

Flint Native Habitat Restoration Vision Plan:

Using Pollinator Garden
Concepts for Vacant Lots

Sustainable Built
Environment Initiative

September, 2021

MICHIGAN STATE
UNIVERSITY

School of Planning, Design
and Construction

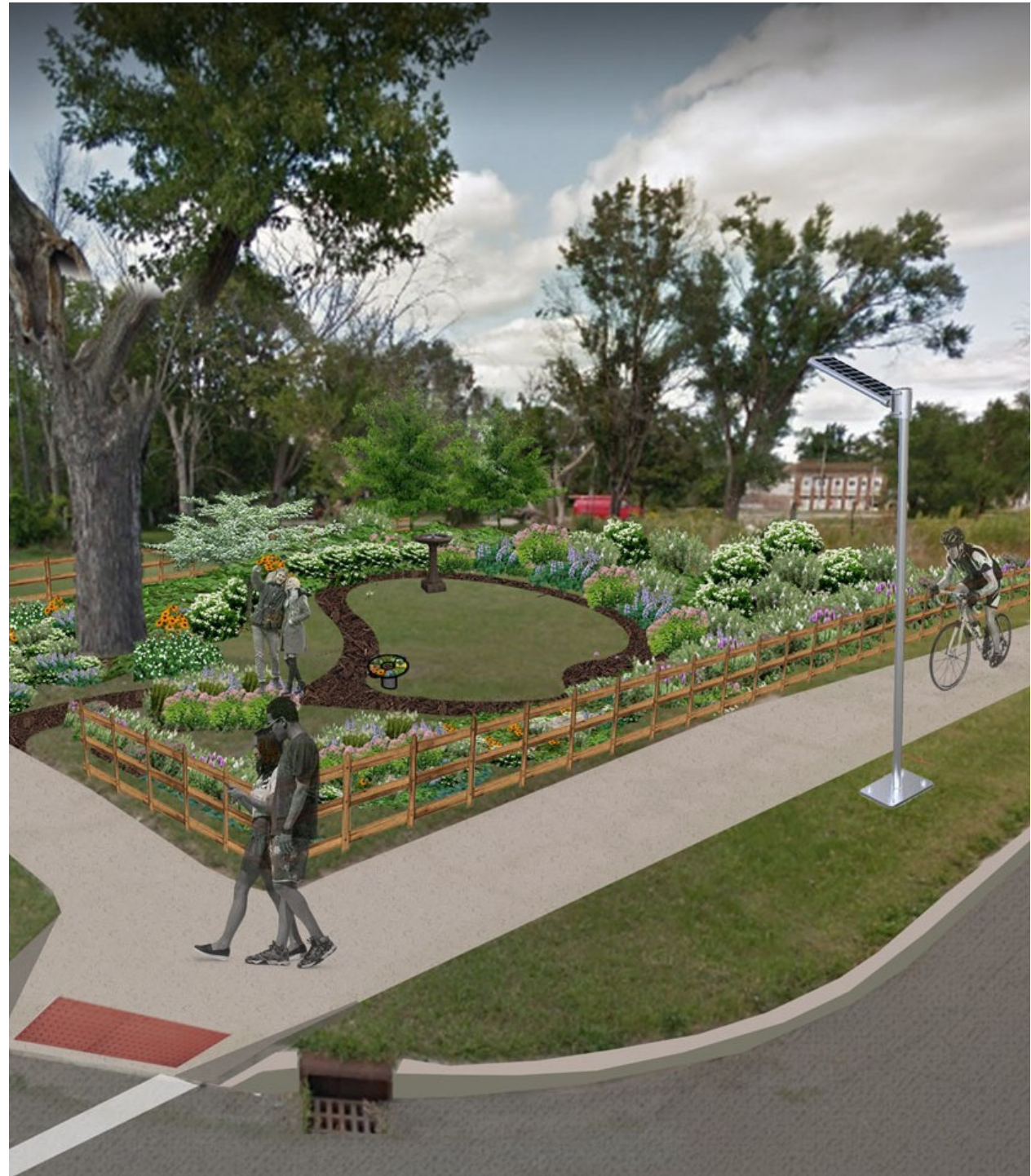


Table of Contents

■ Acknowledgements — 4

1 Introduction — 5

- Project Overview — 7
- Process — 8
- Existing Conditions Images — 9

2 Community Input — 10

- Meeting One: Community Visioning — 11
- Meeting Two: Design Input — 18
- Meeting Three: Final Recommendations — 25

3 Design & Planning Recommendations — 27

- Planning & Design Goals — 28
- Goals and Objectives — 29
- Planning Recommendations — 30
- Seasonal Design Activities — 35
- Plant Selection — 36
- Design Themes and Locations — 41
- Ballenger Square Example Lot Design — 42
- Ballenger Highway Example Lot Design — 44
- Bel Aire Woods Example Lot Design — 46
- Grace Community Christian Example Lot Design — 48
- WC's Beautification Example Lot Design — 50

4 Appendix — 52

- Appendix A: Meeting One Visioning Input — 53
- Appendix B: Meeting Two Design Feedback — 55
- Appendix C: Meeting Three Recommendations — 56

*All photos, unless otherwise noted, are courtesy of the MSU SPDC

Acknowledgements

Local Partners

Genesee County Land Bank, The City of Flint, Genesee County Land Bank Clean & Green Neighborhood Groups, and MI-YVPC.

The Michigan State University Team

Michigan State University (MSU) and the School of Planning Design and Construction (SPDC) is led by faculty members Wayne Beyea and Jun-Hyun Kim, with research assistants Jason Derry, Emma Gilbert, Maggie Huntley, Quinn Kendra, Armin Mouly, Shu Yang and Paige O'Keefe.

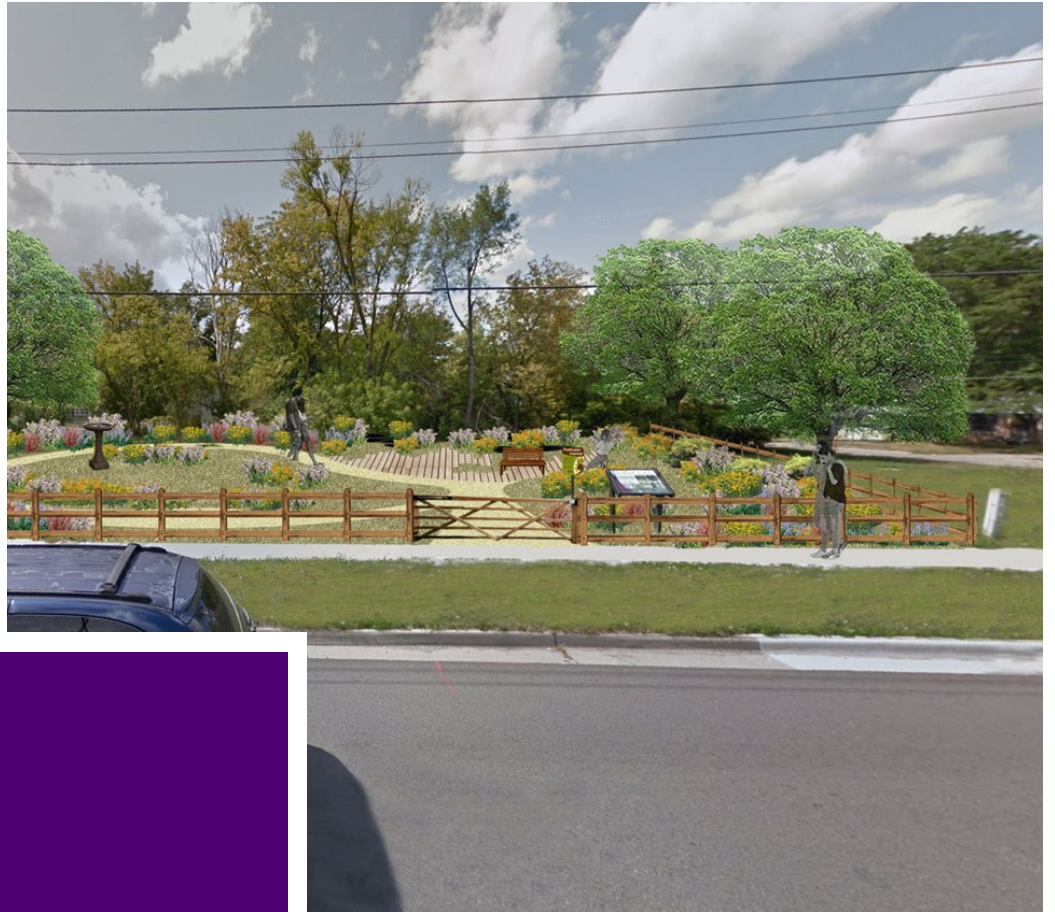
Special Thanks

The MSU Team would like to express their gratitude to Christina Kelly, Melissa Hertlein, and Raynetta Speed with the Genesee County Land Bank and all of the Clean & Green members that participated throughout this project. This process would not have been possible without their invaluable feedback and support.

The following entities have provided support to make this initiative possible:



Introduction



Introduction

MSU Extension (MSUE) and the School of Planning, Design and Construction (SPDC) have jointly developed the Sustainable Built Environment Initiative (SBEI) to address sustainability challenges and improve the quality of life in Michigan's communities. The partnership allows for an integrated approach to solving complex community problems through the diverse expertise found within the School of Planning, Design and Construction along with MSUE's institutes and Extension educators. The Sustainable Built Environment Initiative focuses on projects that integrate planning and design elements within a sustainability framework.

OBJECTIVES OF THE SBEI

- ♦ Work with communities to develop sustainable planning and design ideas for local issues and opportunities
- ♦ Build consensus and generate ideas to address challenging sustainability concerns
- ♦ Act as a bridge between communities and consulting, planning and design professionals

Please note: The design recommendations in this report are intended to be conceptual and visionary. As a tool for consensus building, this report does not include an environmental, technical or market feasibility analysis or cost estimates necessary for final design recommendations.

Project Overview

The purpose of the Flint Pollinator Project is to develop a conceptual plan for transforming vacant land and abandoned lots into native habitat areas within the City of Flint. This report details how MSU staff, the Genesee County Land Bank, and citizen representatives from local neighborhood groups partnered to identify community concerns and build consensus on the conceptual plan. The overall results serve as an aesthetics and utility guide. The community input will help direct the future enhancement of ecosystem services while improving the appearance of lots and

promoting social interaction between community members.

To enhance ecosystem services, the final design/planning recommendations consider the following themes:

- ♦ Creating wildlife habitats in the form of **pollinator gardens** to support the well-being of neighborhood flora, and
- ♦ Cultivating **natural stormwater management systems** to reduce runoff and promote infiltration.

Ultimately, the community feedback centers around four goals with which to move forward:

GOALS OF THE FLINT POLLINATOR PROJECT

1. Revitalization
2. Safety
3. Placemaking
4. Sustainability

With a collaborative process, the MSU team worked with the Genesee County Land Bank and Flint residents to address these objectives through the resources and opportunities unique to the City of Flint. This report serves as the culmination of that work and provides guidance for realistic solutions to achieve a more sustainable built environment.

WHAT IS A 'POLLINATOR GARDEN'?

A pollinator garden is planted and designed, with diverse pollen producing plants which overlap bloom time throughout the season and attracts pollinating insects known as **pollinators** (Source: Michigan Pollinator Initiative; College of Natural Science, Michigan State University).



Process

Visioning Sessions, Preliminary Recommendations, Final Plan Presentation, Implementation

To achieve a plan for the area that accurately representing the interests of the neighborhoods, a three-meeting input process was adopted.

On November 13, 2020 the first virtual meeting was held as a preliminary opportunity for residents of Flint to discuss opportunities and preferences for pollinator gardens. With the input of local representatives, the meeting acted as a forum for community leaders and citizens to

make suggestions concerning the project.

The second virtual meeting was held on March 26, 2021. The primary purpose was to present preliminary recommendations and designs for the area. Participants voiced their opinions and concerns on the initial proposals. This input was then analyzed and used to update the proposals to further meet the needs of the community.

At the third and final meeting on June 4,

2021, the final design images and planning recommendations were presented virtually to the public. From this meeting, input was gathered to make final adjustments to the content of this report.



Existing Conditions Images

Five neighborhood areas were identified to focus efforts for this project. Representative sites were selected within these areas to showcase potential pollinator improvements. The five representative sites are illustrated below.



Bel-Aire Woods Association: 5610 Cloverlawn Street



Ballenger Square Community Association: 1209 N. Chevrolet Ave.



Grace Community Christian Fellowship: 1335 Lewis Street



Ballenger Highway Neighborhood Association: 2313 Welch Boulevard



WC's Beautification Project: 4705 Dupont Street

Community Input



Community Input

Meeting One: Community Visioning

Neighborhood groups from the City of Flint area met on November 13, 2020 via Zoom. MSU faculty presented an overview of the SBEI process and information about urban pollinators.

Participants were asked to vote, using the poll feature on Zoom, on visual preferences of pollinator gardens. The vote consisted of neighborhood residents in attendance voting on a scale from 1(dislike)-5 (like) regarding their opinion of the visual image. The visual preferences were divided into four characteristics—garden concepts, amenities, perimeters, and signage. Participants were then organized into breakout rooms for discussion (see questions below).



Screenshot of the Meeting One breakout rooms conducted through Zoom.

Breakout room questions

1. What do you like about what you heard concerning pollinator gardens?
2. What are your concerns about pollinator gardens?
3. What kinds of activities would you like to see on the pollinator garden sites?
4. What would improve the sense of place (e.g., live, work, play) on pollinator sites in the neighborhood?
5. Do you have any recommendations that weren't previously discussed?

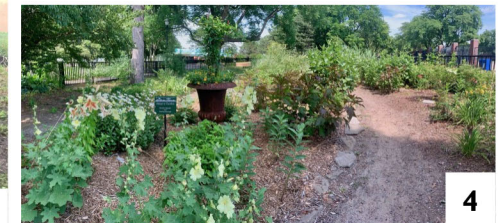
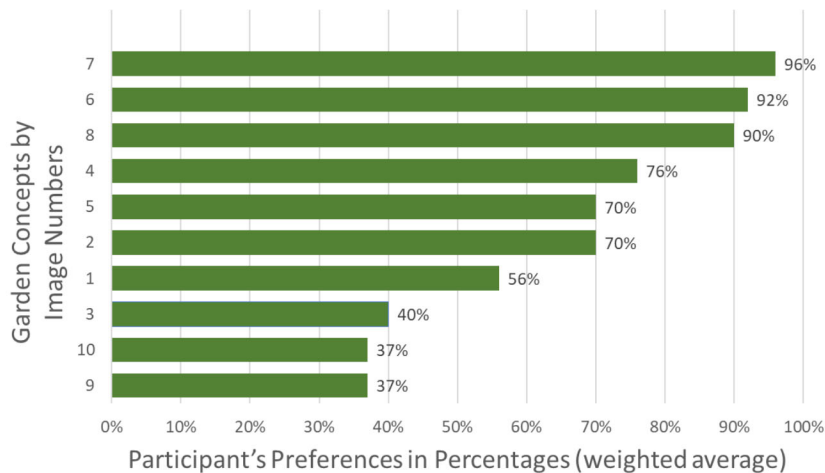
Following the breakout room discussions, groups then reported out their key points. Participants' feedback was organized into five major themes—*beautification*, *perimeters*, *maintenance*, *sense of place* and *youth/community involvement*.

Visioning Input Summary

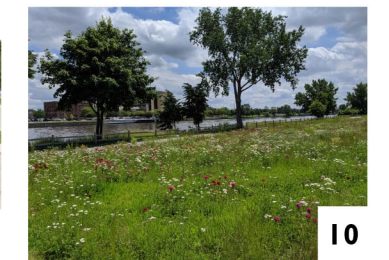
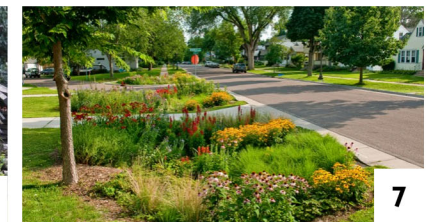
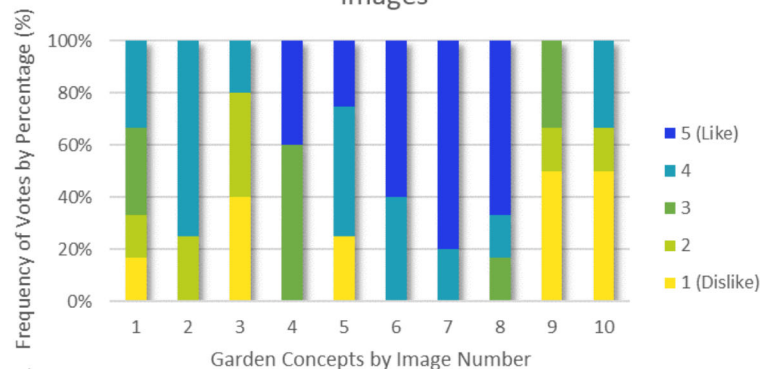
Garden Concepts Images:

At Meeting One, residents provided input to develop a vision for pollinator gardens within the city of Flint. Participants were asked (using the poll feature via Zoom) to rate example images of pollinator garden characteristics. These characteristics included Garden Concepts, Amenities, Perimeters, and Signage. Each participant rated the image shown on a scale of 1-5 (**1 for dislike; 5 for like**). In reference to the garden concept images, the high preference images are image 7, 6 and 8 while the low preference images are 10 and 9.

Participant Preferences for Garden Concept Images



Participant Preferences for Garden Concept Images

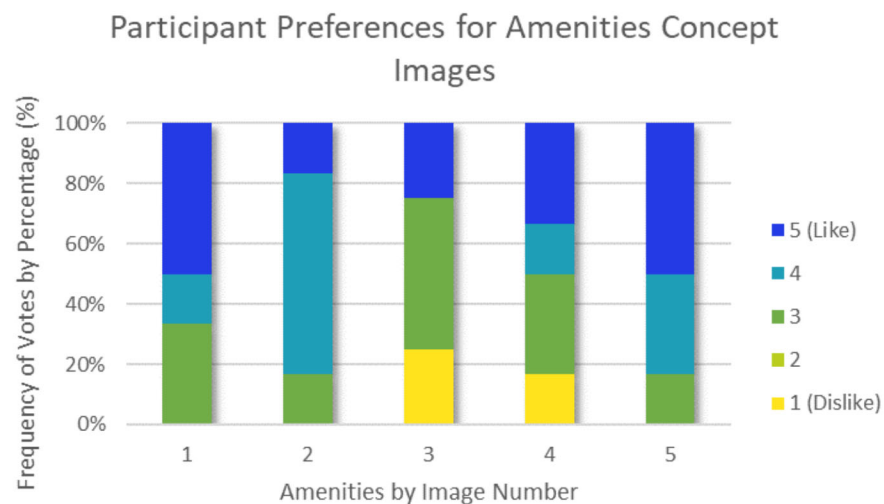
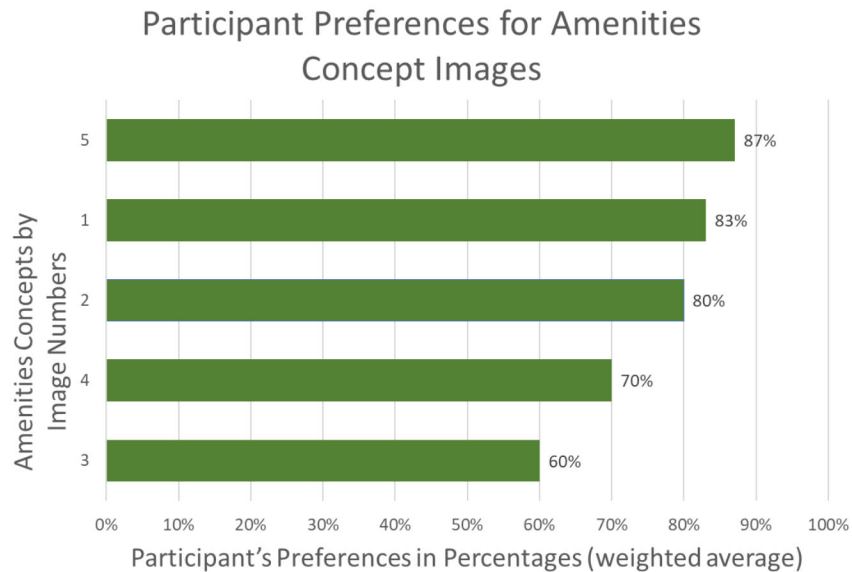


Total Votes: 52

Visioning Input Summary

Amenities Concept Images:

In reference to the amenities concept images, the high preference images are image 5, 1 and 2, while the low preference image is 3.

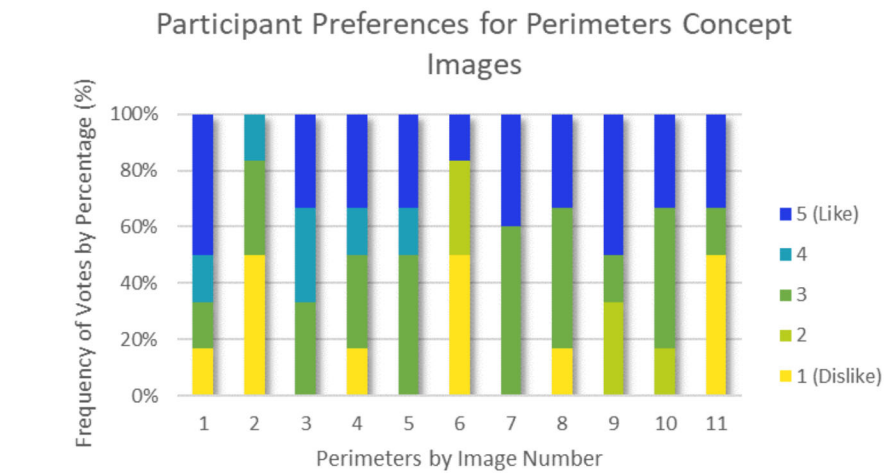
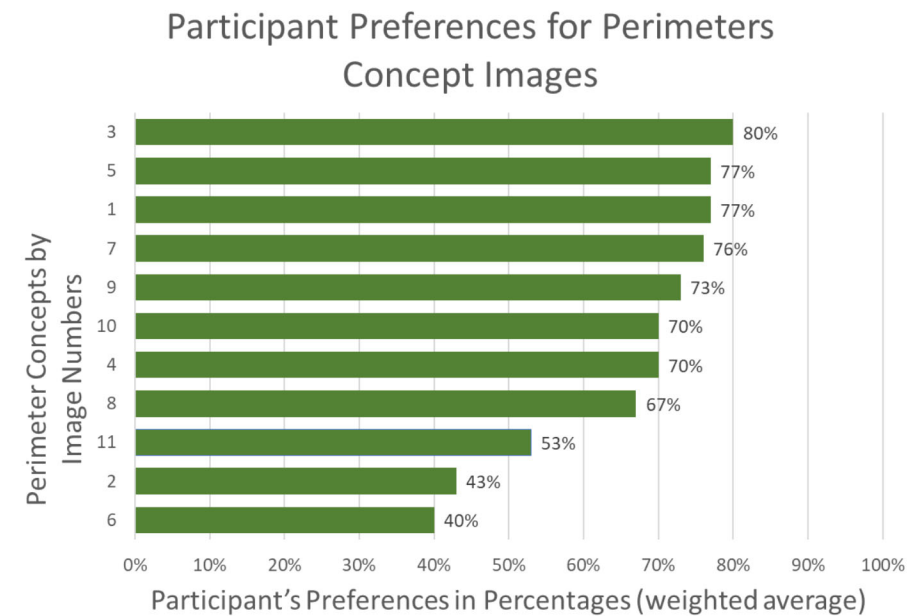


Total Votes: 28

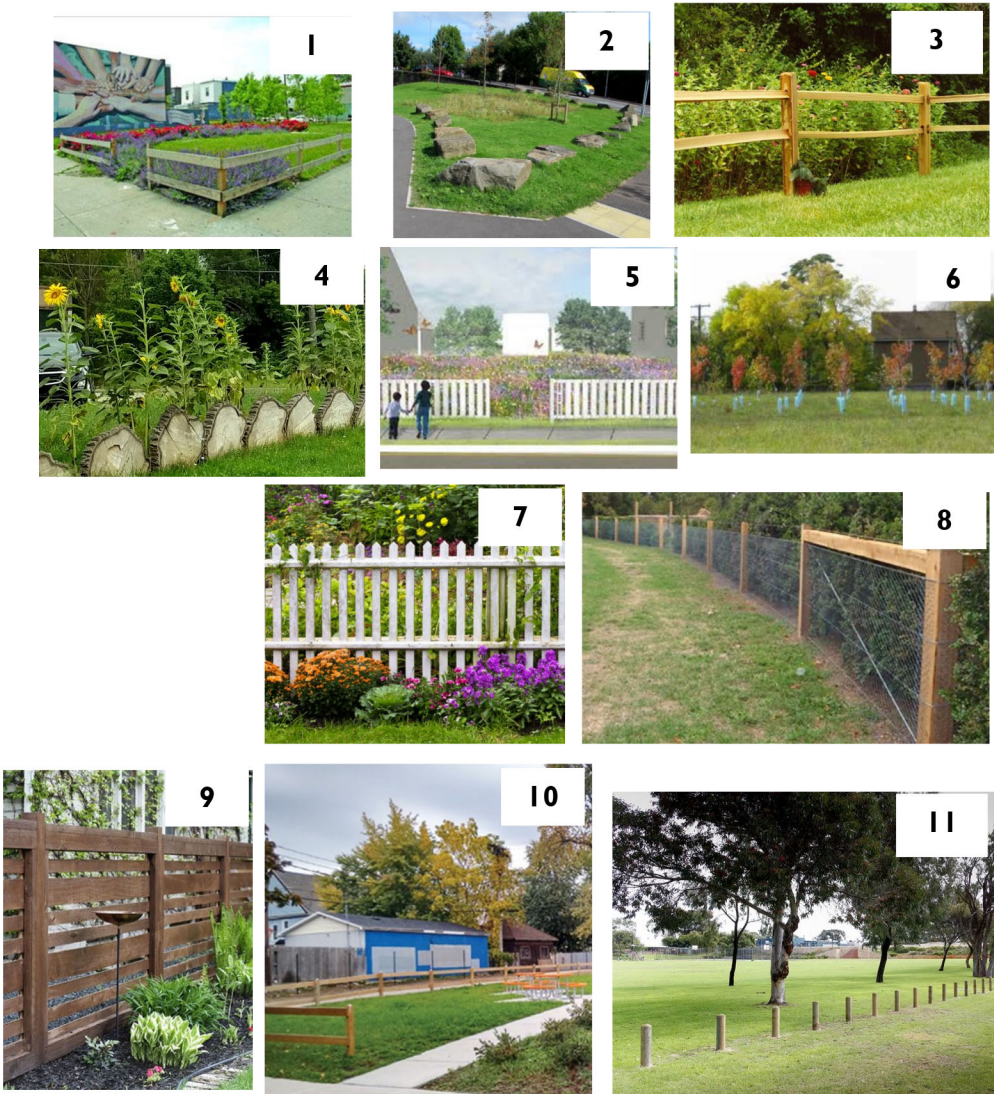
Visioning Input Summary

Perimeter Concept Images:

In reference to the perimeter concept images, the high preference images are image 3, 5 and 1 while the low preference images are 2 and 6.



Total Votes: 65

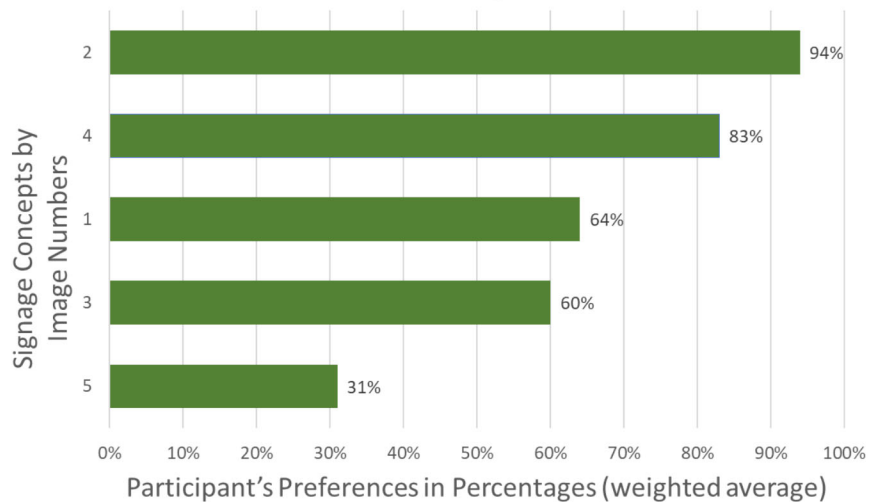


Visioning Input Summary

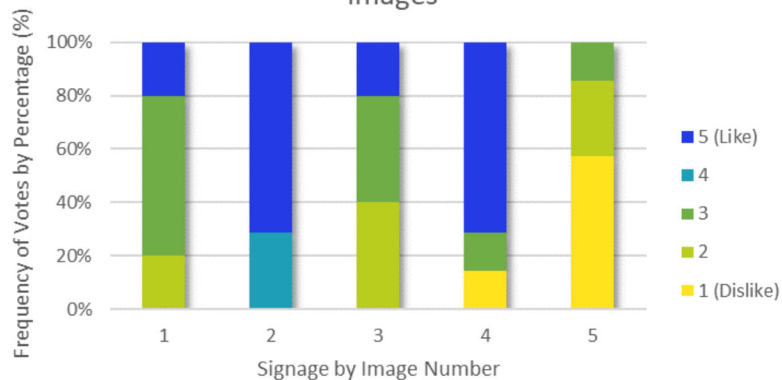
Signage Concept Images:

In reference to the signage concept images, the high preference images are image 2 and 4, while the low preference image is 5.

Participant Preferences for Signage Concept Images



Participant Preferences for Signage Concept Images



Total Votes: 31



Visioning Input Summary

To prompt group discussion, during Meeting One, participants were asked to discuss their answers to the following questions:

1. What do you like about what you heard concerning pollinator gardens?
2. What are your concerns about pollinator gardens?
3. What kinds of activities would you like to see on the pollinator garden sites?
4. What would improve the sense of place (e.g., live, work, play) on pollinator sites in the neighborhood?
5. Do you have any recommendations that weren't previously discussed?

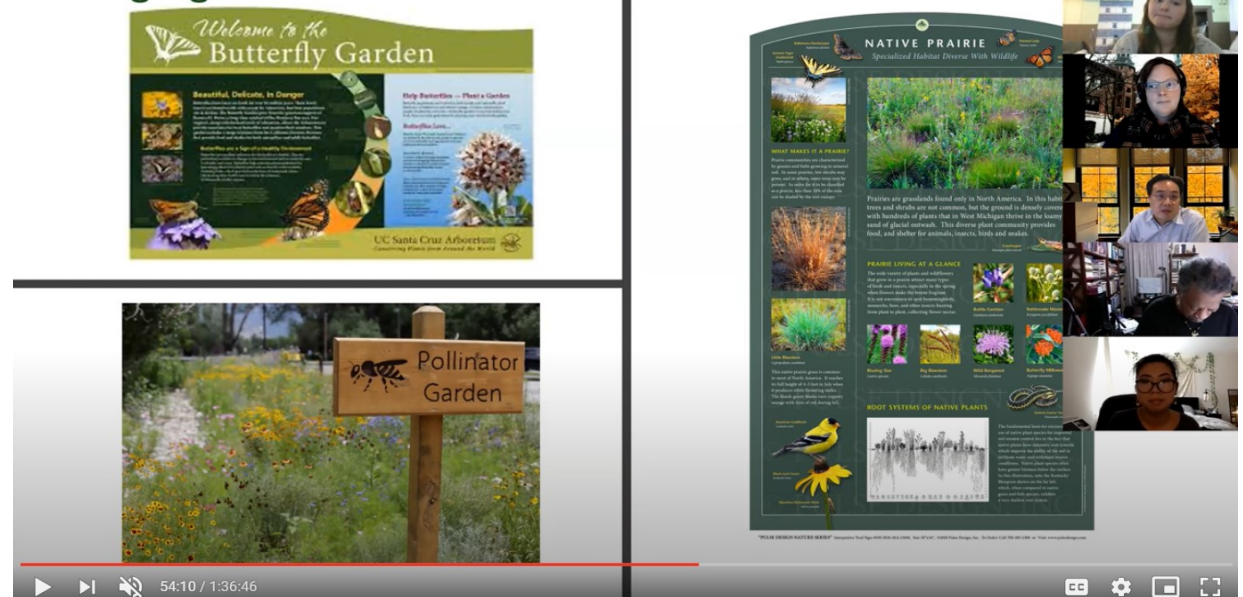
There were five major themes from participants' feedback regarding these questions.

1. **Beautification:** Meeting participants were enthusiastic about the beautification the pollinator gardens could provide, as long as there is a way to prevent dumping on the sites.
2. **Perimeters:** Some participants want perimeters around pollinator sites to deter people from dumping, while others do not want perimeters out of fear they could deter community members from spending time in the gardens.

3. **Maintenance:** Some meeting participants were concerned about the maintenance required for these pollinator gardens, including watering plants, deterring vandalism, and educating community members about maintaining the space.
4. **Sense of Place:** Most meeting participants were interested in the pollinator gardens establishing a sense of place through the installation of benches, signage, and public art. They would like the gardens to be intentionally placed rather than appearing as weed gardens.

5. **Youth/Community Involvement:** Many participants were interested in involving people in the community, specifically young people in the maintenance and activities that can take place in the pollinator gardens. This would improve the sense of community, while educating community members about pollinator gardens.

#4 - Signage



Screenshot of the Meeting One visioning input process.

Visioning Input Summary

Following Meeting One, a post-meeting survey was sent out to participants who were not able to attend the Zoom session. These word clouds are prepared from the responses received from the zoom meeting and the subsequent survey. The responses to the open-ended questions were summarized below using word clouds. A word cloud is a visualization tool whereby the larger the word, the more frequent the word/phrase appeared.

1. What are you most proud of about your neighborhood?



2. What are you most dissatisfied about with your neighborhood?



3. If you could float over the site in a hot air balloon 15 years from now, what would you most like to see?



Total Votes: 15

Community Input

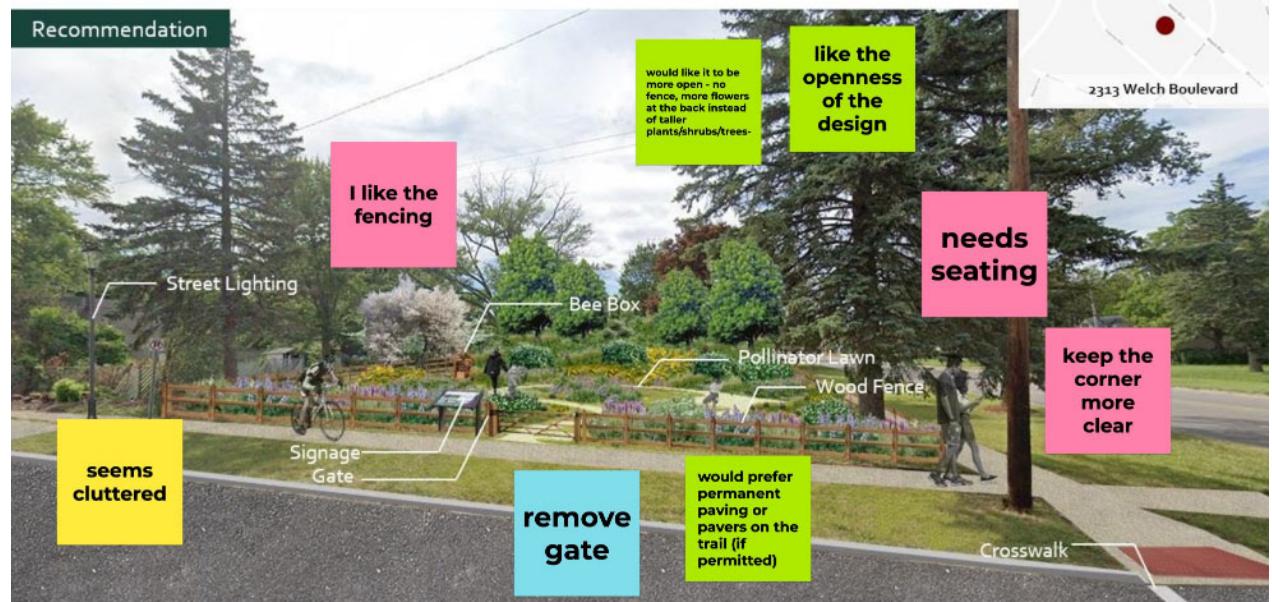
Meeting Two: Design Input

On March 26, 2021, the MSU team presented before and after design options and character images depicting features for the pollinator gardens. Thirteen people outside the MSU team attended the meeting representing Ballenger Square, Bel-Aire Woods, Ballenger Highway, Eastside Coalition, and WC's Beautification Project Clean and Green neighborhood groups. In addition, project coordinators from the Genesee County Land Bank attended the meeting.

After presenting preliminary survey results and feedback received during and after Meeting One, participants were asked to provide feedback on five pollinator garden design renderings to further inform the visioning process. Using Google JamBoard and the "Chat" feature on Zoom, attendees responded with feedback to the design images presented. This input was organized into two feedback prompts:

1. What do you like about the designs presented today?
2. What needs to be added or removed to improve the design?

Corner Lot Design (Full Sun Scenario) Ballenger Highway: 2313 Welch Boulevard



Screenshot of the Meeting Two design feedback representation depicted through Zoom.

Overall, participants disagreed as to whether they felt the designs should include passive garden activities; however, all participants agreed that corner lots would be the most optimal lot location for pollinator gardens, and they generally agreed that garden plantings need to be strategically chosen and planted

on the site so that nearby drivers' sightlines are not obstructed. In general, participants did not like designs that showed dense plantings with limited color variation.

Design Input: Character Images Feedback Examples

Community members responded to character images of designs created by the design team by adding their feedback to a Google JamBoard by placing “sticky notes” directly onto the images. This input helped the MSU team identify the preferences of the residents of the community.

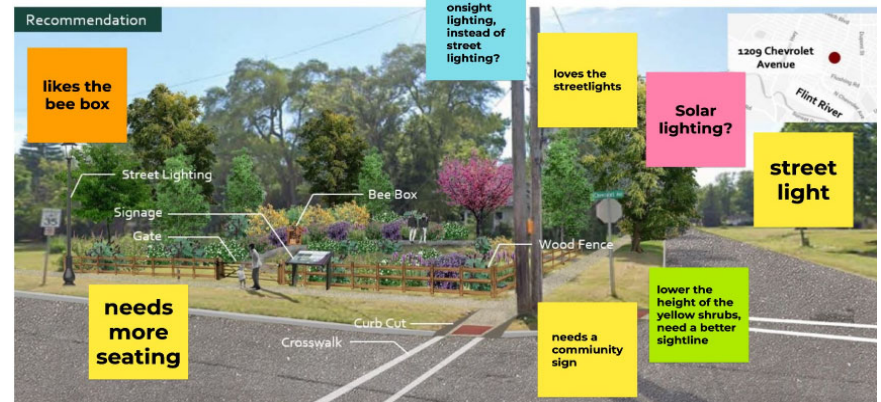
Pollinator Garden (Full Sun Scenario)

Bel-Aire Woods: 5610 Cloverlawn Street



Education Garden (Wet Soil Scenario)

Ballenger Square: 1209 N. Chevrolet Ave.



Eastside Neighborhoods (Partial Shade/Sun Scenario) Grace: 1335 Lewis Street



Pollinator Garden (Dry Soil Scenario)

WC Beautification: 4705 Dupont Street



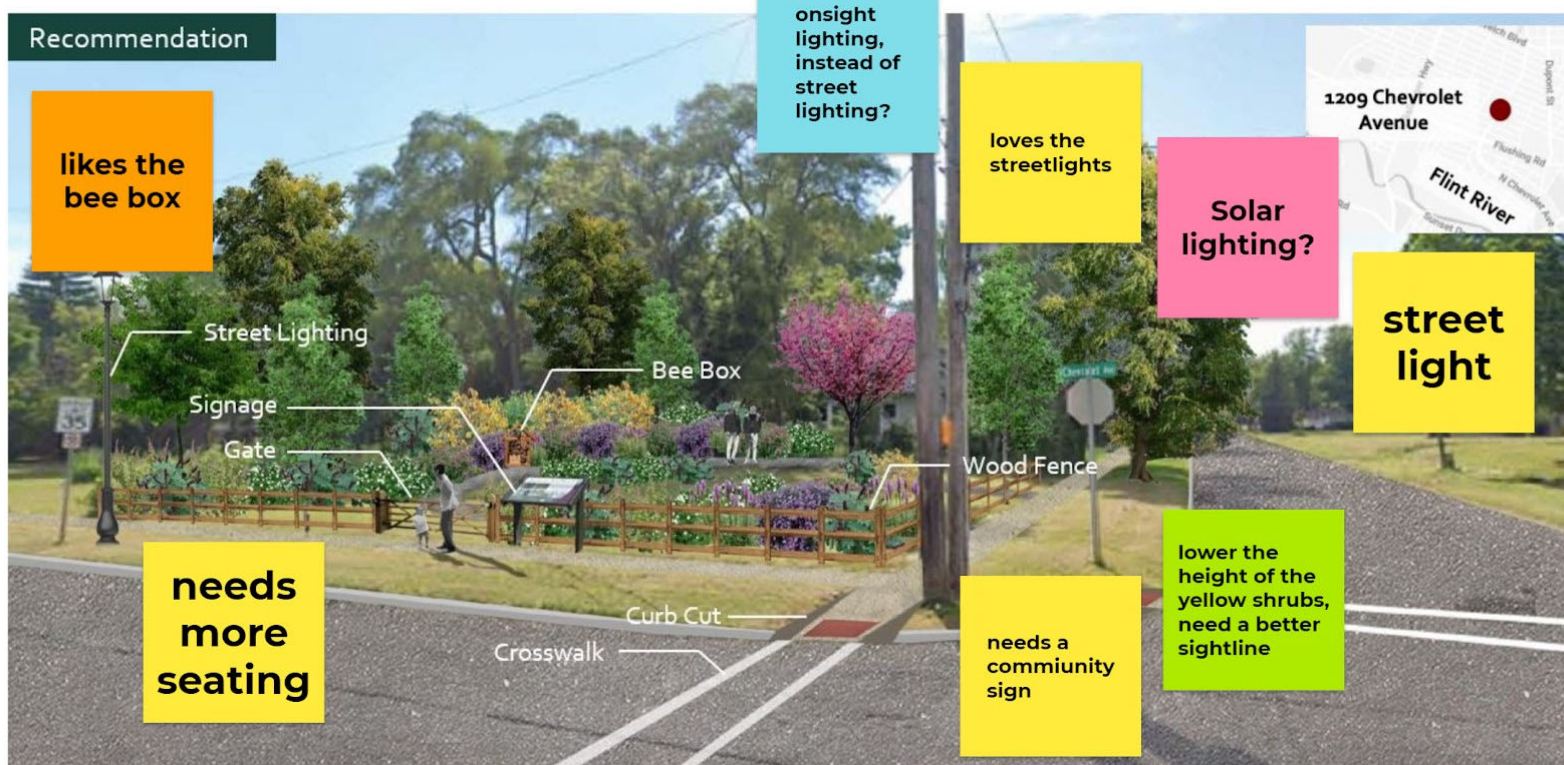
Design Input: Ballenger Square (Educational Garden)

When asked, “**What do you like about the design?**”, participants responded that they generally like the suggested design. They particularly liked the streetlights and inquired as to the options they have to implement lighting around the lot. As such, solar lights and other onsite lighting options were briefly discussed. Participants also liked the bee box.

When asked, “**What needs to be added or removed to improve the design?**”, participants disagreed as to whether amenities for passive activities, such as benches, should be included in the garden design. Participants also vocalized that they were interested in adding cameras to the design to deter vandalism and dumping. Upon discussing lighting options, participants worried about the cost and maintenance of the lights. Furthermore, participants worried that the height of the two yellow bushes in the background of the image would obscure sightlines for nearby drivers and suggested shorter plantings should be placed there instead. Finally, participants vocalized they were interested in incorporating a neighborhood sign similar to the one included in design four.

Education Garden (Wet Soil Scenario)

Ballenger Square: 1209 N. Chevrolet Ave.



Screenshot of the Ballenger Square Educational Garden design input collected via Google JamBoard.

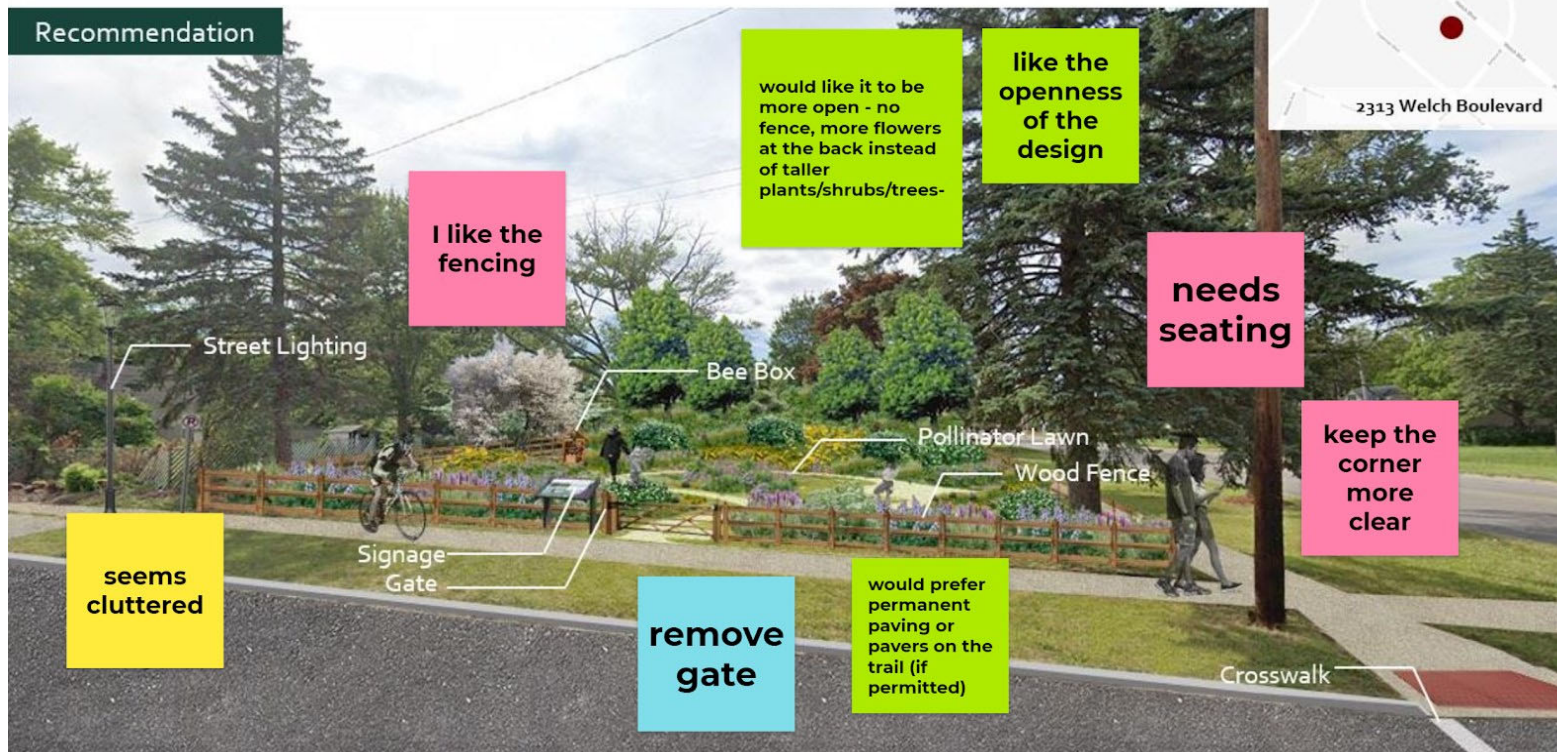
Design Input: Ballenger Highway (Corner Lot Design)

When asked, “**What do you like about the design?**”, participants noted they preferred the openness of the design, fencing, and round pathway. Participants also appreciated the different heights of the planting around the path.

When asked, “**What needs to be added or removed to improve the design?**”, participants discussed they would prefer permanent paving or pavers on the trail if permitted. Participants also noted the gate along the fence should be removed due to concerns regarding vandalism. Some participants also commented that the design looked cluttered, even though it seemed open. Lastly, a few participants voiced they would like to see some seating added to the design.

Corner Lot Design (Full Sun Scenario)

Ballenger Highway: 2313 Welch Boulevard



Screenshot of the Ballenger Highway Corner Lot Design input collected via Google JamBoard.

Design Input: Bel-Aire Woods

When asked **“What do you like about the design?”**, participants mentioned they like the sidewalk bordering the garden and the curb cut-out. Furthermore, a few participants supported the idea of no activities on the site due to liability concerns. Participants stated they liked the lot chosen for the rendering because the existing driveway can be used as an access point.

When asked **“What needs to be added or removed to improve the design?”**, participants stated temporary signs should be added to the site listing the rules and responsibilities of garden visitors. For example, rules regarding bikes, food/drink, dog clean-up, etc. Moreover, some participants disagreed with previous comments regarding garden activities, stating passive activities should be included in the designs because it would promote neighborhood unity, socialization, and pride. A participant also mentioned the drive-way cannot be used as an access point because it is not ADA compliant like the curb cut shown in the rendering. Finally, participants suggested rainwater entrapment systems be added to aid in irrigating the site.

Pollinator Garden (Full Sun Scenario)

Bel-Aire Woods: 5610 Cloverlawn Street



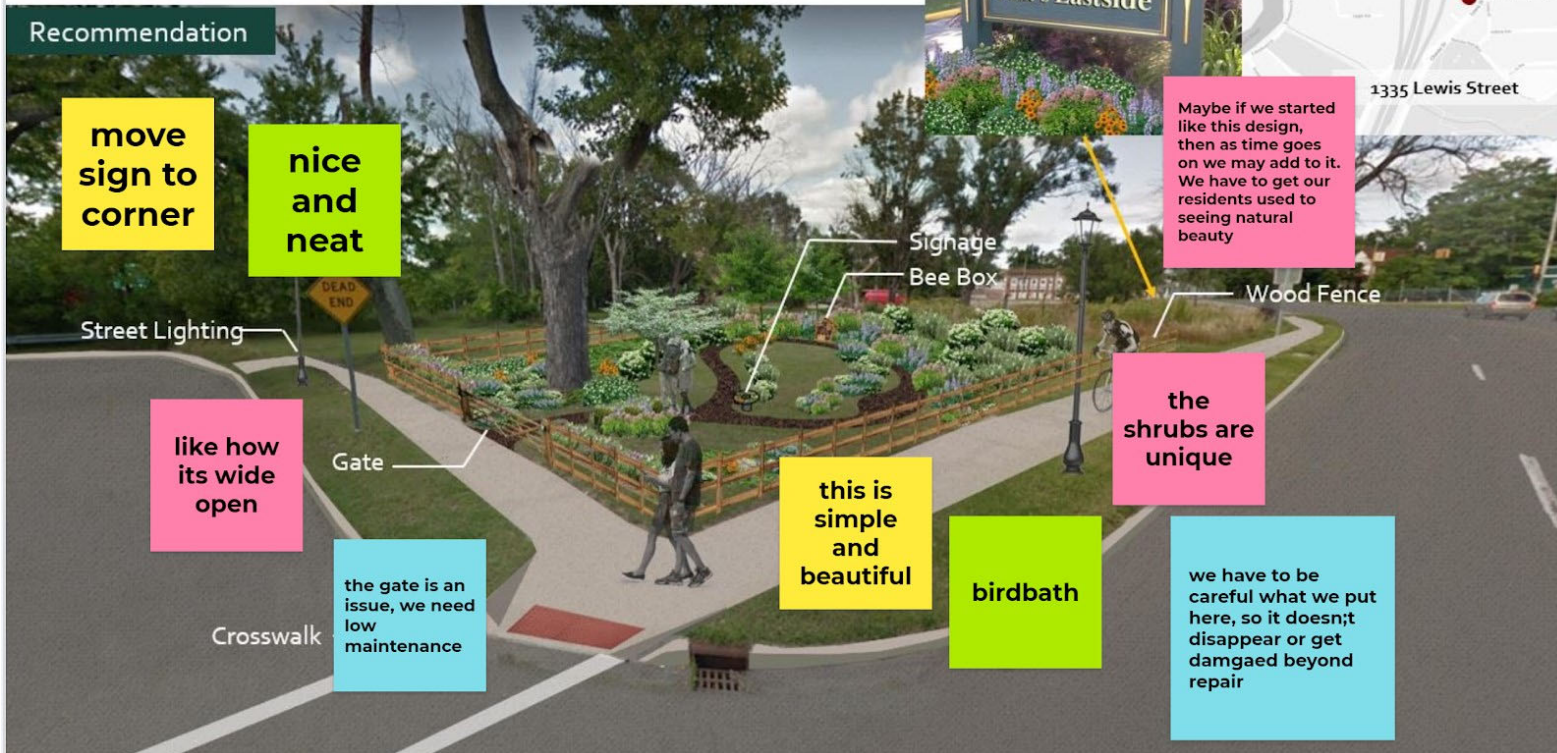
Screenshot of the Bel-Aire Woods Pollinator Garden design input collected via Google JamBoard.

Design Input: Eastside Neighborhoods

When asked, **“What do you like about the design?”**, participants liked the simple, wide-open, clear, garden design not intended for public interaction. Participants noted the design was nice to look at and appreciated the low maintenance, different/unique bushes, and shrubs. Several participants voiced they liked the simple, yet beautiful look of the lot.

When asked, **“What needs to be added or removed to improve the design?”**, participants discussed they wanted a birdbath added near the bee box. They also repeated their concerns about the gate and requested it be removed. Furthermore, participants noted the neighborhood welcome signage should be moved to the corner of the fence (where the people are currently standing). Participants also mentioned their general concerns about the maintenance of various plantings.

Eastside Neighborhoods (Partial Shade/Sun Scenario) *Grace: 1335 Lewis Street*



Screenshot of the Eastern Neighborhoods design input collected via Google JamBoard.

Design Input: WC's Beautification

When asked, “**What do like about the design?**”, participants responded supporting the clean, openness of the garden and the fencing.

When asked, “**What needs to be added or removed to improve the design?**”, and participants responded they would like to see more colorful flowers, trash receptacles, and games to keep the garden clean and engaging. The idea of a water feature was also briefly mentioned. Furthermore, participants requested seating and a birdbath be added to the current design. There was a general consensus that starting small and adding more plants and amenities over time would be the most appropriate method for Clean and Green groups to approach designing their own gardens.

Pollinator Garden (Dry Soil Scenario)

WC Beautification: 4705 Dupont Street



Screenshot of the WC's Beautification Pollinator Garden design input collected via Google JamBoard.

Community Input

Meeting Three: Recommendations

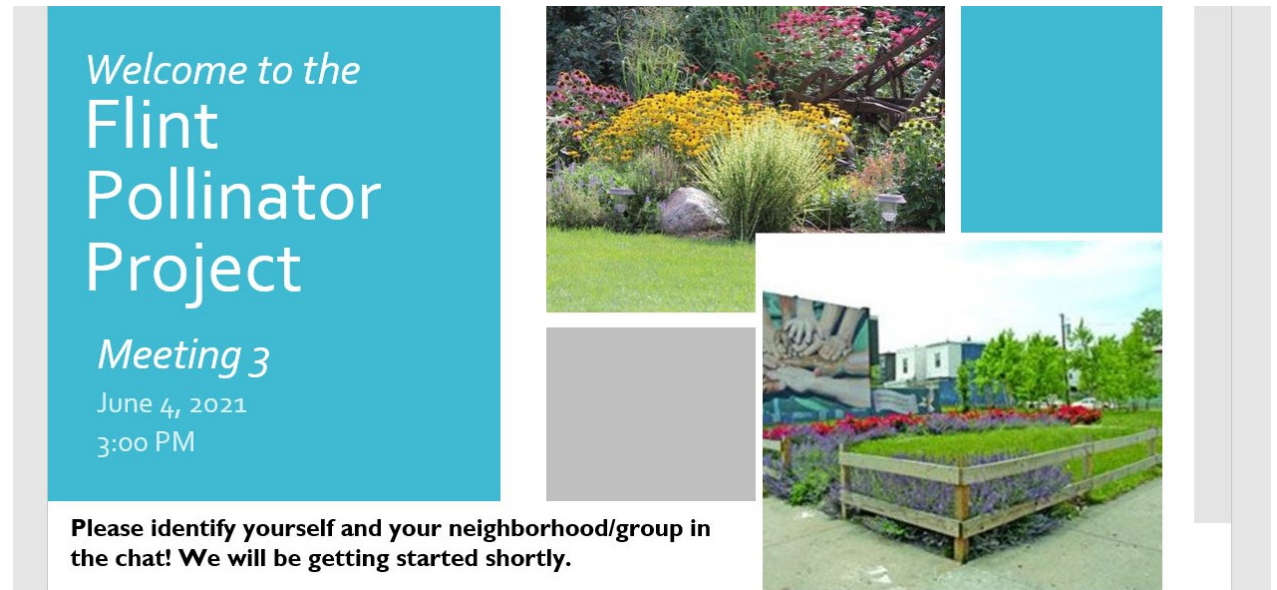
The third and final Flint Pollinator Project Meeting held on June 4, 2021, via Zoom. The goal of the third meeting was for the MSU team to present their final planning and design recommendations and receive any final feedback.

During the meeting, participants were asked to respond to two prompts:

1. Which one recommendation presented today would you most like to see implemented?
2. What do you think of the designs presented today?

Overall, many of the comments during the meeting regarded funding sources and liability issues that may arise during the implementation component of project. However, there were also a few comments from Clean & Green members in response to fencing and pathway options. The Land Bank and the Clean & Green members stated their concerns regarding the liability of dumping and fence maintenance.

More specific details on the comments received during the meeting are presented on the following page and in Section C of the Appendix.



Screenshot of the Meeting Three welcome slide as presented over Zoom.

Meeting Three: Recommendation Feedback*

Q: Can we do fencing?

A: Would need to get a permit for fencing from the city. The fence permit is about \$200. Insurance companies think that fencing is a good idea so it wouldn't be a liability concern.

Q: How do we do pathways?

A: Don't use anything permanent, but gravel, compressed sand, or mulch are all great options. Natural pathways are better for maintenance and at deterring people from entering the site.

Q: Can we use pea rocks for the pathways?

A: Yes, at the end of the day, the pathway material just has to be removeable.

Q: Do we have to choose pollinator sites that are on a corner?

A: No, the corner lot designs presented are merely suggestions based on feedback received during previous meetings where the MSU team heard that corner lots might be preferred by Clean & Green members. Another positive about choosing corner lots is that they are always visible.

Q: Will the number of benches we install make the liability insurance cost increase?

A: No, the number of benches does not matter as long as there are no jungle gyms or other climbable things installed.

Q: Can we go directly to MSU to ask questions, or do we have to go through the Land Bank?

A: The MSU team is involved as a consultant on this project so they won't be as active and hands-on in the long-term, but the Land Bank will serve as the point resource in the long run. The Conservation District is another good resource.

Q: Can we get drawings of this?

A: Yes, the MSU team will provide a digital and hard copy of the report within a month.

Q: Did you consider the overlap of pollinator seasons?

A: In general, yes, but it is impossible for pollinator food sources to grow during the winter months in Michigan.

*Responses provided by the Genesee County Land bank. More detailed comments can be found in the Appendix C.

Planning & Design Recommendations



Planning & Design Goals

These recommendations are framed around four key community goals which are intended to contribute to the vitality and vacant lot reuse of the urban pollinator target area.

The four community goals are: Revitalization, Safety, Placemaking, and Sustainability. Planning recommendations have been developed for each.

Planning & Design Goals:



Revitalization



Safety



Placemaking



Sustainability

Corner Lot Design (Full Sun Scenario)

Ballenger Highway: 2313 Welch Boulevard



Education Garden (Wet Soil Scenario)

Ballenger Square: 1209 N. Chevrolet Ave.



Goals and Objectives



REVITALIZATION

— to revitalize the target area by redefining the usage of vacant lots to improve the quality of life for residents.

- Restore and create habitats for native pollinators to be able to thrive
- Protect human health and the environment
- Return abandoned lots to natural environments



PLACEMAKING

— to use features of the built environment to encourage passive engagement, health, safety, and to enhance a sense of place

- Enhance a sense of community by introducing pollinator gardens
- Introduce design amenities throughout the garden (benches, streetlight, etc.)
- Use placemaking to beautify the space and deter dumping and illegal activities



SAFETY

— to improve overall safety for the community.

- Implement traffic calming by using rain gardens and medians to separate pedestrians from vehicles
- Create clear visibility through low planting heights and illumination
- Provide snow storage by leaving room for snowplow during the winter season



SUSTAINABILITY

— to encourage sustainable development considering ecological, social and economic aspects

- Encourage native pollinators (birds, bees, butterflies, insects) through planting a diverse range of native plants
- Implement low maintenance design to support water conservation and reduce fertilizer pollution
- Install stormwater management infrastructure to lower the total amount of runoff from impervious surfaces

Planning Recommendations

Plant Selection

Addressed Goals	Recommendations
  	Consult MSU Extension's "Creating and maintaining pollinator friendly habitat" blog for more information about how to ensure the longevity and vitality of a pollinator garden.
 	Plant flowers, trees, and shrubs native to Michigan and the Southern Lower Peninsula specifically to ensure habitat diversity, resilience, and vitality.
 	Consult with the MSU Department of Entomology's Native Plants and Ecosystem Services Plant Selection Guide for more information about native plants and pollinators in the Southern Lower Peninsula.
 	Use plants with a variety of blooming seasons to ensure pollinators will have a food source for multiple seasons.
	Ensure a diversity of native plants are implemented in order to ensure pollinators have a range of food sources from which to select.



Revitalization



Safety



Placemaking



Sustainability

Planning Recommendations

Installation

Addressed Goals	Recommendations
  	Be creative! Many amenities can be DIY and still look great. Use lots of bright colors to really make the space stand out in the neighborhood and have fun with designs.
 	Incorporate local art features, such as a pathway mural, to invite community members into the garden while drawing attention to local artists' talent.
  	Reduce the use of impervious surfaces, such as concrete and asphalt, in pollinator gardens to mitigate water run-off.
 	Select plants that require little to no maintenance after the plants are established.
	Strategically use plants that are best suited for the soil and sun conditions specific to the lot.
 	Install barriers like split rail fencing, posts, or boulders to prevent illegal dumping, driving on the lot, and parking.
 Revitalization  Safety  Placemaking  Sustainability	

Planning Recommendations

Neighborhood Vitality

Addressed Goals	Recommendations
 	Provide educational opportunities for local youth.
 	Support pollinators that help to support local food gardens and increase yields.
 	Strengthen community ties and connections.
  	Transform a vacant space and create a beautiful site for local residents to enjoy.
  	Involve neighbors to assist in maintenance and installation .



Revitalization



Safety



Placemaking



Sustainability

Planning Recommendations

Seeking Funding & Assistance

Addressed Goals

Recommendations

   	Involve neighbors and community members in addition to Clean & Green groups in the planning and fundraising for pollinator garden implementation.
   	Seek funding from local and state sources such as the C.S. Mott Foundation, The Community Foundation of Greater Flint, or the Michigan State Housing Development Authority's Neighborhood Enhancement Program.
   	Seek out community groups that may allow Clean & Green members to borrow or rent gardening tools and/or borrow gardening tools from the Neighborhood Engagement Hub.
   	Connect with the Genesee County Conservation District and/or Ruth Mott Applewood for technical assistance and funding opportunities.
   	Seek additional funding from national programs or private organizations to support this work. Apply for multiple grants for better chances to secure funding each year. Multiple grants can be used in tandem for each phase.
   	Use the final report for this project as a template for grant applications and send the PDF copy of the report with grant applications. This can help to increase the chances of securing funding.



Revitalization



Safety



Placemaking



Sustainability

Planning Recommendations

Leasing and Liability Insurance

Addressed Goals

Recommendations



If your group has yet to apply to lease the lots, do so as soon as possible to ensure those lots are in the Land Bank Database as leased.



Have all that participate in installation, plantings and/or ongoing maintenance, sign a liability release and submit those to the Land Bank office prior to starting work.



Passive installations and amenities do not need liability insurance but all project participants must sign a liability waiver.



Seek liability insurance if your group plans to hold public events on the site or if your group decides to open the lot up for public use by installing benches or other public use amenities.



Call the Land Bank with any questions about liability insurance.



Revitalization



Safety



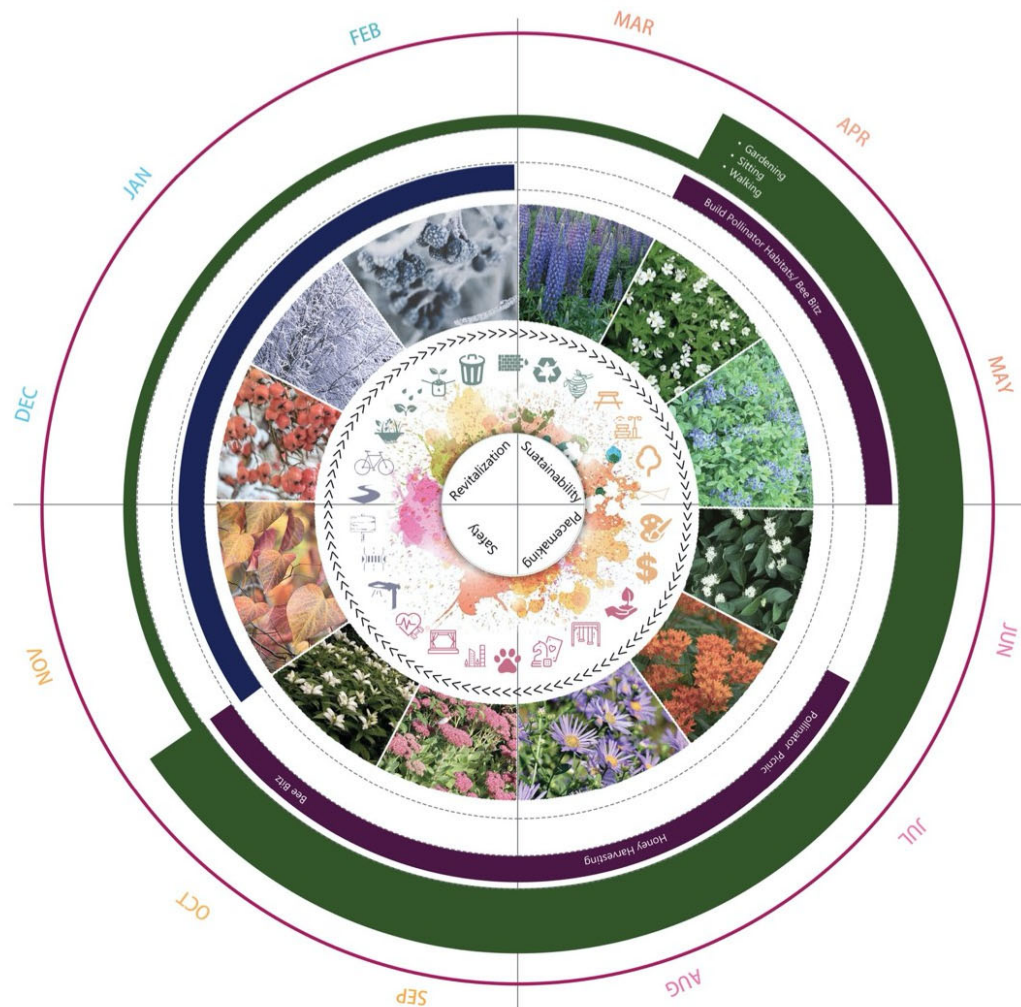
Placemaking



Sustainability

Seasonal Design Activities

The full calendar is divided into spring, summer and fall and diverse activities are suggested that can be performed in the pollinator garden during those seasons. These activities will help to keep the garden area active and vibrant throughout the year.



Spring Activities



Seeding Pollinator Plants / Building Sense of Community

Summer Activities



Gardening Activities / Honey Harvesting / Relaxing

Fall Activities



Cleaning/ Community Gathering / Gardening Activities

Plant Selection



Plant Selection: Wet Soil Scenario

A list of trees, shrubs and wildflowers are given below which grow and thrive in wet soil. A few specific characteristics of the plants such as bloom time, color, height and moisture requirement are also provided in the following chart*. Further details can be found at: <https://pollinators.msu.edu/resources/pollinator-planting/pollinator-gardens/>

	Scientific Name	Common Name	Bloom Time and Color												Height (ft)	Moisture	Notes
			JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC			
Wildflowers	<i>Anemone canadensis</i>	Canada anemone													1-2	AVE-WET	SP
	<i>Asclepias incarnata</i>	Butterfly Bush													3-4	AVE-WET	LH, N
	<i>Chelone glabra</i>	Turtlehead													3-5	AVE-WET	LH
	<i>Eupatorium maculatum</i>	Spotted Joe-Pye Weed													4-5	AVE-WET	N
	<i>Eupatorium perfoliatum</i>	Common Boneset													3-5	AVE-WET	N, PP
	<i>Fragaria virginiana</i>	Wild Strawberry													1-2	AVE-WET	LH, GC
	<i>Oligoneuron riddellii</i>	Ridell's Goldenrod													2-4	AVE-WET	N, PP
	<i>Symphyotrichum novae-angliae</i>	New England Aster													3-6	AVE-WET	LH, N, PP
	<i>Amorpha fruticosa</i>	False Indigo													6-15	WET	BU
	<i>Aronia melanocarpa</i>	Black Chokeberry													3-6	AVE	BI
Shrubs	<i>Lindera benzoin</i>	Spicebush													5-10	AVE-WET	LH
	<i>Spiraea tomentosa</i>	Hardtack													2-4	AVE-WET	BU
	<i>Liquidambar styraciflua</i>	Sweet Gum													60-80	AVE	BE
	<i>Amelanchier arborea</i>	Serviceberry													15-25	AVE-WET	BI
Trees	<i>Gymnocladus dioica</i>	Kentucky Coffeetree													60-80	AVE-WET	BU, HB
	<i>Tilia americana</i>	American Linden													50-80	AVE-WET	BI, BU



Trees



Gymnocladus dioica
Kentucky Coffeetree
60-80ft



Amelanchier arborea
Serviceberry
15-25 ft



Tilia americana
American Linden
50-80ft



Liquidambar styraciflua
Sweet Gum
60-80ft

Shrubs



Amorpha fruticosa
False Indigo
6-15ft



Aronia melanocarpa
Black Chokeberry
3-6ft



Lindera benzoin
Spicebush
5-10ft



Spiraea tomentosa
Hardtack
2-4ft

Wildflowers



Anemone canadensis
Canada anemone
1-2ft



Asclepias incarnata
Swamp Milkweed
3-4ft



Chelone glabra
Turtlehead
3-5ft



Eupatorium maculatum
Spotted Joe-Pye Weed
4-5ft



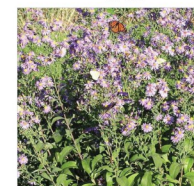
Eupatorium perfoliatum
Common Boneset
3-5ft



Fragaria virginiana
Wild Strawberry
1-2ft



Oligoneuron riddellii
Ridell's Goldenrod
2-4ft



Symphyotrichum novae-angliae
New England Aster
3-6ft

*The color boxes in the table represent the blooming time and color of each plant.

Plant Selection: Dry Soil Scenario

A list of trees, shrubs and wildflowers are given below which grow and thrive in dry soil. A few specific characteristics of the plants such as bloom time, color, height and moisture requirement are also provided in the following chart*. Further details can be found at: <https://pollinators.msu.edu/resources/pollinator-planting/pollinator-gardens/>

	Scientific Name	Common Name	Bloom Time and Color												Height (ft)	Moisture	Notes
			JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC			
Wildflowers	<i>Asclepias tuberosa</i>	Butterfly Weed													1-3	AVE-DRY	LH
	<i>Coreopsis lanceolata</i>	Sand coreopsis													1-2	AVE-DRY	BI, N
	<i>Liatris aspera</i>	Rough morning star													3-4	AVE-DRY	N
	<i>Lupinus perennis</i>	Wild Lupine													1-2	AVE	LH, N
	<i>Monarda fistula</i>	Wild Bergamot													2-4	AVE-DRY	N
	<i>Penstemon hirsutus</i>	Hairy Beardtongue													1-2	AVE-DRY	BI
	<i>Solidago speciosa</i>	Showy Goldenrod													2-5	AVE-DRY	N, PP
	<i>Tradescantia ohiensis</i>	Common spiderwort													2-3	AVE-DRY	-
	<i>Cornus sericea</i>	Red-osier dogwood													3-9	AVE-DRY	LH, N, SP
	<i>Corylus americana</i>	Hazelnut													5-9	AVE-DRY	-
Shrubs	<i>Hylotelephium 'herbstfreude'</i>	Autumn Joy Stonecrop													1.5-2	AVE-DRY	BU
	<i>Viburnum prunifolium</i>	Blackhaw Viburnum													12-15	AVE-DRY	BI, BU
	<i>Amelanchier laevis</i>	Smooth Serviceberry													12-25	AVE-DRY	BI, LH
Trees	<i>Quercus alba</i>	White Oak													50-80	AVE-DRY	-
	<i>Quercus rubra</i>	Red Oak													50-75	AVE-DRY	-
	<i>Sassafras albidum</i>	Sassafras													30-60	AVE-DRY	-



Trees



Amelanchier laevis
Smooth Serviceberry
12-25ft



Quercus alba
White Oak
50-80ft



Quercus rubra
Red Oak
50-75ft



Sassafras albidum
Sassafras
30-60ft

Shrubs



Cornus sericea
Red-osier dogwood
3-9ft



Corylus americana
Hazelnut
5-9ft



Hylotelephium 'Herbstfreude'
Stonecrop
1.5-2ft



Viburnum prunifolium
Blackhaw viburnum
12-15ft

Wildflowers



Asclepias tuberosa
Butterfly weed
1-3ft



Coreopsis lanceolata
Sand coreopsis
1-2ft



Liatris aspera
Rough Morning Star
3-4ft



Lupinus perennis
Wild Lupine
1-2ft



Monarda fistula
Wild Bergamot
2-4ft



Penstemon hirsutus
Hairy Beardtongue
1-2ft



Solidago speciosa
Showy Goldenrod
2-5ft



Tradescantia ohiensis
Common Spiderwort
2-3ft

*The color boxes in the table represent the blooming time and color of each plant.

Plant Selection: Full Sun Conditions

A list of trees, shrubs and wildflowers are given below which grow and thrive in full sun condition. A few specific characteristics of the plants such as bloom time, color, height and moisture requirement are also provided in the following chart*. Further details can be found at: <https://pollinators.msu.edu/resources/pollinator-planting/pollinator-gardens/>

	Scientific Name	Common Name	Bloom Time and Color												Height (ft)	Sun	Notes
			JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC			
Wildflowers	<i>Asclepias tuberosa</i>	Butterfly Weed													1-3	FULL	LH
	<i>Coreopsis lanceolata</i>	Sand Coreopsis													1-2	FULL	BI, N
	<i>Liatris aspera</i>	Rough Morning Star													3-4	FULL	N
	<i>Liatris spicata</i>	Marsh Blazing Star													3-4	FULL	N
	<i>Monarda fistula</i>	Wild Bergamot													2-4	FULL	N
	<i>Oligoneuron riddellii</i>	Riddell's Goldenrod													2-4	FULL	N, PP
	<i>Silphium terebinthinaceum</i>	Prairie Dock													4-10	FULL	N, BI
	<i>Symphyotrichum laeve</i>	Smooth Aster													2-4	PT-FULL	LH, N, PP
	<i>Hylotelephium 'Herbstfreude'</i>	Autumn Joy													1.5-2	FULL	BU
	<i>Spiraea tomentosa</i>	Hardtack													2-4	FULL	BU
Shrubs	<i>Viburnum dentatum</i>	Arrowwood Viburnum													6-10	PT-FULL	BI, BU
	<i>Viburnum opulus var. americana</i>	American Cranberry bush													8-12	PT-FULL	BI, BU
	<i>Acer rubrum</i>	Red Maple													40-70	PT-FULL	-
Trees	<i>Crataegus crus-galli</i>	Cockspur Thorn													25-35	FULL	BI, BU
	<i>Liquidambar styraciflua</i>	Sweet Gum													60-80	FULL	BE
	<i>Tilia americana</i>	American Linden													50-80	PT-FULL	BI, BU



Trees



Acer rubrum
Red Maple
40-70ft



Crataegus crus-galli
Cockspur Thorn
25-35ft

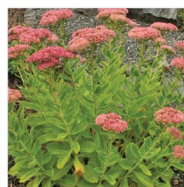


Liquidambar styraciflua
Sweet Gum
60-80ft



Tilia americana
American Linden
50-80ft

Shrubs



Hylotelephium 'Herbstfreude'
Stonecrop
1.5-2ft



Spiraea tomentosa
Hardtack
2-4ft



Viburnum dentatum
Arrowwood viburnum
6-10ft



Viburnum opulifolius var. americana
American cranberry bush
8-12ft

Wildflowers



Asclepias tuberosa
Butterfly weed
1-3ft



Coreopsis lanceolata
Sand coreopsis
1-2ft



Liatris aspera
Rough Morning Star
3-4ft



Liatris spicata
Marsh Blazing Star
3-4ft



Monarda fistula
Wild Bergamot
2-4ft



Oligoneuron riddellii
Ridell's Goldenrod
2-4ft



Silphium terebinthinaceum
Prairie Dock
4-10ft



Symphyotrichum laeve
Smooth Aster
2-4ft

*The color boxes in the table represent the blooming time and color of each plant.

Plant Selection: Full and Partial Shade Condition

A list of trees, shrubs and wildflowers are given below which grow and thrive in full and partial shade condition. A few specific characteristics of the plants such as bloom time, color, height and moisture requirement are also provided in the following chart*. Further details can be found at: <https://pollinators.msu.edu/resources/pollinator-planting/pollinator-gardens/>

	Scientific Name	Common Name	Bloom Time and Color												Height (ft)	Shade	Notes
			JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC			
Wildflowers	<i>Asclepias incarnata</i>	Swamp Milkweed													3-4	PT-FULL	LH
	<i>Chelone glabra</i>	Turtlehead													3-5	PT-FULL	LH
	<i>Eupatorium maculatum</i>	Spotted Joe-Pye Weed													4-5	PT-FULL	N, PP
	<i>Fragaria virginiana</i>	Wild Strawberry													1-2	PT-FULL	LH, GC
	<i>Lobelia siphilitica</i>	Great Blue Lobelia													1-3	PT-FULL	PP
	<i>Rudbeckia hirta</i>	Black-eyed Susan													1-3	PT-FULL	LH, N
	<i>Tradescantia ohiensis</i>	Common Spiderwort													2-3	PT-FULL	-
Shrubs	<i>Veronicastrum virginicum</i>	Culver's Root													3-5	PT-FULL	N, PP
	<i>Ilex verticillata</i>	Winterberry													6-12	PT-FULL	BI
	<i>Physocarpus opulifolius</i>	Ninebark													3-9	PT-FULL	N
	<i>Prunus serotina</i>	Wild Black Cherry													50-85	PT-FULL	LH, BI
	<i>Spiraea alba</i>	Meadowsweet													3-4	PT-FULL	BU
Trees	<i>Acer saccharum</i>	Sugar Maple													40-80	FULL	-
	<i>Amelanchier laevis</i>	Smooth Serviceberry													12-25	PT-FULL	BI, LH
	<i>Cercis canadensis</i>	Redbud													12-25	PT-FULL	LH, N
	<i>Nyssa sylvatica</i>	Black Gum													30-50	PT-FULL	BE



Trees



Acer saccharum
Sugar Maple
40-80ft



Amelanchier laevis
Smooth Serviceberry
12-25ft



Cercis canadensis
Redbud
12-25ft



Nyssa sylvatica
Black Gum
30-50ft

Shrubs



Ilex verticillata
Winterberry
6-12ft



Physocarpus opulifolius
Ninebark
3-9ft



Prunus serotina
Wild Black Cherry
30-60ft



Spiraea alba
Meadowsweet
3-4ft

Wildflowers



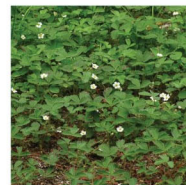
Asclepias incarnata
Swamp Milkweed
3-4ft



Chelone glabra
Turtlehead
3-5ft



Eupatorium maculatum
Spotted Joe-Pye Weed
4-5ft



Fragaria virginiana
Wild Strawberry
1-2ft



Lobelia siphilitica
Great Blue Lobelia
1-3ft



Rudbeckia hirta
Black-eyed Susan
1-3ft



Tradescantia ohiensis
Common Spiderwort
2-3ft

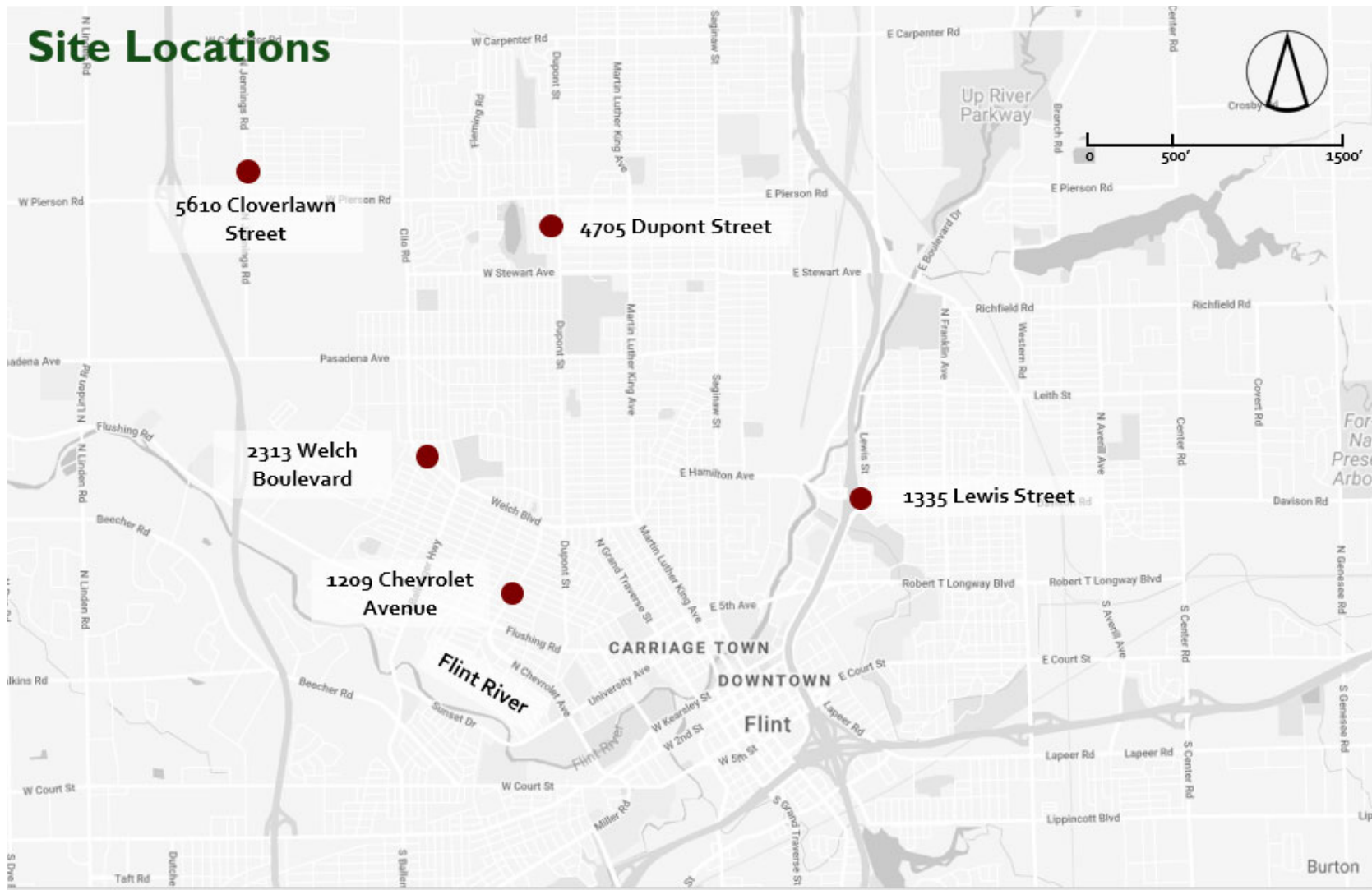


Veronicastrum virginicum
Culver's Root
3-5ft

*The color boxes in the table represent the blooming time and color of each plant.

Design Themes & Locations

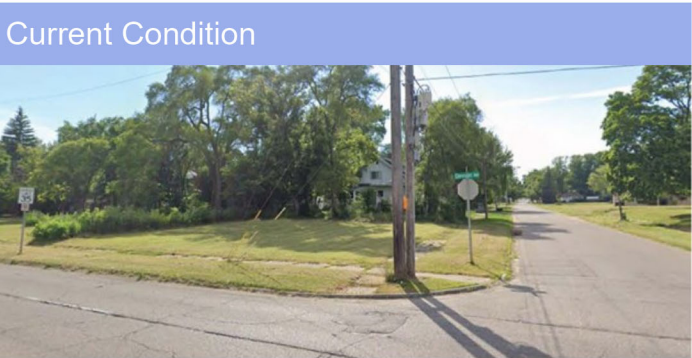
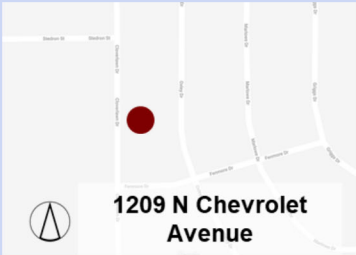
The design recommendations are segmented into five potential lot designs. These lots were identified by the Genesee County Land Bank members and are defined by their unique built environment characteristics, including primary land uses and potential reuse.



Education Garden (Wet Soil Scenario)

Ballenger Square Community Association: 1209 N Chevrolet Avenue

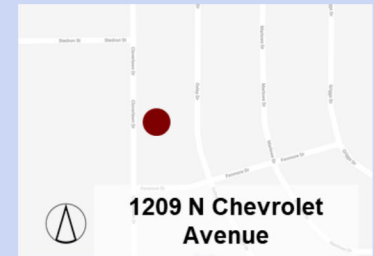
Site Location



Education Garden (Wet Soil Scenario)

Ballenger Square Community Association: 1209 N Chevrolet Avenue

Site Location



Phase 1: Installing fence and pollinator plants



Phase 2: Increasing density of pollinator plants



Phase 3: Adding ornamental tree(s)/increasing plant density



Phase 4: A fully implemented pollinator garden



Corner Lot Design (Full Sun Scenario)

Ballenger Highway Neighborhood Association : 2313 Welch Boulevard

Site Location



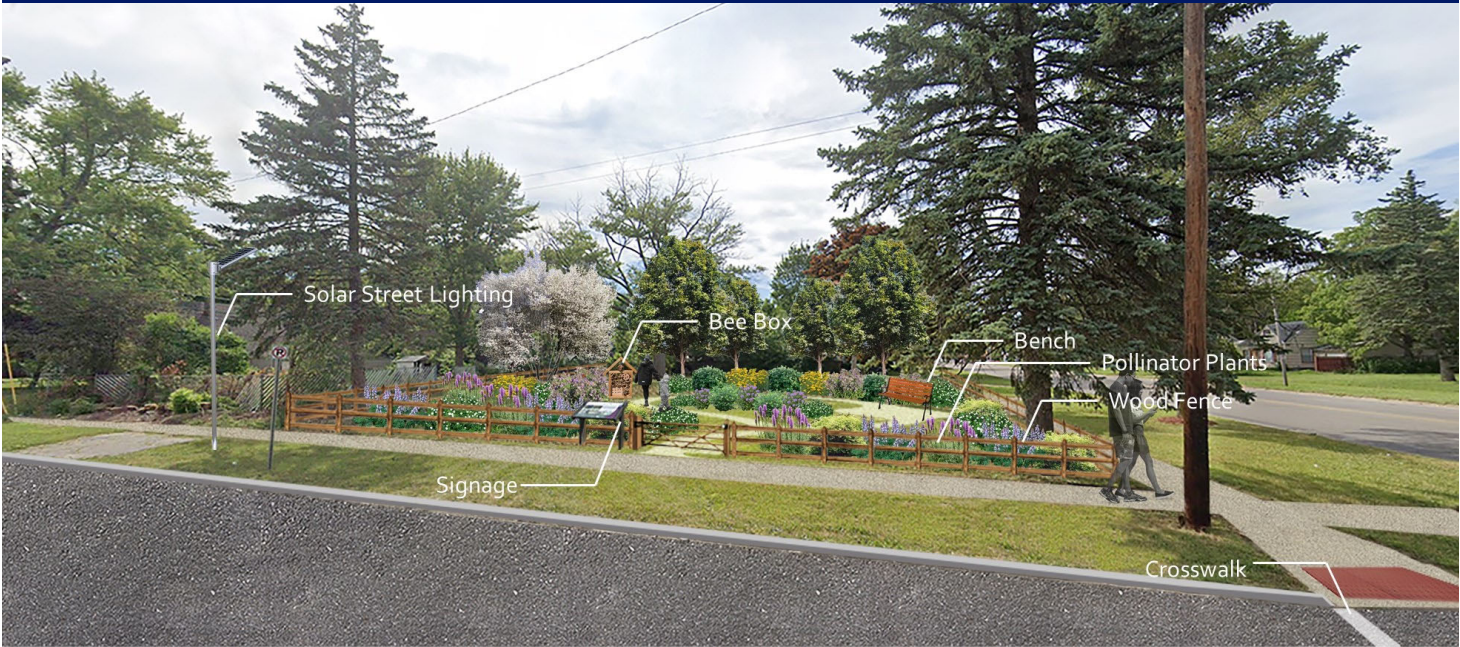
Current Condition



Alternative: Initial Design Proposal



Final Recommendation



Corner Lot Design (Full Sun Scenario)

Ballenger Highway Neighborhood Association : 2313 Welch Boulevard

Site Location



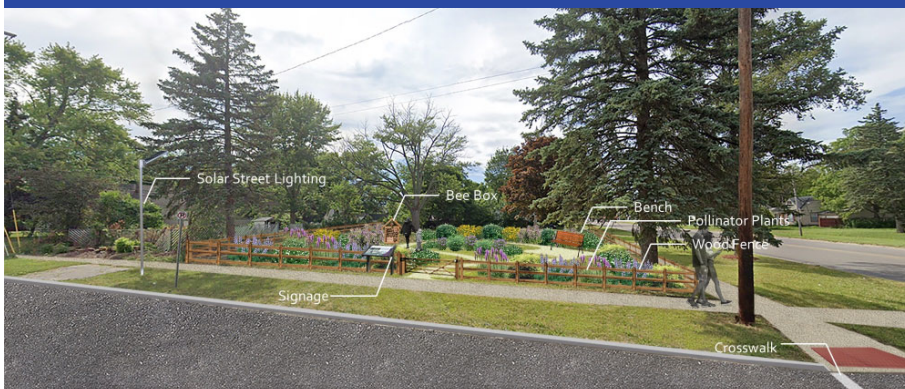
Phase 1: Installing fence and corner pollinator plants



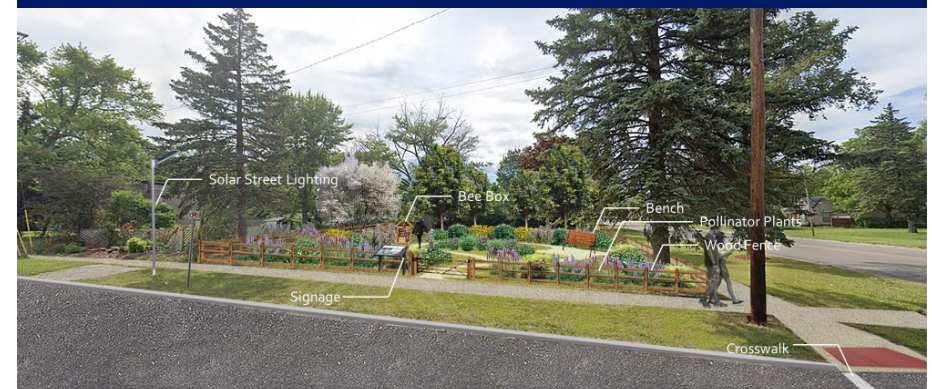
Phase 2: Adding a trail and amenities



Phase 3: Increasing density of pollinator plants



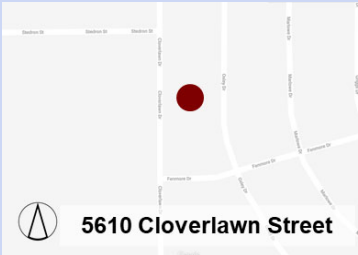
Phase 4: A fully implemented pollinator garden



Pollinator Garden (Full Sun Scenario)

Bel-Aire Woods Association : 5610 Cloverlawn Street

Site Location



Current Condition



Alternative: Initial Design Proposal



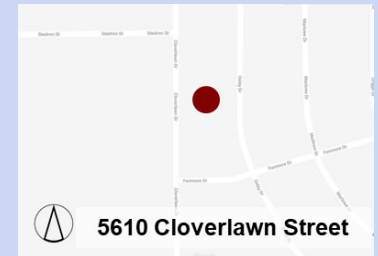
Final Recommendation



Pollinator Garden (Full Sun Scenario)

Bel-Aire Woods Association : 5610 Cloverlawn Street

Site Location



Phase 1: Installing fence and corner pollinator plants



Phase 2: Adding a trail and amenities



Phase 3: Increasing density of pollinator plants



Phase 4: A fully implemented pollinator garden



Grace Community Christian Fellowship : 1335 Lewis Street

Site Location



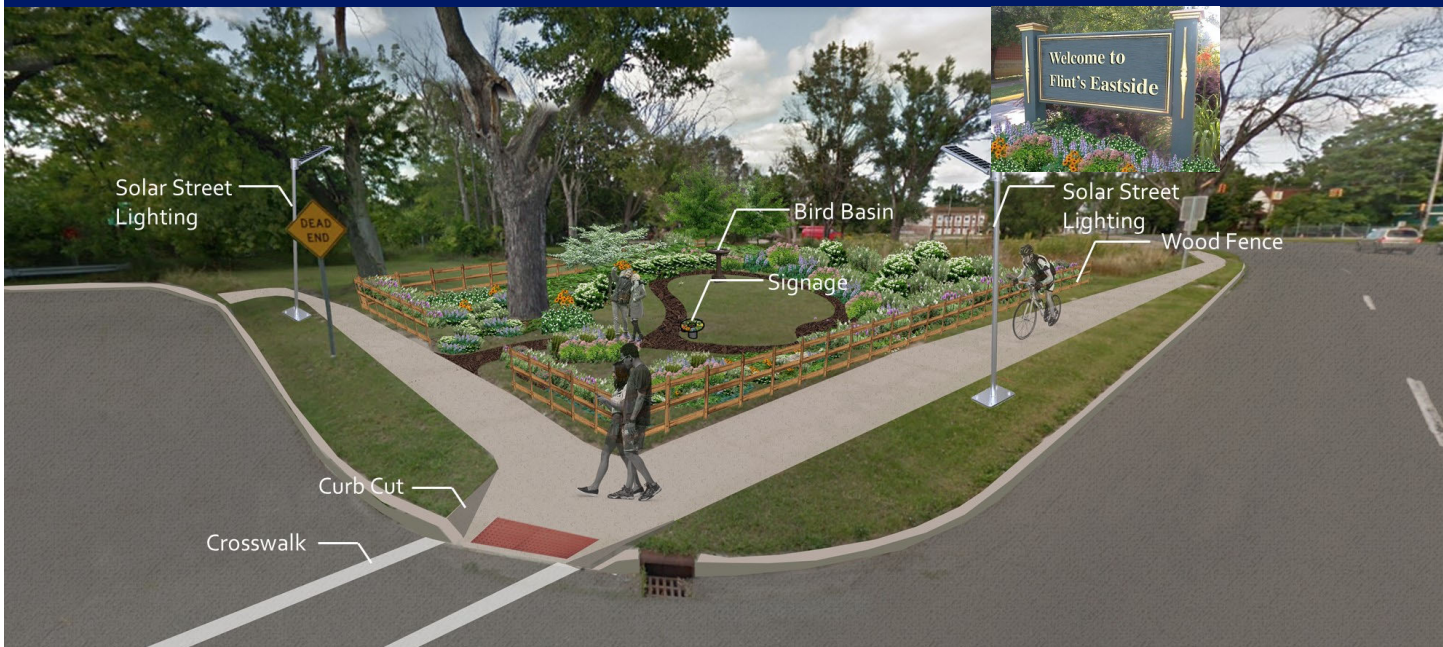
Current Condition



Alternative: Initial Design Proposal



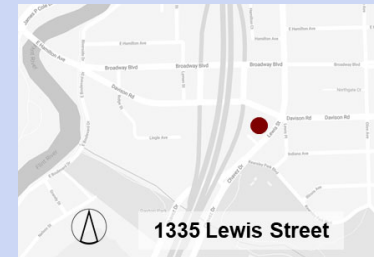
Final Recommendation



Eastside Neighborhoods (Partial Shade/Sun Scenario)

Grace Community Christian Fellowship: 1335 Lewis Street

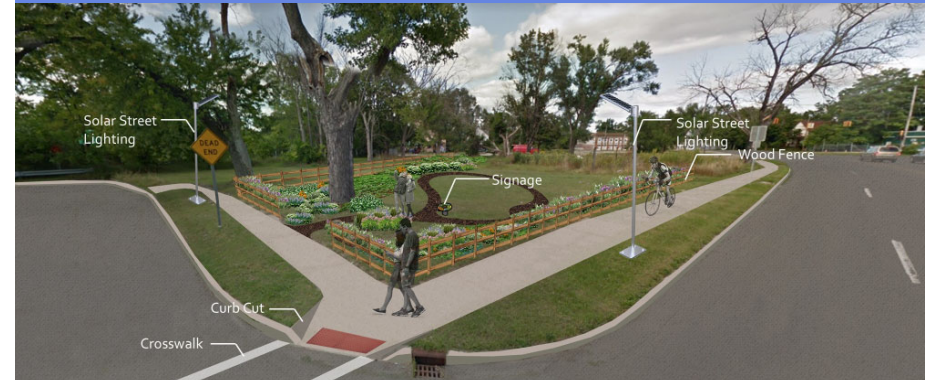
Site Location



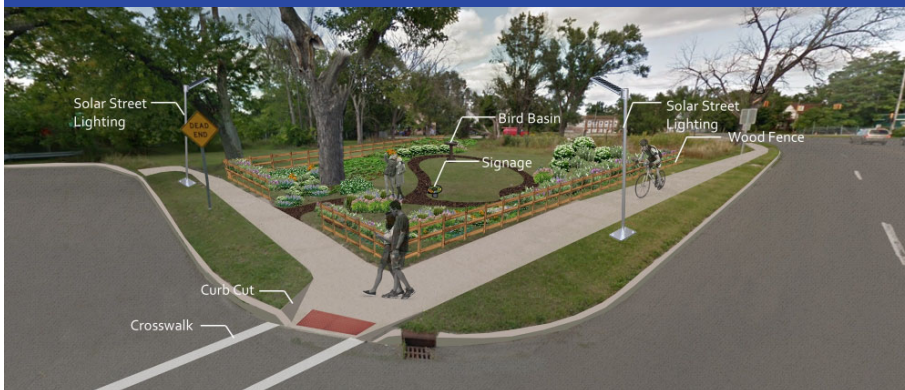
Phase 1: Installing fence and corner pollinator plants



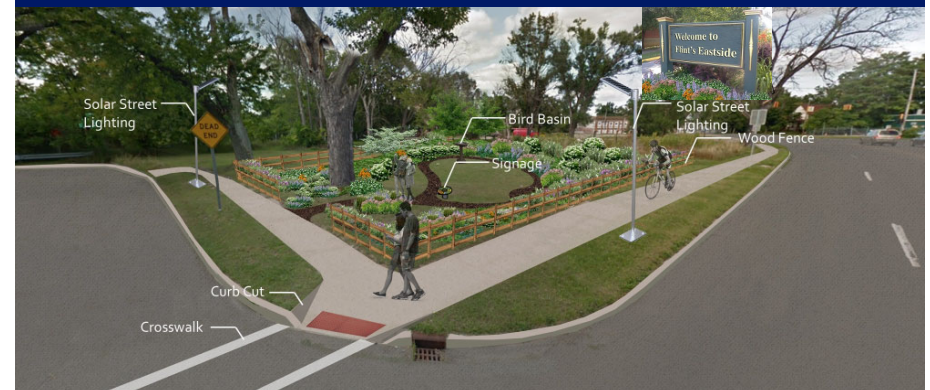
Phase 2: Adding a trail and amenities



Phase 3: Increasing density of pollinator plants



Phase 4: A fully implemented pollinator garden



Corner Lot Design (Dry Soil Scenario)

WC's Beautification Project : 4705 Dupont Street

Site Location



Current Condition



Alternative: Initial Design Proposal



Final Recommendation



WC's Beautification Project : 4705 Dupont Street

Site Location



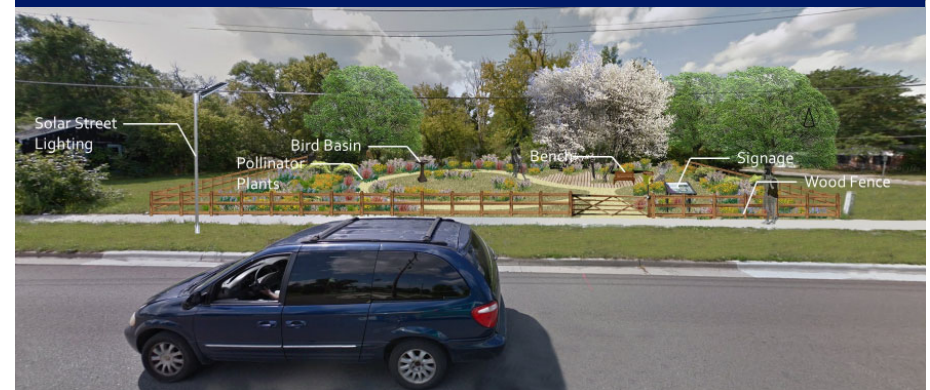
Phase 2: Adding a trail and amenities



Phase 3: Increasing density of pollinator plants



Phase 4: A fully implemented pollinator garden



Appendix



Appendix A: Meeting One Visioning Full Input

At Meeting One, residents provided input to develop a vision for pollinator gardens within the City of Flint. Participants were asked five questions, which they discussed in breakout rooms via Zoom, and then reported out.

What do you like about what you heard concerning pollinator gardens?	Count
Excellent idea, enjoyed program	2
Nice signage and benches in pictures	1
Want park usable for everyone, young people could maintain park	1
Wondered if going away from rain gardens	1
Pollinator gardens are a good idea	1
Gets people to learn about pollinators	1
Decorating with barriers is good idea to prevent dumping	1
See focus on beautification aspects gardens can provide	1

What are your concerns about pollinator gardens?	Count
Maintenance—Who waters plants and manages area?	1
Space and amenities should be places of peace and quiet	1
Inclusivity for meetings	1
Understanding practicality of project	1
Nervous about people's respect for signage (vandalization, graffiti)	1
Make sure children are involved in creating and maintaining of gardens	1
Fear some pollinator types and animals are dangerous to children (e.g., bees, snakes)	1

What kinds of activities would you like to see on the pollinator garden sites?	Count
Annual events in park where community can gather and socialize	2
Youth activities (e.g., youth talent show)	1
Place for native bees	1
Having younger kids get involved	1
Educational activities	1
Bring people together with benches	1
Good for public health	1
Gardens source of encouragement for upliftment/community empowerment	1
Pollinator gardens can serve as conversation piece, bring people together	1
Strengthens community ties	1

Appendix A: Meeting One Visioning Full Input

What would improve the sense of place (e.g., live, work, play) on pollinator sites in the neighborhood?	Count
Having someone teach members of the community how to maintain landscaping	1
Consider there may not be water source to water plants	1
Something needs to help make them stand out and look intentional (e.g. make them colorful)	1
Understand the purpose they serve	1
Placement needs to be more dense and intentional (more land area, not just vacant lot)	1
Most important: benches	1
Adding amenities that bring people together for quiet/passive activities	1

Do you have any recommendations that weren't previously discussed?	Count
Distribution of 1-page informational hard copy throughout community	1
Rain garden concept	1
Signage could be more central and education-based	1
Areas around abandoned schools could be nice sites	1
Bat houses	1
Bringing vacant lots to life through beautification	1
Liked stone barriers most, more organic looking and inhibit dumping	1
Dislike idea of using fences due to safety concerns about kids jumping fence	1
Mix of both small and large signage	1
Low barriers will help deter dumping	1
Want city to look more "lived in"	1

Appendix B: Meeting Two Design Full Feedback

During the second meeting, participants provided feedback to three question prompts regarding their likes, concerns, and improvement ideas. The full response counts are shown below.

What do you like about the designs presented today?	
Theme	Count
Nice designs	6
Not cluttered looking	4
Streetlights	2
Fencing	2
Beautiful trees	1
Love idea of education garden	1
Solar lighting	1
Like bee box	1
Openness of designs	1
Round pathway	1
Sidewalk	1
Good for site in neighborhood	1
Bushes/shrubs	1

What needs to be added or removed to improve the design?	
Theme	Count
Maintenance	5
Signage	4
Used as passive sites	3
Change seating	2
Cluttered	2
Need bird bath	2
Vandalization prevention	2
Dumping concerns	2
Trash cans	2
Used as active sites	2
Cameras	1
Change lighting	1
Bushes too high	1

Issues with gates	1
No fence	1
More open	1
Ground cover better toward corners	1
Rain water entrapment systems	1
Curb cut ADA issue	1
Gates	1
Concrete/steal trash cans	1
Less is more	1
Bird bath	1
More colorful flowers	1
Water fountain	1
Insurance concerns	1

Appendix C: Meeting Three Recommendations

At Meeting Three, participants were asked: Which one recommendation would you most like to see implemented? The complete responses are below. “C” denotes a general comment. “Q” denotes a question asked by a participant to MSU and Genesee County Land Bank staff. “R” denotes the response given by MSU and Genesee County Land Bank staff to participant questions.

C: Frankenmuth Insurance is a really good fit.	R: Yes, anything that would invite people on the lot (not signs, but benches or games) would make the liability insurance kick-in.
C: Looking for information about fencing. Looked at English Style Picket fences. Helps people not ride bikes or dump on the site. Only concern is ADA compliance.	Q: I have a problem with the liability insurance because I can see how people would take advantage of it.
R: Don't have to worry about ADA unless you want the garden to be publicly accessible. Would need to get a permit for fencing from the City.	R: If we (the Flint Land Bank) did not require liability insurance, the liability would fall back on the City, which isn't an option.
Q: We were looking at three lots. Do we need to keep it to one lot?	C: Liability forms at the site won't work because it would be incredibly difficult to ensure that everyone that visits the site fills one out.
R: No, you can do as many as you want. Beautification is the goal. Take on as much as your group wants to do/can handle.	Q: Do we have to choose pollinator sites that are on a corner?
Q: Can we do fencing?	R: No, the corner lot designs presented are merely suggestions based on feedback received during previous meetings where the MSU team heard that corner lots might be preferred by Clean & Green members. Another positive about choosing corner lots is that they are always visible.
R: The fence permit is about \$200. Insurance companies think that fencing is a good idea so it wouldn't be a liability concern.	Q: Will we be doing this process again next year?
R: Would be in the lease with the property. Not an issue. May even be able to get assistance digging post holes.	R: No, this is a one-time deal.
R: Using posts or boulders don't require a City permit but there are other barrier options.	C: I wish we would have had the meetings a bit sooner because it's planning season now and we can't really use the design suggestions. We learned that the native plants died on one lot, but if we do another lot, we now know that we need to hand water the native plants so that they come back. On our third project, we did the landscaping, but we don't know how much the liability insurance will be because we involved students at the nearby school, and we want it to be a reading nook for the school kids with local artwork.
Q: How do we do pathways?	R: The Land Bank is looking into working with non-profits to sponsor lots so that neighborhood groups only have minimal or no cost for insurance.
R: Don't use anything permanent, but gravel, compressed sand, or mulch are all great options. Natural pathways are better for maintenance and at deterring people from entering the site.	Q: Will the number of benches we install make the liability insurance cost increase?
Q: Can we use pea rocks for the pathways?	
R: Yes, at the end of the day, the pathway material just has to be removeable.	
Q: Does the liability come into play when you put benches and games on the lot?	

Appendix C: Meeting Three Recommendations (cont.)

R: No, the number of benches does not matter as long as there are no jungle gyms or other climbable things installed.	C: I thank you all for all of the hard work you have done to help us have beautiful spaces in our neighborhoods. We are also using children to maintain our spaces (BSCA youth initiative).
Q: Can we go directly to MSU to ask questions, or do we have to go through the Land Bank?	
R: The MSU team is involved as a consultant on this project so they won't be as active and hands-on in the long-term, but the Land Bank will serve as the point resource in the long run. The Conservation District is another good resource.	
Q: You say non-profit organization. What is the difference between a non-profit, a church, and a block club?	
R: Non-profits and churches already have insurance policies so the cost for added insurance for something like one of these sites would be much less to them. In those cases, the lease may be in the non-profit's name rather than the neighborhood group. Churches may be a good resource if they are in the area.	
Q: Can we get drawings of this?	
R: Yes, the MSU team will provide a digital and hard copy of the report.	
C: Eric Johnson Insurance is great.	
C: We are changing the design that you presented for Chevrolet Avenue. It will spread to three lots.	
Q: Did you consider the overlap of pollinator seasons?	
R: In general, yes, but it is impossible for pollinator food sources to grow during the winter months in Michigan.	
Q: Where do we go next on this?	
R: If your group hasn't done a lease application yet, that would be the next step. Then, talk to Raynetta about planning and budgeting. Next, you would start lot prep.	