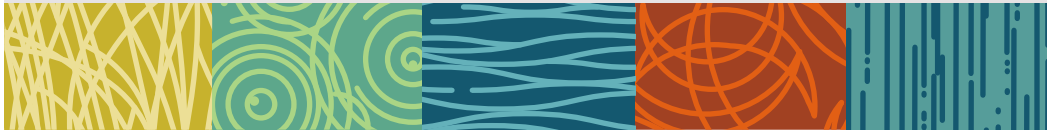


GREENBELT MASTER PLAN

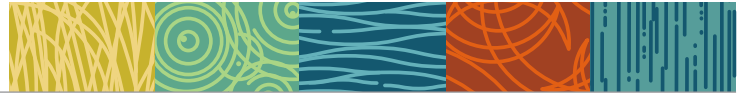
Distinct by Nature



FOR THE CITY OF CLIVE 20
16

This Clive Greenbelt Master Plan would not have been completed but for the dedication of city staff and leadership and the many residents of Clive and the region who gave of their time and talents to prepare this plan. A number of additional stakeholders have been engaged in this process, but included in the ongoing work of this planning are the following groups:

Acknowledgements



Steering Committee

Scott Cirksena, Mayor & Greenbelt Steering Committee Chair*
Eric Klein, City Council*
Susan Judkins, City Council*
David Bell, Park Board*
David Siebert, Clive Chamber*
Mark Brauer, Planning & Zoning*
Dennis Henderson, City Manager*
Jon Garnaas, Clive Community Foundation*
Jennifer Easler, Green & Sustainable Clive*
Bethany Wilcoxon, Greater Des Moines Partnership

City Staff

Matt McQuillen, Assistant City Manager*
Alex Pfaltzgraff, Planner*
Todd Seaman, Leisure Services Director*

Political Focus Group Attendees

Robert Brownell, Polk County Supervisors*
Steve Gaer, West Des Moines Mayor
Dennis Goldford, Drake Political Science Professor*

Social – Human Focus Group Attendees

Jeremy Dyvig, YMCA Healthy Living Center*
Linda Shanks, Clive Community Services*
Cyndi Fisher, Education Drives our Great Economy
Dr. Yogesh Shah, Des Moines University*
Shelley Horak, Dallas County Public Health

Financial – Economic Attendees

Andrea Westmeyer, Measurement Mojo*
Susan Dunn, Heart of America Group*
Greg Edwards, Greater Des Moines Convention & Visitors Bureau
Wade Den Hartog, Des Moines Community Foundation
Ryan Carroll, Greater Des Moines Partnership
Robert Rouwenhorst, Venture Capitalist*
Larry James, Urban Land Institute
Jim Aippersbach, Clive Community Foundation*

Built Focus Group Attendees

Todd Ashby, Des Moines MPO Director
Jeremy Becker, Polk County Public Works
Reo Menning, Former Metro Waste Director
Jeff May, Clive Public Works*
Doug Ollendike, Clive Community Development*
Jeff Theilen, Clive Parks Division*
Bill Dikis, Clive Planning and Zoning Commission*
Ethan Standard, Des Moines Area Regional Transit
William Walling, Net INS
Bob Veenstra, Veenstra & Kimm, Waste Water Reclamation

*Denotes City of Clive resident, business owner or employee.

Cultural Focus Group Attendees

Tom Murphy, West Des Moines School District*
Chris Murphy, Clive Festival*
Sally Dix, Bravo Greater Des Moines
Les Aashiem, Clive Historical Society*
Jessica Rowe, Greater Des Moines Public Art Foundation
Cinnamon Rost, 515 Brewery*
Brad Brown, Clive Lions Club*
Ruth Haus, Living History Farms President
Josh Dreyer, Clive Public Art Commission / Willis Auto*
Chris Kramer, Department of Cultural Affairs*

Natural Focus Group Attendees

Darren Fife, Walnut Creek Watershed Coalition
Jennifer Welch, Polk Soil & Water Conservation District
Mark Dungan, Polk County Conservation
Gary Scott, West Des Moines Parks & Recreation
Jan Herke, Urbandale Parks and Recreation Director
Matt Jermier, Waukee Parks and Recreation Director
Jeremy Lewis, Des Moines Bike Collective Director

Business Roundtable Attendees

Dave Harmeyer, Vista Real Estate Inc
Theresa Greenfield, Colby Interests*
Mark Haviland, Swanson Depot*
Abby Gilroy, Neighborhood Development Corporation
Rick Krause, CBRE Hubbell Commerical
Terry Lutz, McClure Engineering*
Artur Golebiewsky, Best Western Hotel Owner*
Brian Phillips, Terras*
Ted Corrigan, Des Moines Water Works

Residential Roundtable Attendees

Les Sulgrove, Residential Real Estate Expert
Ted Weaver, Clive City Council*
Dennis Witte, Woodlands Homeowners Association*
Kris Sadoris, Hubbell Multi Family Developer
Jason Eveland, Hansen Development
Keith Luchtel, Former City of Clive Attorney*

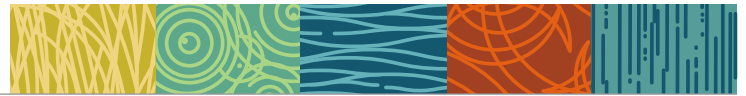
Consulting Team

Pat Boddy, Project Director, RDG Planning & Design
Ryan Peterson, Project Manager, RDG Planning & Design
Doug Adamson, Landscape Architect, RDG Planning & Design
Greg Pierce, Water Resource Engineer, RDG Planning & Design
David Dahlquist, Public Artist, RDG Planning & Design
Scott Crawford, Landscape Architect, RDG Planning & Design*
Jami Haberl, Executive Director, Healthiest State Initiative
Aryn McLaren, Healthiest State Initiative
Kim Chapman, Principal Ecologist, Applied Ecological Services
Doug Mensing, Project Manager, Applied Ecological Services
James Stevens, Senior Associate, ConsultEcon



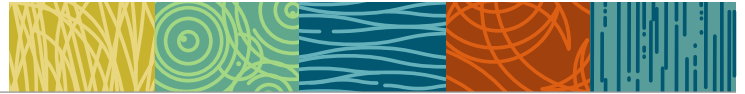
Prepared by RDG Planning & Design

Table of Contents



	Executive Summary	6-11
1	Public Engagement	12-33
2	Strategic Framework and Measuring Results	34-45
3	Natural Capital	46-73
4	Cultural Capital	74-83
5	Built Environment	84-112
6	Social/Human Capital	113-137
7	Financial Capital	138-147
8	Political Capital	148-155
9	Zones	156-173
10	Implementation	174-181
11	Capital Costs	182-200
12	Demand and Use Analysis	201-208
13	Operating Plan	209-217
14	Funding	218-233
15	Economic Impacts	234-247
	Appendices	248

Executive Summary



GREENBELT VISION:

Clive's Social
Center, Recreation
Corridor and
Regional Resource

GREENBELT MISSION:

Engage
Stakeholders,
Sustain
Community and
Natural Health

Introduction

This Clive Greenbelt Master Plan reflects eighteen months of in-depth work within the City of Clive and across the metro region to achieve an aspirational-but-achievable 25-year roadmap for the Greenbelt's future. The plan requires many partners, both public and private, internal and external to Clive, and the ongoing hard-work of City leadership. This plan unpacks from a vision and mission meaningful to Clive's residents and partners across Central Iowa.

The plan speaks to the Greenbelt's role as Clive's social center, while at the same time serving as a recreation corridor and regional resource. This is a delicate balance for the plan to accomplish. It provides multiple health, economic, social and environmental benefits to Clive and serves as significant "connective tissue" for the whole of the community. Few communities are blessed with a linear park that traverses the entirety of their city. As one resident put it "other communities measure their park systems in acres, we measure ours in miles." This plan is intended to preserve, protect and enhance that resource while continuing to welcome visitors and serve the region.

Plan Development

This plan was developed through extensive public engagement, an assessment of existing conditions, and the science required to help the City develop concrete steps for moving forward. Special emphasis was also placed on the current and potential public health benefits of the Clive Greenbelt and plan features were developed based on health data and best practices.

Public Engagement - Process and Results

The plan launched in the spring of 2015 with a series of focus groups and interviews addressing the community's social/human, public health, cultural, built environment, natural resources and financial/economic needs, including roundtables with business, Chamber of Commerce, and real estate professionals. A half-day stakeholder workshop followed those interviews. The general public was contacted through on-line means, on-trail opportunities (suggestion boxes), three public meetings, two random-sample household surveys, and "intercept" studies - interviews along the trail and at the 2015 Clive Festival. Across the board, responses generated the same top tier planning goals:

- Improve trail connections and safety, providing recreation for all
- Manage stormwater and stabilize streams
- Restore and protect habitat and overall natural resources

This plan has been designed to deliver on those top-level goals. Based on the many conversations with the public, improved business connections, integration of the arts, and facilities/programming components to support "all of the above" further drive this plan.

Existing Conditions and Previous Plans

This plan builds on the work before it, including past strategic, master planning and scientific studies. The list of past work is long, but Clive's Strategic Plan, past streambank, and bridge/structural studies, and the nearly concurrent Walnut Creek Watershed Plan particularly tie to this document. Additional foundational work included an assessment of existing habitat, land use, flood and facility

conditions. These existing conditions informed future planning.

Science: Stream Suitability Modeling

With Walnut Creek running the entire length of the Greenbelt, the plan needs to set priorities for streambank stabilization and similar projects. The consulting team devised a model to understand potential impacts of continued erosion (based on a number of factors from the Walnut Creek streambank assessment to soil, infrastructure, topography, land use), risks to neighboring properties, and risks to other key facilities (e.g., utility lines). The results prioritize stream segments that are most likely to encroach on infrastructure or erode away property through color intensity (reds and oranges vs. yellows and greens), providing the City with natural stream sections for priority restoration and stabilization.

Public Health

The Healthiest State Initiative was an integral part of the design team, working with a public health advisory committee (professionals in the public health and design realms) and the public to identify key strategies to address regional health issues ranging from obesity to mental health challenges. After assessing existing health conditions, the team recommended working toward a goal of reaching residents with a Greenbelt access point no more than 1/8 mile from their homes while also promoting healthy food availability through incentivized pop-up businesses and related strategies. NOTE: With that strategy in play, this plan estimates the Greenbelt can generate from \$895,747 to \$1.1 Million in health care savings for Clive residents annually by promoting active living and positively impacting a user's weight and lifestyle.

The Plan

The plan appears in this report in five zones or districts - each zone named for the stream or land cover characteristics within that zone and accompanied by artistic elements to further reflect the Clive Greenbelt's unique water story - an important aspect of interpreting the Greenbelt for the public. *Working from East to West, the plan's zone by zone highlights include:*

The Falls.

This segment emphasizes the Eastern gateway to the Greenbelt and the whole of Clive, while also stressing improved trail connections and access for existing neighborhoods and businesses. Key projects include the North Walnut Creek Trail extension, commercial redevelopment, improved trail connections to adjoining neighborhoods, stream stabilization, stormwater management at Indian Hills Woods and natural areas restoration.

The Oxbows.

This zone anticipates an eventual redevelopment North and South of the Greenbelt and a "bypass" for commuter cyclists running North of and parallel to the Greenbelt. The plan would also remove Porter Shelter from the floodway, take full advantage of the Aquatic Center's Community Building and eventually place a Nature Center in this recreational hub. A series of wetlands are proposed to help mitigate upstream development. Near term key projects include trail replacement between 100th and 114th Streets, connecting University to the Greenbelt via Hickory Hills, and a City Hall/Library trail connection.

The Lakes.

Water quality, habitat restoration and improved connections dominate here. The plan envisions wetland restoration near 128th Street while also consider-

ing stream stabilization, with utility and trail protection. Facility enhancements proposed include a Country Club Lake bridge for connectivity, a trail head at Casey’s General Store and natural/creek play at Wildwood.

The Headwaters.

This zone offers particular opportunities to enhance education at Shuler Elementary with an outdoor lab envisioned, while also improving safety and recreation with a new trail to bypass the challenging 156th Street/Hickman Road intersection.

The Wilds.

This zone may afford the City of Clive its greatest opportunity to lead the region as pacesetters in stormwater management, habitat protection and recreation. While some development has started in this Northwest “corner” of Clive, the city has an opportunity to live its “Distinct by Nature” brand by putting stream, habi-

tat and trail protections in place before new developments occur in the balance of The Wilds. Emphasis in this zone is on policies protecting Walnut Creek and habitat features along with streambank restoration, extending the trail into this portion of Clive, and siting future parks.

Implementation

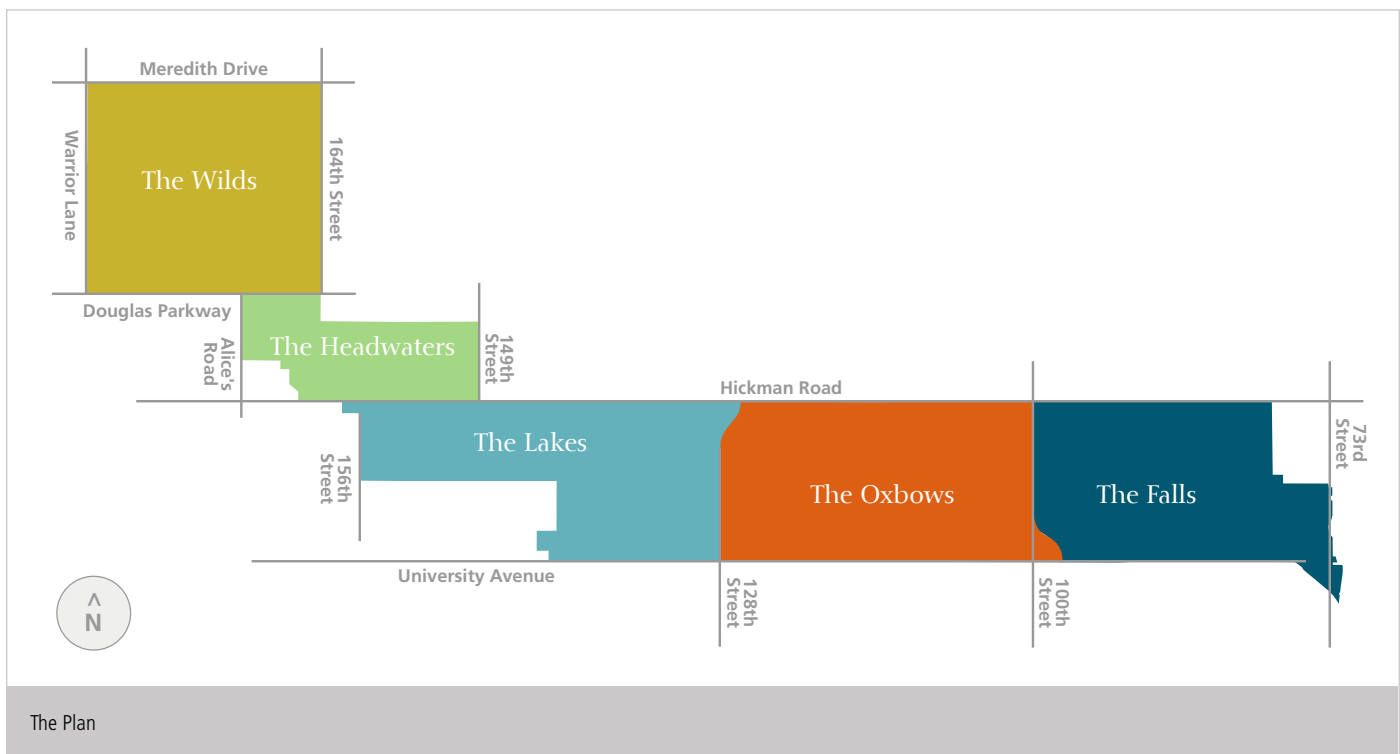
The Need for Regional Partners and Leaders

The Clive Greenbelt Master Plan must have partners in leadership and resources - both within Clive and throughout the region - to make all aspects of this plan a reality. Particularly challenging will be identification of the key players and strategies to lead the region in flood mitigation and water quality improvements. Upstream partners are particularly essential for the Greenbelt’s stream resources to regain and retain a healthy condition. The Watershed Management Authorities in the region (and associated on-the-ground technical leaders) are

an excellent starting point, but this plan identifies the need for continued policy work and leadership in this arena.

Implementation Priorities

In addition to priority projects highlighted through computer models and facility needs, two additional high level strategies drive this plan’s priorities. Build-out in The Wilds (northwest section of the Greenbelt) allows the City to exercise leadership in stormwater management and thoughtful development - if plans for The Wilds are exercised early, ahead of incoming development. This makes many of The Wild’s preservation, protection and connection projects a natural chronological priority. At the same time, the Wastewater Reclamation Authority (WRA) currently has plans on the drawing board for a significant sanitary sewer line project in 2026 that would directly affect projects in The Falls and The Oxbows (the eastern portions of the Greenbelt). This means it makes sense to



avoid projects in these areas for the short term and instead execute these projects in partnership with the WRA when their sewer project is executed.

Policy

A series of policy considerations surface in this plan - ranging from looking at parking requirements for trail frontage businesses to adopting tools for improved stormwater management. The most significant policy recommendations connect to the Walnut Creek Watershed Plan where all communities in the region are encouraged to adopt the Iowa Stormwater Management Manual (ISWMM). ISWMM offers new guidance to discourage flood plain development,

improve enforcement of stormwater pollution prevention plans and provides options for addressing top soil replacement.

The Costs - Capital

The Clive Greenbelt Master Plan does not pay for itself, reinforcing the partnering need. Improvements identified in this plan carry a price tag of \$88.6 million over 25 years, or \$3.5 Million annually. Projects in the plan are identified by short (started within five years), medium (6-10 years), and long term need (11-25 years). This plan indicates the City's annual share of expenses at \$1.6 M (46%) with the balance borne by regional partners (35%), private partners (18%) and supplemented by volunteers.

The projects outlined in this plan directly deliver on the high level goals the public outlined at the outset. Of that \$88.6 million in projected costs, a majority (56.1%) addresses environmental improvements, 40.2% enhances recreation and connectivity, 2.2% applies to wetlands, and 1.6% is set aside for new Greenbelt properties - for connections or habitat protection.

This plan also helps leverage a number of significant other investments in Clive.

The plan anticipates:

- Community Redevelopment
\$411 Million
- New Development (The Wilds)
\$264 Million
- Other Community Investments
\$34 Million

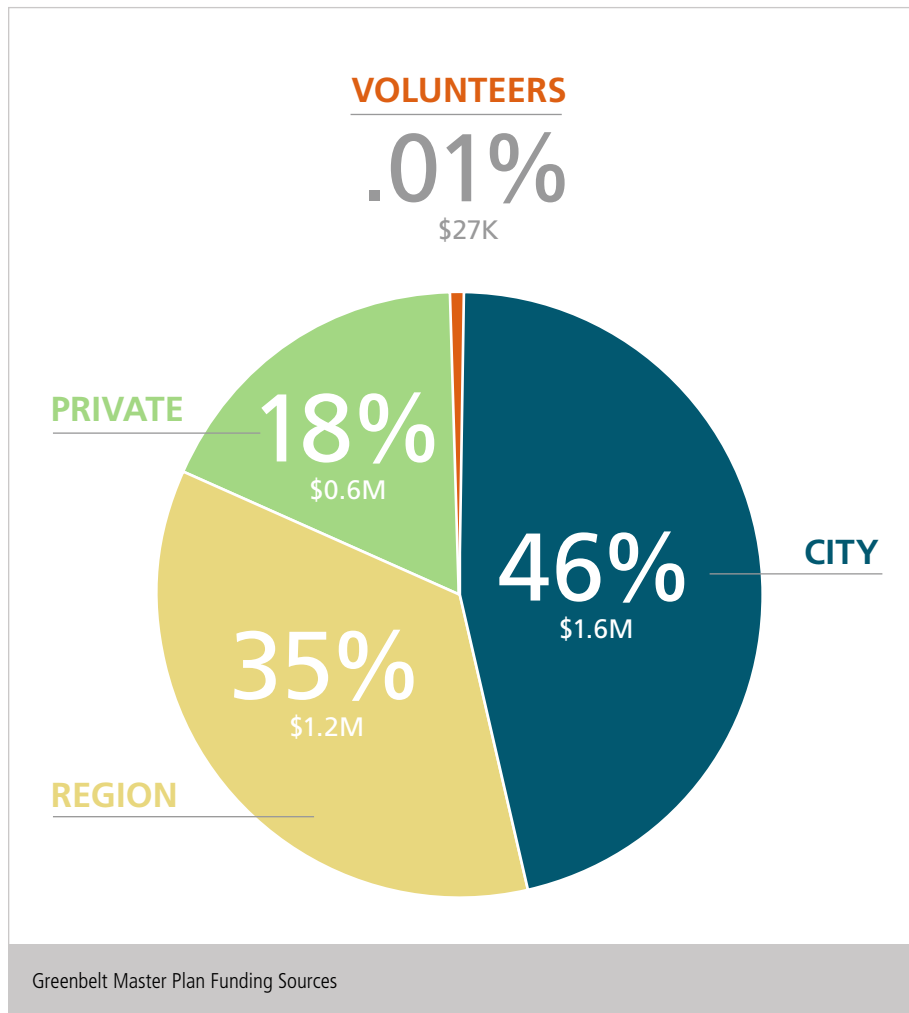
For a total capital investment of \$797 Million, including the Greenbelt Master Plan.

Operations and Maintenance (O&M)

At full build-out of this plan (25 years), six additional full-time equivalent staff may be required for O&M with an annual estimated annual Greenbelt O&M cost of \$436,000. The plan recommends employing a volunteer coordinator to leverage community volunteers. The total value of volunteer labor over the life of the plan is estimated at \$685,000. The Greenbelt investment does have the potential to offset a portion of operating costs, with \$101,000 of annual earned revenue potential estimated.

Visitation

With full build out of this plan, total visitation to the Clive Greenbelt is estimated to increase 40% and range from 636,000 to 1.27 million annually. While this has positive economic benefits, the plan recommends monitoring this



Greenbelt Master Plan Funding Sources

growth to prevent negative impacts for Clive residents enjoying the Greenbelt.

Funding the Plan

The plan outlines a series of funding strategies and funding sources to assist with implementation. These include the oft-mentioned engagement of regional partners, maximizing private sector participation, creating the wetland development bank outlined in the plan, expanding market valuation and property tax revenue, leveraging state and federal grant partners, and finding economies of scale through large infrastructure projects.

The Plan Benefits

Economic Impacts

Economic impacts of this plan include construction impacts, visitor spending, and revenue generation. During the course of the plan's implementation, \$238 Million in expenditures and \$86 Million in wages and salaries are expected. These impacts are significant, resulting in over 1,500 jobs. The impact to the park and recreation operations and greenbelt spending in Dallas and Polk Counties is anticipated to be \$1.9 Million in expenditures including \$746,000 in wages and salaries, and 23 jobs. The fiscal revenue generation of the plan is anticipated to be \$1 Million to the city in property, hotel and road use taxes; \$360,000 to Dallas and Polk Counties in property taxes; and \$44,000 to the State of Iowa in property, sales and income taxes.

Intrinsic Benefits

The genesis of this plan was borne from the residents of Clive and the City Council strategic plan. In addition to the economic benefits, a significant number of intrinsic benefits surfaced that are not as easily quantified. A sampling of these

include, private redevelopment adjacent to the greenbelt, expanded educational opportunities for schools and community groups and improved walkability and reduced car trips. Most notably, the plan continues to preserve and enhance the high quality of life that Clive residents expect.

NEXT STEPS

Moving forward, the plan will serve as a foundation for the City's future, helping to guide decisions related to the greenbelt. As the City continues to evolve and grow, the community must look for partnership opportunities, share the message and continue to promote its political will within the state and region. After all, the plan's direction has been set by Clive residents allowing the community to come together and share the Greenbelt's "Distinct by Nature" brand creating a resilient community.

The public engagement process for the Clive Greenbelt Master Plan employed a variety of outreach methods to provide ample opportunity for participation by Clive residents and regional stakeholders.

Steering Committee

A steering committee was recruited, meeting regularly throughout the 16 month process to review materials, provide insights and ideas, and overall guidance for the plan. Chaired by Mayor Scott Cirkseña, the steering committee's members represented engaged citizens and community leaders, supportive foundations and non-profits, human service and health/education organizations as well as businesses, arts, recreation and nature-based groups. A listing of membership appears in the Acknowledgements section of this report.

Focus/Discussion Groups and Roundtables

Early in the planning stages, city staff and the consulting team convened focus groups and small group discussions to provide context, and an overview of opportunities, challenges, needs and ideas. These groups were recruited to address the seven "capitals" of community life: social, human, cultural, financial/economic, built environment, natural resources, and political capital. See "Capital Definitions" graphic upcoming.

As part of this early research, three roundtables were also held:

- 1) A Business Roundtable, convened over a lunch hour to maximize participation, aided in capturing insights from the private sector about city policies that could help or hurt the business community's involvement with the Greenbelt.
- 2) A Real Estate/Homeowners Association Roundtable, conducted to understand the relationship between residences and Greenbelt opportunities/challenges.
- 3) Clive Chamber Lunch & Learn event, garnering input from Clive Chamber businesses on September 23, 2015 to understand how the Greenbelt can aid private sector efforts, including signage, connectivity and community promotion.



Stakeholder Workshop

On June 29, 2015, business roundtable and focus group participants, plus a larger stakeholder group from wide-ranging backgrounds, participated in a half-day stakeholder workshop. The workshop opened with a presentation of results of the earlier focus group discussions, technical information gleaned from the project's "discovery" phase, and an overview of greenbelt history. With that background, the nearly 40 participants were prompted through small group discussion to begin meaningful strategic work on behalf of the Clive Greenbelt's future. Vision, mission, strategies, goals and measures were all on the table for the stakeholders to discuss. This stakeholder workshop provided the foundation for

the master plan's strategic framework and early ideas related to methods to measure and deliver on the vision and mission. (See Chapter 6: Strategic Framework and Measuring Results). Of particular interest to the stakeholders was finding the balance in the plan for leveraging the regional appeal of the Greenbelt without sacrificing the Greenbelt experience for Clive users in any way.

Surveys/Direct Input

The city and consulting team used four approaches for direct public input.

1) Random Sample Citizen Satisfaction Survey

Two random sample citizen surveys directly influenced this master plan. In June 2015, the city conducted a

quality of life study specifically in support of this Greenbelt Master Planning effort. A second February 2016 survey, part of the city's ongoing citizen surveys (conducted every two years), included prompting questions to inform this plan. Similarly, citizen satisfaction surveys in 2012 and 2014 also gaged community interest in the Greenbelt. In all instances, public opinion emphasized the value of improved water quality and quantity management throughout the Greenbelt, a desire for better connections and trail safety, and an interest in maintaining the Greenbelt as both a recreational amenity and one meaningful to the protection of Clive's natural resources. Summary of results of



Members of the community participate in the stakeholder worksession to help establish the mission and vision of the Clive Greenbelt.

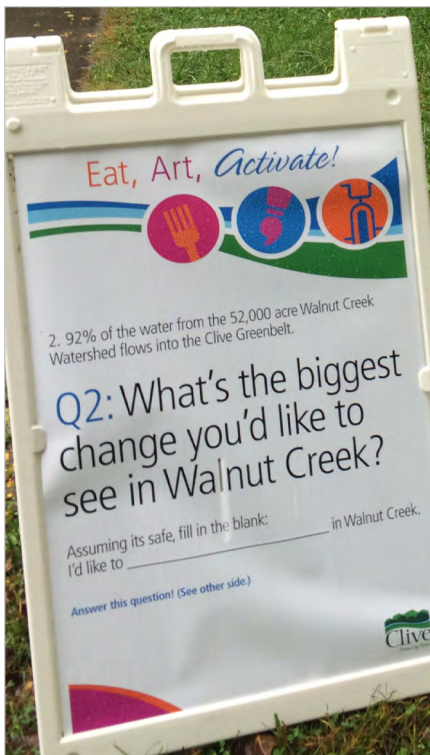
the 2015 and 2016 studies appear in the Appendix.

2) Intercept Study

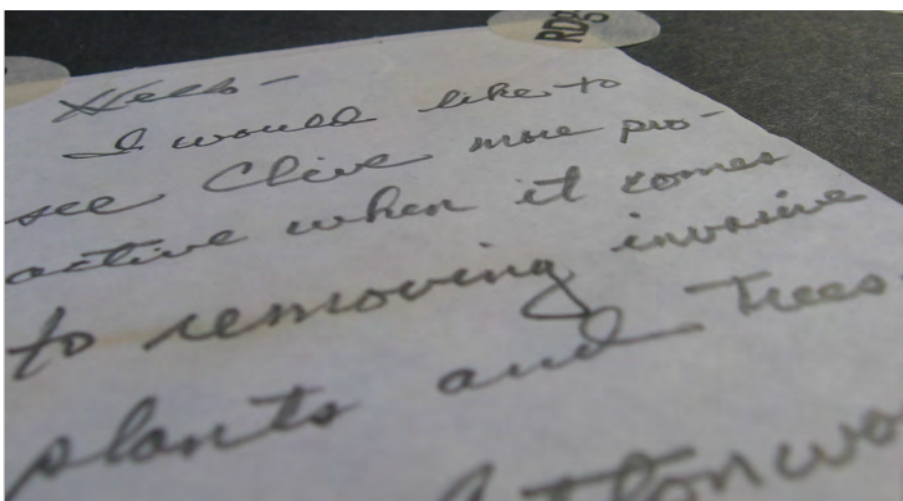
Parallel to the focus group discussions, consulting team and city staff devised a questionnaire to gain early insights from residents, using this tool as an "intercept" study at the July 16-18, 2015 Clive Festival. Residents

in attendance at the festival and at the community's aquatic center were asked to spare a few minutes of time and answer questions related to their current and prospective use of the Clive Greenbelt. Very few of those approached refused to participate. This was not a random sample study, but provided insights into Greenbelt needs, particularly from the perspec-

tive of young families (who were primarily in attendance at the festival). The results of this intercept study were quite similar to the random sample survey but placed a slightly greater emphasis on recreation and basic facility amenities to support young children. A summary of the results of this intercept study also appear in the Appendix.



A Frame signs and "tweet" boxes were used to capture the perspective of greenbelt trail users.



3) Activate the Greenbelt

In the fall of 2016, in partnership with the annual Healthiest State Walk, Clive kicked off an Activate the Greenbelt campaign – featuring both on-line and along-the-trail features. To give trail users an opportunity to either use social media or a more tactile method of engagement, the consulting team posted signs and bird houses with comment cards and pencils, so passersby could prepare "tweets" to drop into the bird houses. The pun was intended to get the public's attention. The signs also announced the #activatethegreenbelt for an on-line tweet. Interestingly, the twitter account generated few responses, but nearly 200 comments were posted using the hands-on "tweet."

4) On-line

Kicked-off as part of "Activate the Greenbelt," the City has provided on-going opportunities for the public to comment on the Greenbelt plan, its process, and results through the city's website and Facebook pages. In particular, the City used the Clive Open Forum tool on its website to seek feedback from residents and Greenbelt users on a number of Greenbelt-related topics. Those comment avenues continue.





Artist David Dahlquist of RDG Planning and Design discusses the significance of ephemeral art using found objects from the Greenbelt during the kick off to the "Activate the Greenbelt Campaign"

Public Outreach Events

In addition to the direct-input methods highlighted above, the public has also had the opportunity to participate in three open houses. All open house events were held in the early evening hours at the Clive Special Events Building, located just east of the Aquatic Center, 1801 NW 114th Street.

September 17, 2015 –

This open house kicked-off the "Activate the Greenbelt" campaign and emphasized the cultural elements of the Greenbelt with renowned Public Artist David Dahlquist providing project examples and insights on story telling through public art. An artist from the RDG-Dahlquist

Art Studio worked with students to create art pieces from nature.

This event generated discussion that reinforced:

- Value of the Greenbelt as a necessary public/recreational amenity
- Need of water quality/quantity enhancements
- Interest in trail condition improvements, and
- Value placed on the corridor as a pathway for habitat protection

The event also generated enthusiasm for the potential of public art features to enhance the overall greenbelt experience for residents and showed citizen

and resident support for engaging the arts as a means for story-telling, informing, and educating residents. Note: Intercept survey results indicate this is not necessarily a primary focus of Clive residents, but it is an added value and distinguishing characteristic for the Greenbelt. The Greenbelt's primary functions of active recreation/exercise, stormwater management, and habitat protection rank higher in terms of public interest (see Emerging Themes below).

Attendance: 40 estimated.

October 7, 2015 –

This open house concluded the "Activate the Greenbelt" campaign and was

held in partnership with the Walnut Creek Watershed Master Plan. Display boards outlined information and strategic thought captured to that point. The public received a brief presentation reviewing the materials on the boards and tables were opened for optional, facilitated small group discussions as the open house continued. Three discussion tables resulted.

- Discussion was in-depth on a full-range of issues but particularly included the public's interest in seeing Clive help lead the metro area in development of policies and practices that focus on water quality, quantity and natural resources protection.
- At the same time, safety concerns about the trail's alignment, speed of use, and lines of sight continued to surface.

- Senior residents in attendance were particularly interested in being able to sustain access to the Greenbelt.
- Young families called for the need to provide amenities along the trail (e.g., drinking fountains, toilets) with greater frequency.

Attendance: 100 estimated.

April 20, 2016 –

This event allowed the public to view the draft master plan through maps, boards, and summary descriptions. Again, a presentation provided additional information. They were invited to leave written comments, participate in a short open-ended questionnaire and/or discuss the plan with a facilitator. Some concerns were raised about a particular trailhead location and others expressed

Approximately

2/5

(39.6%) say the greenbelts' most important role: recreation for people of all ages and abilities*

* Clive Festival Intercept Study (July 2015)



Participants identify opportunities for Greenbelt connections during the open house.

concerns over the plan “doing too much” within the Greenbelt’s boundaries. They did not want negative impacts to the overall character, natural resources and/or public enjoyment of the Greenbelt through potential over-use but generally, the plan was well-received.

Attendance: 100 estimated.

Public Health Advisory

Due to the interest in emphasizing public health and safety, the Healthiest State Initiative and RDG Planning & Design’s Public Health Advisory committee facilitated a discussion on October 23, 2015, focusing on strategies in the Clive Greenbelt Master Plan that would enhance public health results. Public Health Advisory members included representatives of Polk County and Dallas County Public Health, Des Moines University, AARP, and Unity Point Health – just to name a few. Among the key findings of that session: a goal of developing access points to the Greenbelt for Clive residents within 1/8 mile.

Homeowners Associations

As the master plan entered its early draft stages in late winter/early spring 2016, representatives of the City and the Consulting Team visited Homeowners Associations to gain insights on the plan’s developing strengths and challenges. Homeowner Association visits included

Country Club, Woodlands, Country Club West/Woods, and Verona Hills.

Generally, the Homeowners Associations expressed support for the plan. In some specific instances, an approach or detail met with questions, resulting in some modifications to the plan. Overall, however, most HA respondents encouraged the plan to move forward. Several spoke of wanting to volunteer to work in the areas of habitat restoration and/or general Greenbelt maintenance and clean-up, with a few mentioning education/programming as well. In The Lakes region, particular interest was expressed in stormwater management, sediment control, and the overall impacts of water management practices on the character and quality of the lakes.

Neighboring Jurisdictions

Throughout the master planning process and specifically on March 8, 2016 the team held discussions with neighboring jurisdictions on how the Greenbelt Master Plan may present opportunities to collaborate. As in prior stakeholder sessions, the plan was largely well received, with a series of plan elements generating discussion. Most of these comments related to trail connections (where/how to link to the Greenbelt –which was of particular importance to West Des Moines), neighboring communities showing interest in extending trails, and some comments

related to on-street cycling accommodations (e.g., Windsor Heights asking Clive about intentions for bike lanes West on University Avenue).

Stormwater management also surfaced as a topic of conversation. By way of examples, Waukee spoke to the value of new approaches to stormwater management (as proposed for Clive’s “The Wilds” segment) and Urbandale’s comments noted the importance of stormwater management in the context of Living History Farms.

The proposed I-35/80 interchange development was also discussed with recognition of the important role it plays for multiple communities – particularly Urbandale and Clive who are most directly affected. As a result of this meeting with several jurisdictions, some additional individual contacts are being made to confirm the viability of the plan’s final details.

In the Clive Festival Intercept Study* **51%** of the 147 respondents say they use the trail for leisure cycling

*Conducted July 2015

THE CAPITALS DEFINED

Natural

Ecosystem services provided through water, vegetation, air, soils, plants, and wildlife, or other natural systems – location-based, but not built. This capital evaluates ecosystem services that could be provided to the Greenbelt.

Cultural

These resources are rooted in people and places. They link to human history, cultural heritage, the arts, and the way we interact. They “reflect the way people ‘know the world.’” This capital focuses on the people and places related to Clive’s history, heritage and arts.

Built

As the name implies, it is what we have built – from infrastructure to icon.

Social

Our “social glue” – how we come together to form affinity groups, networks, connections, organizations and communities – even when we are not homogeneous in our make-up. This capital builds on the current community events to help the Greenbelt better serve as the connective tissue for the community.

Human

Our capacity to learn, work, obtain/retain and share knowledge, manage productivity, lead toward a vision, and access additional resources wherever they may be. Working with the residents and community, this capital identifies strategies that provide lifestyle opportunities connected to the Greenbelt.

Financial

Resources available for community building, business and entrepreneurship, innovation, and future development of many sectors. This capital focuses on the business and development community engaging with the Greenbelt as an economic tool.

Political

Decision-makers and their influencers – access to power and the ability to create or shift guidelines, standards, regulations, and, of course, policy. The capacity to ensure directives are followed and to fulfill the City of Clive Strategic Plan Objectives of a “Distinctive Clive Greenbelt.”

Future

The Greenbelt is a system that must remain flexible to accommodate changes in the future.

**Based on the work of Jan and Cornelia Flora of Iowa State University.*

Results

Emerging Themes

The focus groups and input sessions led to the development of emerging themes for consideration by stakeholders at a strategic workshop. These themes, however, have evolved as additional input was received. For example, early discussions placed a level of emphasis on arts components in the Greenbelt that did not surface as strongly in the strategic workshop or in quantitative studies. The original emerging themes have been modified here to better capture the results of the whole of the stakeholder/public engagement process.

Respondents ask: Does the greenbelt serve Clive or the region? How do we find the balance?

Some focus group participants want to see the Greenbelt/trail dedicated almost exclusively to Clive residents. Others say the Greenbelt is a critical regional connector-trail and that important role must be supported. When prompted to speak to the Greenbelt's potential, most want to see some level of regional attraction incorporated along or near the Greenbelt but not at the expense of the Clive residents who foot the bills. They also want the trail to continue to serve a connector role, but question whether it needs to deliver the trail-highway in vogue for high-speed destination riders. In fact, many say that's beyond the Greenbelt's scope and the pace of the Greenbelt should not be compromised even as they value its critical connection between Polk and Dallas Counties.

When this discussion goes even further, regional leaders in particular see the

Clive Greenbelt as not just an asset for Clive, or a connecting piece in the trails network, but a critical attractor for Central Iowa. It resonates as a quality of life issue for attracting the millennial generation - essential for the Metro's future survival, they say.

Greatest asset that Clive has is the trail.

West Des Moines - that whole west side is just booming and I would hate for Clive to just be the pass-through area. I'd like to see it as more of a destination point.

This isn't something every community or region has. It's a huge opportunity to play up a place where businesses want to locate, a place where families want to move, a huge asset that could be explored.

Are we trying to create an image of the trail for outside-of-Clive users, or dress it up for people who are in Clive? I don't see it as much as a destination type of place to me. It's what do you really want to try and drive the trail to do - destination with art, or a nice place because it's in our community?

What treasure you have in this community - an amazing trail along the waterway.

On serving millennials, this is a huge quality of life issue for them. By 2020, they'll be 50% of the work force, and if we can't figure out how to attract and retain them, this area isn't going to grow.

They want a healthy greenbelt.

One area with little to no dissension is the overall health and vitality of the greenbelt - water, vegetation/habitat/tree canopy, soil, stream banks, erosion control - all are elements respondents across the board tend to see as critical to the long term vibrancy of the greenbelt. They want the natural resources embodied in the greenbelt to thrive, not just survive. Interestingly, few associate a healthy greenbelt with a greenbelt that would go untouched, letting "nature take its course." Instead, several focus group respondents speak of invasive species, water quality and the need to manage the greenbelt. In 2015, 76% agreed strongly or somewhat with the importance of restoring natural areas within the Greenbelt (See August 2015 Clive Greenbelt Park and Library Services Survey results in the Appendix).

You have to tell the story of water, and when the kids can get in water and it's clean, they are amazed. You have an opportunity with this greenbelt. You can do some stabilization throughout this greenbelt and you should be able to see a difference from start to finish and that's going to be important.

I see it restored to a condition that is even more beautiful than it is now: healthy water, healthy plants, not a bunch of invasive [species].

How many ash trees are there and what's next if you start losing your tree canopy. That's a huge concern for all we're talking about.

Water quality is key as well. If we could

Results

see or smell garbage, who would want to be on the trail at that point?

You need a biological or ecological indicator. Bacteria is one we've talked a lot about. You need to have that improved but that goes well beyond the scope of what you can do in the greenbelt.

"Escape" is the greenbelt's watchword.

In many of the focus group discussions, without prompting from the facilitators, the word "escape" surfaces as the key descriptor of the Clive Greenbelt. That sense of escape from the pace of our busy lives, reaching a natural oasis in our urban environment – these culminate in what they see as characteristics that make this greenbelt distinct.

My favorite part is when you come from Hickman and enter the greenbelt. It's just more peaceful when you hit the trail.

This is an oasis. A place to come and yet it's peaceful.

The greenbelt gives people a connection to nature and the outdoors while still being in town. They can't get that in their manicured lawns.

Escape is what comes to mind. You get the feeling that you're not in the rat race, that it's natural.

Escape into beauty.

You come away refreshed if you're here for 15 minutes. That's worth real



The Greenbelt trail winds its way along Walnut Creek within the floodplain forest allowing users to "escape" into a vast network of open spaces.



Results



Seventy percent of people surveyed use the trail for exercise - one of the primary purposes of the greenbelt.

Results

money, that's worth real time, that gets to the escape.

Despite the focus group participants' interest in "oasis" and "escape," respondents in the August 2015 survey lean slightly in favor of a "manicured" appearance for the Greenbelt. It appears "vegetative health" may resonate most strongly with residents when it comes to the Clive Greenbelt.

They still tend to connect public health to active living.

Not entirely, but generally, stakeholders need prompting to consider the mental and emotional health benefits of the Clive Greenbelt or other aspects of public health. When pointed out to them, they tend to quite quickly make the connection, but their first thought related to the greenbelt and public health focuses on "active living." While they may value the greenbelt for its escape, they still see it as one of their primary connectors for physical activity and figuring out how to prompt activity tends to dominate their "public health" thinking. After all, the August 2015 survey clearly shows the dominance of "exercise" as a primary use of the Greenbelt with 7/10 respondents currently using it for exercise and 84% saying they would use it for exercise in the future. Still, almost 2/3 (63%) say they would sit on a bench and enjoy nature along the Greenbelt in the future.

In a focus group with public health practitioners, respondents suggest connecting to school nurses, along with mental and physical health professionals as a method for understanding the greenbelt's role in public health. Working with

local foods in the greenbelt also gets a mention and some consider the links between a healthy natural habitat and overall community health. This latter is particularly true of the "natural resources" group as well. Those professionals also tend to see health benefits beyond the physical for greenbelt users.

You need to manipulate the public into doing things. It used to be that nobody drove their kid to school.

Track the intelligence of Clive children because they're in the greenbelt more, or track how they perform on fitness tests because they walk this prescribed pathway. We all have to figure out a way. People are making a choice, but we need to make it easier to choose doing those things.

15 minutes in the forest reduces blood pressure significantly.

A molecule emitted by vegetation may have a stimulating effect on the immune system . . .

Create some opportunities - a lot of different things outside the box. You might be able to have walking bus stops, like they all walk to school and use the trail to do that.

Have a different activity every half mile.

Install stop and exercise locations along the way . . . places along the way for additional cardio-vascular [work-outs].

A lot of new office parks are building some type of activity for their people to leave the building at lunch time. You see any building now, and they're all walking out there with their sneakers.

Social connectivity. That loneliness is getting common in our lives - how can you connect the greenbelt socially and cognitively.

The social importance of the Clive Greenbelt also surfaces in the August 2015 Survey where 78% of Clive residents would support expanding neighborhood connections to the Greenbelt.

The paired creek creates a key distinction.

While many think first of the Clive Greenbelt Trail, when focused on what sets this greenbelt apart, many turn to "water." A creek runs through the whole of the

85%*
of stakeholders
support
streambank
restoration of
Walnut Creek

* August 2015 Clive
Greenbelt and Library
Services Survey

Results

Clive Greenbelt adjacent to the trail. At the same time, the Clive Greenbelt runs through the whole of Clive. Particularly in combination, these features set the Clive Greenbelt apart from all other trails and greenways in the region. Only Clive has a “linear park” through its entirety, and that’s by design. Early Clive leaders set the Greenbelt aside to help secure a valued distinction for the community. These stakeholders indicate the decision to use the Greenbelt as a source of community character has stood the test of time. This is reinforced in quantitative studies

where 85% support streambank restoration of Walnut Creek (August 2015 Clive Greenbelt and Library Services Survey).

Water draws people.

Water is universally appealing to everyone, so at some point, if you can provide access to that water, you will get people to stop. We have done that in a number of parks and a number of areas . . .

I guess I would look at this as an opportunity for water recreation activities . . . make it suitable for the public to buy-in. Anything to get them in the water - fishing, kayaking, canoeing . . . wading.

If you want to make this dynamic and get people out there, you have to include the water. Otherwise, it’s just another bike trail in a green area. We have a lot of trails, but they don’t have that component to it.



Stream restoration is a process that involves grading, stabilizing and re-vegetating the stream's flood way to help minimize channel erosion and preserve habitat.

Results

A focus on arts/culture/heritage helps to set the Clive Greenbelt apart as well.

When asked to call out what sets this trail apart, the art-along-the-trail component also gets multiple mentions. Some focus group respondents suggest leveraging this feature even further – through promotions, “apps”, or programs. And they speak of expanding the connections to the arts with greater integration between arts and community. This in part comes through defining arts broadly with some wanting strong connections to not just visual arts, but all media as well as to Clive’s cultural and natural heritage.

When you’re looking at the arts, you have to think more than object - how it can be integrated into the structure of the trail and focus more on the experience. Many artists in the U.S. are interested in bringing community together and enriching experience and through works that may not on the surface look like art [for example] how can you bring people to play safely in the water?

The art has to be part of the whole experience . . .

You need an app . . .

There’s public art along the greenbelt in Urbandale and West Des Moines, too. Talking regionally, is there some way to make that an experience for people? A bike tour of public art? We all have our components and how can we help people to get out and enjoy [all of it]?



Clive's art along the trail program celebrates its rich history and culture.

Results

Public meeting responses also reinforce the interest in integrated art. Survey respondents downplay this feature as a priority. 17% say they currently use the Greenbelt to engage in public art, but nearly one-third (30%) say they would do so in the future.

Stakeholders call for outreach and education strategies and programs.

From apps to bio-blitzes, kiosks to birdcams, these stakeholders see this greenbelt as popping with opportunity to get the public to interact with the art and science already thriving here. They ask for greater connection to the schools and enhanced understanding of the greenbelt treasures (be they nature-based or human-installed) through strong programs, interpretive signs, and/or technological links. In part, some of these respondents appear to be calling for greater public stewardship of the greenbelt – stewardship that occurs when the public has a greater understanding of all it holds.

Waukee has done Y camps where they use the trail in Waukee as part of their summer enrichment [programs], and you're already doing some of that. You could develop something in that regard and develop the trail for that purpose.

A school could walk along the creek and do stream monitoring, sampling, macro-invertebrates. Get out of the classroom and come down to the water and do something. That's been extremely successful. We just need to get to the water.

You mentioned birds but the same thing with frogs, mushrooms . . . people will come out for some of those things. What's in your environment to be aware of?

Do a bio-blitz.

Build a school that has continuous access to the greenbelt, like a nature academy . . . interpretive center . . . a place you can go to learn about the greenbelt.

I love the idea of learning about water in a first world country and somewhere else.

While maintaining parks and open spaces dominate the priorities of Clive residents, a majority (52%) still support an increased level of programming for the Greenbelt and Trail.

They seek measured but essential economic development.

Most in the focus groups say the Clive Greenbelt could do more to leverage the opportunities it affords the city and perhaps the larger region in terms of prompting economic vitality. And many see that as a critical need for Clive and all of the Western suburbs and/or the region. If they don't create a full range of quality of life amenities, they lose key audiences for their future - particularly millennials. They see an isolated business here or there, but not the vibrancy they anticipate could or should develop. They see a few trail stretches or nodes/hubs where it makes sense to give the commercial area a front door on the trail.

Some in the business sector definitely project interest in the trail as a potential economic engine, but they see some regulations in the way. At the same time, they - and other respondents - acknowledge economic development trail-style has a seasonal nature to it that will require careful management for success.

When conducting the intercept study, quantitative survey, or meeting with the public through stakeholder strategy sessions or public open houses, many express concern about over-commercializing the Greenbelt. But at the same time, 59% in the August 2015 Survey do support improved Greenbelt-business connection. Balance is key here.

Or a winery. Think, too, about destinations that already exist like Living History Farms. Just figure a way to get there . . . it's less about adding

59%*

support
improved
Greenbelt
business
connections

*in the
August 2015
Survey

Results

new and more about enhancing the existing - what's there already. 515 [Brewery] is already there. Let's just make it easier to get there.

You can go through Clive if you're not familiar and never realize there's a greenbelt here. So in terms of trying to enhance economic development, enhance the visibility of it.

As a landlord, if I were to put a pathway to continue the trail, it would be based on the additional income it would make for me. I might make the additional investment if it's going to attract business to me that I might not otherwise attract. . . . But I can only build [that connector] to my lot line.

Not sure the businesses are always sure how they can use the trail and not sure how they would have that conversation. . . . I'm thinking a bit more about how we can communicate what can go on and creating an open dialogue for uses on the edge.

Patio requirements . . . how zoning interacts with the edges is really important for connecting and providing more amenities.

. . . [businesses] would have a lot of expense [in connecting to the trail] and the retail components are May to October . . . can't make payments if they only have revenue half the year. It's an income-expense issue. They need help.

We could use a zoning overlay . . .

There's just got to be a way to integrate new businesses that attract people without disrupting the peace that occurs.

If they were trying to create a new trail, they would strive to achieve something that already exists here. I would recognize the sanctuary elements

that are already here that take years to create - use a connecting path, create good signage, not overwhelming, with identifiers, help you know when to exit and go get a beer.

I don't want [the greenbelt] to be over-commercialized . . .



Pop up businesses, like food trucks or wine bars can help attract users to the greenbelt and help improve spending within the Greenbelt.



Results

Attractions with regional appeal earn mixed reactions.

Some of these focus group participants definitely want an amphitheater, bandshell, or other significant facility to program and craft as a potentially regional destination – at least an event-driven destination. Others simply say they don't see it. That role is played by others; Clive would only absorb expense for no real gain. In the August 2015 survey, 46% of the respondents say they currently use recreational facilities in the vicinity of the Greenbelt but 66% say they would use such facilities in the future.

The middle ground here seems largely developed through defining the context and extent of a regional effort. If it's a

facility that has a local community role to play most of the year, but can be enhanced or promoted to house something larger or more significant temporarily, that makes sense to many of these respondents. A major regional venue sitting vacant most of the year does not. In short, a modest-sized venue, perhaps with distinct physical characteristics and/or attention-getting programming, might help highlight Clive's distinction, serve as a source of pride and entertainment, give the community some regional cachet, and yet not undermine the ability of the Clive residents to engage in their normal greenbelt routine most of the time.

Add amenities - an amphitheater. Connect the businesses.

Create a small amphitheater - maybe by the greenbelt by the aquatic center - far enough away to have concerts that bring people to the trail and the amenities that Clive offers.

When I bike, I have a destination in mind- ice cream or a brewery or biking because I want to see the different art pieces.

We could use something very iconic but fits into the landscape.

I think positioning the wrong thing in there could be rude, too bold.

Iconic things help draw people there. Look at what the High Trestle Bridge does. Everyone in the world knows about that.

I'd like to see a bandshell of some sort - a gathering area for the community to listen to all types of music. Ankeny has one - everybody has one. We don't have one. You go along the trails and you see them but we don't have it.

The Greenbelt provides a strong social connection for Clive residents.

While several focus group participants comment on the good work the city has done to enhance 86th street as a gateway or entry portal to Clive, they don't see a road of that character ever serving as a social hub. Instead, they say the greenbelt now plays that role and that could be enhanced in the future. Right now, the greenbelt is the place to see and be seen with many daily social inter-



The Greenbelt serves as one of Clive's premier social corridors, connecting residents throughout the community.

Results

actions taking place via evening stroll or family outing.

It's the city's spine - everything is connected to it and branched off from it. It's the piece that keeps us going. Enhance development around that.

It also provides a great outdoors for everyone - from people who live in a small apartment to folks who have their own private space. . . . We all own [it] commonly. . . . We all get to enjoy it. It's where people congregate and spend time there. It's a great release.

You always see young families at the monkey bars, people playing ball at Campbell Park and you know they come from all types of locations that may or may not have an outdoors. And now they can enjoy it and it's massive - a great relief for people who are cloistered.

It's a social space.

We don't have a Main Street in Clive. You have this spot where you can congregate and bump into your neighbors.

They want a four season trail.

It doesn't come up in every group, but frequently someone mentions the desire to see that greenbelt activated year-round, but they recognize challenges associated with such an effort.

If you plow it, it betters the chances for the cyclists. If you don't plow, cross-country skiers might enjoy it.

But a lot of people still walk in the winter.

The added value of this trail would be being able to use it twelve months out of the year.

Go sledding. We need to make the shift in winter.

Currently only 6% of Clive residents use the Greenbelt for cross-country skiing, but ¼ of Clive residents (25%) say they would do so in the future if support facilities were provided.

East of I-35/80 surfaces as the energy-economic stretch.

West of I-35/80, stakeholders appear to see a quiet, unequivocally escape-oriented greenbelt. We see greater stakeholder interest in activating the greenbelt for social and economic vitality when looking east of the I-35/80 corridor. Still, that activation must be handled delicately to achieve an appropriate balance between active living and urban escape.

Some of our facilities - areas east of the interstate - have grown tired and need reinvestment.

The city spent a ton on 86th and there's that section on 86th between University and the greenbelt that's just like a dead zone - an abandoned gas station and vacant lot. Assemble the land. Do an RFP for development . . .

We pride ourselves on our residential beauty. The greenbelt creates that great outdoors for every citizen to

enjoy, respect and treasure nature. If we turn it into an economic engine and not natural beauty that complements our residences, [that would be wrong].

West of the Interstate is a whole lot more residential.

New York City has for many years maintained Central Park without encroachment of businesses into it and it would be very unfortunate if Clive got too much away from the natural scheme.

As a Clive tax payer, I need to be concerned about taxes in the future and

1 in 5*

respondents would add connections – the number one selected change from a list offered to respondents

* Clive Festival Intercept Study (July 2015)

Results

economic development is an important thing to keep my taxes low, but it has to be a delicate balance.

Connections are critical to the Clive Greenbelt's success.

Disconnects surface: the trail at Country Club, and a variety of greenbelt links to the greater community. Many of these stakeholders look for better connectivity. On the one hand, they speak of losing their way on the trail in the vicinity of Country Club. It's not adequately connected or signed. But perhaps the greater issue at hand comes from the need for improved connections to the community more broadly and through a variety of means.

They question that everyone has the access that's warranted. Sometimes those are physical connections – a neighborhood whose path to the greenbelt is simply too roundabout. Sometimes the connections simply need to come through wayfinding signs. Others speak of wanting to connect to the businesses, parks or other facilities in or near the greenbelt – signs might play a key role there, too, but not signs alone. Several stakeholders mention the need to improve the whole of Clive's non-vehicular access. They would like to see bike lanes or other means to help all Clive residents (and potentially others) get around in Clive, thereby expanding a "greenbelt culture" to the whole of the community.

In the Clive Festival Intercept Study (July 2015), one in five respondents (21%) would add connections – the number one selected change from a list offered to respondents.

We have a connectivity problem to the greenbelt for the Latino community.

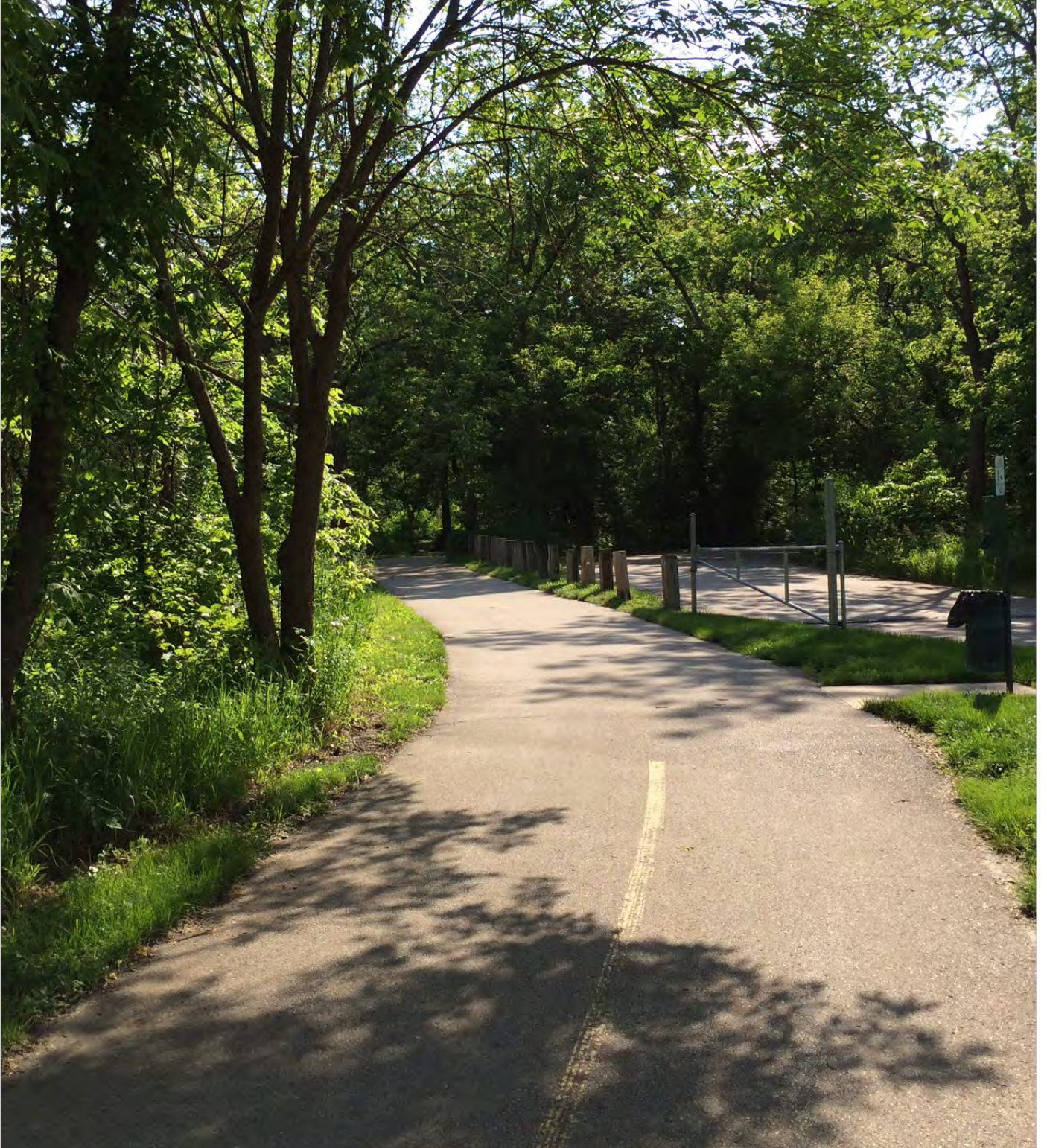
The North Walnut Creek piece between Windsor Heights and Clive - we need a way to connect that neighborhood, that square mile. It's been a missing link.

Our goal throughout the metro is to connect communities.



Greenbelt connections and wayfinding.

Results



The greenbelt trail winds its way along Maddox Parkway near 100th Street.

Results

People don't know if they live in Urbandale, Clive, or Waukee and they don't care which one they live in. The greenbelt provides connectivity among the communities and builds that sense of community . . .

The analogy was drawn to a spine and there has to be a happy balance of connections to the spine . . . people have to go some distance to connect into the spine. If you had little connections, it wouldn't destroy the quality of the greenbelt but would provide easier access.

From Miss Kitty's to 515 Brewery, the greenbelt exposure is all parking lot, so there's no real connection into the spaces that are available that could be changed and developed. It's not much fun to run through there looking at parking lots and loading docks.

Safety issues surface.

Some of the safety concerns that surface in focus group conversations link in part to the very elements that make the greenbelt so valued – its urban escape, the sense of privacy and quiet it can evoke. While this is a valued backdrop, when someone unknown to you appears, safety comes into question. After all, there may be no one else around – blowing a whistle may do no good.

Nature also has its drawbacks – people worry about irritants – or even perceived dangers of ticks or mosquitoes.

But perhaps the greatest safety concerns stem from the user-conflicts mentioned earlier. High speed cycling and family/

social clusters using the trail at slower speeds simply do not mix. Couple those conflicts with the winding way of this particular trail and safety issues emerge.

As a female, I'm not going to go down that trail by myself after dark.

Security and safety is important to people of all ages.

It's not just about getting accosted on the trail, it needs to be a little wider. It has blind turns. It's hard enough to walk with your kids, but on a bike that's particularly important.

18% of the July 2015 Clive Festival Intercept Study respondents support widening/straightening the trail, ranking this change third on a list of improvement options provided.

In conclusion . . .

In the final analysis, many stakeholders and/or survey participants envision a greenbelt with some level of regional attraction but an emphasis placed on the day-to-day Clive user. Toward that end, they ask for physical improvements to the trail, greenbelt/habitat and stream; greater connectivity to the greenbelt and throughout the community; potential short loops in the trail mix (for family users) and perhaps some “bypass” for the true high speed users whose main focus is to reach a destination outside of Clive. They want the greenbelt and its environs well-maintained, with vegetation health, natural resources protection and an overall “cleanliness” that skews ever-so-slightly toward manicured in appearance – but still maintains that sense of oasis from the urban environment.

They also see value for both regional users and Clive residents in creating appropriately-scaled and accessed “mini-destinations” along the way. These may be cultural, nature-based, outreach/educational or more traditionally “economic/private sector.” They may involve programming and/or technology as well as physical ports-of-call. All would serve to bring some level of vitality to Clive, enhancing the greenbelt’s regional appeal and support, and at the same time, embracing the Clive user who needs to get to enjoy his or her social corridor each and every day.

I think there are a lot of opportunities that haven't been seized.

The strategic framework builds from the City of Clive's Strategic Plan. In 2012, Clive's Mayor and Council, along with the City's Management Team, went through an extensive strategic planning process to determine the vision, mission statement, core beliefs and action items for the City to focus on over the next 15 years.

The resulting 2030 vision calls for a “desired destination for Clive” – referencing Clive:

- 1) Is a beautiful, safe city with great residential neighborhoods through buildout
- 2) Provides exceptional family living and opportunities for personal wellness
- 3) Has the distinctive Clive Greenbelt, and a revitalized 86th Street Corridor neighborhood

This strategic framework not only takes the “distinctive Clive Greenbelt” vision statement to heart, but through the Greenbelt’s strategic directive, reinforces exceptional family living, opportunities for wellness, and safe, great residential neighborhoods.

Two of the City’s top strategic priorities also lead quite directly to this planning effort:

- The Development of the Greenbelt Master Plan (this very report); and
- The Development of the Walnut Creek Watershed Master Plan (a study directly relevant to improvements within the Clive Greenbelt corridor).

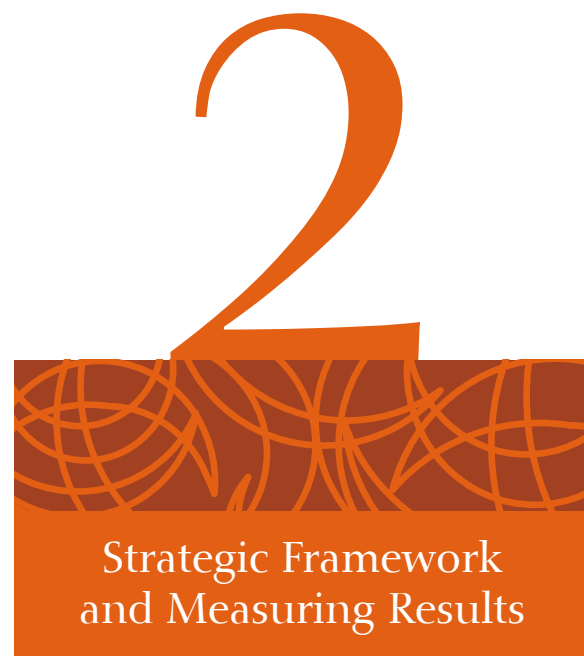
High priorities in the City’s strategic plan also link to this strategy, including:

- Trail maintenance/replacement projects and funding; and
- Walnut Creek streambank stabilization.

The strategic framework for the Greenbelt Master Plan that appears below aligns with the 2012 Strategic Plan. The structure of this strategic framework incorporates the seven basic capitals that inform the development of this overall plan: social, human, cultural, natural, built environment, political, and financial/economic capital. These capitals were defined in the previous section of this report.

Strategic Directions

Clive’s social and recreation corridor enjoys a character all its own. Far different from a corridor focused on roadways and facades, its lasting value comes through its ability to maintain a high quality natural environment, an educated populace, links to a vibrant economic sector, and overall public health.



GREENBELT VISION: Clive's Social Center, Recreation Corridor and Regional Resource

A welcoming community and regional destination distinct by integration of safe/beautiful corridors, healthy living and natural resources, easy access, cultural/educational spaces and links to nearby neighborhoods and businesses. At the same time, the Clive Greenbelt allows a true escape from urban pressures and pace.

- People play in the creek here – and the waters are clean enough to make that a pleasure
- They learn here and have fun doing it
- Users always feel safe here
- They socialize here, routinely
- Stops along the way make this a valued destination – for special nature spots, arts, culture, heritage, restaurants, shops, overnight stay and more
- It's so easy to get to and to use!
- It promotes an outdoor culture – active families/residents with knowledge of healthy habitats and waters, stewardship and outdoor recreation skills, a visceral connection to nature
- People cycle through here, but are just as likely to cycle or walk TO here – they find many reasons to make Clive a place for learning, playing and doing business in or near the Greenbelt

GREENBELT MISSION: Engage Stakeholders, Sustain Community and Natural Health

To engage the public in stewarding and enjoying Clive Greenbelt's natural resources and trail while enhancing its connections to active learning, healthy living, and the distinctive community that is Clive.

- To support through policy, funding, and advocacy
- To maintain through skillful on-the-ground stewardship, including volunteer activities and public-private partnerships for significant resource preservation
- To enhance connections across the region and within the community of Clive to cultural/community/nature-based destinations as well as entrepreneurial/business destinations outside the corridor
- To proactively engage educators and craft ongoing, accessible, and fun learning opportunities
- To integrate nature, the arts, learning, and physical/emotional health in a safe, beautiful and healthy environment

Natural Capital

Flood Management and Water Quality Improvements

Promote partnerships, limit flood plain development, increase opportunities for stormwater infiltration and slow water flow, particularly from upstream, incoming development; water quality and quantity are linked.

- 1) Develop policies and facilities on a local, regional, and watershed-scale to improve stewardship, and mitigate flood damages as well as reduce flood duration and peak. Lower the frequency of damaging/debilitating floods.
- 2) Improve water quality within Walnut Creek/the Clive Greenbelt to improve drinking source water and accommodate human contact in the stream for recreation and other benefits.

Methods (broadly) include working through Watershed Management

Authorities and other means of partnership to promote improvements in policies and practices for stormwater management within Clive and upstream of the Clive Greenbelt.

More specific strategies include:

- Consider the greenbelt as a mitigation bank
- Re-connect the stream to the floodplain
- Preserve and enhance existing topsoil
- Consider partnering with adjacent communities to manage the small storms
- Consider improvements that better manage the large events
- Enhance the Greenbelt as a "sponge" and buffer throughout Clive while improving its overall beauty and characteristics of high quality habitat (See Habitat/Riparian Corridor Improvements)
- Proactively grow homeowner and

local business education on fertilizer use and stormwater management/infiltration practices (e.g., rain barrels, rain gardens and bio-swales, gutter re-routes, pavement reduction, etc.); consider stormwater utility incentives for cooperative residential and/or business practices

- Expand/enhance flood plain education and warning systems; adopt policies to limit development within a buffered 500-year flood zone and grow flood responsiveness. Identify at-risk flood properties.
- As redevelopment within the Greenbelt occurs, reduce connected impervious surfaces to 10% *(currently 40%).
- Develop a localized monitoring/measurement network to understand natural hydrograph, flood levels/peak flows, flow speeds, and overall water quality measures. This network can be part of a larger watershed plan.

GUIDING PRINCIPLES

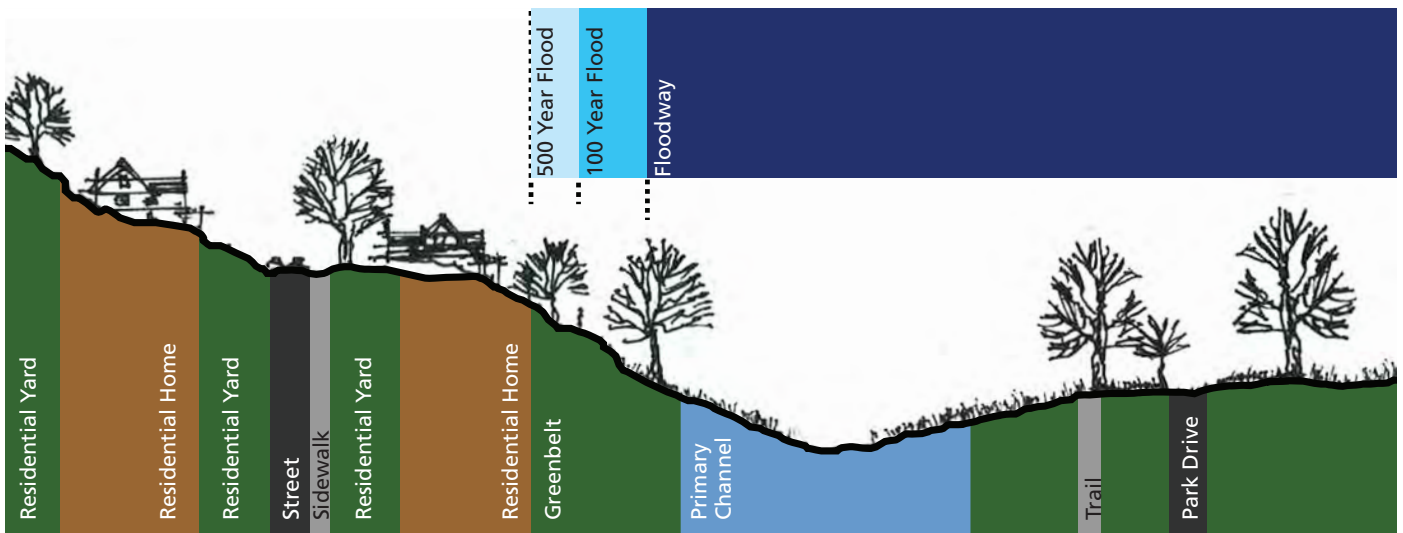
- 1) This planning process must be built from the voices of the Clive community and regional partners.
- 2) The Clive Greenbelt already serves the city and the region as a valued recreational/exercise and connecting amenity; these values must be maintained if not enhanced.
- 3) The lasting value of the Clive Greenbelt hinges on the health of its natural resources and built infrastructure, its connections to community and cultural vitality, and its capacity for enhancing public health and safety.
- 4) The support of the Clive community coupled with public and private partnerships from across the region remain key to the long term success of the greenbelt as a resource. Upstream partners are particularly important to the Greenbelt's success.
- 5) The Greenbelt fosters nearly unlimited potential to support Clive residents and others in enjoying an exceptional quality of life.



Habitat/Riparian Corridor Improvements

Closely akin to water quality and quantity management is the overall maintenance of the riparian corridor for wildlife and plant health, beauty and overall functionality. Clive's "Distinct by Nature" brand resonates when the Greenbelt's riparian corridor is at its healthiest.

- 1) Create a diversity of high quality native plant communities and habitats
 - Increase the beauty and variety of the Greenbelt.
 - Improve visibility in the forests.
 - Increase chances to engage and encounter diversity in nature; connect people to the water resource (improved in quality and quantity control). (See Public Health below).
 - Preserve habitat/wildlife and history that is rare and cannot be replaced.
 - Protect large areas that have a variety of plant communities and rare wildlife.
 - Secure connectors among and buffers around the core Greenbelt areas.
 - Encourage desirable plant and animal life and discourage invasive



Stabilizing the Greenbelt's channel will help reduce erosion, improve habitat and help convey floodwater through the Greenbelt.

plants and weeds.

- Make ecological restoration and management tasks match the City's resources; involve the public and volunteers as appropriate.

Built Capital

Trail and Connections

Maintain, expand and improve the current trail system while giving residents and other users a greater sense of safety.

- 1) Establish safe and attractive connections to the larger Central Iowa Trails Network that will accommodate cyclists of widely varying abilities without sacrificing the Greenbelt Trail's capacity to accommodate pedestrians, family groups and others using the space for slower recreation and/or social purposes.
- 2) Improve Greenbelt connectivity through direct connections/access points, bike lanes and policies creating a pedestrian/cycling culture linking Clive residents to the Greenbelt, the business sector, and to each other.

- 3) Provide trail enhancements to support inclusiveness and diversity, considering ADA, socio-economic background, age, ethnicity and other social aspects that could discourage access or use.

- 4) Maintain/improve current infrastructure.

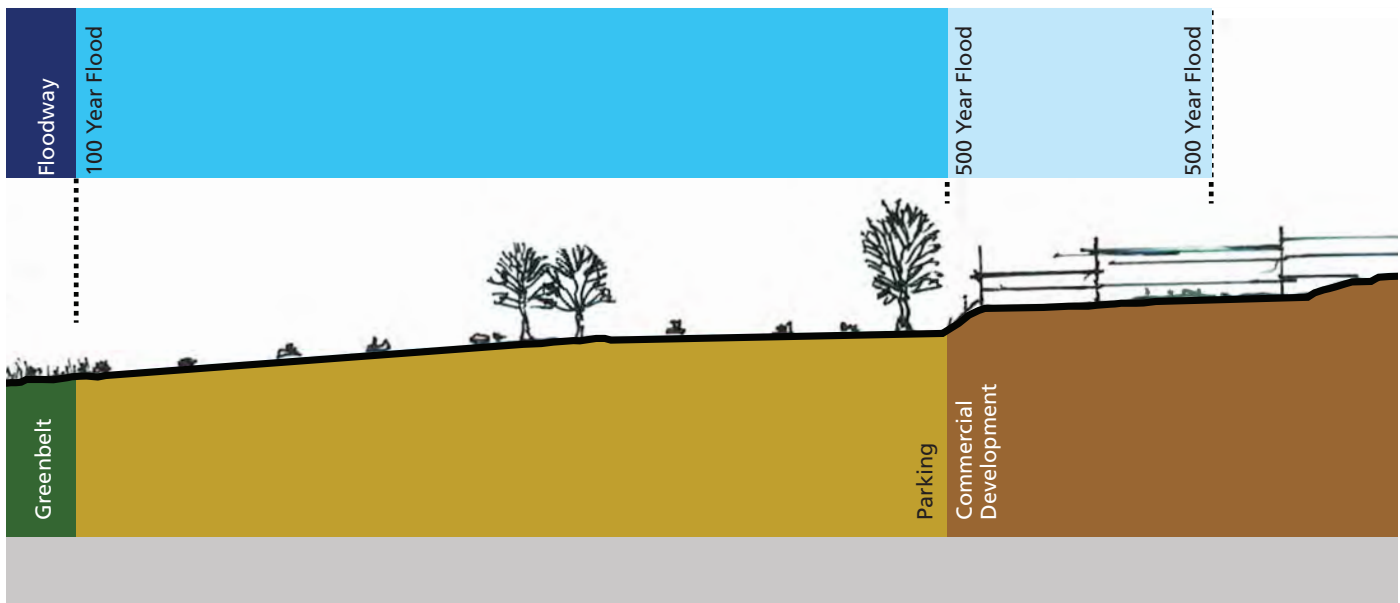
- Improve the current greenbelt trail to widen and straighten where appropriate.
- Consider a trail "bypass" for high speed cyclists.
- Establish/enhance on-street cycling accommodations.
- Improve overall trail access across the Greenbelt's length, ensuring Eastern and Western Clive residents have equitable access to the Greenbelt and its amenities.
- While respecting wildlife and dark sky needs, establish an appropriate lighting scheme.
- Identify additional mechanisms to improve public safety along the trail for all users.
- Enhance access to basic amenities (restrooms, rest stops, water, shade, wayfinding/signage).

Social/Human and Cultural Capitals with Public Health

Mental and Social Wellbeing through Recreation, Arts, Science, Education and Equity

Integrate the Greenbelt's exceptional features through a blend of facilities and programs that leverage the Greenbelt's close-at-hand educational institutions, riparian habitats, water access, popular trail and growing attention as an arts destination. Partner with county public health to provide education and programs. Ensure access for all.

- 1) Ensure all segments of Clive society have equal access to the rich amenities inherent in the Greenbelt.
- 2) Develop a diverse system of recreational and educational experiences throughout the Greenbelt including trails, public art, parks, environmental education and event spaces.
- 3) Provide an arts-and-science based framework for the Greenbelt Master Plan



- Note the use of arts components to reflect the science-based water story embedded in the plan's segments: The Falls, The Oxbows, The Lakes, The Headwaters, and The Wilds (See Chapter 4 – Cultural Capital)
- 4) Provide healthy spaces to connect residents to the natural environment that encourage physical activity, an alternative to the fast-paced environment of urban life, and social connectedness.
 - Consider nature center and/or outdoor classrooms within or near the Greenbelt.
 - Establish a bandshell, small amphitheater or similar venue.
 - Improve/expand safe creek access for school groups and others.
 - In partnership with schools and informal education institutions, advance outdoor education and arts programming (nature-based arts and science education).
 - Improve activation of the Greenbelt corridor for winter and rainy season use.
 - Ensure trail/creek/greenbelt access, education and other facilities, parks/amenities, and programming are easily accessible by all residents of Clive regardless of residential location or resources.
- Identify, protect, and engage the public in appreciating associated cultural/heritage/historic connections to/through the Clive Greenbelt.
- Promote service learning projects to enhance the Greenbelt, including creek, trail, habitat, science activities and cultural/heritage amenities.
- Enhance/expand spaces/places appropriate for journaling, landscape painting - a variety of people-nature connections
- Promote programs for quiet reflection within the Greenbelt. Have

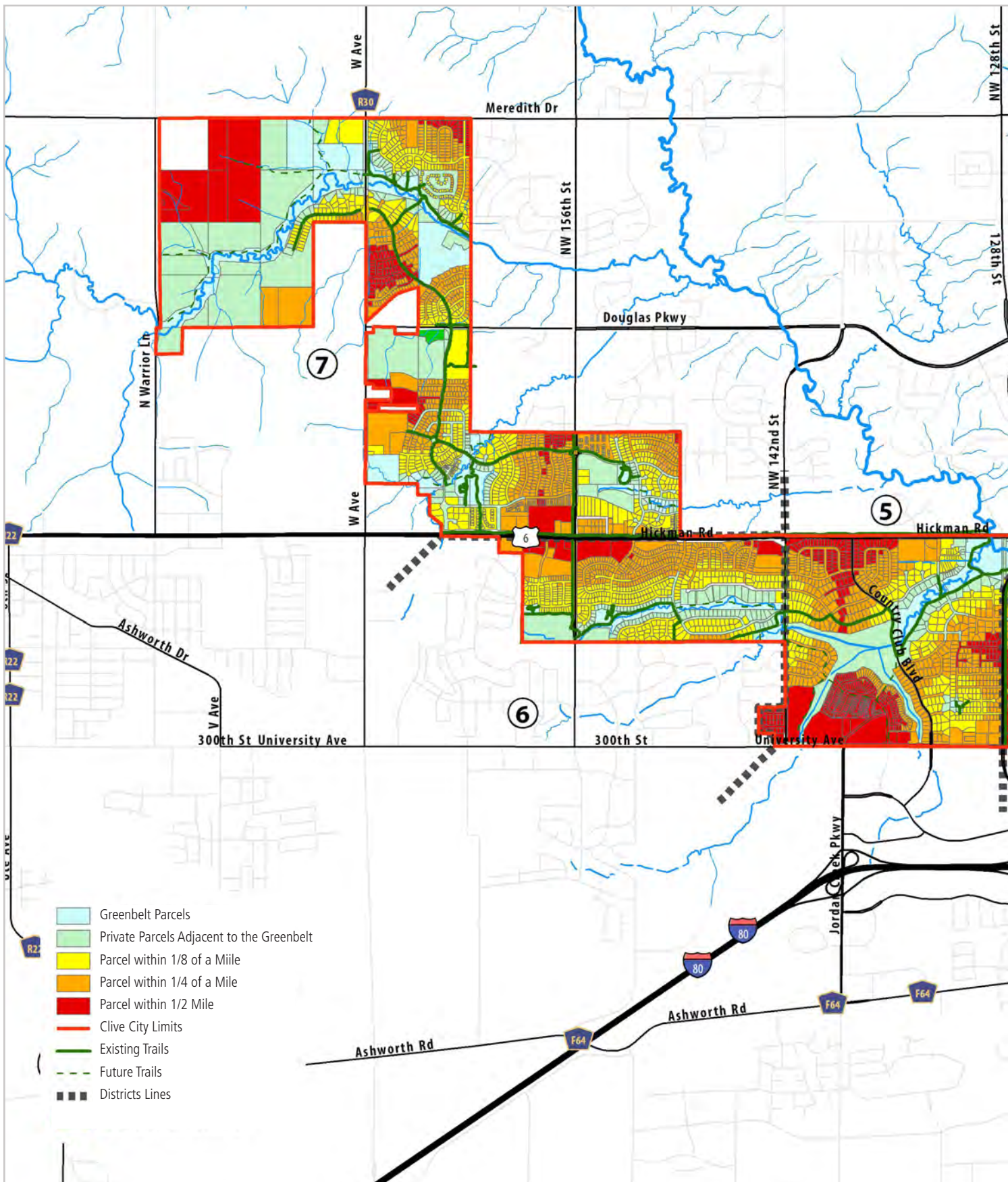
RULES OF THE TRAIL*

- 1) Pedestrians have the right of way at all times. Cyclists and in-line skaters must be aware of pedestrians.
- 2) All Greenbelt users should stay to the right, slow down and use caution under bridges and at blind corners where vision could be impaired.
- 3) Pedestrians should not walk more than two wide.
- 4) Wearing headphones or earbuds is not advised; if used, keep one ear available for listening at all times.
- 5) When approaching pedestrians from behind, slow down and call out "on your left" before you pass.
- 6) All non-paved sections are restricted to foot traffic only.
- 7) Dogs are allowed only if on a leash - leash not to exceed four (4) feet.
- 8) Dog owners are responsible for sanitary disposal of dog feces. Pet waste is a significant source of stream bacteria.
- 9) Bicyclists and in-line skaters shall not conduct serious training or maintain fast speeds; ride within your limits.
- 10) Don't harass or encroach upon the wildlife. Disturbing or collecting any vegetation or natural habitat along the Greenbelt is prohibited.
- 11) Stay only on designated trails.
- 12) Glass beverage containers are not permitted.
- 13) Pedestrians and cyclists should wear reflective clothing and use lights after sunset and before dawn.

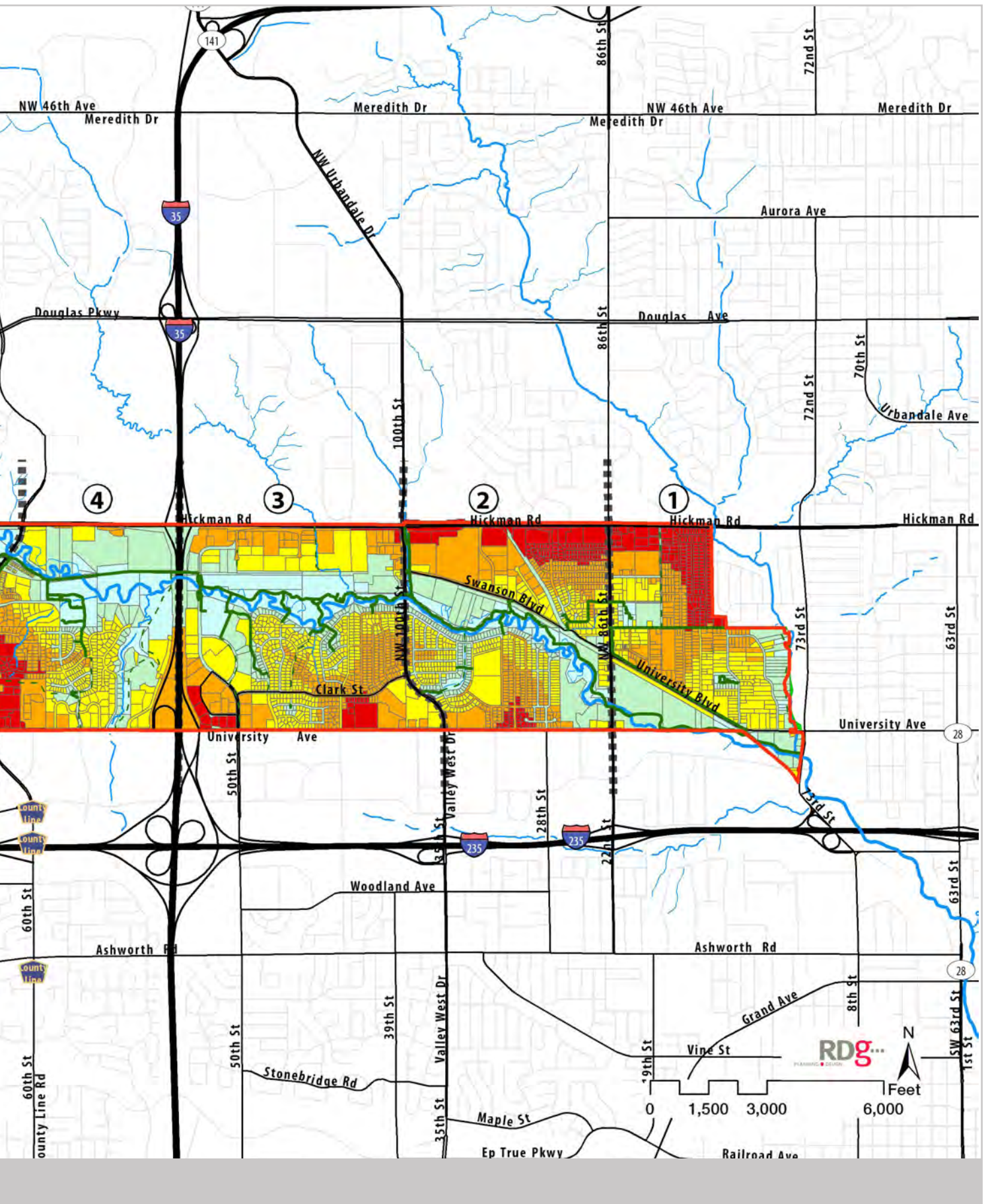
**Adapted from the City of Boise parks department. <https://parks.cityofboise.org/parks-locations/parks/greenbelt/>*



The Greenbelt can serve as an outdoor classroom providing opportunities for arts and science based learning.



All property owners shown in red or orange do not fall within 1/8 of a mile of the Greenbelt or connecting trail.



meditation classes and spaces with a water feature.

Physical Well-Being

through programs that prompt physical activity and healthy eating

- Signs indicating miles between areas along biking and walking trails
- Yoga and Tai Chi Classes
- Walking and biking events and competitions
- Partner with universities and businesses to develop programs and evaluate health outcomes for the community and employees related to physical activity
- Use health podcasts to promote physical activity during park visits
- Partner with restaurants and grocery stores to provide healthy foods associated with park picnics for friends and families
- Ensure age appropriate activities and infrastructure

Financial/Economic Capital

Economic Health

The vitality of the Clive Greenbelt will be nearly impossible for residents, community leaders and partners to maintain if it's not directly linked to healthy businesses and economic vitality along its reach.

- 1) Without over-commercializing the Greenbelt or sacrificing the experience, use the greenbelt to spark economic investment in Clive.
 - Enhance connectivity and development of existing businesses
 - Encourage greenbelt-related business expansion at the outer edges of the Greenbelt, East of I-35/80
 - Extend the Greenbelt into and through the surrounding developed landscape

- Consider incentivizing entrepreneurship, incubators or other "grow your own" methods to prompt economic activity
- Establish Greenbelt-related "nodes" of economic vitality, prompted by Greenbelt access and Greenbelt "anchor-businesses" (from eating establishments to bike repair)
- Encourage Greenbelt Business Association connections, perhaps through the Clive Chamber, for improved understanding of Greenbelt business needs and enhanced promotion/connections.

Policy/Political Capital

Greenbelt policies must be developed within the context of balancing economic development with natural resources protection and promotion of public health. In some instances, policies relate to relaxing rules (for example, parking/sign requirements for trail-adjacent businesses) and in others, they may place some imposition on past development methods achieve long-term gains for Greenbelt, social, and economic health. Partnerships will be critical to the success of policy recommendations included in this plan.

- 1) Adopt guidelines/policies and secure partnerships to protect the natural resources of the Greenbelt, while expanding the capacity of the public and the business sector to improve Greenbelt connections and overall community vitality.

Economic Vitality

- Implement business and outside-of-greenbelt experience-related signage program that directs users to local businesses and opportunities on or near the trail

- Work with private land owners to create direct connections to businesses from trail
- Create program for pop-up businesses in key economic nodes during peak season and days
- Support development and re-development of adjacent areas to create new business opportunities.

Natural and Built Environment/Connections

- Through guidelines or other policies, fully embrace Clive's "Distinct by Nature Brand:" Improve wildlife habitat, ecological diversity, greenbelt (and City) character, visual sightlines and safety; and reduce inundation by floodwaters.
- Adopt the policies identified in the Walnut Creek WMA Watershed Plan and the policy and implementation recommendations of this report
- Protect the 100-year flood plain of Walnut Creek using healthy stormwater management principles throughout Clive, habitat/stream buffers and set-asides in undeveloped areas, use redevelopment efforts aimed at reduced run-off and improved habitat over existing conditions
- Consider adopting Natural Resources Overlay District policies or similar tactics to buffer the Greenbelt for habitat and water quality/quantity protection/management
 - Preserve habitat/wildlife and history that is rare and cannot be replaced
 - Protect large areas that have a variety of plant communities and rare wildlife
 - Establish guidance for implementation and development of wetland mitigation banking
- Prohibit the use of plant materials (and cultivars) listed as invasive by the



Iowa Department of Natural Resources (DNR) and adjacent states

- Require the use of Iowa native plants (trees, shrubs & perennials) for all development (public and private) landscape plans reviewed by planning & zoning
- Implement a prioritized management strategy that integrates prescribed burning with mechanical and chemical control (if needed).

Social, Human, and Cultural Health

- Consider incentivizing healthy foods/ active lifestyle promotion on the part of local businesses (e.g., fee breaks for food trucks with affordable healthy menu options)
- Establish guidelines so all City of Clive residents will be within a 5 minute walk (1/8 of a mile) of a dedicated greenbelt trail, bike / walk or shared road that ultimately connects to the Greenbelt.
- Partner with the schools to implement outdoor classrooms and interpretation
- Partner through Parks and Recreation for enhanced active and reflective living components in programming
- Modify the “art along the trail” program as it relates to the Clive Greenbelt to focus on the interpretation of the “water story” and relationship to the natural elements.

Waters from over 90% of the Walnut Creek Watershed flow through the City of Clive. The Watershed encompasses and traverses the entire Clive Greenbelt. A watershed is an area of land which drains to a common point.

The Walnut Creek watershed covers approximately 53,000 acres (82.8 square miles) across eastern Dallas and western Polk Counties. While eight communities touch the watershed, only Clive and Windsor Heights rest entirely within the watershed's boundaries. The watershed has been developing at an average rate of 430 acres annually and is about 43% urban in nature, 47% in cropland, and the balance of the watershed is a mix of open water, wetlands, forest, grasslands and pasturelands.

Urbanization has already had impacts on water quality and streambank stability. Currently, flooding, nutrient loading, bacteria and eroded soils (sediment) negatively impact public health, reduce habitat and undermine the ability of Walnut Creek to serve as a Central Iowa amenity. Not all of these issues are due to urbanization – agricultural practices have influenced nitrogen and phosphorus loading more so than urbanization has - but sediment and bacterial impacts tend to surface as a result of urbanization. Additional impacts may occur as this urbanization continues, but this plan is intended to assist in mitigating those impacts. The health of Walnut Creek influences the ability of the Clive Greenbelt to deliver its full potential as an amenity promoting public, environmental and economic vibrancy to the City and Central Iowa region.

Weather is also influencing water quality, flooding and overall stormwater management – especially when coupled with the rapidly urbanizing watershed. Rainfall has become more frequent and intense. Six of the top eight wettest years on record have occurred since 1982. Normal annual precipitation has increased from 30.5" in 1971 to 35.2" in 2014 or 15.5%. The watershed has experienced a 37% increase in annual flow, leading to flooding as a key concern in the watershed. Based on updated flood maps through the National Oceanic and Atmospheric Administration (NOAA), Walnut Creek faces an average increase in its flood plain width of 34 feet.

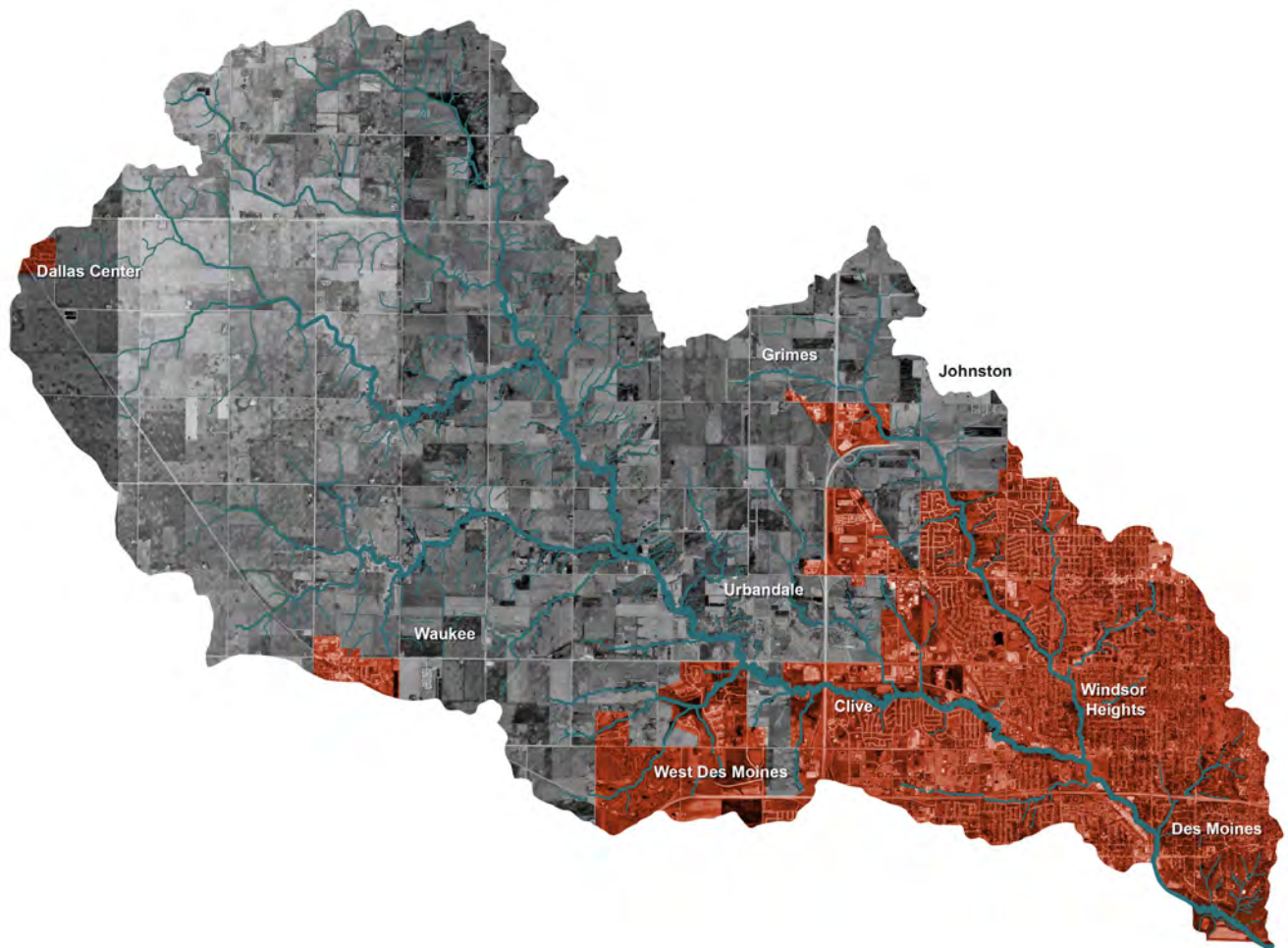


ABOUT THE WALNUT CREEK WATERSHED

Walnut Creek enters Clive at Hickman Road near 128th Street. Forty-five square miles within its watershed are located upstream of its confluence with Little Walnut Creek (see below), made up of primarily undeveloped agricultural farmland. The influence of urban runoff increases as the stream flows eastward from the interstate, through the Greenbelt corridor. Walnut Creek drains generally from northwest to southeast, meeting the Raccoon River northwest of Water Works Park in Des Moines, upstream of the water intake to the Des Moines Water Works plant.

Dozens of smaller streams and three major tributaries feed into Walnut Creek. All three tributaries have their impacts on and within the City of Clive.

North Walnut Creek runs generally from north to south, draining 14.3 square miles of Clive as well as portions of Grimes,

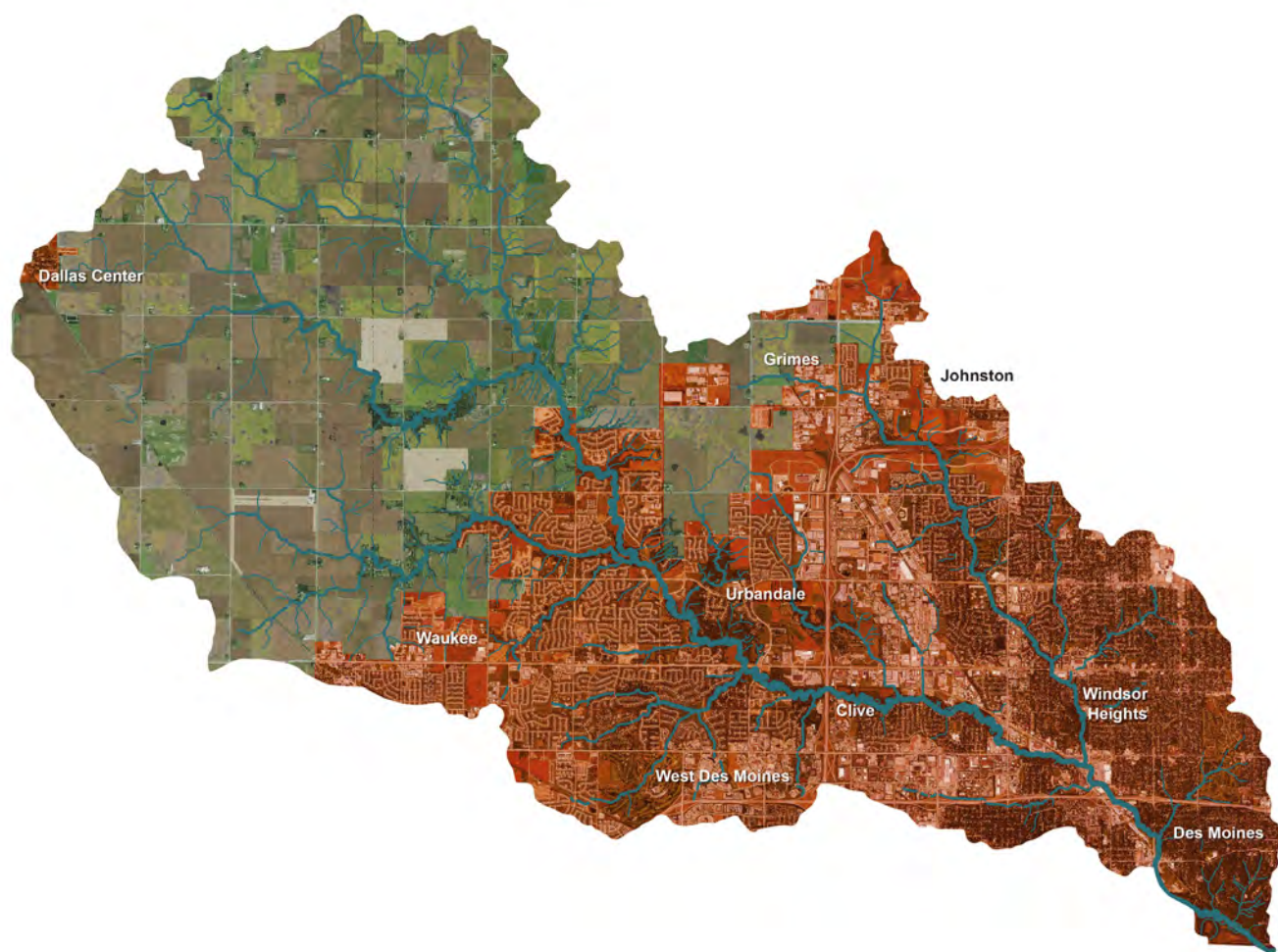


Johnston, Urbandale, Des Moines and Windsor Heights. Only the lowest part of North Walnut actually runs through the Greenbelt, but all of the runoff it receives drains into it.

South Walnut Creek is more commonly known as the stream that passes through Country Club Lake in Clive. This stream drains primarily southwest to northeast, collecting runoff from 4.5 square miles within West Des Moines and Waukee in addition to Clive.

Little Walnut Creek generally flows from west to east, beginning in rural Dallas County and flowing through rapidly developing portions of Clive, Waukee and Urbandale. At the westernmost boundary of Clive, Little Walnut passes under Warrior Lane, through a concrete box culvert. The drainage area within its watershed at this point is 8.1 square miles.

Over a recent ten year period, development in this watershed grew at an average rate of 430 acres per year.



Development in the Walnut Creek Watershed 2014

Water Resources Recommendations

2014 Stream Assessment

In 2014, Clive hired Nilles & Associates to update a 2009 Stream Assessment of portions of Walnut, Little Walnut and North Walnut Creeks in Clive. Between 2009 and 2014, the City was moving to aid in stabilizing streambanks. Fifty-eight acres were acquired between Warrior Lane and Alice's Road to preserve access to Little Walnut Creek. A regional detention basin (Woodcreek Basin) was constructed on City property west of 152nd Street with private homeowners downstream making additional stabilization investments. Structural features were put in play to protect from scour by a storm outfall structure on 100th street and other repairs occurred city wide for some level of erosion protection, particularly near trails.

The Nilles report notes significant improvements where the City was able to make structural improvements. Still, the 13 miles of field assessed streams revealed ongoing challenges. Nearly one-fourth (24.3%) of the streams assessed had unstable banks and 43.4% were rated moderately unstable. The report noted 13 specific locations where erosion had worsened over the previous five years.

Recommendations

- Set-aside parcels as a Greenbelt corridor where 100-year flood events are expected to have an impact on those parcels
- Schedule routine, selective clearing on city-owned property to maintain stream accesses and encourage growth of protective, native vegetation
- Monitor unstable banks for movement
- Adopt and fully implement the Iowa

Stormwater Management Manual (see report Glossary) for new developments and redevelopment sites – the manual includes engineering methods to properly manage both small and large storm events. (These methods are known as "Unified Sizing Criteria").

- Form partnerships across political boundaries for more consistent policies to manage storm water runoff – including maintaining an active partnership in the Walnut Creek Watershed Management Authority. [Note: This is currently the case].

Water Resources

Projects within the Water Resources and Stormwater Management category typically aid in addressing the following strategic directions/goals (at a minimum):

- Improving stewardship, and mitigating flood damages as well as reducing flood duration and peak, and lowering the frequency of damaging/debilitating floods
- Improving overall soil-water health/quality and reducing erosion

It is also important to understand priorities involved in selecting projects for action. Generally, upstream projects should receive priority over downstream projects. This plan seeks to make sure new development is stabilized before dealing with existing areas, but additional factors are also weighed. Some elements contributing to decision-making include: degree of erosion/problem; potential to cause near term damage to utilities, private property or other valued structures (risk assessment); overall project costs and/or available funding resources; complexity of execut-

ing the project and other factors. (See Modeling below).

Monitoring

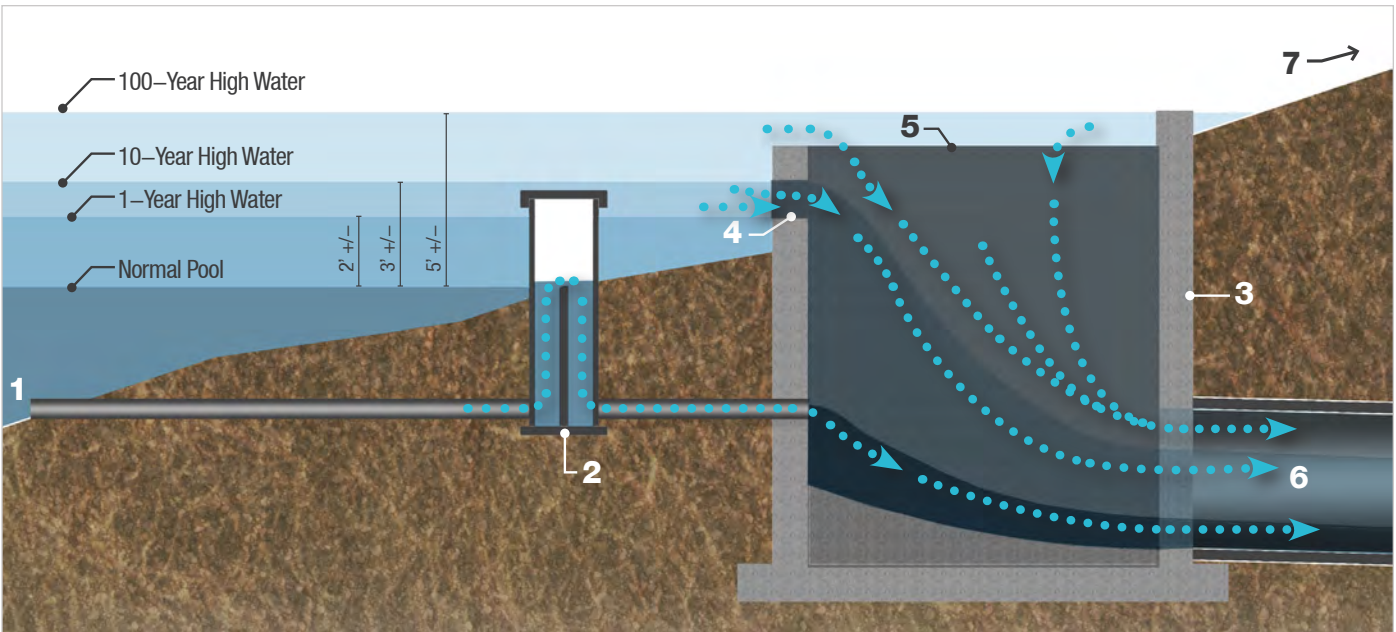
The Walnut Creek Watershed Master Plan includes a detailed monitoring program. This program features coordination with existing monitoring efforts, additional water quality sampling in case-study areas and strategic location of a new network of real-time monitoring stations. The data collected by this effort will help to measure the effects of watershed improvements and offer opportunities to inform the public on water quality trends. The City will need to continue to work through regional cooperative efforts, such as the Walnut Creek Watershed Management Authority to acquire necessary resources to install, maintain and collect data from the monitoring system. The monitoring strategy and its costs are described in detail in Chapter 12 of the Watershed Master Plan.

Streambank Restoration and Stabilization Areas

The vast majority of the streams within Clive are actively eroding and have been identified as having a moderate or high cut bank. These areas are highly prone to erosion during large storm events. In some circumstances, Walnut Creek has moved over 30' in just two years. Valuable park lands, utilities and private property continue to be put at risk. To limit these losses, streambank stabilization techniques must be used. Using natural streambank stabilization and restoration techniques has received strong support from the community. The long term direction for the Clive Greenbelt Master Plan is to restore or stabilize the



Rain Garden



- 1. 1st Stage: Small Diameter Inlet - Low Flow Control (Below Surface)
- 2. Water Level Control Structure
- 3. Main Outlet Structure
- 4. 2nd Stage: Notch Weir or Medium Size Opening (Controls 2-25 Year Storms)

- 5. 3rd Stage: Longer Overflow Weir (50-100 Year Storms)
- 6. Pipe Outlet (Likely Controls 50-100 Year Storms)
- 7. 4th Stage: Emergency Spillway (For Storms Larger Than 100-Year)

Example of a Multi-stage Outlet

Water Resources Recommendations

majority of the stream banks within the greenbelt and implement policies that limit the cause.

Modeling

To identify the areas that are of the greatest need for restoration, the planning team developed a suitability model that identifies and prioritizes the greenbelt for stream bank restoration to occur. The team developed a model to identify the areas where restoration is most beneficial for limiting erosion, protecting property, improvements/infrastructure, improving the Greenbelt's overall character, preserving habitat, improving visibility and safety, and reducing potential

flood impacts.

The suitability model uses a straight forward, point based system that gives each meter of land a numeric value. For example, if a certain portion of the stream bank is near private property, has a high cut bank, is near a trail and utilities, the overall value – or rank - would rise to the top as the sum of each layer is added. See Modeling Process 3.0 for an overview of the model and weighting process.

Projects

The modeling reveals 6,376 lineal feet of highest priority streambank restoration required. Four projects already called out

in the Walnut Creek Watershed Management Plan align with much of this top-tier restoration need. Additionally, more than 49,000 lineal feet of streambank are identified as medium priority for restoration through the modeling process.

Additional Water Projects

Water quality and quantity are directly linked. Traditional development has tended to treat stormwater as a waste product – quickly transferring it into the nearest, large-scale pipe and directly routing it to a nearby stream. Impervious (hard) surfaces – sidewalks, streets, rooftops, parking lots – have exacerbated how quickly stormwater gets to

MANAGING SEDIMENT WITHIN THE CLIVE GREENBELT

Many areas within Walnut Creek have experienced high levels of sediment deposition. Sediments tend to deposit first where flow velocities are lowest. The slower moving water allows particles to settle out by gravity. Often this slower moving water is located near inside bends of streams, or downstream of an obstruction such as a bridge column or debris pile. Over time the collected sediment may deflect surrounding flow patterns, potentially forcing flow even more rapidly toward the banks of the stream, leading to higher potential for erosion. Such erosion adds to sediment loads within the stream, further accelerating the cycle of deposition and erosion.

The higher levels of deposition seen today are symptoms of the elevated levels of sediment suspended in the water. The Walnut Creek Watershed Master Plan estimates that annually nearly 30,000 tons of sediment particles are conveyed through the watershed to the Raccoon River. It is also not feasible to engineer the stream to eliminate all low velocity areas, so that this high level of sediment will not deposit in the stream. (Higher velocity levels in streams would also increase the likelihood of streambank erosion.)

To address deposition, the goal needs to be reducing sediment loads before they enter the stream. The Watershed Master Plan has projected that 82% of the annual sediment load to the creek comes from three sources: streambank erosion, construction site runoff and gully erosion. It is recommended that action be taken to systematically, over time, use bioengineering techniques and other methods to stabilize areas of streams that have been assessed as unstable or moderately unstable. Construction sites should be managed more effectively to reduce pollution in runoff; through more effective planning, implementation and enforcement. In areas where gully erosion is occurring, stabilization practices should be installed to arrest the downward movement of the stream.



Water Resources Recommendations

those pipes. And even turf grass, with its very shallow root system and generally compacted soils, does not serve as a water-absorbent “sponge” of the pre-settlement prairie landscape – where soils were rich, loose, and populated by deeply-rooted, water-drinking plants. This traditional development can sometimes cause water quality and quantity issues that surpass farm land impacts on downstream neighbors.

The City of Clive has an opportunity to lead in terms of a new approach to development. This plan recommends The Wilds serve as an early example where natural resource protection practices stay ahead

of development. The Wilds portion of the Greenbelt Master Plan identifies green-spaces/buffers to set aside or protect to aid in achieving this new approach to development. When coupled with smaller lots/widths and thoughtful planning, the principles proposed for The Wilds do not need to burden a developer with revenue losses, as often the units available for sale can remain the same or increase in value over traditional development.

Enhanced Stormwater Management / Improved Flood Mitigation and Water

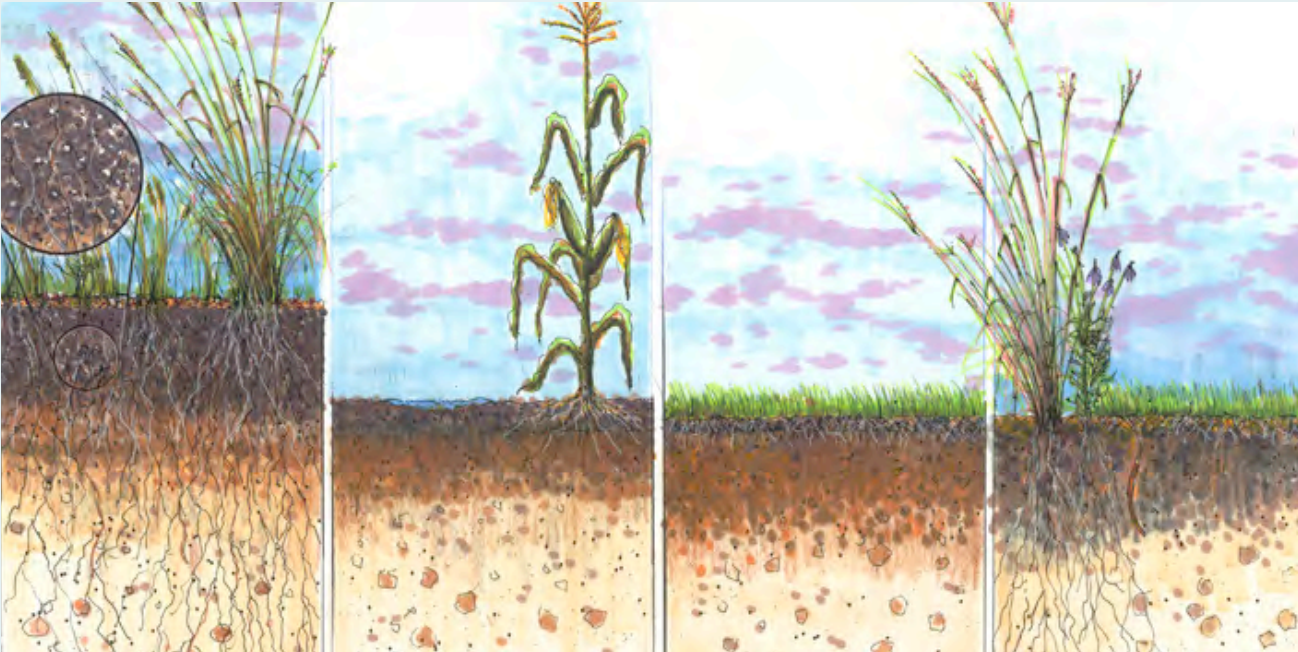
Quality Impacts
In the past, stormwater management

techniques applied in urban areas focused on controlling runoff rates during the largest storm events, in order to reduce downstream flood risk. However, little focus has been placed on addressing the quality and quantity of runoff from smaller storms. Ninety-eight percent of rainfall in Central Iowa comes from rainfall events that drop less than 2.7” of rain over a 24 hour period. The rapid bounce in urban streams caused by these events carries the vast majority of pollutant loads downstream and is responsible for the majority of streambank erosion, especially in smaller, urban tributaries.

The project types to help address these

COMPARATIVE PLANT ROOT SYSTEMS

Deeper roots stabilize soil and absorb water.



Natives

Corn

Turf

Water Resources Recommendations

issues within the Clive Greenbelt include:

- Employing new design methods and stormwater management practices in developing areas that capture, treat and slowly release runoff from smaller storms. During larger storms, runoff should be released at rates similar to more natural conditions.
- Use streambank shaping in selected areas to better connect the stream to its flood plain, reducing velocity while increasing capacity and improving habitat. Where possible, avoid new development encroachments into the floodplain. When encroachments are needed, verify that no rise in local flood elevation is expected.
- Similarly, acquiring easements for improved stormwater management (as identified within the masterplan graphic in Chapter 9)
- Maintaining healthy soils/top soil throughout Clive for its critical water soaking/holding capacity
- Implementing a series of construction or vegetation projects that slow flows (reducing erosion), improve storage, or enhance water-absorbing capacity of the soils, for example:
 - Outlet modifications
 - V-notch weirs
 - Forebays/sediment ponds
 - Bioretention cells, bioswales and stormwater planters
 - Wetlands
 - Grassed waterways
 - Rain gardens
 - Overall healthy adjacent habitat/vegetative cover (See Natural Resources and Habitat Restoration)

The plan includes sixteen recommended primary stormwater management lo-

cations with additional sites producing stormwater management benefits as a by-product of additional initiatives. These sites do not include the streambank restoration projects identified above or the vegetation/habitat management outlined below. They do include partnerships, including potential partnerships with schools, homeowners associations, individual property owners and – particularly in Clive’s Northwest properties – future developers. More project specifics are identified on the master plan map(s).

Accesses

Improved accesses lead to overall stream improvement. Features associated with accesses in the plan (e.g. at the 73 Street Gateway, Aquatic Center and within the Wilds and near Wildwood Park) lead to public safety enhancements and attention to stream stabilization. These accesses also have their recreational and educational benefits. The public has asked for greater access to the water resources within the Clive Greenbelt.

Goals include:

- Ensuring all segments of Clive community have equal access
- Providing ADA accessibility
- Developing a diverse system of recreational and educational experiences
- Providing a healthy space to connect residents to the natural environment

Access points appear throughout the length of the Clive Greenbelt. They will likely develop most readily in the yet un-developed reaches of Northwest Clive (aka “The Wilds”) but a concerted effort is made here to proactively identify access points across the Greenbelt’s length. This plan anticipates additional access points will emerge as stream health is

restored, and related capital projects get underway, providing additional opportunities. Generally, the plan calls for accesses (where feasible and appropriate) at schools, as links with natural playscapes and/or park grounds, and at locations to promote safe recreation.

The most significant of the new access points proposed is called out in the “Oxbows” near the Clive Aquatics Center, in partnership with the Central Iowa Water Trails initiative. While that access anticipates kayak, canoe, tubing and/or paddleboard use, most access points are envisioned as creek-exploration opportunities promoting outdoor play and active living, science and arts education. The City will need to work with the Iowa DNR and others involved in the Central Iowa Waters Trail planning to appropriately interpret and use the launch point at the Aquatics Center. Walnut Creek will not often be navigable due to either flood or low-flow conditions. The public will need to have clear direction about conditions at the time of any proposed use/launch. Wading/exploratory access points will need similar cautions interpreted for the public and in all cases, the public will need education on water quality and stream play, particularly at access sites. See “Geographic Overview” for more detail on locations.

Interpretive Focal Points

Two factors come into play here – where do we have access – either to the creek or by trail and where do we have meaningful features to interpret? Interpretation achieves any number of goals as the interpretive elements can be scientific, cultural, or intended to promote public

Water Resources Recommendations

health. In particular, this plan emphasizes interpretive features that “tell the water story” and integrate with public art (See Cultural Capital – Arts as Integrator below).

Some of the site considerations for water access points parallel those of interpretive focal points: the plan emphasizes proximity to schools, playscapes and parks as well as features that marry water access and aesthetics. The plan also anticipates interpretive focal points at the following locations:

- The proposed new Clive Education and Adventure Center
- In close proximity to businesses with Greenbelt views/access

- In association with stormwater management improvement sites

The plan envisions the most in-depth interpretive elements will surface in spaces yet-to-be-designed, e.g., at future parks in “The Wilds,” at the Outdoor Aquatics Classroom near Shuler Elementary, at the aforementioned nature center, and the future Eastern Gateway.

Wetland Mitigation Banking

Sources: Applied Ecological Services; EPA Mitigation Banking Factsheet (Accessed June 2016)

An Overview

In the late 1980s and early 1990s, federal regulators (U.S. Fish & Wildlife Ser-

vices, U.S. Army Corps of Engineers, and U.S. Environmental Protection Agency) recognized that the status quo of wetland mitigation was not achieving the objectives of the federal Clean Water Act. Small, isolated dispersed mitigation projects, conducted without meaningful standards and often without the expertise of wetland ecologists, were failing to provide the biodiversity, wildlife habitats and water quality goals that would be achievable with larger projects that could be held to higher standards. Enter wetland mitigation banking.

The concept is relatively simple: set aside lands for restoration as wetlands and sell credits to developers and others needing

HIGHLIGHTS OF THE WETLAND MITIGATION BANKING PROCESS

Agency Coordination

While coordination with the U.S. Army Corps of Engineers and other agencies is ongoing throughout the development of a Mitigation Banking Instrument (MBI), at this stage bank planners confirm with all agencies that data and other critical issues are resolved prior to subsequent drafting of the MBI.

Draft MBI and Submit for IRT Review

- With a notice to proceed from the Army Corps, planners develop a comprehensive draft MBI addressing all required components as outlined in the federal rules (33 CFR Part 332). The MBI to be submitted to the Interagency Review Team (IRT) details how the wetland bank will be established, constructed, and operated.
- Response to IRT Comments / Final IRT Meeting
- Once the IRT has completed its review and submitted comments, planners working with the landowner/bank developer address and respond to all concerns. These will be resolved in a final meeting with the IRT prior to development of the final MBI.

Develop Final MBI

After the final IRT meeting, the MBI is reviewed to incorporate necessary changes, and the final MBI is then submitted to the Army Corps for final approval. Planners also work to develop and submit any additional permit applications needed.

Next steps will relate to development of the wetlands/banking system, its ongoing monitoring, and ultimate approval the IRT over a designated time period assuming the wetland is effectively established.

Source: Applied Ecological Services

STREAM BUFFER PROTECTION

(Excerpted from the Walnut Creek Watershed Plan 2016)

Stream buffers should be established, either by public land acquisition or through reservation as permanent easements as public or private open space. These buffers should be created along all first, second and third order streams, as well as any existing or created open drainage course with a drainage area that is larger than 40 acres. Local policies and ordinances should be adopted or amended to establish protected stream buffers. *Stream buffers should be wide enough to serve the following functions:*

- Include the entirety of the regulatory 100-year (1% annual recurrence) flood plain OR where regulatory flood plains do not exist, include areas expected to be inundated by a 24-hour, 100-year return period storm event (flows calculated using the NRCS TR-55 method for fully developed conditions). Consider inclusion of the regulatory 500-year (0.2% annual recurrence) flood plain within the protected buffer.
- Allow for expected stream migration, based on recent movement patterns or historic stream channel locations.
- Provide enough width for future streambank improvements. This plan recommends setting a line based on the existing streambank toe locations, or a line that accounts for expected future movement of the streambank toe. From that line, the buffer should include all land which falls between the stream and a projected slope line from the established toe baseline to the surface of the surrounding area. The slope line should not be steeper than a rate of 4 (horizontal) to 1 (vertical).
- Allow width within the stream buffer for a minimum 15' cleared maintenance path on at least one side of the stream, with a cross slope not to exceed 5%, to allow for access by trucks, tractors and other maintenance equipment. Along streams of first order or higher, these maintenance paths should be provided on both sides of the stream. These paths may be either undeveloped paths, kept clear of trees and brush by annual mowing or paths which are surfaced with pavement or gravel.
- Provide a minimum five foot setback outside of the maintenance path to the edge of the reserved buffer, on the side opposite the stream from the path.
- For engineered channels in developing areas, construct channels as bioswales where feasible to improve volume reduction and water quality treatment. Refer to the ISWMM for feasibility review and design procedures.
- Program annual maintenance to remove invasive species and improve establishment of erosion resistant surface vegetation within protected buffer zones.
- In all cases, provide a minimum 50 foot building setback from the existing top of bank for a first order stream. Provide a minimum 100 foot building setback from the existing top of bank for second and third order streams.

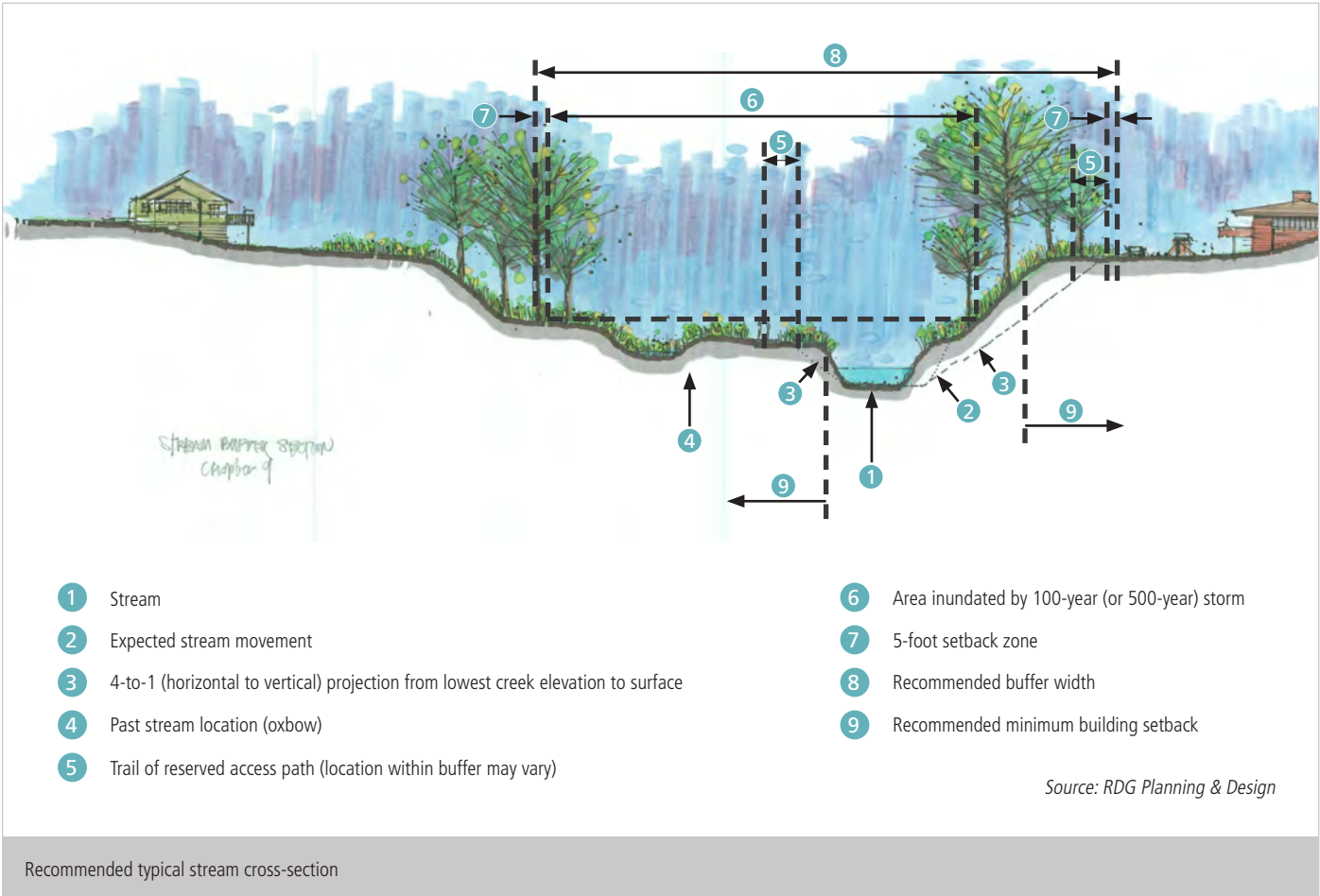
Application

This plan recommends applying these standards to all new developments and where land subdivisions are planned to occur adjacent to streams subject to these provisions. Existing structures that fall within these protection zones should be identified. Past known damages to such structures may be reason to pursue opportunities to acquire and remove such structures to avoid recurrent damages.

Expected Impacts

- Reduced potential for damages to buildings, property and other infrastructure during flood events.
- Maximized capacity for storage and conveyance of large flood events.
- Improved access for maintenance and ability to complete any necessary repairs.
- Improved filtration of stormwater runoff through properly designed channels.

Water Resources Recommendations



to mitigate wetlands lost at another location within the watershed. Through the banking model, a substantial wetland complex with multiple environmental and recreational benefits can be established. A strong underpinning of ecological science is essential to the sustainable creation of natural wetland systems.

Four elements make up a Wetland Mitigation Bank:

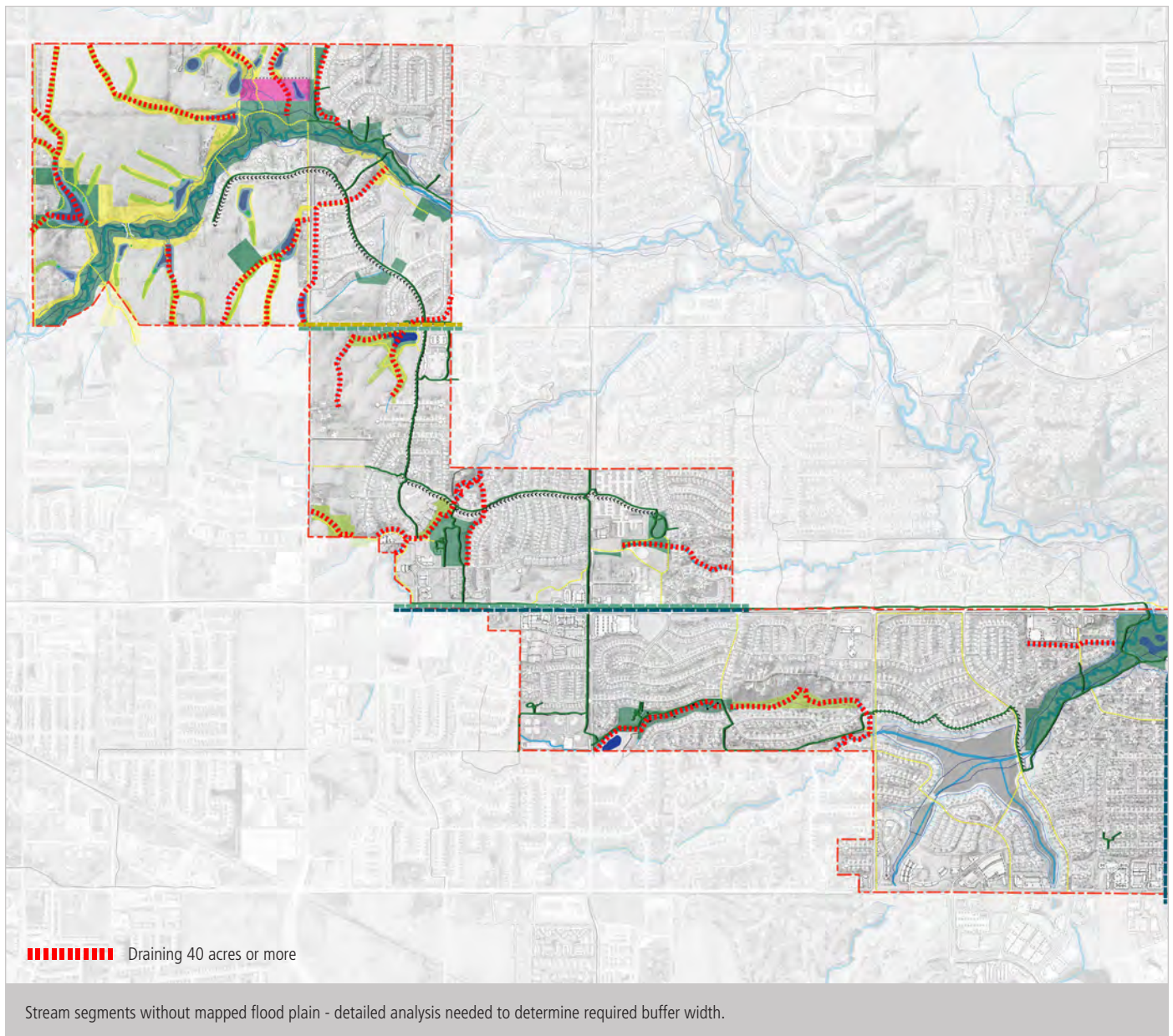
- The land/waters footprint for restoration and preservation
- The agreement between the bank owners/managers and regulators, including performance standards, liability

ity and monitoring

- The Interagency Review Team (IRT) responsible for bank oversight (e.g., the US Army Corps of Engineers with the Environmental Protection Agency and/or state or other agency involvement)
- The geographic footprint (often a designated watershed or sub-watershed) that the bank is permitted to service.

As wetlands are developed within the banking system, the IRT monitors progress in developing a high quality wetland system for a period of time following wetland establishment (typically 3-5 yrs). It is important to note that the banker is

required to monitor and report on wetland quality during this period, and wetland credits are released for sale based on the progress in creating a high quality wetland. Due to the multi-agency review and the extended timeline for project approval, the economics of wetland mitigation banking can be complex and typically a "critical mass" of potential wetland acres need to be a part of the bank (although they need not be contiguous) for the bank financing to work. Unfortunately, wetland mitigation banking processes do not provide precise targets. Close work with the US Army Corps of Engineers and the City's financial advis-



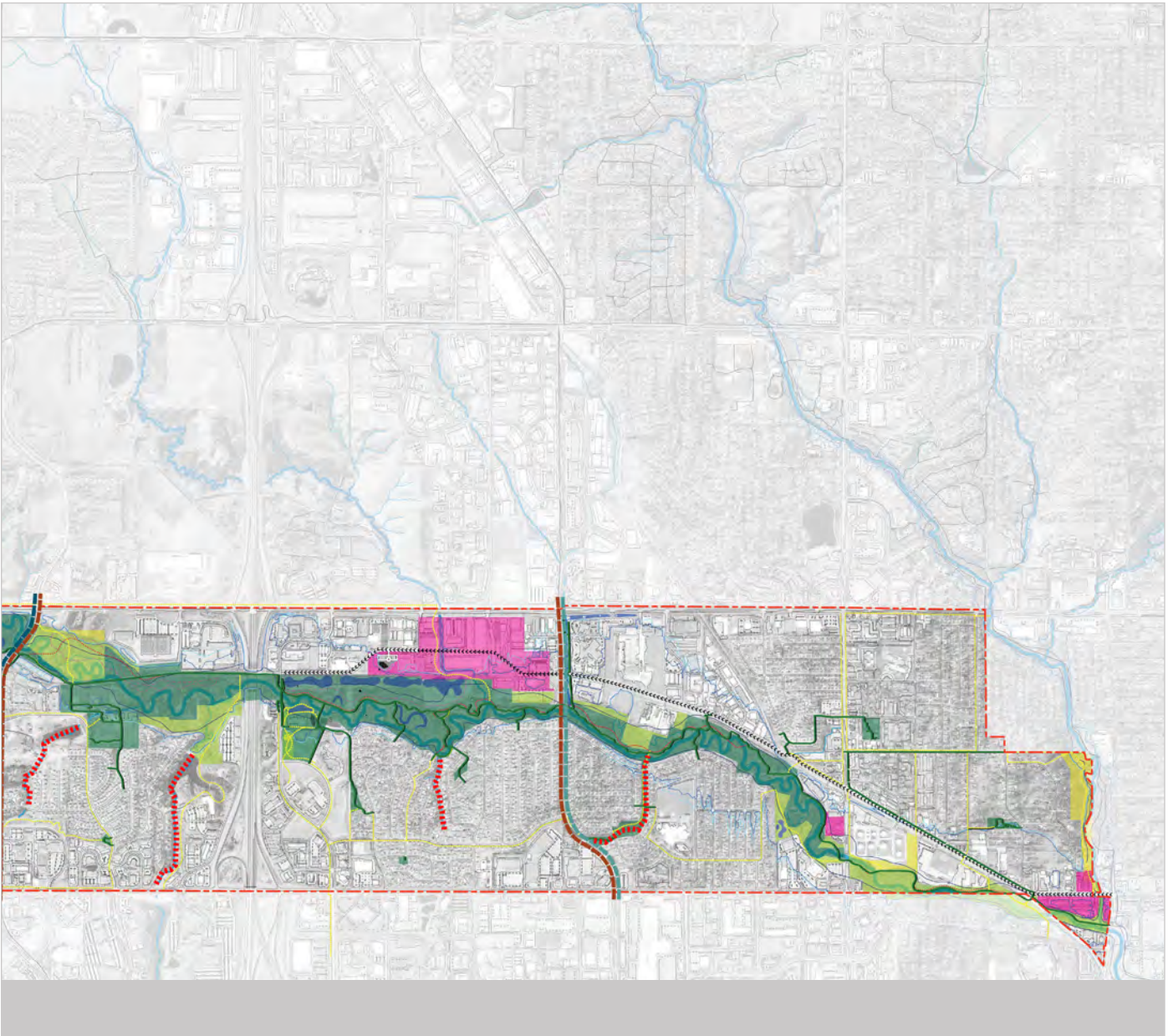
ers will be required to find an appropriate balance between accommodating wetland mitigation needs, covering costs, and exploring if any possibility of generating additional revenue can occur.

Location/Rationale

The Clive Greenbelt Master Plan recommends exploring a wetland complex, primarily located in “The Oxbows” section of the plan, north of Walnut Creek and northeast of the Clive Aquatic Center.

Developing a wetland mitigation bank might serve as a possible funding approach for the City to achieve the habitat, water quality, recreational and educational benefits and assist in supporting wetland maintenance over at least a medium term future. In addition, it could also help the City meet its own wetland mitigation needs for other projects. See discussion of wetland mitigation banking on the prior page.

Increasingly, natural capital systems and/or cap-and-trade approaches to monetize ecosystem benefits are starting to surface as possible methods for justifying funding of natural resources restoration projects. In fact, streambank restoration “credits” are in-process through the Iowa DOT as a potential method for rationalizing future projects (see Political Capital Chapter). But overall, quantifying ecosystem benefits is a relatively new area of economics study and solid mon-



etary benefits are challenging to quantify in the absence of concrete policy that speaks to the use of these systems. For further discussion, see the Economics Capital Chapter.

Walnut Creek Watershed Plan and the Role of Partners

At the same time this Clive Greenbelt Master Plan is under development, the Walnut Creek Watershed Management Authority was preparing its watershed

plan. The City of Clive participates in this planning process. This plan recommends that participation continue. The Clive Greenbelt is challenged by upstream practices of others within the watershed, meaning the importance of these watershed management authority partnerships cannot be over-estimated. The City will likely want to continue the partnerships emerging from the watershed planning process to help ensure upstream projects and practices get strong support for im-

plementation. The Greenbelt will directly benefit.

Meanwhile, the plan also addresses:

- Stormwater management/soil and water health policies directly relevant to the health of Walnut Creek and therefore the Clive Greenbelt (See Policy Considerations below)
- Specific projects throughout Clive, modeled to address overall Walnut Creek Watershed goals but also, by

Water Resources Recommendations

implication, directly aiding in the improved health of the Greenbelt, and

- Projects specific to the Country Club Lakes area (i.e., in this Greenbelt plan “The Lakes”) directly relevant to flood mitigation and water quality outcomes in this section of the Clive Greenbelt and potentially downstream.

Even in the instance of Clive-specific projects highlighted in the Walnut Creek Watershed Plan, partnering around those projects will matter. Watershed Management Authority support for projects can help secure funds from government agencies and private foundations. When projects have notable downstream implications, additional resources might come to the table through partnerships.

Policy Considerations

Policy considerations include urban recommendations from the Walnut Creek Watershed Management Authority, for example:

- Require the use of the Iowa Stormwater Management Manual (ISWMM) as a design resource. It promotes considering stormwater impacts early in the design process - finding ways to arrange developments to reduce land disturbance and impervious (hard) surfaces. Its Unified Sizing Criteria address runoff from both small and large storm events, to resemble more natural runoff patterns.
- Buffer streams, including width sufficient to provide habitat and maintenance corridor(s) (See previous Sidebar on Stream Buffer Protection)
- Improve planning and enforcement of Stormwater Pollution Prevention Plans
- Use local ordinances to restore healthy soils, particularly noting the recommendations of the ISWMM to maintain soil health and its water-absorption capacity
- Protect the 100 year flood plain.
- In new/developing areas:
 - No new structures within the 100 year flood plain
 - Maintain flood storage capacity
 - Reserve open space where flooding or stream movement is expected
 - Set new structures adjacent to the FEMA-regulatory 100-year flood elevation (1% annual exceedance probability) plus 3'
 - In the case of redevelopment, permit no negative impact to flood elevations and evaluate potential for property loss. Through partnerships

developed as part of the Walnut Creek Management Authority, fund and maintain the water quality monitoring program as outlined in the Walnut Creek Watershed Master Plan.

Fund strategies to reduce sediment loads to Walnut Creek from these key causes: streambank/gully erosion and construction site runoff and tracking.

Pursue opportunities to break “direct connections” to streams by diverting storm sewers into stormwater management areas upstream of existing pipe outfalls where there is sufficient open space available. Such facilities could consist of sediment forebays, wet ponds and constructed stormwater wetlands.

See Chapter 9, pages 162-176 of the Walnut Creek Watershed Plan for additional information.

Future Idea

Stormwater management ponds in public areas could be used as an irrigation source to reduce runoff volume and the use of potable water for watering.

Natural Resources and Habitat Restoration

Existing Conditions Summary

Overview of Vegetation and Land Cover; Field Work Findings

Historical Vegetation

General Land Office (GLO) surveys indicate that until about 1850 prairie was the predominant vegetation of Clive (Iowa State University, 2015). Treeless, flat to rolling landscapes supported hundreds of species of grasses, sedges, wildflowers and associated wildlife. Each year or at most every few years, wildfires burned off the dead vegetation of prior years' growth and prevented forest development.

The GLO mapped as "timber" the lands adjacent to the main stem of Walnut Creek and a small area on Little Walnut Creek (Iowa State University 2015). This suggests that the lowland setting of the Clive Greenbelt—steep bluff slopes,

streams, wetlands—did not experience catastrophic fires as the prairies did, although the prevalence of fire in the prairie landscape likely carried low-intensity surface fires into the forested bluffs and floodplains.

As it is today, the lowland forest was likely dominated by cottonwood, silver maple, hackberry, elm, ash, black willow, and honey-locust, and was interspersed with patches of wet scrubland and wet prairie. On rises in the floodplain and on dry slopes leading to the bluffs grew oaks, basswood, walnut, and hickories. Aerial photographs indicate that forests and woodlands in the City were largely confined in the 1930s to the Walnut Creek and Little Walnut Creek corridors.

Walnut Creek Greenbelt (Context)

Using aerial imagery, Applied Ecological Services (AES) digitized a natural boundary for the Walnut Creek Greenbelt, including areas outside the City (Figure: Walnut Creek Greenbelt). With minor exceptions, the Greenbelt was mapped using rules of thumb:

- Include relatively contiguous natural and semi-natural vegetation, especial-

ly floodplain and parkland;

- Include open water and wetlands when relatively contiguous with natural and semi-natural vegetation;
- Exclude buildings, pavement, mowed turf, and active cropland.

The Walnut Creek Greenbelt is biologically significant in the western Des Moines region. For some miles north and south it is the most noticeable natural feature. Large blocks of natural habitat occur, much in Clive's Greenbelt parks and in Urbandale's Walnut Creek Regional Park. These "core" habitats are connected largely by lowland forests and other habitats of Walnut and Little Walnut Creeks.

A major natural connector extends from Clive's western areas, through Urbandale, and ties into the central portion of the City. Other connectors in Clive run west-east to Walnut Creek. A major one is between Walnut Creek and South Walnut Creek. The Greenbelt character changes dramatically around Country Club Lake, but west of here the naturalized character returns.

Given the region's expected growth and future development, the Clive Greenbelt

Future Idea

Might portions of the Greenbelt serve as "pollinator banks" – a way to mitigate for damaged or destroyed habitat?

A POLLINATOR CORRIDOR

Pollinator benefits can be achieved through the use of many native species, with flowering herbs and shrubs being the most obvious. Even small patches of prairies and native landscaping can be beneficial to pollinators. The Wilds would be an ideal place to establish pollinator-plant heavy grasslands and herbaceous wetlands, as would The Oxbows, where the wetland/prairie mosaic is proposed. As concern over pollinator health grows, funding sources to support this work continue to expand. The Greenbelt is strategically located along the I-35 corridor - a monarch migration route generating private and public funding interests.

is and will increasingly become a singular ecological and biodiversity corridor that warrants protection and enhancement

Land Cover in the Clive Greenbelt. Land cover was mapped in the Walnut Creek Greenbelt in the City of Clive (Figure: Clive Greenbelt Land Cover). The smallest area mapped was 1 acre. *Data used in land cover mapping were:*

- Historical aerial photography (1930s)
- Current aerial photography (2014)

- National Land Cover Database (2011)
- SSURGO soils data
- U.S. Fish and Wildlife Service National Wetlands Inventory (NWI)
- LiDAR topographic data (2-ft contours)

After a draft land cover map was developed, AES ecologists conducted field reconnaissance on June 1-3, 2015. During field work, AES became familiar with existing conditions, recreational uses, and restoration challenges and opportunities

in the Greenbelt. AES documented plant species richness, invasive species and habitat quality, and made observations of wildlife, especially birds. *Due to the brief study period in a single June survey, not all the plants and animals of the Greenbelt were documented; a complete species inventory would reveal many more.*

- Land cover mapping and field reconnaissance produced a map that is more accurate and useful for resto-

GREENBELT LAND COVER TYPES

Land Cover Type	Acres	AES-Defined Greenbelt in Clive	Comment
Developed	16.8	2.0%	Acreage increasing over time
Planted Prairie	9.1	1.1%	Rare land cover type and rare in region
Grassland	76.1	9.0%	Most herbaceous cover is non-native, but provides wildlife habitat for regionally uncommon animals
Upland Shrub-Scrub	37.2	4.4%	Woody plants are native, but most herbaceous cover is non-native; still provides wildlife habitat for animals not typically found in developed areas
Upland Forest	46.2	5.5%	Good examples are rare due to past land use, upland forest of original oak-basswood-hickory is not common; some of this forest may have been oak savanna at one time
Lowland Forest	507.9	60%	Common along streams and rivers of the region
Lowland Shrub-Scrub	34.8	4.1%	Woody plants are native, but most herbaceous cover provided by non-native, invasive reed canary-grass
Herbaceous Wetland	7.4	0.9%	Good examples are rare due to past land use and ongoing sediment and nutrient pollution
Open Water	110.6	13.1%	Most open water in the region consists of streams and impoundments
Total	846.1	100%	

ration and management planning than the previous available land cover data.

- Nine land cover types were mapped in the Clive Greenbelt.

Land Cover Descriptions

Land cover types are recognized primarily by vegetation; they are plant communities. Representative locations of natural communities were assigned quality ranks in the field using a national standard developed by state Natural Heritage Programs. Plant community condition is benchmarked against reference conditions in plant communities that have for many years experienced natural or other appropriate disturbances and minimal damaging land uses. Condition ranks are A (excellent), B (good), C (fair), and D (poor). Plant communities in excellent condition possess vegetation structure and composition, and have a disturbance history, which is similar to that under historical conditions. By contrast, poor condition is indicated by loss of expected vegetation structure and species diversity, much coverage by uncharacteristic and invasive species, and a noticeable history of damaging land use. Most plant communities in the Clive Greenbelt were in fair condition (Figure: Clive Greenbelt Land Cover). The relative abundance of each plant species documented in the Clive Greenbelt is presented for each land cover type by vegetation stratum (see Appendix).

Developed



A small proportion of the Clive Greenbelt consisted of developed lands, including impervious surfaces of roads and buildings, or mowed turf and other intensively-maintained landscapes. These areas do not constitute natural or semi-natural plant communities and have limited value as wildlife habitat.

Planted Prairie



The 9-acre Clive Greenbelt Prairie in the eastern part of the Greenbelt is a restored prairie. This field was reportedly cleared and seeded with native prairie plants in the mid-1980s. The prairie exhibits moderate native diversity, but also contains aggressive native species (e.g., Canada goldenrod) and some invasive species like reed canary grass. This planted prairie was given a condition rank of C. Management mostly consists of prescribed burns conducted approximately every three years.

Grassland



Grasslands are defined as areas where herbaceous plants cover 90% or more of the ground. They include old field, fallow cropland, hay meadow, and pas-

ture. Some grassland may meet wetland criteria. Most of the grasslands in the Greenbelt are dominated by non-native, cool-season, agronomic grasses. Upland grasses are smooth brome (*Bromus inermis*), Kentucky bluegrass (*Poa pratensis*), orchard grass, (*Dactylis glomerata*), and topographically-lower areas mostly in floodplains dominated by reed canary grass (*Phalaris arundinacea*). Several native and non-native forbs also were present in grasslands. While they are not strictly a natural plant community, and therefore were not given condition ranks, grasslands of the Greenbelt do provide uncommon habitat in the region.

Upland Shrub-Scrub



These areas are typified by shrubs, scrubby trees, and/or mature trees covering 10-50% of the ground. In the Greenbelt, most upland shrub-scrub consists of old fields that have been invaded by woody plants or they are partially-wooded pastures. Vegetation includes a mixture of native and non-native species. While some areas are not natural plant communities and were not ranked, those dominated by native species were given condition ranks ranging from B/C to C.

Upland Forest



In forests the tree canopy covers 50-100% of the ground. Only a few, relatively small stands of upland forest exist in the Greenbelt. Human activity has disturbed and altered the vegetation and encouraged invasive plants, such as Amur honeysuckle, to colonize upland forests. Upland forests observed in the field had a quality rank of C/D.

Lowland Forest



These forests dominate the Greenbelt's low areas along Walnut Creek and its tributaries. They are widest along the mainstem of Walnut Creek. Lowland forest includes forested wetlands in the active floodplain, forests on slopes just above creek valley, or forests in drainageways. Condition ranks of lowland forest ranged from B to C/D, depending on the abundance of Amur honeysuckle and reed canary grass and the diversity and age of canopy trees. Shade suppression due to a dense understory, beneath the tree canopy, is occurring in many of the area's forests. Dense growth of mostly Amur honeysuckle and the native but prolific box-elder are shading

and suppressing ground layer vegetation and causing native plant diversity to decrease. Reed canary grass also outcompetes native species, resulting in solid or nearly complete stands of this non-native plant, with reductions in native plant diversity. The loss of soil-stabilizing plants often leads to erosion, which can lead to loss of topsoil, loss of native seed and other propagules, and sedimentation and nutrient enrichment of downstream aquatic resources. Surprisingly, green ash was not an important component of the forest, suggesting that emerald ash borer mortality will not significantly change the current forest character.

Lowland Shrub-Scrub



Lowland shrub-scrub areas typically have 10-50% cover of shrubs, scrubby trees, and/or mature trees. Relatively few of these areas exist in the Greenbelt, and they are generally associated with floodplains lacking a dense canopy. Lowland shrub-scrub generally represents degraded native plant communities with abundant reed canary grass. They have a condition rank of C to C/D.

Herbaceous Wetland



These wetlands consist of $\geq 90\%$ cover of herbaceous plants. Only a few herbaceous wetlands were identified within the Clive Greenbelt. These ranged from shallow wetlands containing native bulrushes and sedges to vegetated depressions often dominated by reed canary grass. There is potentially an historical fen in the west mile of Clive on what appeared to be organic soil on a slope below bluffs. Fens are a groundwater-fed community on organic soil. Although dominated by reed canary grass due to tile drainage, the organic soil, general setting, and discharge of water suggests that it may historically have supported vegetation found in fens. This possibility should be checked by a local biologist familiar with Iowa fens. The Greenbelt's herbaceous wetlands generally represent degraded native plant communities (due to abundance of invasive reed canary grass), and have a quality rank of C to D.

Open Water



The Clive Greenbelt contains mostly flowing water (lotic) and three non-flowing (lentic) systems. Lotic waterbodies include Walnut Creek and its tributaries. These flowing waters were observed to be generally turbid, with sediment coating rocks and the creek bottom. This indicates significant suspended sediment and poor water quality. Vegetation was sparse in these creeks and wildlife appeared limited. Lentic waterbodies include Country Club Lake (45 acres), Colby Lake (7 acres), and several farm

ponds in the western portion of the Clive Greenbelt. The shoreline of Country Club Lake generally consists of mowed turf to the rip-rapped waterline. The shoreline of Colby Lake consists of residential lawns/properties on the west, and steep but more natural shorelines on the east.

Overview of Wildlife Activity

Wildlife Observations

During field work, AES staff observed wildlife and indications of animal species. Wildlife identification was based on

direct sightings, calls, scat, prints, feathers and other signs. Bird counts were made at several locations, resulting in a more complete list of species than for other groups, which were observed only incidentally. A system investigation of wildlife would undoubtedly reveal many more species. Appendix presents the animal species observed by faunal class, with each species' relative abundance by each land cover type in the Greenbelt.

Rare Natural Features

The U.S. Fish and Wildlife Service lists six

federally-listed, proposed or candidate species in Polk and Dallas Counties (USFWS 2015).

Due to the small size and generally poor condition of the plant communities here and the mostly-developed or agricultural surroundings, it is unlikely that these species are present in the Greenbelt. More systematic surveys are needed to completely rule out the possibility of these species being present.

The IADNR's Natural Areas Inventory (NAI) tracks state-listed species. As of June 2015, 41 state-listed species were identified in Polk County and 17 state-listed species in Dallas County (IADNR 2015). Ten of these species were in both Polk and Dallas Counties. None of these state-listed species were observed during AES's field reconnaissance. An NAI database search was conducted for the City of Clive plus a 1-mile buffer. Only two NAI records were found within this search area.

Barn Owls can tolerate a degree of human activity and may still use the Clive Greenbelt. Given the old record for the Hickory Hairstreak (last observed in 1960), it is unlikely it persists in the Greenbelt.

What was once common is now rare, and what was once rare is now common in the Clive Greenbelt. Prairie and prairie wetlands once dominated, but now the formerly rare lowland forest of floodplains and oak-hickory forest of uplands constitute most of the natural vegetation. Oak savanna and scrubland was rare and has become rarer. The City's Comprehensive Plan tells a story of diminishing natural vegetation in the last 150 years, with conversion of prairie and prairie wetlands to cropland, and after



The luna moth was seen in the West Avenue core area, in Clive's west mile.

WWII the conversion of remaining natural vegetation to city and suburb. For example, upland forest decreased 41% from 1992 to 2006, and grassland 94%, according to the Comprehensive Plan.

With shrinking habitat, many species of birds, mammals, reptiles, butterflies, and fish have become so rare that they are legally protected (see list in City's Comprehensive Plan). Not surprisingly, most of these are birds, butterflies, mammals, reptiles and fish of the prairie and savanna ecosystem, which are among the most diminished of ecosystems in North America due to the style of development practiced over the last 200 years.

Species of Greatest Conservation Need

Species of Greatest Conservation Need (SGCN) is a wildlife classification to aid in regional conservation. It includes state-listed species and non-listed species that are rare or in decline in a region, often as a result of habitat loss. The Iowa DNR publication, Iowa Wildlife Action Plan - Securing a Future for Fish and Wildlife: a Conservation Legacy for Iowans (IADNR 2007) presents a state-wide analysis of SGCN. The Iowa Wildlife Action Plan identifies 313 SGCN species. *AES ecologists identified four SGCN species in upland grassland and herbaceous wetland in the Clive's west mile, near Lit-*

tle Walnut Creek, during field work. All are likely breeding.

- Dickcissel
- Eastern Meadowlark
- Field Sparrow
- Sedge Wren

Clive's west mile serves as a refuge for SGCN species because it is a large area with a variety of plant communities—or a large habitat mosaic. The existing or potential diversity of habitats in the Greenbelt raises the potential for SGCN species to use this resource. Restoration, enhancement, and management of the Greenbelt would be expected to attract more SGCN species of forest, grassland,

FEDERALLY-LISTED, PROPOSED OR CANDIDATE SPECIES IN POLK AND DALLAS COUNTIES

Common Name	Scientific Name	Federal Status	Habitat
Topeka Shiner	<i>Notropis topeka</i>	Endangered and Critical Habitat	Prairie streams and rivers
Indiana Bat	<i>Myotis sodalis</i>	Endangered	Caves, mines (hibernacula); small stream corridors with well developed riparian woods; upland forests (foraging)
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. Roosts and forages in upland forest during late spring and summer.
Least Tern	<i>Sterna antillarum</i>	Endangered	Bare alluvial and dredged spoil islands
Prairie Bush Clover	<i>Lespedeza leptostachya</i>	Threatened	Dry to mesic prairies with gravelly soil
Western Prairie Fringed Orchid	<i>Platanthera praeclara</i>	Threatened	Wet prairies and sedge meadows

NAI STATE-LISTED SPECIES IN CITY OF CLIVE PLUS 1-MILE BUFFER

Common Name	Scientific Name	Class	State Status	Observation Year
Barn Owl	<i>Tyto alba</i>	Bird	Endangered	2006
Hickory Hairstreak	<i>Satyrium caryaevorum</i>	Insect	Special Concern	1960

shrub-scrub, and herbaceous wetland. More challenging would be to improve habitat for and attract SGCN mussels and some fish to the creeks of the Greenbelt as this requires managing runoff outside and upstream of the Greenbelt.

Tree Canopy and Invasive Species

Invasive vegetation exists in all but the highest quality portions of the Clive Greenbelt. Invasive species thrive in disturbed habitats and often dominate and out-compete native plants, reducing habitat and species diversity and lessening an ecosystem's resilience in the face of disturbances and environmental change. Of the plant species found by AES in the project area, several present a risk to the ecological restoration and management of native plant communities (Appendix). Controlling these species is essential for restoration to succeed.

The Greenbelt's most problematic invasive plant species are discussed below.

- **Multiflora Rose (*Rosa multiflora*)**
This invasive shrub is not extensive in the Greenbelt; however, given time it would be expected to spread, especially in more open/sunny plant communities. The City has initiated removal efforts for this species, which also should

be continued.

- **Amur Honeysuckle (*Lonicera mackii*)**
This Asian shrub has become quite invasive in the Greenbelt's forests and shrub-scrublands, creating dense shade in areas that it dominates. The City has initiated removal efforts for this species, which should be continued and expanded to control this invasive species of primary concern.
- **Reed Canary Grass (*Phalaris arundinacea*)**
This invasive grass is dominant in portions of the Greenbelt, especially lower or wetter areas that receive ample sunlight. Herbaceous wetlands, lowland shrub-scrub, openings in lowland forest, and low-lying grasslands are all largely dominated by this invasive plant. While a serious ecological concern, management of this aggressive species must be strategic because it is expensive to initially control and will quickly re-invade and overtake an area again if management does not continue. The seed floats and is readily transported downstream. Especially during floods this characteristic creates ongoing pulses of invasion in floodplains. Due to the extensive cover of this species throughout

much of the Greenbelt, control efforts should be focused in headwater areas that are most easily controlled, and other select, high-priority, low-lying areas farther downstream.

- **Garlic mustard (*Alliaria petiolata*)**
This invasive forb is not yet extensive in the Greenbelt. Its aggressive nature, especially in low or moist forests and woodlands, suggests that it has the capacity for greater expansion. The City has initiated removal efforts and these should be continued.
- **Box elder (*Acer negundo*)**
This native tree, found throughout much of the Clive Greenbelt, is often invasive in disturbed habitats, including low or moist forests, woodlands, and shrub-scrubland. It can invade and spread in canopy gaps and at forest edges, and it contributes to shade-suppression of desirable native species. Selective thinning of this native tree, and removal from the understory, often enhances existing natural areas, improves habitat structure, increasing native diversity, and improves views through forests, thereby increasing their attractiveness.



Tartarian Honeysuckle, a relative of Amur Honeysuckle



Reed canary grass dominates open, moist ground in the Clive Greenbelt



Garlic mustard can form dense patches that excludes other herbaceous groundcover

A general tenet of restoration ecology is to address new invasion sites first, rather than spend most resources on areas where invasives already are dense. Early detection and removal or control of new invasion sites can be very cost-effective. It protects existing remnant plant communities that are still somewhat intact. These areas have a higher likelihood of recovery and self-healing as opposed to densely invaded areas, which often can-

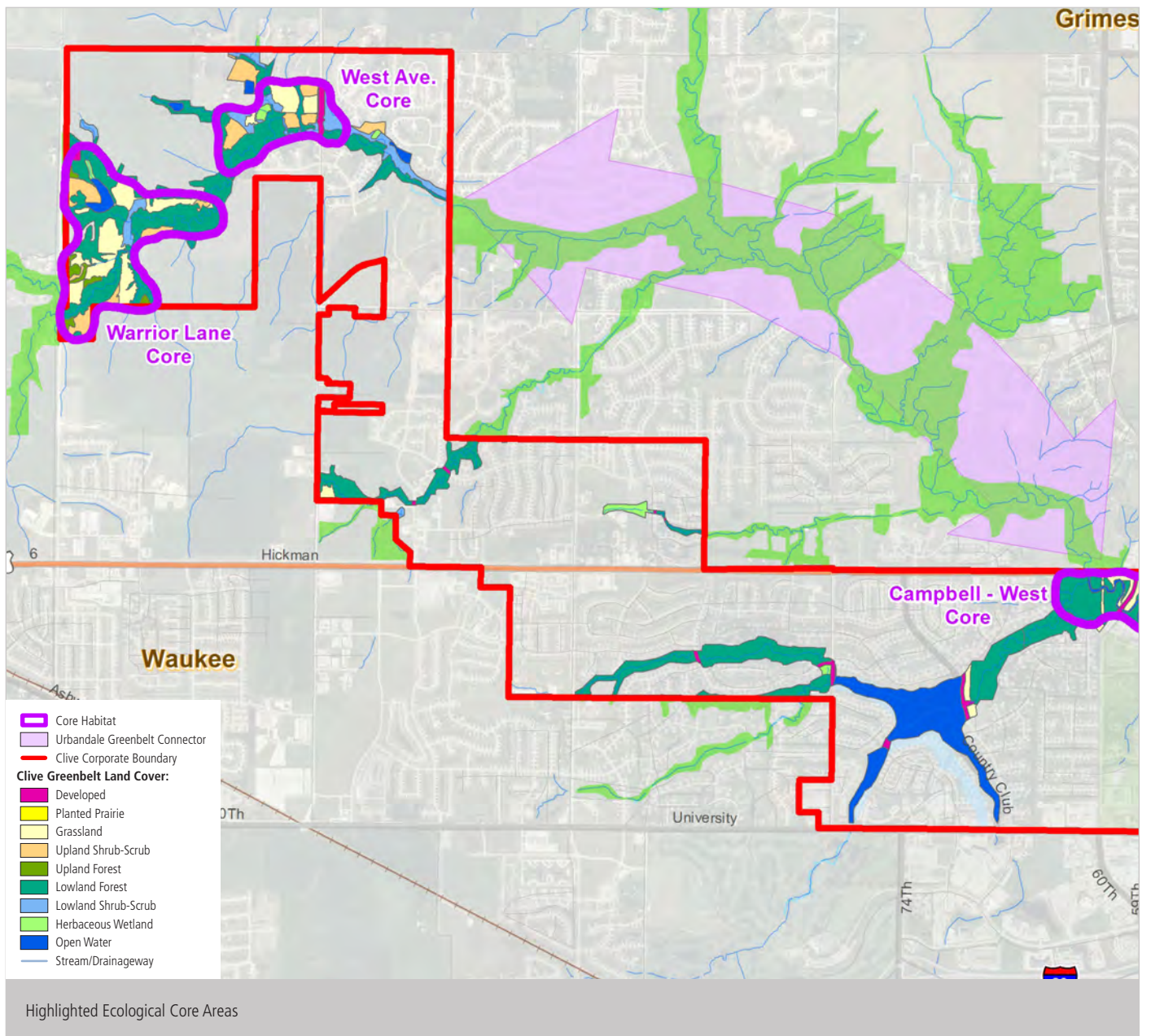
not become much poorer in quality than they already are.

While invasive animals can be problematic in some natural areas, they did not appear to be a concern in the Clive Greenbelt. Deer are known to reduce the density or flowering of some plants, and an understanding of their numbers and effects would allow an assessment of the need for management. City staff should

remain aware of emerging invasive plants and animals so that monitoring and rapid action can be taken early to reduce invasion and overall cost of removal or control efforts.

Ecological/Core Areas

Land cover mapping for the Clive Greenbelt highlighted six relatively large "core" areas along Walnut Creek and its tributaries (Figure: Clive Greenbelt



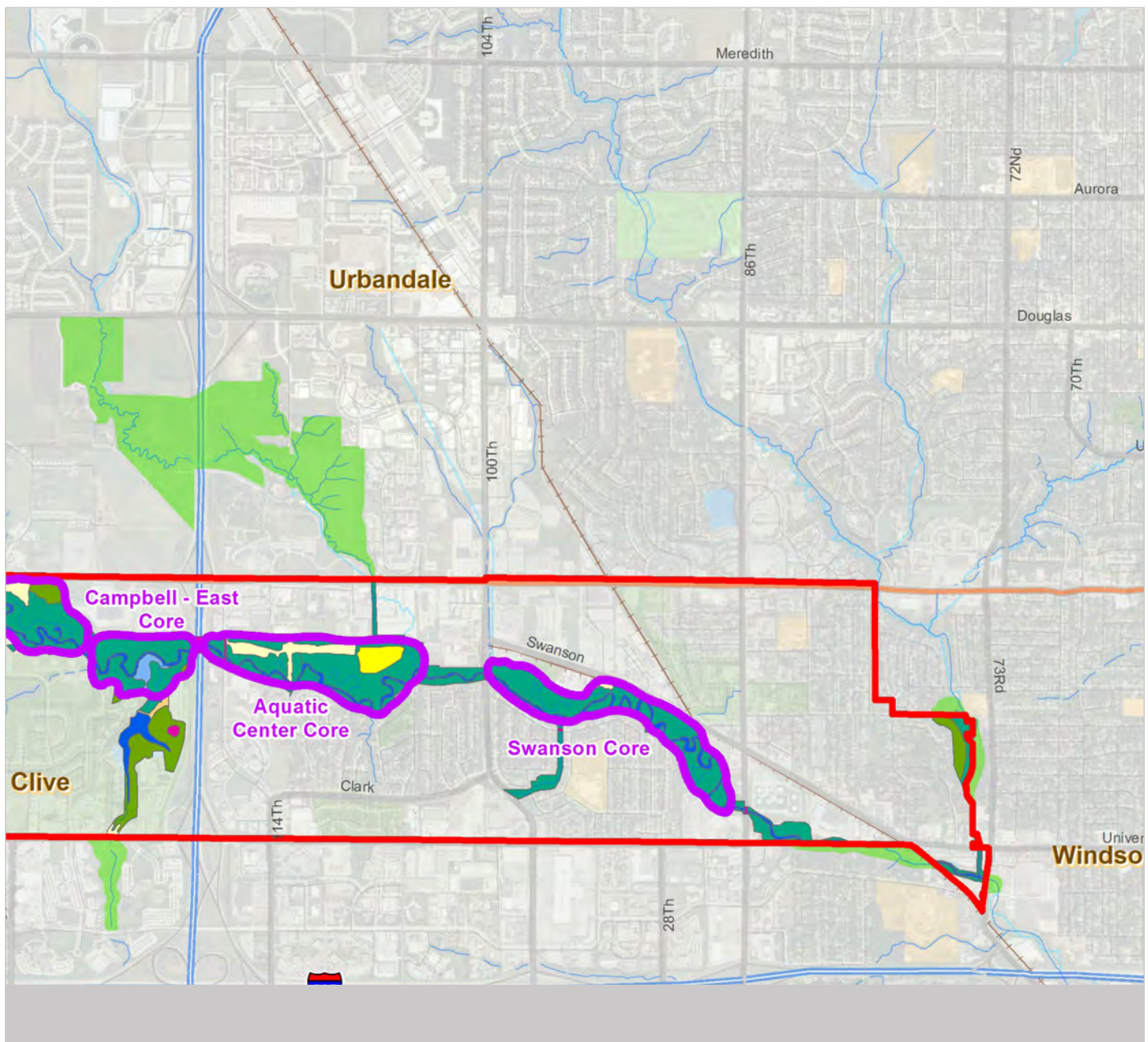
Opportunities & Priorities). Each of these areas has unique attributes and conservation opportunities.

• *Warrior Lane Core*

The western-most and largest of the six cores. It is a complex mosaic of plant communities, ranging from forest to grassland, and from upland to aquatic. It is almost completely in private ownership, and agricultural practices such

as pasturing have significantly altered some of these areas. The size and complexity of this core, however, together with its setting in an agricultural rather than urban matrix, present perhaps the greatest conservation opportunity in the Clive Greenbelt. Development is occurring immediately south of the Warrior Lane Core in Waukee, apparently following typical suburban development approaches. Engaging the

developer and City of Waukee immediately would reserve opportunities to do a better job of integrating the Greenbelt at this location with the surrounding development. Parkland dedicated under ordination will need to be paired with acquisition of fee title and easements to protect future greenway design options. Stormwater management design that uses low impact or conservation design development ap



proaches, in combination with BMPs as specified in the Iowa Stormwater Manual, will ensure that soil infiltration rate and groundwater discharge to the stream remain at current levels. Future development planning should strive to use source reduction and stormwater treatment train approaches which emphasize infiltration and filtration.

- *West Avenue Core*

Northeast of Warrior Lane Core. These two cores are connected by Little Walnut Creek and associated lowland forest. The West Avenue Core is smaller than the Warrior Lane Core, but has a similar habitat complexity and conservation value. Much of the West Avenue Core is or may become City parkland. These two cores, either individually or combined, present a unique opportunity to establish a large, diverse, regional park as an endpoint destination for the Clive Greenway.

- *Campbell – West Core*

Located northwest of Campbell Recre-

ation Area. This core is contiguous with Campbell – East Core and the Aquatic Center Core to the east. Campbell – West Core is dominated by lowland forest of generally C rank, but it contains some grassland and upland Forest.

- *Campbell – East Core*

Located between Campbell Recreation Area on the west and the I-35/80 corridor on the east. This core is smaller than but contiguous with Campbell – West Core and the Aquatic Center Core east of I-35/80. The Campbell – East Core is dominated by lowland forest of generally C rank and contains a patch of lowland shrub-scrub. Traffic on I-35/80 is clearly audible in this area.

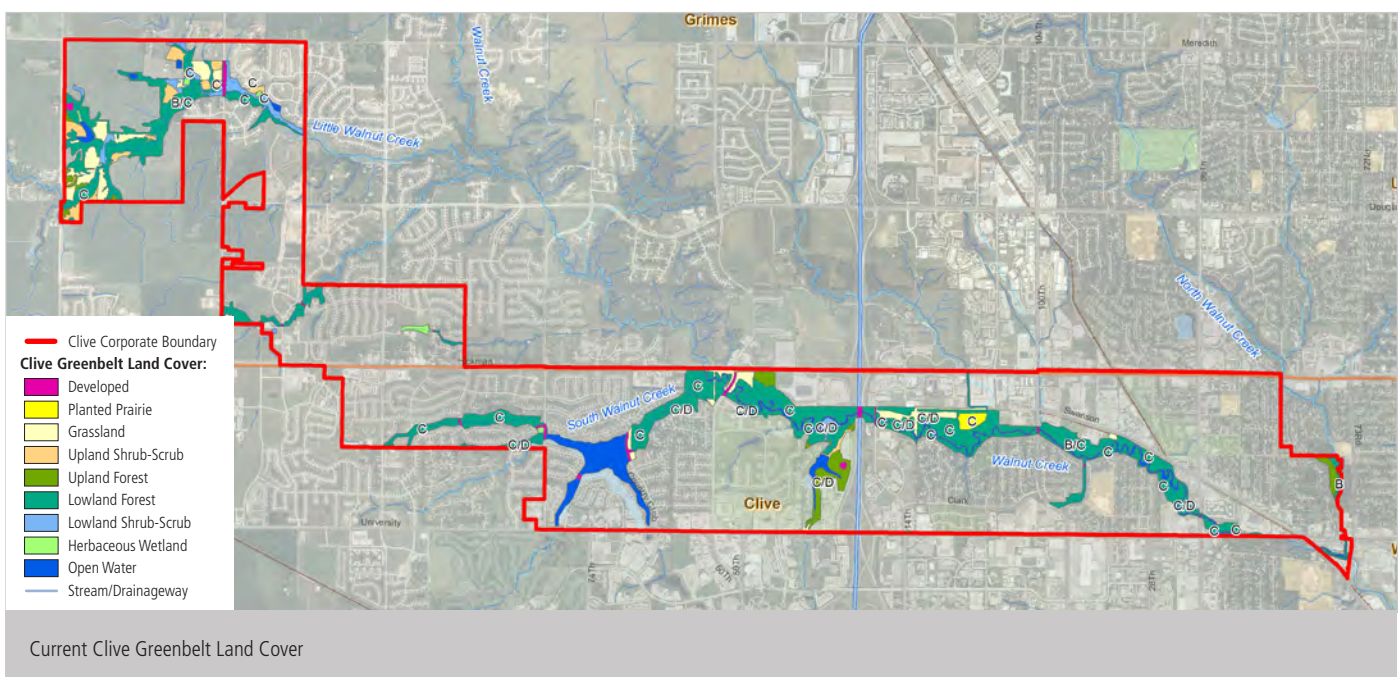
- *Aquatic Center Core*

Located just east of the I-35/80 corridor and adjacent to the Clive Aquatic Center. It is contiguous with Campbell – East Core to the west, but there is a forest canopy gap on the east side of I-35/80. This core is dominated by lowland forest of generally C rank and

contains relatively large grasslands and the 9-acre Greenbelt Prairie, which is unique feature in the broad Walnut Creek floodplain. Invasive plants consisting mostly of Amur honeysuckle and reed canary grass tended to have lower cover in the eastern part of this core, east of the Greenbelt Prairie. This area contains several large, mature trees of sycamore (*Platanus occidentalis*), silver maple (*Acer saccharinum*), and cottonwood (*Populus deltoides*).

- *Swanson Core*

Located along the south side of Swanson Boulevard. This relatively narrow core is not contiguous with other core habitats and consists almost exclusively of lowland forest. Most of it was ranked a C, but the western portion of this core was generally in better condition than the rest of the lowland forest elsewhere in the Greenbelt. This is due to sparser coverage by invasive plants and a relatively diverse groundlayer and canopy.



Natural Resources/Habitat Recommendations

Natural Resources Management Plan Implementation

In addition to over-arching policy recommendations (see below), this plan recommends implementation of a comprehensive Natural Resources Management Plan for the Clive Greenbelt that appears in greater detail in the Appendix. The plan's highlights include recommendations related to ecological planning, restoration and perpetual management methods suitable to achieve restoration of the Clive Greenbelt's vegetation types/land cover: Greenbelt prairie, grassland, upland forest, upland shrub-scrub, lowland forest, lowland shrub-scrub, emergent water and open water (see above).

Proposed Land Cover/ Core Habitats

Using current land cover, vegetation, and historical conditions, and also an understanding of habitat requirements for species protection, 16 major management units were identified to help secure the restoration and protection of core habitats through this plan. Management details appear in the Implementation sections of this report but the core habitat sites are a foundational recommendation of this plan and appear in the adjacent map. Information in this plan consisting of management units, land cover types within management units, restoration and management tasks specific to land cover types, and an opinion of probable cost, will allow the City to develop project-specific restoration plans which require a site-specific level of detail, such as project budget, local conditions and hazards, and partner and volunteer contributions.

Policy Considerations

Walnut Creek's dynamic role in shaping the Clive Greenbelt requires policies that address stormwater management, flood mitigation, soil health, water quality, and streambank protection and restoration. This master plan references overall water/stormwater and stream stabilization policies (see above).

Topics of vegetation management also spark policy considerations including:

- *Use an Ecosystem Approach to Manage Vegetation, Wildlife, Water*
An ecosystem approach recognizes the interconnected nature of all things, uses scientific principles to manage the effect of development on nature, and implements solutions cautiously to avoid unintended consequences. An ecosystem approach seeks to increase the resilience of the human and natural world despite changes in the environment, economy, and culture.

Applying an ecosystem approach in the Greenbelt suggests the following be incorporated into Clive's annual and long term planning and zoning, and operations and maintenance activities.

- Large, continuous natural areas are rare state-wide and should be protected, restored, and managed to improve their ecological condition from poor/fair (C/D) to good/excellent (A/B);
- Forested areas dominate the Greenbelt and should be protected and improved by removing invasive plants, planting native trees and shrubs in canopy gaps and at ragged edges, and encouraging tree

and shrub planting on adjacent private property;

- High-quality grasslands, savannas, and herbaceous wetlands—with their wildlife—are extremely rare state-wide and should be restored over large areas where this does not conflict with core forest habitat;
- Manage forests, grasslands, and wetlands across property lines by working with Green and Sustainable Clive to train volunteers to carry out restoration efforts on public and private lands, and by partnering with homeowner associations to adopt greenbelt management areas;
- Manage water holistically across property lines by developing a water management plan for the City, with an emphasis on inventory of existing aquatic resources and conditions, identification of best practices for water use conservation and water runoff management, and recommending strategies to create for green infrastructure and integrate it with gray infrastructure—using the Walnut Creek Watershed Plan as a starting point;
- Manage certain sensitive and problem species to support state-wide efforts at sensitive species conservation (e.g., pollinators) and to address threats to natural resources (e.g., excessive deer browsing).
- *Budget for Project Maintenance*
Plan for project maintenance at the onset of a habitat or vegetation restoration project. Essential training and experience for habitat and vegetation maintenance is:
 - Knowledge and experience in using

Natural Resources/Habitat Recommendations

tools for vegetation management (brush saw, chain saw, weed whip, scythe, etc.)

- Knowledge of the more than a dozen invasive and aggressive plant species needing control in the Greenbelt;
- Knowledge and experience (including specific training) in planning and executing prescribed burns;
- Herbicide application training and, if using non-City contractors, proof of certification as a commercial herbicide applicator (Round-Up and Garlon are often used);
- Knowledge of what ecologically healthy plant communities look like and the species they are usually comprised of;

Some of this knowledge and experience is present with current City staff. For example, City staff have experience with vegetation management, prescribed burning and herbicide application. If technical knowledge of plants and ecology are weak at the City, staff can acquire plant identification skills and plant

community ecology knowledge specific to the Greenbelt by taking field courses or by being trained on-site by a knowledgeable volunteer or contractor. Technical knowledge can also be brought into the City by hiring new staff for a position such as “restoration ecologist” or “natural resources manager”. Lastly, the City could hire an outside contractor with experience in restoration and natural resources management to perform part or all of the services required for the Greenway’s natural resources maintenance.

While the Capital Improvements Program (CIP) can be used to identify initial project restoration costs for a particular location in the Clive Greenbelt, annual operating budgets need to include the costs to maintain that restored area. Budgeting in this manner is routine for storm sewers, streets and other hardscape infrastructure, as well as for turf in ballfields and playgrounds, but communities rarely commit to the ongoing maintenance of restored natural resource systems, called green infrastructure. Yet those systems provide a direct cost-benefit to the city

like that of the infrastructure we normally budget for annually.

- *Consider a Natural Resources Overlay District*

This tool combines several features in one area for zoning protection. A natural resource overlay district protects specific habitats and associated functions of waterways, riparian corridors, wetlands, woodlands and essential wildlife habitat. (The City of Cedar Falls was the first in Iowa to give this approach serious consideration). This type of district can simplify Clive’s approach to protecting and managing the Greenbelt by a) combining in one ordinance the land use and management standards for public and private development in the Greenbelt, and b) eliminating the need to apply to the Greenbelt any standards elsewhere in the zoning code which covers the same topics as in the overlay district. This approach would elevate and promote the recreational and conservation uses of the Greenbelt above other uses and specify the bound-

CASE STUDY: NATURE-BASED COST AND BENEFITS

Milwaukee’s successful Greenseams program identified depressions, wetlands, and lowland forests which, if restored and managed, would ease downstream flooding. According to the Conservation Fund, which runs the program, Milwaukee spent about \$15 million to store 2,000-4,000 acre-feet of runoff at a cost of \$3,750-\$7,500/acre-foot. By contrast, the most recent stretch of the Milwaukee Deep Tunnel, a \$121 million gray infrastructure project to manage combined sewer overflows, cost \$91,000/acre-foot. The City’s \$15 million investment in protecting and managing natural lands did more than regulate stormwater at lower cost—it expanded parkland and opened up trails. Making the commitment to maintain the restored portions of the Greenbelt will help ensure that it continues to be recognized as a place of good quality forest, wetland, and streamside experiences and is an overall success in the eyes of the public.

Natural Resources/Habitat Recommendations

ary of this special use area. It would provide a framework for discussion of the public domain relative to both City and private development. In this way, over time, the Greenbelt becomes institutionalized as a distinct entity in the City, with standardized boundaries and land use practices. Details about the natural resources overlay district from Cedar Falls' Comprehensive Plan appear in the Appendix of this report.

- *Enhance Clive's Tree Canopy Ordinance*
Considering the largely wooded nature of the Greenbelt, an alternative to a natural resources overlay district is to revise the City's tree canopy ordinance. An enhanced tree canopy ordinance would protect and improve the existing tree canopy wherever it occurs in the Greenbelt, fill gaps in the current tree canopy where forest is the natural and preferred vegetation type (e.g., in floodplain forest), and increase the amount and density of forest cover at the edges of the Greenbelt in order to buffer the negative effects of adjacent developed land uses on the Greenbelt's natural resources. Revisions to Clive's tree canopy ordinance could a) require that development preserve native tree stands or sufficiently replace their lost function at appropriate locations, such as gaps in or buffers to existing forests, b) prefer native tree plantings over non-native trees in and adjacent to the Greenbelt, c) require removal of highly invasive trees and shrubs from wooded areas, d) support the shading of concrete and parking lots to mitigate urban heat island effects, and e) provide for landowner education. A sample tree ordinance with enhanced

provisions appears in the Appendix of this report.

MOSQUITOES

Mosquitoes are and will continue to be present in the Greenbelt, especially in the abundant lowland forests. While treatments exist (including chemicals and bacteria (Bt) treatments), they can be costly, of variable effectiveness, and can negatively impact non-target species. Removing habitat used by the most aggressive mosquito species (e.g., tiny isolated pooling areas used for breeding) and providing adequate habitat for natural mosquito predators (e.g. bats, dragonflies) can help to control mosquito populations - but they will persist in the Greenbelt.

The City of Clive recognizes the vital role that Public Art plays in the life of the community. Through a strategic planning initiative that began in 2007, the Public Art Advisory Commission was established to develop a comprehensive program based on the incorporation and integration of public art to advance the “quality of life” of Clive residents and visitors.

It is important to note the five primary goals of the original strategic plan. "Clive will be a place where:"

- 1) 86th Street is a destination that works.
- 2) The City Campus is a focal point, Clive's "town square."
- 3) Residents receive high-quality services.
- 4) People experience a distinctive Clive identity.
- 5) The community is known for its environmental stewardship.

The current strategic plan continues to emphasize these points and embraces the incorporation of public arts into the community. It also stresses how important Public Art is for community health and well-being.

Meanwhile, Public Art programs have grown across the country, with programs increasing in number and visibility throughout communities both large and small. Americans for the Arts and its Public Art Network (the national clearing house for public art in the US) have documented many incredible benefits including: grassroots economic development, health and well-being, educational programming in relationship to history and culture, brand and identity development, and many other significant quality of life connections.

The City of Clive highlighted the importance of number 4, to "assist in experiencing a distinctive Clive identity." This concept is a key element in the relationship between the Clive Public Art Master Plan and the opportunities emerging from this Greenbelt Master Plan. The statement emphasizes the understanding and the awareness that art is part of our everyday lives, and that art within the community of Clive is a distinguishing factor of what it means to live in "THIS" community. In other words, art is part of the cultural fabric of how Clive residents see themselves and communicate to others about "where we live."



BRAND ASSESSMENT

To leverage the City's brand as part of an integrated arts initiative (see below), this planning process included a review of Clive's branded elements, such as:

- Trail signage
- Website and monthly newsletters
- Clive Festival logo and website
- Parks and Recreation programming guide, Clive Creations

The assessment shows strength in the overall brand. Carried across most of the communication pieces, the logo is the most dominating feature. The colors, the serif and script fonts and the graphic – all set the tone for how the City of Clive is perceived, therefore how the Greenbelt will also be perceived.

The main color choice, green, is a visual cue to the Greenbelt, helping create a semantic memory by connecting the color to the name, making the Greenbelt memorable. In addition, the psychological message of the color relates to nature, fresh beginnings and new life. A city that is continuing to evolve, grow and nurture its Greenbelt should be proud of this symbolic messaging.

While a serif font creates a feeling of formality, the one chosen is not stodgy or too prestigious. It speaks to the beauty of the Greenbelt and that it is cared for. This style of typography and the fluidity of space allowed between letters suggest that visitors will find the Greenbelt easy to navigate. Paired with the script used in "Distinct by Nature," the feeling of movement is once again portrayed as is fun and friendliness.

The graphic chosen to represent the City of Clive speaks to the importance of nature and movement. This park-like image edged by a pathway creating motion is telling a story about Clive's future. By driving this motion to the right nothing less than forward momentum should be expected.

The color, typography and graphics all help communicate a place that an individual, a couple or a family will enjoy living in or visiting. However, the publication Clive Creations and the logo's appearance are not always wholly in sync. The look and fonts established by the logo and supported by the newsletters are not carried through in all publications, changing the image that is conveyed and weakening the overall message. In addition, the logo has been altered in the trail signage from its appearance in the newsletters. Logo reinforcement will help the brand remain strong.





Existing Conditions



Ice Spiral (Tree-Soul) Artist Andy Goldsworthy



The Cairns, Des Moines Art Center Artist Andy Goldsworthy

“How can a community develop a conscious, symbolic and effective expression of its own values, meaning, and aspirations (that is, culture) without having developed its own creative capacities (that is, Art)?

John Hawkes,
4th Pillar of Sustainability.

Since that 2007 strategic initiative, Clive’s “Distinct by Nature” brand has been enhanced through the City’s commitment to public art in association with the Greenbelt. A selection committee annually secures works to display seasonally along the trail. In 2016, the Greenbelt showcased nine pieces at highly visible sites along the Greenbelt with support from the City and a Cultural Enrichment grant from Bravo of Greater Des Moines. This program serves as a leader for Central Iowa. Other communities certainly invest in public art, but currently, Clive’s program is the most focused effort to connect public art stops along the full length of a community trail.

Sustainability and Integrating Public Art

One of the latest developments in the critical dialogue of public art is the relationship between art and sustainability. John Hawkes speaks to this connection.

He describes a growing awareness that the cultural vitality of a community links directly to the health of where we live. This is fundamental to the concept of place-making today. The original charter for Clive’s Public Art Advisory Commission makes an important statement about recognizing Clive for its “environmental stewardship.” The role of public art within the Greenbelt is one of the most important ways to make this connection and interpret the relationship between art and nature for the public.

Expanding the Role of Public Art

The Greenbelt exists because of “water,” the natural geological movement of water that cuts through the community. It is the “life-source,” a thread that frames the natural world within a very busy and developing built environment of residences and businesses, connected with a still growing transportation

“If you love Art, or if you aspire to the Arts, you loved nature first.”

– Elbert Hubbard, poet-laureate of the Roycrofters American Arts and Crafts Movement



Crystal Bridges Art Trail - Bentonville, Arkansas



Existing Conditions

infrastructure. The Public Art Advisory Commission currently places “Art Along the Trail” to encourage and engage users of the Greenbelt. These pieces however, are not necessarily connected to the Greenbelt in concept, in “Story,” in theme or material. In other words, they are separate, distinct pieces of sculpture that do not necessarily relate to nature, conservation, or stewardship, ideas that are emerging from within the Clive Greenbelt Masterplan. The chance for the Clive Public Art Advisory Commission to expand the role of public art within the Greenbelt represents a significant emerging opportunity.

Public Art as Practice and Process

The phrase “Public Art” means many different things to many different people. As soon as the genre was “labeled” or

categorized, the connotation had already changed. Instead of an object of artwork placed in the public realm, the term now denotes a “Process,” that must involve the public in a context sensitive way.

Yet another development in the most current contemporary discourse about Public Art concerns a new genre entirely, namely “Social Practice” methodologies. In these public artist “interventions,” community activities and programming take the place of an “object” installation. Rather than a sculpture being arbitrarily “placed” in a given location, a selected artist, often through a broader community organization initiative, develops a program about an aspect of art, community history or ecology that takes place at a specific location. This might be in conjunction with a school. The Clive Greenbelt represents an ideal catalyst for

these experiences to occur. Residents and visitors alike will begin to think of the Greenbelt trail in new and exciting ways.

Again, this represents being open to expanding upon new perspectives for the true “integration” of public art. Public Art will become part of the “experience” of the Greenbelt. It may be new expressions through multi-disciplinary design, working with engineers to mitigate the banks. It may be performances about water that lead to a greater awareness of water-quality. Public Art may include planting of the landscape, sound, stories, temporary installations, found materials, the pavement itself, signage and wayfinding—but in each case, the experience needs to more clearly relate to the unique Clive Greenbelt connection to nature. In developing this new direction in relationship to the Clive Greenbelt

The best pieces of public art are not imposed on a site, but instead grow from history, character, research, dialogue, indigenous use of materials, etc., in response to the site-specific location itself.



Starry Night Trail Eindhoven, Netherlands Artist Daan Roosegaarde

Recommendations



Storm King Artist Mark di Suvero



Sean Yoro, known as Hula, PU'UWAI



Bay Area Bridge Trail: Footpath 2009 Artist Lyle Gomes

themes, Public Art will become a dynamic and identifiable signature element for the City of Clive. There are many other community Public Art Commissions around Clive that attempt to do similar things, however, none of them has the Clive Greenbelt. To connect art to this incredible experience is to do something truly unique and “Only” in Clive.

Integrate Public Art, a Greenbelt Water Story and the Distinct by Nature Brand

In a meeting with the Clive Public Art Commission, the “Greenbelt Water Story” was highlighted as the most significant opportunity to integrate Public Art and connect to the “Distinct by Nature Brand.” The Public Art Commission was excited by a series of strategic recommendations that would shift the focus of simply placing art along the trail, to a new understanding that makes the Greenbelt the experience of art in and of itself. In order to fully embrace the recommendations identified below, this plan encourages the Public Art Commission to update its public arts master plan (developed nearly a decade ago) to reflect ideas and themes identified in this document. The current public arts plan focuses on public art in the Greenbelt as a key component of Clive’s public arts vision.

In development of these recommendations, this plan first considers the Walnut Creek Watershed. Looking at this watershed from above, the creek’s footprint reflects an organic network – a circulatory system or the beginnings of a web. Pivoted to vertical, the creek system



Recommendations

stands as a symbolic tree, representing the Greenbelt's much beloved woodland vegetation. Using this element as one of the integrated public art features for the Greenbelt sparks an intuitive understanding of the continuous interactions between treescape and river corridor.

Calling out the way water moves through the Greenbelt corridor further reinforces this water story. This plan identifies five segments of the corridor, each similar in total area but with distinctive water features. This plan recommends using those features as the basis for naming and marking each of these five segments of the Greenbelt. Working from East to West, the recommended marks and names are charted to the right.

Since The Wilds area is currently largely undeveloped, it provides a real opportunity to pro-actively integrate art and The Wilds brand/pattern into anticipated upcoming development(s) in this Northwest section of Clive. We see city leadership and private developers jointly embracing all of the brands, but The Wilds branding can be adopted in advance of development. This allows for efficiently using The Wilds pattern and story in the branding, recreation and education features of community hubs, parks, kiosks, trail connectors, signage throughout and more.

In addition, the following list represents artistic "themes" for artwork integration based on the exploration and interpretation of water and the natural environment. The intent is to use this as a new framework for developing future Request for Qualifications and "Calls-to-Artists." Naturally, they cannot be implemented

all at one time, but instead, offer suggestions for a purposeful transition and model for Clive's Public Arts Commission.

Public Artists can be called to serve as part of multi-disciplinary design teams in the earliest conceptual development for project(s) related to the following:

- Bank stabilization and erosion control
- Temporal/ephemeral installations not intended as "permanent" installations
 - Sound
 - Found materials
 - Video/projection
- Site-specific nature photography
- Artist signage and wayfinding
- Sculptural/functional elements
 - Benches
 - Kiosks
 - Railings/grilles/grates
- Pavement pattern
- Pop-up galleries, "clearings of discovery" with artist mapping

Art as Educational Interventions

Art as Educational Interventions. Public Art and the schools come together here. There are many opportunities for the Clive Public Art Commission to work closely with public schools, county conservation boards, scouting groups, artists and others to develop collaborative educational programs that include hands-on learning activities based on "art and water." The Clive Greenbelt is the connection. Through strategic public art curriculum, building on the themes identified (see list below), Public Art affords the opportunity to greatly enhance resident and visitor understanding of water and its power. The Greenbelt becomes an outdoor classroom, a gallery, a laborato-

ry and a creative playground.

Strategic discussions throughout this planning process have spoken to the importance of creative approaches with an educational foundation. The public continues to struggle with a series of important water story messages, including:

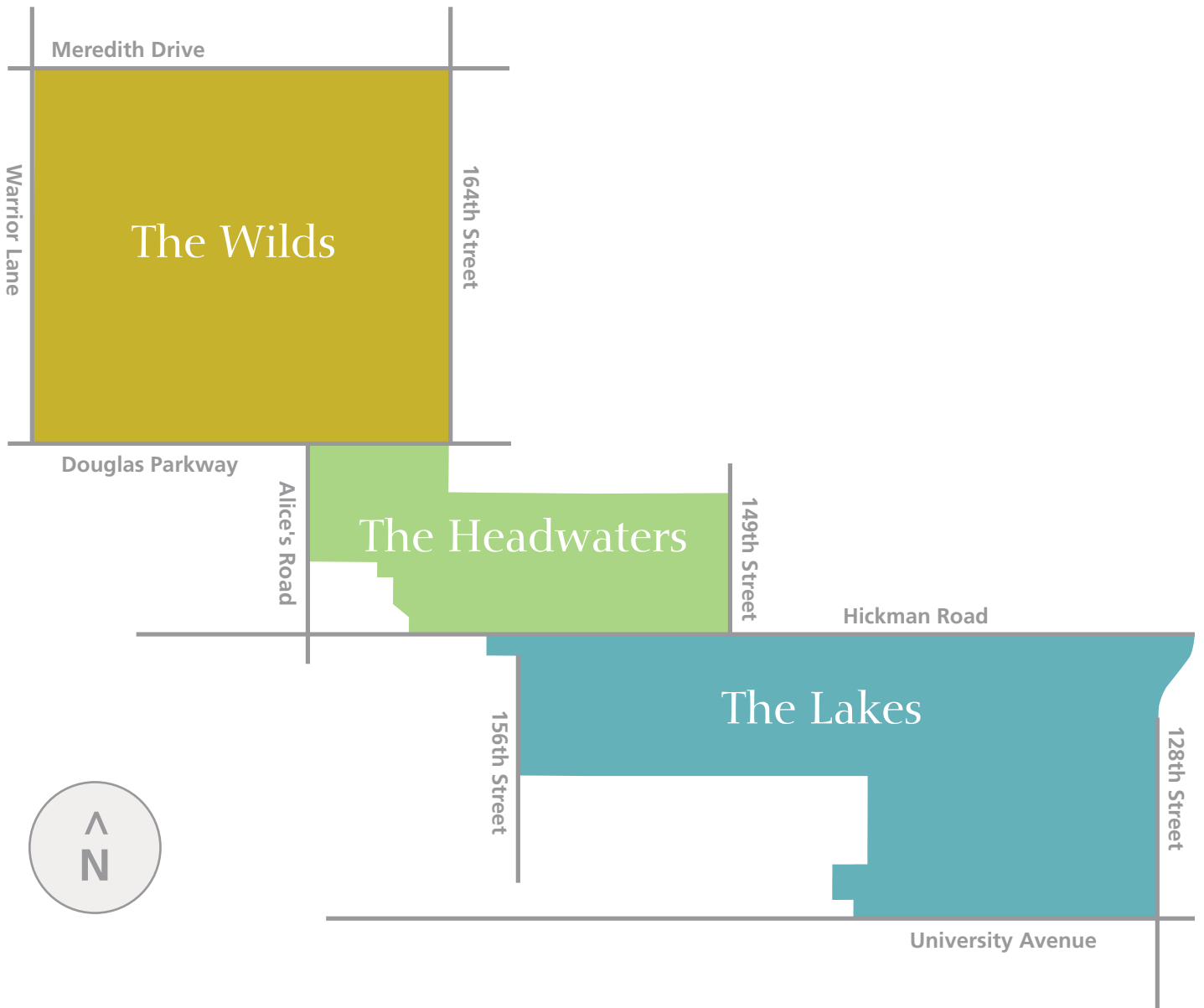
- The impact of land use changes on flooding and water quality
- The role the built environment plays (building in flood plains, the role of construction sites on sediment load and erosion, the impact of hard surfaces on run-off and flooding)
- The role urban and rural partners can play in improving water quality through effective stormwater management
- The value of urban streams and corridors for public health, human recreation and wildlife habitat
- How to maintain quality streams and habitats
- The role of watersheds and particularly the Walnut Creek Watershed's importance to Clive
- Clive's role as both downstream and upstream partner within the Walnut Creek Watershed

More key messages could easily be identified and incorporated into public art components but these provide some highlights and guidance for the Public Art Commission's consideration moving forward. While the relationship between Public Art and education (particularly when looking at "messaging") must be handled delicately, solid educational underpinnings for Clive's Public Art make sense considering the importance of the water story to the long-term vitality

Recommendations



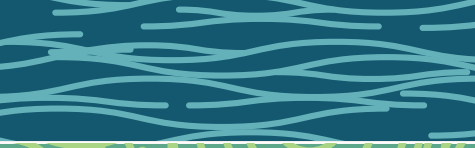


of the Greenbelt and the community of Clive.

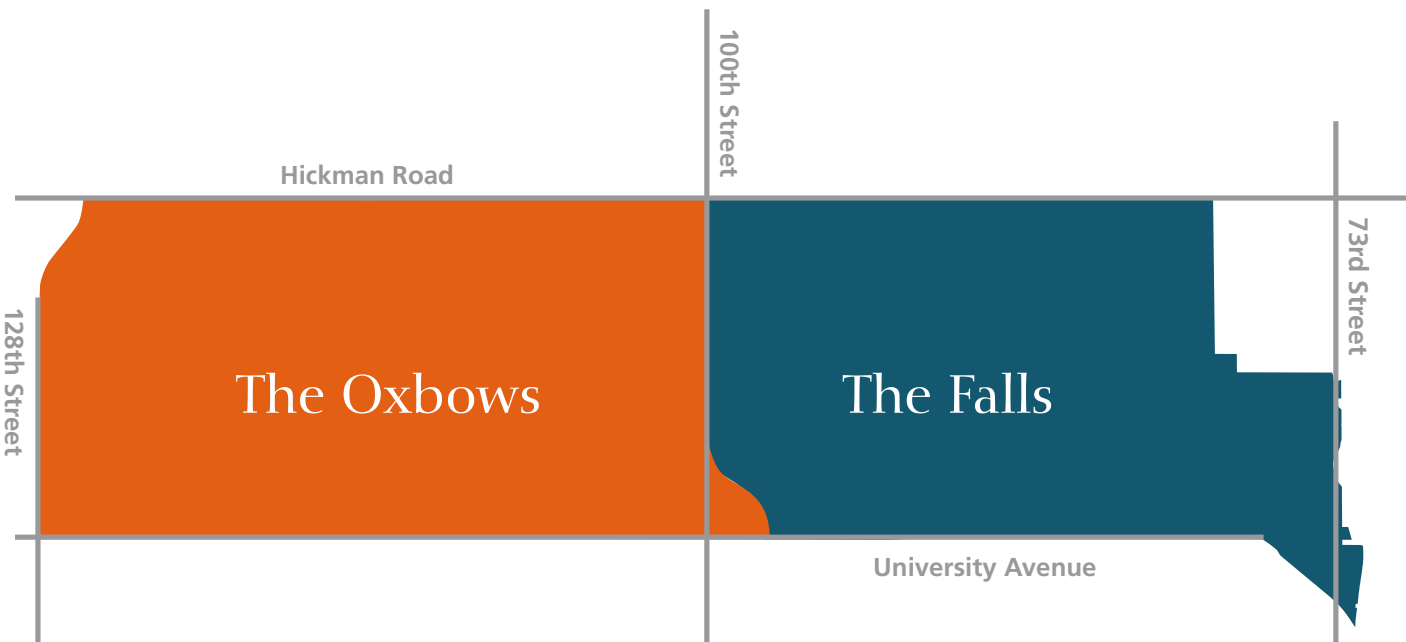
See Chapter 5 for more information on translating these Public Art features and branding-enhancement recommendations into design standards.





Recommendations

Mark	Name	Water Feature
	The Falls	A series of small knickpoints or falls earn this segment its name
	The Oxbows	Walnut Creek is a water body on the move, leaving behind curved stream segments, now separated from the main stream. You will find these in this segment
	The Lakes	A few smaller dams have been established in this segment creating a series of ponds (small lakes) that have served roles in both storm water management and recreation
	The Headwaters	The upstream end of the main stem of Walnut Creek can be found here – the very definition of “headwaters”
	The Wilds	This segment remains relatively untouched – allowing the Greenbelt to acquire a more genuine “wild” character than elsewhere in the system by protecting its natural systems prior to development



Since its initial establishment in the early 1970s the Greenbelt trail has served as a primary destination and connecting corridor within the City of Clive and the Central Iowa Trails Network. The trail and facilities network is located primarily within the floodway of Walnut Creek, winding its way through floodplain forest, prairie, and open meadows for over 11 miles.

Built Capital

Existing Conditions/Facilities

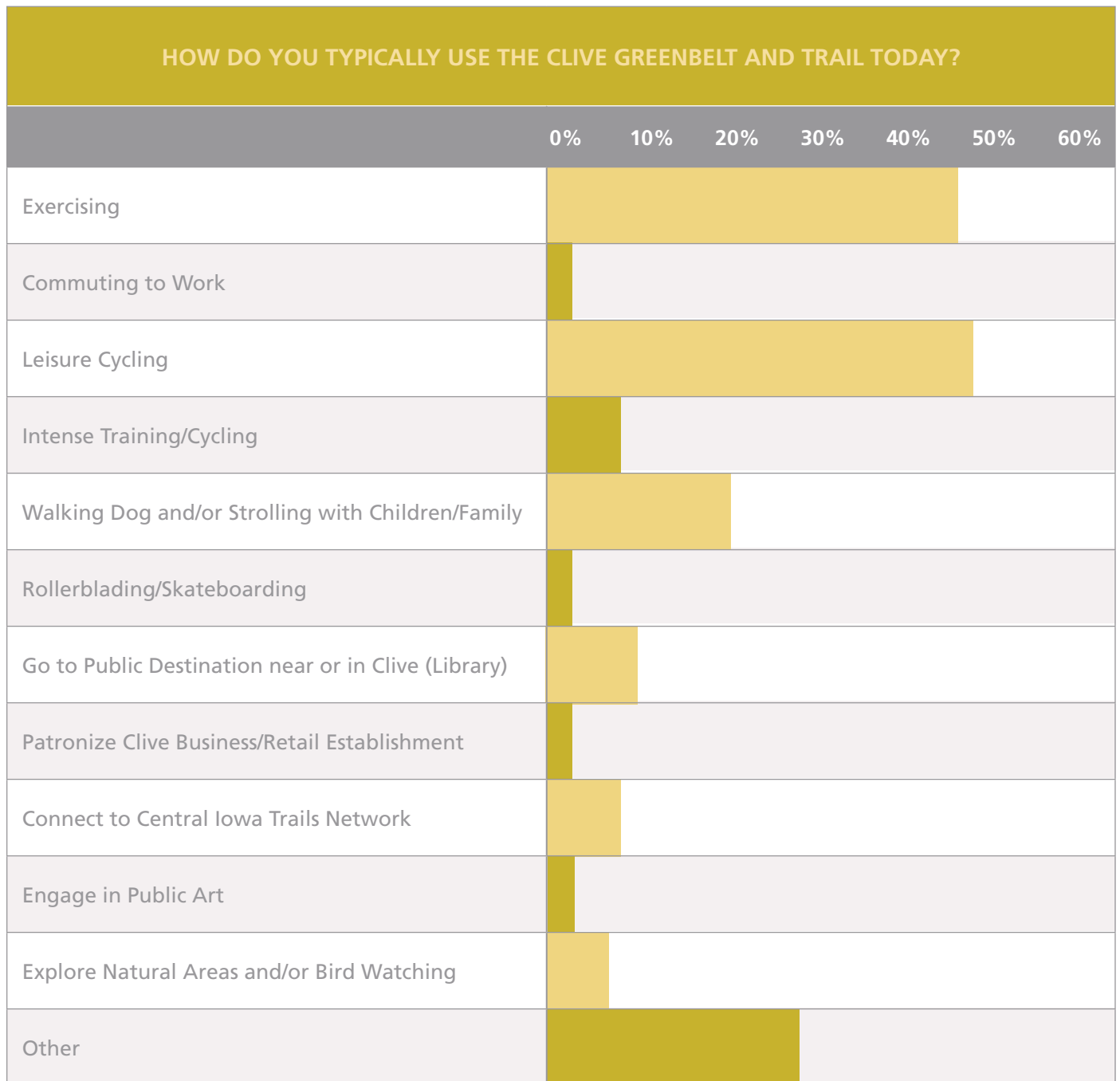
At key points, the trail connects to other city and regional trails, most notably the Raccoon River Valley Trail. The “built” capital focuses on the infrastructure within the Greenbelt constructed to serve a basic purpose within the Greenbelt system including trails, bridges, trailheads, shelters, benches, trash receptacles and signage. These improvements help users navigate, recreate and enjoy the Greenbelt Trail system.

The key built components consist of or relate to trails, bridges, shelters and supporting elements that permit users and citizens to safely navigate the trail system and use facilities as they are intended. Other infrastructure elements that support basic public services include significant stormwater, sanitary sewer trunk lines, water service and underground electric. This report completed an inventory of these systems but did not assess their condition. See The Appendix for more detailed information on this inventory.

When surveyed, about 9 of 10 Clive residents report that the Greenbelt trail is a high quality asset to the community. Furthermore, field intercept surveys report that most people see the Greenbelt’s primary role as a recreational amenity, for both leisure and exercise, underscoring the importance of having high quality built capital.

5

Built Capital



Did You Know?

Residents gave exceptionally high marks to the overall quality of the Clive Greenbelt Park, with about 9 in 10 residents awarding “excellent” or “good” ratings; no respondents felt that the quality was “poor.”

2009 Comprehensive Parks, Recreation and Open Space plan

In 2009, the City of Clive completed a comprehensive review of its current park offerings, facility condition and design guidelines. Of most relevance to the Greenbelt Master Plan is the review of the existing park facilities and trails network.

Several key themes from the 2009 park plan that have been underscored during the Greenbelt planning process include:

- Building on the City's Distinct by Nature Brand
- Developing additional trail connections
- Acquiring additional park lands for habitat preservation

- Developing facilities to meet the recreational needs of Clive Citizens
- Using the 2009 plan as a foundation for park programming, the current Greenbelt Master Plan focuses primarily on the Greenbelt network and those parks directly adjacent to the Greenbelt. The Greenbelt Master Plan folds in those recommendations to help fulfill the mission, vision and overall "Distinct by Nature" brand.

Note: See Appendix for a complete copy of the 2009 Comprehensive Parks, Recreation and Open Space Plan

One element the 2009 plan does not address pertains to the location of facilities. Within the Oxbows district, Porter shelter

is located within the floodway. This shelter sits at the end of Maddox Parkway and has been susceptible to recent floods. The shelter is currently near the end of its useful life and is in need of repair. As the greenbelt plan is implemented, relocating this shelter outside of the floodway will reduce maintenance and flooding impacts. With this in mind, no new shelters or habitable spaces are proposed within the floodway to minimize structures restrictions within the floodway and long term maintenance costs.

Existing Trail Reach, Connections and Condition

The geographic reach of the trail network primarily follows Walnut Creek, the



In 2015, significant rainfall within Walnut Creek Watershed caused flooding within the Greenbelt. Porter Shelter is located within the floodway and should be relocated as it is nearing the end of its design life.

South Fork (Country Club Lake) of Walnut Creek and Little Walnut Creek (in the Northwest portions of the community). The trail is about 11 miles in length, with some short connections to the adjacent neighborhoods and businesses. The majority of the trail is found in the backyard of most businesses and residential homes.

The condition of the Greenbelt Trail is relatively good and is primarily constructed of asphalt. Several sections of the trail have recently been resurfaced, with additional portions planned for reconstruction in 2017 (within The Oxbows). At the end of 2017, more than 90% of the Greenbelt spine’s pavement surface will be in good to new condition.

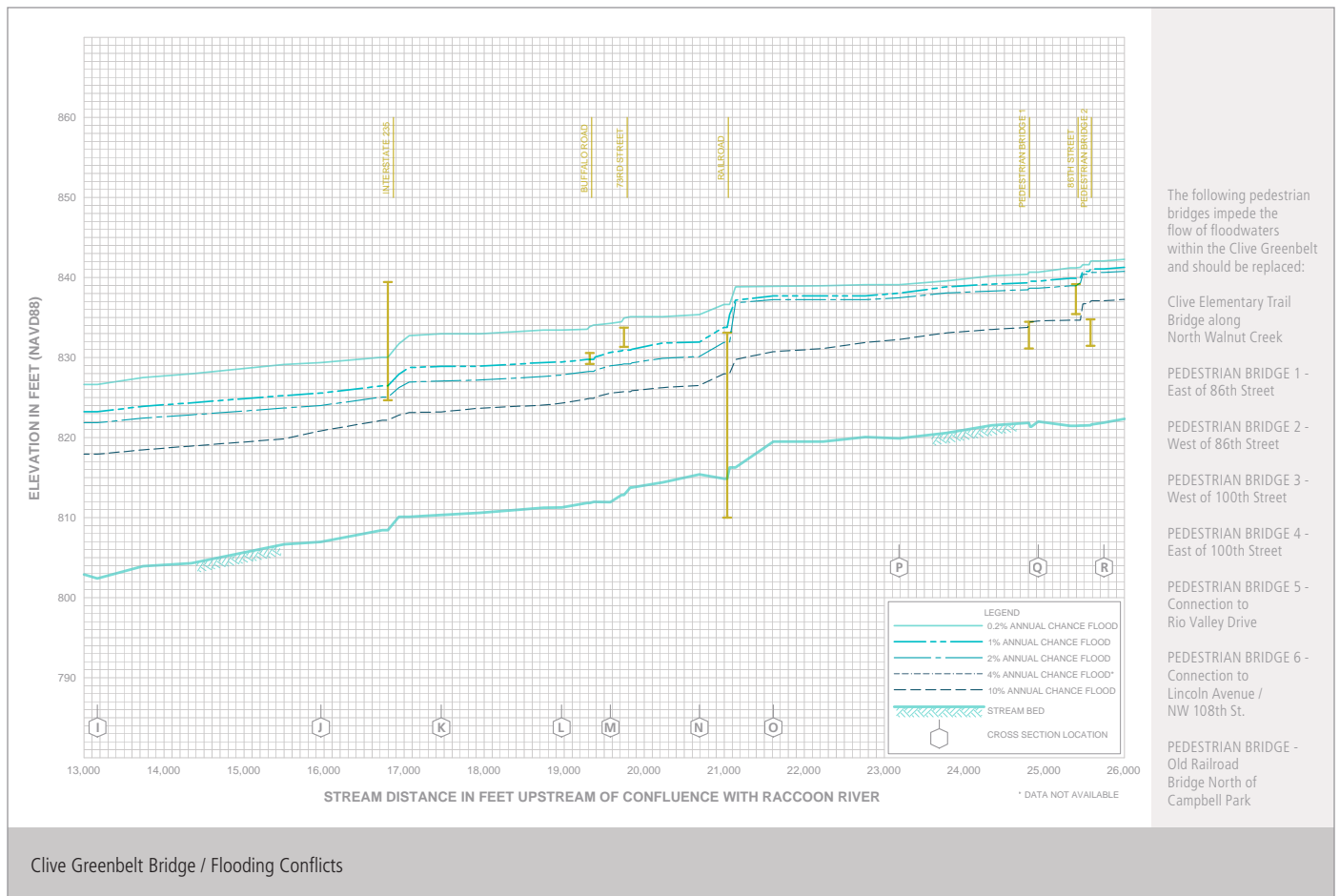
The greenbelt trail character can be defined as winding and picturesque with limited site lines – especially within The Falls, The Oxbows and The Lakes. The western portion of the trail system is located within prairie and open meadows as it winds its way along Little Walnut Creek. Recent improvements have focused on enhancing the overall site lines, removing sharp bends and relocating the trail so it is not directly adjacent to the stream. The improvements also include a center line, helping to keep users within their lane.

Finally, views from the greenbelt trail system to areas outside the greenbelt are limited. This presents a challenge for users to visually connect from the trail to

adjacent businesses, parks or rest areas. Enhancing site lines and physical trail connections to adjacent parks and business is a key strategy to help improve the experience, safety and accessibility of the trail system.

Bridge Assessment

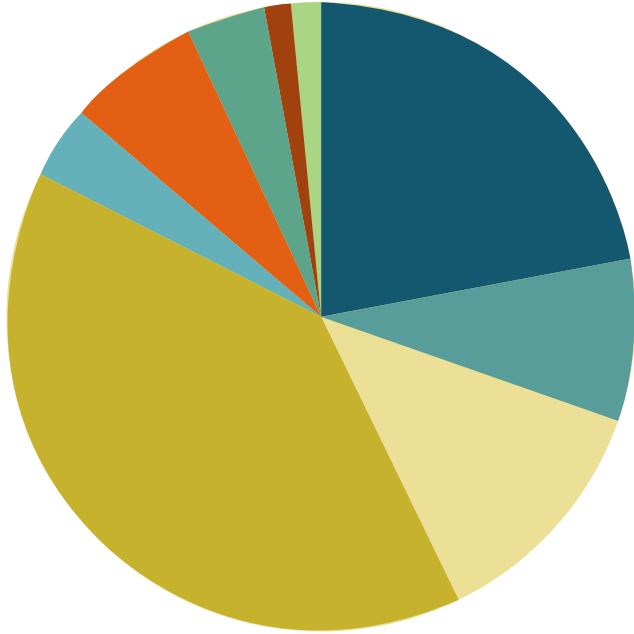
Throughout the Greenbelt, the trail system crosses Walnut Creek and its tributaries numerous times. In 2015, the City of Clive hired Shuck Britson Engineers to complete an inspection of the bicycle and pedestrian bridges within the Greenbelt. Generally speaking, most bridges are in good structural condition. The biggest challenge the City faces with the pedestrian bridges is their location and span within the floodway/floodplain.



Clive Greenbelt Bridge / Flooding Conflicts

Recommendations

FROM THIS LIST, WHICH IS THE MOST IMPORTANT FUNCTION THE CLIVE GREENBELT SHOULD OR COULD PROVIDE?*



	Connect the Central Iowa Trails Network
	Protect Water Quality
	Help Control Flooding
	Provide Recreation for People of All Ages and Abilities
	Promote Businesses and Economic Development
	Protect Habitat and Wildlife in Central Iowa
	Educate People about Water, Wildlife, and Habitat
	Connect People to the Arts, Culture and Heritage
	Other

*2015 — Clive Intercept Study Results

agency and can help supplement the funding needed to restore the impacted areas within the greenbelt. In addition, the State of Iowa (Iowa Finance Authority) currently has a forgivable loan program in place that can benefit natural areas – specifically stream bank stabilization.

Building on the Distinct by Nature brand, the mission and vision, the built infrastructure for the Clive Greenbelt Master Plan is intended to be both functional and unique. This chapter’s key recommendations are based on the concept of integrating the underlying theme of “water” into the built environment, previously discussed within the Cultural Capital section of this report. As such, the design guidelines have been created to help unify the appearance and support the brand of the Greenbelt, setting it apart from other Central Iowa Trail systems. *The following guidelines outline the key program elements used within the Greenbelt Master Plan concept.*

Trails

A primary goal of this plan is to improve the overall access to the trail network for Clive residents and businesses while also connecting with adjacent trail networks. During trail intercept surveys, the most important function of the greenbelt was defined as connecting to the Central Iowa Trails Network and providing recreation for people of all ages and abilities. With this in mind, the master plan identifies additional trail, widened sidewalks, soft trails, bike lanes and sharrows to help accomplish this goal.

Due to the linear nature of the city’s geographic footprint, current key trail heads

Recommendations

occur approximately every two miles – some of which occur at neighborhood or regional parks. The master plan expands this and identifies a trail head at approximately every mile – or two per district, ensuring equal access from all neighborhoods to the trail system.

In addition to the trail and trail heads, the greenbelt plan also identifies alternative routes for commuter cyclists or higher speed riders that runs parallel to the greenbelt system. Rather than develop a wider trail system, the plan calls for shared roadways and bike lanes to help relieve trail congestion, improve trail user safety and assist those riders whose primary goal is to move through the Greenbelt.

Note: Since the master plan is a 25 year vision, completing the build out will take place

over time – thus the commuter route will not be available in the short term. To verify trail capacity, safety and use, trail counters should be installed and monitored regularly. This data will also assist in determining the need of the on street bicycle routes.

Trail Design Guidelines

These guidelines are intended to guide the implementation of the basic amenities used within the greenbelt that will help unify the trail system, provide continuity and enhance the overall greenbelt experience.

The trail alignment is shown within the overall master plan, but should consider the following items:

- Maintain an access easement between private properties of at least 24' to accommodate the trail, appropriate

clearances and vegetative screening.

- The trail should be generally set back from the stream by at least 60' with the horizontal distance based on a 6:1 ratio of bank height to trail setback to accommodate stream movement and future stream stabilization.
- The trail widths are identified at 10' for the greenbelt spine; as trail use rises, consideration should be given to implementing a 12' wide trail in heavily used segments.

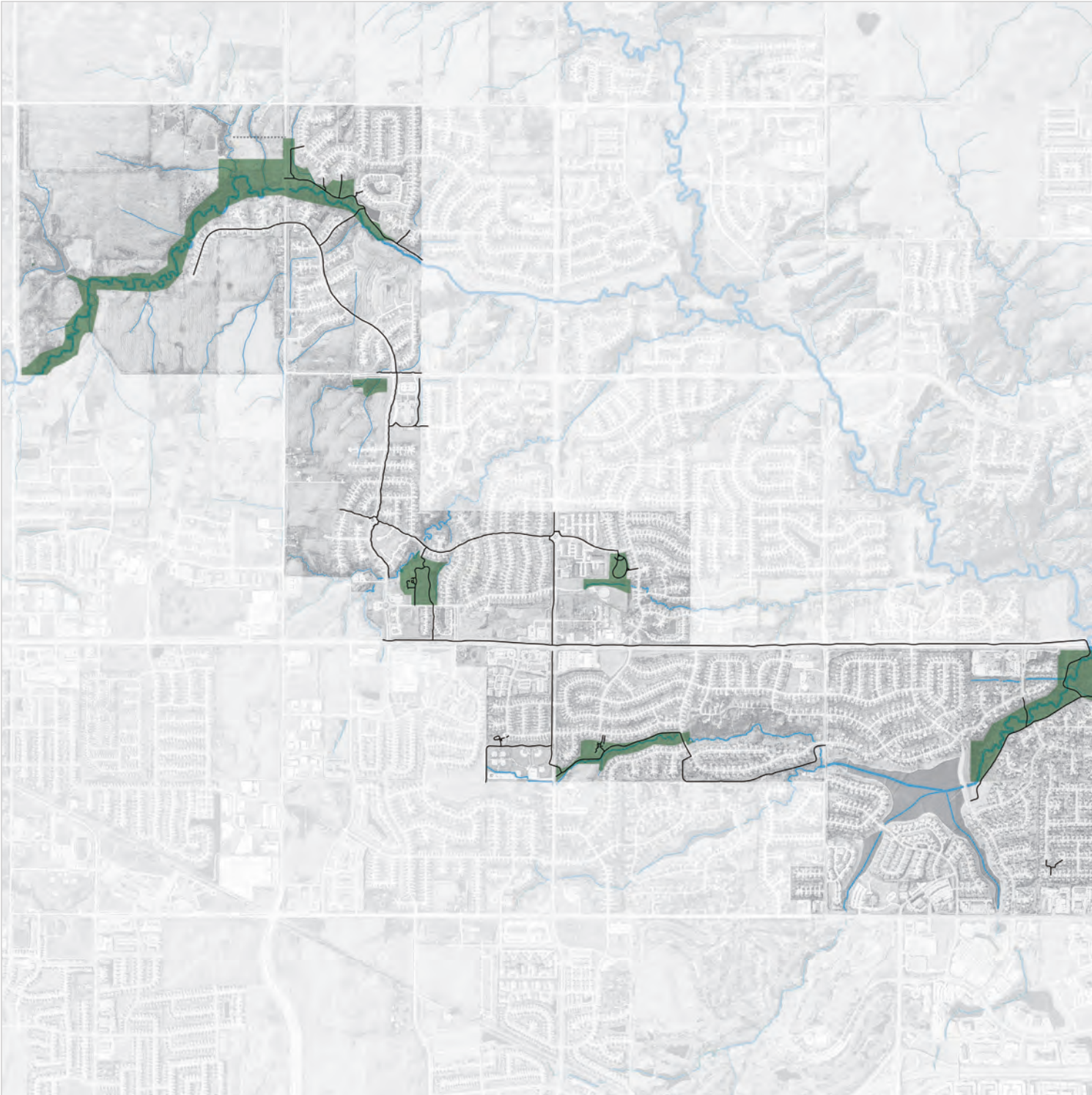
Finally, the trail itself should be viewed as a linear canvas for art integration, gallery walks or lighting. Consideration of integral pavement coloring, reflective surfaces or recycled glass aggregates (or other methods) should be considered as trails are installed.



INNOVATION IN TRAIL SHARING

In Iowa, most trails work with pedestrians and cyclists in the same line of travel. Cyclists call an “on your left” as they approach pedestrians from behind. In other countries, new approaches to sharing trails are emerging. When a path has enough width (including shoulder), the trail can be painted to reflect a bike-side for two-way bike traffic and a pedestrian side for walkers heading both east and west. The Clive Greenbelt could experiment with this potentially safer way for cyclists and pedestrians to share trails.

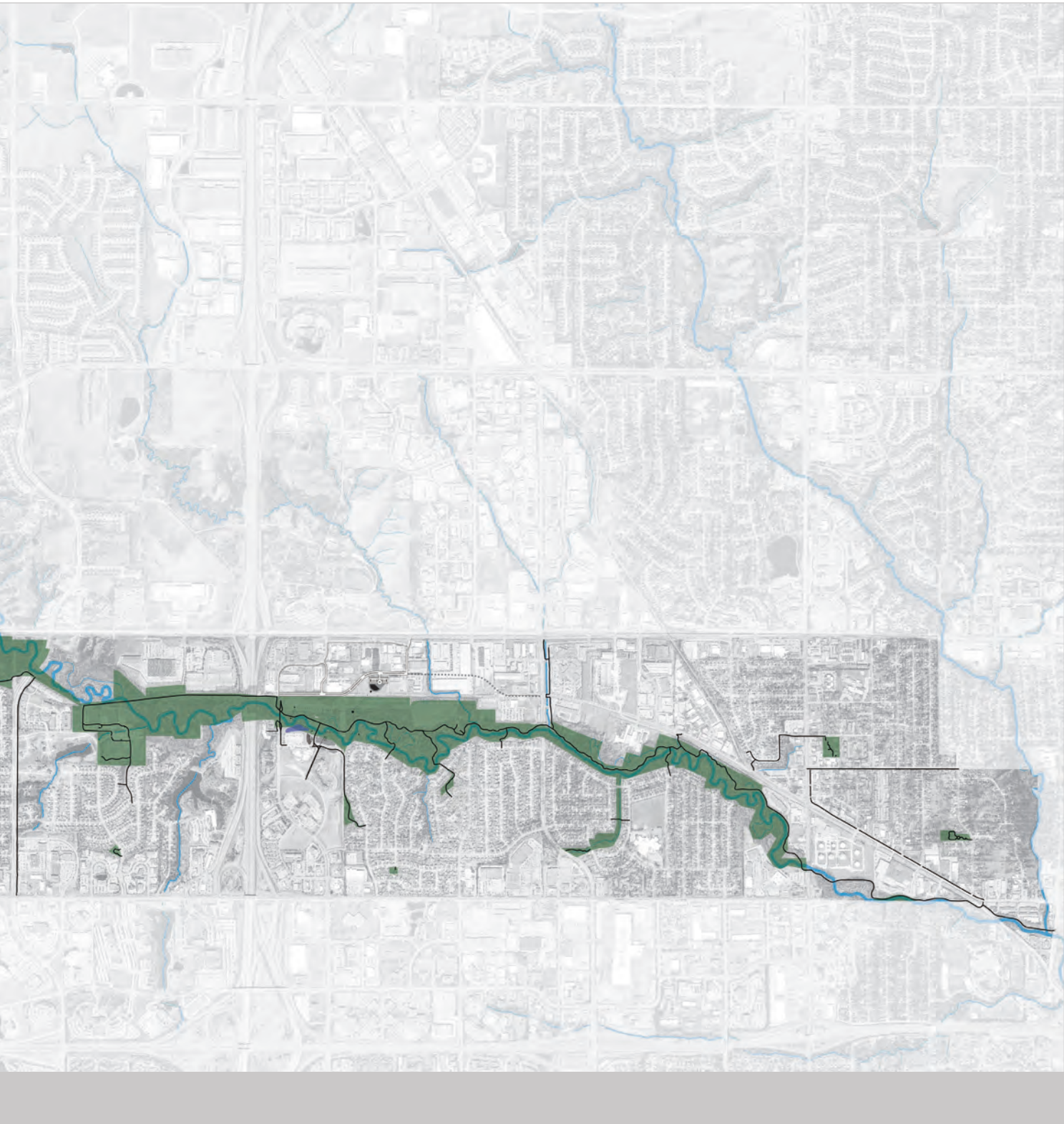
Recommendations



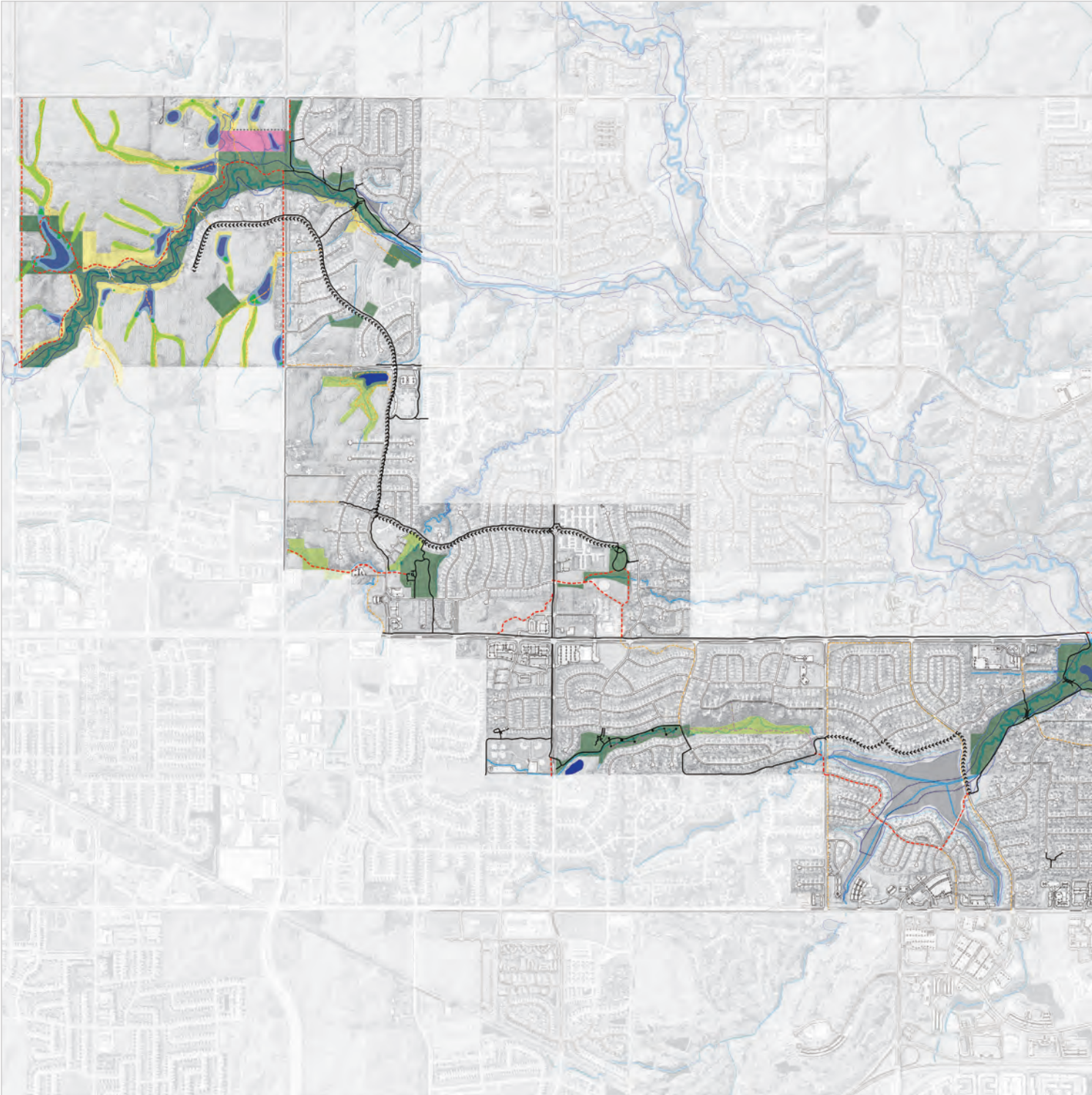
Existing Trail Network



Recommendations



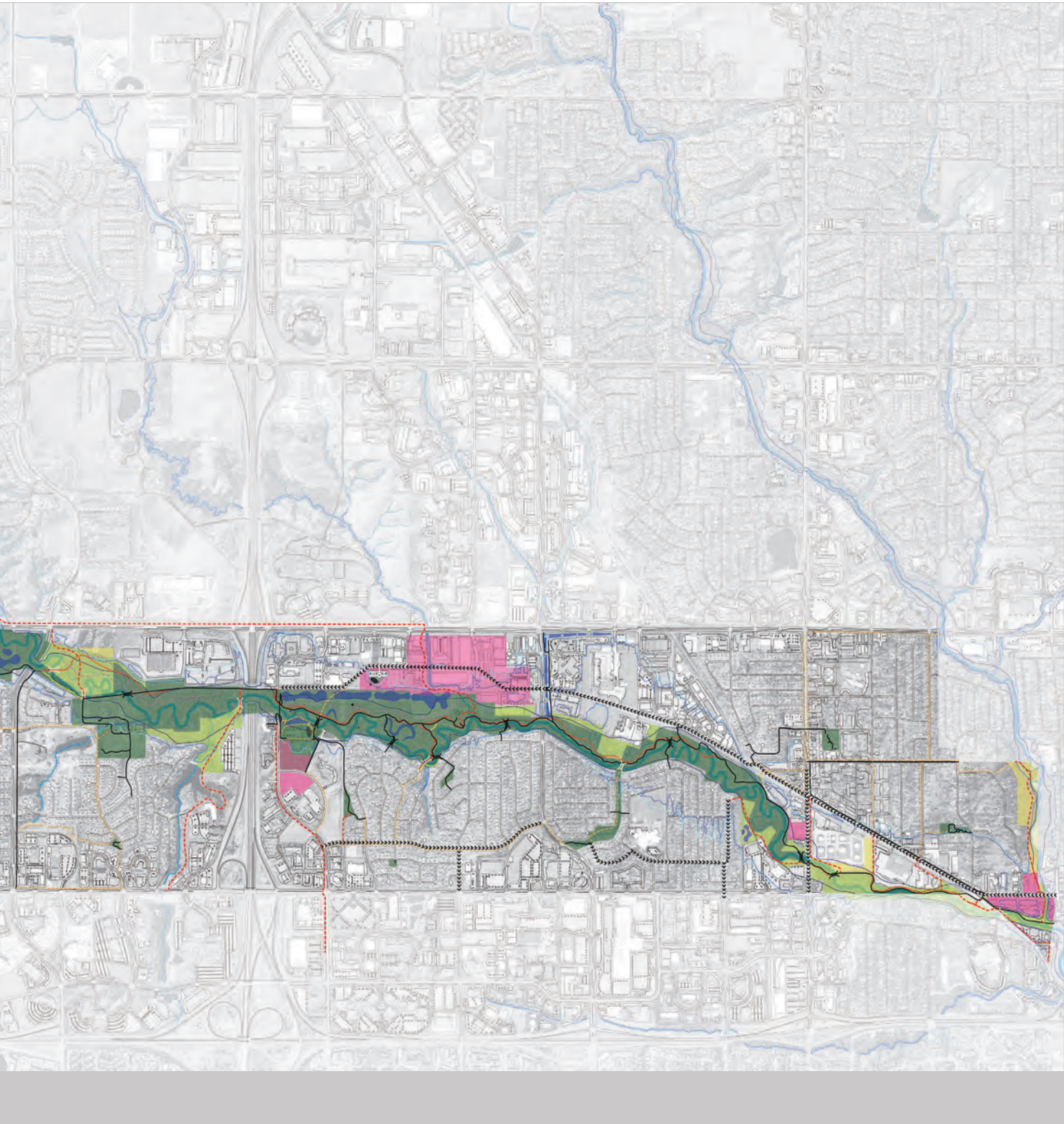
Recommendations



Proposed Trail Network



Recommendations



Design Guidelines

Greenbelt Trail



PURPOSE:

Primary Greenbelt Trail

- Scenic, paved connection for walkers, leisure cyclists, active cyclists, rollerbladers, etc

SURFACE:

- 10' wide paved trail with center stripe

SURFACE MATERIALS:

- 5" Asphalt pavement on 6" base course
- 6" Concrete pavement on prepared subgrade

SHOULDER:

- 3' wide graded area, 6" aggregate

HORIZONTAL CLEARANCE:

- 5' wide clear zone on each side of the trail
- 60' from stream (6' for every 1' of vertical bank)

VERTICAL CLEARANCE:

- 10' (free of signage, tree branches, etc)

ACCESSIBLE ROUTE:

- ADA Compliant

SNOW REMOVAL

- Yes, as needed

TRAIL MAINTENANCE

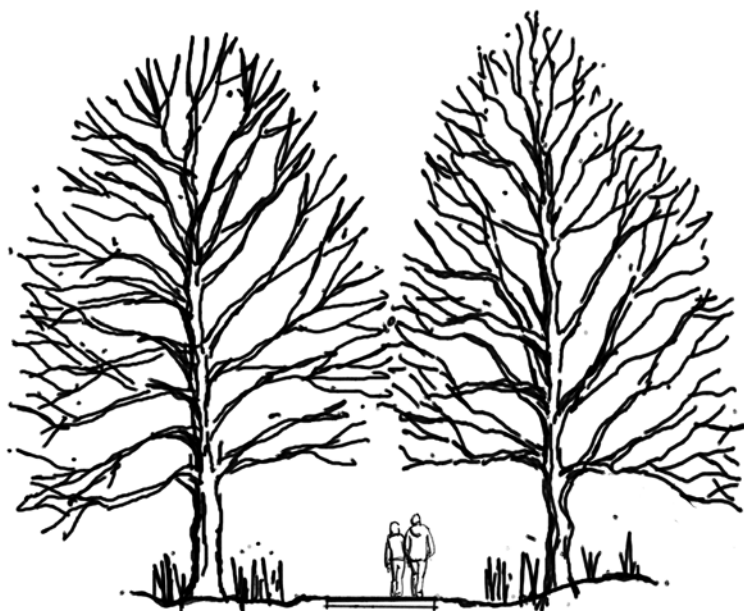
- Mowing: maintain horizontal and vertical clearances, trash pick up and spot spray four times per year

TECHNICAL REFERENCE:

- http://www.iowasudas.org/manuals/design/archived-design/pdf/2012_Edition/Chapter_08-2012.pdf

Design Guidelines

Greenbelt Fingers



PURPOSE:

Secondary Greenbelt Trail

- Connect neighborhoods/businesses to the Greenbelt.
- Can serve as a widened sidewalk / shared sidepath

SURFACE:

- 8' or 10' wide paved trail with center stripe.

SURFACE MATERIALS:

- 5" Asphalt pavement on 6" base course or
- 5" Concrete pavement on prepared subgrade

SHOULDER:

- 2' wide graded area, 6" aggregate

HORIZONTAL CLEARANCE:

- 3' wide clear zone on each side of the trail.
- 60' from stream (6' for every 1' of vertical bank)

VERTICAL CLEARANCE:

- 10' (free of signage, tree branches, etc)

ACCESSIBLE ROUTE

- ADA Compliant

SNOW REMOVAL:

- Yes, as needed

TRAIL MAINTENANCE

- Mowing: maintain horizontal and vertical clearances, trash pick up and spot spray four times per year

TECHNICAL REFERENCE:

- http://www.iowasudas.org/manuals/design/archived-design/pdf/2012_Edition/Chapter_08-2012.pdf

Design Guidelines

Soft Trails

**PURPOSE:**

- Informal trail for hiking, nature observation, cross country skiing, etc

SURFACE:

- 4' mown path or gravel/crushed limestone surface

SURFACE MATERIALS:

- Turf grass
- Stabilized gravel

HORIZONTAL CLEARANCE:

- 2' to 4' wide clear zone on each side of the trail

VERTICAL CLEARANCE:

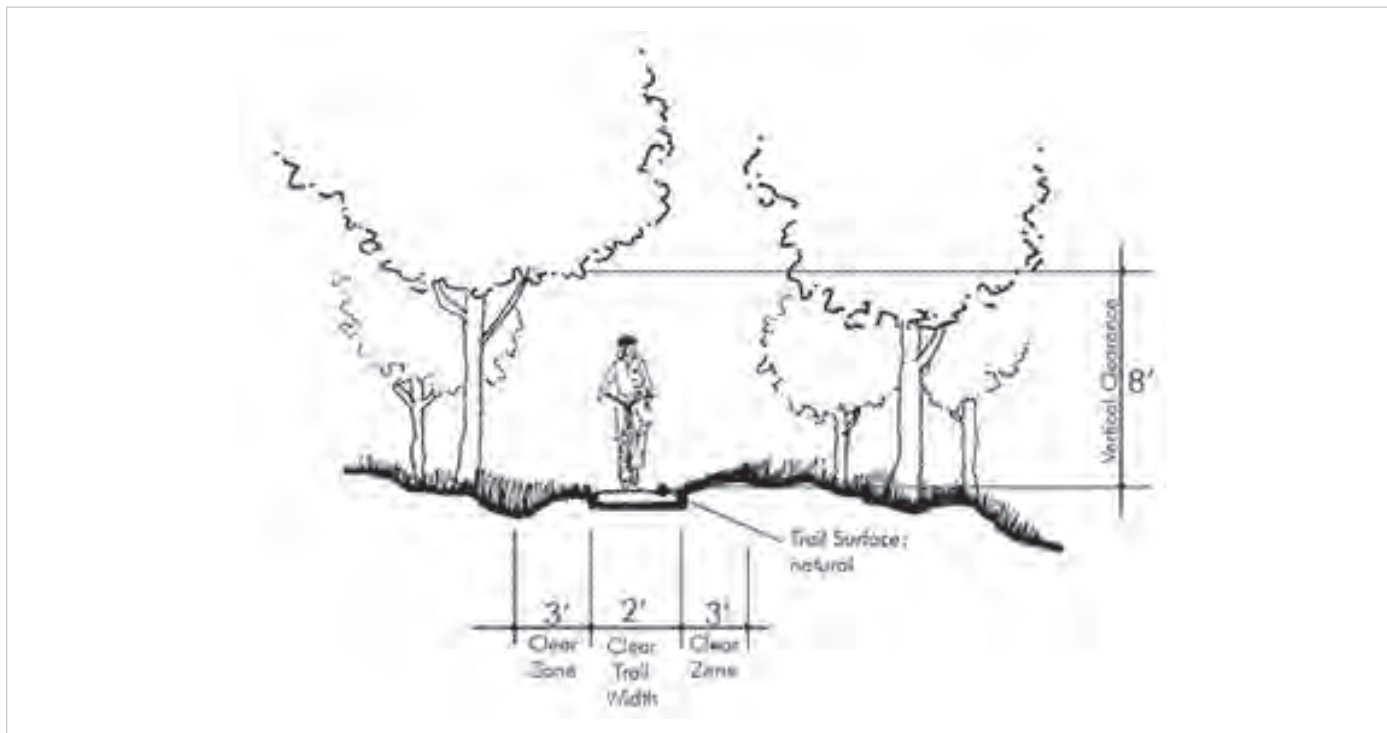
- 10' (free of signage, tree branches, etc)

ACCESSIBLE ROUTE:

- Not accessible

Design Guidelines

Mountain Bike Trails



PURPOSE:

- Single track trail for mountain biking

SURFACE:

- 18" to 4' in width

SURFACE MATERIALS:

- Compacted soil
- Stabilized gravel

HORIZONTAL CLEARANCE:

- 2'

VERTICAL CLEARANCE:

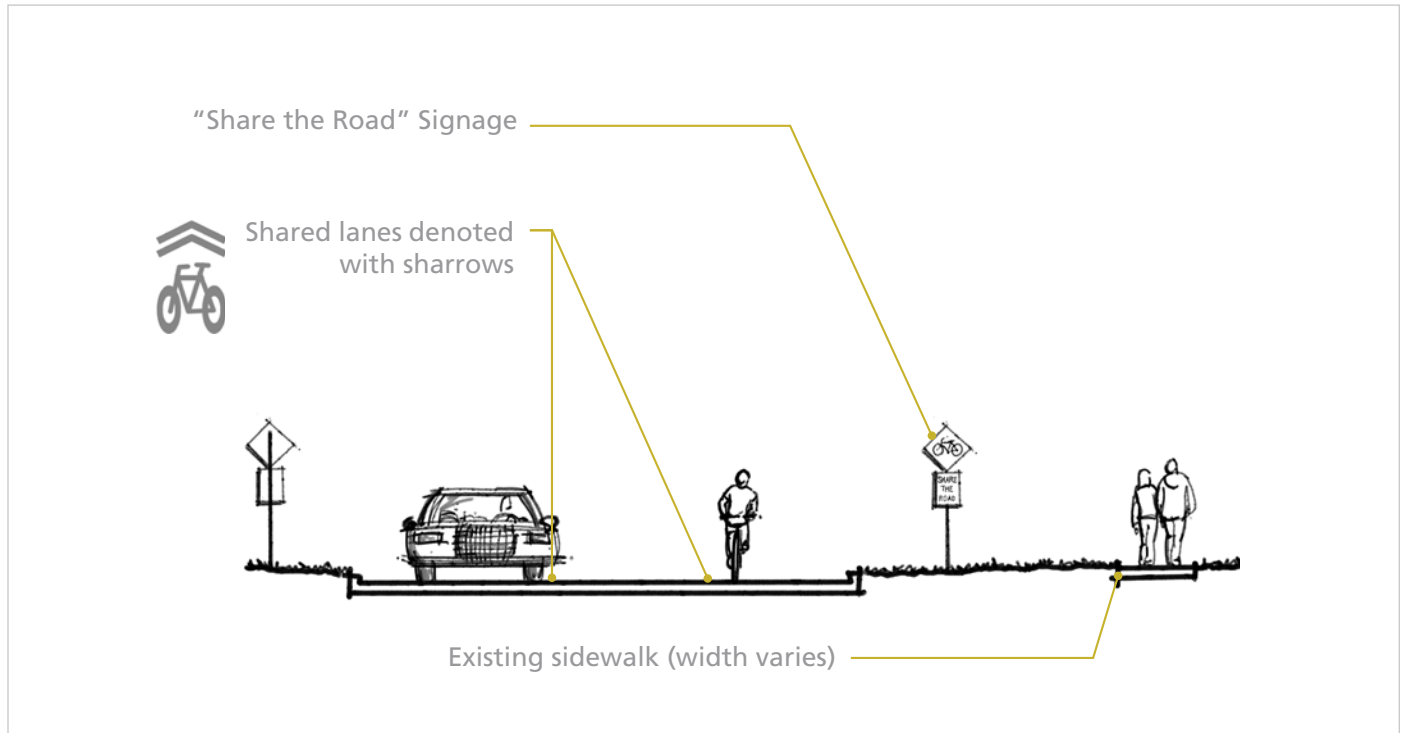
- 8'

ACCESSIBLE ROUTE

- No, trail slope to range from 0-12% in gradient

On Street Bicycle Routes

On Street Bicycle Routes - Shared Lane



PURPOSE:

- To identify low volume streets that are a designated bike route
- Sharrows indicate to motorists that a cyclist may take the lane at an existing street

HORIZONTAL CLEARANCE:

- Sharrows to be placed in the center of the travel lane as required by the Manual on Uniform Traffic Control Devices (MUTCD) and National Association of City Transportation Officials (NACTO) Design Guides

VERTICAL CLEARANCE:

- Provide bicycle route signage as required by MUTCD and NACTO Design Guides

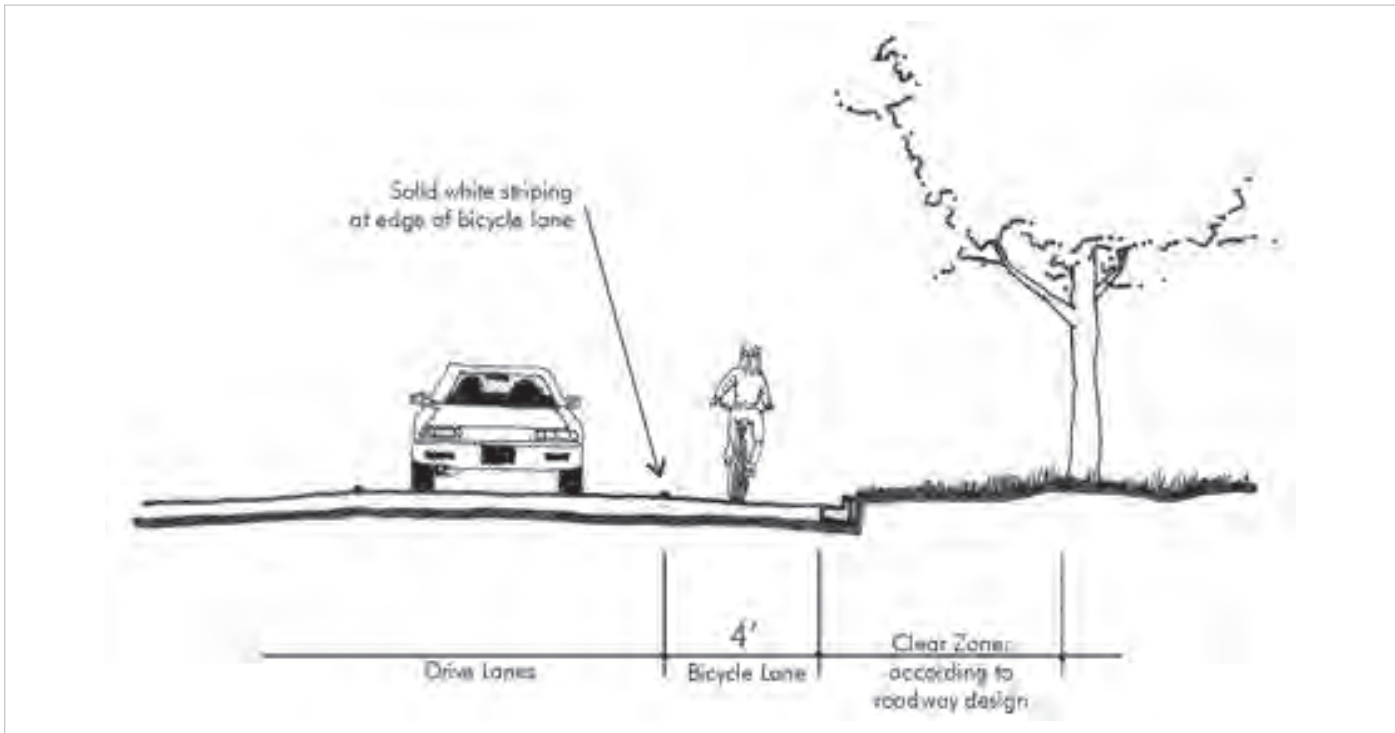
TECHNICAL REFERENCE:

<http://nacto.org/publication/urban-bikeway-design-guide/bikeway-signing-marking/shared-lane-markings/>



On Street Bicycle Routes

On Street Bicycle Routes - Bike Lanes



PURPOSE:

- To delineate a specific travel lane for cyclists on public streets

SURFACE:

- Concrete or asphalt

WIDTH:

- 6'-0"

PROTECTION:

- Provide protected bike lanes at street intersections; reflective lane striping and delineators should be used in all other locations

TECHNICAL REFERENCE:

<http://nacto.org/publication/urban-bikeway-design-guide/bikeway-signing-marking/shared-lane-markings/>

Design Guidelines

Trailheads



The Greenbelt Master Plan identifies a series of trailheads located throughout the master plan. These trailheads are generally spaced about a mile apart and primarily serve the Clive neighborhoods and often are paired with a small neighborhood park, with the exception of two locations. A new community trailhead and a parking lot is identified at the future regional park in The Wilds on the west end and a new stand-alone trailhead is identified along University Avenue near the intersection of 80th Street. The principle difference between the neighborhood and regional trail heads is parking lot size and supporting infrastructure.

SAFE CROSSINGS

Did You Know?

Traffic calming measures such as speed tables have been shown to reduce vehicle speed more than 20%.*

Trails that cross a primary thoroughfare should include traffic calming measures to help reduce the speed of vehicles, provide separation and help distinguish pedestrian travel corridors. Since each circumstance is unique, consideration should be given to the type of street, adjacent land use and location within the trail network.

*http://nacto.org/docs/usdg/impacts_of_traffic_calming_ewing.pdf



Design Guidelines

Neighborhood Trailheads



PURPOSE:

- Provide neighborhood access to the trails network.
- Reinforce the Greenbelt brand.

AMENITIES:

- Restroom / Shelter
- Unisex (2)
- 400 Square Feet of Covered Space
- Drinking Fountain
- Electrical hook up for food vendors
- Built-in seating

LIGHTING:

- 1.5 - 2 foot candle within parking lot
- LED Accent Lighting

KIOSK:

- Greenbelt map w/ special interest points
- Private businesses adjacent to the trail (paid advertisement)

MATERIALS:

- Weathered Steel, Stainless Steel

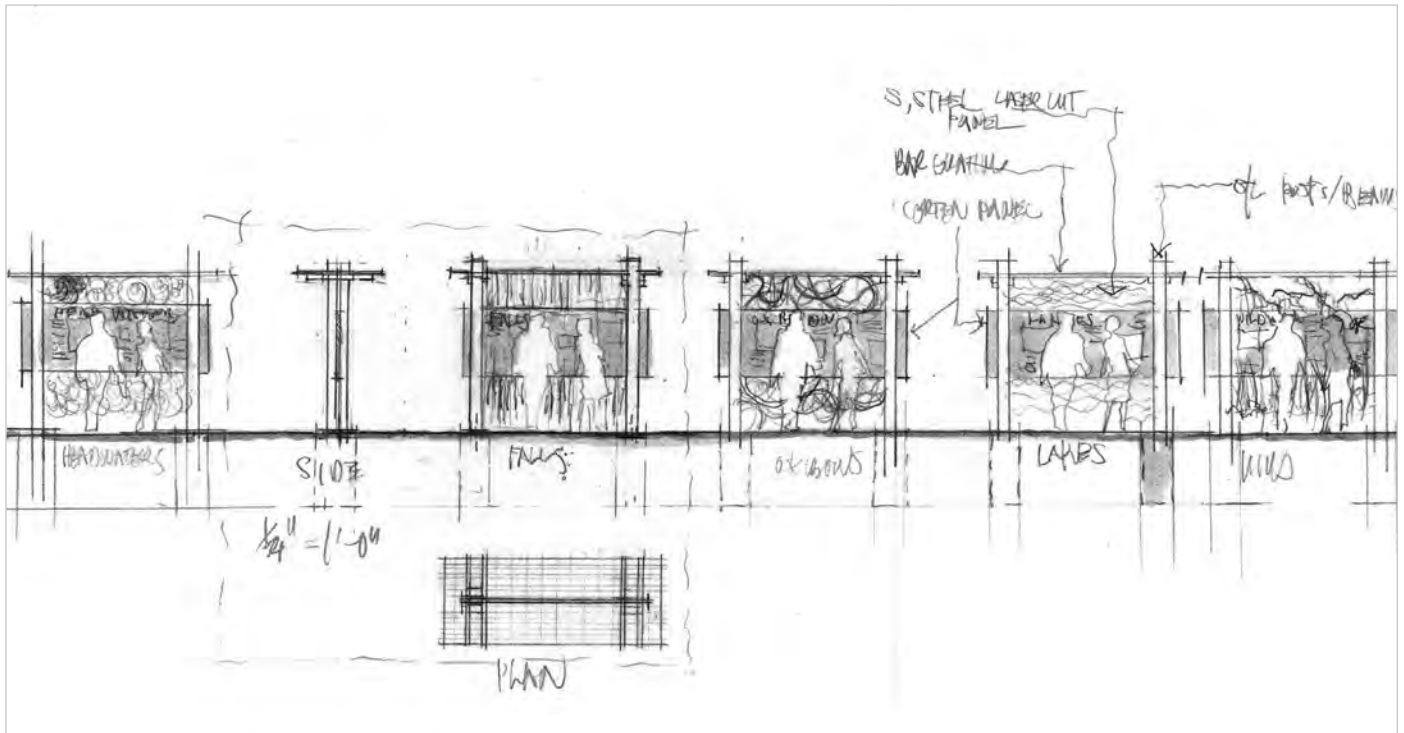
VERTICAL CLEARANCE:

- Space for 6 Vehicles Total
- 1 Van Accessible HC Parking Stall
- 1 HC Parking Stall

Note: If constraints do not permit off street parking, on street parking may be used to fulfill parking requirements.

Design Guidelines

Community Trailheads



PURPOSE:

- Provide community access to the trails network
- Reinforce the Greenbelt brand

AMENITIES:

- Restroom / Shelter
- Male/Female/Unisex
- 1200 square feet of covered space
- Drinking Fountains
- Electrical hook up for food vendors

LIGHTING

- 1.5 - 2 Foot Candle
- LED accent lighting

KIOSK

- Greenbelt map w/ special interest points
- Private businesses adjacent to the trail (paid advertisement)

MATERIALS:

- Weathered Steel, Stainless Steel

PARKING LOT

- Space for 24 Vehicles Total
- 1 Van Accessible HC Parking Stall
- 1 HC Parking Stall

Design Guidelines

Trail Marker



PURPOSE:

- Identify distance of primary Greenbelt trails
- Reinforce the Greenbelt brand
- Identify access points
- Identify the Greenbelt district

LARGE 12' TRAIL MARKER

- Identify the access point and place at the beginning of each district

MATERIALS

- Weathered steel, stainless steel

LIGHTING

- LED accent lighting

Design Guidelines

Trail Lighting



PURPOSE:

- Provide lighting where the primary trail intersects another trail, at trail heads and where trails intersect public streets

LIGHTING TYPE:

- LED

LOCATIONS:

- Where a primary greenbelt trails intersects another trail
- Where a greenbelt trail meets a roadway
- Where a greenbelt trail adjoins a trail head

POLE & FIXTURE COLOR:

- Black

Note: Lighting is site specific and should be studied in great detail following the illuminating Engineering Society Handbook.



Design Guidelines

Trash & Recycling



PURPOSE:

- Collect trash and recycling items
- Reinforce the Greenbelt brand

TRASH/RECYCLING:

- Covered receptacle

MATERIAL:

- Steel

COLOR:

- Powder coated green

MANUFACTURER:

- RJ Thomas Manufacturing, Cherokee, Iowa

MODEL:

- TRH/G-32PC24
- Pedastal Base: Model M3/G
- Green Dome Plastic Lid: Model CN-PD/N-27

Design Guidelines

Pet Waste Collection



PURPOSE:

- Collect pet waste
- Reinforce the Greenbelt brand

PET WASTE COLLECTION:

- Covered Receptacle

MATERIAL:

- Steel

COLOR:

- Powder coated green

MANUFACTURER:

- Zero Waste USA, San Diego, California

MODEL:

- Gladiator Dog Waste Station, Model JJB12A



Design Guidelines

Bench



PURPOSE:

- Serve as a resting point and destination
- Reinforce the Greenbelt brand

MATERIAL:

- Steel

COLOR:

- Powder coated green

MANUFACTURER:

- RJ Thomas Manufacturing, Cherokee, Iowa

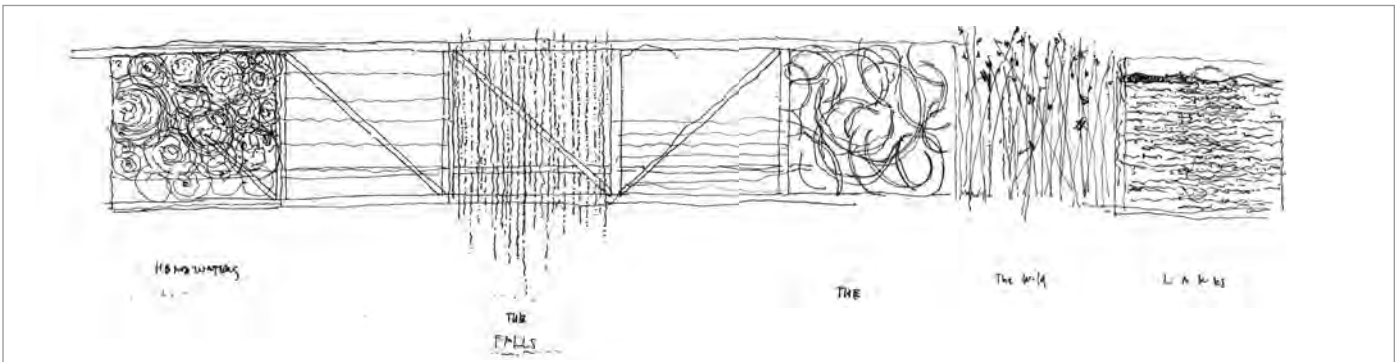
MODEL:

- Model B32C/CN-6PC34

Note: Benches shall be replaced when they exceed their useful life. Wholesale bench replacement is not recommended.

Design Guidelines

Trail Bridge



Building from the primary goals related to connectivity and trail expansion, a number of new pedestrian bridges will be needed to complete the trail network. In addition, there are multiple existing bridges within The Falls and The Oxbows that currently restrict the flow of Walnut Creek and serve as an obstruction within the floodway. This plan anticipates these bridges will be elevated and replaced or relocated to areas that do not cause a hindrance to the flood flow.

Bridges also present an opportunity to celebrate the Greenbelt's brand through integrated art, lighting and enhancements. As bridges are added or as trails are relocated, integrated art should be added at primary crossing points for Walnut Creek.

The locations discussed earlier identify an opportunity to celebrate the district and create a signature bridge at key connecting points.

PURPOSE:

- Span Walnut Creek and its tributaries providing direct access to neighborhoods, parks and adjacent commercial nodes
- Reinforce the Greenbelt brand

HORIZONTAL CLEARANCE:

- 10' wide for 8' wide trails
- 12' wide for 10' wide trails

SURFACE:

- Black locust hardwood decking

TRUSS / RAILING MATERIALS:

- Weathered steel

APPLIED / INTEGRATED ART:

- Stainless steel
- LED lighting

Design Guidelines

Wayfinding Signage Enhancements - Private Wayfinding



In 2015, the City of Clive implemented a comprehensive signage and wayfinding system to help users understand their location and adjacent public attractions. During Greenbelt planning meetings, many users indicated they would be willing to use the trail system to purchase goods and services, but many struggled with finding their way out of the Greenbelt to these key services. This plan recommends an enhancement to the trail system signage to include specific private destination wayfinding, completed in a tactful, consistent manner that helps build upon the Greenbelt brand.

PURPOSE:

- Direct users to private services/destinations within the Greenbelt
- Increase user spending and access to services
- Reinforce the Greenbelt brand

STYLE:

- Central Iowa Trails brand
- Add directional arrows and distance, along with business brand

Design Guidelines



Clive

Rules of the Trail

- 1) Pedestrians have the right of way at all times. Cyclists and in-line skaters must be aware of pedestrians.
- 2) All Greenbelt users should stay to the right, slow down and use caution under bridges and at blind corners where vision could be impaired.
- 3) Pedestrians should not walk more than two wide.
- 4) Wearing headphones or earbuds is not advised; if used, keep one ear available for listening at all times.
- 5) When approaching pedestrians from behind, slow down and call out "on your left" before you pass.
- 6) All non-paved sections are restricted to foot traffic only.
- 7) Dogs are allowed only if on a leash - leash not to exceed four (4) feet.
- 8) Dog owners are responsible for sanitary disposal of dog feces. Pet waste is a significant source of stream bacteria.
- 9) Bicyclists and in-line skaters shall not conduct serious training or maintain fast speeds; ride within your limits.
- 10) Don't harass or encroach upon the wildlife. Disturbing or collecting any vegetation or natural habitat along the Greenbelt is prohibited.
- 11) Stay only on designated trails.
- 12) Glass beverage containers are not permitted.
- 13) Pedestrians and cyclists should wear reflective clothing and use lights after sunset and before dawn.

A growing body of research indicates the built and natural environments play a role in determining a community's public health. Public health professionals across the country now promote "health in all policy," and "health in all planning." Common watchwords for community building have become: "Let's make the healthy choice the easy choice."

The Clive Greenbelt serves as an example of a significant natural space immersed in a built environment – making it a prime candidate for delivering valuable public health impacts — if public health is given serious consideration in its planning. This is no surprise to the stakeholders involved in the development of this plan. At the early strategic level, participants spoke to the Greenbelt as Clive’s “Social Center” and a mission of “enhancing [the Greenbelt’s] connections to active learning, healthy living, and the distinctive community that is Clive.”

Therefore, the City of Clive and the consulting team purposely collaborated with the Healthiest State Initiative at the outset of this plan to help ensure the trail, adjacent parks, habitat corridor, creek/stream, and the many amenities and built features of the Clive Greenbelt and Trail fulfill the Greenbelt’s promise as a primary path to public health for Clive residents and visitors.

In a 2010 literature review, Cornell University researchers “found that decisions about factors such as density of communities, presence and size of parks, land-use mix, height and size of residential structures, food store location, and how roads are laid out affect people’s physical health and psychological well-being.” They discovered nature nearby promoted better health. Just having a window to a natural area improved “cognitive functioning” and “recovery from surgery and illness.” Time in the outdoors reduces stress and “having nature close to a home protects the psychological well-being of children . . . [and] boosts their cognitive functioning.” Parks and trails promote physical activity and “in fact, older, urban residents who have places to walk and access to parks and tree-lined streets live longer.” The researchers indicate natural spaces can bring people closer together, “enhancing social connections.” The flip side of that scenario also bears out in the research with easy car access reducing activity and increasing rates of obesity. (Cornell University College of Human Ecology from the work of Wells, N.M., Evans, G.W and Yang, Y. (2010)).

With the Clive Greenbelt and Trail traversing through the whole of Clive, it affords the City a rare opportunity to promote public health. Free and accessible parks bridge across traditional boundaries to create a strong sense of community, promote both active lifestyles and personal reflection, and can enhance one’s ability to de-stress and focus. The recreation provided through a system like Clive’s Greenbelt corridor can be enjoyed by nearly any demographic/socio-economic group as well as a wide range of abilities and interests. The features of the Greenbelt addressed in this chapter can influence physical, emotional, social health and the cognitive function (thinking power) of Clive residents and visitors as shown in the public health benefits table on the following page.

Social/Human Capital

Existing Conditions

FEATURES OF THE CLIVE GREENBELT MASTER PLAN - POTENTIAL PUBLIC HEALTH BENEFITS

Feature	Physical	Emotional	Social	Cognitive
Trails	√	√	√	√
Parks/recreation facilities	√	√	√	√
Adventure features	√			
Outdoors-in-winter features	√		√	
Outdoor classrooms/ learning environments	√		√	√
Stream/water access	√	√	√	√
Reflecting/quiet spaces		√		√
Interaction with arts		√	√	√
Access to health foods	√			
Community gardens	√		√	
Gathering spaces			√	
Time in nature		√		

While not every box above is checked, a case could be made that nearly every one of these features (depending on its use at the moment) could address almost all of these four primary health needs.

This chapter explores what we currently know about public health in the nation, Iowa, Polk/Dallas counties and Clive. It addresses the existing conditions of the Greenbelt's features that promote public health and makes recommendations for enhancements that will likely produce the greatest health benefits. Finally, this chapter works to assess the benefits of these recommendations through both public health and economic lenses, to the extent currently possible.

Demographic/Health Overview

Despite the attention of the health profession, the media, and the public about the benefits of healthier diets and increased physical activity, the prevalence of obesity continues to rise in the United States. Obesity is second only to tobacco in the number of deaths it causes each year (Danaei, 2009). The root cause of obesity is simple, an energy imbalance caused by consuming too many calories while not getting enough physical activity. The U.S. Surgeon General suggests that both behavior and environment play a large part in causing people to be overweight, while simultaneously offering the greatest areas for prevention and treatment of the problem (U.S. Department of Health and Human Services, 2001).

The 2013 Community Health Needs Assessment (CHNA) for Polk and Dallas County revealed that the City of Clive

60% of adults
age 20 years or greater living in Clive, Iowa
are considered either overweight or obese

Existing Conditions

23%

of Clive adults self-report no leisure time for physical activity

is no exception. The CHNA showed that roughly two-thirds, or 60%, of adults age 20 years or greater living in Clive, Iowa are considered either overweight or obese; 23.12% of Clive adults self-report no leisure time for physical activity; and over 80% of Clive adults are consuming inadequate amounts of fruits and vegetables each day (CHNA, 2013).

In addition to personal behaviors affecting diet and physical activity, socioeco-

nomics status (SES) may also play a part in the likelihood of being overweight or obese. A recent study found that persons of higher SES tend to have a healthier diet than their counterparts who reside in areas of lower SES (McLaren, 2007). Review of the Clive census tracts revealed a large discrepancy between the median household incomes in eastern versus western Clive; \$40,565.00 and \$90,993.00 respectively (U.S. Census). It is also estimated that roughly 8% of

HOW DO WE DEFINE HEALTH?

Iowa's Healthiest State Initiative considers physical, social, emotional well-being and cognitive function when looking at public health.

Physical Well Being

Having a sense of vigor and vitality, feels very healthy and is full of energy. This is more than just the absence of disease, but includes lifestyle behavior choices to ensure health and avoid preventable disease and conditions.

Social Well Being

A personal feeling of involvement with other people and with their community and receive quality support from family, friends and others.

Emotional Well Being

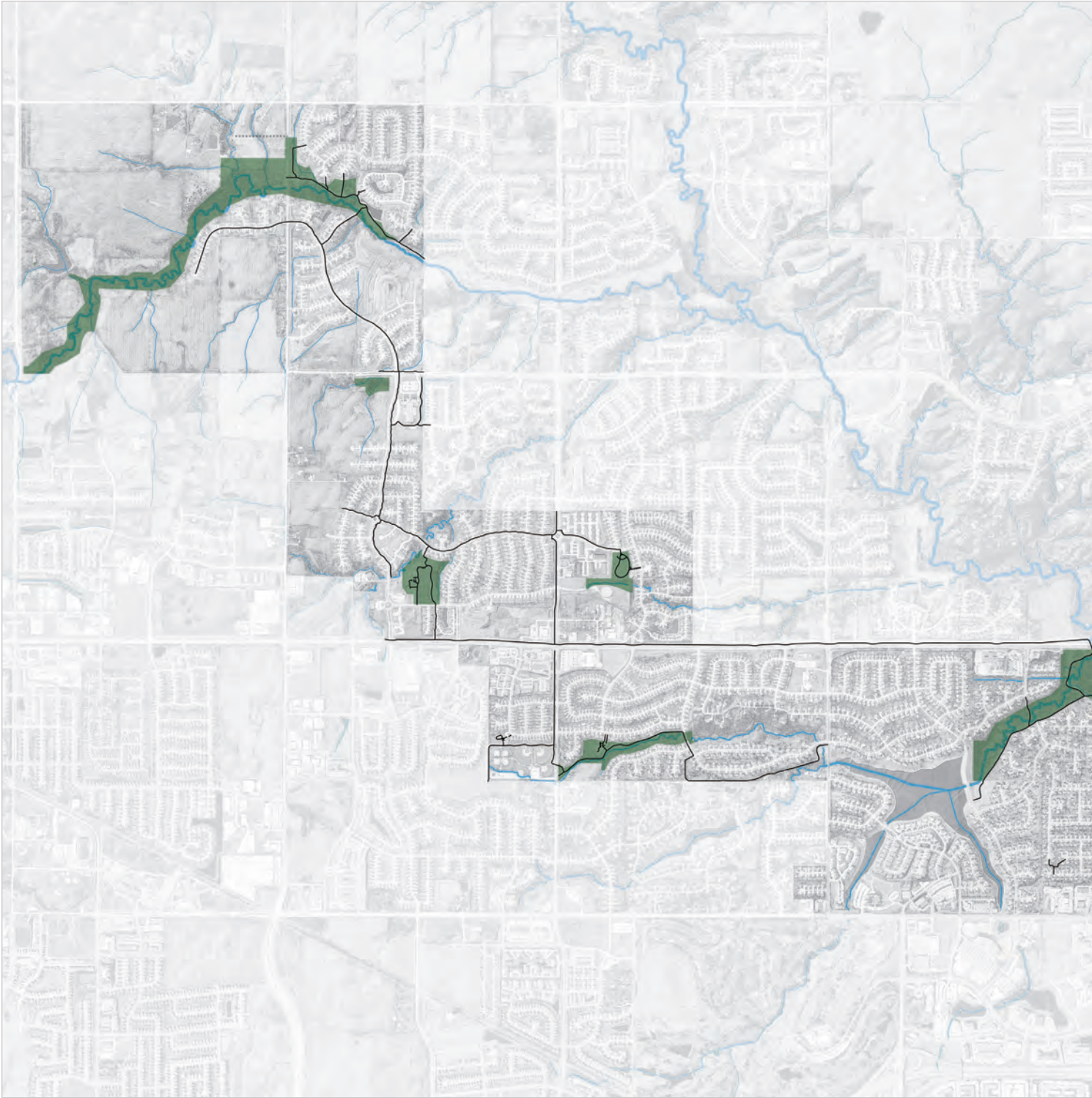
Being satisfied with his/her life, realizes his/her own potential, can cope with normal stress of life and can work productively.

Cognitive Function*

Cognition is a combination of mental processes that include the ability to learn new things, intuition, judgment, language, and remembering. When cognition is impaired (referred to as cognitive impairment), a person has trouble with these processes that begins to affect the things he or she can do in everyday life. People of all ages can experience cognitive impairment, which can range from mild to severe. Cognitive impairment is not caused by any one disease or condition. Alzheimer's disease and other dementias and conditions such as stroke and traumatic brain injury can cause cognitive impairment. Some causes of cognitive impairment are related to treatable health issues (e.g., medication side effects, vitamin B12 deficiency, and depression).

*Source: Center for Disease Control; <http://www.cdc.gov/aging/healthybrain/index.htm>

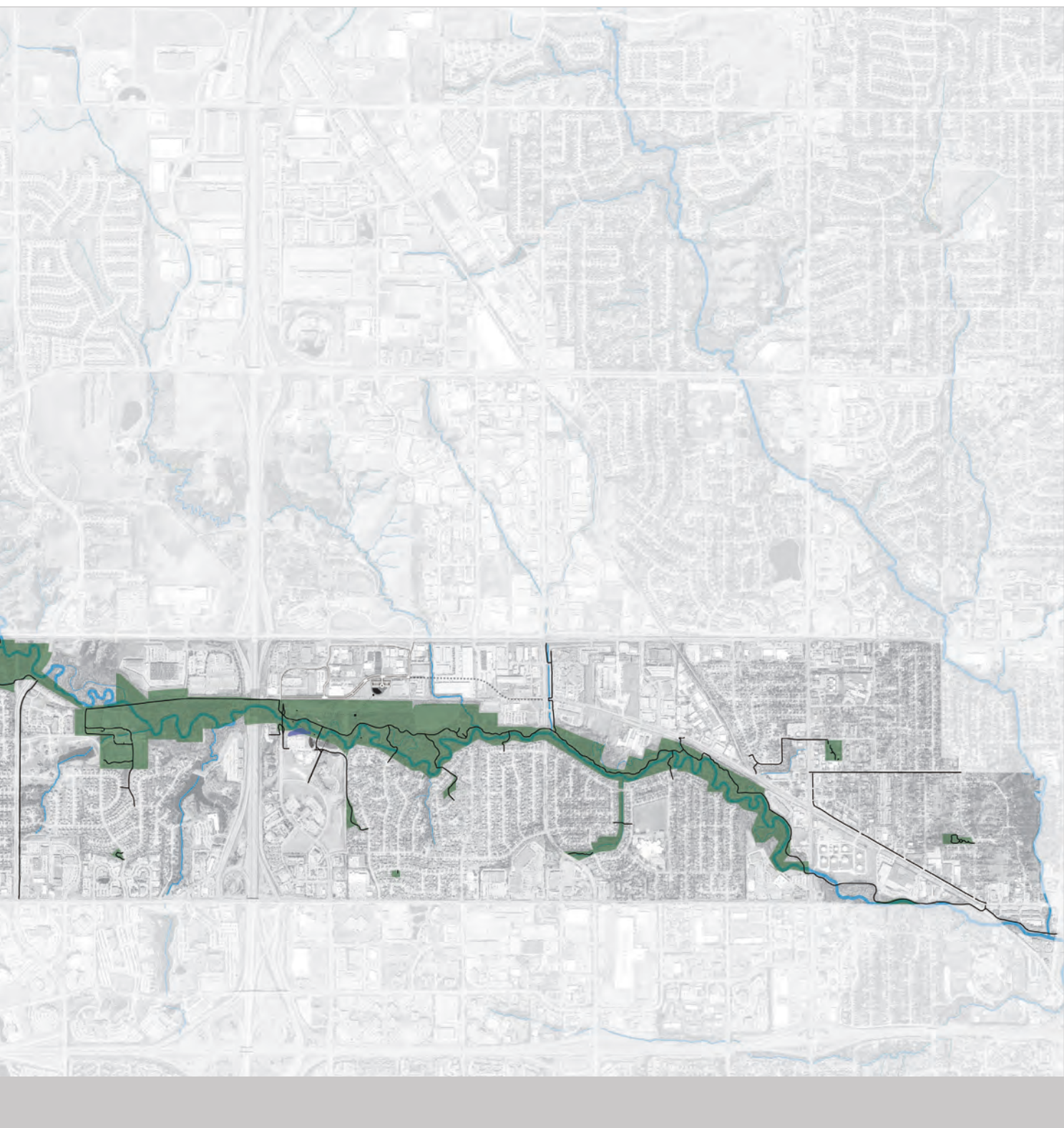
Existing Conditions



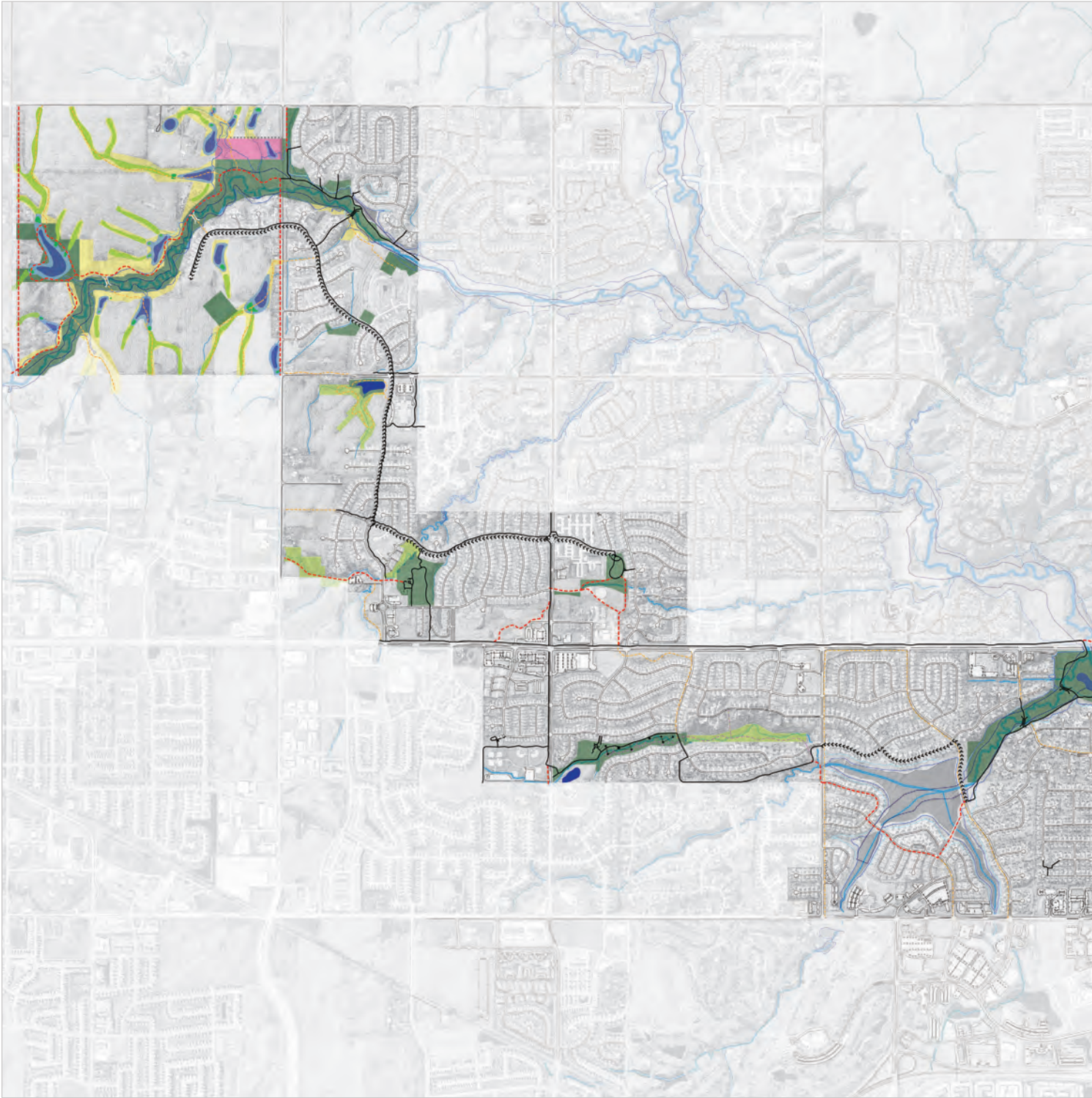
Existing Trail Network



Existing Conditions

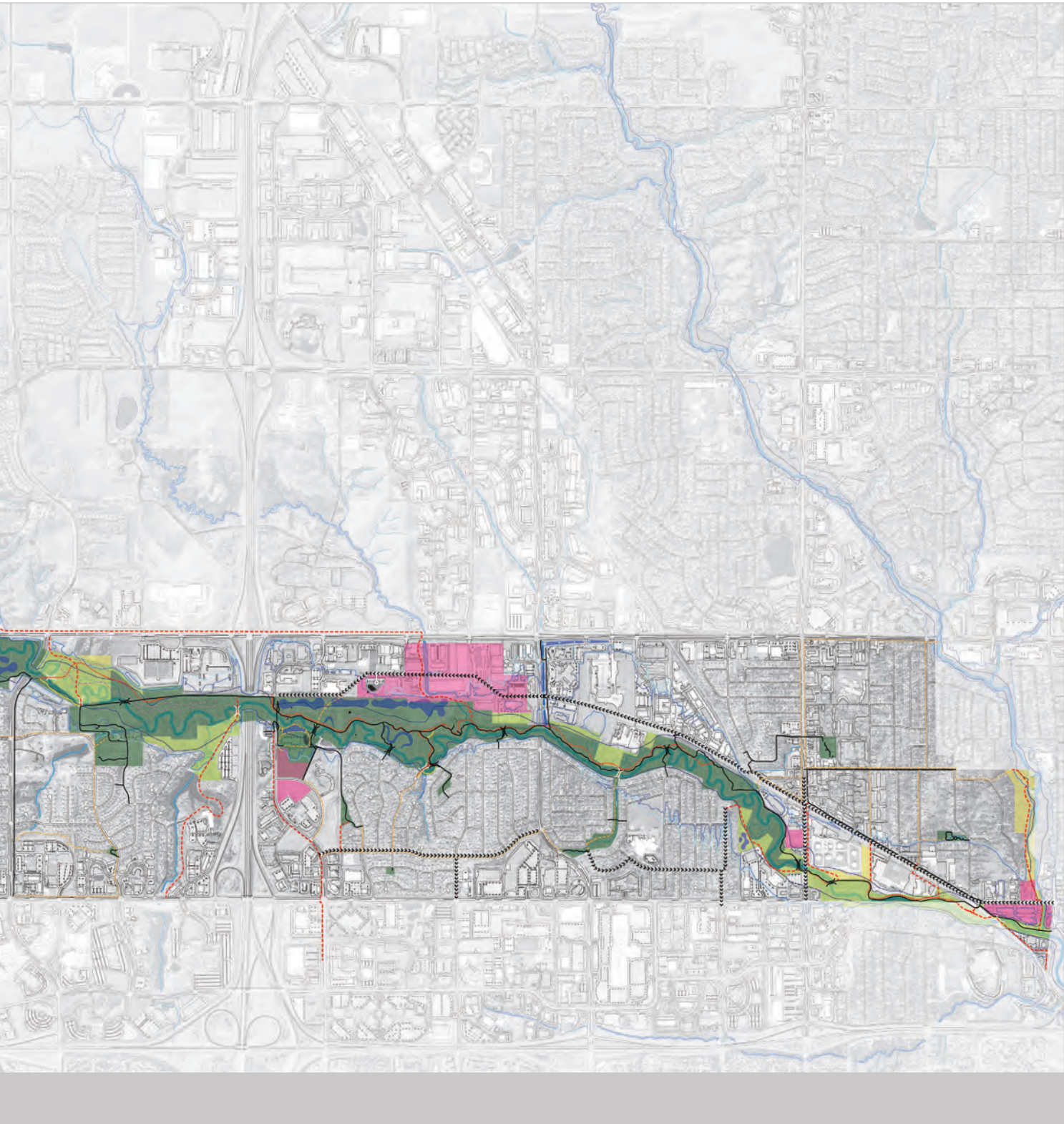


Existing Conditions



Proposed Trail Network

Existing Conditions



Existing Conditions

families in eastern Clive are living below the poverty line in comparison to less than 3% for those living in western Clive.

These findings demonstrate that access to affordable, healthy food options may be a greater obstacle for residents living in eastern portions of Clive.

The inclusion of public health recommendations within a high level master plan intended to set out objectives and strategies to manage development and change over time is a rather new idea and signals a change in the importance being placed upon the health of individuals. Looking at development through a health lens provides opportunities for positive changes in the well-being of Clive residents and all people using the Clive Greenbelt trail.

Trail Connectivity

Missing links to underserved populations

It might seem odd to discuss trail connectivity within the social/human capital section of this report, but the missing links

speak to a lack of access for segments of Clive's population. While the Greenbelt Plan shows many opportunities for improved or additional accesses, of particular note here is the general lack of access by residents in "The Falls." These residents live in Clive's eastern stretches and likely experience the greatest disconnect from the benefits of the Greenbelt. In focus groups, social service and public health professionals speak directly to the need for these residents to have greater access to active recreation amenities and outdoor play. Many live in apartment complexes with limited access to backyards and/or high quality park spaces. Some of these residents also have limited resources for gym/fitness memberships or other pathways to active living. This makes the Greenbelt connections particularly important to these residents. This segment of the community is currently under-served by trail connections.

Missing links to adjacent communities/region

Highlights of the connections to neighboring communities include:

West Des Moines

- The Eastern Gateway to West Des Moines, where West Des Moines has agreed to place sidewalk and/or trail width along 73rd street, and
- Extending from Clive City Hall south to University as West Des Moines connects from Westtown Parkway and north to University.

Waukee/Urbandale

- Paralleling Alice's Road and heading north into Urbandale and south into Waukee, and
- Along Little Walnut Creek, under Warrior Lane and into Waukee
- Similar North/South connector along Warrior Lane
- Raccoon River Trail extension, Living History Farms

Windsor Heights

- Heading north and extending the eastern edge of the Greenbelt (the Eastern Gateway) along North Walnut Creek, using an underpass at University Avenue and following the stream to connect along the Clive-Windsor Heights border.

Recreation and Education

In addition to the Clive Greenbelt Park and Trail, the City of Clive maintains 15 parks and the Clive Aquatic Center (an outdoor facility featuring zero-depth entry, leisure pool, Lazy River, three water slides and six lap lanes). This facility is located just east of City Hall in the vicinity of the Walnut Ridge Senior Living Community, and immediately south of the Clive Greenbelt, adjacent to the City's popular Special Events Center. The 15 parks are scattered throughout the Clive system.

The Falls

While the Clive Greenbelt/Trail is a dominant feature throughout the eastern reaches of Clive, connectivity to the Greenbelt is a challenge. None of the neighborhood parks listed here have a Greenbelt connection. Some play equipment is located behind the Car-X Tire on 86th Street, adjacent to the Greenbelt, essentially serving as a trailhead.

George Lundberg Park

1450 NW 78th Street

This neighborhood "pocket" park includes covered picnic shelter, playground equipment, half-basketball court and a walking trail but no trail connection to the Greenbelt.



George Lundberg Park



Westview Bend Park

Westview Bend Park

1836 Northwest 90th Street

City staff and park neighbors worked together less than five years ago to give this park new equipment and upgrades of retaining walls, fences and landscaping. This neighborhood park is just north of Swanson Boulevard and in close proximity to the Greenbelt trail but with no connection.

Linnan Park

8500 Alice Avenue

This park is just east of 86th Street. Park features include tennis courts, a basketball court, ball field and wading pool. A shelter for reservations is available, accommodating 35-40 people. The park currently features no trail connection to the Greenbelt.



Linnan Park



Swanson Memorial Park

Swanson Memorial Park

8641 Swanson Boulevard

This historical site sits in close proximity to the Clive Greenbelt but has no direct connection. This site maintains the railroad depot and caboose adjacent to one of the City's oldest homes.

The Oxbows

Campbell Recreation Area is immediately adjacent to the Greenbelt and other park features are close-at-hand or connected in this area. Lack of signage is among the features preventing a true integration of park(s) and Greenbelt.

Campbell Recreation Area 12385 Woodlands Parkway

This 34-acre park features three adult softball fields, sand volleyball, basketball, three tennis courts, playground equipment and open turf. The park features an open-air shelter for rental (capacity 40-50) and picnic tables. A gazebo (not available for rental) is also on-site. It's immediately adjacent to the Clive Greenbelt Trail.

Karp Park

1500 Northwest 109th Street

This quiet neighborhood park includes new play equipment, a shelter, and half-basketball court. The park connects indirectly to the Greenbelt via a trail that links to the Aquatic Center and Special Events Building.

Rio Valley Park

1743 Rio Valley Drive

A trail within the park and a bridge over Walnut Creek links this quiet neighborhood park to the Greenbelt trail. It features a playground and open space.

Walnut Ridge Park

10700 Elmcrest

This small neighborhood park has relatively new play equipment and landscaping (2010) plus a tennis court but no Clive Greenbelt connection. Of all the parks in the system, connecting this park to the Greenbelt would likely prove most challenging considering its location. Fortunately, The Oxbows enjoy other connecting features.

Wellington Ridge Park

1400 Northwest 123rd Street

While no Greenbelt connection, this park does emphasize interpretation. A wood-chipped footpath guides visitors through a small neighborhood park featuring native grass and wildflower plantings with interpretive signs.



Campbell Recreation Area



Karp Park



Rio Valley Park



Walnut Ridge Park



Wellington Ridge Park



Huntington Ridge Park



Lions Park



Wildwood Park

The Lakes

Lions Park (bordering between The Lakes and Headwaters sections of the Greenbelt) enjoys a direct connection to the Greenbelt and the active Wildwood Park does as well. Currently none of the parks in this section fully reflects the character of the Greenbelt in terms of activities and features.

Huntington Ridge Park

1400 Northwest 131st Street

This small neighborhood park has no trail connection to the Clive Greenbelt but features a basketball court and playground equipment.

Lions Park

(Bordering The Lakes/The Headwaters)

15880 Wildwood Drive

Lions Park is located near the Bob Brownell Sports Complex (Walnut Creek Little League) and connected directly to the Greenbelt Trail. It features a tennis court, basketball court, playground equipment and donated gazebo.

Wildwood Park

15166 Wildwood Drive

Immediately adjacent to the Greenbelt and connected by trail, this is an activity-oriented four-acre park with soccer field, basketball court, roller blading area and play equipment.



Country Club Glen Park



Stonegate Park

The Headwaters

While in place longer than The Wilds, this section of the Greenbelt and the development in this area continues to take some shape. No direct adjacencies to the traditional character of the Greenbelt are experienced here as yet.

Country Club Glen Park

16335 Sheridan

This 15-acre park, North of Hickman near 161st has an open-air shelter and picnic tables for about 40 people. Playground, basket court and soccer fields are also here. By trail, the park connects to the Raccoon River Valley Trail to the south and Boston Parkway to the north.

Stonegate Park

15280 Boston Parkway

This park has its own internal walking trail but not yet a connection to the Clive Greenbelt. Park improvements include shelter, play equipment, basketball court and miniature golf.

The Wilds

As a developing area, park facilities are just now beginning to come on line. This region of the Greenbelt is ripe for thoughtful, proactive approaches to preserve/protect the character of Walnut Creek, connect with the trails network and provide educational and recreational amenities of substance.

Recreation and Education Programming

The City of Clive's Parks and Recreation department features nearly a dozen summer programs for families and various age groups that take some advantage of the Clive Greenbelt and Trail. Biking and Booking Family Contest, for example, focuses on families riding to the library with the Greenbelt Trail as

a primary pathway. Clive has launched its second annual Bike Scavenger Ride, promoting fit and healthy lifestyles for families of all ages along a three mile stretch of the trail (86th to 128th).

Other programs feature more outdoor skills building and/or nature links, e.g., Fly Fishing Fundamentals, Seeds and Songs, Creepy Crawlers (hunting insects, picking up works and playing in the creek) or the Clive Rangers program. This early elementary school age program promotes explorations in nature through the Greenbelt Park.

Recommendations



Zip lining

Features Promoting Public Health

The Greenbelt's public health features relate directly to elements that promote physical activity, but mental/social health of residents and visitors are also critical components of a healthy community. This plan works to spark cycling, running, walking, and play while also connecting residents in social spaces and reaping the mental (and physical) health benefits of immersion in nature.

Adventure Facilities

Ziping, Mountain Biking

Surveys conducted in support of this study do not demonstrate a clear need for adventure facilities, but Clive's youngest residents say they want adventure features included. Connections to the creek and associated exploration provide adventure opportunities, but the Greenbelt should also make room for more focused adventure elements. Zip lining and/or mountain biking are proposed but either facility requires a public-private partnership approach for implementation and ongoing maintenance. The Clive Aquatic Center already provides a

level of adventure adjacent to the Greenbelt. In all instances – aquatics, mountain biking and/or zip lining – can be enriched (if ultimately offered) through providing facility links that lead users to greater appreciation of discovery-based, lower-impact activities as well. Any and all adventure features will need to be accomplished with a high level of sensitivity to the integrity of the natural resources within the Greenbelt.

Paddling/floating

While Walnut Creek will not likely be continuously navigable, the Iowa DNR and Metropolitan Planning Organization's water trails study shows value through a creek access for paddling and/or floating in the vicinity of the Aquatic Center. This plan endorses that recommendation.

Trail Connections

To promote generally active living, the plan promotes trail connections and on-street accommodations that link every resident to a Greenbelt access path within 1/8 of a mile from home. These connections are addressed in greater detail elsewhere within this report.



Mountain biking

WHY 1/8 MILE MATTERS

For many, the healthy choice is not always the easy choice. Increasing access to healthier living choices, such as parks and trails, can have real benefits in terms of health outcomes. This means that the built environment; or the physical parts of where we live, work, and play must be conducive and supportive of physical activity. There is a significant association between physical activity participation and accessibility. For instance, the likelihood of using a suburban trail decreases by 42% for every 1/4-mile increase in distance from home to trail. It is recommended that people and parks are no farther than five minutes apart, or approximately 1/8-mile by foot to capitalize on the associated health benefits. People must be empowered to integrate daily physical activity into their lives through increased access to places for such movement.

Recommendations



Kayaking



Family enjoying trail

Recommendations



Natural Playscape : Sand Play



Natural Playscape : Water Play



Porter Shelter

Recommendations

Natural Playscapes, Park Enhancements and Connections

One of the great public health benefits of the Clive Greenbelt stems from its capacity to link the public to nature play. Adjacent park features can be leveraged through playground conversions or enhancements creating more nature-based opportunities for play and/or additional active spaces. Similarly, the public benefits when its park system connects to the Greenbelt. Highlights of key park connections are referenced here and in some instances, discussed in greater detail in sections on Trail Connectivity.

The Falls

With the challenges of trail connectivity in this section of the master plan, park connections are no exception. The plan calls out the need to link both Linnan Park and Swanson Memorial Park to the Greenbelt. With existing trail connecting Linnan and Swanson Memorial Parks, the Swanson connection delivers results for both.

A dog park is proposed in the vicinity of the 80th Street Trailhead with community gardens and pop-up businesses as additional features. A community orchard could also be considered.

The existing Greenbelt Park just west of 86th Street and adjacent to the trail/creek requires enhancements, including relocation to higher ground with the current playground in the floodway. Nature-based play and integrated art enhancements will also be appropriate here, aiding in telling the water story at a site so directly relevant.

An enhanced linear park, based on stormwater management practices and located just west of Indian Hills Middle School is also proposed in this section.

The Oxbows

With Porter Shelter in the floodway, the shelter requires high levels of maintenance and its use is limited. A replacement facility, expanded to include indoor/outdoor options, community features and storage will move out of the floodway and to the west of this site. See Clive Education and Adventure Center below. Campbell Park (immediately adjacent to the Greenbelt) is slated for new features including a natural playscape and disc golf. In order to promote year-round active living in or near the Greenbelt, the plan also calls for a skating rink at Campbell Park.

The Lakes

The plan proposes a Country Club Lake Overlook featuring restrooms, water fountains and shelter.

Wildwood Park is a successful park in this area but its proximity to Eason Elementary begs for improved connections. Children already play in the stream here but accesses need improvements. Enhanced nature play is also on tap for this park.

The Headwaters

Here we see potential for a new park immediately west of Shuler Elementary, building from an existing detention basin to allow room for learn-to-fish programs, habitat restoration and hands-on science fun and learning.



A small fishing pier is proposed for the aquatics lab near Shuler Elementary.

Recommendations



Clive residents participate in a "Design My Greenbelt" activity, helping map out the program for the Clive Greenbelt.

Recommendations

The ravine at Country Club Glen Park affords an opportunity for a new natural playscape with nearby community gardens and sites within the park appropriate for tasteful, pop-up businesses.

The Wilds

This section of the plan calls for a minimum of two new neighborhood parks, the protection of Walnut Creek and its fingers as an expansion of the Clive

Greenbelt, and a new community-scale park adjacent and north of the “new” Greenbelt, immediately west of Alice’s Road. This park would emphasize nature play with potential services/programs including fishing, outdoor classroom (see below), creek play, hiking, birding and cross-country skiing.

Key Gathering/Social Spaces

Additional trail heads are proposed

throughout the Greenbelt system (see Built Environment – Chapter 9). Of particular note here are enhancements proposed in the vicinity of the Clive Aquatics Center. The plan proposes an outdoor amphitheater, events lawn, gathering spaces, improved accesses and overlooks.

Healthy Food Access

The Greenbelt and Trail, when properly enhanced, can achieve this plan’s strategic push for healthy food access in three ways.

Trail Connections

Mentioned above and elsewhere in this report, giving all people easy access to the trail and connecting it more successfully to local area businesses (including general, health and ethnic food stores and restaurants) starts to deliver on this goal.

Community Gardens

The plan recommends community gardens at Country Club Glen Park and across from Shuler Elementary (both sites located in The Headwaters) and at the 80th Street Trailhead in The Falls.

Healthy Food Pop-ups

The plan wants to give space to the pop-up business movement in general, but particularly healthy food pop-up businesses. These improve access to healthy living for Clive residents and visitors throughout the Greenbelt. Pop-up sites identified include the 80th Street Trailhead (The Falls), at the Clive Aquatics Center/Proposed New Amphitheater (The Oxbows), in the vicinity of new trail amenities at 128th and Hickman/Camp-

HEALTHY FOOD VENDORS

While encouraging economic growth, the City of Clive can still remain responsive to the community’s need for access to healthy food. Mobile vending, or selling food out of a portable vehicle, often has an unhealthy or ‘greasy’ stigma attached to it, but that doesn’t have to be the case. Fortunately, some communities have recently begun finding ways to work with mobile vending while promoting healthy food selection.

Healthier mobile food retailers typically offer their customers healthier options such as fresh or cut fruit and vegetables, water or low-fat/skim milk, and whole grain foods. However, municipalities may specifically define healthier food options for mobile vendors, such as allowing only whole fruits and vegetables or explicitly defining nutritional criteria.

In Kansas City, mobile food retailers who operate in parks are regulated by the Kansas City Parks and Recreation Department. With the stated goal “to increase access to healthier food and beverage alternatives,” the Parks and Recreation Department offers scaled permit discounts for mobile retailers who meet criteria for “Healthier” and “Healthiest” categories based on the percentage of healthier items for sale.

To be a “healthier” food vendor, 50% of the items for sale must adhere to the nutrition guidelines set out by the Parks and Recreation Department; for “healthiest” food vendors, 75% of stock must meet the criteria. In return, “healthier” food vendors receive a 50% reduction in the cost of their Parks and Recreation vending permits, and “healthiest” food vendors gain increased access to parks and prime locations.

Recommendations



Community Gardens

bell Park (The Oxbows) and at Country Club Glen Park (The Headwaters – near community gardens). This plan's strategy further recommends fee breaks for food trucks with affordable healthy menu options as a means for increasing healthy food access.

Outdoor Classrooms and Education

Water Resources and Environmental Education

The stormwater management, wetland and other water feature components of the master plan afford exceptional educational opportunities – often through recommended outdoor classrooms or

through simply improved creek accesses for school groups and others.

Outdoor Classrooms

The plan proposes outdoor classrooms in the vicinity of Shuler Elementary and at Eason Elementary, leveraging stream/creek accesses in both locations. An outdoor classroom is also called out at the new community park proposed west of Alice's Road in The Wilds.

Accesses for Learning

A number of improved creek accesses are proposed throughout the plan. Each affords an opportunity for school groups to gain access for hands-on sci-



Outdoor Classroom

Recommendations

ence or other educational opportunities. Generally, where access improvements are proposed, they are seen as learning opportunities. Some of the more significant access/learning points include sites where stormwater management (SWM) features are proposed, such as the Eason Elementary SWM improvements (located in The Lakes) or an outdoor aquatic lab near Shuler Elementary. When open space accompanies the access point (several of these locations surface in The Wilds), those also may provide more group learning options and access.

Botanical Learning Areas

The Wetland Bank identified in The Ox-

bows section may prove the most significant of the water/botanical resources learning opportunities overall, simply due to its size, proximity to Clive's highly-public aquatic facilities and connection to a larger habitat complex. At some level, the entirety of the Greenbelt serves as a "botanical learning area," but the two particular additional sites of note are identified in the plan: the fen (south of a newly proposed park in The Wilds) and an area adjacent to The Oxbows' proposed stream stewardship demonstration/streambank restoration site. This becomes another habitat and water restoration complex for meaningful learning experiences.

Clive Education and Adventure Center

In a potential future re-development zone north of the Greenbelt and west of 100th street, a 3500 square foot facility is proposed. The plan envisions this as a rental facility, base camp for Green and Sustainable Clive (and other Greenbelt/Trail volunteer groups), and as a year-round gathering site for classes and outdoor enthusiasts.

Integrated Art

The recommendations in Chapter 4 (Cultural Capital) and Chapter 5 (Built Capital) include themes for "calls-to-artists" and design guidelines focused on education related to Clive's water story. This



Integrated Art

Recommendations

story includes understanding the impact of upstream practices on downstream partners. Clive is especially well-situated for this story. Clive is downstream of farming practices, development in Waukeg, Urbandale and its own development in The Wilds. At the same time, Clive is the upstream partner to Windsor Heights and Water Works Park. How do we move from negative impacts to positive? What are rural implications for our water story? What happens in developing landscapes? In areas already developed and

systems are aging? How do we farm, develop and re-develop for soil and water health improvements? Clive can likely tell this tale more effectively than any other metro partner.

Chapter 4 recommends telling the water story through a series of strategic integrated art opportunities, beginning with interpretive/artistic elements included in any number of upcoming projects. The simplest expressions may occur with benches, kiosks or railings. Thoughtful

(and perhaps more comprehensive) approaches may take shape with new trail-head installations. But any number of projects may prove as powerful opportunities - including bank stabilization, erosion control, and stormwater management projects. See Chapters 4 and 5 for more information and recommendations.

Partnerships

A number of City staff/departments and commissions join the City Council in leadership of this work. Of particu-



Families picnicing

Recommendations

lar note are the Clive Public Art Commission, Green and Sustainable Clive, Planning and Zoning and Clive's Parks Board. Key partnerships involve schools (particularly Eason and Shuler Elementary schools, Clive Learning Academy and Crestview School of Inquiry), naturalists (through Dallas and Polk County Conservation Boards), informal educators (e.g., scouting programs) and private developers involved in the protection/set-aside of environmental assets, particularly in The Wilds. Neighboring communities, non-profit educational institutions (Blank Park Zoo, Living History Farms, Science Center of Iowa), non-profit/foundation funders (e.g., Bravo, Iowa Natural Heritage Foundation, Metro Arts Alliance, etc.) and a number of related agencies may provide technical assistance or resources to secure facilities protection and/or education opportunities. More on partnerships can be found in the Political Capital Chapter as well as sections of this report dedicated to Implementation.

Interpretation and Program Essentials

The City of Clive has already embarked upon a program mix that reflects the strategic direction outlined in this report addressing "enhanced active and reflective living components." It is now a question of balance, working to strengthen the nature-based components of the program while continuing to take advantage of the trail as a tool to prompt active lifestyles. *This plan recommends that, over time, the City of Clive enhance its nature-based programming to Greenbelt-branded opportunities, such as:*

- Basic and advanced birding
- Service learning related to trail/creek

maintenance and/or invasive species removal

- Annual "bioblitzes" or similar nature count activities
- Greenbelt flora/fauna hikes and species identification training
- Basic fishing
- IOWATER (Iowa's voluntary water quality monitoring) training
- Basic paddling

Partnerships will be key here (see above). Polk and Dallas County Conservation Boards; the Iowa DNR; organizations like the Sierra Club, Audubon Society or Izaak Walton League; Iowa Natural Heritage Foundation (bioblitzes); and/or scouting organizations will likely be particularly helpful to expanding programming in this direction. The goal here is to use partnerships as the means for accomplishing Greenbelt Nature Programming within the context of parks and library programming.

Foundation for Assessing Public Health Benefits: Health Based Benefits of the Clive Greenbelt Trail

The overall health and well-being of residents is important in building strong communities. Parks and green spaces provide an opportunity to support the social, emotional and physical factors that impact the overall health and well-being of Clive residents.

Physical Health Benefits

The Surgeon General recommends at least 150 minutes of moderate activity a week, and that children and adolescents are active for at least 60 minutes every day (Surgeon General, 2015). In-

creasing portions of the population, including many children, do not meet the recommended physical activity guidelines. The CDC reports that only 1 in 5 adults meet the physical activity guidelines. Nearly one-quarter of Clive residents' aged 20 and older, self-reported spending no leisure time for physical activity in the 2015 Clive Quality of Life Survey.

As physical inactivity and obesity rates continue to rise, cities must focus on concepts of building community where people can engage in routine physical activity. This physical activity should be available in a comfortable and enjoyable environment that is easily accessible by all residents. The physical and economic impacts of physical inactivity are noteworthy. The National Institute of Health has linked obesity with numerous health conditions, including heart disease, stroke, diabetes, high blood pressure, unhealthy cholesterol, asthma, sleep apnea, infertility, and as many as 11 types of cancers (National Institute of Health, 2012). The annual per-person direct medical cost of being overweight is \$266 greater than that of a normal weight person in the United States. This cost difference climbs to over \$1700 per year for an obese individual living in the United States (Gilden Tsai, 2011). With over two-thirds of Clive residents being overweight or obese, it is resulting in the residents spending over 10.8 million dollars in obesity-related healthcare expenditures each year.

Trails, parks, and sidewalks provide opportunities for physical activity in a safe and inviting environment. These opportunities for physical activity lessen health

Recommendations

Estimates of the direct medical cost savings assumes that 23% of Clive residents using the trail will be new exercisers and physical inactivity results in \$615 in direct medical costs per person, per year. Based on low and high scenarios; savings between \$895,747 and \$1.1 million dollars were found annually for the City of Clive residents in direct medical costs by utilizing the Clive Greenbelt trail system.

related problems and subsequent health care costs. It is estimated that if one out of every ten adults started a regular walking program, the U.S. could save \$5.6 billion in health care costs. Iowa on average sees an annual growth of 6.1% in personal health care costs resulting in an increase from \$7.2 billion dollars in 1991 to \$20.8 billion dollars in 2009.

Projected direct medical cost savings of Clive residents due to increased physical activity opportunities allowed through the Clive Greenbelt were calculated using the CDC's estimate that a lack of physical activity costs \$615 per person, per year in direct medical expenses.

The direct medical costs avoided due to increased physical activity of residents on the Clive Greenbelt were projected based on the number of new exercisers using the Clive Greenbelt trails. Documented research suggests that 23% of trail users are considered new exercisers. One hundred percent of all new exercisers will experience some increase in their physical activity level. Estimates of the direct medical cost savings assumes that 23% of Clive residents using the trail will be new exercisers and physical inactivity results in \$615 in direct medical costs per person, per year. Based on low and high scenarios; savings between \$895,747 and \$1.1 million dollars were found annually for the City of Clive residents in direct medical costs by using the Clive Greenbelt trail system.

Emotional Health Benefits

Poor psychological and physical resilience in response to stress drives a great deal of health care use. Stress is a mind-

body phenomenon, affecting both mental health and directly influencing physiology of the human body. In primary care, stress-related illnesses are known drivers of healthcare resource utilization in the United States. Health care expenditures attributable to stress-related disorders, such as, depression and anxiety, were over 80 billion dollars per year in 2012.

The State Mental Health Agency (SMHA) per capita mental health services expenditure for the state of Iowa is \$142.38 million dollars per year. Based on the 3.107 million people living in Iowa, this results in \$45.86 of annual mental health service costs per person per year. It has been documented that mental health care costs can be reduced by up to 43% over a one-year period due to relaxation response interventions. It was found that the residents of Clive could save nearly \$22,000 in mental health related costs by experiencing the natural setting of the Clive Greenbelt trail, based on the projected trail usage self-reported in the Clive Citizen's Satisfaction survey.

There is growing evidence to suggest that exposure to natural environments can be associated with mental health benefits. Proximity to greenspace has been associated with lower levels of stress and reduced symptoms of depression and anxiety. Natural environments are considered to be therapeutic environments associated with the treatment, healing, and maintenance of health and well being. Forest environments are one example of a therapeutic landscape and have been shown to significantly decrease depression and acute emotions such as stress.

Recommendations

Strong communities are built around having healthy residents who can contribute to the growth of a community. Not only does a park provide a venue for physical activity, but it also provides an opportunity to build social cohesion and mutual trust among neighborhoods. Parks have been found to increase social interaction among neighborhood residents, as they provide a venue for the neighborhood to

gather for social events and recreational activities. Another important factor in our overall health is linked to our emotional health. Access to nature points to reduced levels of stress, improved work productivity, reduced job-related frustration, increased self-esteem, enhanced capacity to pay attention, and greater life satisfaction (Cohen, D., Sturm, R, Han, B., Marsh, T., 2014).

REFERENCES

- Carlson, S., Fulton, J., Pratt, M., Yang, Z., and Adams, E. (2015). Inadequate Physical Activity and Health Care Expenditures in the United States. *Progress in Cardiovascular Disease*, 315-323
- Centers for Disease Control and Prevention, 2014. *Healthier Food Retail: An Action Guide for Public Health Practitioners*. Atlanta: U.S. Department of Health and Human Services. Retrieved from <http://www.cdc.gov/nc-cdphp/dnpao/state-local-programs/pdf/healthier-food-retail-guide-full.pdf>
- Centers for Disease Control and Prevention, 2003. Preventing Obesity and Chronic Disease through Good Nutrition and Physical Activity.
- Centers for Disease Control and Prevention, 2011. *Strategies to Prevent Obesity and Other Chronic Diseases: The CDC Guide to Strategies for Increasing Physical Activity in the Community*. U.S. Department of Health and Human Services; Atlanta.
- Centers for Medicare and Medicaid Services. National Health Expenditure Data. Retrieved from <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/index.html>
- Dajun, D. 2011. Racial/ethnic and socioeconomic disparities in urban green space accessibility. Where to intervene?. *Landscape and Urban Planning*. 102:234-244
- Danaei G, Ding EL, Mozaffarian D, et al. *The preventable causes of death in the United States: comparative risk assessment of dietary, lifestyle, and metabolic risk factors*. PLoS Med. 2009
- Insel, T. (2015). Director's Blog: Mental Health Awareness Month: By the Numbers. *National Institute of Mental Health*. Retrieved from <http://www.nimh.nih.gov/about/director/2015/mental-health-awareness-month-by-the-numbers.shtml>
- McLaren, Lindsay, 2007. *Socioeconomic Status and Obesity*. *Epidemiological Review*. Vol. 29:29-48
- Morita, E., Fukada, S., Nagano, J., Hamajima, H., Yamamoto, H., Iwai, Y., Nakashima, T., Ohira, H., and Shirakawa, T. (2006). Psychological effects of forest environments on healthy adults: shinrin-yoku (forest-air bathing, walking) as a possible method of stress reduction. *Public Health*, 121(1): 54-63.
- National Institute of Health, 2012. *What Are the Health Risks of Overweight and Obesity?* <http://www.nhlbi.nih.gov/health/health-topics/topics/obe/risks>
- National Policy & Legal Analysis Network to Prevent Childhood Obesity. 2009. *Healthy Mobile Vending Policies: A win-win for vendors and childhood obesity prevention advocates*. Retrieved from http://www.changelabsolutions.org/sites/default/files/MobileVending_FactSht_FINAL_091008.pdf
- Paez KA, Zhao L, Hwang W. Rising out-of-pocket spending for chronic conditions: a ten-year trend. *Health Aff (Millwood)* 2009;28(1):15-25
- Pearson, D., Craig, T. (2014). The great outdoors? Exploring the mental health benefits of natural environments. *Frontiers in Psychology*, 5(1178):1-4.
- Stahl, J., Dossett, M., LaJoie, S., Denninger, J., Mehta, D., Goldman, R., Fricchione, G., Benson, H. (2015). Relaxation Response and Resiliency Training and its Effect on Healthcare Resource Utilization. *PLOS ONE*, 10(0): 1-14.
- U.S. Census, Summary File 3; 2010 U.S. Census Summary File 1; 2009-2013 U.S. Census American Community Survey (ACS)
- U.S. Department Health & Human Services, 2001. *The Surgeon General's Call To Action To Prevent and Decrease Overweight and Obesity 2001*, Office of the Surgeon General; Washington, D.C.
- Wells, N. (2014). How Natural and Built Environments Impact Human Health. *Outreach and Extension*. Cornell University College of Human Ecology, Retrieved from http://www.human.cornell.edu/outreach/upload/CHE_DEA_NaturalEnvironments.pdf
- Wen, Ming, et al., 2006. *Objective and perceived neighborhood environment, individual SES and psychosocial factors, and self-rated health: An analysis of older adults in Cook County, Illinois*. *Social Science & Medicine* 63, 2575-2590

ConsultEcon, Inc. was retained by RDG Planning and Design as a subcontractor to provide market and economic analysis of the development and implementation of the Clive Greenbelt Master Plan. The following report summarizes results of the economic analysis for the project. More detail appears in Chapters 10–15.

Basis for Economic Analysis

The basis for the economic analysis is the Clive Greenbelt Master Plan and its composite improvements to the Greenbelt. The Clive Greenbelt Master Plan is a long term, 25-year plan for public and private development oriented to the Clive Greenbelt. The Greenbelt is a unique part of the City of Clive's public infrastructure and identity. The Master Plan envisions a Clive Greenbelt with robust recreational and natural resources that reflects the community's values and identity. The economic analysis assumes the full implementation of the master plan and full build out of the City in 2042.

Plan Overview

The Clive Greenbelt Master Plan is a 25-year plan that includes a mix of proposed public investments and potential private investment. Following is an overview of public and private investments, based on the summary of hard and soft cost estimates.

- Greenbelt Improvements*

Greenbelt trails, environmental improvements, wetlands, and property acquisition to expand Clive's recreational and natural resources for the next generation of Clive residents. Most Greenbelt investments are public investments. The total estimated cost of the Greenbelt Improvements, including hard and soft costs, is \$88.6 million.
- Other Community Investments*

New and improved parks and recreational facilities in addition to the Greenbelt, such as an event lawn, amphitheater, ice rink, renovation and addition to the existing community building, a new civic building. The proposed zip line is a potential private investment opportunity. The total estimated cost of Other Community Investments is \$33.7 million.
- Redevelopment Areas*

Three areas are targeted for redevelopment as a part of the master plan. While most of the investment in Redevelopment Areas is private investment, public investment in public space supports private investment. The total estimated public and private costs for development in the Redevelopment Areas is \$411.1 million.



- *New Development in The Wilds District*
The Greenbelt is one of Clive’s core features and an amenity for new Clive residents. The Greenbelt investment and future operations of parks and recreation supports the direct and indirect investment in new residential communities on open land. The total estimated cost of new private development in the Wilds is \$264.0 million.

Mix of City, Regional and Private Investment for Full Plan Implementation

As a regional asset, the Clive Greenbelt is enjoyed by residents throughout the region. In addition, the Greenbelt and Walnut Creek experience environmental impacts such as flooding and stream bank erosion due to development outside of city limits. Therefore, not all of the costs of selected improvements would be borne by the City of Clive because of the regional nature of the Greenbelt. Most costs associated with the Redevel-

opment Areas and New Development in the Wilds would be borne by the private sector.

Based on the assumptions about how projects would be funded, the core Greenbelt Improvements would require a City investment of \$41.1 million, including hard and soft costs. Over the 25 year period of the plan, the annual average City investment in the Greenbelt is estimated to be \$1.6 million. The estimated City investment in Other Community Investments and Redevelopment Areas adds another \$22.6 million and \$14.0 million for a grand total potential City investment of \$77.7 million or \$3.1 million on average over 25 years.

Redevelopment Areas and Private Development

New parks and trails have been shown to support investment in and enhancement of property values in communities throughout the United States. Public

investments in the Greenbelt, Other Community Investments and the Redevelopment Areas have the potential to enhance the value of private development in Redevelopment Areas and new development in the Wilds. The Greenbelt development is a function of the City’s growth trajectory and build out of the City in the coming decades. Housing the next generation of Clive residents and providing them with quality government services are important to attracting new residents and making Clive a desirable community.

With the City’s build out in the Wilds District and new residential units proposed for the Redevelopment Areas, additional capital and operational expenditures in City of Clive parks and recreation are required to accommodate future demand for Greenbelt trails, and ongoing city parks operations, maintenance and recreational programming. There is an indirect relationship between the pub-



lic investment in the Greenbelt and the private investment in the Redevelopment Areas and the New Development in the Wilds District. While the Greenbelt is not the only reason for new development, it is the primary recreational amenity in the City and an important and differentiating component of the City's brand and identity.

City Build-Out Scenario

The build out scenario identified as a part of the Greenbelt Master Plan identifies approximately 3,800 housing units for an estimated total of approximately 11,200 housing units in the City of Clive in 2042. This estimate is 12 percent higher than the City's build out estimate for 2030, due to increased density of land use proposed in Redevelopment Areas and in the Wilds District, which contains the largest amount of open land available for new development.

Greenbelt Demand and Use

The proposed improvements to the Greenbelt will create more trails and trail capacity, increase the connectivity and accessibility of the trail system, and enhance the visitor experience with new amenities, signage, wayfinding and public art integrated into infrastructure. The Greenbelt has the potential to support investment in private real estate and create new jobs in the expansion of parks and recreational operations and other ancillary private businesses that are supportive of Greenbelt use. These improvements, if combined with greater ongoing promotional activity around new improvements and Greenbelt programming, will create a more appealing and enjoyable destination and thereby have the effect of increasing the overall use of the Greenbelt trail by residents

and visitors to Clive. Based on the full implementation of the master plan in 2042, Greenbelt visitation is estimated to range from 636,000 to 1.3 million annually, with a mid-range estimate of 954,000. Between 2015 and 2042, the change in visitation represents an increase of 560,000 visitors over the current mid-range visitation estimate of 397,000 visitors annually.

New Greenbelt Parks and Recreation Operations

New parks and recreation department operations will support the increase in Greenbelt demand and use. The total estimated park operations and maintenance expenses are estimated at \$436,000 annually due to the full implementation of the Greenbelt Master Plan. Recreational programming would add an estimated \$130,000 in operating expenses for a total of \$566,000. These incremental costs would be in addition to existing parks and recreation budgets.

Revenue due to New Parks and Recreation Operations

New parks and recreation operations have the potential to generate \$101,000, approximately 18 percent of the total new operating expenses, assuming full implementation of the master plan. New Clive Greenbelt parks and recreation department annual operations would require an estimated \$465,000 of non-earned revenue or contributed revenue for breakeven operations for all major plan components. It is assumed that most of the non-earned revenue for operations would come from the city's general fund, the future property tax revenue that will be generated as the city continues to grow that would then satisfy additional new demand for recreational programs and park facilities from the new resident households. Assuming the current lev-

el of assessed valuation of \$1.4 billion and no other sources of funds to support parks and recreation operations, the City would need to increase its general operating levy by \$0.34 per \$1,000 of assessed value.

Economic Impacts

Economic impact evaluations measure the total net new economic activity that will occur in a defined geographic region as a result of the development of the project. Net new activity excludes any activity associated with the project that replaces other economic activity in the area. Because the demand and use and operations plan evaluated the change in activity, the majority of economic activity associated with the implementation and new parks and recreation operations of the Clive Greenbelt Master Plan will be net new to the area. In addition to the planned recreational and environmental impacts, the plan has the potential of spurring real estate development in the City. The City is targeted for growth. The public investments in the Greenbelt respond to and enhance the new private development and investment in the City. New private development has spillover effects that mutually reinforce the new annual impact of Greenbelt parks and recreation operations and the ongoing value of the new real estate.

Construction Period Impacts

Construction of the proposed public investment (including both City and regional investments) in Greenbelt, Other Community Investments and Redevelopment Areas identified in the Clive Greenbelt Master Plan will result in a positive impact on the Regional (State of Iowa) economy during its construction period. The economic impacts are based on the total estimated development project cost

"...total annual impact estimated at \$1.9 million in expenditures, of which \$744,000 in wages will be generated, and 22 total jobs will be supported in Dallas and Polk Counties."

outlined in the Master Plan. The total economic impacts due to project construction are estimated at the state level and would occur over the entire development period. *They include:*

- Approximately \$237.6 million in expenditures (economic activity) in the State economy, of which approximately \$86.0 million would be wages and salaries.
- An estimated 1,554 total person-years of employment (including the direct project-related employment and indirect and induced employment) are estimated to be supported due to project development. Much of this statewide direct impact would occur in the Clive area, which is the locus of the expenditure.
- In addition, the \$86.0 million of earnings would support approximately \$2.6 million in direct, indirect, and induced income taxes.

Real Estate Impacts

The proposed Clive Greenbelt has the potential to impact real estate in Clive in a variety of ways. These include increased values for properties adjacent and in proximity to the Greenbelt, and the potential to support the development and build out of the Wilds District and the Redevelopment Areas. Additional park and recreational amenities will further support development in and around the Clive Greenbelt.

The full build out of the Wilds District and the Redevelopment Areas identified in the Clive Greenbelt Master Plan indicates a total potential market valuation of over \$868 million. This new valuation translates to an average of \$4.9 million in new property taxes, assuming full city build out as identified in the master plan. Assuming 10 percent of the value is due to the Greenbelt, the estimated tax revenue generation from new development due to the Greenbelt is \$497,000 annually.

With the implementation of the Master Plan, existing property values will be enhanced and generate an estimated \$168,000 annually.

Economic Impacts due to Ongoing Greenbelt Parks and Recreation Operations

As it attracts visitors from resident and

visitor markets, the ongoing operations of the Clive Greenbelt will form a stream of economic benefits to the Local (Dallas and Polk Counties) and to the Regional (State) economies. Much of the spending due to new Clive Greenbelt operations will be net new to Clive as well as to the state as a whole. That is, it will include new economic activity for the economic units being evaluated, the potential increase over Greenbelt operations that are reflected in the City's Parks and Recreation budgets today.

Based on the estimated new City operating expenses of the Clive Greenbelt, the estimated Greenbelt use patterns, and the profile of off-site visitor spending on the day of their visit to the Greenbelt, total potential economic impacts of the Clive Greenbelt including direct, indirect, and induced effects are summarized as follows.

The total on-going annual economic impacts of the Clive Greenbelt Master Plan include:

- *Direct Spending*
The new Parks and Recreation Department \$566,000 annual operating budget will be new direct spending in Dallas and Polk Counties and Iowa as a whole. It is estimated that 85 percent of this direct spending (\$452,000) will take place in Dallas and Polk Counties and 95 percent (\$537,000) will take

"...the potential to generate annually approximately \$1,028,000 to the City of Clive (mostly due to road use and property taxes), \$358,000 to Dallas and Polk Counties, and \$44,000 to the State of Iowa. "



place in Iowa as a whole. In addition, Greenbelt Visitor net new off-site spending associated with their visit is estimated at \$688,000 in Dallas and Polk Counties and \$702,000 in the State of Iowa as a whole. Net new off-site spending is only a portion of the total overall off-site spending. The direct spending is then re-spent in the local (Dallas and Polk Counties) and regional (Iowa) economies, the multiplier effect.

- Local Dallas and Polk Counties Impacts**
As the multiplier effect works its way through the local economy, the net direct economic activity due to the Clive Greenbelt Master Plan project will generate a total annual impact estimated at \$1.9 million in expenditures, of which \$744,000 in wages will be generated, and 23 total jobs will be supported in Dallas and Polk Counties. (It is important to note that Dallas and Polk Counties and State economic impacts are not additive.)
- Regional Statewide Impacts**
As the multiplier effect works its way through the regional (State of Iowa) economy, the direct economic activity due to Clive Greenbelt Master Plan project will generate a total annual impact estimated at \$2.0 million in expenditures, of which \$744,000 in wages will be generated, and 22 total jobs will be supported in the state. At the statewide level, these effects include the support of jobs and economic activity in Dallas and Polk Counties and outside these areas. However, Dallas and Polk Counties economic activity estimated above will not be fully a subset of the statewide economic activity, as there is assumed to be some substitution of spending from other areas of the state to Dallas and Polk

"Partnerships with educational institutions and environmental organizations will create new opportunities for lifelong learning and help to position Clive as a knowledge community in the region."

Counties. However, in all, the project offers substantial benefits to other areas of the state as well as the local area.

Generation of Fiscal Revenues

The new land uses and build out of the City of Clive identified in the master plan will create economic activity that generates direct fiscal benefits to state and local government. The development of the Clive Greenbelt will support net new tax revenues for the City of Clive, Dallas and Polk Counties and the State of Iowa. In total, the analysis of road use, sales, hotel, income and property taxes has identified the potential to generate annually approximately \$1,028,000 to the City of Clive (mostly due to road use and property taxes), \$358,000 to Dallas and Polk Counties, and \$44,000 to the State of Iowa.

Other Economic and Community Benefits

Overall, the direct revenue due to new Greenbelt operations and the indirect incremental property taxes due to the implementation of the Greenbelt do not pay for the full cost of implementation and operation. As a public good, a natural and recreational resource, many of the benefits of the Greenbelt are intrinsic and intangible. The economic analysis and valuation of ecosystem benefits is

still an emerging field of study. Attempts to document the value of ecosystems are often limited to the direct use of the resource, such as the value created through the implementation of recreation programs, which has been quantified above. Attempts to quantify other benefits are more elusive. Nonetheless, a number of economic and community benefits can be identified. Beyond its potential to create direct and multiplier effects on the local and state economies, the Clive Greenbelt will contribute substantial additional qualitative economic and community benefits. *These include:*

- Redevelopment of the Greenbelt and Adjacent Areas**
Clive's Greenbelt is a principal community asset but adjacent properties do not engage with the trail or parks. Redevelopment of properties adjacent to the Greenbelt will contribute to improved property values and city tax revenue, and unlock what is now the hidden value of additional visitor spending in local commercial businesses. This will contribute to the improved sense of place in Clive, a walkable and enjoyable destination, with adjacent properties that provide views, vistas, and outdoor public space for recreation, entertainment and commerce.
- Restored Natural Areas and Improved Environmental Performance**
Clive's practices in green infrastructure

The quality of life benefits of the Clive Greenbelt project may have the most profound and long-lasting impacts on the community.

create benefits of potential decreased costs incurred through storm water improvements that better manage the storm water runoff than existing infrastructure. This improved infrastructure will better manage flooding and recharge water into the natural system.

- *Improved Health and Wellness*

The Clive Greenbelt Master Plan will expand the trail system and thereby expand the number of users and the frequency of visits to the trail and associated facilities that promote activity, healthy living, social engagement and well-being. An ongoing promotional campaign will support awareness of Clive Greenbelt events, activities and programs, which can support both youth and adult health and wellness through increased recreational opportunities and increased community participation in recreational programs offered by the City and its partners that use the Greenbelt facilities. See Chapter 10 for more information about the potential economic benefits of the Clive Greenbelt through positive public health impacts.

- *Improved Walkability and Reduced Car Trips*

By creating a more interconnected city with additional pedestrian and bicycle

trails, the Greenbelt Master Plan creates more opportunities for residents and visitors to get around Clive without getting into an automobile, leading to a reduced number of car trips within the community. Most car trips are short trips particularly in a suburban community like Clive. Connecting new and existing neighborhoods to regularly frequented destinations, such as schools, Greenbelt shopping centers, aquatic center and trails, will promote alternative modes of travel. This in turn can reduce the pollution and congestion effects of car traffic on Clive's roadways because residents have opted to walk or bike to their destination rather travel by automobile.

- *Expanded Educational Opportunities*

The Clive Greenbelt will expand formal and informal educational opportunities and recreational partnerships with schools, in parks, and elsewhere along the Greenbelt. These educational benefits will lead to greater stewardship of the watershed environment and advancement of knowledge of storm water, wetlands, stream and floodway management, and water quality issues. Partnerships with educational institutions and environmental organizations will create new opportunities

for lifelong learning and help to position Clive as a knowledge community in the region.

- *Enhanced Enjoyment of Nature*

The Clive Greenbelt project will expand the network of trails in the community and increase public access to the Walnut Creek, natural forests, prairie and other natural habitats that support diversity of wildlife and contribute to the health and wellness of the watershed. These investments will contribute to the health and wellness of Clive's citizens through additional activity outdoors that help them better enjoy nature in an urban setting.

- *Attracting New Residents*

As the primary recreational resource in the community, the Clive Greenbelt is central to attracting new residents to the community and maintaining healthy property values. Therefore, maintaining the infrastructure, fixtures and finishes to a high standard will ensure satisfaction of existing residents and appeal to new residents and visitors alike (who are also potential new residents).

- *Attracting New Businesses and Employees*

More and more businesses and em-

ployers are looking for real estate amenities that support healthy lifestyles, recreational activity, and access to natural areas. Better connecting the Greenbelt to existing employment centers will support differentiating Clive's commercial districts within the regional marketplace. It will enable local real estate owners and brokers to market properties based on the connection to the Greenbelt as a benefit of a Clive business location.

- *Expansion of the Visitor Economy and Infrastructure*

The Clive Greenbelt project will contribute to the expanded profile of Clive as a visitor destination, thus benefiting the City and region overall. The new recreational amenities, such as the zip line and ice rink, creek accesses, improved trail connections to hotels west of the Interstate and associated devel-

opments provide an additional destination for inducing "pass-through" travelers staying in Clive's hotels that are proximate to the Civic Area. It will encourage extended stays by visitors to Clive staying in local hotels and in private homes. The expanded network and improved visitor services has the potential to serve other pass through travelers and travelers to Central Iowa's bike trails to include Clive in their itinerary as a stopover location. The Clive Greenbelt Master Plan has the potential to be a stimulus to visitor economy revenues in Clive, making a contribution to the community's visitor industry goals and local economy.

- *Quality of Life*

The quality of life benefits of the Clive Greenbelt project may have the most profound and long-lasting impacts on the community. This project will enhance community self-esteem and citizenship by reinforcing and expanding the Greenbelt as a source of community pride and identity. The Clive Greenbelt project will enhance Clive as a place to live, work and play, thus improving all aspects of the local economy and community.

The Cost of Maintaining the Status Quo

The Greenbelt represents significant past investment in infrastructure and future investment potential. There is a cost to maintaining the status quo, or managing the Greenbelt as it has been managed and operated in the past. Current City staff levels, which are reduced from years prior, are sufficient only to maintain the asset in a reactive manner, which is not suitable for the expansion of the Greenbelt as a community asset, and may be a detriment.

When evaluating alternatives as part of an environmental impact assessment, the status quo alternative is called the no build or no action alternative. In reality, however, the current Greenbelt infrastructure identified as a part of the Master Plan requires ongoing action, including maintenance and operations and regular capital improvements. Capital, operations and maintenance budgets established in existing city plans and city departmental budgets may be partially if not wholly allocated to Greenbelt maintenance.

The Greenbelt is an important recreational, storm water and flood control resource that if not maintained properly has the potential to become blighted and deteriorate over time. Stream bank erosion and flooding will affect values of properties directly adjacent to the Greenbelt, and increasingly, properties that are further away. Some properties may need to be abandoned, which would erase their potential value and impact the property tax base.

In total, there is \$84.6 million of property value within 75 feet of Walnut Creek that may be threatened due to stream bank erosion and flooding. These properties generate an estimated \$639,000 annually in property taxes to the City of Clive.

Aligning and integrating existing City operating and capital resources towards the Master Plan for improvements and ongoing operations in the Greenbelt is a proactive strategy to public infrastructure management. The opposite approach of piecemeal implementation often reacts to emergencies that may be more costly if property is lost than managing the resource to its fullest potential with integrated planning and incremental development.

"In total, there is \$84.6 million of property value within 75 feet of Walnut Creek that may be threatened due to stream bank erosion and flooding. These properties generate an estimated \$639,000 annually in property taxes to the City of Clive."

Implementation Strategies

Due to the size and the scale of the plan, the plan will need to be implemented in phases over the 25-year period. Short-term, mid-term and long-term projects have been identified and prioritized.

City Property Tax Revenue

As noted, the Greenbelt Master Plan build out scenario would add approximately \$868 million to Clive's market valuation and \$4.9 million annually in new property tax revenue, of which \$489,000 can be attributed to the Greenbelt. The City of Clive could then dedicate a portion of this additional revenue to the Greenbelt's ongoing investment and operations. It is important to note, however, that this new property tax revenue will not be fully realized until the plan is fully implemented in 2042.

Increase City Capacity to Fund the Greenbelt

Assuming the proposed build out of the Wilds and the Redevelopment Areas, the City will have increased property tax base which in turn will increase the City's capacity to increase its general obligation bond funding dedicated to the Greenbelt expansion and development. On average, the total \$41.1 million Greenbelt project requires \$1.6 million in annual City investment, assuming full participation of regional partners and the private sector. Other Community Investments included in the master plan add another \$1.0 million annually on average, although these projects would likely be funded on a one time basis rather than an annual ongoing capital program that is required for Greenbelt facilities.

The City has increased its general bond allocations for the Greenbelt reaching an average annual rate of \$550,000 based on 2 year spending of the 2015 bond

issue. The capital improvement program for the City budgets the Greenbelt Trail Replacement Program with over \$2.3 million in 2017, 2018 and 2019. Therefore, in order to implement the master plan over 25 years, the City would likely have to increase its budget of capital improvements dedicated to the Greenbelt. Assuming the current level of assessed valuation of \$1.4 billion and fully funding the city's share of Greenbelt improvements \$1.6 million, which is only a portion of the total project, the City would need the equivalent of \$1.19 per \$1,000 of taxable valuation in the debt service levy to fund the Greenbelt improvements.

Engage Regional Partners

The Greenbelt is a regional asset and resource that requires participation from regional partners because it bears the brunt of environmental impacts associated with development outside of the City limits. Therefore, the City will need to engage adjacent communities, regional and state agencies to share in the costs of improving the environmental conditions in the Greenbelt.

Maximize Private Sector Participation

There are plan elements that involve private partners and investment in the Greenbelt and Other Community Investments. For trail construction, most of the new development in the City of Clive has either been developer contributions or the City's general obligation debt. Identifying the potential projects that may be borne by the private sector reduces project costs for the city. Private sector participation has the potential to reduce the City's cost for the core Greenbelt improvements by about 18 percent based on assumptions about projects that could be taken on by the private sector.

Create a Wetland Development Bank

Developing a wetland development bank is a way to monetize the improvements to the natural areas in the Greenbelt by selling wetland bank credits to developers that are required by the state to purchase credits if their development eliminates wetlands. The City would have to establish and administer the wetland bank or explore collaboration with existing wetland banks as partners. The cost of wetland bank credits fluctuates depending on demand and the level of competition for the credits at a given time, but can range up to \$60,000 per acre of credit.

Leverage of State and Federal Grant Funding

While the primary source of Greenbelt funding will be the City and private sector partners, the City should leverage state and federal grant funds for Greenbelt improvement projects. There are state and federal funding programs available that would support Greenbelt project implementation.

Leverage Large Scale Infrastructure Projects

The new sanitary sewer project and interchange project proposed at Hickman Road that are proposed will impact the Greenbelt and potentially create a stream of funds for project mitigation that the city can direct towards Greenbelt project implementation.

Build Community Support

Citizen surveys and community response to the proposed plans have been positive. Translating this excitement into private giving and contributions may provide support for Greenbelt operations and implementation of proposed projects. Most public support will come



through the form of supporting increased appropriations for city parks and recreation operations and general obligation bonds for Greenbelt projects.

Build Community Support for Fundraising, Sponsorship, Naming Rights and Volunteerism

Citizen surveys and community responses to the proposed plans have been positive. Translating this excitement into private giving and contributions may provide support for Greenbelt operations and implementation of proposed projects. Most public support will come through the form of supporting increased appropriations for city parks and recreation operations and general obligation bonds for Greenbelt projects. Nonetheless, community, educational, health and environmental organizations can provide additional direct fundraising, in kind or volunteer support for the master plan. Individuals and businesses often provide money for facilities in return for donor acknowledgement, dedication or naming rights. Naming rights may be used by the City to fund specific projects, such as the amphitheater, as well as trail furnishings, facilities, and trail segments. The Clive Community Foundation may be one source of giving that can pool donated funds from throughout the community and the region. Other organizations, schools, churches, businesses and other community organizations are a source of potential volunteers for Greenbelt work and clean up days.

Developing recommendations for this master plan related to the political considerations is a bit of a moving target. Funding, regulation, overall political will for improvements in water quality/quantity – these are all set against a backdrop of controversy over how best to address the state’s soil and water management issues.

At the same time, trails initiatives are also not entirely settled and the City of Clive has regulations on its books that appear to challenge some of the Greenbelt business owners from achieving full benefits from their location.

Partnerships and Collaborations

Stormwater Management, Flooding and Water Quality

Partnerships and collaborations are critical to the success of this Greenbelt Master Plan. With the Greenbelt's location entirely within the Walnut Creek Watershed (which is part of the larger North Raccoon Watershed), and water management so critical to the long-term health of the Greenbelt, a number of partnerships must be sustained over time for the plan's success. Currently, Clive is well-positioned to partner in this key arena. A Clive City Council Member is currently leading an initiative to secure federal funding in support of the Raccoon River Watershed and Clive has been an active member of the Walnut Creek Watershed Management Authority (see below). These are vital partnerships that appear poised for long-term support by Clive staff and leadership.

Public Health

Public health partnerships also matter. As can be seen throughout this report, the Clive Greenbelt promotes healthy living (active living, de-stressing get-aways, reflective spaces for mental health, social gathering spaces and more) for both the City and the region. This places the Greenbelt on the front-lines of fighting the obesity epidemic and any number of illnesses attributed to sedentary lifestyles. It also positions Clive to promote healthy choices overall, even providing key benefits in the arena of mental health. Mental health is an area of health care gaining increasing attention as health care providers, patients and families call for more supports. This planning effort has already placed the City of Clive in partnership with the Healthiest State Initiative, Polk County Public Health, and a locally convened "Public Health Advisory" team which includes Des Moines University and the Iowa Department of Public Health.





STABLE: Little Walnut Creek, in a stable rural section.



Recent erosion

UNSTABLE: A moderately unstable part of Little Walnut Creek.

Infrastructure Partnerships

The City is currently an active member of the Metropolitan Planning Organization (MPO), the Wastewater Reclamation Authority (WRA), and Metro Waste Authority. These and other regional infrastructure collaboratives are of incredible value to the Greenbelt, along with more traditional utility partnerships (e.g., MidAmerican Energy). Similarly, working in partnership with neighboring communities (already underway) must continue for successful infrastructure supports and trail connections.

Funding Partnerships

As will be seen in later chapters on funding, any number of public and private partners are working in areas that could be directly relevant to the capital expenses and ongoing maintenance costs of the Clive Greenbelt. Many of these partners are listed both above and below. Locally, the Clive Community Foundation and the Community Foundation of Greater Des Moines are perhaps among the more prominent private funding partners but certainly organizations like Bravo Greater Des Moines are relevant, too. At the county level, both the Board of Supervisors and the County Conservation Boards have roles to play in partnering for the Greenbelt's success (and technical assistance in addition to funding likely applies here). At the state level, any number of agencies are poised to connect including the Department of Natural Resources, the Department of Cultural Affairs and the Iowa Economic Development Authority.

Soil/Water Health Planning, Funding and Regulation

Completion of the Walnut Creek Watershed Management Authority Watershed Plan

This plan was completed in late June 2016.

It includes a series of recommendations for the urban and rural sectors (see “Political Capital Recommendations” below). The Authority has endorsed the plan and will be working to achieve the recommendations throughout the metro. A watershed coordinator position is being funded at Polk Soil and Water Conservation District to assist in the implementation of this and two other watershed plans in the metro. The watershed coordinator will assist both urban and rural partners in the implementation of the plan. Polk SWCD has secured grant dollars for plan implementation (upstream, rural watershed work). A consortium of state/federal agencies and others have secured federal dollars through the Natural Resource Conservation Service (NRCS) Regional Conservation Partnership Program (RCP) for Walnut Creek Watershed Plan implementation (among other watersheds in the state). Again, these dollars will be targeted at upstream practices, but with the whole of Clive located in the Walnut Creek Watershed, these dollars will likely benefit the Clive Greenbelt’s water quality and quantity. The Walnut Creek Watershed Plan further has called out a series of Clive projects, based on observed conditions and the city’s current and future plans for stormwater management and greenbelt improvements.

Capital Crossroads and the Soil and Water Future Task Force

Near the beginning of the state’s most recent legislative session (Jan/Feb 2016), a collaborative of urban and ag business leaders, non-governmental organizations (NGO’s), city/county agencies and other water quality stakeholders convened to develop recommendations for the legislature on how to address water issues in the state. These recommendations include establishing an ongoing fund-



Aerial photos from flood event—June 25, 2015

Source: RDG Planning & Design

ing stream for water quality/quantity improvements (e.g., passage of the 3/8 cent sales tax to fund the Natural Resources and Outdoor Recreation Trust Fund, funding a new state revolving fund for soil and water health, and/or similar initiatives). This task force continues to meet but at the conclusion of the 2016 legislative session, no substantive legislation was passed to address water quality.

A Legislative Impasse

At least in part, the legislature failed to reach agreement on water quality due to a division in how to fund any new initiatives and associated accountability with any funding. At issue is whether “new money” (e.g. a sales tax) should be implemented, or whether funding water quality should be “revenue neutral.” Concerns have also been raised about the ability to account for and effectively, transparently spend a significant amount of resources. At the same time, some

legislators seek regulation linked to any funding streams and others oppose regulation.

Topsoil Rule and City of Clive Leadership

Prior to launching this Greenbelt Master Plan, the state rescinded its 4” top soil rule based on requests from the development community. Previously, developers were required to replace 4” of top soil on developed lands as their projects concluded. It is critical that the lands remaining post-development do not lose their capacity to soak up water. Detention basins or other management practices cannot be expected to reduce the additional runoff volume created by a non-functioning landscape. Heavy equipment causing substantial compaction and increasing rainfall amounts/frequency make restoring healthy topsoil a critical tool for managing water and controlling erosion. The City of Clive has attempted to lead

here by introducing a new ordinance that could serve as a model for the metro area. This proposal is currently being reviewed by the City of Clive.

Stormwater Pollution Prevention Plans (SWPPPs)

A key finding of the Walnut Creek Watershed Plan is the serious impact of construction sites on erosion. The Watershed Plan calls for improvements in implementation of these plans and of their enforcement. While relevant to re-development as well, this is a particularly critical element for “The Wilds.”

Planning for Low Impact Development

The Greenbelt Master Plan envisions a fresh approach to development in “The Wilds.” This will require shifts in guidelines to allow for the early preservation/protection and buffering of the creek/streams while achieving economic impacts similar to traditional development. This means potentially allowing for smaller lot sizes/setbacks, narrower street widths, education/incentives for homeowner practices (e.g., rain gardens, rain barrels) and allowing nature-based stormwater management practices (“green infrastructure”).

Greenbelt-Business Connections

Patios and Parking

Businesses adjacent to the greenbelt say they hesitate to take full advantage of their greenbelt proximity by expanding patios due to the seasonal nature of the business and the city’s associated parking requirements. They refrain from expanding services to cater to cyclists when facing costly requirements intended for drive-in users.

Connections

In part, businesses hesitate to make trail connections as they have no guarantees of city follow-through if they launch a connection from their property to the greenbelt limit. And with city assurances, they still must make an economic decision about the cost of the connection compared to their capacity to draw an audience from the trail, especially when that audience is largely seasonal.

Signage

Current sign ordinance constraints placed on the trail help preserve the Greenbelt’s character but perhaps at the expense of helping users find their way to area businesses they might find appealing.

Pop-up Businesses

While somewhat related to minimal supporting facilities, the city must also allow pop-up businesses in the vicinity of the trail to equitably, affordably conduct and promote their businesses.

Trails Network

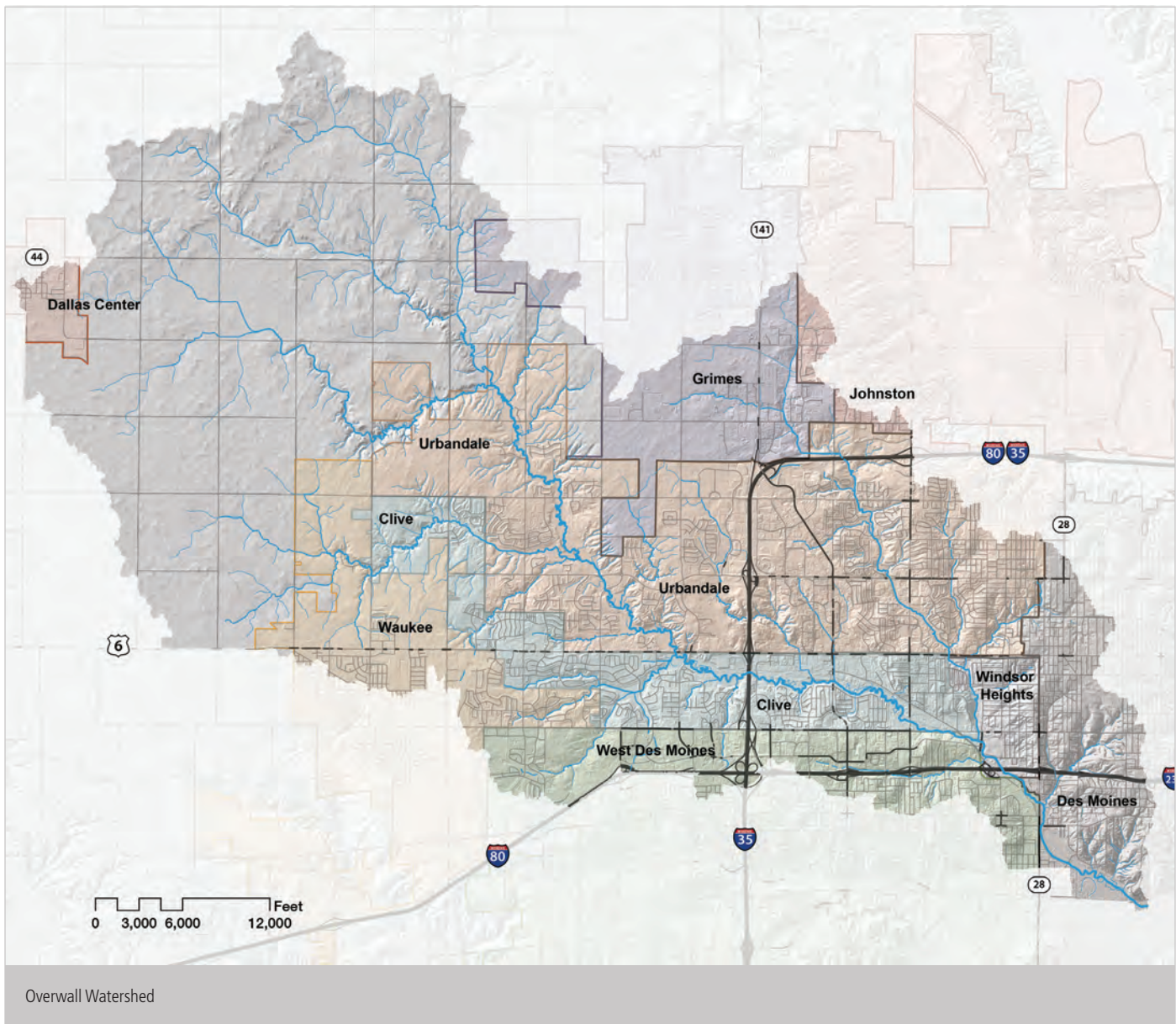
In recent years, trails funding opportunities have continued to shift. Federal transportation dollars committed to trails have ebbed and flowed and currently appear in a downward cycle. State trails funding has relied heavily in the past on available federal dollars. The Natural Re-



After stream restoration



Before stream restoration



sources and Recreation Trust Fund would bring (approximately) \$15 Million into the trail coffers annually (statewide), if the 3/8 cent sales tax were approved in the legislature and the currently proposed funding formula moved forward. Meanwhile, counties across the state have started to look to bond referendums to provide resources for parks, trails, and soil/water health. Polk County Conservation's \$50 million bond referendum (passed in 2012) is a case in point. Those

dollars, however, must be dedicated to Polk County Conservation managed/owned properties, making it difficult to apply that resource to the Clive Greenbelt, despite its regional function.

On the water trails front, the Iowa DNR's Water Trails Program has been typically funded at the \$1-2 million level annually over the last several years. With the Water Trails Program working in partnership with the Metropolitan Planning Organi-

zation (MPO) to develop a water trails plan for Central Iowa, this could/should help bring resources to the table for signage, access points, mapping/communications and potentially other aspects of water trails development. Whether this will drive meaningful resources for overall water quality/quantity improvements remains to be seen.

Recommendations

Soil/Water Health Planning, Funding and Regulation Policy and Regulations

Primary policy recommendations relate directly to those included in the Walnut Creek Watershed Management Plan, including:

- Use criteria in the Iowa Stormwater Management Manual (ISWMM) to reduce the impacts of storms in new developing areas. These standards would:
 - Improve water quality by capturing, cleaning and infiltrating runoff from a 1.25" rain event. 90% of all storms in Central Iowa are of this depth or less.
 - Collect runoff from a "1-year storm event" (2.67" in 24 hours) and slowly release it over 24 hours. This protects downstream channels from erosion caused by the rapid bounce in water levels after such events.
 - Provide detention of larger storms, releasing runoff at rates similar to natural, pre-pioneer settlement conditions. This helps to mitigate the risks of flooding over time.

These goals are best accomplished when using practices such as wet ponds, wetlands and bioretention features incorporated into open spaces as amenities accessible to the public.

- Use the techniques outlined in the ISWMM to maximize the use of soil quality management and restoration. This will help support plant growth and reduce runoff. Incorporate these techniques into a local ordinance.
- Buffer streams to allow for floodwater

conveyance, stream migration, slope stability and access. More detailed guidance is included in the Walnut Creek Watershed Plan.

- Improve implementation and enforcement of Stormwater Pollution Prevention Plans
- Protect the 100-year flood plain:
 - No new structures in developing areas
 - Maintain flood storage capacity
 - Reserve open space where flooding or stream movement is expected
 - Set new structures 3-feet above the 100 year flood plain's high water elevations

Related policy recommendations include promoting the use of practices by private landowners – reduced impervious paving, rain barrels, rain gardens or comparable stormwater management features. Such projects could be incentivized by allowing for stormwater utility credits.

It is recommended the city develop a suite of guidelines for developments (new and/or repurposed) to incorporate additional low-impact design principles, such as:

- Preserve and maintain the natural topography and drainageways to convey, cleanse and infiltrate stormwater
- Reduce impervious surfaces
- Use "green infrastructure" (e.g., stormwater planters, bioretention cells, bioswales, aggregated habitat and corridor protection)
- Allow greater density on remaining available development land (shallower lots and setbacks, increased availability of multi-use development/form based code)

- Minimize land disturbance
- Mimic the hydrology of the native ecosystems, retaining stormwater where it lands
- Plant for natives/biodiversity, potentially restricting invasive species, and including allowance of front yard native plantings/rain gardens (native prairie forbs and grasses are water-absorbing plants)
- Use of Natural Resources Overlay District(s) or similar tools to implement holistic natural resource protection practices (See Habitat Restoration Recommendations in Chapter 7 for additional information).

This plan recommends the City commit to an ongoing Capital Improvements Plan set-aside for management/maintenance of the Clive Greenbelt (including trail and amenities) and Walnut Creek/streambank restoration. Also consider an annual commitment to match upstream and/or private projects not within Clive's direct jurisdiction but which directly benefit the City's overall soil and water health. Such a set-aside would enhance Clive's ability to collaborate with others (see below).

Advocacy and Collaborations

This plan recommends the City of Clive:

- Retain its active role in the Walnut Creek Watershed Management Authority
- Potentially expand its participation in additional collaborative initiatives (e.g. The Greater Des Moines Partnership's Soil and Water Future Task Force)
- Consider direct advocacy on behalf of an ongoing funding stream of significance to support both urban and rural

Recommendations



Collaborating with watershed partners is critical

- best management practices for storm-water management
- Consider advocacy in support of Farm Bill policy changes that could have a direct impact on Walnut Creek's upstream health
- Participate in partnered projects through matching funds, technical assistance and/or letters of support.

Due to the value of any number of collaborations and partnerships, this plan further recommends:

- Continued support of public health partnerships, potentially expanding current efforts with the Healthiest State Initiative, Polk County Public Health, AARP and more. Local health care providers, clinics, senior living centers, etc. are all likely candidates.

- Continued collaborations with the Clive Community Foundation and other private foundations and funds to maintain additional private supports for the Greenbelt.
- Similarly, ongoing partnerships through the MPO, Wastewater Reclamation Authority (WRA) and neighboring communities to help address regional infrastructure supports (trails, utilities, etc.) in addition to the storm-water/water/soil health partnerships described above.

Greenbelt-Business Connections

This plan recommends:

- Revisit the sign ordinance in partnership with the business sector to develop signage requirements that allow for

greater promotion of the Greenbelt's business partners while maintaining preservation/protection of the Greenbelt's "oasis" character

- Develop guidelines, including appropriate cost-share policies, to enhance physical Greenbelt-business connections
- Adjust patio/facility parking ratio requirements to account for cycling-oriented (not car oriented) clientele
- Set guidelines to allow for pop-up businesses and monitor their impact.