

. *Natural Resources and Conservation*

Goal

Protect, restore and properly manage natural areas, trees and landscapes, and conservation lands in Alachua County while enhancing their resilience and improving their capacity to support climate adaptation and carbon sequestration.

Introduction

Natural Resources and Climate Change

Climate change can negatively impact the environment and the clean water and air, agricultural production, and recreation it provides us. Wildlife, fauna, and natural cycles also suffer, disrupting the stability that they provide our ecosystems. Depletion or degradation of natural resources can further exacerbate the effects of climate change, worsening impacts. Conversely, conservation and proper management of our natural resources can buffer ecosystems and local communities from the worst effects of a changing climate. When appropriately managed, forests, wetlands, and prairies, in particular, are effective at lowering temperatures, increasing carbon sequestration, and improving water quality. The relationship between climate change and natural resources is subsequently interdependent, highlighting the importance of conservation efforts in both climate mitigation and adaptation.

Natural Resources in Alachua County

North Central Florida is home to bountiful natural resources, including springs, forests, wetlands and prairies. Alachua County has a long history of valuing and protecting these resources that are essential to ensuring a healthy ecosystem for generations to come.

Currently, the main threats to our County's natural resources are habitat loss, unsustainable development practices, pollution and invasive species. Climate change, however, also poses as a threat to our ecosystems, as shown in our Vulnerability Assessment. As the effects of climate change continue to worsen, the risk of damaging wildfires is projected to increase, particularly around the **Wildland-Urban Interface**, and within natural areas such as forested wetlands, pine flatwoods, and pine plantations. As temperatures increase and droughts become more extreme, water resources, including surface waters and the aquifer, are projected to decline in water quality

and available quantity. Meanwhile, more extreme rainfall events may cause new and additional areas to flood. A changing climate is thus expected to further affect local biodiversity. We have a duty to protect our local communities and natural resources from the impacts of climate change through strategically planned development and land preservation and conservation.

Equity

Natural resource strategies and solutions are relevant to equity concerns. As mentioned in previous sections, climate change impacts communities disproportionately. One such way is through **urban heat islands (UHI)**. A UHI is a phenomenon where cities are significantly warmer than rural areas. The difference in heat is a result of removing natural trees and plants that provide shade and cool the air, as well as replacing natural soils and turf with concrete and asphalt that absorb heat.^[1] According to the Massachusetts Institute of Technology, UHIs can cause cities “to be 1-7°F warmer during the daytime.”^[2] Studies have shown that this phenomenon disproportionately impacts low-income and minority urban communities, who also have less access to cool spaces compared to the general population.^[3] This leads to an unequal overexposure of heat, heat-related illnesses, and increased nighttime temperatures, highlighting why urban tree and soil conservation is essential.

Considerable evidence and recognition now exist regarding the importance of natural climate solutions as a public health strategy, with health equity implications. The ability of land conservation to mitigate climate change further promotes human health by moderating and reducing extreme weather events, creating cleaner air, supporting easier access to local produce, creating more livable communities, and lowering risk for infectious diseases, especially with regards to water quality protections. Protecting and creating parks, green spaces, and other opportunities for contact with nature is increasingly recognized as a public health strategy to promote physical health, and mental health for communities and individuals.

To achieve successful community support and longevity, land conservation must be done with respect for the human rights of the people who live in and near conservation focus areas and will manage the land. Strong conservation practices should respect local voices and create broader partnerships that can ensure long-term success. Ongoing acknowledgement of the displacement of communities, particularly of indigenous people, must also be recognized in natural resource conservation strategies.

Another equity consideration is the fact that the County’s natural resources are often not accessible to all community members. Those with limited mobility, for instance, are not able to easily access the resources provided by the County in our parks or reserves. It is imperative that these spaces are designed with inclusivity in mind (see the Land Use and Transportation chapter for more information).

Baseline & Targets

To determine our community success and preparedness related to climate change impacts, it is important to have meaningful metrics. The table below identifies performance targets that will help the County measure how successful we strive to become more climate resilient.

Table 6.1 Natural Resource Baselines and Targets		
Performance Targets	Baseline	Target
Adopt an Urban/Community Forest Management Plan	Baseline tree canopy determined by 2026	Target tree canopy TBD
Update Tree Protection Code	Last Update 2020	2025
Tree City USA	Not currently designated	2026
Update Comprehensive Plan and ULDC to incorporate the climate action plan strategies	Current Comp plan adopted in 2019	2026
Number of acres of surface waters and wetlands authorized for impacts by the County	1 acre/year in the unincorporated area	1 acre/year Countywide
Protect Priority areas of County as conservation lands	23% of County currently in conservation	30% of lands and freshwater conserved by 2030 50% by 2050

Past and Current Efforts

Alachua County Comprehensive Plan 2019-2040

The Conservation and Open Space Element of the Alachua County Comprehensive Plan emphasizes the urgent need to preserve our natural resources in protection of human health and natural resource integrity. This protection of wetlands, floodplains, uplands, and other natural resources within the county are key to supporting the climate resiliency of the County and are important tools to address aspects climate vulnerability identified in the county's Climate Vulnerability Analysis. The following are just a few of the current objectives and supporting policies that the Plan has identified to help achieve that goal:

Policy 1.1.1 The County shall promote the long-term maintenance of natural systems through a comprehensive approach that involves education, public participation, regulations, incentives, acquisition, intergovernmental coordination, and other appropriate mechanisms.

Policy 1.2.1 Any decision may directly or indirectly affect the conservation, management, preservation, enhancement, and use of the natural resources of Alachua County. It is the intent of this Element that County officials, staff, and citizens constantly monitor all decisions for the effects they may have on appropriate conservation and use of resources, and that such decisions be made with consideration given to the principles and policies of the Comprehensive Plan and this Element.

Policy 2.2.1 The County shall encourage environmental stewardship among all citizens of Alachua County by advancing conservation principles in the everyday operations of Alachua County.

Policy 3.1.3 Conservation areas shall be developed only in a manner consistent with protection of the ecological integrity of natural resources, and in accordance with standards which are outlined subsequently in this Element.

Policy 3.6.15 The County shall identify and protect green infrastructure through the development review process by protecting conservation resources and natural areas and allow and encourage proven environmentally friendly development techniques, like low

impact development that minimize impacts to natural resources and water quality and maintain existing hydrologic conditions.

Policy 4.1.8 The County shall establish a tree planting program to improve air quality in designated areas.

OBJECTIVE 4.5 - GROUNDWATER AND SPRINGS: Protect and conserve the quality and quantity of groundwater and springs resources to ensure long-term public health and safety, potable water supplies from surficial, intermediate, and Floridan aquifers, adequate flow to springs, and the ecological integrity of natural resources.

OBJECTIVE 4.6 - SURFACE WATER SYSTEMS: Ensure the protection and improvement of the water quality, biological health, and natural functions of surface water systems in Alachua County.

OBJECTIVE 4.7 - WETLAND ECOSYSTEMS: Wetland acreage and function shall be protected.

OBJECTIVE 4.8 - FLOODPLAINS AND FLOODWAYS: Protect and maintain the natural functions of floodplains, floodways, and all other natural areas having hydrological characteristics of the one hundred (100)-year flood elevation. Natural functions include water purification, flood hazard mitigation, water supply, and wildlife habitat and connectivity.

OBJECTIVE 4.10 - STRATEGIC ECOSYSTEMS: Protect, conserve, enhance, and manage the ecological integrity of strategic ecosystems in Alachua County.

Policy 6.2.1 The County shall establish and maintain the Alachua County Forever program to acquire and manage environmentally significant lands for the protection of water resources, wildlife habitat, and natural areas suitable for resource-based recreation.

OBJECTIVE 6.3 - ECOLOGICALLY FUNCTIONAL LINKAGES: Develop a linked network of protected natural areas and open space that can be managed to support the protection, enhancement and restoration of functional and connected natural systems while providing unique opportunities for recreation, and economic development.

Policy 6.6.5 The County shall restore and enhance degraded natural areas on County-owned preservation, conservation and recreation lands, including removal of invasive non-native plants and animals, reforestation, re-establishment of burn regimes for fire-adapted ecosystems, and restoration of shorelines and natural hydrology, as needed.

Alachua County Forever

Land conservation is a critical strategy that can help mitigate greenhouse gas emissions, the driver of climate change, while improving community resilience to climate-driven hazards. Natural lands, particularly forests, wetlands, and grasslands, allow trees, plants, and soils to act as carbon reservoirs – reducing the release of greenhouse gases and capturing greenhouse gases already in the atmosphere. These lands also support community resilience to climate change, improving water and air quality, preserving biodiversity, and reducing inland flooding while protecting essential water supplies that communities depend upon.

Alachua County Forever, the County’s land conservation program, has successfully protected over 35,000 acres of environmentally significant lands in the county, since program establishment in 1998. These lands are protected through fee-simple acquisition of lands from willing landowners, and through establishment of conservation easements which protect privately-owned lands from future development in perpetuity and protect the most significant environmental resources on-site in partnership with willing landowners. Lands acquired fee-simple are managed as nature preserves, while conservation easements allow landowners to retain rights for use and management of their properties, with annual monitoring of ecological value protection conducted by County staff.

The Alachua County Forever program mission: to acquire, improve, and manage environmentally significant lands that protect water resources, wildlife habitats, and natural areas suitable for resource-based recreation, is implemented in accordance with Board of County Commissioners Resolution by County staff working with citizens, conservation partners, and willing landowners. To prioritize protection of the most ecologically significant lands, geographic “ACF project areas”

have been identified within the county, and three priority corridors were named in 2023, integrating the County’s land conservation with regional and state-level conservation efforts. In 2023, the Board of County Commissioners identified the “30x30” initiative as the minimum guiding target for the Alachua County Forever program. The “30x30”, or America the Beautiful Initiative is a national goal to conserve at least 30 percent of U.S. lands, freshwater and U.S. ocean areas by 2030. Locally-led conservation efforts are critical to accomplishment of this goal.

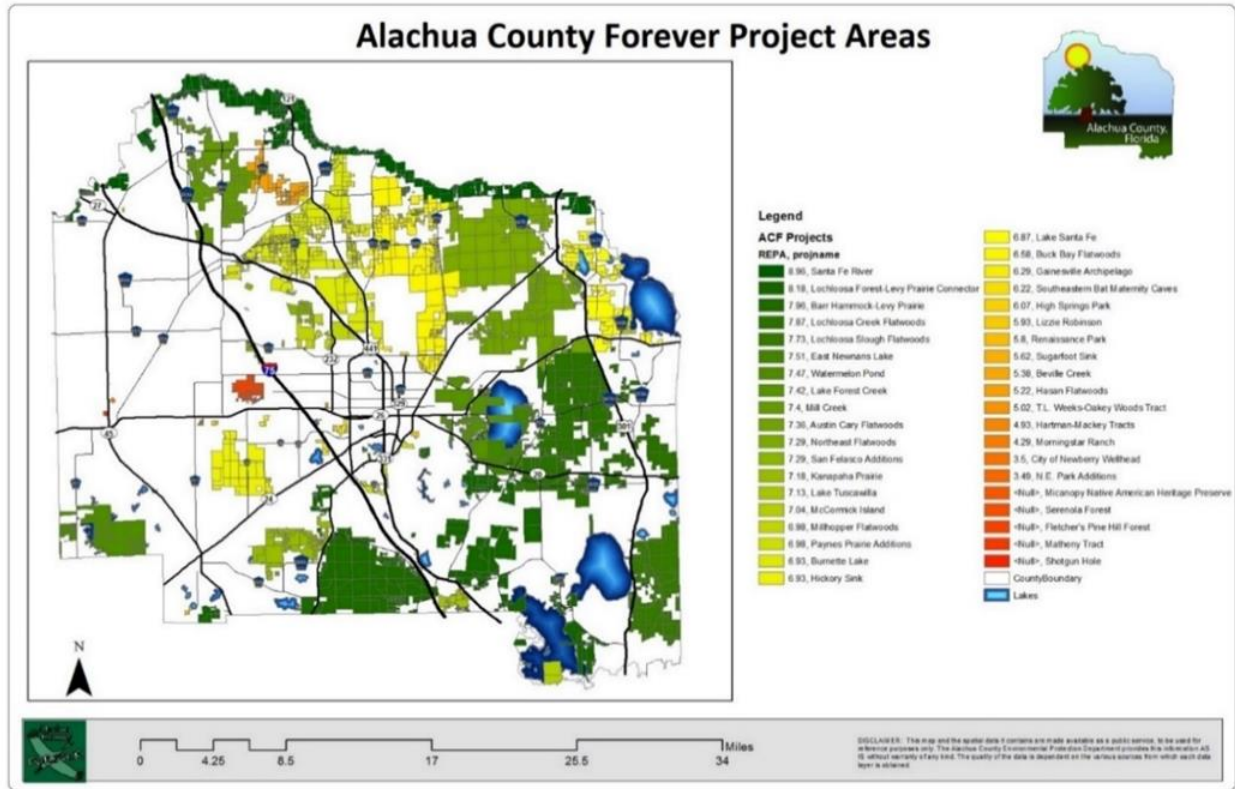


Figure 6.1. Alachua County Forever Project Area Map

Wild Spaces and Public Places

The Alachua County Forever Program is funded by the voter-approved Wild Spaces and Public Places surtax. Since 1998, the voters in Alachua County have passed referenda on four separate ballots (1998, 2008, 2016, and 2022) to support protection of environmentally significant lands and water resources, and to expand recreational opportunities in the County. In November 2022, the **Wild Spaces Public Places** referendum was re-authorized by Alachua County voters for a ten-year period. With this most recent referendum, from 2023 through 2032, a 0.5% sales tax will be directed towards acquiring and maintaining conservation lands, wildlife habitat, and greenspaces such as parks, and improving park recreational infrastructure. Funds dispersed to the nine municipalities are primarily used for recreational park improvements and other built public infrastructure, while county funds prioritize protection of environmentally significant lands while also supporting recreational park improvements.

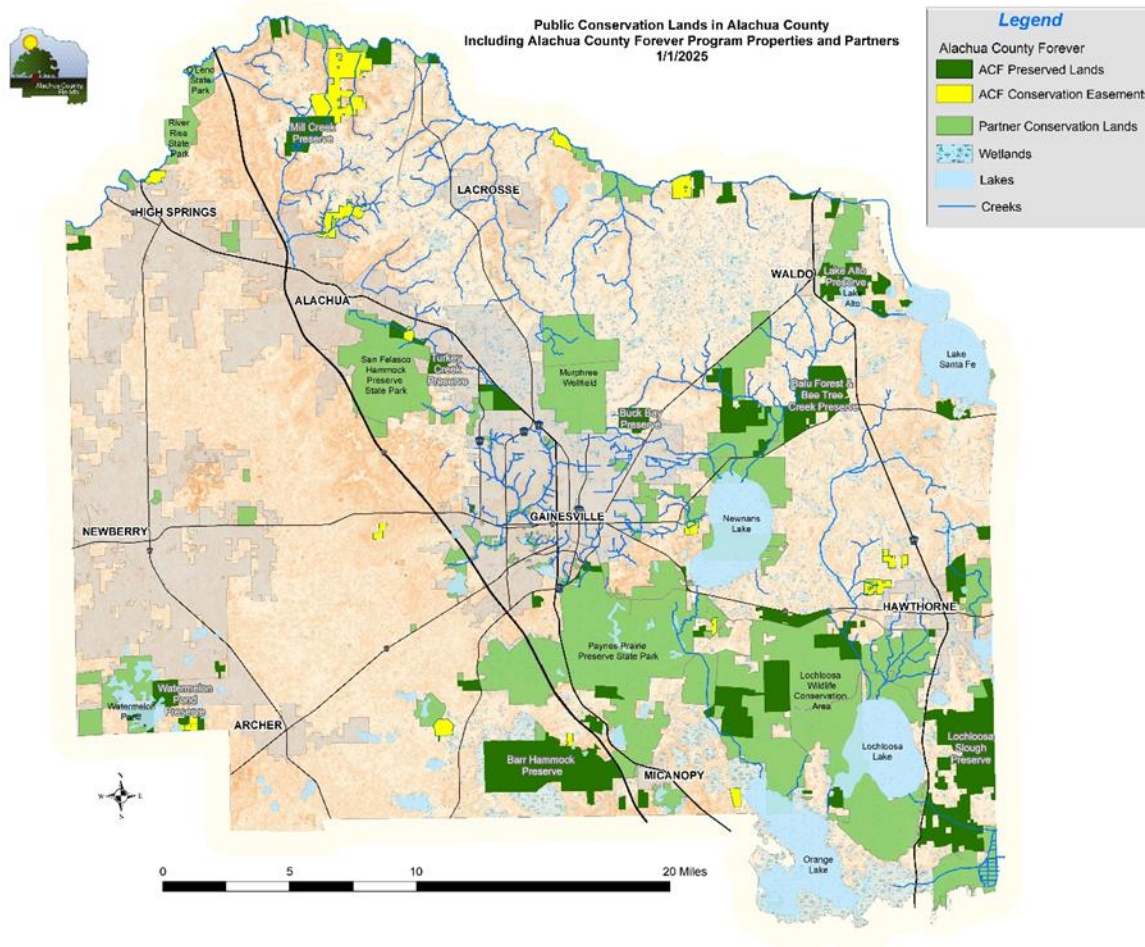


Figure 6.2. Alachua County Conservation Lands with Properties Acquired through the Alachua County Forever Program and Wild Spaces and Public Places Surtax Funding

Unified Land Development Code

Given the impact land development can have on habitat loss and resource use, Alachua County has implemented several Land Development Codes to protect our natural resources. Since 1993, for example, the County implemented strict protections for wetland buffers with minimal exceptions. In 2005, upland habitat protections were added, requiring conservation resources outside of wetlands to be protected, including significant habitat, listed species habitat, strategic ecosystems, and significant geologic features. For high quality ecosystems, or areas of significant habitat, up to 25% of uplands on a property proposed for development may be required to be set-aside as a conservation area. For strategic ecosystems, which represent large corridors of high-quality habitat and waterways, up to 50% may be set-aside. Setting aside exceptional upland habitat further protects our water resources as well as wildlife.

Alachua County has some of the most stringent buffer requirements and upland habitat protections in the state, putting local residents in a better position to cope with climate change impacts like

flooding and extreme heat. Other parts of the code protect a variety of other greenspaces, such as the **Open Space Code**, which provides protections for open spaces such as community gardens, community fields, greens, or pocket parks. These spaces are not only essential for conservation and wildlife habitat, but they also allow us to build a stronger community by having natural areas where people can gather, traverse, exercise, and play. To protect the natural habitat value of these greenspaces, the Code requires removal of invasive exotic species on all new developments.

The Unified Land Development Code also implemented two Special Area Studies (SAS); one in the community of Cross Creek and the other in the Idylwild/Serenola community. The intent of the special area studies is to provide specific policies, standards, and guidelines that address significant cultural, historic, and environmental resources and characteristics of unique communities within Alachua County. The SAS contain some of the most stringent protections for natural resources in the County. For example, in the Cross Creek SAS, building impact areas are limited to 0.5 - 1 acre for properties located within certain mapped resource protection zones. In the Idylwild/Serenola SAS, all developments must be designed so as to retain at least 40% of the initial canopy.

Tree Protection

Trees are undeniably valuable assets for both the environment and the community. They offer a wide array of benefits that increase over time, including shade, oxygen, and habitat for wildlife. As trees mature, their shade can cool urban temperatures by as much as 10 degrees compared to areas without trees and their capacity to sequester carbon further amplifies. Additionally, they protect people from harmful ultraviolet radiation while filtering air pollutants, reduce energy costs, and enhance property values which further amplifies their positive impact on the lived environment.

The purpose of the Tree Protection Code is to advance these aesthetic, economic, environmental, and social contributions through preserving existing canopy and the creation of tree resources where there is a deficit. In the interest to promote the public health, safety and general welfare; enhance the beauty of Alachua County, and to complement zoning, subdivision and land use ordinances, it is imperative to establish standards and improve measures to preserve trees.

The **Tree Protection Code** implements policies to preserve, protect, and enhance the quality and quantity of the County's tree canopy while also balancing development and improvement of property. In 2020, Tree Code update provided a variety of additional protections for trees:

- Strengthened protection of high quality 60" Diameter at Breast Height (DBH) trees
- Increased mitigation rate for heritage trees
- Clarified dripline protection for the required minimum percent retention of trees
- Extended recapture timeframe of unauthorized clearing prior to development from 3 to 5 years
- Reduced tree permit threshold for non-heritage trees from 2 acres to 1 acre

The Tree Protection Code is being reviewed by the Board in 2025 and updates to the code are expected to be adopted in 2025 or early 2026.

Tree Planting

Trees are essential to many ecosystems, providing homes for wildlife and sanctuaries from the heat of summer. This is why the County has worked hard not only to protect our trees, but plant more. Since 2018, there has been an Annual Tree Planting Work Plan, 1,200 trees have been planted, and there has been annual wildflower seeding in County ROWs. The goal of this program is to establish high value trees on County owned rights-of-way, developed County properties, and properties directly influencing the public sphere. Participating in tree planting events is a great way to volunteer toward helping improve tree canopy in Alachua County.

Protection of Karst Sensitive Areas

The Unified Land Development Code sets forth protection measures for significant geologic features and karst topography, such as retention of these features and their buffers in their natural condition. Climate influences natural ecosystems in a variety of complex ways, for example warming may force species to seek out cooler areas for survival. Fine-scale topographic complexity creates important microclimates that can facilitate species to grow outside their main distributional range and increase biodiversity locally. Additionally, Karst features provide a diversity of microclimatic habitats that may facilitate the persistence of taxa with diverse environmental preferences. Research indicates karst features may provide potential safe havens for multiple phyla under local and global climate oscillations.^[4] Locally, most sinkholes promote a moist climate that is moderated from temperature extremes. Protecting the features that provide such microclimates could improve resilience for animal communities in the face of ecosystem migration resulting from climate influences.

Other stressors such as development, can combine with climate change leading to more drastic cumulative effects. The County's Comprehensive Plan requires strategies that, "Protect and conserve the quality and quantity of groundwater and springs resources to ensure long-term public health and safety, potable water supplies from surficial, intermediate, and Floridan aquifers, adequate flow to springs, and the ecological integrity of natural resources." In unincorporated areas, the Alachua County Development Review Process also has mechanisms to address the type of development surrounding geologic features.

On the other hand, while the Countywide Natural Resources Protection Code provides some protection of significant geologic features within the municipalities through avoidance and minimization of impacts, it does not currently consider the larger development patterns surrounding those features since it is not a land development code. Alachua County will continue to work with local municipalities to strengthen their comprehensive plans to match the County's protection strategies.

Landscaping Code

The County Comprehensive Plan requires and encourages development and landscaping practices that conserve, appropriately use, and protect native vegetation and forests. Landscaping in new development must incorporate water conservation practices while use of invasive species is prohibited. The Plan encourages the use of groundcover alternatives to lawn grass, site design techniques that provide for passive cooling in landscape design and supports strategies that maximize biodiversity of plant species.

Recent updates to the Landscaping Code to further these objectives include changes in the following areas:

- Resilient Landscapes – increased emphasis on reduced irrigation and fertilizer, promotion of alternative groundcovers and reduced turfgrass; requirements for Low Impact Development to disrupt impervious surfaces; clarity on credit for use of existing vegetation.
- Urban Forest – diversity requirements for trees, shrubs, and groundcovers; minimum requirements for native species; reduced tree installation sizes for greater species diversity; encouragement of edible and keystone species; update of appropriate trees list to remove invasive species, limitation on use of palm species to control Lethal Bronzing Disease.
- Urban Heat Island – allow flexibility for tree locations near covered parking solar facilities; for paved area tree canopy coverage, simplify requirements for vehicular areas and add requirement for pedestrian areas.
- Compact Development – new standards for root zone volume, width, depth, pervious surface areas for trees in constrained areas; clarification of street trees requirements; standards for geometric, walled, fenced basins as amenities to developments.

Countywide Wetland Protection Code and the Countywide Natural Resources Protection Code

In 2018, Alachua County adopted countywide wetland protection standards outlined in Chapter 77, Article II **Countywide Wetland Protection Code**. Chapter 78, **Countywide Natural Resources Protection Code**, was later adopted in 2021, and outlines protection standards for significant habitat, listed species habitat, strategic ecosystems, and significant geologic features. Both codes implement strong protections for wetlands from clearing and other activities, only allowing alterations if authorized by the associated municipality and County Board of County Commissioners.

Technical Assistance and Code Enforcement

In support of the extensive environmental protections in the County's Comprehensive Plan and Code, staff responds to citizen inquiries and provides technical assistance, largely free of charge.

The County has had a Pre-Application Screening process in place since 2015 whereby all building permits are reviewed by the Environmental Protection Department for compliance. The Department also has a robust outreach program, including regular presentations to school children and civic groups, social marketing campaigns, informational pamphlets and a website, mailings, and more. When code violations are not able to be resolved by staff working with citizens, the County has the option to settle matters with a code enforcement special magistrate and/or civil citation.

Future Strategies and Action Items

Continuation and Expansion of Land Conservation Efforts through Alachua County Forever Program

Land conservation, habitat restoration, and land stewardship are nature-based climate actions (natural climate solutions) which increase carbon storage or reduce greenhouse gases in the atmosphere. Natural climate solutions include strategies from special low-impact agricultural practices and habitat restoration to tree planting, nutrient management, and conservation of both public and private lands. Combined at the national level, these and other natural climate solutions could absorb twenty-one percent of the annual net greenhouse gas emissions. Among these strategies, land conservation is one of the most cost-effective. Alachua County, through the Alachua County Forever Program, will continue land conservation efforts using the strategies and action items outlined below.

STRATEGY: Continuation of Protection of Environmentally Significant Lands through Alachua County Forever Program

The voters of Alachua County have approved continued funding of land conservation efforts through the Alachua County Forever Program through 2032 and may likely support additional funding into the future. The Board of County Commissioners, in its 2023 Strategic Guide, identified “Invest in and Protect Our Environment” as a guiding principle, and named “Continue Wild Spaces and Public Places and include agricultural lands as well” as a program action in support of this principle. In February 2023, the Board approved the “30x30” goal for land conservation within the County as a target for the 10-year (2023-2032) management strategies of the Alachua County Forever Program.

- **ACTION ITEM** – Continue acquisition of conservation lands in support of “30x30” land conservation goal – Continue to evaluate and acquire environmentally significant lands in priority project areas and corridors in support of Alachua County Forever mission. Utilize planning and funding strategies in support of conservation of 30% of the County’s lands and freshwater by 2030.
- **ACTION ITEM** – Continue acquisition of conservation lands in support of “50x50” land conservation goal. Continue to evaluate and acquire environmentally significant lands in priority project areas and corridors in support of Alachua County Forever mission. Utilize

planning and funding strategies in support of conservation of 50% of the County’s lands and freshwater by 2050.

- ACTION ITEM - Review ACF property evaluation data and process, including and decision matrices, for opportunities to include climate resiliency values and climate change mitigation opportunities by December 2026.

Table 6.2 Enhance Private Conservation Management Areas

Action Plan Components	Jurisdiction	Pros	Cons
Continue public education, code enforcement	Local government, FDEP, WMD	Increase habitat value, fewer code violations	Cost

Table 6.3 Conserve priority environmentally significant lands within Alachua County

Action Plan Components	Jurisdiction	Pros	Cons
Conserve priority lands as fee simple or conservation easement acquisitions to protect water resources, wildlife habitat, and resource-based recreation where appropriate.	Alachua County, private landowners, FDEP, WMD, USDA	Reduce flooding, reduce risk of catastrophic wildfire, protect water quality and water recharge, mitigate greenhouse gas emissions, protect carbon storage reservoirs	Landowner awareness, real estate market conditions, expanding population.

STRATEGY: Implementation of Agricultural Land Protection Strategy under the Alachua County Forever Program; to increase conservation of farmlands through acquisition of agricultural conservation easements:

In September 2024, the Board of County Commissioners approved an Agricultural Land Protection Strategy for implementation under the Alachua County Forever program. Similar to the threats posed to environmentally significant conservation lands, agricultural lands are also under threat from development and other pressures. Since 1950, Alachua County has lost over 46% of its farmland, and much of the remaining agricultural land is at a high risk of conversion to development. Conversion of these agricultural lands impacts local food production networks, remnant wildlife habitat, and increases stormwater runoff, pollutants transported by runoff, and water consumption. Furthermore, much of the remaining agricultural land in the western part of Alachua County contains sandy, high recharge soils, which are essential for the future viability of the Upper Floridan Aquifer that provides fresh drinking water and feeds the springs and rivers contained within Alachua and neighboring counties. Alachua County’s Climate Vulnerability Analysis identified the multiple policy, planning and finance actions recommended to help manage impacts from climate change on agricultural lands, workers, crops and practices. Implementation of an agricultural land conservation strategy will help ensure the diverse landscape of Alachua County is preserved into the future. This is one of the measures Alachua County can use to effectively address the impacts of climate change, mitigate risks, and enhance the quality of life for current and future residents.

- ACTION ITEM - Implement the Agricultural Land Protection Strategy in accordance with Board Direction established through Board Resolution. Acquire agricultural land conservation easements on priority lands within the county, in partnership with willing landowners.

STRATEGY: Review land stewardship practices on Alachua County Preserves for opportunities to increase climate resiliency and implement selected compatible strategies. Prioritize vulnerabilities identified in the County’s Vulnerability Analysis:

- ACTION ITEM – Review the land stewardship practices on County-owned conservation lands for potential climate benefits as well as other priority ecosystem services.
- ACTION ITEM –Complete a climate-focused review of Alachua County Forever Timber Business Plan, and Grazing Business Plan by 2027. Include assessments of carbon storage and absorption in analyses.
- ACTION ITEM –Continue and expand prescribed burning on County-owned preserves to help reduce the possibility and intensity of destructive wildfires by reducing fuel build-up.

Table 6.4 Expand protection of agricultural lands within Alachua County

Action Plan Components	Jurisdiction	Pros	Cons
Conserve priority lands as agricultural conservation easement acquisitions	Alachua County, private landowners, FDACS, USDA	Protect local food production, protect open space, reduce flooding risk, protect or mitigate water quality and water recharge.	Landowner awareness, real estate market conditions, expanding population, and challenges in farming longevity.

Comprehensive Plan Update

In 2025, the County will begin updating its Comprehensive Plan, which is required every seven years in order to comply with new state laws and reflect changes in local conditions. The Plan will be updated to reflect our current understanding of climate change on ecological systems. It will include language recognizing natural resources, and trees in particular, for their value in helping our community mitigate and adapt to climate change.

Tree Protection Code Update

The next tree protection code update will evaluate the effectiveness of the existing code and provide clarity for tree canopy retention requirements such as:

- Tree Protection Standards - Minimum Tree Canopy Retention Hierarchy
- Threshold and Protection of Large Trees
- Tree Canopy Incentives and Consequences
- Specimen Tree List

Tree Canopy Retention Percentage

- Current: On development projects, tree protection amounts are based on a flat minimum percentage and does not recognize sites that may have higher quality or lower quality tree resources
 - Potential: Assess various strategies such as retaining trees based on current/historical land resources, overall condition and quality of species, or strengthening the purpose of tree ratings
- Current: Tree Protection Standards – The method for minimum tree protection standards states a prioritized hierarchy list as well as stating a combination of

factors within the hierarchy. Some of these priorities can end up limiting the amount of protection of higher quality trees on site such as a registered champion tree.

- Potential: Reorganizing priorities within Tree Protection Standards minimum canopy hierarchy to better balance protection of tree resources
- Current: Removal of 60” diameter at breast height (DBH) trees are prohibited unless it is demonstrated by the applicant that removal is unavoidable. When the minimum canopy retention requirements are met elsewhere within the hierarchy, the amount of rootzone protection is reduced for 60” trees retained beyond the minimum. In addition, a 59” tree in better condition would not be recognized with the same protection.
 - Potential: Clarify the classification of 60” diameter trees within the hierarchy and evaluate size threshold/tree conditions.
- Incentives for low impact design:
 - Potential: Current density bonuses are based on gross density (units/property), with less tree canopy required for higher density. However, a core principle of low impact design is to increase net density (units/acre) while increasing tree and green space preservation. This can result in higher property values, and lower development costs from reduced hardscaping, landscaping, and stormwater infrastructure

Specimen Tree List

- Current: Table 406.16.1 Specimen Tree List overestimates size of specimen trees compared to when specimen trees are observed on site
 - Potential: Remove minimum sizes for small trees and assess on a site-by-site basis
 - Potential: Clarify mitigation on smaller stature trees and provide a method for capturing uncommon species on a tree survey

Potential Incentives for Retaining Trees

- Current: The incentive for reducing mitigation by 50% for any dripline impacts are not being utilized and not all impacts are detrimental to tree survival
 - Potential: Clarifying the types of dripline impacts may or may not be allowed or provide a method for assessing mitigation with cumulative impacts
 - Potential: Clarify when the maximum calculated protection zones are required based on species, size, and/or condition of the tree
 - Reducing mitigation fees for additional strategies used to retain canopy (e.g. Silva cells)
- Potential: Update the Transit Supportive Design Standards to allow the preservation of high-quality heritage tree canopy within the street setback to count towards meeting the building frontage requirement

Potential Tree Permit Changes

- Allow non-native edible species for mitigation
- Process for denial and appeal tree permits for checks and balances
- Tree advisory board and Tree City USA certification

Community/Urban Forest Management Plan

Alachua County's currently provides protections to forests or trees through conservation land management, tree protection standards for trees removed on development projects and the permit process for single-family properties; landscaping standards on development projects and mitigating or replanting for trees removed within the County. Some of these protection methods are reactionary to specific situations within the County such as responding to inquiries for removal or evaluating tree concerns for safety. The Community/Urban Forest Management plan will provide proactive, comprehensive goals and strategies to further balance the needs of the environment and people.

Developing a Community Forest Management Plan, or a more tightly geographically focused Urban Forest Management Plan, will require three major components: social systems, governance systems, and the ecological systems. The social component incorporates the framework of community values – what people who live and use these spaces would like to see. The governance provides the guidelines and responsibilities for Alachua County's goals such as how they will be applied and monitored, and the timeframe for implementation methods for trees Countywide. Community/urban forest management will inventory current tree canopy cover, species, health, and distribution. It will also identify public safety hazards to residents and structures which will be a useful tool for extreme weather preparation. The community input and support to establish the public commitment and organizational framework will unify efforts to protect, manage, and care for our trees in the long term.

Initial discussions regarding the scope of the plan suggest the following areas be reviewed for inclusion in the plan development, community outreach, and tree inventory areas within the County:

- County Urban Cluster or Urban Service Area
- County Road rights-of-way
- County Parks
- Smaller municipalities within the County as interested

Examples of successful urban forest plans include specific recommendations on policies, procedures and practices, and provide information required by policy makers, planners, utilities, environmental managers, businesses and citizen volunteers to optimize the benefits of the urban forest while minimizing management costs.

The investment in this plan can come at a fraction of the cost of other environmental management programs, such as stormwater system maintenance. A five-city study by the EPA in 2015 found that cities received benefits ranging from \$1.50-\$3 for every dollar invested in trees. Unlike human-made systems, such as roads and bridges which deteriorate with age, trees are the only urban infrastructure that increase service and value over time.^[5]

By properly managing the County’s tree population and tree infrastructure – through proactive planning of quantity and quality of trees, structural pruning maintenance, pest management, and removal of high-risk trees - the County can increase property values, tourism appeal, and the physical, and mental health of residents, while reducing storm water runoff, energy consumption, and air and water pollution.

Overall, a community/urban forest management plan will define the vision, begin the tree inventory and tree assessments, create a strategic plan and timeframe based on the assessments, define the entities responsible for implementation, and monitor efforts towards achieving these goals.

Tree Inventory

A component of the community/urban forest management plan will require knowing what the composition and condition of trees in Alachua County prior to developing short term and long-term strategies. It is currently estimated through aerial imagery that there is approximately 53% of tree canopy coverage in the County’s urban service area. A formal tree inventory should include an assessment of current tree canopy percentage and forest cover; tree species, health, and how they’re distributed. This will help make informed decisions on future goals of maintaining canopy coverage, areas to plant high-quality species or improve diversity, management of invasive species or removal of trees at risk of causing damage or harm to property or people.

Table 6.5 Expand and Enhance the County's Urban and Community Forest			
Action Plan Components	Jurisdiction	Pros	Cons
Obtain and Implement Urban/Community Forest Management Plan	Alachua County	Reduce UHI effect, increase storm resiliency, increase habitat	Currently no dedicated funding sources

Landscaping Goals

In recent years, the land development process has dramatically changed in ways that exacerbate habitat loss and the heat island effect. The current land development process currently results in vast clearcutting and scraping away of existing resources to create a “blank slate.” This method consumes a vast amount of resources, such as new landscaping, irrigation, and fertilizer.

Alachua County currently does not have any requirements for lot level landscaping. As part of the Climate Action Plan, the County will explore adding lot level landscaping requirements, particularly focused on replanting of trees and native vegetation. Additionally, requiring soil amendments for new landscaping will also be considered in order to promote healthy soils and landscaping practices that minimize the use of supplemental resources.

One planting strategy that has gained a lot of attention for its climate benefits is micro forests, or the Miyawaki method. This is an afforestation practice that involves densely planting a variety of native trees in as little as a tenth of an acre. This result is accelerated growth of a diverse forest, that requires little maintenance once established. While this practice is just beginning to gain traction in the United States, it has proven successful in other countries such as Japan, where the idea originated. Alachua County will consider this strategy to address the increasing need in urbanized areas for cooling and habitat that micro forests have the potential to provide. This could be achieved through first planting a micro forest on County property as a demonstration, then finding ways to incentivize it in the broader development landscape.

As addressed in the County’s current Comprehensive Plan and Landscaping Code, Firewise landscaping is an important strategy for minimizing impacts to developed areas from wildfires. The Climate Vulnerability Analysis points out that chances of extreme drought, and associated wildfires, are expected to increase with climate change. To address this concern, the County will assess staff and budgetary resources allocated to implementing the wildfire mitigation objectives of the Comprehensive Plan.

Table 6.6 Creating New Resilient Landscapes			
Action Plan Components	Jurisdiction	Pros	Cons
Require soil amendments in new construction	Local government	Great water savings if property owner changes watering behaviors	Property owner and builder resistance, potentially staff intensive

Require trees on new residential lots	Local government	Reduce urban heat island (UHI) effect, modest energy savings	Property owner and builder resistance, potentially staff intensive
Subsidize native plant nurseries	FDACS	Increase availability and stock	Currently no dedicated funding sources
Promote movements that assist landowners with native landscaping	Local government, UF IFAS Extension	Increase habitat, marginal water savings and water quality improvements	Difficult to measure
Require green certification of new construction	Local government or utilities	Modest water, energy savings	Political and builder resistance, potentially staff intensive
Retain higher density inside Urban Cluster, while also retaining greenspace	Alachua County	Reduce UHI effect, incentivize pedestrian transportation	Political and builder resistance
Impose limits on impervious surfaces	Alachua County	Reduce UHI effect, reduce stormwater runoff, protect soil and habitat	
Update Tree Protection Code to increase tree canopy retention	Alachua County	Reduce water use, protect soils and habitat	Builder/developer resistance
Require / incentivize permeable pavement and other Low Impact	Local government	Improve water quality and reduce flooding	Builder/developer resistance, cost, maintenance

Development techniques			
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Promote Low Impact Design

Low impact design (LID) is an approach to land development and stormwater management that preserves and protects natural resource systems using various site planning and stormwater management technologies to reduce the average annual stormwater pollutant loading discharged off-site. The approach, also known as green infrastructure, uses site planning and a suite of engineered small-scale hydrologic controls distributed throughout the site and integrated as a BMP Treatment Train to replicate the natural hydraulic functioning of the landscape through infiltrating, filtering, storing, evaporating, and detaining runoff close to its source. Protection of natural resources through LID is an important strategy to cope with an increasingly unstable climate. LID also preserves and utilizes the natural topography onsite during project design. While historically used for stormwater management, green infrastructure also cools the surrounding area by releasing moisture into the atmosphere, deflecting radiation, and shading.

The County is already addressing LID through potential updates to the Comprehensive Plan and Unified Land Development Code, including the Stormwater Code, Tree Protection Code, and Landscaping Code. The following are additional potential strategies to increase the adoption of LID approaches to new development in the County:

- Create our own brand for a sustainable development standard; e.g. “Alachua County Conserves”. Businesses and developments can include the sticker in their windows, websites, marketing, etc. if they meet green development standards.
- Create a technical memo on cost-benefits of various low impact development strategies.^[6]

The following are not included in the stormwater LID code and should be explored as additional options:

- Miyawaki mini-forest method utilized to quickly grow small, diverse native forests.^[7]
- No permanent irrigation.
- 100% native landscaping.
- Buildings oriented to maximize cooling breezes and shading.
- Cool painted roofs, facades and pavement.^[8]
- Solar panels installed or structures solar ready.
- Voluntary conservation management areas.

Other potential code updates:

- Limit surface parking and require a parking garage past a threshold.
- Require surface parking over a certain size to install solar roofs.
- Strengthen enforcement and implementation of requirements under ULDC SEC. 406.90., which currently states that natural topographic features *may* be retained through lot layout and infrastructure siting.
- Explore limits on paved areas such as driveways, surface parking, etc.

Climate Action Mapping

Maps are a helpful visual tool to promote broad understanding of current conditions and policy implications for natural resources. Through the use of Geographic Information Systems, complex analysis of geographic data can be performed and visually displayed in an easy-to-understand format. The Climate Vulnerability Analysis contains several useful maps, including areas of extreme flooding, heat, and wildfire risk in the County. The following maps could also be included as part of the Climate Action Plan:

- County Tree Inventory
- Updated Greenways Master Plan (Bicycle and Pedestrian Master Plan)
- Climate Action Infrastructure Projects (e.g. tree plantings, flood mitigation, cooling stations, etc.)

Map 7. Alachua County **Greenways** and Blueways

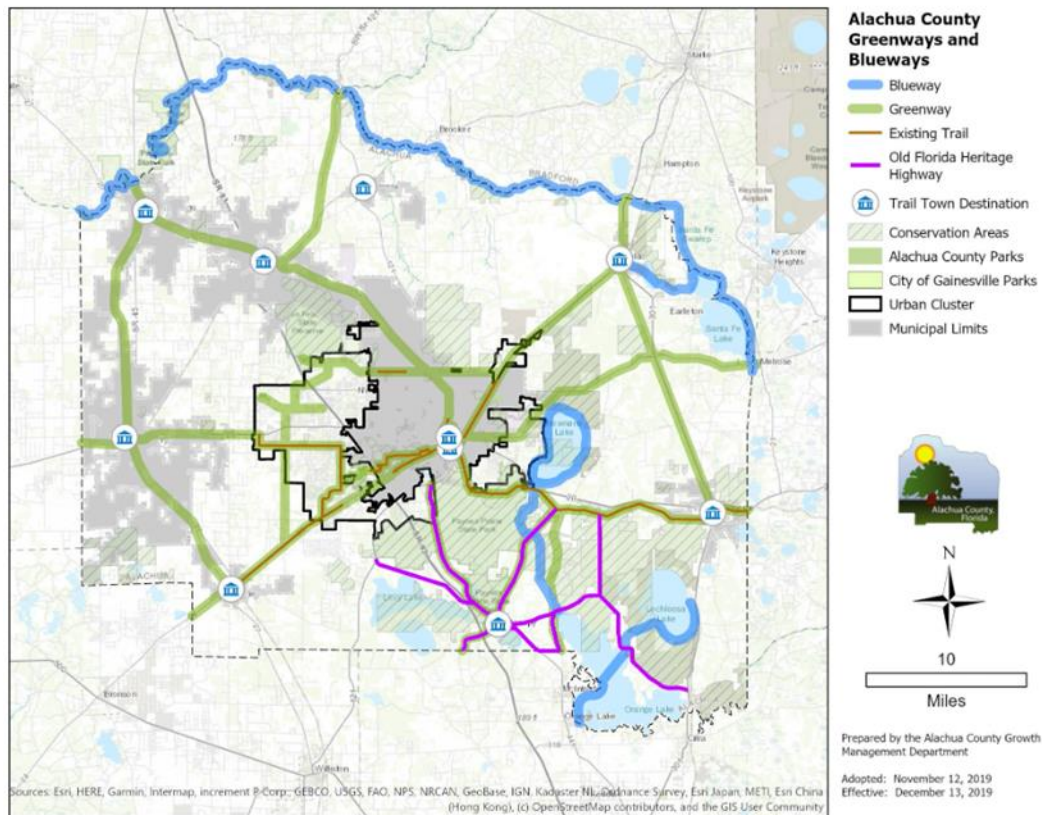


Figure 6.3: Alachua County Greenways and Blueways

What Can You Do?

Volunteer

One of the best ways to get involved with Alachua County's efforts to protect our natural resources is by directly volunteering with the variety of opportunities we provide residents. Volunteer opportunities are available for our Water Resources Program, Arboriculture program and Alachua County Forever Program. Please see our Volunteer Page for more information.

Native Yards

Collectively, urban landscapes, particularly those surrounding single-family homes, place a strain on our natural and water resources without contributing much to our ecosystems. It is essential that we shift the paradigm away from resource-intensive traditional yards and towards a more natural approach to landscaping that promotes native plant species and provides habitat for wildlife. There are several resources to assist property owners locally, including the Florida-Friendly Landscaping Program (FDEP and UF/IFAS) and Springs Friendly Yards (Florida Springs Institute) programs. Nationally, the Homegrown National Park movement is a grassroots call-to-action to regenerate biodiversity and ecosystem function by planting native plants and creating new ecological networks within urban landscapes. Similarly, the Wild Ones Program offers free native landscape designs for each unique ecoregion. These programs promote yards that require little to no supplemental inputs such as fertilizers and irrigation once established, while also providing forage and habitat for native species including pollinators.

Get Involved in Local Governmental Efforts

Here are some ways in which you can get involved with Alachua County's efforts to preserve our ecosystems and trees:

- Contact your elected representatives to support climate resilient policies.
- To help make a difference in climate resiliency in your community, join a County Advisory Committee such as the Environmental Protection Advisory Committee.
- Report clearing of natural areas, excessive water use, and other activities that harm the environment by calling the Alachua County Environmental Protection Department.

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