- Project Poster for Hallway
- Outreach Event(s)

CONSTRUCTION

- Built project - School District Contracting and Supervision
- Project Documentation
- Project Poster for Hallway
- Ribbon Cutting Celebration

MAINTENANCE & PROGRAMMING

- Maintenance Meetings / Trainings with Landscape Architects and Engineers
- Ongoing Scheduling for Maintenance and Programming
- Project Poster for Hallway

Example of a bioswale that can manage large quantities of stormwater at Fondy Park in Lindsay Heights, Milwaukee

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 serve as an opportunity for creative science, technology, engineering, arts, and math (STEAM) student and community engagement. The school grounds 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 that helps to manage as much stormwater on the school grounds as feasible.

The plan includes approximately **22,000 sq.ft.** of asphalt removal and replacing it with new green space and a mixed use recreation and educational space. Because of Clement's successful school garden program, the plan also incorporates a new outdoor classroom with a rainwater harvesting system. Additionally, the inclusion of native plantings and stormwater trees allow for unique spaces on the schoolyard that can represent native Wisconsin ecosystems, complete with student created signage. Pending a more detailed survey, a large scale underground cistern could also be implemented beneath the planned bioswale to further manage stormwater runoff. The plan manages approximately **88,987 gallons** of stormwater for a given rain event.

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

Reflo
Sustainable Water Solutions

DEPAVING

Hard surfaces like asphalt and concrete are primary sources of stormwater runoff. Replacing hardscapes with more porous landcovers help to infiltrate stormwater into the ground and prevent it from running off into the sewer system. Removing pavement also offers the opportunity to replace it with other types of green infrastructure that promote better stormwater management. Furthermore, the co-benefits that come with greener spaces include reduced heat island effect, improved social-emotional outlook, and significantly improved habitat, promoting biodiversity.

BIOSWALES

Bioswales typically capture stormwater from roads and parking lots, often with lower water quality, infiltrating runoff into the ground and cleaning it naturally. They are planted with vegetation that helps 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.

ABOVE GROUND CISTERNS

Rainwater harvesting is the practice of capturing rainwater, storing it in cisterns, and reusing it, typically for irrigation. Above ground cisterns are convenient because they can be elevated to allow gravity to help put some pressure on the outflow hosing. The pictured 550-gal system includes plumbing that helps improve water quality and reduces maintenance.

LARGE SCALE CISTERNS

Larger cisterns are typically built underground. Alice's Garden project captures stormwater from the adjacent schoolyard, treats it through a bioswale, and stores it in a 20,000-gal underground cistern (built by 150 volunteers) where a solar powered pump and treatment system allows the water to be reused for irrigation.

Rendering by CDS of Clement Avenue School's outdoor classroom, rainwater harvesting system, and raised bed garden expansion

OUTDOOR EDUCATION AND HEALTHY FOOD ACCESS

As illustrated in the infographics produced by Children & Nature Network and Cream City Conservation Corps (found in the Introduction of this document), access to outdoor classrooms on school grounds can significantly enhance learning outcomes and social-emotional wellbeing. School 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.

Clement's schoolyard redevelopment includes a new outdoor classroom space with a covered **pavilion** complete with seating and materials to support outdoor learning. Rainwater harvesting will support the nearby raised bed gardens and the orientation of the pavilion's roof is intended to accommodate solar panels in future phases of development. Nearby green infrastructure including stormwater trees, bioswales, and native grasses will also serve as **unique learning spaces**. Educational and artistic **signage** throughout the schoolyard is intended to support student curated tours.

Example of student engaged maintenance of raised bed gardens

Example of classroom activities around grown produce

Green Schools Consortium of Milwaukee
A Green & Healthy Schools Wisconsin Regional Network

CREAM CITY CONSERVATION CORPS

OUTDOOR CLASSROOMS AND EDUCATIONAL 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. Educational signage can serve as an opportunity to engage local artists and support learning not only by students, but also the surrounding community that may make use of the facilities after school hours.

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.

SCHOOL GARDENS

School gardens range in scale from the typical 4 foot 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.

Professional local artist, Reynaldo Hernandez, with students from Parkside School from the Arts during an unveiling of the new outdoor murals, created by the students and artist, at the school.

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 learn devices or strategies to support their curricular areas, maximizing student engagement and furthering academic success. As a green and healthy school, experiential learning through the arts can be used to inspire ideas, take in-depth looks at our impact on the environment and learn unintended consequences of our actions that can be explored through visual and preforming art forms.

Arts @ Large and the Milwaukee Public Schools are committed to designing programs that promote **social-emotional learning** (SEL). Creating supportive environments for students in our schools and engaging families meaningfully are two areas of specific need. Training staff about the impacts of **trauma** and explicit instruction of SEL skills is an important part of this work. Research tells us that in order for students to use the skills they have learned, they must be in an environment that supports the use of those skills. As a green and healthy school, this is becoming a reality and the inclusion of the arts and environmental education better engages youth in the 21st century and positions them for potential future careers.

ARTS @ LARGE
Beyond Education. Beyond Expectations.

Example of local professional artists hired through Arts @ Large to work with students in the classroom

Musicians and performing artists can play vital roles in helping to activate spaces, here artists are shown preforming during one of Paliafito Park's Music Under the Stars Series

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 school yard redevelopment, the works of art created by the students will not only beautify the space, but provide a sense of ownership and accomplishment to celebrate with the students and their families. With the visual arts, the invisible become 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 by CDS of Clement's conceptual schoolyard redevelopment

RECREATION AND OTHER SITE IMPROVEMENTS

Well supported and engaging recreational opportunities during the school day can help to increase attention spans, improve social-emotional learning, and help to support team building. Creative applications of visual arts on walls and ground coverings can help to guide students in independent and group physical fitness activities. These recreational improvements can lead to reduced instances of childhood obesity and other positive health outcomes.

Clement's conceptual schoolyard redevelopment plan includes fit trails with signage on **physical fitness**, improved basketball courts, an improved soccer field (1/3 size), an improved kickball field (on Milwaukee County Parks property), and a gaga ball pit. Enhancements around the tot lot include replacing some failing components with more **naturalized play alternatives** and building a shade sail system to increase usability throughout the summer. To increase **accessibility** to the schoolyard, additional bike parking is called for at the major entrances and 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 foursquare.

Examples of gaga ball, physical fitness trail-type activities, and shade sails

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EXISTING GREEN SPACE AND UTILITIES

Clement's existing green space is heavily used by students and due to poor stormwater drainage and overuse, the grass is warn down, the soil is compacted, and the area becomes muddy and unusable after rain events. Furthermore, there are several raised utilities that prevent the space from being used effectively.

ASPHALT KICKBALL AND SEDIMENT

Kickball is a favorite sport at Clement; however, due to the large amount of deteriorating asphalt sediment is routinely found on the grounds and presents a slipping hazard that has resulted in several schoolyard injuries.

TOT LOT

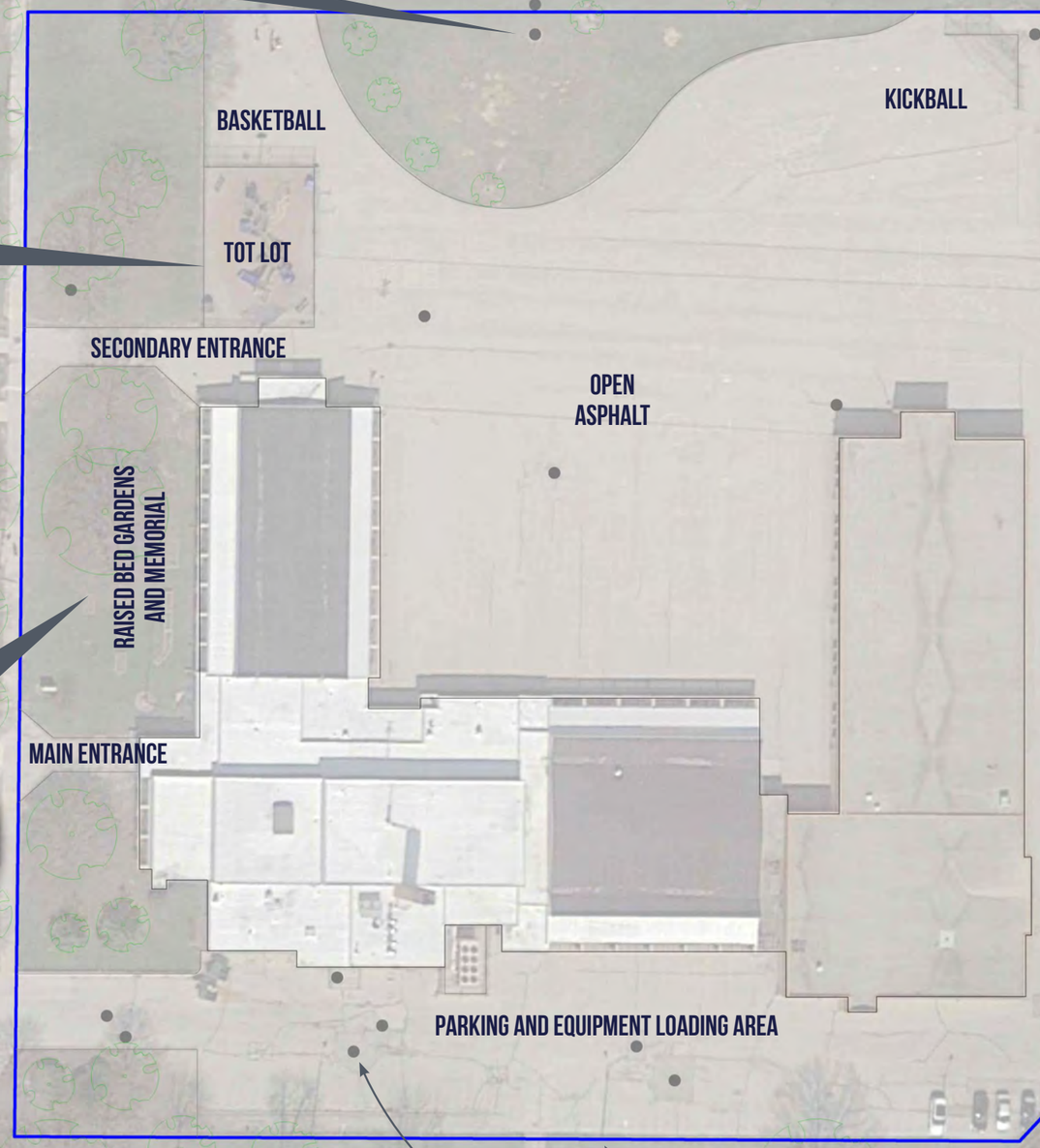
The existing tot lot was built in 2002 and is beginning to show its age with warn and damaged components. Additionally, the structures are in direct sunlight, which tends to make them hot and difficult to use during the summer months. The tot lot's use is also complicated due to its proximity to a high traffic area during dismissal times.

MILWAUKEE COUNTY KICKBALL FIELD

Immediately adjacent to the school is the Milwaukee County's Tippecanoe Park. The school would like to make regular use of this space, but has refrained from doing so because of liability concerns, poor stormwater drainage, and relatively poor quality of the nearby baseball/kickball field.

RAISED BED GARDENS

Clement has maintained several raised bed gardens for the past 5+ years. The program is well connected with the curriculum and produces a significant amount of healthy food for families.



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0 30' 60' 120'

APPROXIMATE SCALE IN FEET

TIPPECANOE
MILWAUKEE COUNTY PARK

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Prepared by:

Reflo
Sustainable Water Solutions

Drawing Title:

EXISTING SITE PLAN

Project:
Clement Avenue Elementary
3666 S Clement Ave
Milwaukee WI 53207

Designed By: Reflo, CDS, and Clement Ave Green Team
Drawn By: Justin Hegarty

Project No.
2018.MKE.14

Figure No.

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CLEMENT AVENUE

NATURALIZED AND SHADED TOT LOT

To help improve the use of the tot lot, Clement would like to phase out aging components and replace them with more naturalized alternatives as well as shade the structures with a shade sail system.

MULTIPLE ARTS OPPORTUNITIES

Throughout the schoolyard, there are many opportunities for arts such as: murals on building walls, educational signage, creative pavement markings, and performing arts as a part of the outdoor classroom use.

ADDITIONAL GREENSPACE AND RECREATIONAL FACILITIES

Reducing the amount of asphalt on the school grounds is a central component to the redevelopment plan. Along with new green space, earthen mounds, and tree plantings, Clement would like to add pavement markings and facilities that support exercise activities and game play.

INCREASED ACCESSIBILITY

To help improve foot traffic in and out of the school building, Clement would like to add an additional entrance to allow for older students to bypass the tot lot area. This would require that the basketball court be relocated, but gaga ball could be put in its place. Additionally, to help promote biking to and from school, this location could also include bike racks.

STORMWATER GREEN INFRASTRUCTURE

Green Infrastructure will help to better manage stormwater on the school grounds, where it falls, improving the aesthetics, recreational facilities, and the health of local watersheds.

REVITALIZED KICKBALL FIELD

IMPROVEMENTS AND CONNECTION WITH ADJACENT COUNTY PARK

Clement would like to increase its engagement with Milwaukee County Parks and use of Tippecanoe's facilities. Clement would also like to help revitalize the existing kickball field and manage additional stormwater by planting a rain garden on a low lying part of the park.

TIPPECANOE MILWAUKEE COUNTY PARK

OUTDOOR CLASSROOM AND RAISED BED GARDENS

To help facilitate ecolitercy and all of the sensory exploration that comes with outdoor learning, Clement would like to build an outdoor classroom, complete with rainwater harvesting and raised bed gardens.

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0 30' 60' 120'

APPROXIMATE SCALE IN FEET

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Reflo Sustainable Water Solutions

Drawing Title:

PROPOSED SITE PLAN

Project:
Clement Avenue Elementary
3666 S Clement Ave
Milwaukee WI 53207

Designed By: Reflo, CDS, and Clement Ave Green Team
Drawn By: Justin Hegarty

Project No.
2018.MKE.14

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DEPAVING

Total asphalt removal is anticipated to be approximately 22,000 sq.ft. and replaced with more porous ground cover including turf grass, native grasses, bioswales, walking paths, and crushed granite.

Managing approx. 4,400 gallons
(calculated using MMSD's Capacity Table)

STORMWATER TREES

18 stormwater trees are intended to be planted.

Managing approx. 450 gallons
(calculated using MMSD's Capacity Table)

NATIVE GRASSES

Total native planting areas (both near the soccer field and the outdoor classroom) total 13,300 sq.ft.

Managing approx. 5,320 gallons
(calculated using MMSD's Capacity Table)

UNDERGROUND CISTERN (POTENTIAL)

The building roofs (Watersheds 3 and 4) are internally drained (located in the separated sewer area); however the plumbing is routed near the planned bioswale and it may be feasible to divert that stormwater into a 20,000-gallon underground cistern.

(Potentially) Managing approx. 20,000 gallons
(calculated using MMSD's Capacity Table)

BIOSWALE 1

Located at the lowest point of Watershed 1, Bioswale 1 would be sized to manage a 25-year rain event.

Managing approx. 25,290 gallons
(calculated by engineering estimates)

WATERSHED 1:

Existing contributing area: 39,400 sq.ft. of pavement @ CN=98 and 10,500 sq.ft of grass @ CN 79

ABOVEGROUND CISTERN

As a part of the outdoor classroom structure, Clement Ave. would like to divert stormwater into a 550-gallon above ground cistern to demonstration rainwater harvesting and to reuse the rainwater for the raised bed gardens.

Managing approx. 550 gallons
(calculated using MMSD's Capacity Table)

BIOSWALE 2

Located at the lowest point of Watershed 2, Bioswale 2 would be sized to manage a 25-year rain event.

Managing approx. 19,777 gallons
(calculated by engineering estimates)

WATERSHED 2:

Existing contributing area: 26,700 sq.ft. of pavement @ CN=98

WATERSHED 3: INTERNALLY DRAINED BUILDING ROOF

Contributing area: 11,800 sq.ft. @ CN=98

WATERSHED 4: INTERNALLY DRAINED BUILDING ROOF

Contributing area: 14,500 sq.ft. @ CN=98

RAIN GARDEN (POTENTIAL)

Although, not on the school property, the adjacent area on Milwaukee County Park's property tends to stay wet resulting in standing water, deteriorated grass, and muddy areas. Clement Ave. would like to plant an approx. 3,000 sq.ft. rain garden in this area to help manage the stormwater and promote biodiversity around the school campus.

(Potentially) Managing approx. 13,200 gallons
(calculated using MMSD's Capacity Table)

TOTAL POTENTIAL GREEN INFRASTRUCTURE CAPTURE CAPACITY =

88,987 GALLONS

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0 30' 60' 120'

APPROXIMATE SCALE IN FEET

NOTES

The planned green infrastructure is intended to manage a 25 year - 24 hour storm event, 4.53 inches of rainfall, as described in the National Oceanic and Atmospheric Administration's (NOAA) Atlas 14 precipitation frequency estimates for the Milwaukee Mitchel Airport station. All conceptual planning depictions and estimates, including stormwater management capacity, will need to be confirmed during the detailed design and construction as-built processes.

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Prepared by:
CDS
Reflo
Sustainable Water Solutions

Drawing Title:
STORMWATER GREEN INFRASTRUCTURE PLAN

Project:
Clement Avenue Elementary
3666 S Clement Ave
Milwaukee WI 53207

Designed By: Reflo, CDS, and Clement Ave Green Team
Drawn By: Justin Hegarty

Project No.
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Figure No.

MURALS

Clement would like to further activate the schoolyard through the visual arts. Several walls are currently barren and unattractive. 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. Additionally, Clement would like to have artistically created pavement markings that can double as an interactive mindfulness space.

EDUCATIONAL SIGNAGE AND EXHIBITION

Looking at the redeveloped schoolyard 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. The following is a preliminary list of potential themes:

1. Bioswales and Stormwater Management
2. Orchards and Healthy Food Access
3. Outdoor Classroom - Use Schedule
4. School Gardens and Rainwater Harvesting
5. Underground Cistern and Sewers
6. Project Partners and Site History
7. Native Plantings and Pollinator Species

OUTDOOR CLASSROOM AND PREFORMING ARTS

The outdoor classroom will serve as an important focal point in the schoolyard. The space can serve classroom activities, including being used for rainwater harvesting and potential solar energy production, while also doubling as an intimate space for smaller scale preforming arts activities.

SCHOOL GARDENS AND ORCHARD

Building off of Clement's existing school garden program, the schoolyard redevelopment will include additional raised bed gardens and a small orchard so that students, teachers, and families can have access to healthy, local food.

BENCHES

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

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0 30' 60' 120'

APPROXIMATE SCALE IN FEET

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Prepared by:

Reflo Sustainable Water Solutions

Drawing Title:

ARTS, OUTDOOR EDUCATION, AND COMMUNITY ENGAGEMENT PLAN

Project:

Clement Avenue Elementary
3666 S Clement Ave
Milwaukee WI 53207

Designed By: Reflo, CDS, and Clement Ave Green Team
Drawn By: Justin Hegarty

Project No.
2018.MKE.14

Figure No.

CONCEPTUAL PLAN SUPPORTING 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.

Cream City Conservation is a two-prong social enterprise: working with organizations to address internal cultures and practices that contribute to workforce homogeneity; and training and employing young adults 15-25 whose social identities are traditionally underrepresented in the environmental industry.

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.

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

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 multi-faceted schoolyard redevelopment projects.

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 bi-monthly meetings and an annual conference, hundreds of local participants have collectively shared ideas, resources, and lessons-learned.

Arts @ Large activates Milwaukee's education communities to build environments that support arts-rich, life-long learning. Arts @ Large uses the arts as a tool to engage students in academic learning and provide meaningful work for artists.

4

PLANNED CURRICULUM CONNECTIONS

It is 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.

The butterfly garden and outdoor classroom will provide highly motivational and hands-on opportunities for young students to learn basic sequencing skills, such as the water cycle and life cycle of a plant. Older students will better understand and discuss more complex processes such as global warming and decomposition. Students of all ages will learn and use new vocabulary and concepts in ways that a normal classroom does not allow. Access to the native Wisconsin ecosystems will help further these skills.

When students return to their families, they will be excited to express what they've learned because they will have continuous exposure to the plants, animals and insects they have experienced within their school environment, further perpetuating and linking learning opportunities at home. Having this resource just outside our school doors will provide the repetition students often need to obtain and learn this valuable information.

In addition to these concrete opportunities for growth in academic language and learning, the creation of a safe and dynamic environment for play will allow our students to practice and develop the social communication skills they will need as they grow into adolescents and adults. As designed, the playground areas will allow and encourage students to engage with each other during play and collaboration. By creating safe, determined areas for games, children will have engaging opportunities to learn about rules, turn taking, and conflict resolution. Areas designated for imaginative play will create opportunities for students to create stories and dialog with their peers. Each of these skills is an essential building block required for students to communicate effectively in their classroom and their community.

MPS MILWAUKEE PUBLIC SCHOOLS

WISCONSIN DEPARTMENT OF PUBLIC INSTRUCTION

pbis Positive Behavioral Interventions and Supports

COMMON CORE STATE STANDARDS INITIATIVE
PREPARING AMERICA'S STUDENTS FOR COLLEGE & CAREER

K4 - K5

Jumping into hands on learning using the new outdoor space would allow the K4 and K5 students to have an introductory set of lessons on **animals habitats**, insects and how they grow and learning how the **plant cycle** works for each season. The outdoor space would allow the teachers to take students outside for both hands on activities as well as large and small motor development.

Students further explore the **growing cycle** in the classroom by planting seeds, caring for them and then watching them mature. Then they care for the plants until maturity and help harvest the fruits, berries and vegetables. The **water cycle** is introduced at this early age and students are taught lessons in **conservation** and collection as well as learning the importance of the rivers and Lake Michigan. 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.

1ST - 3RD

The older students will help **grow** the plants and **maintain** the garden beds with the help of the school community and neighborhood around Clement Avenue. Allowing the opportunity to encourage **healthy fruit/vegetable** and growers to grow in their own gardens.

The teachers engage the students in health about **healthy choices** and how to care for plants at home to have fresh vegetables. The 2nd and 3rd graders start their journey as Animal Ambassadors during a partnership with the **Milwaukee County Zoo**.

Students study the **ecosystem** around them as well as how a city works. The interactive play areas, native plants and trees and outdoor classroom will allow the various classes to be able to study things outside such as plant and animal growth, insect **life cycles** and the **rain cycle**. They will also have great opportunities to work on **literacy** and acting skills within their outdoor class experiences.

4TH - 5TH

The outdoor classroom and the "green" playground will transform Clement Avenue school. The project will make physical changes to our outdoor playground that will create curricular and experiential learning opportunities that have never been available on school grounds. It will provide naturalized areas that 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 (4th grade standard). The project will be a lasting asset to the school and community rather than an eye sore and safety hazard

5th grade would benefit from the water study because we already do projects about the **water cycle** and its components (evaporation, transpiration, condensation, precipitation, run-off, and collection). We could also use the green space and cistern to study these components in person and hands on. There would be continued benefits for 5th grade because we do research about **ecosystems**, both big and small. These natural, green spaces would afford us the opportunity to see real examples, in nature, which would be an invaluable experience.

Both 4th and 5th grade would make, much needed, use of outdoor classroom space because the rooms used for those grades often get warmer than 90 degrees when it is sunny outside. The hands on classroom allows 4th and 5th grade teachers the ability to set up experiments on **energy** and **motion** as well as experiments outside where is more room for each group to study and learn.

6TH - 8TH

8th Grade studies the **social studies** component of **community spaces**. The students are actively involved at planning out community spaces such as parks and how the community will interact with them. Since the surrounding community has the neighboring Tippicanoe County Park as a place to meet and interact, the new green space would be a great place for Clement Avenue students to work collaboratively with the community. The students are involved with the planning of their own community spaces for projects and will be sharing some of this information with the county parks as we plan our community space.

Another larger project that would benefit from the green space and playground would be the larger project that involves **technology** and **engineering**. The middle school students each year design cities. The student are trying to find green and sustainable solutions to creating a new city and how these pieces would help our current cities to find solutions to problems such as water and air pollution, water conservation and energy solutions.

Junior high students volunteer their time to become part of the school wide **student green team**. Where they will be caring for the butterfly gardens and plant beds with duties such as weeding and watering plants, helping with the compost. One very important skill the students are learning is that of **commerce** and trade. The students help grow the plants and vegetables and then help the teachers sell the items at the annual plant/**vegetable sales**. Students are shown the importance of **supply and demand** as well as competition prices.

MUSIC INTEGRATION

Music is in the world around us and can happen inside and outside. Traditionally, music is taught inside where lessons are taught. We can explore a greater variety of music and tie it into a STEAM format using the outdoors to help cross curricular study. Some examples include experimenting to see how singing sounds different inside vs. outside, singing songs about bugs/birds/ and colors, using the natural trees and logs to create **rhythm games**, exploring how outside sounds are related to music. Things that were traditionally done in books now can be taught outside with chalk such as drawing whole/half notes, and composition using outside elements. We work with ACE, and the Milwaukee Symphony Orchestra, and will be able to hold **outdoor concerts**, and learning activities.

ART

Students express themselves through art each day. Combining art into the classroom projects we create outside allow the students to take ownership of their learning and expressions through their feelings. **Drawing in nature** allows students to learn about the world around them and the senses they use to create meaningful experiences. Different techniques could be used such as collages, **study of light and shadows**,and traditional **chalk art** . Art is striving to follow a STEAM model and incorporate things such as seasons, community holidays, light and motion, the city we live in and the natural growth cycle of plants and animals. Allowing students to work outside lets them choose their object to study, draw or sculpt. Art is a part of the human experience and showing students that patterns, shapes and shade occur in their everyday lives. We also will be working with the students to create **murals** and other art work that will be displayed in the new outdoor area as well.

SENSORY

The experiences all children have when they are outside in nature provides an ever-changing variety of new and exciting things to **see**, **touch**, **hear**, and **smell**. We will be providing all of these sensory experiences for our little ones when they have opportunities to see all of the trees, rocks, grass and even the water, and how they all have their purpose in this space. They will be able to touch all of the things growing here in the gardens and around the playground. In a special place near the front of the school, the children will get to play with trucks, and pails and shovels in an area designated for early childhood play equipment, encouraging exploring on hands and knees. There will be lots to hear with the sounds of children laughing, playing, and yelling as they run around and discover places to play with their friends. Flowers growing and blooming and trees showing the first buds in spring to the last of the fall leaves in autumn will provide lots of **teachable moments** throughout the school year. The students will also be provided a hand water pump, that will recycle the water collected and they will physically pump it back out and be reused for our plants around the schoolyard.

HEALTH AND WELLNESS

Having a new layout on the playground allows us to be able to break up the area into **workout stations** throughout the structure. Students could choose to do leg stretches while sitting or standing at the activity stations and having **shade to rest** in when done. The grassy area would be used for continued **mindfulness activities** and do have a **safe place** for our community to play soccer. Buddy Benches and social seating areas will help promote social health and problem solving. 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**.

5

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, parents, and the surrounding neighborhood in school activities and outdoor learning, while also sharing the responsibility of maintaining the new green space.

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

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.

RAISED BED GARDENS

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

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 water damage during winter freezing. Then in spring, cisterns will again need to be adjusted to accept rainwater.

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. Between 1-3 years of initial weeding are required, but after that period, maintenance is minimal.

6

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.

It is 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. Inkind Contribution
Stormwater Green Infrastructure		
Asphalt removal, sawcutting, etc.	$ 75,000	
Soil, grass, and other porous re-surfacing	$ 40,000	
18 Stormwater trees	$ 10,000	$ 10,000
Native plantings	$ 5,000	$ 2,500
Bioswale soils and plantings	$ 65,000	$ 2,500
Underground cistern	$ 50,000	$ 7,500
Outdoor classroom cistern	$ 7,500	$ 2,500
Survey, Detailed Design and Permitting	$ 30,000	
Project Management	$ 2,500	$ 10,000
Continued Reflo Support	$ 7,500	$ 7,500
Project Signage	$ 5,000	$ 2,500
Water Related Arts Programing		$ 10,000
Demonstrations, Workshops, Tours		$ 2,500
Water Focused Curricular Activities	$ 10,000	
Vegetation Establishment	$ 5,000	$ 5,000
Stormwater Green Infrastructure Subtotal	***$ 312,500***	***$ 62,500***
School Garden and Healthy Food Access		
Additional raised bed planters	$ 7,500	
Maintenance for plantings		$ 2,500
School Garden and Healthy Food Access Subtotal	***$ 7,500***	***$ 2,500***
Recreational Improvements		
Gaga Ball Pit	$ 7,500	
Repaired tot lot with naturalized equipment	$ 50,000	
Shade Sails over the tot lot	$ 20,000	
Basketball relocation	$ 5,000	
Soccer goals	$ 5,000	
Asphalt painting: track, ball courts, 4-square	$ 7,500	
Fit trail paths and equipment	$ 10,000	
New fencing behind relocated basketball court	$ 10,000	
Revitalized kickball field (County Park)	$ 10,000	
Recreational Improvements Subtotal	***$ 125,000***	***$ -***
Educational Elements		
School murals	$ 15,000	$ 5,000
Outdoor classroom		
Structure	$ 60,000	
Seating and Classroom Materials	$ 20,000	
Educational Elements Subtotal	***$ 95,000***	***$ 5,000***
Other Site Improvements		
New entrance development	$ 15,000	
Bike parking equipment	$ 3,500	
Schoolyard benches	$ 7,500	
Other Site Improvements Subtotal	***$ 26,000***	***$ -***
Total Estimated Fundraising Targets:	***$ 566,000***	***$ 70,000***

7

PROJECT TIMELINES AND NEXT STEPS

Although there has already been a significant amount of time and energy invested in the schoolyard redevelopment project by Clement Avenue 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 2019. The scope of the construction is based on the funds obtained through budet allocations, grants, donations, and school fundraisers. Engineering, surveying, and architecture firms are typically hired in fall to support the detailed design and perimitting process. To minimize disruption to regularly scheduled school functions, construction is preferred to be conducted over a relativly 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 CLEMENT'S SCHOOLYARD REDEVELOPMENT:

Please go to Reflo's website: www.RefloH2o.com
or send and email to: justin.hegarty@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 - SUSTAINABLE WATER SOLUTIONS

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

MMSD has a publicly available resource center, annual rain garden plant sale, a guidebook on green infrastructure at schools, and annual green infrastructure funding opportunities: www.mmsd.com

GREEN AND HEALTHY SCHOOLS WISCONSIN

Compilation of green school curricular connections and a guidebook, "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 ON HOW TO SUPPORT THE CLEMENT AVENUE SCHOOLYARD REDEVELOPMENT PROJECT PLEASE CONTACT:

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