Vacant Land as a Natural Asset

Enduring land values created by care and ownership

Research Report - April 2008

Joan Iverson Nassauer
Rebekah VanWieren
Zhifang Wang
Danielle Kahn

GENESEE INSTITUTE
<table>
<thead>
<tr>
<th>Page</th>
<th>Introduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Purpose of Project</td>
</tr>
<tr>
<td>3</td>
<td>Key principles</td>
</tr>
<tr>
<td>6</td>
<td>Mapping stewardship and care countywide</td>
</tr>
<tr>
<td>12</td>
<td>Mapping properties: Three time frames</td>
</tr>
<tr>
<td>16</td>
<td>Method &amp; Results</td>
</tr>
<tr>
<td>16</td>
<td>Overview</td>
</tr>
<tr>
<td>17</td>
<td>Map Models</td>
</tr>
<tr>
<td>18</td>
<td>Maintenance Maps</td>
</tr>
<tr>
<td>28</td>
<td>Ripening Amenity Maps</td>
</tr>
<tr>
<td>34</td>
<td>Future Land Use Maps</td>
</tr>
<tr>
<td>38</td>
<td>Site Stories</td>
</tr>
<tr>
<td>96</td>
<td>Conclusions</td>
</tr>
<tr>
<td>97</td>
<td>References</td>
</tr>
<tr>
<td>98</td>
<td>Appendices</td>
</tr>
<tr>
<td>98</td>
<td>Appendix 1 - Data Sources</td>
</tr>
<tr>
<td>99</td>
<td>Appendix 2 - Data Models</td>
</tr>
</tbody>
</table>
Vacant land can be managed to create enduring environmental values. This project analyzed vacant properties managed by the Genesee County Land Bank Authority (GCLBA) to show how they can be managed to achieve inviting neighborhoods and to protect and build long-term ecosystem services. The project marries the intrinsic strengths of Genesee County – especially its water resources – with its immediate strengths: citizens’ engagement and sense of ownership in their own neighborhoods. It takes these strengths one step further by showing how to create enduring value on vacant land by encouraging community engagement in the care and environmental stewardship of vacant property. To achieve these goals, this report suggests that the GCLBA manage its properties across three times frames:

**NOW – FOR MAINTENANCE.** With primary concern for maintaining property in cost-efficient ways that enhance neighborhood appeal while protecting ecosystem services.

**TRANSFORMATION – AS A RIPENING AMENITY FOR THE FUTURE.** Using the locations of the more than 4000 GCLBA properties across the county as an opportunity to create more attractive neighborhoods and environmentally beneficial landscape patterns for the future.

**FUTURE – AS LAND USE TYPES.** Identifying future land uses and landscape characteristics of GCLBA properties to enhance the value of surrounding properties as well as enhance ecosystem services for the entire community.
The heart of our suggestions for the future of GCLBA properties is to seek knowledge about local landscape values (what characteristics make a neighborhood an attractive place to live) and to use those characteristics to protect its ecosystem services as well. We start with what people value about their neighborhood. Then we identify management, design, and planning strategies that embody those values and also produce ecosystem services (Nassauer 1997, 1995; Nassauer, Halverson, and Roos 1997). We learned a great deal from our field work in Genesee County in 2007, and from all of this past work, we offer two key principles for management of GCLBA properties: the **market substitution principle** and the **community care principle**.

**The market substitution principle:**
Time and community care can substitute for robust market conditions to create property values.

A period when real estate markets are weak and many properties are vacant may be an opportunity to take the time to manage change toward a larger goal: achieving long-term ecosystem services. When people are economically strapped or markets are weak, property owners may have more time than money to spend. They may be able to spend more time on maintenance of their properties, and they may be willing to do so in order to live in a more attractive place.

In robust land markets or under past industrial economies, some ecosystem services may have been unknown, overlooked, or sacrificed for market goals. With greater ecosystem knowledge now, different landscape values are apparent than during the industrial boom times, and these ecosystem values can help to ensure property values for the long-term. Clean and abundant water, commercial and industrial sites that have healed from their history of industrial contamination, beautiful wooded hills and stream corridors that are alive with biodiversity, and a landscape that clearly displays the time that people invest in caring for their neighborhoods – all of these characteristics can be achieved in Genesee County with time.
Care is necessary to use time well. Management approaches must engage the community in care that shows and care that knows about the ecosystem services that are part of neighborhood landscapes, leading to:

**The community care principle:**

Ecosystem services achieved by local communities’ engagement in caring for the landscape create enduring value.

Two important ways that people exercise care in Genesee County are by engagement and stewardship. People are engaged in care when they regularly do something to maintain it. Gardeners, people who mow their lawns, people who prune their shrubs and trees, people who keep their house and fences painted and in good repair all are showing care by engagement.

People show care as stewards when they show the boundaries around an area that must be managed in a certain way in order to protect some ecosystem function. People who keep tall grasses near the shores of wetlands, lakes, and streams, who protect large areas of woodland or native flowers and grasses, who are careful not to dump waste or wash cars near storm sewer inlets or near wetlands, lakes, or streams are showing care by stewardship.

Care is a form of ownership. Even when a property title is not owned by an individual, care for that property is in itself an act of control and ownership. Interestingly, this concept is legally recognized through adverse possession, or squatter’s laws, in many states; in Michigan, for example, property ownership or easements may be claimed by a person who has used and maintained another person’s property continuously for 15 years (Michigan 2008). This concept is particularly important in Michigan: 1 in 33 homes in Detroit’s metropolitan area is subject to a foreclosure filing – the highest proportion in the nation (RealtyTrac 2007), and home prices have plunged 9.6%, more than twice the national rate, during the past year (S&P/Case-Shiller home price index).

Care creates enduring value. A well-cared for place elicits continued community and personal engagement. The opposite of good care is neglect. Sociologists Wilson and Kelling’s (1982) observed that more crime may occur when the obligation to be civil is lowered by actions that seem to signal that no one cares - like leaving broken windows in disrepair.

In the future design and management of Genesee County properties, care and stewardship can overlap. People can engage in care-taking of their own properties in a way that protects and even enhances ecosystem services. Landscape ecology concepts point to ways that this can done.
How could appropriate management of GCLBA properties contribute to the long-term environmental health of the region? We identified the following fundamental ecosystem services that could be enhanced by GCLB properties: water quality, biodiversity of habitats, and landscape amenity values. The consequences of not protecting these ecosystem services could be: contaminated groundwater, wetlands, lakes or streams, reduced safety in eating fish from local waters, sick and disappearing birds and amphibians, and neglected, unattractive neighborhoods.

We mapped Genesee County to identify how GCLBA properties should be managed to protect ecosystem services and achieve appropriate care. The future land use types we mapped (shown on the facing page) are not conventional land uses. Instead, they are based on landscape ecology concepts that show how residential, commercial, industrial and open space land uses can be designed and managed to protect and even enhance ecosystem services for GCLBA properties and neighborhoods. These maps begin on page 16.

The figure on the facing page identifies the types of future land uses located on those maps. On a blue background, the figure shows future land use types that occur where lakes, streams, wetlands, groundwater and regional water sources, or aquifers, are vulnerable to contamination because soils are relatively porous. These types are called: vulnerable habitat, vulnerable habitat connection, and vulnerable habitat stepping stone. On a green background, the figure shows the future land use types that occur where habitat values are highest. These types are called: habitat patch, habitat matrix, urban habitat connection. The figure shows that the vulnerable habitat, vulnerable habitat connection, and vulnerable habitat stepping stone types protect both water quality and habitat ecosystem services in the same location. For example, a vulnerable habitat connection connects larger habitat patches and also has porous soils that could allow surface contaminants to reach underlying aquifers. The yellow background in the figure shows the future land use types that cover most of the county, where land has been intensively used for row crop agriculture or urban development. These areas have lower habitat value, but they CAN contribute to important ecosystem services in the future. For example, the exurban ecological design type can be designed to include residential development at varying densities, and within this development small patches of habitat can be designed to detain and infiltrate rain water.
Our urban ecological design work in other metropolitan areas has demonstrated the success of pairing appropriate care and stewardship with landscape ecology concepts for design and planning. To illustrate how this works, we have selected examples from some of our past work.

Our project to guide the growth of Cambridge, Minnesota, a 19th century rural county seat that was under growth pressure from the 2.5 million Minneapolis-St. Paul metropolitan area, illustrates several types that we identified in this study of Genesee County as well. With a new city sewer plant that would accommodate growth, the town of Cambridge aimed to protect and enhance habitats and water quality as well. Several existing habitat patches occurred in the designated growth area, shown below. A **habitat patch is a contiguous area of landcover that supports some part of the life cycle of native plant or animal species**. For example, a habitat patch might provide food and rest for a bird migrating from Central America to the Arctic in the spring, or it might provide for the entire life cycle of a frog. Landscape ecology research tells us that larger habitat patches are more effective than smaller patches. In the site shown below on the right, woodland, wetland, and lake habitat patches existed near each other, but these patches were not well-connected to help species move from one patch to another.

The below figure on the left shows our ecological design for the growth of Cambridge (1997). The design establishes **habitat connections**, **habitat stepping stones**, as well as a **background habitat matrix**, while also improving the transportation infrastructure and providing 698 residential units, including affordable housing. **Habitat connections** are created between the wetland and woodland so that the two ecosystem types are now one continuous patch that provides a more complete set of habitat functions for numerous plant and animal species. **Habitat stepping stones** are created along the back lot lines of residential blocks, where small narrow patches of native plant species provide many ecosystem services, including providing food for a host of birds and butterflies that pass through the neighborhood. **The background habitat matrix**, shown in the right figure below, can be designed to include many very small habitat patches – even the size of a small garden - that, repeated over a large contiguous area, help to support the survival of native plant and animal species.
Mapping stewardship and care countywide

We designed an even larger *urban habitat connection* at a nearby location in this urban watershed in St. Paul, Minnesota. In the top images, our 1995 design for the 25-acre Phalen Wetland Park, shows how a contiguous patch of wetland and wet meadow habitats can bring the amenity values of nature into the center of a city. In this particular location, a shopping center once occupied the site of the new park.

The same landscape ecology concepts can ensure that *exurban ecological design* protects ecosystem services even as development occurs on larger lots beyond the edge of the city. At the bottom, a rainwater garden retrofit in Burnsville, Minnesota, by Barr Engineering shows how very small habitat patches can appear to be gardens even on larger lots.

When very small habitat patches are designed into the fabric of a city, they contribute to *urban ecological design*. In the example on the right from our 1996 design to retrofit a neighborhood in Maplewood, Minnesota, we created rainwater gardens that also served as a background habitat matrix with some small habitat stepping stones. The rainwater gardens, shown in the left figure, capture rainwater from the adjacent street and lawns and run it into the sandy soil of the neighborhood. At the same time, the gardens were designed to enhance neighborhood amenity values and introduce selected, beautiful native plants.

An abandoned property in the neighborhood, shown in the bottom figure, was designed to be a slightly larger, *habitat stepping stone*, that could create nesting and breeding cover for some species while it held local rain water during bigger rain storms.

*Urban habitat stepping stone* created on abandoned property

*Phalen Wetland Park & Area Plan in Maplewood, MN - urban habitat connection*

*Rainwater garden retrofit in Burnsville, MN - exurban ecological design*
To reach future land uses that protect and build environmental health, we applied the market substitution principle and the community care principle across three time frames that begin now to transform GCLBA properties for the future. Each time frame, shown in the figure on the facing page, maps certain ecosystem functions or community care characteristics to suggest how an extended period of time can be used to achieve a highly desirable future land use pattern. Each map produces a typology, or a breakdown of types of GCLBA properties across the entire county, for appropriate management in each time frame.

The transformation of GCLBA properties as ripening amenities for the future can occur because Genesee County has the time now to adjust landscape patterns to values that are not driven by short-term markets. Below, we summarize three of the policy ideas that we suggest for engaging community members in the transformation of GCLBA properties’ most appropriate future land uses.

**Mow-to-own** programs could establish care contracts that allow neighbors to earn ownership of nearby GCLBA properties by providing good maintenance of those properties over a period of year.

**Transfer of occupancy rights** programs could transfer occupancy of homes to higher amenity neighborhoods from neighborhoods that have many abandoned properties and where ecosystem services could be enhanced by conversion away from residential land uses.

Such transfer of occupancy rights programs could invite willing residents to move to residential restoration areas that offer higher amenities, including adjacency to extended open spaces created by the transfer of occupancy rights programs, and where city infrastructure updates and maintenance could be concentrated as the new land use pattern evolves.
METHOD & RESULTS
Overview

We used a geographic information system (GIS) to map the different types of GCLBA properties for each time frame: MAINTENANCE now, transformation to RIPENING AMENITIES, and FUTURE LAND USE types. Each map was created by a GIS model that combined existing spatial data by explicit, replicable rules – so that anyone would get the same result from the same data. To make the three time frame maps, we combined maps of influential characteristics of the Genesee County landscape:

ORDERLINESS EXPECTATIONS - different land use contexts that in which people who live in the community will have different expectations for what a well-cared-for landscape will look like.

ENVIRONMENTAL FLOWS of water, plant and animal habitats, and people that should be managed to protect environmental and human health

AMENITY OPPORTUNITIES – landscape characteristics that people nearly always perceive as attractive, including lakes, rivers, and wooded slopes.

We combined the maps of influential characteristics in different ways to answer GCLBA property management questions that were relevant for each time frame, as shown in the figure on page 17. Our analysis combined data maps shown in each of the white boxes at the bottom of the figure. Sources and metadata for data map in the white boxes are shown in Appendix 1. Models for combining these data maps to produce maps for each of the three time frames can be found at the back of this report in Appendix 2.

Our models combined the data maps shown in the white boxes to make three thematic maps. The Environmental Flows map (page 20) shows the patterns of ecosystem services that may not be immediately visible to people as they occupy the landscape, while the Amenity Opportunity (page 30) map shows the patterns of ecosystems services that are immediately apparent and appreciated as amenities by people when they occupy the landscape. The third map, Orderliness Expectations (page 23), shows how different urban and exurban neighborhood contexts can be associated with different cultural expectations for the way people should maintain their property.
The **ORDERLINESS EXPECTATIONS** map is based on our analyses of population density and land uses. Where people live on smaller properties, as in a city, they have higher expectations for their neighbors to keep their entire property well-maintained. On a larger properties, the cultural norm may be to allow some patches of the property to be unmown. Land use norms are similar. In residential or commercial land uses, people have higher expectations for maintenance than in industrial or agricultural settings. And on large parcels of open space, orderliness expectations may be quite low because people perceive a large open space as being “natural” at least in part.

The **ENVIRONMENTAL FLOWS** map is based on our analysis of the permeability of soils and the possibility that pollution or contaminants on or near the surface of the earth could reach nearby surface waters or underlying aquifers. City boundaries are important for the environmental flows maps because people who live within city boundaries are likely to get their drinking water from municipal sources, reducing their chances of being exposed to contaminants through their water supply. On the other hand, residents of areas beyond city limits are likely to have wells, making them more vulnerable if their properties were subject to contamination. In addition to protecting against these undesirable flows, desirable habitat flows were considered in this map. Landscape ecology concepts are mapped as a foundation for ecological design and planning.

The **AMENITY OPPORTUNITY** map shows the patterns of ecosystems services that people see and value as a part of their everyday lives. Sloping landscapes allow more distant, scenic views. Woodlands also enhance aesthetic value. The green infrastructure of the county, with wetlands, streams, and lakes will be valued as an aesthetic amenity and as a setting for recreation.

We combined maps of these three themes: **Orderliness Expectations**, **Environmental Flows**, and **Amenity Opportunities** in different models to describe effective **MAINTENANCE NOW** for GCLBA properties (P. 27 map), their **TRANSFORMATION AS RIPENING AMENITY FOR THE FUTURE** (P. 33 map), and their **FUTURE LAND USE TYPES** (P. 37 map) to create enduring value.
METHOD & RESULTS

Maintenance Map Model

The map for **MAINTENANCE** of GCLBA properties NOW classifies the entire county to suggest how vacant property can be maintained in cost-efficient ways that enhance neighborhood appeal while protecting ecosystem services. The stories of specific GCLBA properties beginning on page 38 of this report show the **MAINTENANCE** type of each property in orange type at the beginning of each property story.

Maintenance types on the map on page 27 range from the most cautious level of stewardship of precious ecosystem services (type 1 – Nature Protection) for just ten of the GCLBA properties to levels of property care that are highly attuned to urban settings for a total of more than 3500 GCLBA properties (type 8 – Orderly Urban Yard and type 9 – Casual Urban Yard).

To develop the Maintenance map, we used the thematic map of **Environmental Flows**, shown on page 20. It shows that the greatest precaution for protection of environmental flows occurs in the northern part of Genesee County and along the Flint River. Our model for the **Environmental Flows** map depended heavily on our **Groundwater Vulnerability** map, shown on page 21, which maps the most permeable soils and underlying aquifers. **Environmental Flows** also are affected by existing **Green Infrastructure**, the main habitats in the county, shown on page 22. These habitats are widely distributed, but are more rare in the west central and central parts of the county. **Green Infrastructure** is built directly from an analysis conducted by the University of Michigan-Flint Center for Applied Environmental Research (CAER).

The **Orderliness Expectations** map on page 23 is essential to suggestions for **MAINTENANCE** of GCLBA properties now. As the map shows, orderliness expectations are higher in Genesee County cities and towns or wherever residential development occurs.

All of these maps were combined in the model for **MAINTENANCE** of GCLBA properties now, which is described in detail in Appendix 2 and shown in the **MAINTENANCE** map on page 27.
Environmental Flows

- Water Source/City Infrastructure
- Habitat Vulnerability
- Resident Vulnerability
- City Boundaries
- Land Cover Data
- Amenity Opportunity
- Adjacent Amenities

- Large-scale Amenities
- 1. County proposed green infrastructure
- 2. Michigan Natural Inventory
- 3. Water features (lakes & streams)

Groundwater Vulnerability

- Orderliness Expectations
- Cultural Norms
- Land Use Norms
- Population Density
- Land Cover Data

- Future Land Use Map
- Maintenance Map

- Most vulnerable water, quality habitat
- Most vulnerable water, less habitat
- Vulnerable water, quality habitat
- Vulnerable water, less habitat
- Less vulnerable water, quality habitat
- Less vulnerable water, less habitat
- Least vulnerable water, less habitat

- Permeable topsoils & underlying aquifer
- Permeable topsoils, no underlying aquifer
- Low permeable topsoils & underlying aquifer
- Low permeable topsoils, no underlying aquifer
Green Infrastructure

- Michigan Natural Features Inventory
- Potential Conservation Area Assessment
  - High Priority
  - Med Priority
  - Low Priority
- GLS Green Links Data
  - Green infrastructure

Orderliness Expectations

- Highest Order Expectations
- Moderate Order Expectations
- Lowest Order Expectations
The map for **MAINTENANCE** of GCLBA properties breaks them into nine types for maintenance. Detailed characteristics of the property, which must be learned by visiting the property itself rather than relying on the map alone, also should affect maintenance decisions—particularly on properties inside cities and towns. These characteristics and their implications for maintenance are described in the “Site Stories” section of this report beginning on page 38.

Maintenance for **Nature Protection** takes the most precautionary approach and is applicable to only 66 properties, those in type 1 or 2. Both type 1 and type 2 maintenance protect both water quality and habitat. Type 1, **Nature Protection** applies to larger rural properties, many of which could enhance habitat patch size or connectivity. Type 2, **Orderly Nature Protection** applies to exurban residential properties and ensures a neat appearance. Type 3, **Orderly Water Protection** applies to properties in locations with higher risk of surface contamination reaching groundwater, but inside city boundaries where human water needs are likely to be met by municipal water sources. Only eight properties fall into this type, and maintenance ensures a neat appearance and helps to protect groundwater.

About 150 properties fall into types 4 and 5, where water quality is less vulnerable but opportunities are excellent to enhance habitat patches and corridors. Type 4, **Orderly Habitat** applies to properties that occur nearby existing habitat patches or corridors, but inside city boundaries where maintenance must ensure a neat appearance. Type 5, **Casual Habitat** applies to properties nearby existing habitat patches or corridors that are either landlocked from city streets or outside city boundaries. A larger number of properties, more than 600, fall into types 6 and 7, where water quality is less vulnerable but the property is not near higher quality habitat patches and corridors. To determine an effective way to maintain these properties, a site visit will be useful to view sites nearby the property. The “Site Stories” beginning on page 38 suggest what to look for.

**Casual Yard**, type 6 properties, are larger exurban properties outside city boundaries, and generally can be maintained to look neat without extensive mowing. **Minimal Yard**, type 7 properties, are larger rural properties, typically vacant lots. These generally can be maintained with signage and very limited annual mowing.

By far the largest numbers of GCLBA properties (3053) fall into type 8, **Orderly Urban Yard**. Water quality is much less vulnerable on these properties and current habitat value is low. However, the maintenance of these properties can help to enhance both water quality and habitats regionally, which becomes even more important as water supplies and habitats are stressed by climate change. The first goal for type 8 properties is to ensure a neat appearance while minimizing maintenance costs and engaging the community in care. Details in the “Site Stories” show several approaches to meeting this goal. Finally, type 9 properties, **Casual Urban Yard**, tend to be vacant lots that are in less densely populated neighborhoods inside the city. An annual mowing typically will be adequate for these (more than 500 properties) to fit their neighborhood context.
## Method & Results

**Learn More About What to Do**

Read about these maintenance characteristics in the SITE STORIES (page 38)

- **Mow Strip Width**: depends on specific site characteristics of the GCLB lot and the adjacent lots
- **Mowing Frequency**: depends on Maintenance type; all annual lot mowing should be done in the Fall to avoid disturbing bird nesting
- **Signage**: depends on Maintenance type and site stewardship

### Maintenance Map

<table>
<thead>
<tr>
<th>Type</th>
<th>Opportunity</th>
<th>What to do</th>
<th># of GCLB Properties</th>
<th>% Cover of County</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nature Protection</td>
<td>High priority signage</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>Orderly Nature Protection</td>
<td>Mow strip + native plants + high priority signage</td>
<td>56</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Orderly Water Protection</td>
<td>Mow strip + high priority signage</td>
<td>8</td>
<td>&lt;1</td>
</tr>
<tr>
<td>4</td>
<td>Orderly Habitat</td>
<td>Mow strip + annual lot mowing + native plants + signage</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Casual Habitat</td>
<td>Native plants + signage</td>
<td>114</td>
<td>22</td>
</tr>
<tr>
<td>6</td>
<td>Casual Yard</td>
<td>Mow strip</td>
<td>384</td>
<td>8</td>
</tr>
<tr>
<td>7</td>
<td>Minimal Yard</td>
<td>Annual mow strip + signage</td>
<td>237</td>
<td>38</td>
</tr>
<tr>
<td>8</td>
<td>Orderly Urban Yard</td>
<td>Mow strip + annual lot mowing</td>
<td>3053</td>
<td>6</td>
</tr>
<tr>
<td>9</td>
<td>Casual Urban Yard</td>
<td>Annual lot mowing + signage</td>
<td>506</td>
<td>3</td>
</tr>
</tbody>
</table>
The map for transformation of GCLBA properties to **RIPENING AMENITIES**, classifies the county to suggest how the locations of the more than 4000 GCLBA properties across the county can be managed as an opportunity to create more attractive neighborhoods and environmentally beneficial landscape patterns for the future. The “site stories” beginning on page 38 show the **RIPENING AMENITIES** type of each property in blue type at the beginning of each property story.

**RIPENING AMENITIES** types on the map on page 33 range from the highest priority for land disposition to ensure stewardship of precious ecosystem services (type 1 – Water and Habitat Protection Open Space) for just 49 of the GCLBA properties to type 7, which identifies almost 3400 properties that could, after more detailed site inspection, be appropriate as residential restoration areas and for making infrastructure investments.

To develop the **RIPENING AMENITIES** map, we used the thematic maps of **Environmental Flows** (page 20) and **Amenity Opportunities** (page 30). The RIPENING AMENITIES model incorporates landscape amenities to achieve more culturally sustainable ecosystem services. The theory of cultural sustainability suggests designing landscapes so that people immediately enjoy views of landscapes that also provide less noticeable ecosystem services (Nassauer 1997). Notice that locations that have the highest amenity value on the **Amenity Opportunities** map only sometimes have high values on the **Environmental Flows** map.

The **RIPENING AMENITIES** concept associates locations that provide ecosystem services as landscape amenities, as habitats, or to protect water quality in order to identify properties that have high priority for public use or resource protection.
The model identifies seven types of GCLBA properties to be transformed into **RIPENING AMENITIES**. This time frame includes strategies intended to promote land ownership, like the mow-to-own and transfer of occupancy rights ideas shown on page 12. Legal, policy, and community participation mechanisms will be essential to effective development of the **RIPENING AMENITIES** concepts, but key premise it that the path from land maintenance, or care, to environmentally beneficial future land uses is through ownership. Ownership is accomplished both by establishing a sense of ownership (attachment to and identification with a place) and by literally helping people earn the right to own properties that are currently in the GCLB inventory. From the perspective of Henry Louis Gates, Jr., Professor and Director of the W.E.B. Du Bois Institute for African and African American Research, Harvard University (Gates 2007):

People who own property feel a sense of ownership in their future and their society. They study, save, work, strive and vote. And people trapped in a culture of tenancy do not.

Types 1, 3 and 4 are all identified as Priority 1 for property disposition to create enduring ecosystem services. Together the three types include fewer than 80 GCLBA properties, but their locations suggest the appropriate property disposition could create value that would have neighborhood or regional benefits. On page 12, we introduce the idea of “Transfer of occupancy rights” as a means to create or augment open space amenities to expand to protect water quality, enhance habitats, and reduce maintenance expectations. The transfer of occupancy rights idea possibly could be useful for **RIPENING AMENITIES** types 1, 2, 3 and 4.

Two very different types of properties are identified as Priority 2 for property disposition to create enduring ecosystem services. The 132 **Type 2** properties are excellent opportunities to create larger habitat patches or enhance connectivity, and the 533 **Type 6** properties are opportunities to engage adjacent landowners in care by ownership by creating larger lots in exurban locations. This possibly could occur using the “Mow to Own” idea that we introduce on page 12.
**Method & Results**

**Ripening Amenity Map**

Type 7 includes the more than 3000 city properties that are candidate sites for further consideration as residential restoration areas, where density might be increased in areas of infrastructure enhancements and at the edges of new open space amenities, as described on page 12. In type 7 areas that are NOT targeted for residential restoration, the “Mow to Own” idea may be applicable here as well.

<table>
<thead>
<tr>
<th>Type</th>
<th>Opportunity</th>
<th># of GCLB Properties</th>
<th>% Cover of County</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Priority 1: Open space Water protection and habitat</td>
<td>49</td>
<td>16</td>
</tr>
<tr>
<td>2</td>
<td>Priority 2: Open space Habitat</td>
<td>132</td>
<td>22</td>
</tr>
<tr>
<td>3</td>
<td>Priority 1: Open space Water protection</td>
<td>23</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>Site testing Water protection infrastructure</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Habitat matrix infrastructure</td>
<td>277</td>
<td>13</td>
</tr>
<tr>
<td>6</td>
<td>Priority 2: Development and parcel aggregation to large lots</td>
<td>533</td>
<td>35</td>
</tr>
<tr>
<td>7</td>
<td>Priority 1: Development and infrastructure targeting for block densification</td>
<td>3381</td>
<td>8</td>
</tr>
</tbody>
</table>
The **FUTURE LAND USE** model takes GCLBA properties from RIPENING AMENITIES status to identify future land uses and landscape characteristics that will enhance the value of surrounding properties as well as protect and build ecosystem services for the entire community. The “site stories” beginning on page 38 show the **FUTURE LAND USE** type of each property in green type at the beginning of each property story.

To develop the **FUTURE LAND USE** map, we again used the thematic maps of Environmental Flows (page 20) and Amenity Opportunities (page 30), but with a longer view toward land ownership to supports sustainable stewardship and care. Our goal was to locate future land use types based on landscape ecology concepts in the figure on page 7 and described on pages 6-11. Our **FUTURE LAND USE** model produced thirteen future land use types, ranging from the most environmentally vulnerable properties (types 1 – 6 with a total of fewer than 80 properties) to properties highly suited for urban uses in which appropriate design could enhance ecosystem services (type 13 with more than 3300 properties).
**METHOD & RESULTS**

### Future Land Use Map

**Future Land Use** types 1-6 are most essential to manage for their ecosystem services. They all occur where groundwater is vulnerable to surface contamination. Future land uses 1 – 3, which appear in green in the adjacent map, also could be valuable parts of habitat patches or corridors, while types 4 – 6 would contribute to habitat as stepping stones or as part of the background matrix, as described on page 9. Types 7, 10, and 12 also are important for their habitat values, though their water quality is less vulnerable. Types 7 and 10 include roughly 200 properties in rural Genesee County, and types 12 are especially important urban habitats that occur largely along the Flint River in the city of Flint. Only two properties, those in type 8, occur in a developed area where water quality is vulnerable. Properties of this type are recommended for site water testing during the RIPENING AMENITIES, when they are classified as type 4. By far the largest number of properties is type 13, prescribing Urban Ecological Design for the future. Property disposition in the RIPENING AMENITIES time frame will suggest which of these properties are most appropriate as dense residential neighborhoods and how open space uses would be distributed within these neighborhoods to build and enhance ecosystem services. Type 11 occurs in exurban or rural areas, and although these properties are similar to type 13 in their ecosystem services, there were far fewer type 11 properties (less than 600) in 2007.

<table>
<thead>
<tr>
<th>Type</th>
<th>Opportunity</th>
<th># of GCLB Properties</th>
<th>% Cover of County</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vulnerable Habitat</td>
<td>31</td>
<td>11</td>
</tr>
<tr>
<td>2</td>
<td>Vulnerable Habitat Connector</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Vulnerable Urban Habitat</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Vulnerable Habitat Stepping Stone</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Vulnerable Urban Habitat Stepping Stone</td>
<td>5</td>
<td>&lt;1</td>
</tr>
<tr>
<td>6</td>
<td>Vulnerable Urban Matrix Habitat</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Habitat Patch</td>
<td>132</td>
<td>22</td>
</tr>
<tr>
<td>8</td>
<td>Vulnerable Development</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Matrix Design</td>
<td>17</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>Habitat Matrix</td>
<td>87</td>
<td>11</td>
</tr>
<tr>
<td>11</td>
<td>Exurban Ecological Design</td>
<td>533</td>
<td>35</td>
</tr>
<tr>
<td>12</td>
<td>Urban Habitat Connector</td>
<td>173</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>Urban Ecological Design</td>
<td>3381</td>
<td>8</td>
</tr>
</tbody>
</table>
In the summer of 2007, we visited 92 GCLBA properties to test and refine the models and maps for each time frame: MAINTENANCE now, transformation to RIPENING AMENITIES, and FUTURE LAND USE types. These 92 properties are a geographically clustered sample (as shown in orange in the map below), and we chose sample locations that allowed us to visit more than one property for every type included in each of the three maps. For types that included a large number of properties (like type 13 of Future Land Use, or type 6 or 7 of Ripening Amenities), we visited several properties.

Our site visits taught us a great deal, and the maps and models in this report were improved as a result of our site visits. Very important, our site visits also confirmed that some characteristics that are essential for making effective maintenance decisions, and that could be important to creating enduring value for GCLBA properties, are not represented in the digital mapped data available for our analysis. These essential characteristics are immediately apparent in a site visit, and the SITE STORIES in the pages that follow illustrate how those characteristics that can be seen on a site visit should effect maintenance decisions for different types of properties.

Each GCLBA property will change through the time frames in our analysis: from MAINTENANCE now, to transformation as RIPENING AMENITIES that lead to FUTURE LAND USE types. At the top of each page that follows, the Maintenance type is shown in gold type, then the Ripening Amenities type is shown in blue type, followed by the Future Land Use type shown in green type. In sequence, these three types take each property from its present state as shown in each story to a future of enduring value.
Featured property

8.4 acres
W Dodge Road, Vienna Township

This is a rural, landlocked property. It is a high priority for nature protection now, and it could become open space because it is vulnerable to water quality contamination and it has high habitat value.

Typical site characteristics of Vulnerable Habitats:
Property is larger in size, undeveloped, and landlocked or difficult to access

What's Nearby

4.8 acres, Miller Road, Flint

Additional Vulnerable Habitat Property

0.6 acre, Flint Township

4.8 acres, Miller Road, Flint

Additional Vulnerable Habitat Property
Environmental Flow
Areas with permeable soils, where water resources are vulnerable, and near quality habitat.

Orderliness Expectations
Areas that have moderate or low orderliness expectations. Dumping is a concern because these properties are not as easily accessed or seen from major county roads.

Landscape Amenity Opportunity
Areas that have the highest or high landscape amenity, including woods or steep slopes.

### NOW
High priority signage to prevent dumping and to note vulnerable water resources, nearby habitat, and stewardship.

### SOON
Open space amenity values enhance the property value of adjacent properties. Transfer of occupancy rights to create enduring open space amenities.

### FUTURE
High quality, large open spaces that protect the most vulnerable areas of the county.
High Priority Signage Ideas

**For the Featured Property and Similar Maintenance Types**

*Use for Maintenance Types 1 (Nature Protection), 2 (Orderly Nature Protection), and 3 (Orderly Water Protection)*

On properties that are a maintenance type 1, 2 or 3, **high priority signage** should be used that **delineates the property boundary** in order to prevent dumping in these sensitive, mostly rural areas where there are fewer “eyes on the street.” Signs should **note vulnerable water resources, nearby high quality habitat, and property stewardship.**

**Signage content ideas**

When several of these signs are seen together, the viewer reads the red line as a connected boundary marking around the property.

A simple, inexpensive fencing design constructed out of wooden stakes and thin rope creates an easy boundary marking.
Featured property

1 acre
25045 & 25102 Walton Rd.
Flint Township

This is a suburban, land-locked property. It is a high priority for nature protection now, and it could become open space because it is vulnerable to water quality contamination and is close to areas of high habitat value.

Typical site characteristics of Vulnerable Habitat Connectors - Property is larger in size, undeveloped, and land-locked or difficult to access.

Additional Vulnerable Habitat Connector Property

2 acres, River Valley Drive, Flint Township

Additional Vulnerable Habitat Connector Property

N Vassar Road, Mount Morris

What’s Nearby

SITE STORIES
Environmental Flow
Areas with permeable soils, where water resources are vulnerable, BUT NOT near high quality habitat or residential uses.

Orderliness Expectations
Areas that have moderate or low orderliness expectations. Dumping is a concern because these areas are not often visible from major county roads.

Landscape Amenity Opportunity
Areas that have the highest or high landscape amenity, including woods or steep slopes.

NOW
High priority signage to prevent dumping and to note vulnerable water resources, nearby habitat, and stewardship

SOON
Open space amenity values enhance the property value of adjacent properties. Transfer of occupancy rights to create enduring open space amenities.

FUTURE
Open space that contributes to the size and connectivity of the most vulnerable habitats.
Featured property

0.2 acre
3210 Kleinbell St.
Flint

This is a vacant, urban property near a first order stream corridor. It is a high priority for water protection now. It could become open space with urban matrix habitat values because an open space use could protect its vulnerable water quality.

Typical site characteristics of Vulnerable Urban Matrix Habitats - Property is vacant and in a residential neighborhood. Tend to be near or along a vulnerable water feature.

SITE STORIES
Orderly Water Protection → Open Space → Vulnerable Urban Matrix Habitat

What's Nearby

What's Nearby

0.7 acre, Graham Road, Flint Township

Vulnerable Urban Habitat Property
5,485 sf, Kleinpell Street, Flint

Vulnerable Habitat Stepping Stone Property
0.7 acre, Graham Road, Flint Township
Environmental Flow
Areas within the city limits that have permeable soils, where water resources are vulnerable. Because groundwater is not a direct source of drinking water, groundwater contamination caution is not as high. Areas are not near high quality habitat.

Orderliness Expectations
Areas that have high or moderate orderliness expectations

Landscape Amenity Opportunity
Areas that have either the highest, high or moderate landscape amenity opportunities.

NOW
Regular mow strip to front of nearby houses + high priority signage to note vulnerable water resources. No annual lot mowing.

SOON
Open space amenity values enhance the property value of adjacent properties. Transfer of occupancy rights to create enduring open space amenities that protect water quality.

FUTURE
Urban open space that protects the most vulnerable water resources.
Featured property
0.1 acre
55963 Fairfax Street
Flint
This is an urban property adjacent to a large city park. For now, it should be maintained as orderly habitat, as shown on pages 58-59. Because it is adjacent to the park, it could be a strong candidate site to become open space that would need less maintenance. Over the long term, it could be part of a larger locally important habitat patch.

Typical site characteristics of Habitat Patches - Site conditions vary depending on adjacent lot characteristics and street conditions. Properties tend to be near parks, wooded areas, or river corridors.

Additional Orderly Habitat Property
1.5 acres, Grand Blanc Road, Grand Blanc

Additional Open Space Property
6,200 sf, Clyde Avenue, Flint

What’s Nearby
Environmental Flow
Areas with less vulnerable water resources, within city water limits, and near high quality habitat within or outside the city, so native plants are used to ensure habitat value.

Orderliness Expectations
Areas that have the highest orderliness expectations, so using a regular mow strip and annual lot mowing show continued care for the property.

Landscape Amenity Opportunity
Areas have the highest and high landscape amenities, including woods or steep slopes, within or outside the city.

OPPORTUNITIES for the Featured Property
Regular mow strip width based on specific site conditions (see pages 58-59) + annual lot mowing in Fall to protect bird nesting habitat + native plants + sign to note nearby habitat

NOW

SOON
Urban open space amenity values enhance the property value of adjacent properties. Transfer of occupancy rights to create enduring open space amenities within the city.

FUTURE
Urban open spaces that protect habitat and landscape amenities where groundwater vulnerability is low.
**Maintenance Type 4**

**Orderly Habitats**: maintenance approaches based on specific site conditions

**IF** lot is vacant and adjacent to lot with occupied house...

**THEN**...
- use native plants,
- mow lot annually in the Fall,
- regularly mow strip to front of houses and install signage.

**IF** lot has occupied house...

**THEN**...
- regularly mow entire property.

**IF** lot is vacant and adjacent lots are also vacant and street has sidewalk...

**THEN**...
- use native plants, mow lot annually in the Fall,
- regularly mow strip to 3’ beyond sidewalk, and install signage.

**IF** lot is vacant and adjacent lots are also vacant and street DOES NOT HAVE sidewalk...

**THEN**...
- use native plants, mow lot annually in the Fall, and install signage. No mow strip.

**IF** lot is land-locked...

**THEN**...
- use native plants, mow lot annually in the Fall, and install signage. No mow strip.
Habitat Signage Ideas

Use for Maintenance Types 4 (Orderly Habitat) and 5 (Casual Habitat)

On properties that are a maintenance type 4 or 5, signage should be used to note nearby high quality habitat, native plants, and property stewardship.

Signage content ideas

For Orderly Habitats (Maintenance Type 4), a mow strip, native plants, annual site mowing and signage are used.

For Casual Habitats (Maintenance Type 5) native plants, annual site mowing and signage are used.
Featured property
0.5 acre
1489 Genesee Avenue
Beecher area

This is a suburban vacant property. For now, it should be maintained as casual habitat. Because it is near a large undeveloped property, it could be a strong candidate site to become open space that would need less maintenance. Over the long term, it could be part of a larger locally important habitat patch.

Typical site characteristics of Habitat Patch lots - Property is vacant and within or near undeveloped land either in or out of the city.

Additional Casual Habitat Property
6,390 sf, Cass Avenue, Flint

What's Nearby

Additional Habitat Patch Property
1.5 acres, Mount Morris
Environmental Flow
Areas with lower vulnerable water resources, within or outside of the city, and near high quality habitat, so native plants are used to ensure habitat value.

Orderliness Expectations
Areas that have the lowest orderliness expectations, so a mow strip or annual lot mowing is not necessary to demonstrate care.

Landscape Amenity Opportunity
Areas have the highest landscape amenities, including woods or steep slopes, within or outside of the city.

NOW
Native plants + sign to note nearby habitat

SOON
Open space amenity values enhance the property value of adjacent properties and increase habitat patch size and connectivity. Transfer of occupancy rights to create enduring open space amenities within the city.

FUTURE
Urban open spaces that protect habitat and landscape amenities where groundwater vulnerability is low.
Featured property

0.2 acre
1114 Orange Blossom
Mount Morris

This is a suburban vacant property. For now, it should be maintained as a casual yard as seen on pages 70-71. Because it is within an exurban neighborhood, it could be a strong candidate site for parcel aggregation to create larger lots. Over the long term, it could be part of an exurban ecological neighborhood.

Typical site characteristics of Exurban Ecological Design
Lots - Site conditions vary depending on conditions of adjacent lots and street

Additional Exurban Ecological Design Property
8,379 sf, E Juliah Avenue, Beecher Area

Additional Exurban Ecological Design Property
4,555 sf, Tremont Avenue, Beecher Area
Environmental Flow
Areas with lower vulnerable water resources, outside city limits, and not near quality habitat.

Orderliness Expectations
Areas that have the highest orderliness expectations, so using a regular mow strip and annual lot mowing show continued care for the property.

Landscape Amenity Opportunity
Areas that have lower landscape amenities and do not have significant woods or steep slopes.

**OPPORTUNITIES for the Featured Property**
- **NOW**
  Regular mow strip - width based on specific site conditions (see pages 70-71). No annual lot mowing.

- **SOON**
  Target property for care assistance programs, like Clean and Green, or multiple, larger lot aggregation to build infrastructure for ecological subdivisions.

- **FUTURE**
  Residential exurban ecological design.
Casual Yards: Maintenance approaches based on specific site conditions

IF lot is vacant and adjacent to lot with occupied house...
THEN...
do not do annual lot mowing
but regularly mow strip to front of houses.

IF lot has occupied house...
THEN...
regularly mow entire property.

IF lot is vacant and adjacent lots are also vacant and street DOES NOT HAVE sidewalk...
THEN...
do not mow lot annually and do not use mow strip.

IF lot is vacant and adjacent lots are also vacant and street has sidewalk...
THEN...
regularly mow strip to 3’ beyond sidewalk,
but do not mow lot annually.
Featured property
0.7 acre
No street listed
Mount Morris

This is a suburban, undeveloped property. For now, it should be maintained as a minimal yard. Because it is undeveloped and adjacent to a highway, it could be part of the habitat matrix that could support the large habitat areas and patches.

Typical site characteristics of Habitat Matrix Lots - Lot is undeveloped and in a rural or suburban area. These lots tend to be in “background” areas, such as behind lots or near major roads or right-of-ways.

Additional Minimal Yard Property
0.5 acre, Princeton Avenue, Flint

Additional Habitat Matrix Property
0.3 acre, Cass Avenue, Flint
Environmental Flow
Areas with lower vulnerable water resources, outside city limits, and not near quality habitat.

Orderliness Expectations
Areas that have lower orderliness expectations, so an annual mow strip in the Fall along with signage is sufficient to demonstrate care.

Landscape Amenity Opportunity
Areas have the highest landscape amenities, including woods and steep slopes, but not near high quality habitat.

**ANALYSIS of the Featured Property**

**Maintenance Type 7 - Minimal Yard**
- Featured Property
- Sampled Property (7 total)
- GCLB Property (237 total)
- Type 7 (38% total cover of county)

**Future Land Use Type 10 - Habitat Matrix**
- Featured Property
- Sampled Property (3 total)
- GCLB Property (87 total)
- Type 10 (11% total cover of county)

**OPPORTUNITIES for the Featured Property**

**NOW**
Annual mow strip in the Fall + signage.

**SOON**
Initiate matrix/remediation infrastructure pattern

**FUTURE**
Small matrix habitat areas that connect to larger matrix habitat open spaces.
Orderly Urban Yard → Development → Urban Ecological Design

Featured property

4,360 sf
906 E Alma Avenue
Flint

This is an urban, vacant property. For now, it should be maintained as orderly an orderly urban yard as seen on page 84. Because it is on a well-occupied block, it could be a strong candidate for a residential restoration area. Over the long term, it could be part of an urban ecological design neighborhood.

Typical site characteristics of Urban Ecological Design lots - Property is within the city and may be vacant or has a house. Property characteristics vary based on adjacent lots.

Additional Urban Ecological Design Property

4,557 sf, E Ruth Street, Flint

What’s Nearby

Additional Urban Ecological Design Property

6,263 sf, E Carpenter Road, Flint
Environmental Flow
Areas with the lowest vulnerable water resources, within the city, and not near high quality habitat.

Orderliness Expectations
Areas that have the highest orderliness expectations and within cities, so a mow strip and annual lot mowing are used to denote ongoing care.

Landscape Amenity Opportunity
Areas that have lower landscape amenities like steep slopes, and that may be wooded, but are not near habitat.

ANALYSIS of the Featured Property

Maintenance Type 8 - Orderly Urban Yard

Ripening Amenity Type 7 - Development & Infrastructure Targeting

Future Land Use Type 13 - Urban Ecological Design

NOW
Regular mow strip width based on specific site conditions (see pages 84-85) + annual lot mowing in Fall to protect ground bird nesting habitat

SOON
Target property for assistance programs, like Clean and Green, or for density maintenance in residential restoration areas. In areas not designated to densify, target property for lot aggregation and community gardens. (Priority 1)

FUTURE
Urban neighborhoods with increased densities in focus target zones, in turn improve urban services and open space amenities, such as parks and community gardens.
Featured property
5,623 sf
E Bundy Avenue
Flint

This is an urban, vacant property. For now, it should be maintained as an orderly urban yard as seen on page 85. Because it is on a block with higher vacancy, it could be a strong candidate for lot aggregation or community gardens. Over the long term, it could be part of an urban ecological design neighborhood or urban amenity.

Typical site characteristics of Urban Ecological Design lots - Property is within the city and may be vacant or has a house. Property characteristics vary based on adjacent lots.

Additional Urban Ecological Design Property
4,437 sf, E Austin Avenue, Flint

Additional Urban Ecological Design Property

What’s Nearby
8180
Additional Urban Ecological Design Property
4,225 sf, E Russell Avenue, Flint
Environmental Flow
Areas with the lowest vulnerable water resources, within the city, and not near high quality habitat.

Orderliness Expectations
Areas that have the highest orderliness expectations and within cities, so a mow strip and annual lot mowing are used to denote ongoing care.

Landscape Amenity Opportunity
Areas that have lower landscape amenities like steep slopes, and that may be wooded, but are not near habitat.

ANALYSIS of the Featured Property

**NOW**
Regular mow strip width based on specific site conditions (see pages 84-85) + annual lot mowing in Fall to protect ground bird nesting habitat.

**SOON**
Target property for assistance programs, like Clean and Green, or for density maintenance in residential restoration areas. In areas not designated to densify, target property for lot aggregation and community gardens. (Priority 1)

**FUTURE**
Urban neighborhoods with increased densities in focus target zones, in turn improve urban services and open space amenities, such as parks and community gardens.
SITE STORES
Maintenance Type 8
Orderly Urban Yards: maintenance approaches based on specific site conditions

IF lot is vacant and adjacent to lot with occupied house...
THEN...
mow lot annually in Fall and
regularly mow strip to front of houses.

IF lot has house...
THEN...
regularly mow entire property.

IF lot is vacant and adjacent lots are also vacant and street DOES NOT HAVE sidewalk...
THEN...
mow lot annually
but do not use mow strip.

IF lot is vacant and adjacent lots are also vacant and street has sidewalk...
THEN...
regularly mow strip to 3' beyond sidewalk
and mow lot annually.
Featured property
4,134 sf
805 E Foss Avenue
Flint

This is an urban, vacant property on a street corner. For now, it should be maintained as an orderly urban yard as seen on page 90. Because it is on a corner, it could be a strong candidate for developing a neighborhood marker or gateway. Over the long term, it could be part of an urban ecological design neighborhood.

Typical site characteristics of Urban Ecological Design lots - Property is within the city and may be vacant or has a house. Property characteristics vary based on adjacent lots.

Orderly Urban Yard → Development → Urban Ecological Design

What’s Nearby

Additional Orderly Urban Yard Corner Property
4,764 sf, Leith Street, Flint

Additional Orderly Urban Yard Corner Property
4,855 sf, E Piper Avenue, Flint (house has been removed)
Environmental Flow
Areas with the lowest vulnerable water resources, within the city, and not near high quality habitat.

Orderliness Expectations
Areas that have the highest orderliness expectations and within cities, so a mow strip and annual lot mowing are used to denote ongoing care.

Landscape Amenity Opportunity
Areas that have lower landscape amenities like steep slopes, and that may be wooded, but are not near habitat.

ANALYSIS of the Featured Property

NOW
Regular mow strip width based on specific site conditions (see page 90) + annual lot mowing in Fall to protect ground bird nesting habitat

SOON
Target property for assistance programs, like Clean and Green, or for density maintenance in residential restoration areas. In areas not designated to densify, target property for lot aggregation and community gardens. (Priority 1)

FUTURE
Urban neighborhoods with increased densities in focus target zones, in turn improve urban services and open space amenities, such as parks and community gardens.
Where appropriate, corner lots can be used for neighborhood identity markers, and the can be mowed to highlight signage or other elements such as a planter.

**Neighborhood Identity Markers**

**Stewardship Signage Example**

**Thanks for making our community CLEAN & GREEN!**

Eastside Neighbors are taking care of 24 properties in this area!
Featured property

4,191 sf
E Russell Street
Flint

This is an urban, vacant property. For now, it should be maintained as a casual urban yard. Because it is on a block with high vacancy and near an existing open space, it could be a strong site for early planting of habitat matrix infrastructure. Over the long term, it could serve as an urban habitat connector to larger habitat areas.

Typical site characteristics of Urban Habitat Connector lots -
Property is within the city and is most likely vacant. Within the city of Flint, these properties are often on blocks that have a higher density of vacant lots.

Additional Casual Urban Yard Property

4,333 sf, E Ruth Street, Flint

Additional Urban Habitat Connector Property

4,383 sf, E Russell Avenue, Flint

What’s Nearby

4,383 sf, E Russell Avenue, Flint
Environmental Flow
Areas with the lowest vulnerable water resources, within the city, and not near high quality habitat.

Orderliness Expectations
Areas that have lower orderliness expectations, but within the city, so only annual site mowing is used to show a moderate level of ongoing care.

Landscape Amenity Opportunity
Areas that have higher landscape amenities, including woods and steep slopes, but are not near high quality habitat.

OPPORTUNITIES for the Featured Property

NOW
Annual lot mowing in Fall to protect ground bird nesting habitat + signage to note stewardship

SOON
Initiate matrix/remediation for infrastructure pattern

FUTURE
Properties that improve connectivity between and the size of urban habitat patches.

SITE STORIES
Casual Urban Yard → Habitat Matrix Infrastructure → Urban Habitat Connector
Financial and industrial stresses will undoubtedly bring additional vacant land to more areas of Genesee County in the near future. As the number of vacant properties grows, the pattern of properties could change to be more broadly distributed across the county. But, while the patterns of vacancy could change, the enduring ecosystem services that are at stake do not change. The inherent water resources, amenity characteristics, and biodiversity potentials of the county could be enhanced, or it could be inadvertently damaged by inappropriate maintenance and development of vacant properties.

This report lays the foundation for the county to use a time period of weaker land markets to establish a potent direction that will benefit those who live in Genesee County for generations. This report points out where to use different forms of community care and stewardship now, and it suggests directions for engaging citizens to develop a deeper sense of ownership for neighborhood landscapes and ecosystem services. By establishing the pattern for enhancing the enduring ecosystem services now, before market pressures could lead to piecemeal impressions of progress, the county can build greater, enduring values for future markets – ensuring that the county is the beautiful, inviting, resource-rich location that it can be.

This analysis for three time frames focused on the nearly 5000 properties in the GCLBA inventory in 2006, but the countywide maps in this report will be equally valid for additional properties in the county because they are based on underlying ecosystem values and they are attentive to widely held cultural norms for care and stewardship.

In addition, leaders in other communities that are coping with vacant land in the midst of financial or industrial stresses, or recovering from environmental or technological catastrophes may find that the three time frames open a path for their own communities to move forward. The first map, MAINTENANCE now, addresses the most powerful thing that people notice when they consider living or working or doing business in a neighborhood: Does it look like people are taking care of it? As any community recovers, establishing the look of good care, even in the face of financial stress, must be a very high priority. In the second map, we have coined the term RIPENING AMENITIES to convey the idea that the one resource that stressed communities have in common – time to “ripen” without market pressure – can be a great long-term advantage. This time can be used to reconfigure landscape patterns to further their appeal of community, to protect and enhance ecosystem services, and to engage local citizens as respected and effective caretakers of their home communities. Finally, the third map, FUTURE LAND USE types, spells out how different forms and locations of development can create enduring community values: clean, healthy, attractive places where people know they would enjoy living.

Building on the power of community care and the value of time, the Genesee County Land Bank Authority can establish a trajectory for landscape change that will make the future of the county even more promising than its past.

And where our past work mentioned in this report can be found


More information on these projects is posted at:
http://www-personal.umich.edu/~nassauer/Lab/index.html
<table>
<thead>
<tr>
<th>Map</th>
<th>Data for model</th>
<th>Data</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural norms</td>
<td>Population density</td>
<td>2000 census of population data</td>
<td>US Census Bureau (Last retrieved 06/2007 from University of Michigan graduate library)</td>
</tr>
<tr>
<td>Landuse norms</td>
<td>Landcover data</td>
<td>2001 landcover data</td>
<td>Michigan government website <a href="http://www.mogi.state.mi.us/mgdi/?rel=cext&amp;action=Genesee">http://www.mogi.state.mi.us/mgdi/?rel=cext&amp;action=Genesee</a></td>
</tr>
<tr>
<td>Adjacent amenity</td>
<td>Slope</td>
<td>Michigan DEM data</td>
<td>Michigan government website, as above.</td>
</tr>
<tr>
<td></td>
<td>Woodland vegetation cover</td>
<td>Deciduous and coniferous forests interpreted from 2001 landcover data</td>
<td>Michigan government website, as above.</td>
</tr>
<tr>
<td>Large-scale amenity</td>
<td>Green infrastructure</td>
<td>County proposed green infrastructure</td>
<td>Michigan-Flint Center for Applied Environmental Research (CAER) GInetwork_Genesee is the green infrastructure network layer that was created as an outcome of a planning charrette. Proposed green infrastructure also includes a buffer area determined by CAER.</td>
</tr>
<tr>
<td>Michigan Natural Features Inventory</td>
<td>Michigan Natural Features Inventory</td>
<td>From Genesee County: Michigan Natural Features Inventory data for Genesee County with the associated criteria scores as found in the Potential Conservation Area Assessment. The attribute titled &quot;Total&quot; is the score for the criteria that then gave the ranking (high, med, low priority) and the 9 attributes that come before that are the actual criteria scores (ie. Total size = \text{&quot;size_sc&quot;} / Size of Core Area = \text{&quot;core_sc&quot;, etc})</td>
<td></td>
</tr>
<tr>
<td>Water features (lakes &amp; streams)</td>
<td>Lake data, stream data</td>
<td>Michigan government website, as above.</td>
<td></td>
</tr>
<tr>
<td>Groundwater vulnerability</td>
<td>Soils</td>
<td>Michigan STATSGO Soil data</td>
<td>Michigan government website, as above.</td>
</tr>
<tr>
<td></td>
<td>Groundwater aquifer data</td>
<td>Michigan Aquifer Characteristics</td>
<td>Michigan government website, as above.</td>
</tr>
<tr>
<td>Water sources/city infrastructure</td>
<td>City boundary</td>
<td>Michigan Geographic Framework Cities</td>
<td>Michigan government website, as above.</td>
</tr>
<tr>
<td>Habitat vulnerability</td>
<td>Aquatic Ecosystems</td>
<td>Lake data Stream data National Wetland Inventory data</td>
<td>Michigan government website, as above.</td>
</tr>
<tr>
<td></td>
<td>Green infrastructure</td>
<td>County proposed green infrastructure</td>
<td>Michigan government website, as above.</td>
</tr>
<tr>
<td>Resident vulnerability</td>
<td>Landcover data</td>
<td>2001 landcover data</td>
<td>Michigan government website, as above.</td>
</tr>
</tbody>
</table>

### Appendix 2 - Data Models

**Environmental Flows Model**

<table>
<thead>
<tr>
<th>ENVIRONMENTAL FLOWS MODEL</th>
<th>A - Vulnerability to Contamination</th>
<th>B - Water Source/City Infrastructure</th>
<th>C - Habitat Vulnerability</th>
<th>D - Resident Vulnerability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No city water &amp; not near residential</td>
<td>1</td>
<td>Low- or high-density residential</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>More vulnerable to contamination</td>
<td>2</td>
<td>City water near residential or habitat</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Lower groundwater contamination caution</td>
<td>2</td>
<td>City water near residential or habitat</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Lower groundwater contamination caution</td>
<td>2</td>
<td>City water not near residential or habitat</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Lower groundwater contamination caution</td>
<td>2</td>
<td>Lower groundwater contamination caution</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Lower groundwater contamination caution</td>
<td>2</td>
<td>Lower groundwater contamination caution</td>
<td></td>
</tr>
</tbody>
</table>

- 1: Both groundwater and habitat/human contact caution
- 2: Not residential or not near aquatic habitat or not near residential area
- 3: City water near residential or habitat
- 4: City water near residential or habitat
- 5: City water near residential or habitat
- 6: City water near residential or habitat
- 7: Not residential or not near aquatic habitat or not near residential area
- 8: Not residential or not near aquatic habitat or not near residential area
- 9: Not residential or not near aquatic habitat or not near residential area
- 10: Not residential or not near aquatic habitat or not near residential area

---
### AMENITY OPPORTUNITIES MODEL

<table>
<thead>
<tr>
<th>Green Infrastructure</th>
<th>Landscape</th>
<th>Infrastructure</th>
<th>Amenity Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>outside green infrastructure (as described by...) or within 30 meters of green infrastructure</td>
<td>no effect</td>
<td>no effect</td>
<td>1 - high landscape aesthetic and/or ecological context and site opportunities</td>
</tr>
<tr>
<td>deciduous or coniferous woodland, slope over 18%, or lake, stream, or wetland</td>
<td>no effect</td>
<td>no effect</td>
<td>2 - high site aesthetic opportunities and ecological connectivity potentials</td>
</tr>
<tr>
<td>not inside or near green infrastructure</td>
<td>none of the above</td>
<td></td>
<td>3 - lacking high landscape or ecological amenity opportunities</td>
</tr>
</tbody>
</table>

### ORDERLINESS EXPECTATIONS MODEL

<table>
<thead>
<tr>
<th>Cultural Norms (based on population density)</th>
<th>Land Use Norms</th>
<th>Orderliness Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - High-density Urban residential</td>
<td>1 - High-density Urban Residential</td>
<td>1 or 2</td>
</tr>
<tr>
<td>2 - Low-density Urban residential</td>
<td>2 - Low-density Urban Residential</td>
<td>3 or 4</td>
</tr>
<tr>
<td>3 - Not Urban</td>
<td>3 - Roads</td>
<td>5 or 6</td>
</tr>
<tr>
<td>4 - Park</td>
<td>4 - Park</td>
<td>6 - Other Unbuilt</td>
</tr>
</tbody>
</table>

### MAINTENANCE TYPOLOGY MODEL

<table>
<thead>
<tr>
<th>Environmental Flows</th>
<th>Coordination of Conservation Efforts</th>
<th>Maintenance Type</th>
<th>What to do</th>
<th>% Cover of County</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - most vulnerable water, quality habitat</td>
<td>1 - Nature Protection</td>
<td>1 - Orderly Nature Protection</td>
<td>Regular mow strip, native plants &amp; signage to prevent dumping and note water &amp; stewardship</td>
<td>30</td>
</tr>
<tr>
<td>2 - vulnerable water, quality habitat</td>
<td>2 - Habitat Provision</td>
<td>2 - Orderly Habitat</td>
<td>Regular mow strip* &amp; high priority signage</td>
<td>20</td>
</tr>
<tr>
<td>3 - vulnerable water, quantity habitat</td>
<td>3 - Casual Water Provision</td>
<td>3 - Minimal Yard</td>
<td>Annual mow strip*, signage</td>
<td>18</td>
</tr>
<tr>
<td>4 - vulnerable water, less quality habitat</td>
<td>4 - Nature Protection</td>
<td>4 - Orderly Urban Yard</td>
<td>Annual site mowing*, signage</td>
<td>22</td>
</tr>
<tr>
<td>5 - least vulnerable water, less quality habitat</td>
<td>5 - Casual Yard</td>
<td>5 - Casual Urban Yard</td>
<td>Mean *</td>
<td>8</td>
</tr>
<tr>
<td>6 - least vulnerable water, less quantity habitat</td>
<td>6 - Minimal Yard</td>
<td>6 - Minimal Urban Yard</td>
<td>Mean *</td>
<td>6</td>
</tr>
</tbody>
</table>

* Mow strip width depends on specific characteristics of the GLBC lot and adjacent lots; annual site mowing should be done in the Fall to avoid disturbing bird nesting.
## Ripening Amenity Typology Model

<table>
<thead>
<tr>
<th>Environmental Flows</th>
<th>Landscape Amenity</th>
<th>Ripening Amenity Type</th>
<th># of GCLB Properties</th>
<th>% Cover of County</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Highest groundwater contamination vulnerability, and near habitat or residential uses</td>
<td>1, 2</td>
<td>1 - Priority 1: Open space - water protection and habitat (Target Out)</td>
<td>49</td>
<td>16</td>
</tr>
<tr>
<td>2. High groundwater vulnerability, but not near habitat or residential uses</td>
<td>3</td>
<td>2 - Priority 1: Open space - water protection and habitat (Target Out)</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3. Groundwater contamination caution, but within city water limits, and near residential or habitat</td>
<td>1, 2, 3</td>
<td>3 - Priority 1: Open space - water protection and habitat (Target Out)</td>
<td>23</td>
<td>6</td>
</tr>
<tr>
<td>4. Groundwater contamination caution, but within city water limits and not near habitat</td>
<td>1, 2, 3</td>
<td>4 - Priority 1: Open space - water protection and habitat (Target Out)</td>
<td>23</td>
<td>6</td>
</tr>
<tr>
<td>5. Groundwater contamination caution caution, within or outside city water limits, business</td>
<td>1, 2</td>
<td>5 - Priority 1: Open space - water protection and habitat (Target Out)</td>
<td>49</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>6 - Priority 1: Habitat matrix infrastructure</td>
<td>277</td>
<td>13</td>
</tr>
<tr>
<td>6. Lower groundwater contamination caution, outside city water and not near habitat</td>
<td>1, 2, 3</td>
<td>7 - Priority 1: Development and infrastructure targeting for block development (Target In)</td>
<td>3381</td>
<td>8</td>
</tr>
<tr>
<td>7. Lowest groundwater contamination caution, within city water limits, and not near habitat</td>
<td>1, 2, 3</td>
<td>7 - Priority 1: Development and infrastructure targeting for block development (Target In)</td>
<td>3381</td>
<td>8</td>
</tr>
</tbody>
</table>

## Summary Statistics

<table>
<thead>
<tr>
<th>What to look for/Notes</th>
<th># of GCLB Properties</th>
<th>% Cover of County</th>
</tr>
</thead>
<tbody>
<tr>
<td>In or near large habitat patches AND likely permeable soil</td>
<td>31</td>
<td>11</td>
</tr>
<tr>
<td>Near large habitat patches, wooded, sloped, likely permeable soils</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td>Groundwater caution, but not near habitat, or wooded or sloped</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>In or near large habitat patches or residential neighborhood AND likely permeable soil</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Permeable soil, but not a direct water source. Tends to occur along first order stream corridor.</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Not permeable soil, but near large habitat patches. Wooded or steeply sloped.</td>
<td>132</td>
<td>22</td>
</tr>
<tr>
<td>Wooded or sloped but not near habitat.</td>
<td>87</td>
<td>11</td>
</tr>
<tr>
<td>Wooded or sloped but not near habitat.</td>
<td>173</td>
<td>1</td>
</tr>
<tr>
<td>Wooded or sloped but near habitat.</td>
<td>533</td>
<td>35</td>
</tr>
</tbody>
</table>

## Future Land Use Typology Model

<table>
<thead>
<tr>
<th>Environmental Flows</th>
<th>Landscape Amenity</th>
<th>Future Land Use Type</th>
<th>What to look for/Notes</th>
<th># of GCLB Properties</th>
<th>% Cover of County</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Highest groundwater contamination vulnerability, and near habitat or residential uses</td>
<td>1, 2</td>
<td>1 - Vulnerable Habitat</td>
<td>In or near large habitat patches AND likely permeable soil</td>
<td>31</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2 - Vulnerable Development</td>
<td>Rural and developed areas with possible permeable soil, not wooded or sloped</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2. High groundwater vulnerability, but not near habitat or residential uses</td>
<td>1, 2</td>
<td>3 - Vulnerable Habitat Connector</td>
<td>Near large habitat patches, wooded, sloped, likely permeable soils</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>4 - Vulnerable Habitat Stepping Stone</td>
<td>Groundwater caution, but not near habitat, or wooded or sloped</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. Groundwater contamination caution, within city water limits, and near residential or habitat</td>
<td>1, 2</td>
<td>5 - Vulnerable Urban Habitat</td>
<td>In or near large habitat patches or residential neighborhood AND likely permeable soil</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>6 - Vulnerable Urban Matrix Habitat</td>
<td>Permeable soil, but not a direct water source. Tends to occur along first order stream corridor</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>4. Groundwater contamination caution, but within city water limits and residential area</td>
<td>1, 2, 3</td>
<td>7 - Vulnerable Urban Habitat</td>
<td>In or near large habitat patches or residential neighborhood AND likely permeable soil</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>5. Low groundwater contamination caution, both within or outside city water limits, but near habitat</td>
<td>1, 2</td>
<td>8 - Habitat Patch</td>
<td>Not permeable soil, but near large habitat patches. Wooded or steeply sloped.</td>
<td>132</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>9 - Matrix Design</td>
<td>Wooded or sloped but near habitat.</td>
<td>87</td>
<td>11</td>
</tr>
<tr>
<td>6. Lower groundwater contamination caution, both within city water limits and not near habitat</td>
<td>1, 2</td>
<td>10 - Habitat Matrix</td>
<td>Wooded or sloped but not near habitat.</td>
<td>173</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>11 - Ecological Design</td>
<td>Wooded or sloped but not near habitat.</td>
<td>533</td>
<td>35</td>
</tr>
<tr>
<td>7. Lowest groundwater contamination caution, both within city water limits and not near habitat</td>
<td>1, 2</td>
<td>12 - Urban Habitat Connector</td>
<td>Wooded or sloped but not near habitat.</td>
<td>173</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>13 - Urban Ecological Design</td>
<td>In or near large habitat patches, but not near habitat.</td>
<td>3381</td>
<td>8</td>
</tr>
</tbody>
</table>