FOREST CITY STAPLETON, INC.

2004

Stapleton Sustainability MASTER PLAN

I am pleased to introduce the 2004 Stapleton Sustainability Master Plan.

As you'll discover, Stapleton's practical, results-driven approach to sustainability has resulted in the achievement of early successes and has provided a solid framework to guide future efforts and investments in the project. Sustainability at Stapleton has set a new standard of excellence for community development projects of all sizes. By demonstrating that sustainability can be integrated on a large scale and in such practical and cost-effective ways, Stapleton provides a replicable model of success for other communities.

Without question, one of the most critical factors helping achieve sustainability goals at Stapleton has been the collaboration and contributions of individuals and organizations throughout the community and country. The ongoing effort and involvement of these groups trace back to the initial planning and vision for Stapleton, including the development of the Green Book, which continues to be a valuable tool in achieving current and future sustainability goals. In addition to furthering the success of Stapleton, these various contributions have created a far-reaching ripple effect and are now poised to impact countless other development projects as ambassadors of other communities visit Stapleton and/or hear the wonderful story.

As a result of the success of sustainability at Stapleton, Forest City Enterprises recently adopted sustainability as one of our eight core values. This marks an important milestone for our organization and elevates sustainability to a new level of strategic importance and accountability. While we have a great deal to learn, our customers and partners are increasingly interested in understanding how sustainability practices can be incorporated in their projects and we are excited to assist them.

Of course, the achievements outlined in this report are only the beginning. Much work remains to be accomplished at Stapleton. Forest City looks forward to continually building on the success and momentum of Stapleton by promoting and pursuing sustainability efforts in our future development projects.

Chuck Ratner
President and CEO, Forest City Enterprises

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It's a question that goes to the heart of what we define as sustainability at Stapleton. Simply put, our goal is to create a community that not only enhances the quality of life for people today, but also ensures that the

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How do you create a community
that will stand the test of time–environmentally, economically and socially?

needs of future generations can be met. It's a common sense approach that involves understanding and planning for the long-term viability of the community's natural resources as well as its social and economic systems.

STAPLETON

The Stapleton Sustainability Master Plan is designed as a guide—a resource that can be shared and referenced at every step in the planning and redevelopment process.

The Green Book

At the heart of Stapleton's sustainability strategy is the Green Book, known more formally as the Stapleton Development Plan. This comprehensive resource provides key guidelines that provide the foundation for Stapleton's sustainability efforts as well as a framework for the community's continuing growth.

Building on these guidelines, the Stapleton Sustainability Master Plan provides strategies and achievement reports that are designed to guide the development and management of key resources within Stapleton's natural and built environments.

A Practical Approach

The Stapleton Sustainability Master Plan clearly differentiates Stapleton's unique and pragmatic approach to sustainability. While many developers tend to treat sustainability as a concept or building philosophy, Forest City Stapleton, Inc. uses the Master Plan as a tool to ensure a more practical approach.

In addition to defining tangible actions, the Stapleton Sustainability Master Plan provides measurable objectives that can and will be continually tracked and refined throughout Stapleton's development.

Areas of Focus

The goal of the Stapleton Sustainability Master Plan is to transform the vision of a sustainable community into a reality. To do so, it outlines action plans for eleven key areas critical to the long-term viability of the community. Detailed overviews of each of the following areas are provided in the subsequent chapters of this document:

- Education
- Land Use Design
- Parks and Open Space Preservation
- Community Lighting
- Residential Building
- Commercial Building
- Recycling
- Transportation
- Energy Conservation and Alternative Sources
- Water Management
- Healthy Living

Next Steps

The Stapleton Sustainability Master Plan is designed as a guide—a resource that can be shared and referenced at every step in the planning and redevelopment process. However, it is also a living document, one that will continue to evolve with Stapleton. On a continual basis, the Plan will be reexamined and refined in order to ensure that goals are not only practical and feasible, but also economically viable. Achievement Reports are included at the end of each chapter of this plan to highlight specific actions and programs that have been completed or are underway. These reports will also be updated on a regular basis to provide a clear and timely record of tangible steps being taken to achieve Stapleton's sustainability goals.

STAPLETON

THE STAPLETON vision

When the people of Denver voted to transform the city's historic Stapleton International Airport into a new landmark neighborhood, they were determined to do it right. That included incorporating sustainability practices into every aspect of the redevelopment effort. Forest City Stapleton, Inc., which was selected as the city of Denver's development partner in 1999, has worked in partnership with the Stapleton Foundation for Sustainable Communities, the Stapleton Development Corporation and the City and County of Denver to ensure that sustainability is a key priority and integral part of the Stapleton redevelopment project.

Stapleton has garnered international media attention for its commitment to sustainability because it is the first development of such a substantial scale to do so. In total, Stapleton encompasses 4,700 acres, or 7.5 square miles. When complete, it will be home to some 30,000 residents and 35,000 workers, including more than 12,000 homes, 3 million square-feet of regional and town center retail, and 10 million square-feet of office, research and development and industrial space. In addition, it will feature more than 1,100 acres of regional parks and open space.

By making sustainability an integral part of its ongoing development plan, Stapleton is setting a new standard for urban community redevelopment—of all sizes.

EDUCATION

GOAL: To create stewards of the Stapleton community who understand, support and contribute to sustainability on every level and at every opportunity.

Education is at the core of all of our sustainability initiatives at Stapleton. In fact, it is a key goal for each of our areas of focus, meaning it is an inherent part of every project we undertake. The reason is simple: sustainability is a community vision. And a community responsibility. It is not a goal that can simply be completed and forgotten. It must evolve and grow into a community mindset and culture.

At Stapleton, we use a variety of resources to promote the lifelong learning of every person who lives and works here, from community workshops and classes to the regular distribution of our informative monthly newsletters, New Leaf and New Leaf for Kids.

Ultimately, our goal is to help people understand more than the how's of sustainability—but also the why's. By educating and sharing information about the benefits of sustainability practices, people are better able to understand how these efforts impact their day-to-day lives at Stapleton—and why they are worth continuing.

Certainly, we do not expect every person to embrace every aspect of sustainability. Rather, our goal is to encourage each person to change just one behavior in their day-to-day lives, whether it relates to their transportation choices, recycling habits or water conservation practices. Collectively, these efforts will create a positive ripple effect throughout Stapleton and surrounding neighborhoods and communities, initiating conversations among neighbors, strengthening community involvement and, ultimately, inspiring interest and support among future generations.

"The reason is simple: sustainability is a community vision."

Simply put, the information contained within this Stapleton Sustainability Master Plan serves as the foundation of community stewardship at Stapleton. To affect change, we must all build upon it—by incorporating practices into our every day behavior and continually sharing what we learn with others. At every opportunity.

education.

Achievement Report: *Education*

New Leaf Newsletter

Published monthly, this brochure provides general information and practical tips about various sustainability practices, helping to inform and motivate residents to utilize them in their own homes and lives. The following is a list of sustainability topics covered in past issues:

2004

January: *Healthier Laundry*
February: *Cooking Smarter*
March: *All About Organic*
April: *Earth Day 2004 – Take Action!*
May: *Eating Healthy: Tips to Make it Easier!*
June: *Protect Yourself from the Sun*
July: *Reduce Greenhouse Gas Emissions from Cars*
August: *Have Fun with Fitness!*
September: *Special Edition on Saving Energy with Appliances in Your Home*
October: *Influenza*
November: *Carpet Tiles for Your Home*
December: *Reduce Holiday Waste*

2003

January: *Saving Water in the Kitchen*
February: *What's a Compact Fluorescent Light?*
March: *Saving Water in the Bathroom*
April: *What is Windsource?*
May: *Compost…Turn Over an Old Leaf*
June: *Biking – Alternative Transportation*
July: *Easy Recycling at Home*
August: *Common Household Cleaning Products*
September: *Parade of Homes Special Edition on Landscaping Design*
October: *Paint – Safer and Healthier*
November: *Low-E Windows*
December: *Holiday Lighting Tips*

2002

October: *Saving our Shade*
November: *Saving Water in the Laundry Room*
December: *A Sustainable Holiday Season*

New Leaf for Kids

Also published monthly, this kid-friendly brochure features fun tips and activities that help children of all ages better understand principles of sustainability.

2004

March: *It's Time to Exercise!*
April: *Celebrate Earth Day 2004*
May/June: *Conserve Water*
August: *Waste Less this School Year!*
September: *National Farm Animals Awareness Week*
October: *Eat It. Plant It. Compost It.*
November: *Reduce, Reuse and Recycle at Thanksgiving*
December: *Sustainable Holidays*

Community Events and Information

Sustainability is a continuous priority at Stapleton and is integrated whenever possible into year-round community events. Due to space constraints, it is not possible to list all of the sustainability components of every community event over time. However, below is a list of educational topics that were posted and promoted on the Stapleton intranet this year.

STAPLETON ONLINE INTRANET INFORMATION, 2004

- Developed and posted information about the following issues:
  - Water Restrictions
  - Dark Sky–The Lighting Crises
  - Stapleton Farmers' Market
  - Colorado on the Move
  - America Recycles Day
  - Treecycle
  - Community Garden
  - Healthy Living and Wellness
  - Stapleton Strollers
  - Recycling Election Signs
  - Denver LEAFDROP

Partnerships with Schools

Forest City Stapleton, Inc. and the Stapleton Foundation partner with community schools to identify and implement programs that integrate sustainability principles into the educational environment. The following highlights some key efforts and programs:

The Odyssey Charter School and Westerly Creek Elementary School

- Serve as an ongoing resource to support curriculum development with regard to sustainability.
- A solar-powered computer system and kiosk in the entry area provides a way for students and visitors to learn about solar power.

The Denver School of Science and Technology sustainable building highlights include:

- Oriented the building longitudinally on an east-west axis to maximize heat gain during the winter.
- Incorporated various courtyard locations to allow maximum light into the classrooms.
- Used extensive daylighting strategies to reduce artificial lighting needs.
- Ensured that majority of lighting is indirect, which is optimum for learning environments.
- Utilized high-efficiency glass and thermally broken windows to reduce temperature transfer along the walls.
- Mandated use of R-19 insulation in the walls and R-30 insulation at the roof.
- Designed mechanical system to allow for ice storage in the future
- Used recycled carpeting.
- Installed "white roofs" on flat areas to reduce the heat island effect.
- Constructed wood arcade at the south entrance from spare wood shavings from mills.

The second Denver Public Schools' Elementary School at Stapleton is currently under construction. Highlights of sustainable design elements include:

- Geothermal mechanical HVAC system.
- Daylighting through increased quantity and performance of glazing on windows.
- Sun control devices to block direct sunlight but also project natural light deep into classrooms.
- Commissioning of mechanical and electrical systems.
- Connection to future gray water utility for irrigation.
- Rain sensor to shut off irrigation during rainstorm.
- Separate irrigation systems for trees/shrubs and sod so that the trees and shrubs can be irrigated during drought restrictions.
- IBAS system to monitor and/or operate mechanical and electrical systems remotely.

Stapleton Farmers' Market

In June 2004, we launched the first season of weekly Stapleton Farmers' Markets. Held each Sunday from June through October, the markets were enthusiastically welcomed by residents of Stapleton and the surrounding communities.

In addition to providing a fun community activity, the Stapleton Farmers' Market is a sustainability program. Unlike the more obvious sustainability aspects of recycling and water conservation, the sustainability aspects of the Stapleton Farmers' Market require a bit more explanation. Here's a closer look at some of the key aspects:

ENVIRONMENTAL SUSTAINABILITY: Most food in the United States travels an average of 1,300 miles from the farm to the market shelf. The Stapleton Farmers' Market provides an outlet for locally grown food, reducing the impact of transportation, while supporting the preservation of the regional food production system. The Stapleton Farmers' Market also offers residents easy access to an abundance of healthy, fresh food choices.

ECONOMIC SUSTAINABILITY: Sustainability is not just about the environment. It is also about the financial health of a community. The Stapleton Farmers' Market provides access to local merchants, contributing to a more vibrant community by ensuring a balance between these smaller entities and national food distributors.

SOCIAL SUSTAINABILITY: Sustainability also has a social component that encompasses a variety of goals at Stapleton. The Stapleton Farmers' Market contributes in multiple ways to this goal by creating a natural gathering place for residents to meet and catch up with neighbors and friends.

The Stapleton Farmers' Market helps build and maintain a more sustainable community for everyone to enjoy.

Notes:

LAND USE DESIGN

At Stapleton, sustainable land planning fosters a community that integrates the very best features of traditional urban life, including a vast network of open spaces, parks, homes, businesses and community centers.

GOAL: To incorporate a comprehensive and mixed-use design that ensures a distinct and enduring way of life for the people who live and work at Stapleton.

Stapleton presents a new ideal for urban living. Rather than following conventional suburban models that promote sprawl, Stapleton is designed to create connectivity throughout the community—from homes to office buildings, to schools and community centers, to shops and restaurants, to parks and open spaces. This New Urbanism philosophy not only defines how Stapleton's neighborhoods are constructed today, it ensures how they will grow in the future.

Promoting Connectivity

Stapleton's land use design calls for neighborhoods with a diverse selection of housing in close proximity to recreational, educational, retail, office and transit opportunities. Emphasizing mixed-use zoning throughout, this integrated design promotes a more inviting and walkable community—where people can enjoy tree-lined streets, sidewalks and pathways that connect homes, offices, shops, schools and parks.

At the same time, the design emphasizes site planning, building design and scale in order to create visually dynamic and inviting streetscapes that blend natural elements and urban architecture. Every Stapleton home, office and street is held to specific design standards that promote a sense of neighborhood, while encouraging architectural distinction. In practical terms, that means each home will look distinct. It also means front porches rather than garage doors greet passers-by. And centrally located parks and open spaces promote a sense of community and connection.

Long-term, the land use design will help ensure Stapleton's ability to accommodate future growth. For example, the proximity of homes and businesses to multiple transportation options—including mass transit, sidewalks and bike paths will help significantly reduce the potential for increased traffic congestion and related air quality issues.

land use

Achievement Report: *Land Use Design*

Land Use Standards

Forest City Stapleton, Inc. has defined the following standards to guide the development of land use design at Stapleton.

Mix of Land Use
- Ensure mix of retail, residential, civic and office uses to encourage activity and access.
- Locate essential goods and services within walking or biking distance from homes to reduce unnecessary car use.

Transit-Oriented Design (TOD)
- Plan TOD district around future rail connection to downtown Denver.
- Propose mixed-use buildings adjacent to transit nodes and bus and train stations, where possible.
- Design for future transit uses in plan.

Open Space Connectivity
- Provide maximum continuity of open space for wildlife migration and recreational use.
- Connect schools to greenway areas to ensure safe walking commutes for children.
- Integrate recreation areas into greenway network for easy access from neighborhoods.

Neighborhood Connectivity
- Connect neighborhoods via street grids rather than arterials and cul-de-sacs. This reduces the need for over-use of arterial streets, which are not as pedestrian-friendly as small streets.

Walkable, Pedestrian-Oriented Neighborhood Streets
- Integrate sidewalks, parallel parking and tree-lined streets to promote pedestrian-friendly walkways.
- Incorporate bike paths into street design to promote alternative transportation.
- Face buildings forward to the street, rather than toward rear parking lots, to create inviting entrances.

Livable, High-Volume Streets
- Create boulevard streets with landscaped parkways.
- Provide curbside parallel parking to keep traffic speeds to a minimum.
- Use frontage roads to provide easier access/departure points for residents of neighborhoods located at the edge of major streets.

Preservation of Sensitive Natural Areas
- Preserve environmentally sensitive areas.
- Leave significant, unique natural areas undeveloped for use as neighborhood amenities.
- Preserve creek areas to use as community amenities.

Emphasize Permeable Surfaces
- Design narrower streets that require less asphalt.
- Provide tuck-under parking to reduce outdoor lots.
- Integrate abundant unpaved areas in parking lots to promote natural drainage and landscaping.

Transit-Supportive Densities
- Design higher residential densities near major amenities.
- Design higher residential densities near transit nodes and major streets.
- Design higher residential densities near mixed-use areas.

Appropriate Solar Orientation
- Design north/south residential blocks to provide maximum southern exposure.
- Utilize small block design to ensure maximum access to light and air.
- Minimize north-facing exposures.

Reuse of Existing Buildings
- Integrate existing parking structures for employment district use.
- Reuse control tower as community amenity and icon.
- Prioritize reuse of structures whenever possible.

Views to Mountains/Visual Connections to Nature
- Preserve important natural vistas to reinforce sense of place and connection to natural environment.
- Reinforce views of downtown to emphasize relationship to urban center.

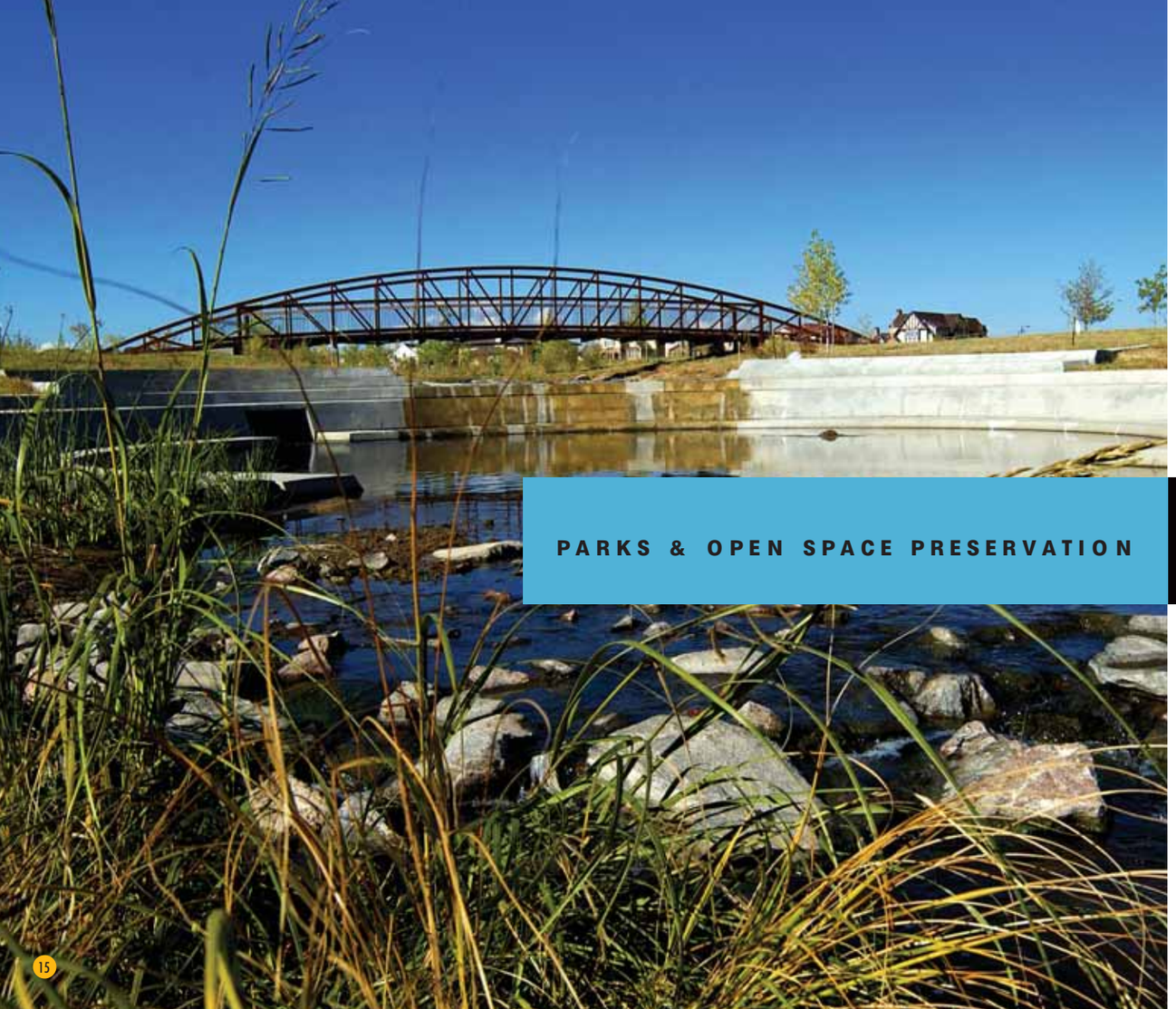
Topography-Sensitive Design
- Use topography to create continuous green space connectivity.
- Integrate topography to ensure access to views/vistas.
- Use topography to screen parking lots, industrial spaces and other undesirable features.

Cultural Sustainability
- Include major parks and pocket parks to offer convenient place for neighborhood socializing.
- Provide community centers to offer easily accessible venues for programs, daycare and classes.
- Situate schools near activity nodes to provide easy access to transit and neighborhoods.

Demographic Sustainability
- Design variety of residential lot sizes.
- Design variety of housing types.
- Design variety of rental/ownership opportunities.

Economic Sustainability
- Design mixed-use employment districts to promote local job growth and minimize commutes.
- Provide mixed-use town centers near neighborhoods to offer easy access to goods, services and jobs.

Notes:



PARKS & OPEN SPACE PRESERVATION

parks

GOAL: To create a strong system of parks and open space that integrates with the built environment in order to provide a more enriching urban experience—and create a stronger sense of community.

Protecting and restoring natural systems is a vital part of the Stapleton Sustainability Master Plan. It is also a continuation of Denver's rich tradition of public parks and greenways. With more than 25 percent of its total acreage – or 1,100 acres – devoted to recreational space, Stapleton will provide an extensive system of recreational space that, when complete, will increase the Denver Park System by more than 25 percent. In addition to serving as a regional recreational resource to residents of Stapleton and the surrounding communities, this system will also protect natural areas that support wildlife habitat and native plant communities.

Stapleton's Parks and Recreation Master Plan, published by the Stapleton Development Corporation, grew out of a careful analysis of the area's existing natural features, its local and regional context and its community vision and objectives. Guided by these considerations, the plan connects the natural and urban environments in a way that is mutually beneficial.

The Parks and Recreation Master Plan incorporates, for example, native and naturalized landscapes to define and connect built environments, while enhancing the community's aesthetic beauty. These areas include greenbelts, parkways, open spaces and other trail systems. At the same time, the Parks and Recreation Master Plan recognizes and protects existing natural features, including a lake, two creek corridors and bluffs. These environments not only enhance the quality of life for residents, they provide critical habitat and wildlife corridors.

Natural Highlights

When complete, Stapleton will feature a unique and diverse system of natural areas and environments that will account for nearly one-quarter of the total land area. Here's a look at some of the key resources that will be included in this vast network:

CENTRAL PARK. The centerpiece of Stapleton's parks and open spaces, Central Park will offer a wide array of recreational opportunities, including trails, water play areas, meadow/open areas, play environments, specialty landscapes and informal sports fields.

"These environments not only enhance the quality of life for residents, they provide critical habitat and transportation corridors for wildlife."

SANDHILLS PRAIRIE NATURAL AREA. The Sandhills Prairie Natural Area will allow people to enjoy a variety of recreational activities amidst the surroundings of a restored native sandhills prairie.

BLUFF LAKE NATURE CENTER. This 123-acre natural area located along Sand Creek provides important habitat for a wide variety of wildlife and is an outdoor classroom for thousands of K-5 students each year. Visitors also enjoy Bluff Lake as a place to relax and learn about nature. Several native plant gardens highlight plants that grow naturally and sustainably in Denver's semi-arid climate.

GREENWAY PARK. This linear, multi-use corridor provides wildlife habitat and movement corridors and pedestrian routes, while helping to manage water quality and storm overflows.

PARKWAYS. Located throughout Stapleton, the parkways provide a natural getaway for people to enjoy a wide variety of outdoor activities.

SAND CREEK CORRIDOR AND TRAIL. Spanning nearly 14 miles of natural corridor, Sand Creek starts in Aurora, winds through Stapleton, and ends in Commerce City. Eagles, fox, deer, coyotes and great blue herons share this natural habitat with visitors. With the off-road trail open, the next phase is now underway. Completion of the entire greenway is expected in five to seven years, including five major parks, seven trailheads, and off-road connections north to Rocky Mountain Arsenal and west and east to the metro trail network.

WESTERLY CREEK CORRIDOR AND TRAIL. Previously covered by the runways of the old airport, Westerly Creek and its new corresponding trail system create recreational pathways and wildlife habitat—and serve as an important storm water management facility.

FRED THOMAS PARK. Providing a natural connection between adjacent neighborhoods, Fred Thomas Park provides a central spot for a host of recreational resources, including basketball courts, play lots, picnic shelters, open meadows and sports fields.

NEIGHBORHOOD POCKET PARKS. Located within each of the neighborhoods, these parks serve as community-gathering areas that are pedestrian and family-friendly.

TOWN GREENS. These small parks are urban in look and feel, and provide a center for community landmarks, such as an amphitheater, gardens, monuments and water features.

GOLF COURSE. Designed for regulation 9- and 18-hole games, the course will be planned, designed and managed for desirable play conditions in an environmentally sustainable setting. Amenities will include an indoor clubhouse and shade pavilions.

THE URBAN FARM AT STAPLETON. The Urban Farm provides a place for children and adults to experience Colorado's agrarian roots. Operated by the Agriculture, Wildlife and Environment (AWE) Center, it features an indoor dressage arena, horse corrals, farm animals and a children's garden.

ATHLETIC AND MULTI-USE COMPLEX. Linked via trail connections to community and neighborhood parks, this multi-use complex will feature state-of-the-art facilities for field sports, including national-level tournaments, while helping to promote overall healthy living.

open space

Achievement Report: *Parks and Open Space*

Stapleton Parks and Recreation Master Plan

This comprehensive resource was developed, published and managed by the Stapleton Development Corporation and the Park Creek Metropolitan District in Summer 2002.

Sustainable Design Principles

Whether designing for a public or privately maintained park area within Stapleton, the following design principles are constantly considered:

- Use only what is essential to achieve the desired effect and nothing more.
- Use on-site and locally available materials such as StapleStone and compost for soil preparation.
- Balance urban development with adequate natural areas and landscapes.
- Design for interest, diversity, connections, definition of spaces, interpretation and habitat.
- Provide stormwater systems that reduce pollutants at their source – water quality ponds, wetlands, landscape swales, etc.
- For materials not available on site, use materials indigenous to the region, including trees, plants, grasses and stone.
- Design areas for flexibility in use.
- Incorporate opportunities for responsible use of resources such as solar power for irrigation control, centrally managed irrigation with weather sensors that apply just the right amount of irrigation, and using recycled water for irrigation.
- Assure availability and convenience of pedestrian and bike routes to alternative modes of transportation.

Denver Public Parks and Open Space

Forest City Stapleton, Inc., the Stapleton Development Corporation and the City and County of Denver work together to ensure the sustainability of public parks and open spaces within the Stapleton community. These areas will ultimately be returned to the management of the Denver Parks and Recreation system, but all entities work together in contributing to the design and development stages. As a result, we have been able to introduce more innovative features that enhance the degree of sustainability of these areas, while helping to raise the standard of excellence for future public park projects throughout Denver.

Westerly Creek

The Westerly Creek stream restoration, extending approximately 1 1/2 miles from Montview Avenue north to the confluence with Sand Creek, represents an important step in the conversion of the former airport into our mixed-use community. Westerly Creek, one of two natural conveyances for storm water, previously carried water underneath the former airport's east-west runway and taxiways. This waterway was converted from a utilitarian, undersized conveyance channel to a diversified waterway, parks and open space system. Four bridges cross the creek at various points and are part of the trail system serving pedestrians, bicyclists and equestrian riders.

Ecologically, the corridor is targeted for a variety of small mammal and bird species that historically inhabit the Sand Creek corridor to the north. Habitat is provided with the planting of native and drought-tolerant trees and shrubs, wetland plants and grasses. The use of the wetlands material has a multifaceted purpose of providing stormwater filtration through water quality ponds, bank stabilization with the sod and biologs, wildlife habitat, and aesthetic enhancements that create a preserve within the largest urban infill project in the country.

Greenway Park

Greenway Park is a linear, multi-use corridor that provides wildlife habitat and natural migration corridors, a pedestrian recreation trail and a water quality/storm water management function. This active park system has bike and walking paths, tennis courts, a skate park and a dog park. It also features covered picnic areas, a playground for children and various gathering areas for get-togethers.

Special sustainability considerations included the installation of a drip irrigation system for shrubs and trees and the creation of a landscape design using a variety of plants that attract and sustain wildlife habitat along the greenway. In addition, the land use design minimizes traffic crossings to allow for continuous wildlife habitat.

Both Westerly Creek and Greenway Park have been piped with Denver Water's purple pipe to take advantage of the reclaimed water system. This infrastructure is in place, awaiting delivery of the water in the next several years by Denver Water.

Community Parks and Open Space

In addition to the public parks, Stapleton includes community pocket parks and town greens throughout each neighborhood that are maintained by the Master Community Association. Smaller in size than the public parks, these areas are designed to provide local play areas and gathering places for residents as well as to ensure a healthy balance between the natural and built environments. To ensure optimum sustainability, Forest City Stapleton, Inc. continues to integrate a number of innovative design features and elements that address these key areas of focus:

Water Conservation

- Established natural filtration drainage systems in local pocket parks by using sand-based filtration areas and eliminating curbs to allow for natural flow and drainage of water.
- Irrigation systems in future parks to allow for spray irrigation in sod areas only and drip irrigation in all other areas.
- Plant selections in parks use low water species.

Sustainable Materials

- Introduced park bench design to be used in community parks and town greens with wood slats harvested from fast growth trees. Wood slats on each bench are removable, allowing individual slats to be replaced as needed, rather than entire benches being discarded when damage occurs.
- Stapleton's parks and open spaces are pet-friendly locations. To ensure a healthy and inviting environment for all trail users, biodegradable dog waste bags are provided. These locations also feature the added benefit of dog drinking fountains.

Community Parks Now Open

- Founders' Green
- Aviator Park and Pool
- Three Neighborhood Pocket Parks

Notes:

The key objective of Stapleton's Lighting Master Plan is to address the functional and safety needs of the community—without negatively impacting or imposing on the natural environment. One of the most common lighting challenges many communities face is the issue of Dark Sky. Light pollution, or excessive and improper use of light within communities, is an increasing problem in this country and around the world. It's a problem most often recognized at night, when people are simply unable to see the stars because of the abundance of artificial light—hence the name Dark Sky.

COMMUNITY LIGHTING

GOAL: To apply an integrated lighting strategy that ensures appropriate light quality throughout the community, while minimizing light pollution and maximizing energy efficiency.

"Contributing to both visibility and safety, lighting is a key part of creating a walkable community."

At Stapleton, lighting is an important resource that serves both practical and aesthetic needs within the community. Contributing to both visibility and safety, lighting is a key part of creating a walkable community. However, if used in excess, it can be intrusive and detrimental to the environment as well as a safety hazard. Stapleton advocates a balanced approach that optimizes lighting benefits for residents and commuters, while minimizing negative effects on the community and the environment.

To address Dark Sky and other lighting challenges, Forest City Stapleton, Inc. has outlined a series of strategic imperatives that focus on conserving energy usage while improving safety and overall quality of life for residents, commuters and visitors. They include:

- Minimizing glare for pedestrians and motorists.
- Enhancing the nighttime environment and safety with appropriate lighting levels.
- Reducing light pollution and eliminating light trespass.
- Softening the nightscape by developing a natural hierarchy of lighting that reduces visual clutter.

Areas of Focus

These strategic priorities are shared with builders throughout Stapleton to help ensure proper lighting installations in residential and business buildings.

- Quantity. Use fewer but more effective lighting fixtures to achieve design goals.
- Durability. Use long-lasting, durable materials to prevent failure, thereby lowering maintenance and replacement costs.
- Recyclables. Use recycled-content materials, packaging and other materials that can be safely recycled.
- Safety. Use non-toxic materials.
- Energy efficiency. Design lighting systems that require the least amount of energy.
- Imbedded sustainability. Use local sources that eliminate energy consumption from freight costs and vehicle pollution.

community lighting

Achievement Report: *Community Lighting*

Lighting Master Plan Development

Now in the final stages of approval, the sustainable lighting plan is designed to:

- Address community safety and functionality needs.
- Promote optimal energy conservation.
- Prevent common Dark Sky and light pollution issues.

The specific steps outlined by the plan to achieve these goals are highlighted on the previous page.

Lighting Research Study

Forest City Stapleton, Inc. and the Stapleton Foundation are conducting research to determine the effectiveness of current lighting fixtures and designs throughout the community. The study utilizes the following quantitative and qualitative research methods:

Photo Metric Measurements - Findings compiled over a nine-month period, from April to December 2003.

- Measurements taken and results calculated for the following retail areas throughout Stapleton:

QUEBEC SQUARE: 5-10% light reduction from big-box corporate lighting standards.

KING SOOPERS IN THE EAST 29TH AVENUE TOWN CENTER: Over 50% light reduction from King Soopers' corporate lighting standards, including the lighting design in the gas station area.

EAST 29TH AVENUE TOWN CENTER AND FOUNDERS' GREEN: More than 30% light reduction from defined development standards. Wattages reduced to eliminate disability glare. Full cut-off pedestrian fixtures installed to adhere with Dark Sky issues.

WALGREEN'S: 10% light reduction and elimination of corporate façade lighting.

COMMERCIAL FEDERAL BANK: 10% light reduction from corporate standards.

Survey Tool

- Five separate focus groups are planned to participate in a survey that will rate the quality of specific lighting fixtures within the community on a number of factors, including glare, safety, functionality and aesthetics.
- The focus group effort has been delayed and current plans project completion of this task in 2005.

Civic Outreach/Participation

A representative from Forest City Stapleton, Inc. is an active member of Denver's City and County Lighting Task Force. Primary goals for the committee include researching, developing and implementing practical ordinances that will help achieve Dark Sky goals throughout Denver neighborhoods. Stapleton is serving as a model for lighting issues throughout the City and County of Denver.

Notes:

residential

RESIDENTIAL BUILDING: SINGLE & MULTI-FAMILY

GOAL: To create a quality standard for Stapleton homes that ensures the most durable, healthy, comfortable, affordable and energy-efficient homes for residents.

Currently, there is no single residential building standard that is broadly accepted nationwide. By creating a partnership of local and national programs, Stapleton is providing a unique resource for homebuilders that enables them to use and benefit from the best and most proven residential-building programs. Over time, this new standard of excellence will define and distinguish residential homes at Stapleton.

Residential building quality is a very important and integral part of a sustainable community because it directly contributes to the long-term satisfaction of the people who live there. Forest City Stapleton, Inc. has created a customized homebuilder-training program for Stapleton that incorporates and integrates the goals of top residential-building programs. This unique resource provides a common hierarchy of standards that can be referenced and used by homebuilders throughout the community.

Setting the Standards

The various organizations and standards listed below work collaboratively to create a dynamic residential training program at Stapleton.

BUILT GREEN COLORADO (www.builtgreen.org) This is the minimum standard that all Stapleton home builders must meet—and often exceed. Built Green advocates construction practices that enable:

- Better efficiency and reduced pollution generation
- Healthier indoor air quality
- Reduced water usage
- Preservation of natural resources
- Improved durability and reduced maintenance

By making these standards mandatory for all its community homebuilders, Stapleton is the largest Built Green community in Colorado.

"Residential building quality is one of the most necessary and integral parts of a sustainable community because it directly contributes to the long-term satisfaction of the people who live there."

ENERGY STAR (www.energystar.gov) This EPA-based program requires homes to operate 30 percent more efficiently than those built to the current Model Energy Code. Builders who qualify are able to use the highly recognized Energy Star logo on their homes and marketing materials, which many cost-conscious homeowners look for. Less known is that in addition to reducing utility bills, the technologies and practices associated with this program also create more comfortable, durable and environmentally responsible homes.

BUILDING AMERICA (www.buildingamerica.gov) In addition to setting even higher standards of excellence for homebuilders, Building America, a U.S. Department of Energy program, provides valuable technical assistance, builder training programs and plan analysis. In short, Building America helps builders understand the nuts and bolts of how to make their homes more efficient. Using a systems engineering approach, the program helps builders:

- Produce homes on a community scale that use 40-70 percent less energy.
- Reduce construction time and waste by as much as 50 percent.
- Improve productivity.
- Implement innovative energy and material-saving technologies.

LEED RESIDENTIAL GUIDELINES (www.usgbc.org) The U.S. Green Building Council (USGBC) is currently developing the Residential Leadership in Energy and Environmental Design (LEED) rating system for homes. As these guidelines are developed, Stapleton is poised to be the first community not only to adopt these standards—but also to meet them.

Rating our Success

An important step in ensuring higher-quality, sustainable homes at Stapleton is a comprehensive third-party verification program. In short, the goal is to ensure that builders are indeed constructing homes that measure up to the standards they say they do.

E-STAR COLORADO (www.e-star.com) E-Star Colorado is a local, nonprofit organization that has developed an extensive home rating system infrastructure. This system provides a foundation for establishing quality control standards at Stapleton. Forest City Stapleton, Inc. is working with E-Star Colorado, Built Green Colorado and Building America to create a compliance testing protocol for Stapleton. The goal is to ultimately test 25 percent of all homes at Stapleton and establish an impartial, third-party certification system that will help ensure that all Stapleton homes meet or exceed the community's residential-building standards.

residential

Achievement Report: *Residential Building*

Single-Family Homes

Forest City Stapleton, Inc. works on a continual basis with all Stapleton builders to achieve and maintain the highest possible ratings for single-family homes throughout the community. Currently, the minimum requirement at Stapleton is the Built Green Colorado program; however, many builders currently exceed this standard. In 2005 the minimum Stapleton requirement will begin to make the shift to Energy Star. In addition, builders can participate in any of the green marketing programs, as long as the minimum levels of performance are met.

Strategic Partnerships

Forest City Stapleton, Inc. continues to work in partnership with leading local and national programs to develop solutions and standards that will ensure high-quality and sustainable residential building at Stapleton. Partners include:

- Building America
- Energy Star Colorado
- E-Star Colorado
- Metro Denver Home Builders Association
- National Renewable Energy Laboratory (NREL)
- The U.S. Green Building Council (USGBC)

2001-2004

Forest City Stapleton, Inc. supports builders who are interesting in increasing their energy efficiency and green construction practices. This ongoing process includes:

- Plan reviews
- Performance testing of sample products
- Builder training sessions
- Assessment of current practices and strategic planning to meet requirements
- Trade training

2003 Parade of Homes

- Worked with homebuilders to evaluate home plans prior to construction to ensure green building practices and to develop educational materials that helped educate Parade of Homes visitors about the various benefits/aspects of these building practices.
- Worked with builders to develop sustainable landscape planning and to develop educational signage and materials for visitors.
- Achieved highest ever Built Green Colorado and Energy Star ratings for Parade of Homes.

Pilot Homes

Pilot Homes are constructed to demonstrate various design and construction techniques; these practices are then applied to the ongoing production process. Stapleton builders completing pilot homes to date include:

- New Town Builders
- McStain Neighborhoods
- Harvard Communities
- John Laing Homes

Multi-Family Homes

In 2003 Stapleton developed diverse multi-family homes that are setting new standards of excellence for sustainability through the use of green building practices. Efforts in this area included conducting sustainability design charettes to identify components that are both economically and logistically practical for these building projects, including:

- Botanica on the Green Apartments
- Crescent Flats Apartments

Notes:

COMMERCIAL BUILDING: OFFICE & RETAIL

commercial

GOAL: To develop a sustainable approach to commercial building that encourages higher energy efficiency, better selection of materials and an ongoing commitment to water management and indoor air quality.

Forest City Stapleton, Inc. has made sustainable commercial building practices a priority. In addition to reducing consumption of natural resources and minimizing waste production, these measures will create economic benefits for commercial business owners, as they have been shown to reduce operating costs, enhance building marketability, increase worker productivity and reduce poor indoor air quality. At Stapleton, Forest City remains committed to reviewing and incorporating key practices, standards and technologies that are currently leading the way in commercial green building.

Commercial buildings have a tremendous impact on the environment. Annually, they consume more than 30 percent of our total energy and 60 percent of electricity. Daily, they consume 5 billion gallons of potable water in flush toilets. And during construction, a typical North American commercial building project generates up to 2.5 pounds of trash per square foot of floor space*. At Stapleton, we are committed to using sustainable building practices to reduce these negative environmental impacts and reverse the trend of unsustainable construction activities.

* Rocky Mountain Institute, U.S. Green Building Council

"Stapleton's commitment to sustainability has made the adoption of the LEED guidelines a natural part of our overall development strategy."

The LEED Guidelines

The Leadership in Energy and Environmental Design (LEED™) Green Building Rating System represents the U.S. Green Building Council's effort to provide a national standard for commercial green building. By using established and innovative practices, standards and technologies, LEED provides common design guidelines and a third-party certification tool that helps promote occupant well being, environmental performance and economic returns.

LEED currently has many guidelines and application guides for real estate projects, including:

- New Construction
- Existing Buildings
- Commercial Interiors
- Core & Shell
- Neighborhood Development
- Multiple Buildings
- Healthcare
- Labs
- Retail
- Schools

The guidelines and application guides most applicable to projects at Stapleton include New Construction, Retail, Core and Shell, Commercial Interiors and Multiple Buildings. As LEED continues to define and provide leadership through these sustainable commercial building measures, Stapleton remains committed to adopting and maintaining them as a natural part of our development strategy.

Office Buildings

In commercial office projects, the goal is to address both the needs of employees and the environment. In fact, research shows that buildings constructed with sustainable practices have a positive impact on employee productivity. This, in turn, translates into positive economic benefits for employers. In short, the result of using sustainable practices in commercial building is a beneficial balance of environmental responsiveness, resource efficiency and economic analysis.

Retail Buildings

Retail projects are unique in their design, function and building challenges. Unlike offices, retail buildings must accommodate the flow of people in order to sell goods and services. In addition, many retail employees have shifts that are shorter than eight hours, and customer visits are even shorter, creating challenges for parking, ventilation, lighting control, etc. As a result, there are many unique design factors to consider, including the needs of the customer, the employees, the product and the environment.

commercial

Achievement Report: *Commercial Building*

NorthField at Stapleton

The development team for NorthField at Stapleton, which is scheduled to open in 2005, is working to identify sustainable site elements and criteria for the various building types. Specific steps include:

- Participation in Xcel Energy's Design Assistance Program.
- Acceptance into USGBC's Core & Shell Pilot program.
- Development of a tenant handbook containing a green building overview, sustainable design options and LEED scorecards.

East 29th Avenue Town Center

Opened in December 2003, Stapleton's East 29th Avenue Town Center features the following base building green components:

- Highly reflective roof membrane
- Recycled steel frame
- Cementicious fire proofing
- Masonry exterior
- Operable, Low-E windows
- Low-flow plumbing fixtures
- Higher R-value walls/ceiling
- Low-VOC paints
- Low-flow plumbing fixtures
- Energy Star appliances

Recycling

Refer to the Recycling chapter of this plan for an overview of construction waste recycling efforts in the East 29th Avenue Town Center buildings.

Notes:

recycle

RECYCLING

GOAL: To effectively utilize salvaged materials from the original redevelopment site and encourage an ongoing community commitment to recycling in homes, businesses, schools and at construction sites.

Recycling is one of the most fundamental and familiar principles of sustainability. At Stapleton, it has been—and remains—a continuous priority, from the initial challenge of recycling the site's original airport, to ongoing concerns of repurposing construction and residential waste.

Recycling has been integral to the successful redevelopment of Stapleton from the very beginning—and it remains so. Through ongoing education and community awareness programs, recycling will remain a continuous goal at Stapleton...and an important and permanent part of the community culture.

The Airport

How do you turn an airport into a community? At Stapleton, the question was not only a matter of logistics, but also environmental responsibility. With sustainability already a clearly defined priority, the first challenge of redeveloping Stapleton centered on successfully recycling the remnants of the airport into usable raw materials for community and area construction projects.

This colossal undertaking will span nearly 10 years. Here is a look at the key projects completed to date, as well as those still in progress today.

Construction Waste

As one of the nation's largest redevelopment projects ever, Stapleton has a distinct opportunity to set new standards of sustainability in regard to managing construction waste.

Given the scope of the project and the numerous entities involved, Stapleton has used various approaches to achieve results. Our first approach was to have builders sort construction waste materials so they could then be hauled to specialized recycling centers. Our next concept involved establishing a community-based grinder to reduce the bulk of waste. And most recently, we have been supporting a local recycling contractor to compost construction waste materials on-site to create topsoil and mulch for landscape applications throughout the community. This innovative approach will set a new construction recycling standard for redevelopment projects.

recycle

Residential and Commercial Waste

Standard residential and commercial recycling is an ongoing pursuit. It is never a project that reaches completion, but one that requires the day-to-day involvement of all community members.

At Stapleton, we continue to develop and make available various educational opportunities that increase awareness about the overall benefits of recycling—as well as the variety of collection services and options. For example, Denver Recycles, a program provided through the City and County of Denver, offers free residential recycling services for pre-sorted paper, glass, plastic and cans. Commercial recycling, however, requires private contracting, as no city services are available.

Equally important, we provide ongoing education about bigger picture issues, such as waste reduction, environmentally responsible purchasing and composting. These efforts help promote awareness about the importance of recycling at Stapleton, while fostering a community culture of environmental responsibility.

"Through ongoing education and community awareness programs, recycling will remain a continuous goal at Stapleton...and an important and permanent part of the community culture."

Achievement Report: Recycling

Consumer Recycling

Forest City Stapleton, Inc. continues to work in close partnership with Denver Recycles to increase awareness and achieve the highest community participation level in the recycling program in Denver. Ongoing initiatives supporting this goal are highlighted below:

- Periodic community workshops and sign-up events.
- Direct mail programs providing educational and sign-up materials to residents' homes.
- Community signage.
- Information and sign-up links on community intranet.

Denver Recycles made its first residential service pick-up in Stapleton on September 15, 2003. Currently, 75% of Stapleton residents eligible for recycling services participate in the program. Our goal is to have 90% of Stapleton residents participate. Denver Solid Waste Management checks construction progress frequently to determine when to expand service; these periodic expansions result in fluctuating participation numbers until newly eligible residents sign up for the program.

Residential Construction Recycling

Forest City Stapleton, Inc. is working with builders throughout the community to advance recycling efforts on residential buildings:

- In 2003, recycling construction programs were individualized to each builder.
- In 2004, Forest City Stapleton, Inc. planned to support a coordinated recycling grinder system that builders could utilize.
  - The grinder effort did not take place due to an unfavorable change in costs.

Commercial Construction Recycling

Forest City Stapleton, Inc. has achieved success in recycling construction waste from commercial building projects. The East 29th Avenue Town Center buildings have achieved the following goals:

- Recycled nearly 150 tons of total construction waste in the Town Center Office/Retail Buildings and Crescent Flats including:
  - 134,000 lbs. (67 tons) of concrete
  - 56,000 lbs. (28 tons) of metal
  - 103,740 lbs. (52 tons) of wood
- All exterior walls were prefabricated for Botanica on the Green to save construction time and material waste. In addition, 47,880 lbs. (24 tons) of wood was recycled from interior construction materials.

Airport Recycling

Forest City Stapleton, Inc. is committed to recycling the remnants of the airport into usable materials. Key projects include:

- The demolition and recycling of 6 million tons (1,100 acres) of concrete runways. The aggregate is successfully being used in construction projects at Denver International Airport, Buckley Air National Guard Base, E-470, The Rocky Mountain Arsenal National Wildlife Refuge and Bluff Lake Nature Center. It will also be used for numerous future roads, alleys, sidewalks, curbs and foundations at Stapleton and other areas.
- The recycling of more than 200,000 tons of asphalt from the airport parking lots and the former commuter runway and runway aprons. This material has been successfully used as road base at the Rocky Mountain Arsenal National Wildlife Refuge.
- The recycling of airport buildings. These buildings and hangars are now home to a variety of area organizations within Stapleton, including Colorado Studios; the Bladium Sports Club of Denver; the Denver Police Training Academy; and R.K. Mechanical, Inc., Colorado's largest mechanical contractor and an employer of nearly 700 employees.
- The former FAA control tower is being preserved in its location. Similarly, the former control tower for Concourse B was recycled for use at Colorado's Front Range Airport.
- The recycling of debris from building demolitions. More than 50% of these materials have been salvaged and reused, including rebar, sheet metal and concrete.

Notes:

TRANSPORTATION

transportation

GOAL: To create a more sustainable community and environment by reducing traditional traffic volume and by encouraging the use of alternative transportation methods, from buses, to car pooling, to walking and biking.

The negative impact of traditional transportation methods—particularly single occupancy vehicles—can be widespread, from traffic congestion, to poor air quality, to noise pollution. At Stapleton, we are taking a proactive approach to reduce these issues by encouraging the use of alternative transportation methods throughout the community. Specifically, Forest City Stapleton, Inc., with the support of the Stapleton Foundation, the Stapleton Development Corporation and the City and County of Denver, has created a comprehensive system that gives people a variety of transportation options that range from buses, to future Light Rail, to bike paths, to walkways, to carpools. These options make it easier for people to choose alternative modes of transportation that contribute to a more sustainable environment that is healthier and more enjoyable for everyone.

"At Stapleton, we have designed a sustainable transportation system that combines public transportation, walkways, and other transportation alternatives."

It is not enough to simply encourage people to make better and more environmentally responsible transportation decisions. You must also provide them with realistic alternatives that allow them to get where they want—when they want.

At Stapleton, we have designed a sustainable transportation system that combines public transportation, walkways, pedestrian access and other transportation alternatives.

Pedestrian Walkways and Bike Pathways

Many Colorado residents enjoy active lifestyles, which makes bike paths and walkways a realistic alternate transportation mode. Stapleton provides residents and visitors with a comprehensive network of pedestrian walkways that are not only practical, but inviting. Tree-lined sidewalks and paved paths that parallel open spaces and parks make walking alone or as a family an easy and enjoyable way to get around. And people will find ample walkways and paths throughout Stapleton, connecting residential areas, community amenities, commercial areas and surrounding neighborhoods.

Stapleton Transportation Management Association (TMA)

The Stapleton TMA is an organization created by the Stapleton Foundation that brings together representatives from Forest City Stapleton, Inc., the City and County of Denver, RTD and others. Its goal is to work with Stapleton residents, businesses and schools to promote transportation alternatives to single occupancy driving.

Public Transportation

The transportation plan for Stapleton includes a substantial public transportation component, ranging from airport and local bus services, to Park 'n Rides, to a proposed Light Rail Commuter Rail System. Here's a closer look at each:

REGIONAL TRANSPORTATION DISTRICT (RTD): 14 RTD bus routes currently run throughout the interior and perimeter of Stapleton. Additional routes are already being planned, including connecting Stapleton to downtown Denver, the Denver Tech Center and the northern suburbs.

STAPLETON INTERMODAL CENTER: The current Stapleton Park 'n Ride, known as the Stapleton Transfer Station, will be relocated north to Smith Road in the future. Shortly thereafter, the functions of the Station will be transferred to the planned Stapleton Intermodal Center, which will serve as a main station for the Stapleton Air Train/Light Commuter Rail system as well as provide for bus and rail transfers, park 'n ride facilities and bike storage facilities.

LIGHT RAIL: In November 2004 voters approved FasTracks, RTD's 12-year comprehensive plan to build and operate high speed rail lines throughout the region. It is anticipated that a light rail stop at Stapleton will be completed in 2015.

transportation

Achievement Report: *Alternative Transportation*

Education and Programs

Forest City Stapleton, Inc. utilizes a number of programs, promotions and partnerships both to communicate the health and environmental benefits of using alternative transportation and to build awareness about the different modes of transportation available at Stapleton.

Forest City Stapleton, Inc. also works in conjunction with the Stapleton TMA on a grass-roots level with residents to develop and implement creative programs that promote fun and healthy transportation alternatives. The following highlights some key efforts throughout the years.

2004

RTD

- Installed first RTD kiosk in the state of Colorado at the King Soopers in the East 29th Avenue Town Center. Information about all of RTD's services is available.
- Continually work with RTD to ensure ample transportation routes via bus and future Light Rail.
- Promote RTD opportunities to residents, workers and business owners.

Pedestrian Safety

- New pedestrian crossing signals installed at Quebec and East 35th and East 36th Avenues, giving pedestrians an extra five seconds to cross Quebec.

Bike to Work Day

- Stapleton TMA hosted Stapleton's 2nd Annual Bike to Work Day, attracting over 200 participants.

Pool to School

- Coordinated walk from Aviator Pool to Westerly Creek Elementary on the first day of school.

Mobile Cyclery

- Arranged for mobile bicycle service shop to come to King Soopers every week.

I-70 Environmental Impact Study (EIS)

- I-70 EIS planning team worked to address community concerns and presented the corridor plan to the CAB, SDC, Stapleton TMA and the Greater Stapleton Business Association.

Stapleton TMA Website

- The StapletonTMA launched the first bilingual transportation website in Colorado.

2001 - 2003

Bike Giveaways

- On a monthly basis, Forest City Stapleton, Inc. hosted a drawing to give away a free bike to a Stapleton resident.

GEM Car Alternative

- In 2003, three electric cars were provided as an educational resource for visitors and residents.

Transportation Fair

- In October 2003, the Stapleton TMA held its first Transportation Fair at Quebec Square.

Eco Pass Master Contract

- In 2002, the StapletonTMA established a Master Contract for Eco Passes for 35 businesses at Quebec Square, the East 29th Avenue Town Center and some of the surrounding hotels.

Notes:

ENERGY CONSERVATION AND ALTERNATIVE SOURCES

GOAL: To promote sustainability through building practices that reduce energy consumption as well as through the continued review of viable alternative energy sources.

At Stapleton, we have developed a two-pronged sustainable energy strategy that incorporates conservation practices, while exploring renewable and distributed generation sources of energy as potential long-term solutions.

To create an effective and well-rounded energy plan, Forest City Stapleton, Inc. incorporates proven practices that address current energy consumption issues, while still keeping an eye toward future technologies and applications that could provide longer-term and larger-scale results.

Specifically, the plan focuses on providing specific strategies to reduce energy consumption and the related impact on the environment. At the same time, it emphasizes Stapleton's commitment to being involved in discussions about alternative energy sources that could eventually reduce our reliance on fossil fuels.

Energy Conservation

Forest City Stapleton, Inc. has made energy conservation a priority for both residential and commercial construction within the community. By incorporating the building standards of the U.S. Green Building Council, Built Green Colorado, Energy Star and Building America, Stapleton encourages builders to create more energy-efficient buildings. For example, by implementing the green-building practices advocated by Energy Star and Building America, Stapleton homes will provide an average 30-50 percent savings on energy—which provide long-term benefits for community residents and the environment.

Alternative Energy Sources

While energy conservation will always be an integral component of sustainability, alternative energy sources may one day provide a more effective solution to reducing the impact and consumption of fossil fuel energy. Here are just a few of the promising alternatives currently being explored:

- **Renewable Energy Sources:** Called renewable because they naturally and continually replenish, these energy sources have a much lower environmental impact than conventional sources. They include wind, geothermal, solar and biomass, which uses heat to convert plant and other organic material into fuel.
- **Distributed Generation:** This refers to any small, modular electricity producer that is located close to the energy demand source. Advantages include lower energy costs, improved reliability, reduced emissions and expanded energy options. Of these potential applications, Stapleton will most likely explore the following two technologies:
- **Fuel Cells:** Battery-like pieces of equipment that convert hydrogen and oxygen into energy. The result is an efficient, reliable and pollution-free energy source.
- **Microturbines:** Small combustion turbines that are ideal for sites with space limitations due to their compact size and light weight. Additional benefits include greater energy efficiency, lower emissions and reduced electricity costs.

energy

Achievement Report:

Energy Conservation and Alternative Sources

Energy Conservation

Through ongoing efforts, Stapleton residential and commercial buildings continue to achieve exceptional energy conservation results. In 2002 - 2004, for example:

- Stapleton homes achieved energy savings of between 20-60% over industry standards.
- Stapleton commercial buildings achieved an average 25% greater energy efficiency than industry standards.

Forest City Stapleton, Inc. continues to work with key agencies throughout Colorado, including Xcel Energy, to:

- Identify additional energy-saving opportunities.
- Identify design and construction impacts for residential, commercial and multi-family structures.

Alternative Sources

Forest City Stapleton, Inc. remains at the forefront of discussions about potential community-wide alternative energy sources. Involvement and efforts to date include:

- Partnering with Xcel Energy and the Colorado Governor's Office of Energy Management and Conservation to research alternative energy sources.
- Working with local and national resource groups to develop renewable, distribution generation strategies.
- Developing and sharing educational materials about alternative sources of energy with Stapleton residents.
- Implementing a pilot program with Xcel Energy to provide incentives for evaporative cooling systems.
- Sponsoring the Colorado Renewable Energy Society's Colorado Renewable Energy Conference in 2003 and 2004.

To date, it has been challenging to identify solutions that meet the practical standards of sustainability at Stapleton. However, Forest City Stapleton, Inc. remains open to organizations and programs that are able to present options that meet these demands and comply with existing development schedules.

Notes:

WATER MANAGEMENT

water

GOAL: To protect, conserve and ensure the long-term availability of one of the community's most precious and scarce natural resources: water.

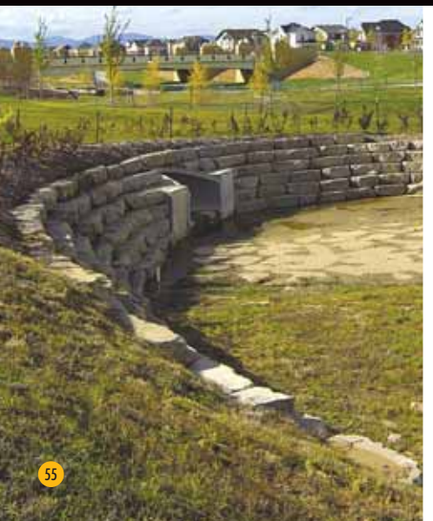
Colorado's semi-arid climate ensures that effective and sustainable water management is a constant priority for every community—including Stapleton. To address both current and future consumption needs, Forest City Stapleton, Inc. has created a comprehensive and proactive plan that incorporates proven best practices in effective resource management as well as community-wide conservation efforts, sustainable landscape design, water reclamation and ongoing community education.

Forest City Stapleton, Inc. is working closely with Denver Water and other appropriate entities to optimize water conservation opportunities at Stapleton. It is projected that these measures will reduce water consumption by 80 million gallons annually—just in Stapleton's first neighborhood. Applied community-wide, these practices can help generate substantial results for Stapleton on a continual basis.

The following are some of the key sustainable practices that comprise Stapleton's water management strategy:

- Using available landscape areas, such as parking lot medians or edges along alleyways, for bio-swales that break down pollutants and dissipate them in root systems.
- Using pocket parks to pre-treat storm water runoff from smaller neighborhoods.
- Instituting non-structural measures such as the use of public education to control outdoor storage, lawn care, street sweeping and maintenance to limit the amount of urban pollutants coming in contact with storm water.
- Creating retention ponds.

"Forest City Stapleton, Inc. is working closely with Denver Water and other appropriate entities to optimize water conservation opportunities at Stapleton."



Water Quality via Best Management Practices (BMPs)

Effective resource management at Stapleton is accomplished through a number of initiatives, which stem from a comprehensive system of Best Management Practices (BMPs). Defined in a BMP Pattern Book, these practices outline measures for erosion control and treatment of urban pollutants via structural and non-structural controls, including:

- Disconnecting impervious areas to provide maximum infiltration and natural irrigation on individual development parcels.

Conservation

Reducing water consumption is critical to water conservation. In addition to promoting behaviors that contribute to conservation among residents and business owners, Forest City Stapleton, Inc. has incorporated water conservation measures into these aspects of the community plan:

- The development of compact, urban neighborhoods where lots as small as 3,600 square feet require less landscape to be irrigated, producing an estimated 40 percent reduction of water use per household.

- All homes at Stapleton are required to comply, at a minimum, with the water and energy conservation elements of the Built Green Colorado standards of the Home Builders Association of Metro Denver. Using low flow fixtures and plumbing devices are standard.

Landscape Guidelines

The updated Sustainable Landscape Design Guidelines have been created to more appropriately respond to Stapleton's high-plains, semi-arid climate. The responsible use of natural resources and native materials within this geographic context is important as we develop visually appealing landscape design to serve the Stapleton community over time.

Reclaimed Water

Using recycled water for irrigation and industrial uses has proven to be a valuable and viable solution—both economically and environmentally. At Stapleton, steps are already being taken to source and utilize recycled water on an ongoing basis. Since 1989, in fact, Denver Water has been refining a program to take wastewater from the Metro Wastewater Reclamation Facility and recycle it to a level suitable for irrigation and industrial uses throughout both Stapleton and Denver. Currently, The Denver Water purple pipe installation is underway in park areas that will use the water for irrigation.

Ongoing Education

- The previous Stapleton Visitor Center included a demonstration garden that educated potential home buyers, business owners and members of the public about attractive landscape alternatives that are drought resistant and consume less water.
- Forest City Stapleton, Inc. is working with Denver Water and Denver Botanic Gardens to create and distribute, educational materials and interactive workshops about water conservation and appropriate landscape techniques. These materials are made available to new residents and business owners at Stapleton through the Forest City web site, the Stapleton intranet, New Leaf newsletter and other channels of distribution.

water management

Achievement Report: Water Management

Addressing the Drought

Forest City Stapleton, Inc. worked closely with Denver Water throughout Colorado's drought crisis to develop solutions that help reduce water consumption without disrupting the ongoing construction and landscape development throughout Stapleton. These efforts included:

- Developing new landscape guidelines, including more aggressive soil amendments, irrigation systems and plant selections.
- Conducting lot-by-lot evaluations of residential properties to ensure optimal, low-water landscaping materials and designs.
- Ongoing installation of water-conservation components within residential and commercial buildings, including water-efficient plumbing fixtures.

Community Education

Forest City Stapleton, Inc. provides ongoing education to Stapleton residents, workers and visitors through a variety of materials, events and partnership initiatives, including:

- A unique alliance with Denver Water and Denver Botanic Gardens to create and distribute educational materials about water conservation and appropriate landscape techniques. These materials are made available to new residents and business owners at Stapleton through the Forest City Stapleton, Inc. website and the Stapleton community intranet.

- In 2002 – 2003, a demonstration garden at the Stapleton Visitor Center educated potential homebuyers, business owners and the general public about attractive, low-water landscape alternatives that are drought-resistant.

Notes:

HEALTHY LIVING

healthy living

GOAL: To create a vibrant and active community environment that encourages and supports healthy living at Stapleton.

Healthy living at Stapleton is created in part through the built environment and a strong sense of community. Healthy living is the last chapter of this Master Plan because a healthy community results from the cumulative impact of the other areas of focus in the Stapleton Sustainability Master Plan.

Healthy living at Stapleton starts with the built environment and Stapleton's design as a walkable community, which provides lots of opportunities to incorporate physical activity into daily life. For example, neighborhoods are specifically situated within walking distance of local shops, parks, restaurants and schools. The simple fact that garages are located at the back of the house instead of the front reflects that this is a community built around people—not cars. At the same time, Stapleton's expansive park system gives people lots of opportunities to get outside and be active, whether it's simply taking your dog to the park, riding your bike or enjoying a weekend picnic with your family. Together, these factors make it easy for residents to get outside and be active, which promotes physical health and wellness.

Physical activity is only one aspect of healthy living at Stapleton. A strong sense of community is also an important aspect of mental health and important to overall well being. Here, people are able to easily meet and interact with others from throughout the community. Diverse housing options help create enriching neighborhoods by bringing together people of different ages, backgrounds and cultures. Local parks, shops and restaurants double as community gathering places. And seasonal events like the Stapleton Farmers' Market bring families, friends and entire neighborhoods together and encourage healthy food choices that also support the local economy.

Forest City Stapleton, Inc. works in conjunction with many partners throughout Denver and surrounding communities to promote healthy living. These include partnerships with healthcare, nutrition and other wellness-related professionals and organizations. At Stapleton, all of these factors work together to create a community that encourages healthy choices and lifestyles.

"A strong sense of community is also an important aspect of mental health and important to overall well being."

healthy living

Achievement Report: *Healthy Living*

Programs

Forest City Stapleton, Inc. encourages healthy living through year-round programs and events. In the past few years, Stapleton has hosted numerous events and introduced activities that help build awareness about healthy living and encourage involvement among residents, businesses and visitors.

Stapleton Strollers

- An ongoing stroller conditioning class for new moms led by a trainer.

Stapleton Charity Chase

- This 5K fun run is held in conjunction with Founders' Day each June and helps raise funds for local charities.

Stapleton Stampede

- Held in August, this event features both 15K and 5K runs and a family walk, with proceeds benefiting the Metro Denver Realtor Foundation.

Community Blood Drive

- Hosted Bonfils Blood Center Blood Drive Mobile.

Flu Shot Clinics

- Due to the nationwide shortage of flu vaccine in 2004, Stapleton's first flu shot clinics were cancelled.

Wellness Website

- Dedicated wellness section on community intranet.

Active Living Partnership at Stapleton (ALPS) Grant

In November 2003, the Stapleton Foundation along with the Friends of the Center for Human Nutrition, a Colorado-based nonprofit organization, received a five-year, $200,000 grant for ALPS from the Robert Wood Johnson Foundation. The funds are being used to demonstrate that the design of the pedestrian-friendly neighborhoods at Stapleton can lead to more active and healthier lifestyles.

Notes:

As you have seen throughout the 2004 edition of the Stapleton Sustainability Master Plan, we continue to evolve our programs in all areas of focus. While the Stapleton Sustainability Master Plan details accomplishments both big and small, here is a quick list of major accomplishments for 2004:

Moving minimum residential building requirement to Energy Star – Energy Star qualified homes are independently verified to be 30% more energy efficient than homes built to the 1993 national Model Energy Code. In 2005 we will work diligently with Stapleton builders to assist with this transition.

Incorporating sustainability principles into the design of NorthField at Stapleton – We are participating in Xcel Energy's Design Assistance Program, the project has been accepted into USGBC's Core & Shell Pilot program, and a tenant handbook containing a green building overview, sustainable design options and LEED scorecards has already been developed.

Launching the Stapleton Farmers' Market – In June 2004, we launched our first season of weekly Stapleton Farmers' Markets. Held each Sunday from June through October, the markets were enthusiastically welcomed by residents of Stapleton and the surrounding communities. The Stapleton Farmers' Market will continue this season, opening June 5th, 2005.

Expanding our educational programs – By the end of 2004 we completed the 28th issue of New Leaf, our monthly newsletter containing tips for sustainable living. In 2004 we also introduced another version, New Leaf for Kids, which we offer in English and Spanish to area schools. Education remains at the core of all of our sustainability initiatives at Stapleton.

As the Director of Sustainability, I encourage and welcome your ideas, comments and feedback. Please feel free to contact me by phone at 303-382-1800 x751 or email me at mknott@stapletondenver.com.

Melissa Knott
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