DELCO'S NEW PARK MASTER PLAN

Community in Nature
DELCO WOODS MASTER PLAN



March 2025

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JMT

Natural Lands

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April 1, 2025

Dear Residents of Delaware County,

Thank you. Your voices, ideas, and passion have shaped the vision for Delaware County's newest and most significant natural space. From the beginning, Delco Woods has been a community-driven effort, and your overwhelming support has made one thing clear—this park matters.

This 213-acre site was the largest unprotected forest in the County—an irreplaceable natural resource that requires thoughtful stewardship. The master plan outlines a long-term vision to protect and restore this landscape while ensuring the public can enjoy it responsibly.

Because this land was acquired through Eminent Domain, there may be additional legal considerations the County will need to address. Eminent Domain allows the County to acquire private property for public use, and while legal processes continue, our commitment to careful management and conservation remains steadfast. Transforming this site into a public space that balances environmental preservation with community access will take time. Development will occur gradually as funding becomes available, supported by both public and private resources over the years. By taking a careful, phased approach, we can protect this forest while creating meaningful opportunities for the community to experience it in a way that aligns with both legal and financial realities.

The journey begins now. Our first step? A half-mile woodland loop trail—an early project that will allow residents to explore the forest's beauty while laying the foundation for future restoration and access improvements. This effort isn't just about building a park—it's about preserving a vital piece of Delaware County's natural heritage. With the right partnerships and continued community support, we can ensure this landscape remains a treasure for generations to come. Thank you for being part of this effort. We look forward to working together to protect and celebrate this extraordinary place.

With appreciation,

Dr. Monica Taylor
Delaware County Council, Chair

Richard R. Womack
Delaware County Council, Vice Chair

Kevin M. Madden
Delaware County Council, Member

Elaine Paul Schaefer
Delaware County Council, Member

Christine A. Reuther
Delaware County Council, Member



Delaware County Council members, left to right:
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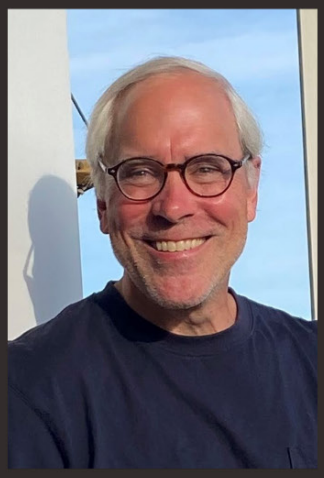


DELCO'S NEW
PARK
MASTER PLAN






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DELCO WOODS MASTER PLAN EXECUTIVE SUMMARY

"Once you cut down a forest, it's gone for generations. But when you protect it, it gives back–clean air, clean water, wildlife, and a place for people to connect and thrive."– The Trust for Public Land

This Park Master Plan sets a long-term vision for creating a green and sustainable public space that protects the site's natural beauty while expanding opportunities for recreation, connection, and community engagement. Designed with inclusivity at its core, the plan envisions a park that welcomes people of all ages, backgrounds, and abilities—ensuring that residents from across the county can enjoy and benefit from its landscapes, trails, and gathering spaces for generations to come.

The preservation of Delco Woods, which was Delaware County's last unprotected large forest, marks a historic milestone in Delaware County's commitment to protecting its natural and cultural heritage. Once part of the ancestral home of the Lenape people, this extraordinary landscape holds deep historical significance while serving as a sanctuary for woodlands, streams, and diverse wildlife. Thanks to the visionary leadership of Delaware County Council and countless citizens fighting to protect this site for several decades, this irreplaceable land has been safeguarded for future generations.

Project Background

The 213-acre site's forests and streams are in the home range of the Lenape people and Colonial-era settlers who established a whetstone mill and tannery. From 1960 to 2015, and still in the memory of many county residents, the Archdiocese of Philadelphia operated Don Guanella Village, a school dedicated to supporting individuals with intellectual and physical disabilities.

When the school closed, concerns grew over potential development that could lead to the loss of the largest remaining contiguous forest in the County. Citizens came together to protect the site from destruction, advocating for its preservation. In 2021, County Council seized a once-in-a-lifetime opportunity to secure the land for a new

county park through Eminent Domain—a legal tool that allows government entities, such as Delaware County, to acquire private property for public use with fair compensation to the owner.

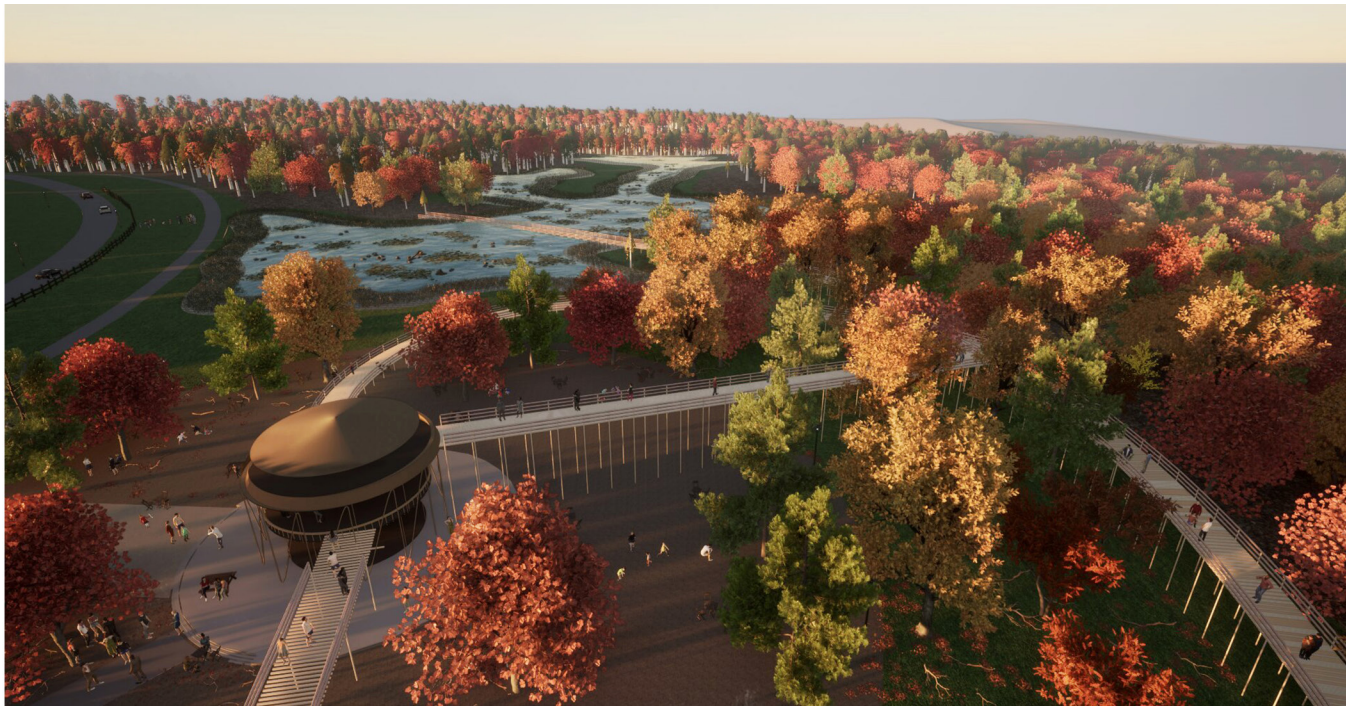
Countywide Support for Delco Woods

Extensive public engagement countywide guided the development of the park master plan. The Plan Advisory Committee of 15 residents was selected from a pool of 330 applicants representing 40 municipalities across the County. A combination of two public meetings, three pop-up events, seven focus groups, 55 interviews, two videos, social media, two online surveys, and promotion by community-based organizations provided multiple opportunities for community input and enabled residents to share ideas, provide feedback, and contribute to the vision for the park. In total, the public engagement process generated 25,214 interactions with the project, not including media coverage from news outlets and television. This welcoming public input effort increased awareness of the new park and ensured that community voices played a central role in shaping its future.

Welcoming, Sustainable Park Design Rooted in Nature and Access for All

GUIDING PRINCIPLES

- Protect the ecology and make the landscape more resilient to climate change
- Welcome all to the park
- Provide diverse and unique recreational opportunities
- Direct intense uses to the current paved and disturbed portion of the site



The Celebration Pavilion and Pond

The Vision

The vision for the park centers on three key elements:

1. **Conserving the forest and streams**
2. **Improving the network of trails**
3. **Creating a community resource for all of Delco**

Starting with practical, achievable early actions that preserve the forest and streams while inviting people into nature, the park will be developed over time as resources allow, ultimately building toward a grand vision that:

- **Brings the Community Together in Nature** – Responds to public desires for hiking, solitude, and gathering spaces in the park.
- **Enhances Connectivity** – Links the park to the broader county with safe walking and biking routes and expanded bus service.
- **Creates a Welcoming Environment** – Establishes six park gateways, enhancing visibility and accessibility from surrounding streets.
- **Protects Natural Resources** – Preserves over 90% of the existing forest, safeguards stream corridors, and maintains the ecological core and forest edges.
- **Encourages Exploration** – Features a 2.5-mile perimeter trail, a 1/2-mile accessible woodland path, internal forest trails, wetland boardwalks, interpretive signage, and designated biking trails.
- **Develops a Vibrant Community Hub** – Converts 40 acres of already disturbed ground into an engaging space anchored by a Celebration Pavilion and water feature, serving as the park's main entrance. The hub features a forest canopy walk, great lawn, native grass meadow, dog-friendly area, and dedicated gathering spaces for teens, older adults, and community events.

Please refer to pages 40 and 41 to see a map of the Delco Woods Development Concept, which locates the features that incorporate these elements.

REALIZING THE VISION – BRINGING DELCO WOODS TO LIFE

The creation of a park truly begins after the land is acquired. The timelines and vision in this plan must be balanced with the knowledge that demands on county budgets and the resolution of the Eminent Domain process may warrant mid-course revisions and flexibility in timelines and implementation. The full vision for the park will take time and require a mix of significant public and private resources.

The action plan contains a modular implementation strategy to maximize flexibility. At the top of the list are early action items that can be implemented in the immediate short term. Subsequent Modules A, B and C can be implemented as opportunities in funding, timing, and other resources arise. The order in which these modules are implemented may be changed to respond to funding, timeline, and public will. By using this implementation approach, the County Council can continue to be responsive to the community's concerns about costs and funding.

Early action items, interchangeable modules, and associated major projects are outlined below:

Table 1	
Module	**Major Projects**
Early Action Items	Woodland Loop Trail; Tree Safety Study and Trail markings and signage; Building security; Park stormwater management plan; Memorandum of Understanding (MOU) with BMX Group
Module A*	Community Recreation Hub: Great lawn gathering and event area, sports courts, playground, pavilions, restrooms, and teen area; Green infrastructure
Module B*	Meadows, community gardens, trails, natural play area; Water feature with flatwater fishing area
Module C*	Multistory Celebration Pavilion with restrooms, catering space, seating; Tree Canopy Walk

*These modules will be dependent on demolition of the existing vacant Don Guanella campus buildings. This will be a critical capital project for park implementation.

The cornerstone of the project's early action items is the accessible, half-mile Woodland Loop Trail, serving as a gateway to unpaved trails and allowing community members of all ages, abilities, and comfort with the outdoors to connect with nature. Designed to provide an immediate connection to nature, this trail invites both longtime advocates for the site and those discovering Delco Woods for the first time.

DELCO WOODS: PROTECTING THE FOREST, CONNECTING OUR COMMUNITY

The preservation of Delco Woods is more than the creation of a park—it is a profound commitment to protecting the county's last great forest. This landscape, rich in history and ecological value, will remain a sanctuary for wildlife, a safeguard for clean air and water, and a vital buffer against the effects of climate change. By securing this land, Delaware County ensures that future generations will inherit not just a park, but an intact and thriving forest ecosystem.

The Delco Woods Master Plan sets a course for balancing conservation with thoughtful public use. It prioritizes protecting and restoring the forest, safeguarding streams, and enhancing biodiversity while creating opportunities for people to experience nature in a way that fosters appreciation and responsibility.

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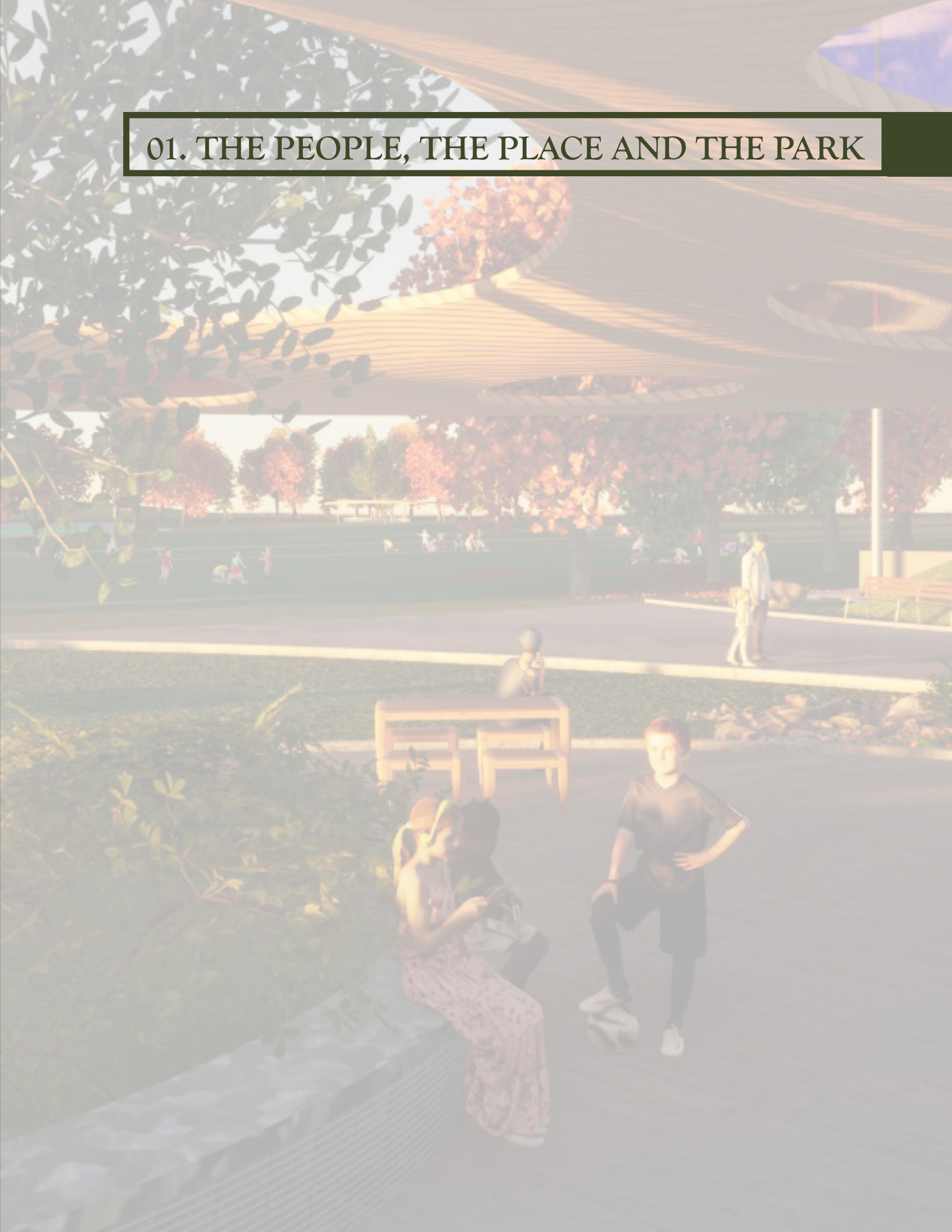
01. THE PEOPLE, THE PLACE AND THE PARK



DELAWARE COUNTY: THE PEOPLE, THE PLACE AND THE PARK

"Cultures and climates differ all over the world, but people are the same. They'll gather in public if you give them a good place to do it." - Jan Gehl, Architect, Copenhagen

This chapter explores the rich history, cultural significance, and future vision for Delco Woods, highlighting its transformation into a premier public park. Below is a summary of the key topics covered:

- **Delaware County Overview –** A diverse, densely populated county.
- **Population Trends –** A growing and increasingly diverse community.
- **Commitment to Sustainability –** County efforts to invest in parks, trails, and conservation.
- **Historical Background of Delco Woods –** From Lenni Lenape ancestral lands to colonial industry and 20th century institutional use of the former Don Guanella School.
- **Grassroots Advocacy for Preservation –** The community's role in protecting the forest.
- **Public Acquisition and Protection –** Delaware County's acquisition of largest unprotected forest in the parks and recreation system.
- **The Park Master Plan –** A blueprint for conservation, recreation, and long-term stewardship of Delco Woods.

ABOUT DELAWARE COUNTY

Delaware County, affectionately known as Delco, is rich with diversity: ethnic, social, cultural, architectural, economic, and ecological. Delaware County reflects a representative cross-section of America's people, places, and ideas. It is the Commonwealth's second most densely populated county, yet third smallest in area. Its 183 square miles are an urbanized suburb of 49 municipalities with 582,185 residents featuring industry, walkable downtowns with an active arts and food culture, eclectic scales and styles of homes, waterfront communities, swaths of woodlands, wetlands, parks, and trails, and endless interesting people among the 49 unique municipalities. Along the Delaware River, the County reflects an industrial and maritime-based history, its eastern side borders the dynamic and soulful southwest end of Philadelphia, and the county's northeast communities include the long-standing Main Line. Altogether, they infuse Delco pride with street smart sensibility and humble character. Delaware County ranked as the fourth best of Pennsylvania's 67 counties in which to live, especially for families and young professionals, based in part on its schools, diversity, job opportunities, and amenities[1].

[1] Niche. (2022) Delaware County #4 in Places to Live in Pennsylvania Delaware County, Pennsylvania - Niche Accessed October 13, 2023.

POPULATION: GROWING AND DIVERSIFYING EVERY YEAR SINCE 2010

Delaware County is home to some of the wealthiest communities in the Delaware Valley, and some of the poorest. Within the county, 94,157 people live in the 28 census tracts that meet or exceed the threshold for the federal Justice40 designation. Collectively, these census tracts house a 78% minority population overburdened with environmental and economic conditions. The per capita income is $20,673 – half of the value of per capita income for Delaware County and just 58% of the national average. The poverty rate for individuals is 24%, which is over twice the national rate (11.6%) and over two and a half times the rate for Delaware County (9.3%). In contrast, Delaware County also boasts some of the highest income areas in the region and Commonwealth. For example, Rose Valley Borough boasts a 2022 median household income of $185,500, more than double both the county median income of $83,960 as a whole and the Commonwealth median household income of $71,798. As of the 2020 census, the County was 63% White non-Hispanic, 22% Black or African American, 0.1% Native American or Alaskan Native, 6.3% Asian, 4.6% Hispanic or Latino, 0.1% Native Hawaiian, and 3.5% were two or more races.

FORGING A SUSTAINABLE TOMORROW

With a vision for a healthy future, the County is investing in the things that support and safeguard the places that make life worth living—like parks, trails, and wildlife habitat. In 2021, the County created the Office of Sustainability with a mission to make Delaware County and its operations more sustainable and resilient to the effects of climate change. Since then, the County purchased the last remaining 213-acre mature forest for conservation as a park, the subject of this plan; partnered with the PADEP to address air pollution in environmental justice areas; and initiated brownfields and land bank programs. The acquisition and development of Delco Woods will further the goal of improving the social, economic, and environmental sustainability of Delaware County.

DELCO WOODS' FASCINATING HISTORY

Originally part of the ancestral homelands of the Lenni Lenape people, Marple Township Historical Society records indicate that around 1687, Bartholmew Coppock, Sr. purchased 300 acres, including the Delco Woods lands. Coppock farmed the land which passed through the generations of family members. From 1805 to 1830, a descendant operated the Rhoads Tannery, located at the southeast corner of Reed and Sproul Roads, relocating to Delaware when chemical processing, versus tree bark, began being used for tanning.

In 2021, John Milner Associates completed a report, *Archeological Data Recovery at Rhoads Whetstone Factory, Delaware County, Pennsylvania*, for the Pennsylvania Department of Transportation and the Federal Highway Administration. The report's purpose was to complete data recovery to mitigate the impacts of the Blue Route and comply with Section 106 of the National Historic Preservation Act. The report documents a late 18th century whetstone (a fine-grained stone used for sharpening cutting tools) factory and associated artifacts, located at the eastern corner of the site near the Blue Route. Historical records could serve as a basis for historic interpretation of the site, including Lenni Lenape land acknowledgments, a recommendation of this plan.

DON GUANELLA SCHOOL

Between 1913 and 1920, the Archdiocese of Philadelphia acquired the property now Delco Woods in three transactions. In 1960, the Archdiocese opened Don Guanella Village, a school and residential program for boys with intellectual disabilities. Over the years, the school expanded with additional residential buildings constructed in 1976 and 1982. By 2012, the Archdiocese indicated intent to sell the property, vacating the buildings in 2015.

SAVING MARPLE WOODS

In 2020, concerned citizens organized as “Save Marple Woods,” dedicated to preventing the development of the forest on the former Don Guanella School property. Based on the threat of numerous land development proposals that could have clear cut 89 acres of trees, the Marple Township’s Planning Commission and the Board of Commissioners responded to concerned citizens. They called on their duty under the Pennsylvania Environmental Rights Amendment and Constitution to reject residential and commercial development plans. The Don Guanella forest has long been identified by the Delaware County Planning Department as a prime preservation target.

In July 2021, the Delaware County Council acquired the Don Guanella School property from the Archdiocese of Philadelphia through Eminent Domain. The Fifth Amendment of the United States Constitution gives the government power to take private property for public use and in exchange for just compensation. By procuring this property through Eminent Domain, it must remain in public use.

In June of 2022, Delaware County commissioned this park master plan. The Delaware County Planning Department coordinated the project in close collaboration with five related departments: Parks and Recreation, Public Works, Facilities, Public Relations, and Park Police.

A TESTAMENT TO RESILIENCE, ADVOCACY, AND PRESERVATION

Delco Woods’ intricate history stands as a testament to resilience, advocacy, and preservation. From the echoes of the Lenni Lenape heritage to the fertile grounds tended by Bartholomew Coppock Sr. and conservation of the site by the Archdiocese, each chapter encapsulates the evolving narrative of this land. The discovery of the late 18th-century whetstone factory, a hidden gem, stands as a bridge between eras, whispering stories of early American industry. The noble and exciting efforts of "Save Marple Woods" and Delaware County’s acquisition of the Don Guanella School property exemplify our unwavering commitment to safeguard the resources that keep our air and water clean, create a sense of community, spur our economy, and provide for opportunities that are fun and healthy. Now, as the County's master plan for this park unfolds, a new chapter begins—one that cherishes heritage and diversity, embraces conservation, and invites generations to weave their stories into the tapestry of Delco Woods’ timeless legacy.

PURPOSE OF THE PARK MASTER PLAN

This park master plan serves as a roadmap for the thoughtful development, conservation, and activation of Delco Woods as a premier public space in Delaware County. It establishes a shared vision that balances ecological preservation, historical interpretation, and recreational opportunities while ensuring long-term sustainability. Rooted in community input and best practices, the plan outlines strategies for park infrastructure, programming, and management to enhance public access, environmental stewardship, and overall quality of life for all residents. As a guiding document, it will help shape policy, direct investments, and provide a framework for decision-making to ensure Delco Woods remains a cherished and well-maintained asset for generations to come.



02. GREEN BY DESIGN: THE JOURNEY TO A VISIONARY PARK PLAN



Members of the Advisory Committee and County Staff touring the New County Park, September 2022

GREEN BY DESIGN: THE JOURNEY TO A VISIONARY PARK PLAN

There must be a better way to make the things we want, a way that doesn't spoil the sky, or the rain or the land. - Paul McCartney

This chapter outlines the planning approach for Delco Woods, integrating site analysis, sustainability, community input, and long-term management. Below is a summary of key topics:

- **Study Methodology** – An integrated approach combining site assessment, community engagement, and financial planning.
- **Field Assessment** – Evaluation of vegetation, hydrology, trails, and existing structures.
- **Published Data** – Use of ecological studies and resource inventories to inform planning.
- **Sustainability** – Strategies for conservation, climate resilience, and adaptive reuse.
- **Community Engagement** – Public input through surveys, meetings, and advisory committees.
- **Operations & Funding** – Plans for maintenance, programming, and financial sustainability.
- **Guiding Principles** – A framework for ecological protection, inclusivity, and accessibility.
- **Key Findings** – Opportunities for stewardship, recreation, and long-term success.

The study methodology paired a site assessment with community engagement to arrive at a design concept that responds to the physical nature of the site and the preferences and needs of residents countywide. This involved integrating park maintenance, programming, and financial considerations into the design process. The goal is to create a comprehensive strategy for managing the site from its present condition into the distant future. The methodology included on-site Field Assessment, publication research, interviews, and focus groups on site findings, sustainability, community engagement, and programming. More detailed information on these topics is included in the following chapters.

FIELD ASSESSMENT

The planning team conducted site visits to inventory and assess vegetation, hydrological conditions, and other ecological features of the property. Site visits were also conducted to identify potential connections to adjoining neighborhoods, trail networks, and to the region beyond. Existing features were reviewed, including the BMX trails and remnants of earlier development and dumping. Site walks and mapping indicated that the baseball field used by Cardinal O'Hara High School is on Delco Woods' property. Prior to this master plan, the County retained KCBA Architects to determine the condition of the existing buildings. The architectural investigation concluded that the buildings should not be retained due to their structural condition and the exorbitant cost of rehabilitation for reuse. Based on the earlier conclusion that the buildings should be demolished, the consultant team considered what purpose the resulting cleared space could serve. Potential uses were further explored with the public. The vacant buildings show signs of trespassing, which is a safety concern.

PUBLISHED DATA AND INTERVIEWS

In addition to site assessment field work, published data such as the Delaware County Natural Heritage Inventory, soils data, and bird counts informed the plan.

SUSTAINABILITY

In 2021, Delaware County Council created the Office of Sustainability and, in August 2023, County Council accepted *Sustain Delco: A Sustainability Plan for Delaware County.* Under the guiding principles of economic sustainability, education, governance, and equity, inclusion, and justice, the Plan establishes goals, targets, and actions in the areas of Climate Resiliency, Natural Resources, Transportation, Energy and Efficiencies, Zero Waste, and Health and Wellness.

Preserving and managing Delco Woods is the top priority of this plan and the park's design. By acquiring the site, County Council has the opportunity to lead by example, demonstrating how park conservation can help mitigate climate change and how responsible forest management can enhance landscape resilience. While approximately 40 acres—roughly half the size of a large shopping mall—are currently covered by deteriorating buildings and parking areas, this space provides ample room to incorporate active park uses that support the health and recreation needs of county residents.

COMMUNITY ENGAGEMENT

The plan reflects an extensive public engagement process that revealed strong community interest and overwhelming support for the new park. Over 24,000 interactions were made through in-person meetings, surveys, interest group discussions, interviews, social media, and the county website. Additionally, the planning process included a comprehensive analysis of the site's social, cultural, engineering, and natural resources.

A consistent theme emerged: the most desired experience is **a deep connection with nature—** whether through exercise and fitness, exploration, adventure, play, or relaxation. Residents expressed a desire for a park that prioritizes forest conservation while offering a **harmonious blend of serene and engaging recreational opportunities**.

Guiding the process was a 15-member Advisory Committee, selected from a diverse pool of 330 applicants to represent a range of perspectives in geography, race, gender, age, and expertise. Their insights helped shape the design and programming recommendations, ensuring the park serves the broad needs of the community.

MAINTENANCE, PROGRAMMING, AND FINANCING

As the largest county park, its addition to the Delaware County parks and recreation system will significantly increase the maintenance responsibilities of the Parks & Recreation Department and its partners in Public Works, Facilities, Park Police, and the Planning Department. Interviews with potential partners in programming and operations generated considerations for the park design, future operation, financing, and support. Work sessions were held with the County's parks and recreation management team to develop a strategy for the immediate,

short- and long-term care of the park. A park stewardship training session was held with county park maintenance staff to advance the Department's ongoing efforts in natural resource management.

GUIDING PRINCIPLES

All landscapes, including this park, evolve over time. Trees die while new ones take their place, streams shift course, and storms or disease can alter the environment. Similarly, residents' preferences for park activities and programs evolve as new interests arise. Recognizing this natural progression, this plan establishes the following Guiding Principles designed to adapt and remain relevant for generations to come.

- Protect the ecological treasures of the site by managing the intact forest and stream corridors in a sustainable manner that advances long-term climate resiliency goals.
- Be welcoming to all county residents, regardless of age, gender, race, and ability.
- Provide diverse and unique nature and recreation opportunities, not usually found in local parks.
- Locate buildings, parking, and intensive recreational and programming uses for the former 40-acre campus portion of Delco Woods.
- Grow into an inviting destination that celebrates the county's support for diversity and accessibility across all communities.

CONCLUSION—COMMUNITY IN NATURE

The planning process identified key opportunities and challenges that will shape the future of Delco Woods. These findings highlight the site's ecological value, its potential for inclusive recreation, the community's strong support, and the essential factors needed for long-term success:

- The site contains the largest forest in the Delaware County park system and it needs restoration and stewardship.
  An opportunity exists to enhance the ecosystems that have called the site home long before it became a public park.
- A 40-acre area, already disturbed by buildings and parking, is suitable to become an inclusive community recreation hub with unique and exciting amenities not found in municipal parks.
- The public supports the rationale for the park at Delco Woods. People should enjoy nature, but not all people feel physically and psychologically safe outdoors. Delco Woods should provide places and programs for gathering and social interaction that help make people of all ages, genders, race, and abilities feel welcome.
- Effective long-term operation, maintenance, and safety will be critical to the park's success in reaping the economic, environmental, health, and social benefits for Delaware County.

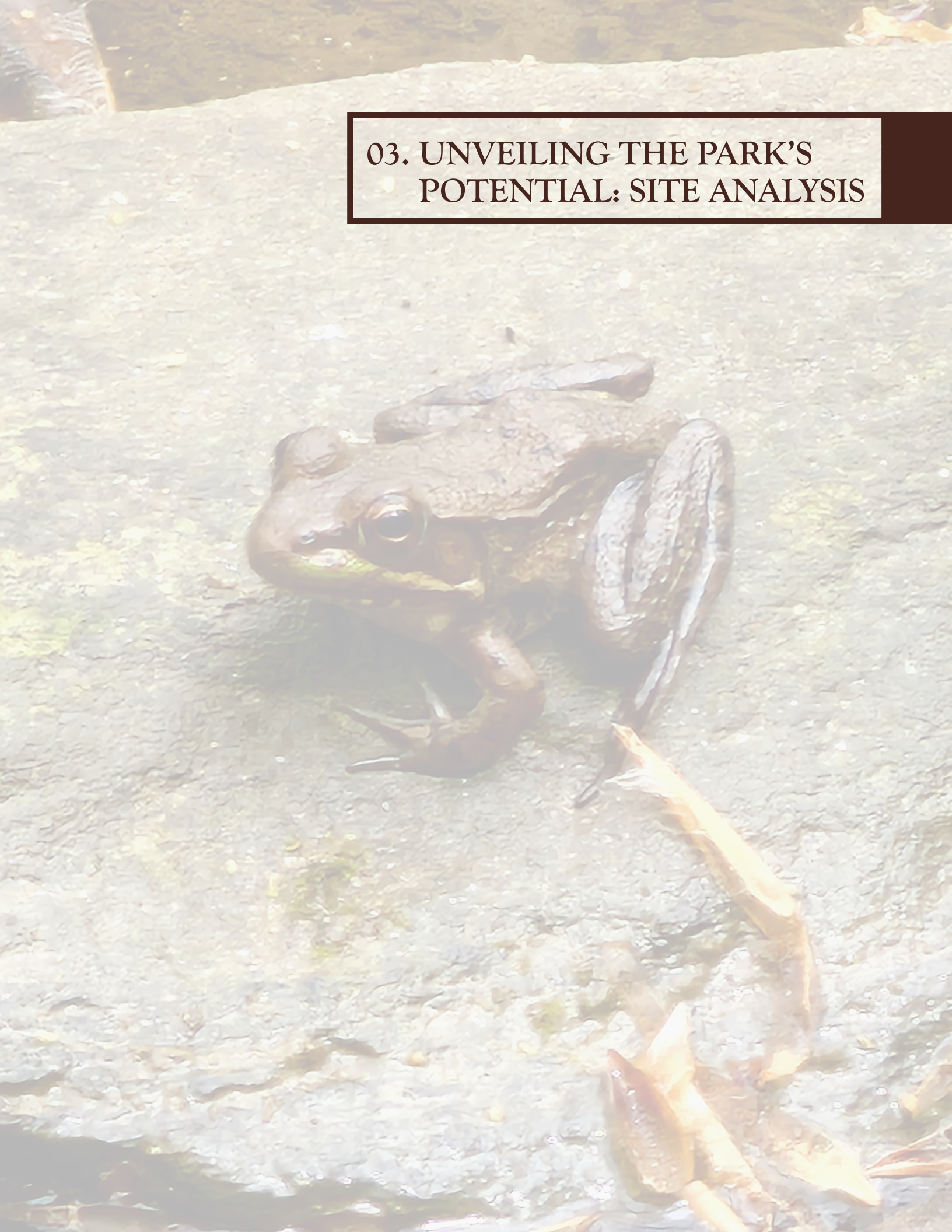
A Park for all DELCO



And all DELCO for the Park

Special thanks to Eric Tamulonis from the advisory committee who worked with the design team in formulating the initial design themes and principles

03. UNVEILING THE PARK'S POTENTIAL: SITE ANALYSIS



UNVEILING THE PARK'S POTENTIAL: SITE ANALYSIS

"One touch of nature makes the whole world kin." - William Shakespeare in Troilus and Cressida, Act 3, Scene

This chapter presents the site analysis that forms the foundation for the Delco Woods master plan. By evaluating the site's natural, cultural, and aesthetic features, planners identified opportunities and constraints that will shape the park's future. Below is a summary of key topics:

- **Site Context** – Analysis of surrounding land use, connectivity, and environmental influences.
- **Natural Features** – Assessment of geology, soils, topography, hydrology, and wildlife.
- **Cultural & Historic Features** – Review of zoning, utilities, circulation, and past land use.
- **Aesthetic Considerations** – Identification of key features, spatial patterns, and scenic views.
- **Forest Conservation** – Preserving the largest woodland in the county park system.
- **Community Vision** – Aligning park design with public support for conservation and recreation.
- **Safety & Maintenance** – Addressing safety concerns about vacant buildings and site conditions.
- **Current Use** – Recognizing active stewardship, including BMX trails and maintenance efforts.
- **Environmental Impact** – Understanding the site's role in climate resilience.
- **Future Potential** – Strategic investment can transform the park into a premier destination.

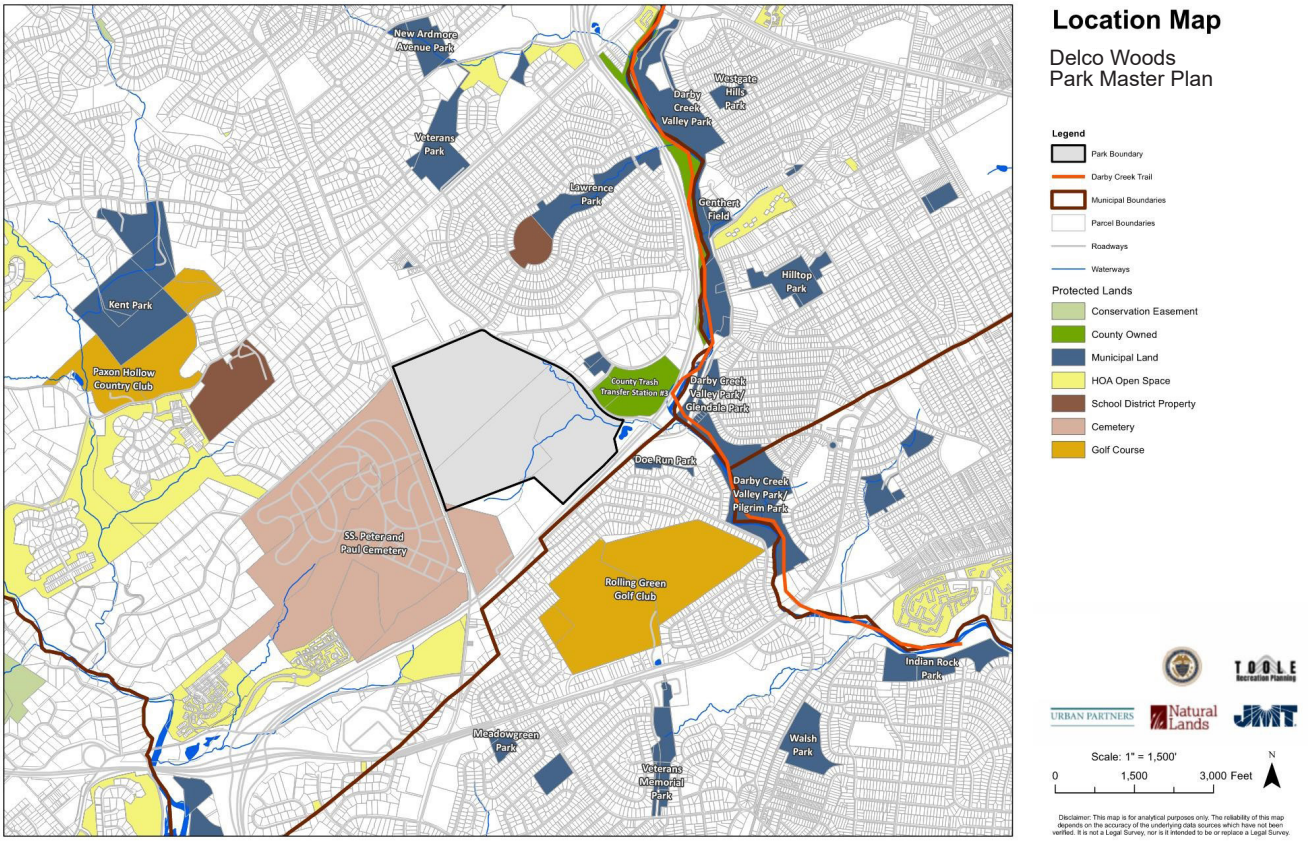
THE FOUNDATION OF A SUCCESSFUL PARK PLAN

Site planning involves working out the details of what should happen on a given area of land, how that activity should happen, and the procedures and costs to implement and manage the plan. The site planning process begins with a site analysis. This plan's site analysis included:

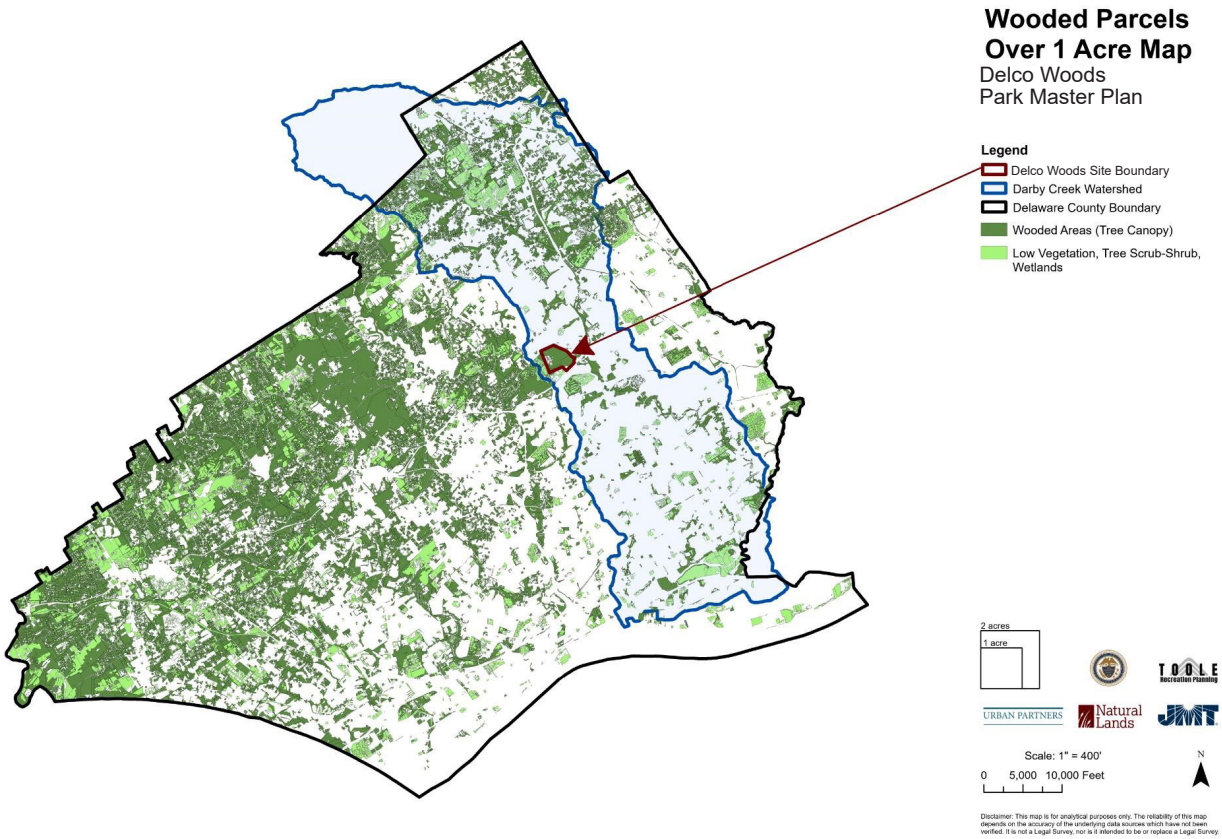
- Context, the broader environment, and features that influence the site.
- Natural features, including geology, soils, topography, hydrology, plants, and wildlife.
- Cultural features, including circulation, zoning, utilities, and current and historic uses.
- Aesthetic considerations, including significant features, spatial patterns, and views.

This information is then combined to determine site suitability for the park facilities and programs desired in the park. The resulting master plan is grounded in the results of the site analysis. The site's most significant feature is the contiguous woodlands. The following maps, prepared by Delaware County Planning Department and the consultant team, illustrate the findings of the site analysis, and the most relevant of those maps are included in this chapter and summarized in each caption. The key findings of each map are found in the caption below each.

CONTEXT



The site lies in the midst of densely developed residential neighborhoods.



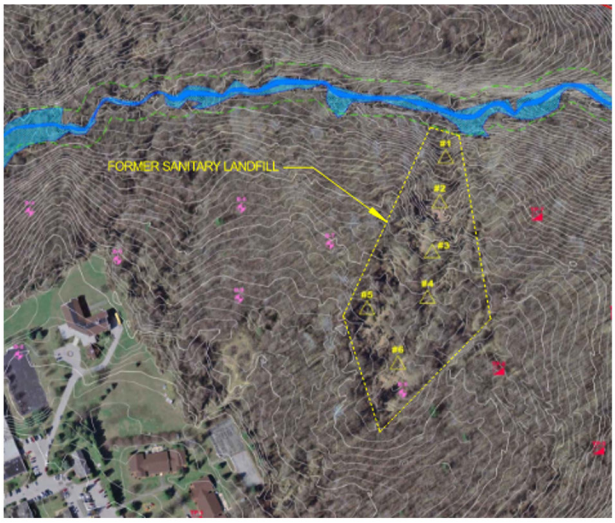
The New County Park represents the county's easternmost large remaining forest.

POTENTIAL TRAIL CONNECTIONS



The map above as provided by the Delaware Trail Alliance shows potential off-site connections to regional and municipal trails networks offer potential collaborative efforts to increase pedestrian and non-motorized access to the park.

POLLUTION CONCERNS

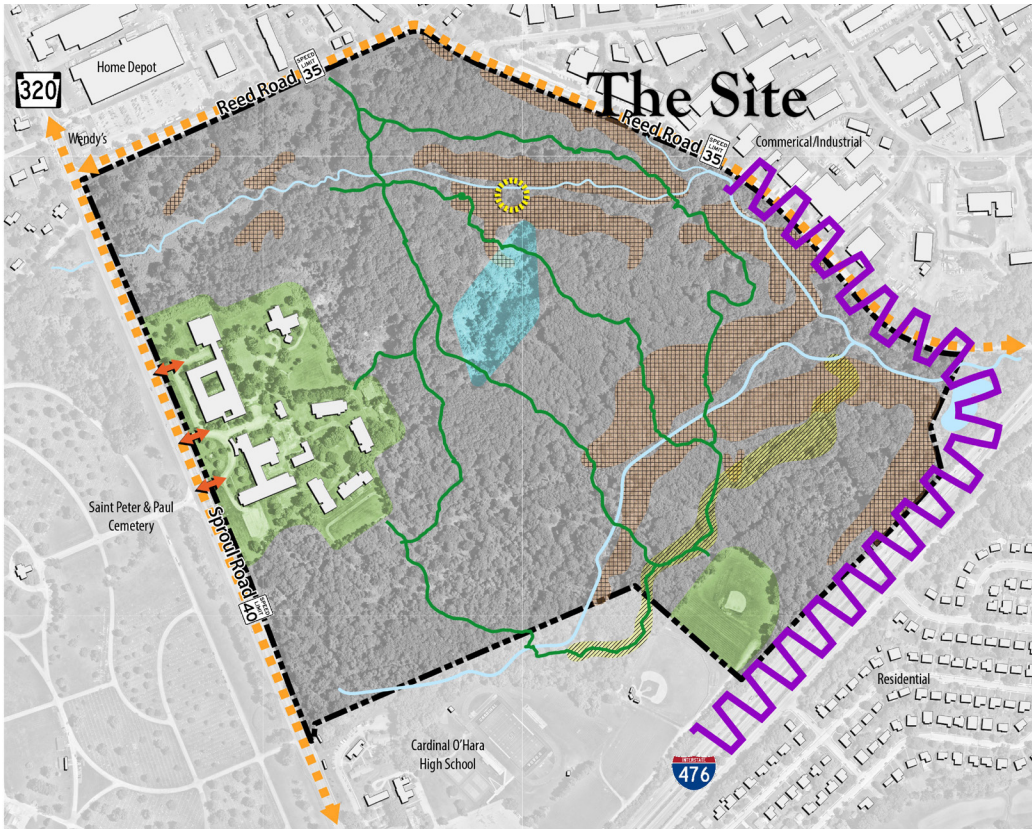




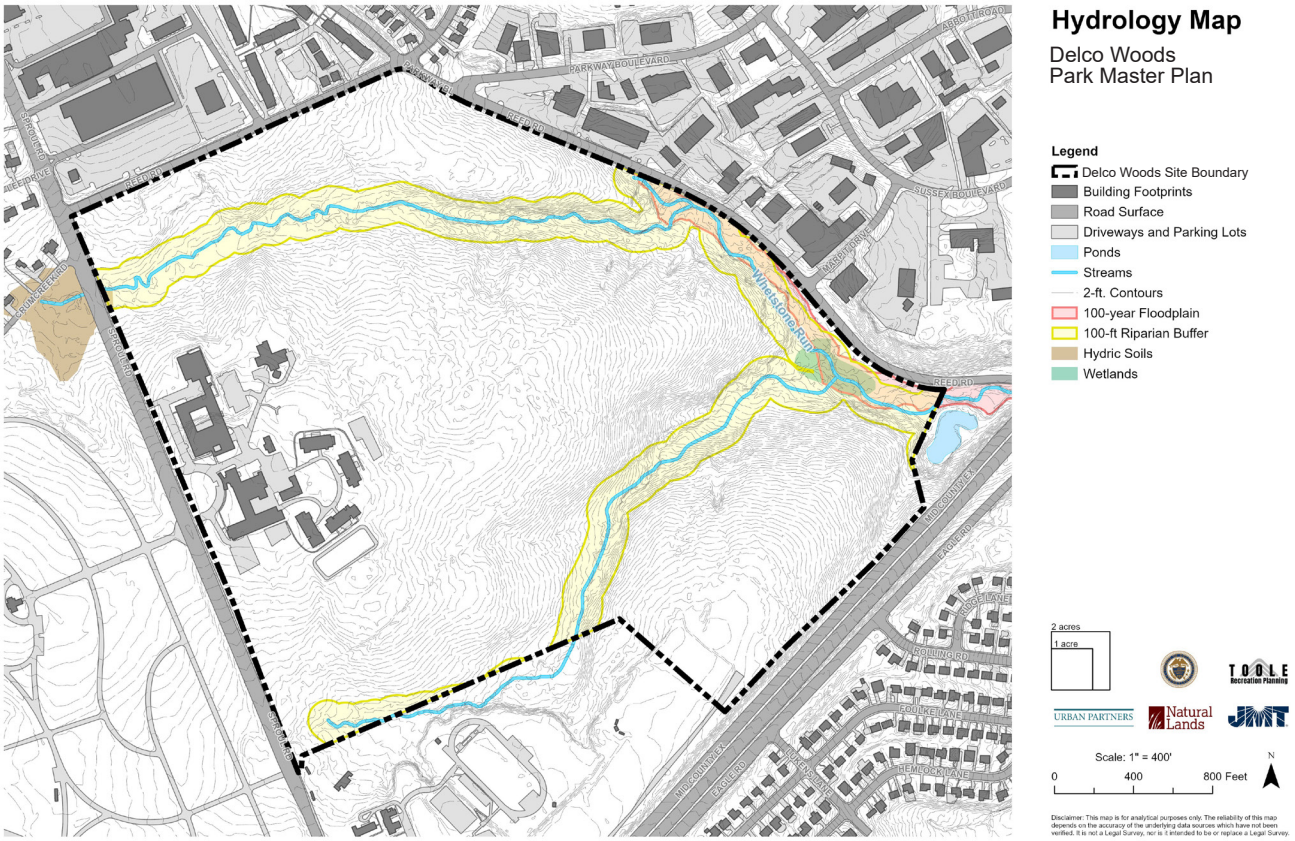
- Sanitary landfill has not been affected by VOCs released from historic landfilling practices.
- The landfill is not permitted. The residual waste must be excavated and transported to properly licensed disposal facilities.

Phase 1 and 2 environmental assessments concluded that several dump sites consisting of construction refuse exist on the periphery of the Don Guanella parcel adjacent to the wooded area. Residual waste consisting of car parts, tires, drums and glass were identified in the interior of the forest.

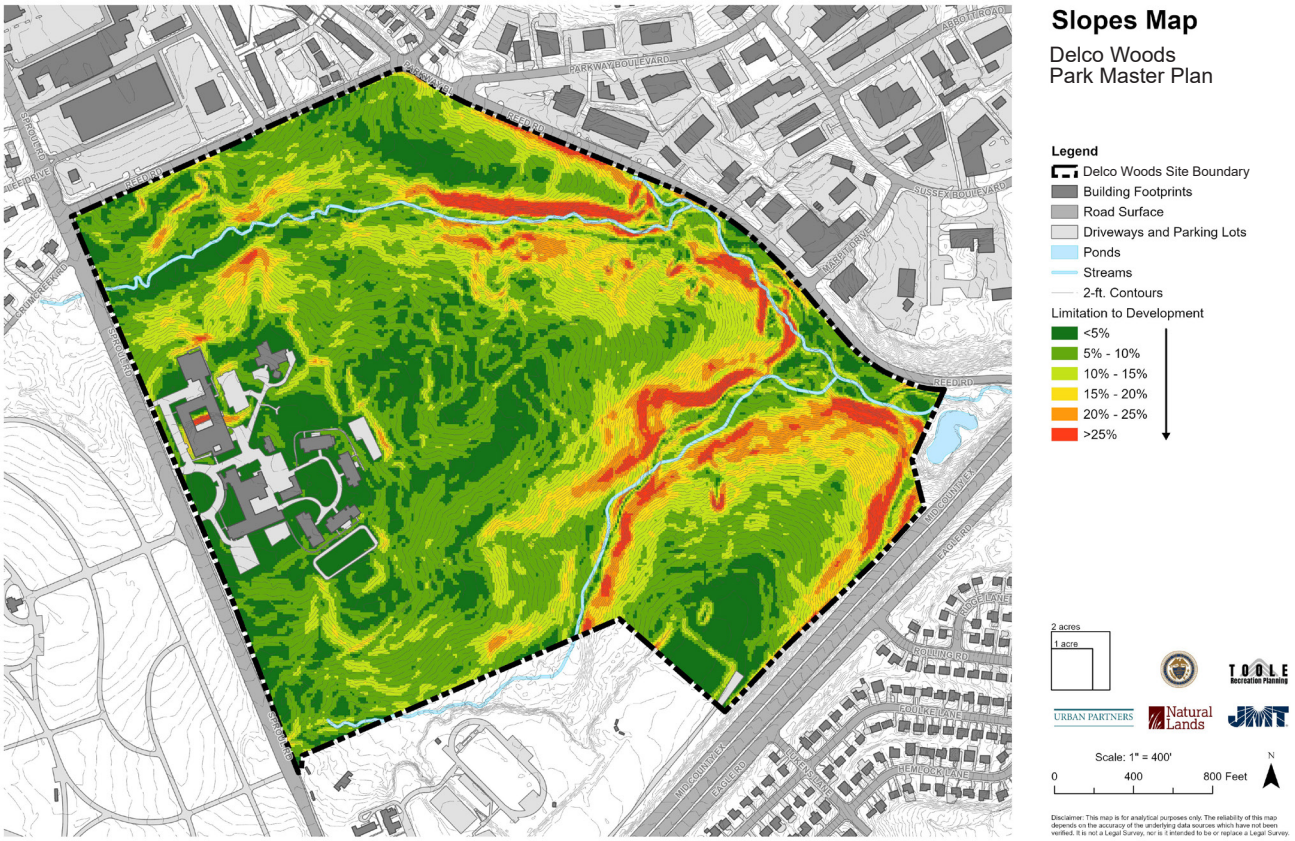
EXISTING CONDITIONS



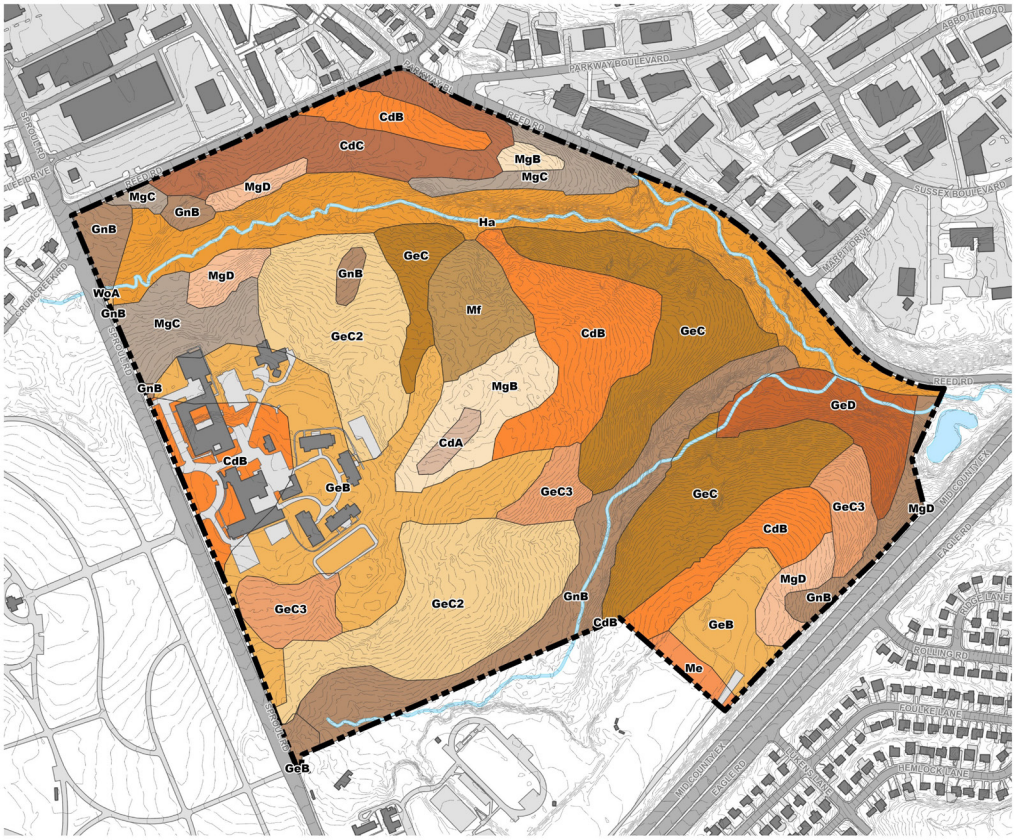
Major roads surround the park - two state roads and an interstate, all high-volume roads with 35 and 40 mph speed limits. Road noise, and truncated views diminish the park experience. The Cardinal O'Hara ball fields encroach upon approximately five acres; a four-acre former dump is currently served by monitoring wells. Site access for more intensive uses is limited to Sproul Road. Reed Road currently accommodates visitors who park across the street. Bus routes and bike trails are nearby. Approximately 30 acres has been previously developed.



Maintaining a 100-foot vegetated buffer from wetlands and streams conserves and improves water quality.



Slopes that exceed 15% are especially important to stabilize with trees and shrubs so that sediment does not enter the streams.



Soils Map

Delco Woods
Park Master Plan

Legend

- Delco Woods Site Boundary
- Building Footprints
- Road Surface
- Driveways and Parking Lots
- Ponds
- Streams
- 2-ft. Contours

Soil Classification

- CdA - Chester silt loam, 0 to 3 percent slopes
- CdB - Chester silt loam, 3 to 8 percent slopes
- CdC - Chester silt loam, 8 to 15 percent slopes
- GeB - Glenelg channery loam, 3 to 8 percent slopes
- GeC - Glenelg channery silt loam, 8 to 15 percent slopes
- GeC2 - Glenelg channery silt loam, 8 to 15 percent slopes, moderately eroded
- GeC3 - Glenelg channery silt loam, 8 to 15 percent slopes, severely eroded
- GeD - Glenelg channery silt loam, 15 to 25 percent slopes
- GnB - Glenville silt loam, 3 to 8 percent slopes
- Ha - Hatboro silt loam
- Me - Made land, schist and gneiss materials
- Mf - Made land, sanitary land fill
- MgB - Manor loam, 3 to 8 percent slopes
- MgC - Manor loam, 8 to 15 percent slopes
- MgD - Manor loam, 15 to 25 percent slopes
- WoA - Worsham silt loam, 0 to 3 percent slopes

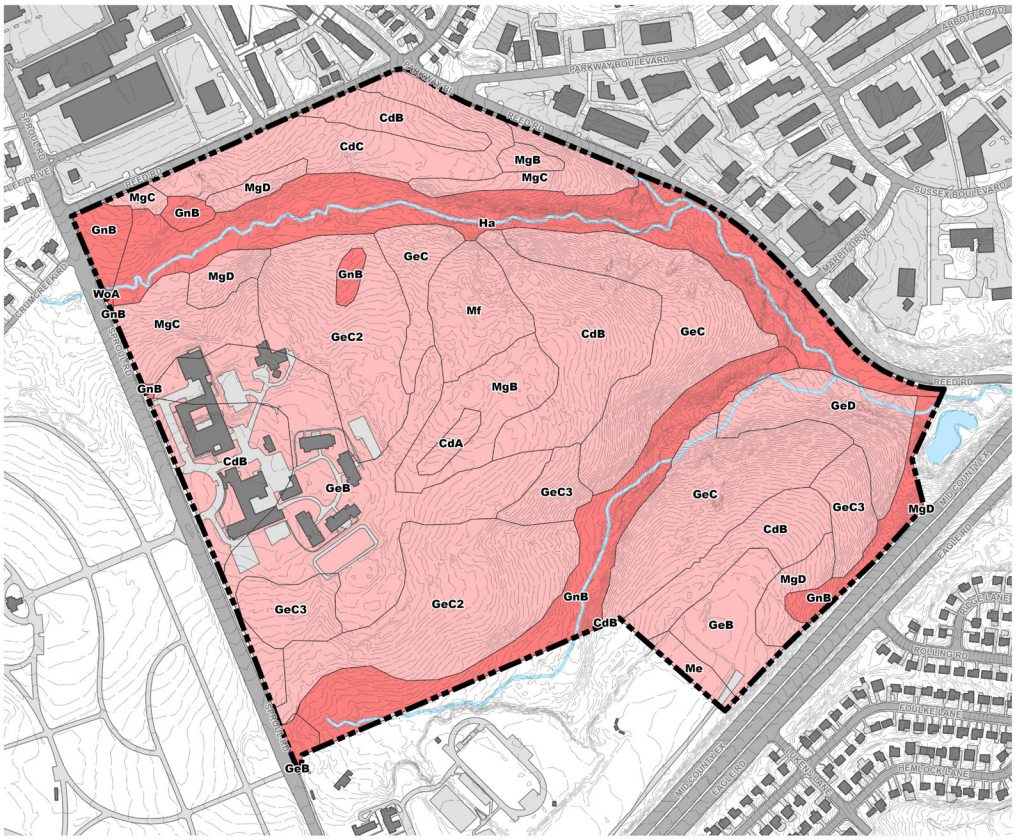
2 acres
1 acre

TOOLE Recreation Planning
URBAN PARTNERS
Natural Lands
JMT

Scale: 1" = 400'
0 400 800 Feet
N

Disclaimer: This map is for analytical purposes only. The reliability of this map depends on the accuracy of the underlying data sources which have not been verified. It is not a Legal Survey, nor is it intended to be or replace a Legal Survey.

The site contains 16 soil types generally categorized as silt loam and channery silt loam. The soil types are described as both coarse and fine grained silty-clay. Drainage characteristics range from well drained to poorly drained.



Soil Limitations Map

Delco Woods
Park Master Plan

Legend

- Delco Woods Site Boundary
- Soil Classification Boundaries
- Building Footprints
- Road Surface
- Driveways and Parking Lots
- Ponds
- Streams
- 2-ft. Contours

Soil Limitations

- Somewhat Limited
- Very Limited

2 acres
1 acre

TOOLE Recreation Planning
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JMT

Scale: 1" = 400'
0 400 800 Feet
N

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As would be expected, the soils most sensitive to land disturbance are those adjoining the streams and wetlands. Those soil types should be protected from disturbance such as active recreation areas or park structures.



1937 Historical Aerial Photography Map

Delco Woods
Park Master Plan

Legend
Property Boundary

2 acres
1 acre

URBAN PARTNERS Natural Lands JMT TOOLE Recreation Planning

Scale: 1" = 400'
0 400 800 Feet
N

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This 1937 aerial photograph shows the presence of woodlands, an indication of the most mature, and highest quality woodlands that still survive in this location.



Plant Communities Map

Delco Woods
Park Master Plan

Legend
Park Boundary
Waterways

Plant Communities
Buildings and Fields (+/-29.6 acres)
Mixed Hardwood Forest (+/- 109 acres)
Red Maple Palustrine Forest (+/-5.2 acres)
Shrubland (+/- 1.1 acres)
Shrubland/Grassland (+/- 2.0 acres)
Skunk Cabbage Wetland (+/- 0.39 acres)
Tuliptree-Beech-Maple Forest (+/- 69.2 acres)

2 acres
1 acre

URBAN PARTNERS Natural Lands JMT TOOLE Recreation Planning

Scale: 1" = 400'
0 400 800 Feet
N

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This map shows the types of vegetative cover on site, explained in detail in the Stewardship Chapter of this plan.



Prioritized Plant Communities Map

Delco Woods
Park Master Plan

Legend

- Park Boundary
- Waterways

Plant Communities

- Buildings and Fields (+/-29.6 acres)
- Mixed Hardwood Forest (+/- 109 acres)
- Red Maple Palustrine Forest (+/-5.2 acres)
- Shrubland (+/- 1.1 acres)
- Shrubland/Grassland (+/- 2.0 acres)
- Skunk Cabbage Wetland (+/- 0.39 acres)
- Tuliptree-Beech-Maple Forest (+/- 69.2 acres)

Priority Levels
1- highest priority
2- medium high priority
3- medium low priority
4- lowest priority/already disturbed

2 acres
1 acre

URBAN PARTNERS · Natural Lands · TOOLE Recreation Planning · JMT

Scale: 1" = 400'
0 400 800 Feet
N

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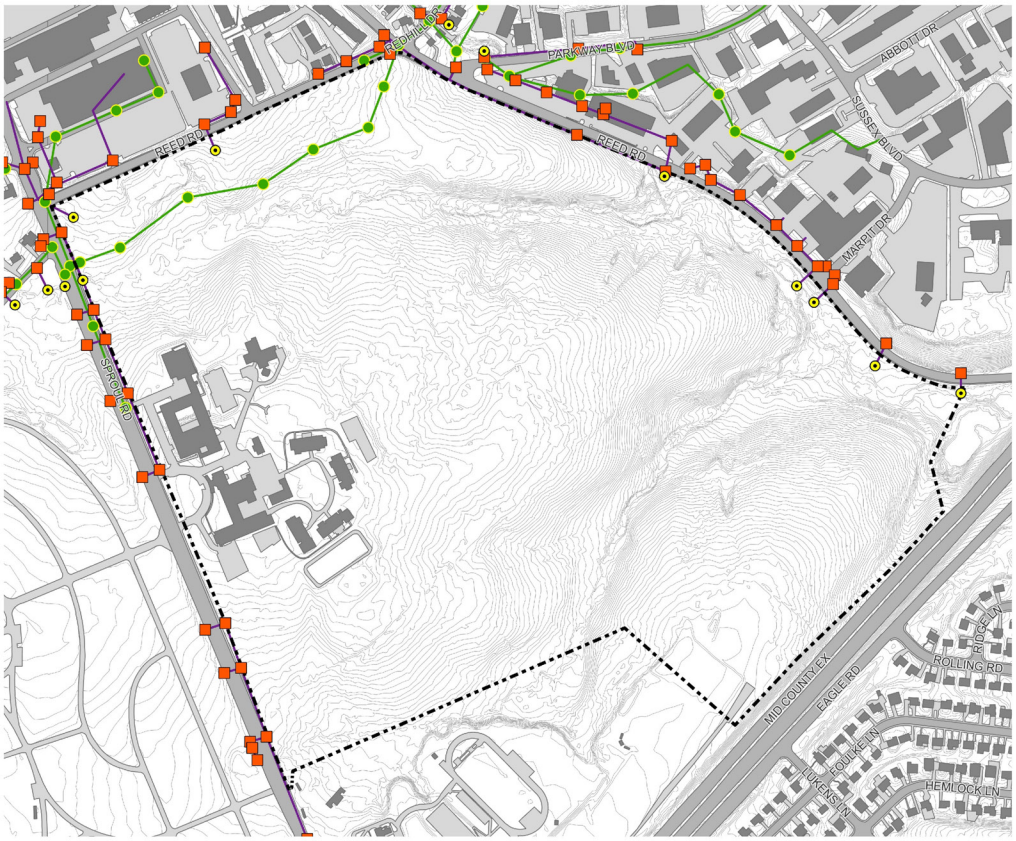
In prioritizing areas for land stewardship, those highest quality woodlands receive highest priority due to the importance of maintaining forest health. As resources become available, stewardship of additional areas would follow.

CULTURAL FEATURES



Utilities Map

Delco Woods
Park Master Plan

Legend

- Delco Woods Site Boundary
- Building Footprints
- Road Surface
- Driveways and Parking Lots
- Storm Sewer Outlet Structures
- Storm Sewer Inlets
- Sanitary Sewer Manholes
- Storm Sewer Piping
- Sanitary Sewer Piping
- 2-ft. Contours

2 acres
1 acre

URBAN PARTNERS · Natural Lands · TOOLE Recreation Planning · JMT

Scale: 1" = 400'
0 400 800 Feet
N

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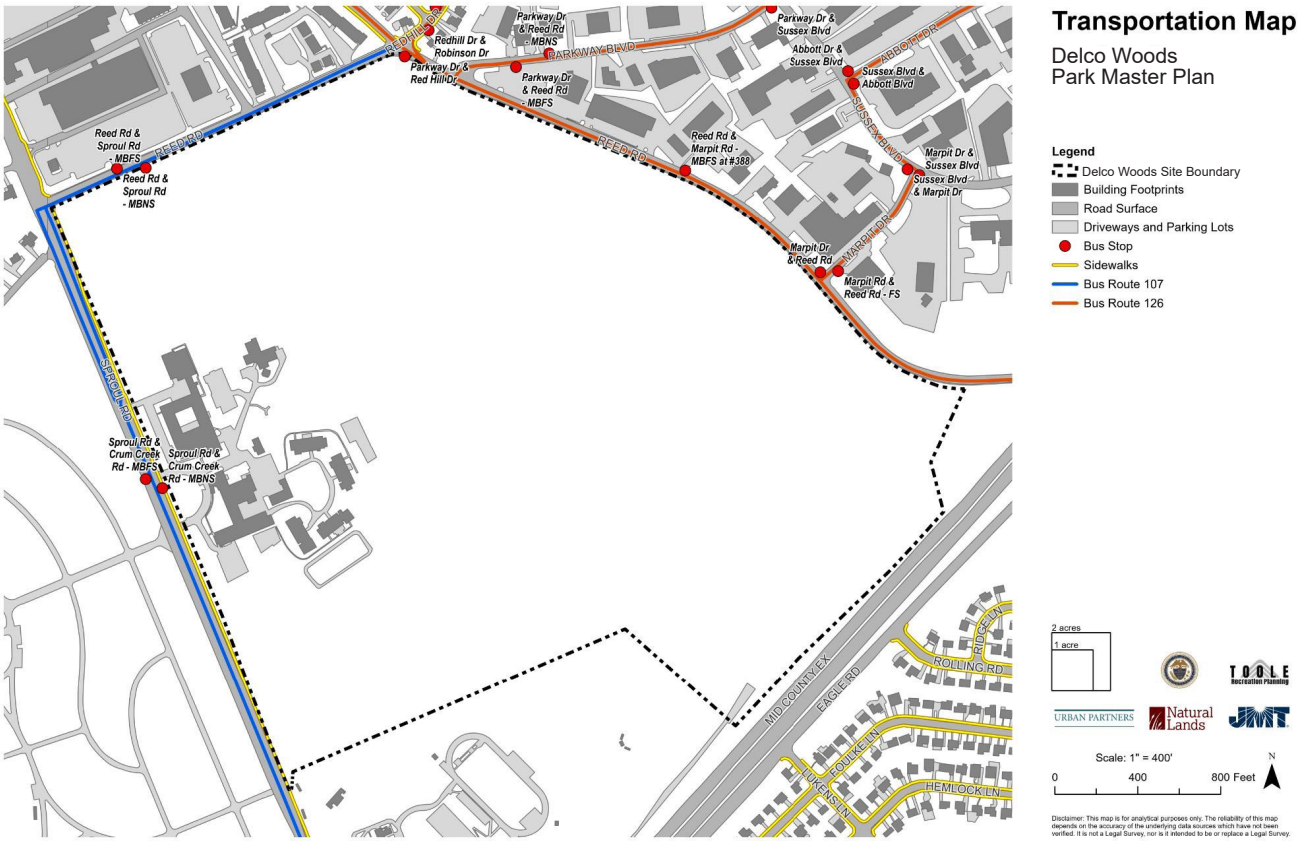
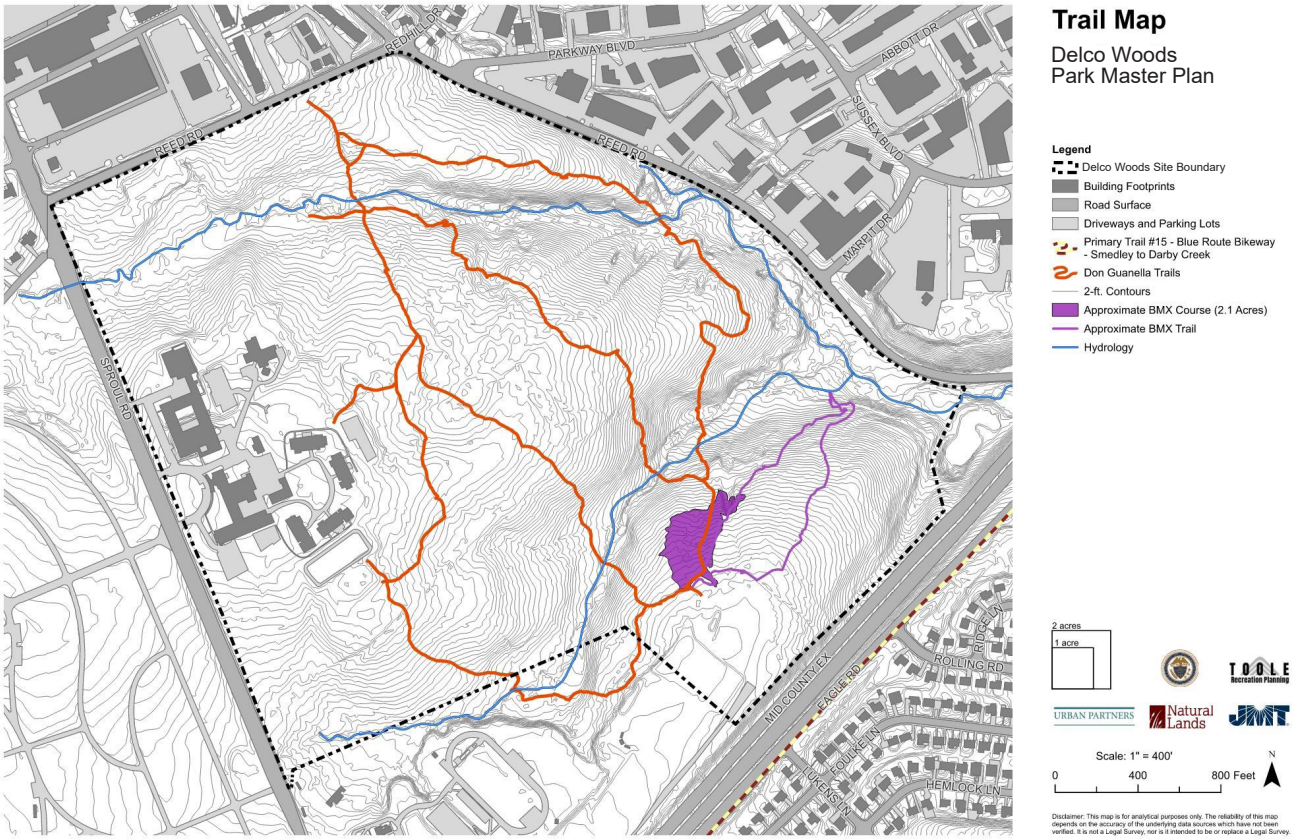
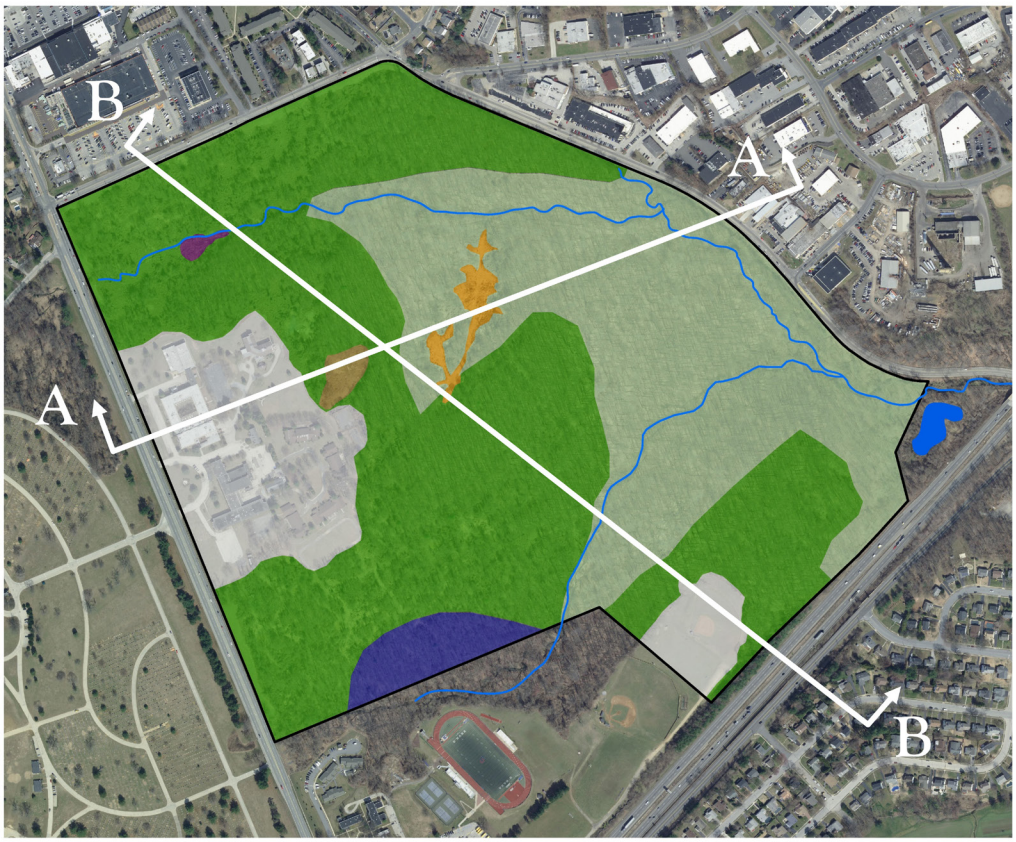
Public utilities are readily available, and the site is currently served by water (Aqua PA), electric (PECO), various telecommunications transformers and sewer (Darby Creek Joint Authority and Marple Township). Records also indicate the buildings were served by heating oil.



Transportation options, such as the adjoining bus stops, sidewalks and parking areas offer multiple opportunities to access the park.



An impressive trail system has been maintained by volunteers. To less frequent hikers, the trails may be confusing as many loops interconnect and overlap in multiple places. Although most trails follow the contours, some challenging portions encroach on ecologically sensitive areas. A BMX bike track exists on the eastern part of the forest behind the school ball fields.



Plant Communities Map

Delco Woods
Park Master Plan

Legend

- Park Boundary
- Waterways

Plant Communities

- Buildings and Fields (+/-29.6 acres)
- Mixed Hardwood Forest (+/- 109 acres)
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- Tuliptree-Beech-Maple Forest (+/- 69.2 acres)

2 acres
1 acre

TOOLE Recreation Planning
URBAN PARTNERS
Natural Lands
JMT

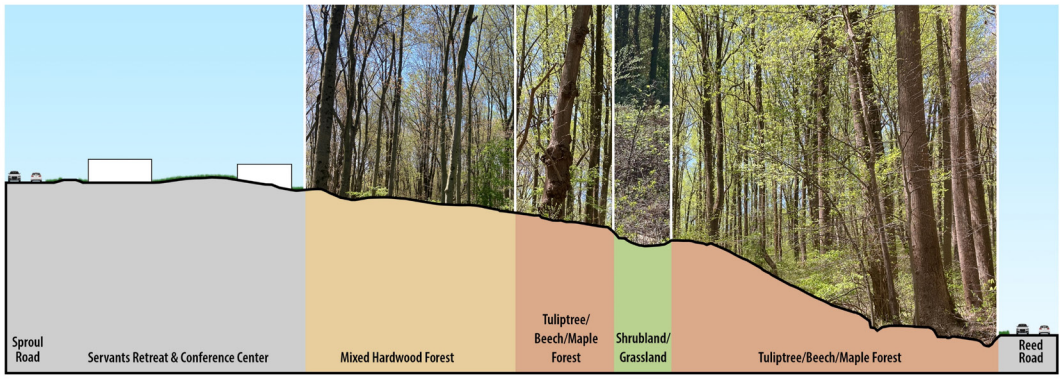
Scale: 1" = 400'
0 400 800 Feet
N

Disclaimer: This map is for analytical purposes only. The reliability of this map depends on the accuracy of the underlying data sources which have not been verified. It is not a Legal Survey, nor is it intended to be or replace a Legal Survey.

A-A and B-B cross sections of the plant communities were mapped, based on field inventories and are shown on the next maps. The Appendix describes the communities in more detail and the Stewardship chapter outlines how each area would be managed.

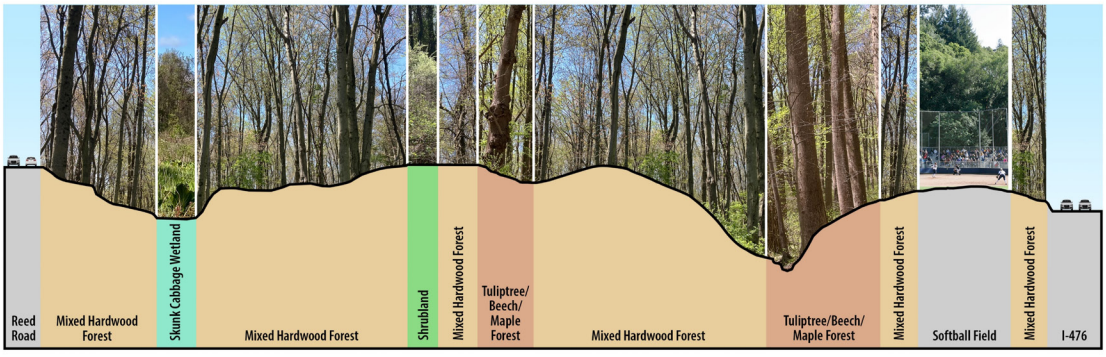
Character Profile NTS

A-A

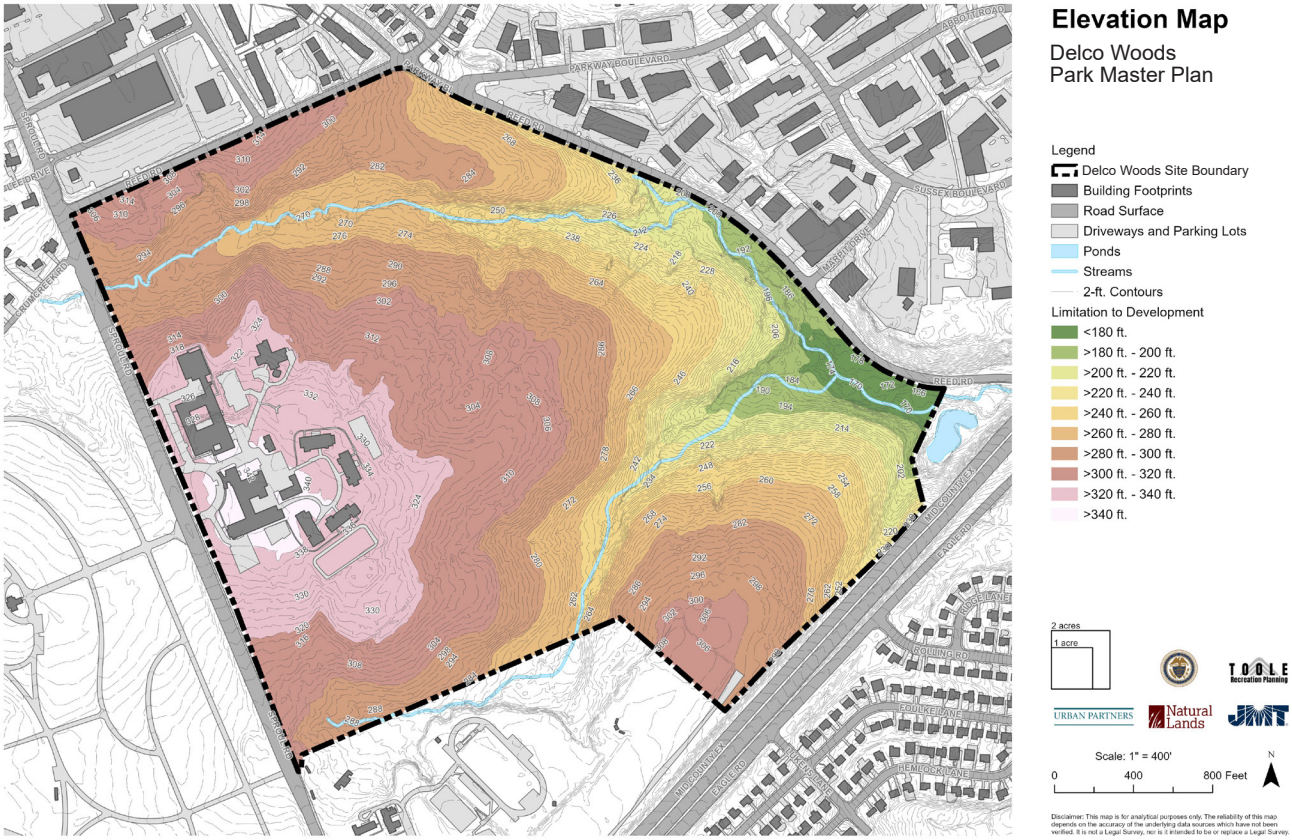


Character Profile NTS

B-B



The cross sections illustrate how a park user would experience the changes in elevation and in plant communities across the site.



The site rises in elevation from the low point at Whetstone Run to the high point where the former Don Guanella campus was built. Elevation ranges across the site from 170 to 340 (70 feet).

KEY FINDINGS AND STRATEGIC OPPORTUNITIES

1. **Forest Conservation:** As the largest forest in the Delaware County park system, its preservation should be a top priority.

2. **Community Vision:** Residents support conservation of the woodlands and establishment of a destination park with unique activities, which should be concentrated in already disturbed areas

3. **Safety & Maintenance:** Vacant buildings and lack of upkeep pose safety concerns that must be addressed in the design.

4. **Current Use & Stewardship:** The park is actively used, with volunteers maintaining the BMX trail system and the Parks & Recreation Department mowing approximately 30 acres.

5. **Environmental Impact:** The forest and stream ecology play a critical role in the county's climate resilience.

6. **Future Potential:** With strategic investment, the site can become the county's signature destination park.

04. DELCO WOODS MASTER PLAN: COMMUNITY IN NATURE



DELCO WOODS MASTER PLAN: COMMUNITY IN NATURE

"Someone's sitting in the shade today because someone planted a tree a long time ago." - Warren Buffett

This chapter presents the master plan for Delco Woods, a vision that balances ecological preservation with dynamic recreational opportunities. Rooted in community input and best practices in park design, the plan prioritizes inclusivity, sustainability, and accessibility. The accompanying maps illustrate key elements of the plan, including the forest, trails, and community hub. Below is a summary of key topics:

- **Community-Driven Design** – Public feedback shaped the park's layout, amenities, and programming.
- **High-Quality Park Principles** – Ensuring accessibility, relevance, and adaptability for all users.
- **Guiding Principles** – Conservation, inclusivity, and strategic placement of recreation facilities.
- **Programming Needs** – Strong demand for nature education, fitness, and multi-generational activities.
- **Opportunities & Constraints** – Analysis of site conditions to guide development.
- **Park Activity Zones** – Three distinct areas: Conservation, Medium Activity, and High Activity.
- **The Concept Plan** – A high-level vision integrating the forest, community hub, and trail network.
- **Development Features** – Preservation of 90% of the forest, enhanced access, expanded trails, and diverse recreational spaces.
- **Maps & Graphics** – Visual representations highlight the forested preserve, trail system, and central community hub.

Community in Nature



This chapter unveils the **vision for Delco Woods**, a masterfully planned park that will **protect its ecological treasures while providing exceptional recreation**. Through the carefully crafted **site plan, dynamic renderings, and inspiring imagery**, this section paints a picture of what is possible when a community comes together to reimagine a space for **adventure, relaxation, and discovery**. From nature trails weaving through preserved woodlands to state-of-the-art facilities that bring people together, this park will set a benchmark for inclusivity, sustainability, and outdoor enjoyment. Get ready to experience the future of Delco Woods—where conservation meets innovation, and every visitor can say, **"Wow, this is our park!"**

RESPONDING TO THE COMMUNITY

About 24,000 interactions with the public through public opinion surveys, public meetings, focus groups, interviews, pop-up events, the county's website, videos, and Zen City, the county's previous public engagement website consistently illustrated the public support for the park. The resulting site design is the result of listening to the community and translating their desired experiences into an inclusive, destination park.

PRINCIPLES OF HIGH-QUALITY PARK DESIGN

Residents from across the County expressed support for the new park and preferences for the types of experiences they wished to enjoy in the park. However, while park users may be experts on the experiences they desire, they are not designers and cannot be expected to arrive at design solutions. The park design strives to be relevant by providing experiences for all users, from those most comfortable in the outdoors, to those apprehensive about being outdoors in nature. The Urban Land Institute suggests five characteristics of high-quality parks, addressed in this plan:

1. Physical condition is addressed through a restoration, maintenance and operations plan that includes stewardship of the forest and streams and maintenance standards for the Community Recreation Hub facilities.

2. Accessibility is addressed in providing facilities for people of all ages and abilities.

Public input reinforced the need for accessible, well-lit trails. One resident shared, 'I feel safest walking in a park with clear sightlines and good lighting—it makes all the difference.'"

3. Positive experiences are addressed by amenities that serve diverse preferences, from those seeking a sheltered environment, to those desiring solitude in nature, to those seeking a gathering place with family and friends.

4. Being relevant to the communities they serve in Delaware County requires serving people of diverse ages, abilities, genders, race, background and economic situations. The plan responds by retaining the approximately two-acre BMX course, a network of passive trails, and the addition of a new parking area on Reed Road. Future uses such as teen spaces, a great lawn, a variety of recreation uses, the pavilion and canopy walk respond to the types of experiences people desired in the park, ranging from the desire to "be in nature," to the ability to enjoy nature "without being in nature." People also desired spaces that ranged from contemplative to places to gather and to others for "exciting adventure."

5. Being flexible and adaptable to changing circumstances is addressed by incorporating a variety of uses, enhancing environmental sustainability and resilience, and incorporating guiding principles to be applied to the park over time. In addition, this plan recommends a Park Advisory Committee, consisting of citizens and aided by county staff. The advisory committee's purpose is to steer the long-term implementation of this plan and see that the guiding principles are adhered to as the plan evolves.

GUIDING PRINCIPLES

Improvements to Delco Woods will be guided by the following principles:

- Protect the ecological treasures of the site by managing the intact forest and stream corridors sustainably.
- Serve as a regional destination that attracts diverse communities.
- Be welcoming to all county residents, regardless of age, gender, race, and ability.
- Provide nature and recreation opportunities not found in local parks.
- Locate buildings, parking, and intensive recreational and programming uses for the 40-acre former campus portion of Delco Woods.

COMMUNITY FEEDBACK ON PROGRAMMING NEEDS:

- Top requested programs: nature education, fitness classes, and special events.
- "We need more things for teens and older adults—not just little kids." according to a resident.

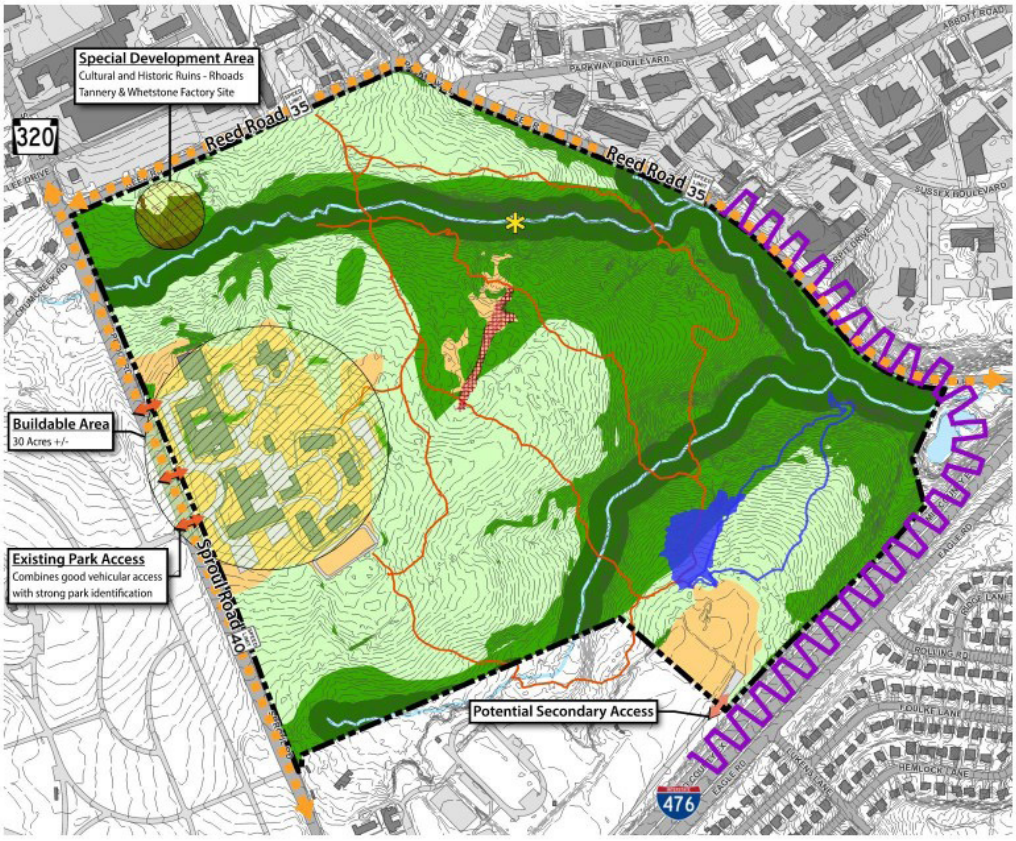
- The public's most preferred uses of the former school campus were as a community building for recreation and wellness, as a naturalized area, or as an environmental center.

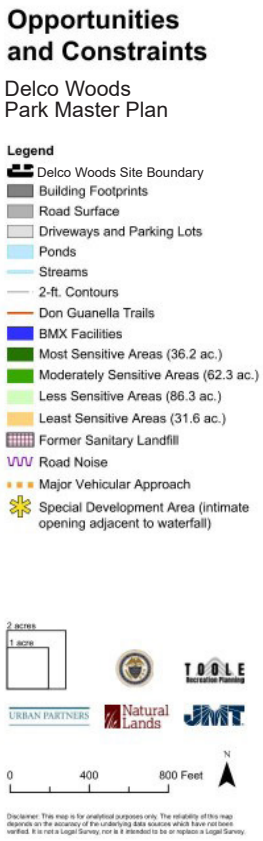
UNDERSTANDING THE CONCEPT PLAN

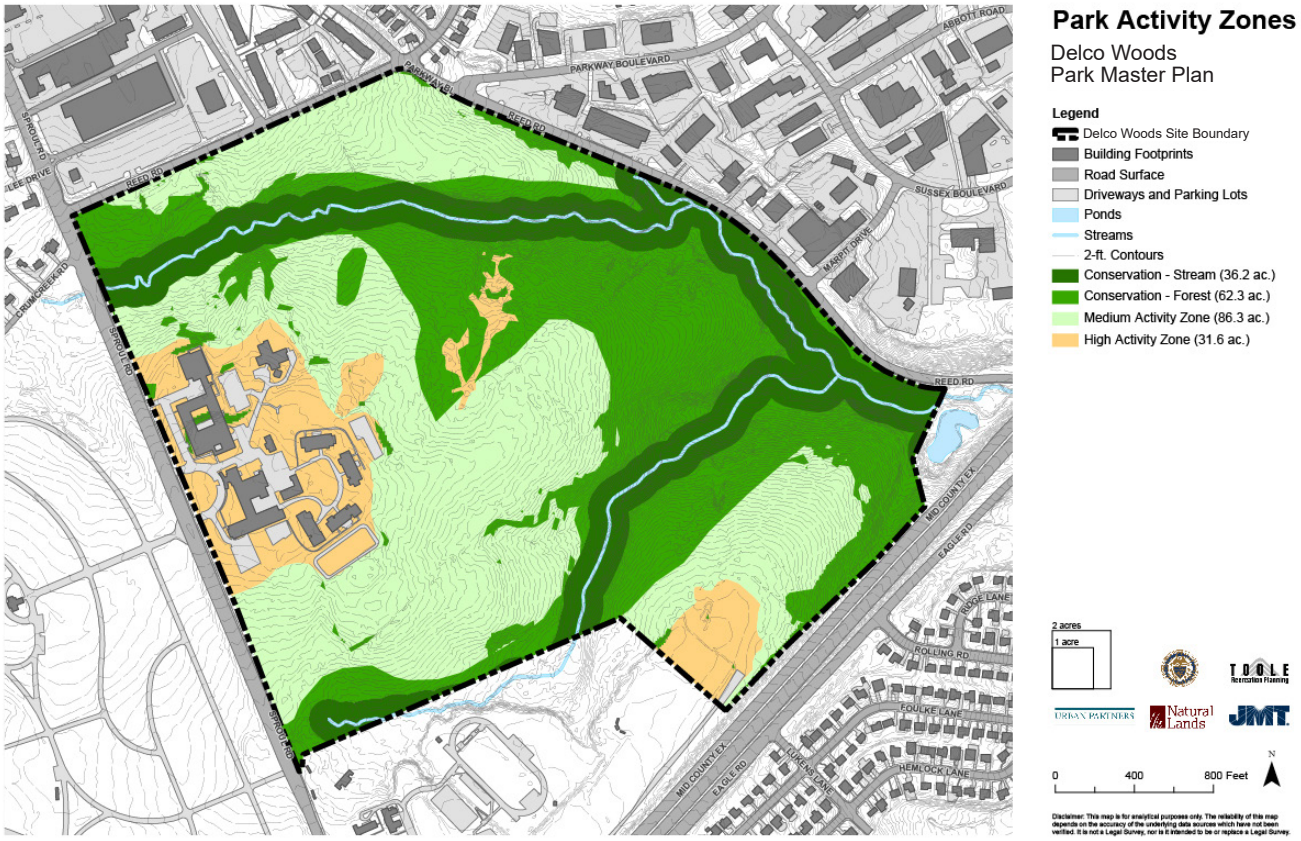
The following pages pull out pieces of the Concept to show how these are to be accomplished.

OPPORTUNITIES AND CONSTRAINTS

The site opportunities and constraints informed the level of activity to occur onsite.







The design responds to the three activity zones with the following design elements:

1. Conservation Zone (98.5 acres). This two-tiered zone includes a 100-foot forested buffer against streams (36.2 acres) as well as the highest quality forest (62.3 acres). Park uses within this zone are limited to trails and stream crossings, providing areas for hiking and solitude.

2. Medium Activity Zone (86.3 acres). This area of forest, meadow and cleared areas would benefit from restoration. Moderate activities such as the forest canopy walk, restored meadows in existing clearings, nature play, fitness trails and other, minimal impact recreational uses are appropriate here.

3. High Activity Zone (31.6 acres). The 31.6 acres designated as a high activity zone is divided into three areas. The first high activity area, an existing, approximately two-acre mountain bike trail would remain. The second area, a remnant farm dump, would be remediated and converted to the Green Stormwater Infrastructure for the park, thereby creating an attractive water feature, increasing resiliency, and restoring this section of the site. Finally, the Sproul Road central frontage is dominated by the existing buildings, parking and surrounding lawn and landscaped areas. This section of the site is perfect for future activities such as the circle drive, bus stop, teen and senior activity areas, a central lawn, a skate park, pump track and other uses that require open areas or reconstruction and site disturbance.



The concept diagram shows how the activity zones are incorporated into the master plan.

Three Key Design Elements. After arriving at the general concept, the site plan is then divided into three key features – the forest, the community hub, and the trail network.

The Design Concept. This high-level vision shows the park developed as a forested preserve with a central community hub and trail network. The design responds to the ecology of the site, to the opportunities and constraints the site presents and to the desires and needs expressed by the community. This two-dimensional plan is accompanied by a series of renderings. Not to be interpreted as a final design, the renderings show the quality of construction intended to make the park a draw for both residents and tourists to the area.

DEVELOPMENT CONCEPT FEATURES

The concept is centered around three site features – the forest, the community recreation hub, and trail connections. The concept plan is designed to accomplish the following:

- **Preserves:** Nearly 90% of the forest and the stream corridors while maintaining the ecological core and forest edges
- **Unites**: Community in Nature
- **Connects**: With increased bus service and safe walking and bike routes
- Expanding the trail network will improve connectivity and encourage more walking and biking, a top priority identified in public meetings and surveys. Residents frequently cited the need for better trail access to neighborhoods and schools. In disadvantaged communities, the lack of transportation was cited as a deterrent to park use.
- **Welcomes:** With six gateways, edge enhancements and visual access from adjacent streets
- **Explores**: With 2.5-mile perimeter trail, .75-mile accessible strolling trail, wetland boardwalks, extensive interpretive trails, designated mountain bike trail
- **Features:** Half-mile Woodland Loop Trail as a first project to respond for public requests for a welcoming, accessible pathway enabling all visitors to experience Delco Woods as soon as possible.
- **Creates**: Approximately 40 acres of community recreation, over 50 features and activities, and iconic features

Developme

Community in Nature - Dela

1. West Neighborhood Connection
2. North Parking
3. Wetland Boardwalk



4. Wetland Areas
5. Historic and Cultural Education
6. Protected Bike Lanes (two way)



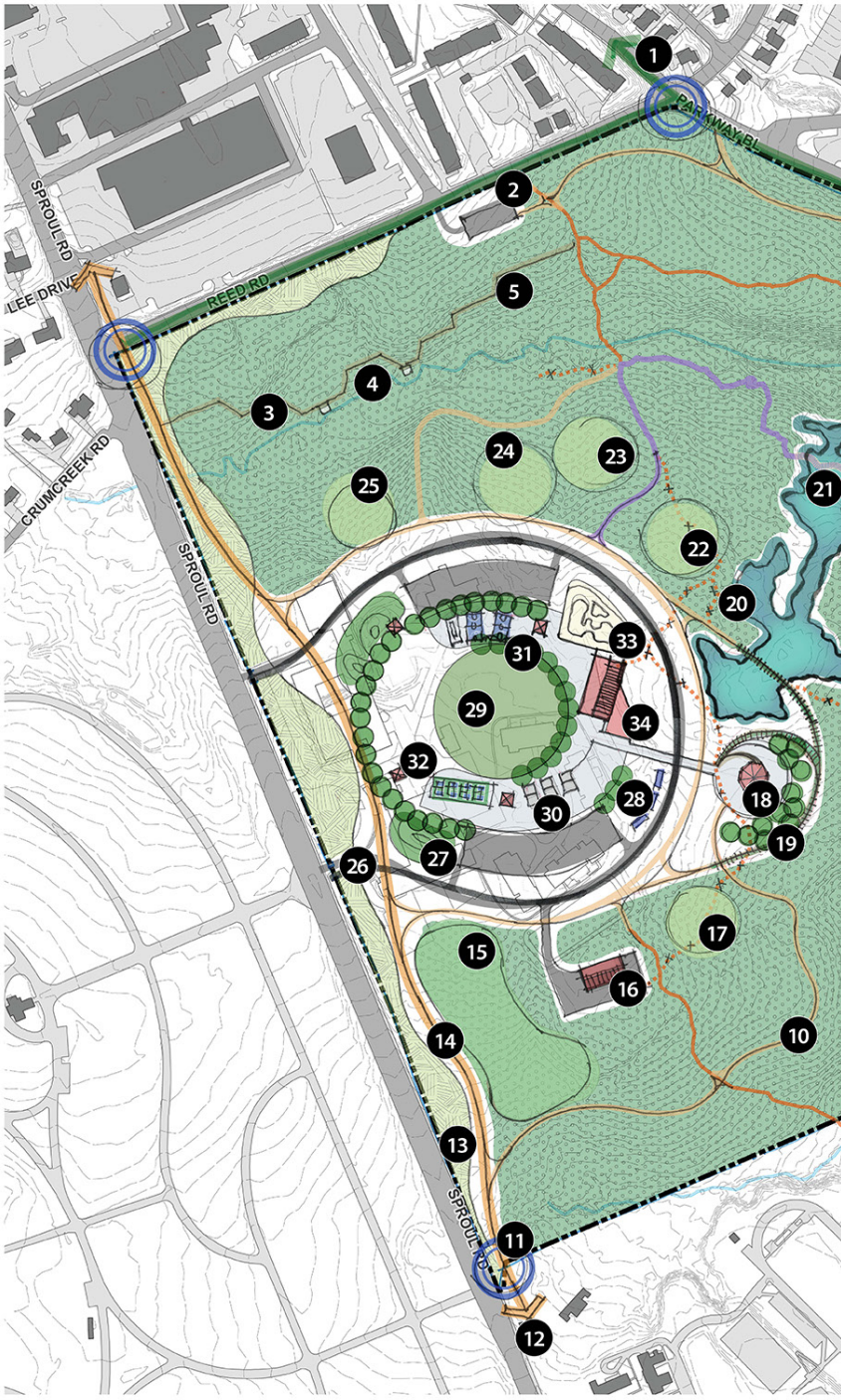
7. Streambank Restoration
8. Darby Creek Trail Connection
9. Existing Forest
10. Hiking Trail



11. Gateway Treatment
12. Connection to Cardinal O'Hara High School and Smedley Park
13. Native Grass Meadow



14. Shared Use Path



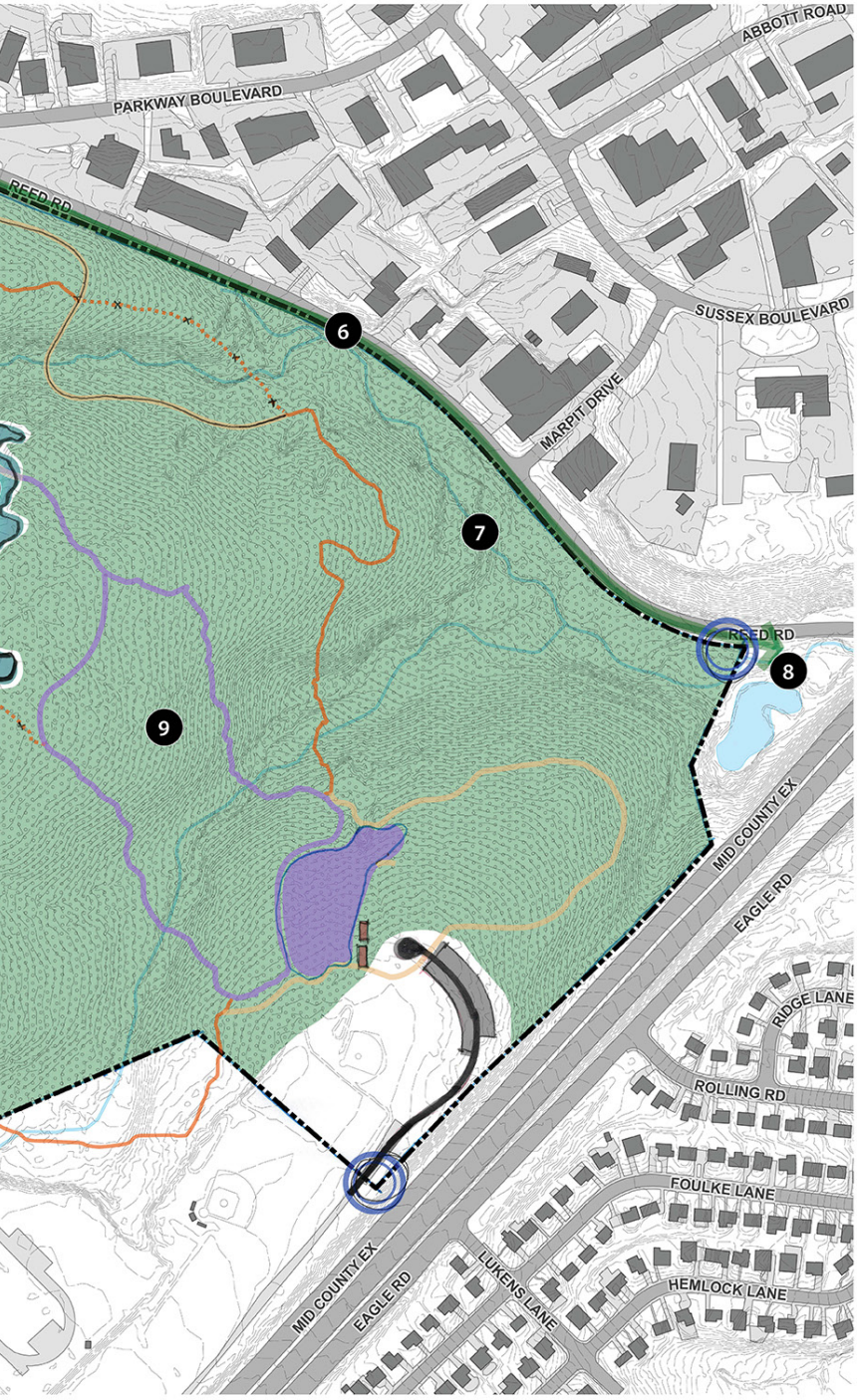
15. Dog Run



16. Park Maintenance
17. Congregation
18. Celebration Pavilion

ent Concept

aware County's Newest Park



22 Nature Play





23 Adventure and Exploration

24 Relaxation and Contemplation

25 Exercise and Fitness

26 Park Drive

27 Activity Mounds



28 Central Bus Stop



29 Unprogrammed Gathering Lawn



30 Senior Activity Cluster

31 Teen Activity Cluster

32 Picnic Pavilion

33 Skate Park/BMX Pump Track/ Programmed Bicycle Safety Course

34 Community Building

19 Canopy Trail



20 Overlook and Birdwatching

21 Constructed Wetlands and Stormwater Management





2 acres
1 acre

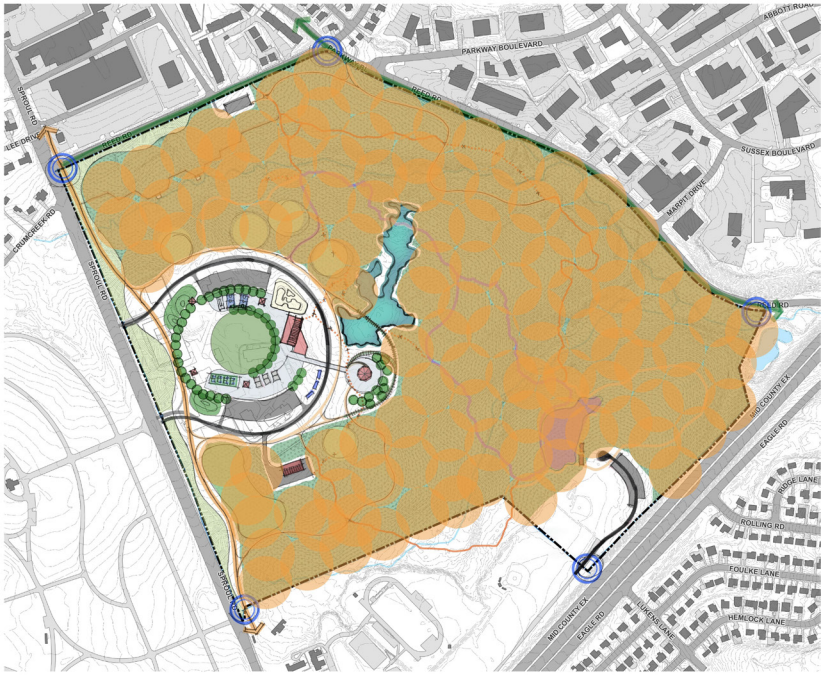
Scale: 1" = 200'

0 100 200 400 800

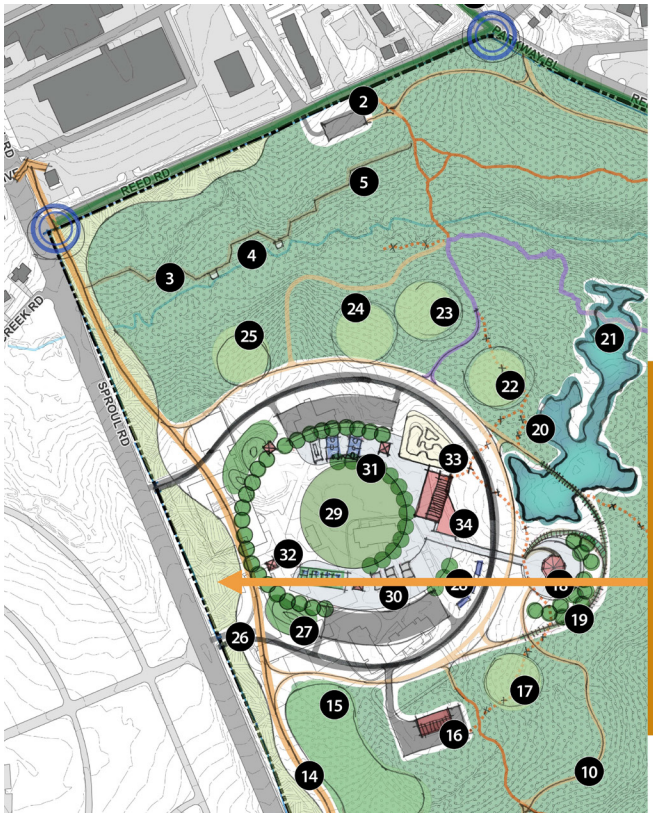
Preserves

- Almost 90% of Forest and Stream Corridors
- Maintains the Ecological Core and Forest Edges



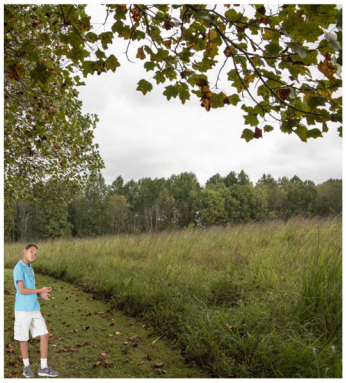


This plan illustrates how nearly 90% of the forest and all of the streams are preserved, maintaining the forest interior and creating a more defined edge, cleared of invasives.

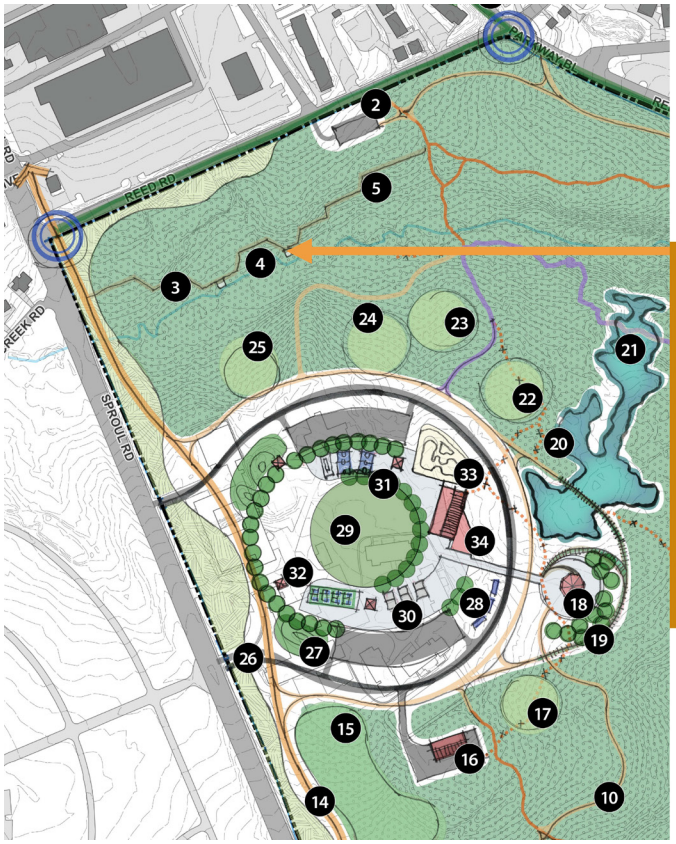


Perimeter Meadow





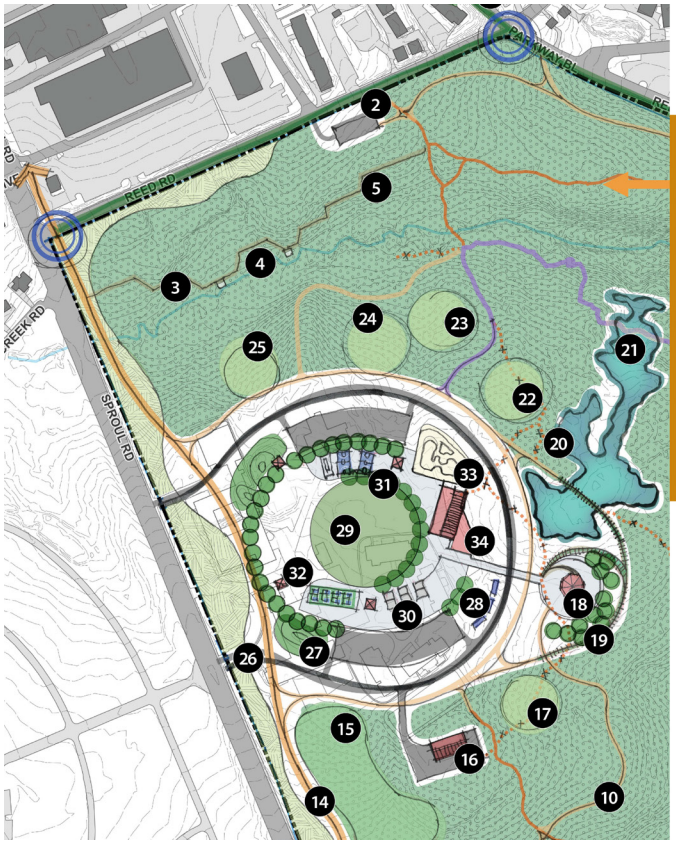
A perimeter meadow filters pollutants from entering the stream and creates a defined forest edge.





Wetland Boardwalk

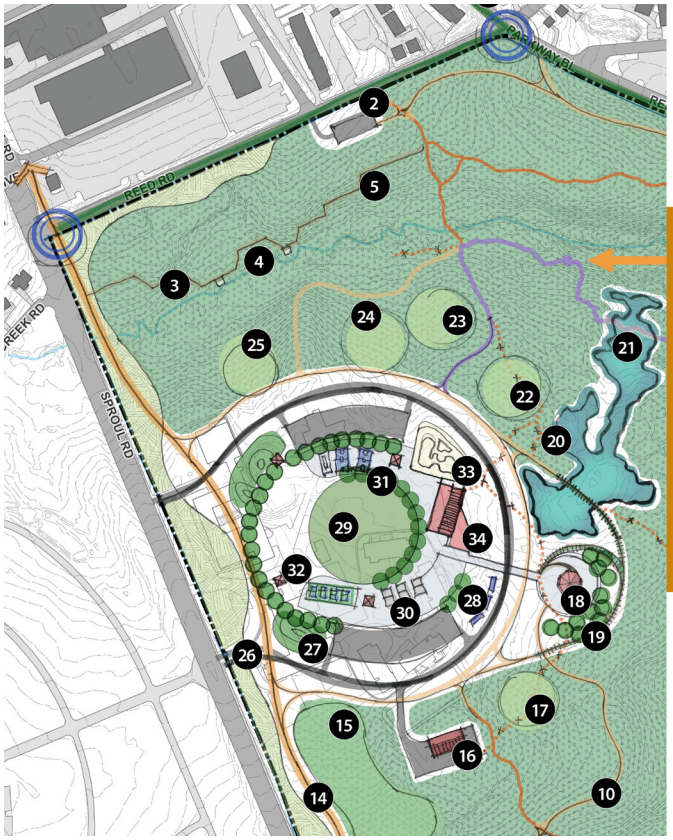
A boardwalk over the wetlands, allows park visitors to view the wetlands without damaging them.





Hiking Trails

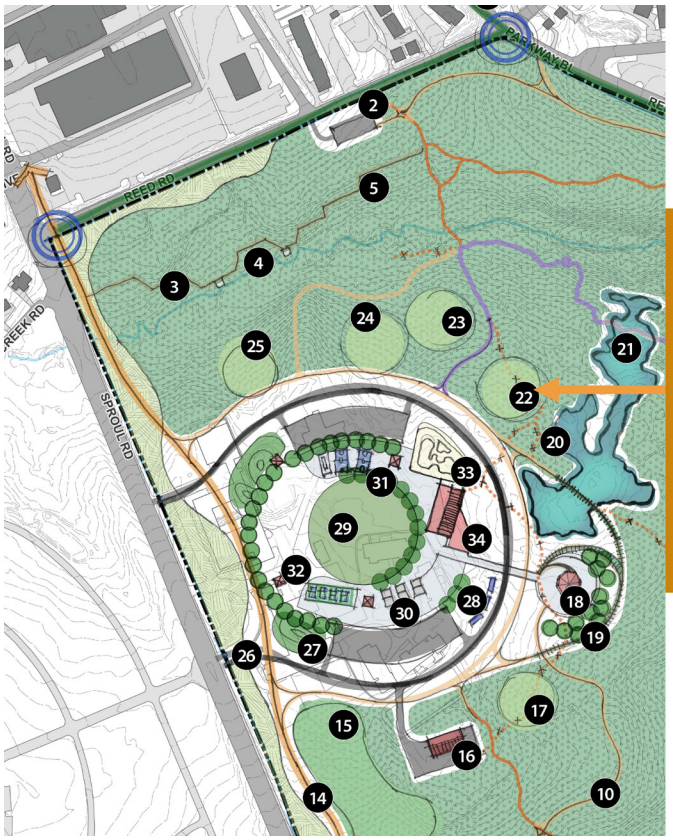
Hiking Trails offer visitors the chance to explore the forest.





Mountain Bike Trails

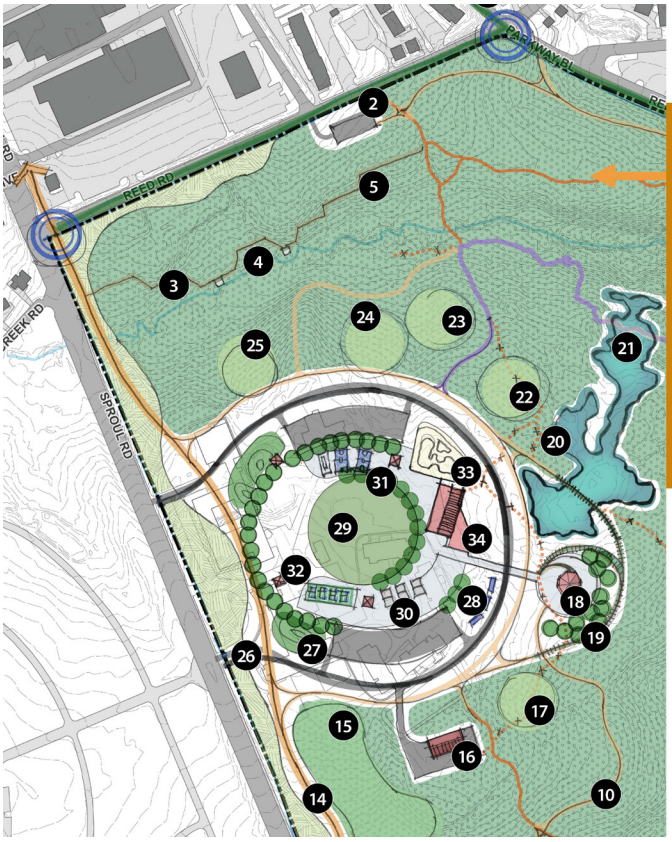
The existing Mountain Bike Trails within the forest would be preserved and continued stewardship would ensure stream quality and continued high adventure for trail users.

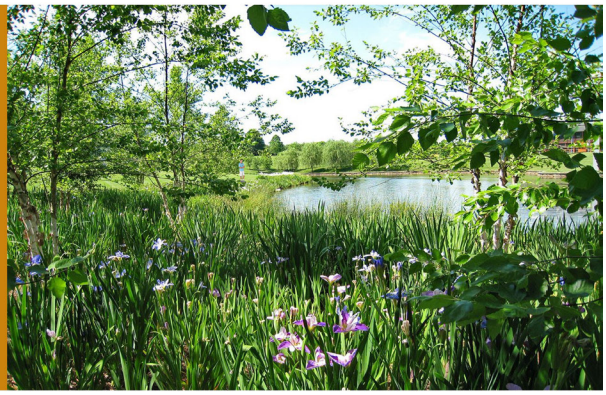




Nature Play

In one of several forest clearings, a nature play area provides excitement for the park's young visitors.





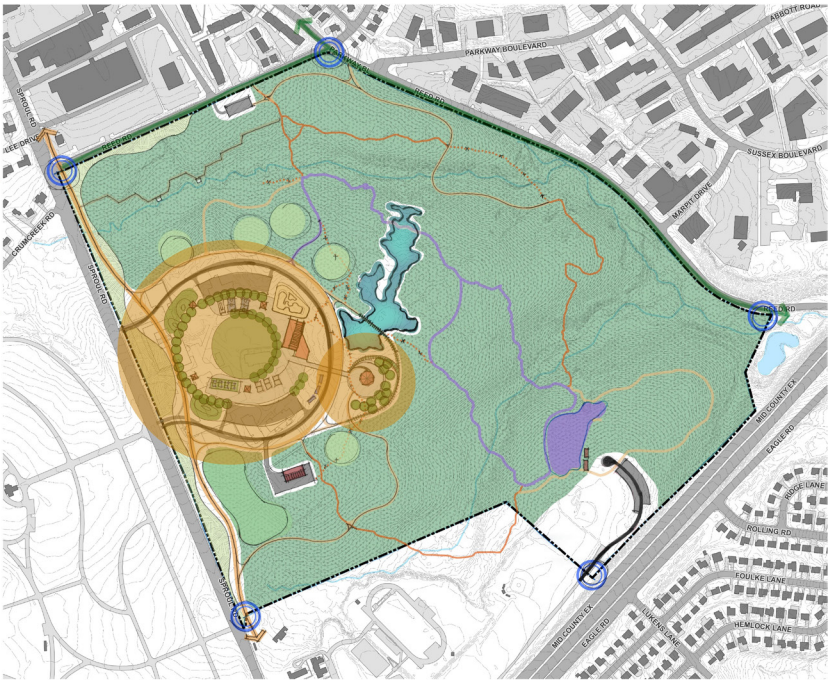
Constructed Wetlands & Retention Pond

Constructed wetlands and pond restore the site and provide necessary stormwater management.

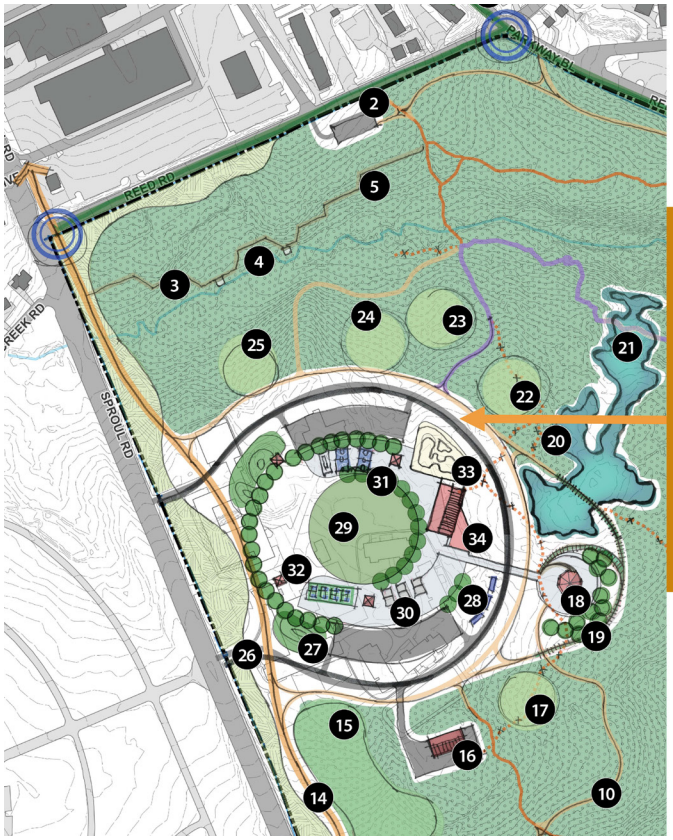
THE COMMUNITY HUB

Creates

- Approximately 40 acres of Community Recreation
- Over 50 features and activities
- Iconic Feature



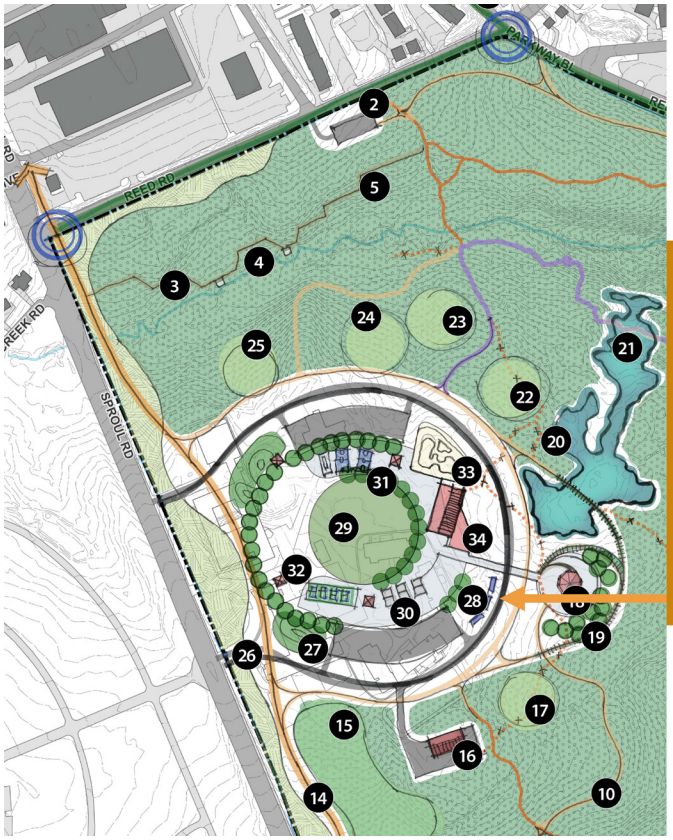
Well-designed public spaces act as a vital marketing tool for the county, making it more publicly visible and culturally relevant. The 40 acre community hub is designed to hold up to 50 activities and an iconic pavilion.





Parkway

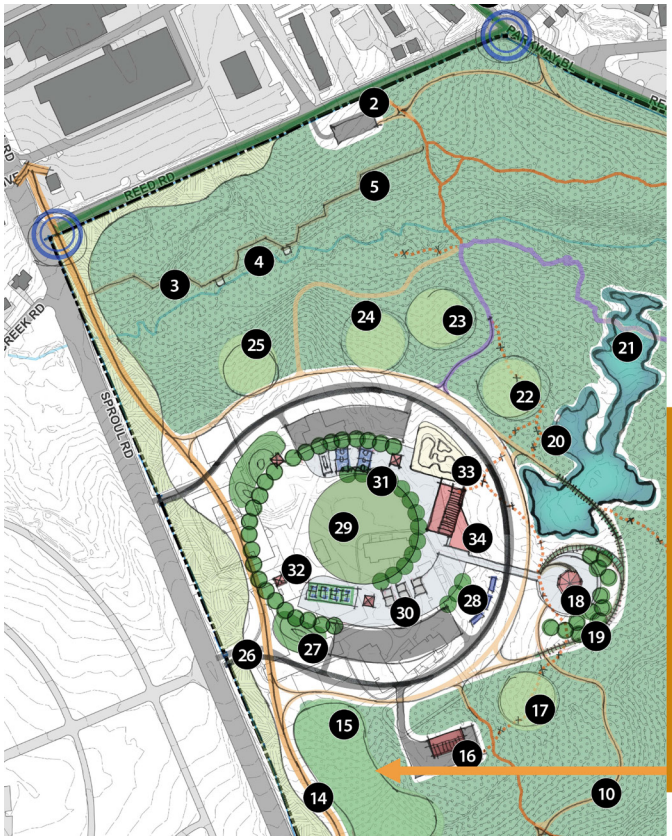
A parkway entrance welcomes visitors to the park.





Central Bus Stop

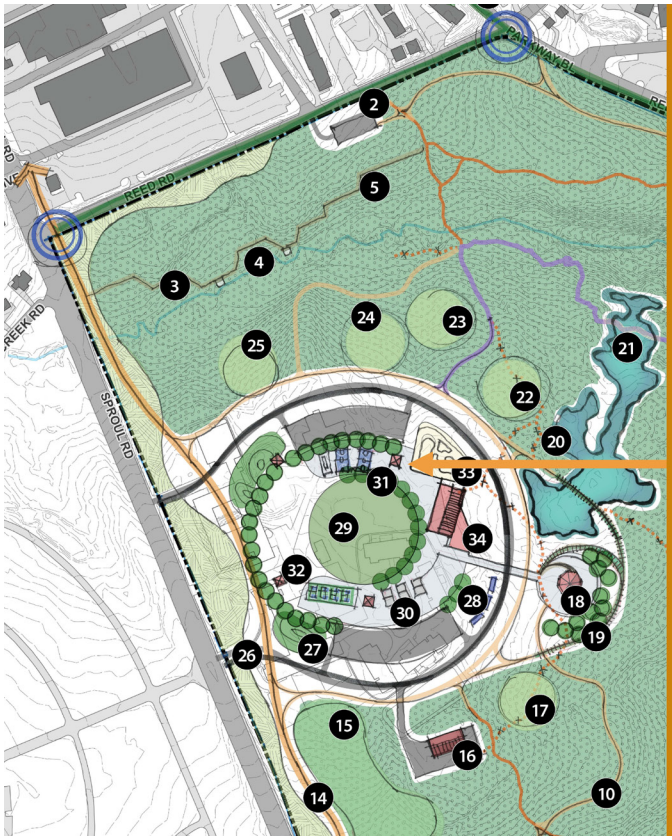
An internal bus stop is envisioned, welcoming those who choose or are unable to drive to the park.



Dog Park



Dog parks encourage socialization among people, as well as their pets.

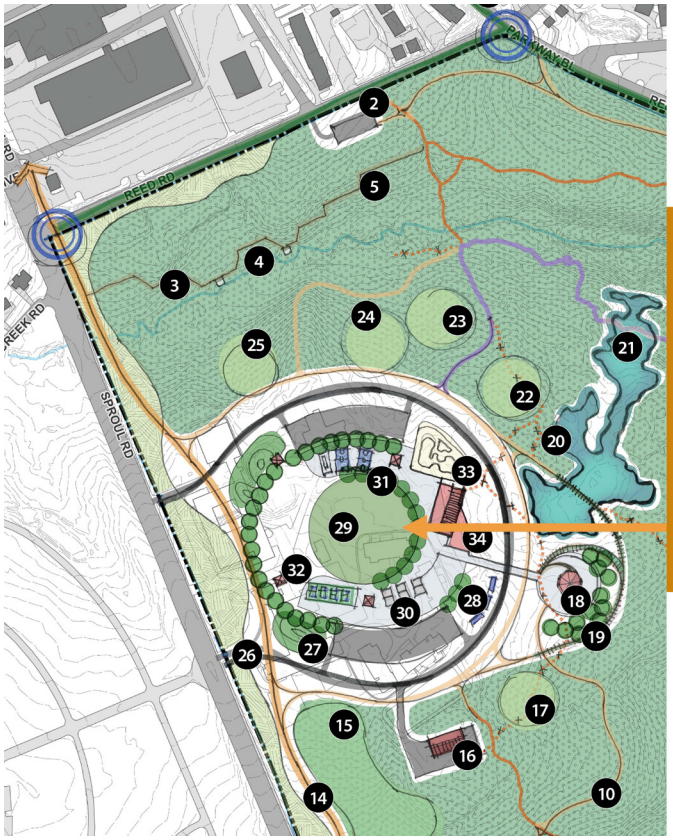






Gathering Pavilions

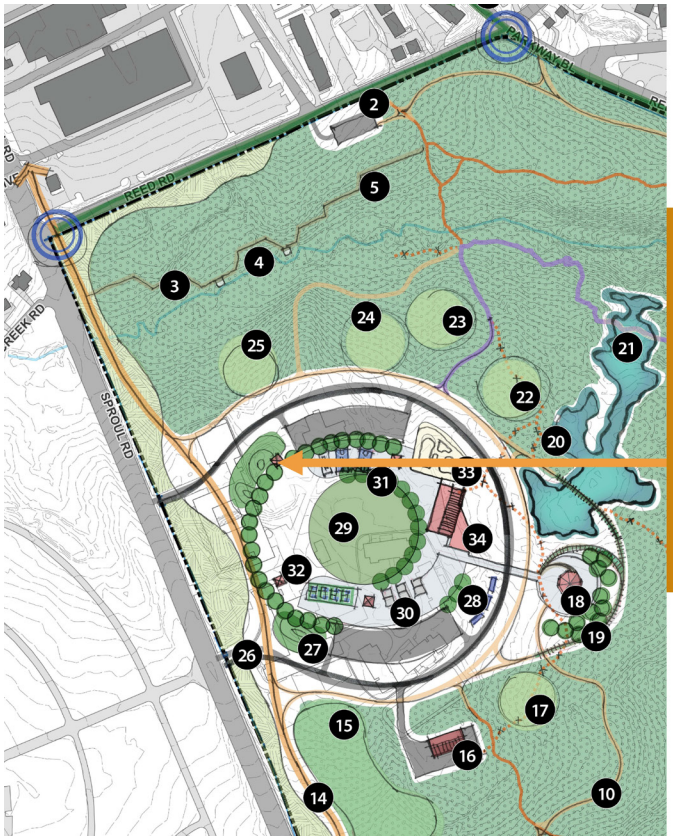
Smaller pavilions offer gathering spaces for families and small groups.





Gathering Green

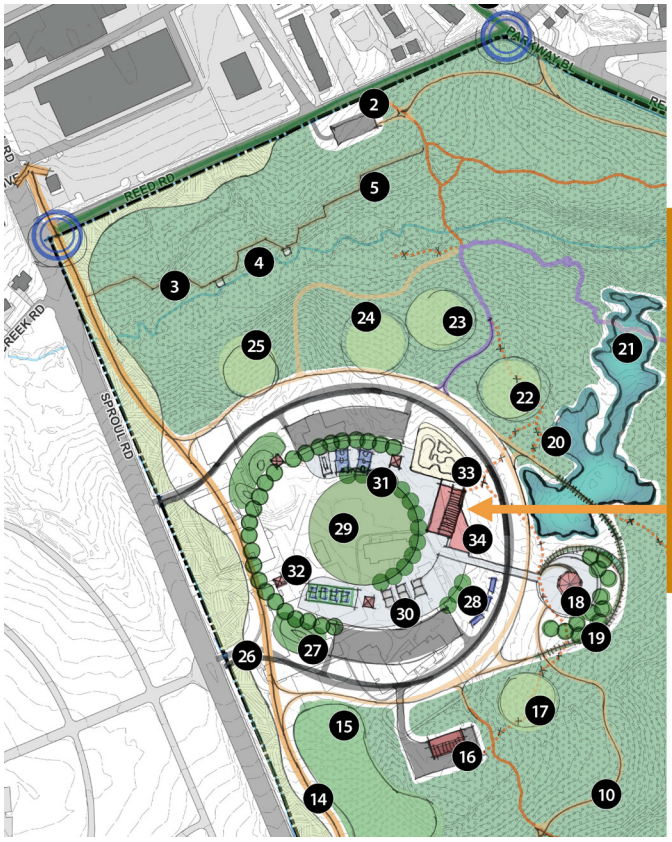
A central green welcomes unstructured play, picnics on the lawn, and serves as a community gathering space.





Activity Mounds

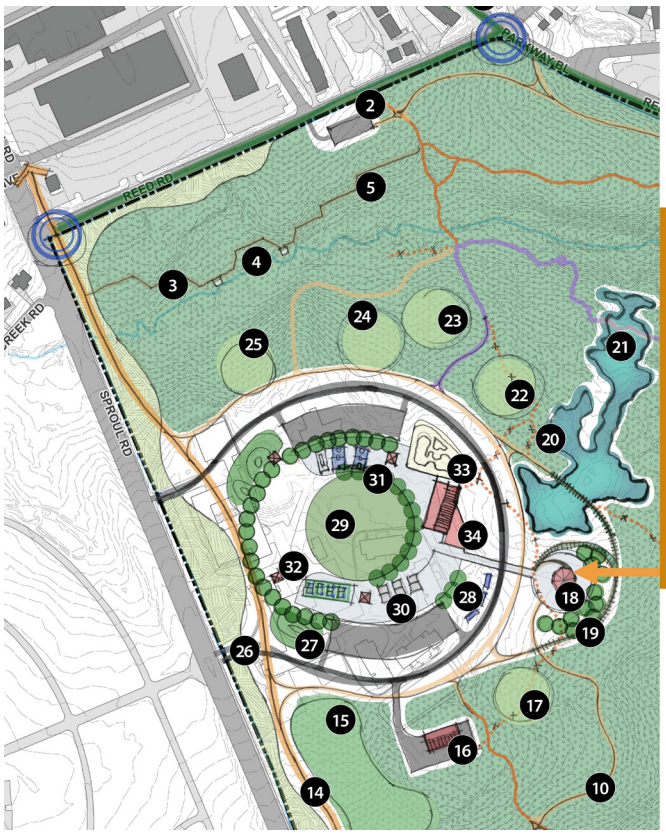
Activity Mounds offer adventure in the community hub.





Community Building

A community center could house spaces for environmental education, indoor activities and health and wellness courses.

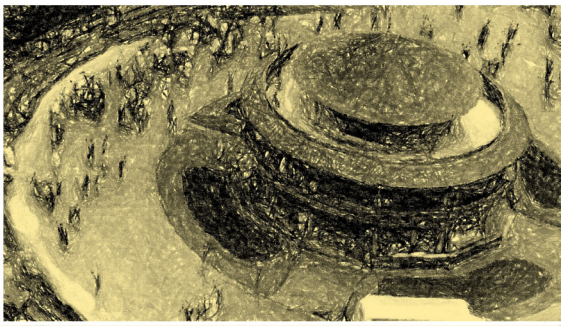


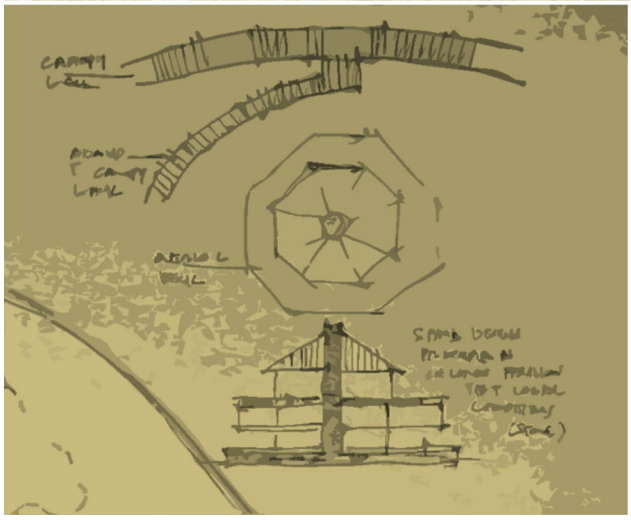


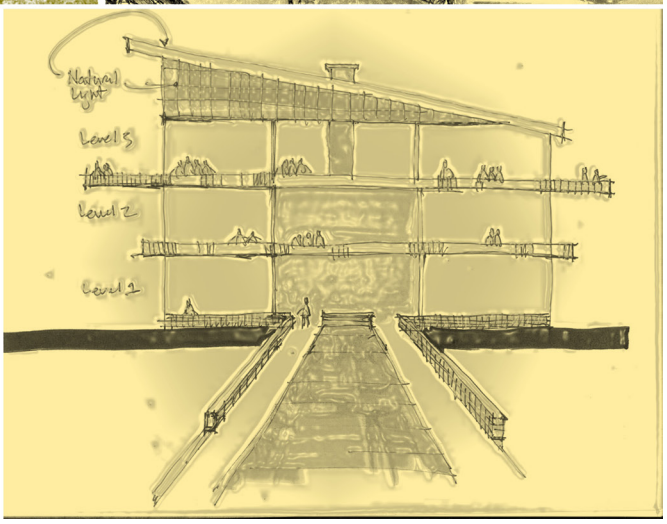
Gateway Pavilion

A three-story pavilion houses restrooms and provides places for family reunions and events. The pavilion generates rental income for the park.

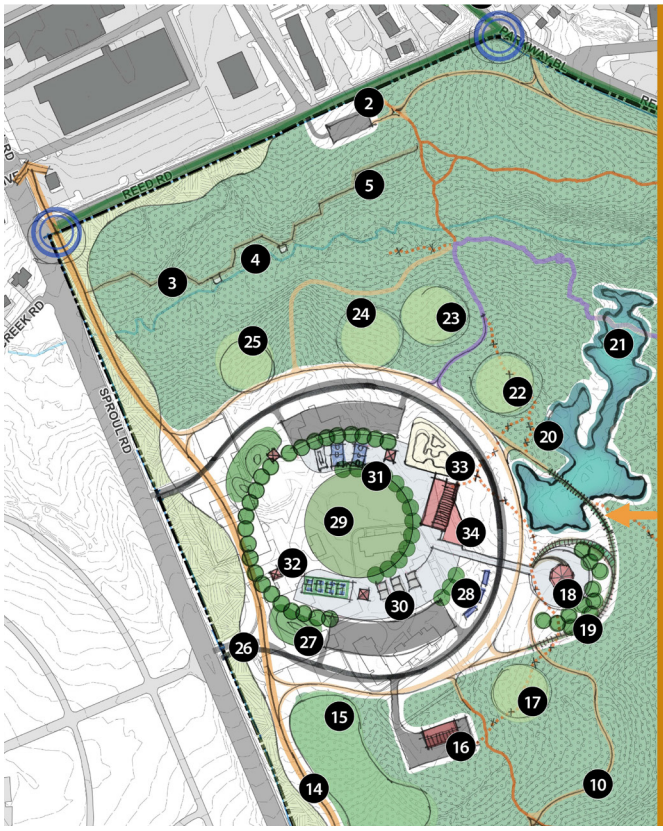


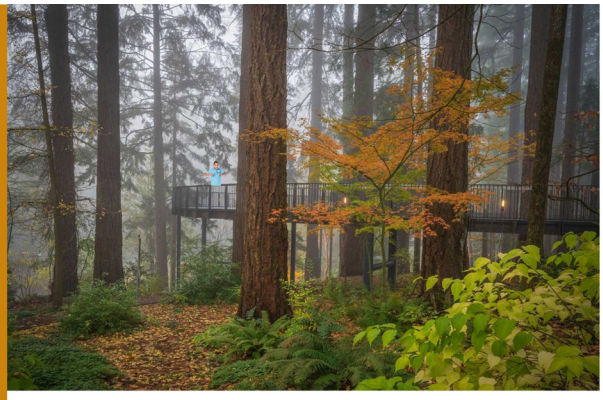


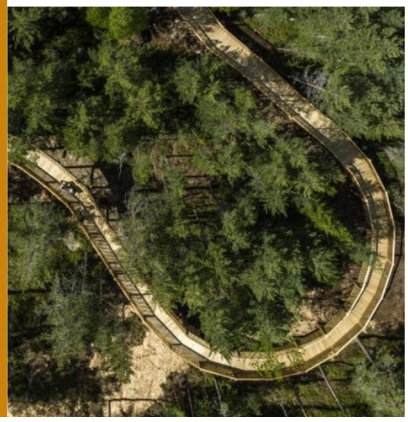




Making the park a destination requires a well-designed, iconic pavilion, the details of which to be worked out in future design phases.







Canopy Trail

Another iconic feature, the canopy walk, welcomes more hesitant visitors to view the forest from a contained venue.

Connects

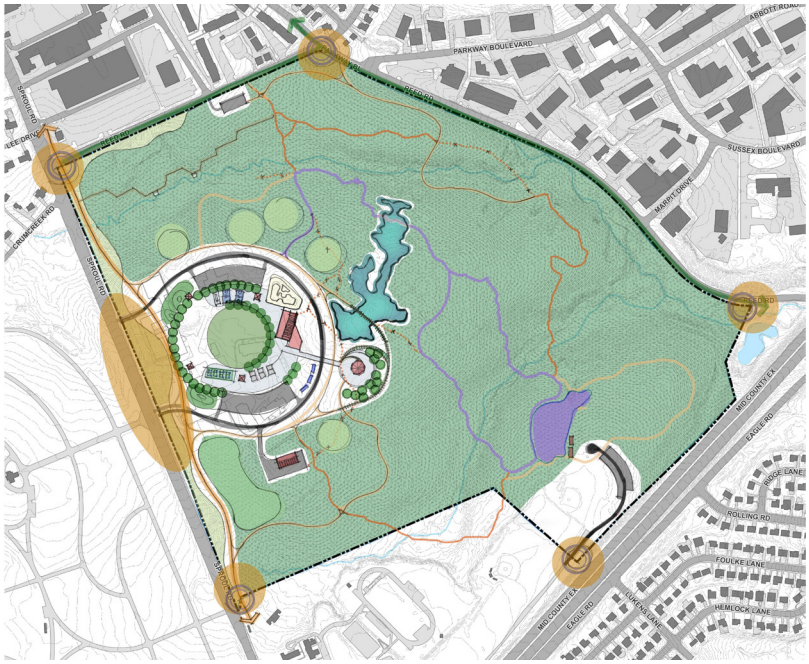
- Increase bus service
- Build Safe Walking and Bike Routes



A bus stop, walking and biking trails, connect users to the park.

Welcoming

- 6 gateways
- Edge Enhancements
- Visual Access From Adjacent Streets

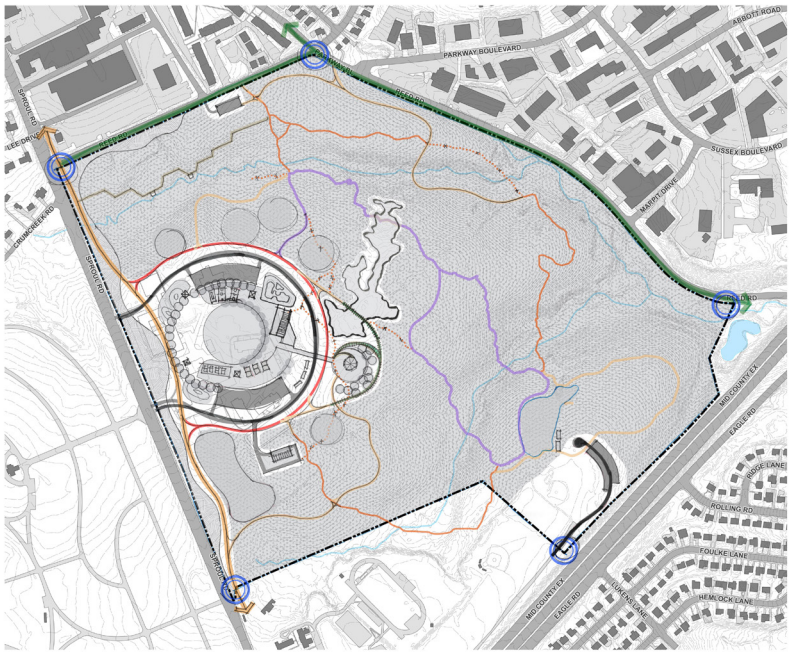


Six gateways and enhancement of the site edges, make the park welcoming to visitors.

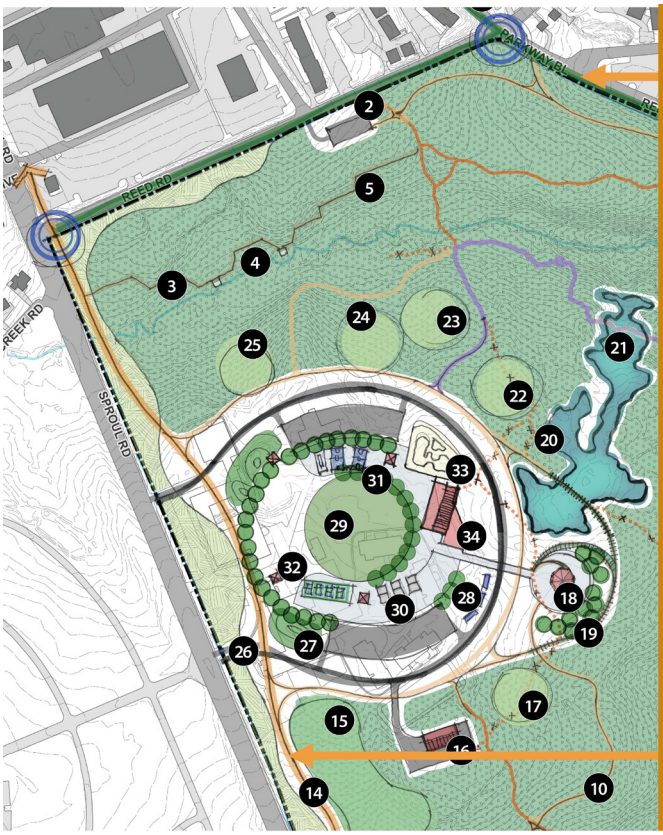
Explore

Miles of Trails

- 2.5mile Perimeter trail
- .75mile Accessible strolling loop
- Wetland boardwalks
- Interpretive trails (TBD)
- Designated mountain bike trail



An extensive trail network allows diverse park users to experience the park at their own comfort level.



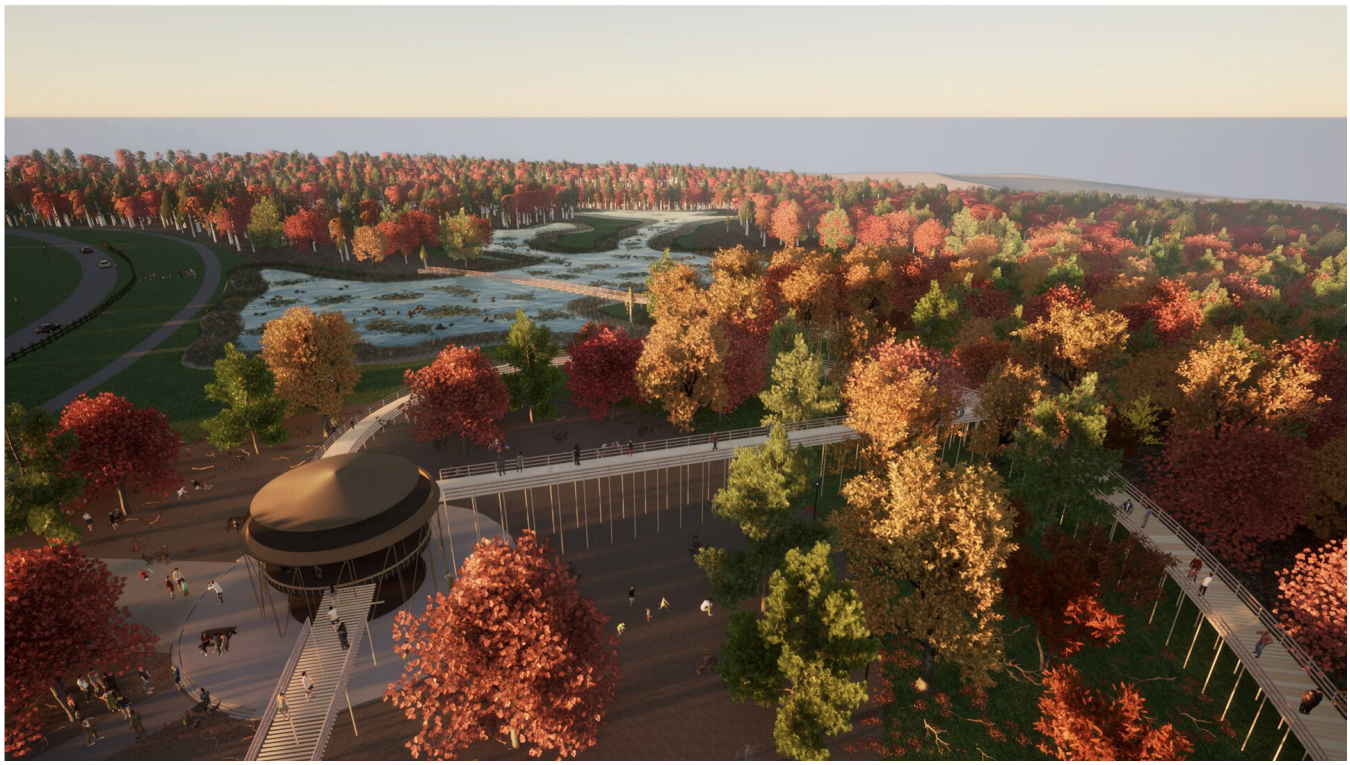


Protected Bike Lane & Shared-Use Trail



A protected bike lane and shared use trail can, in the long term, connect to off-site bicycle paths.

The Celebration Pavilion and Pond



View from the Canopy Approach Walk



View from the Elevated Pond Boardwalk



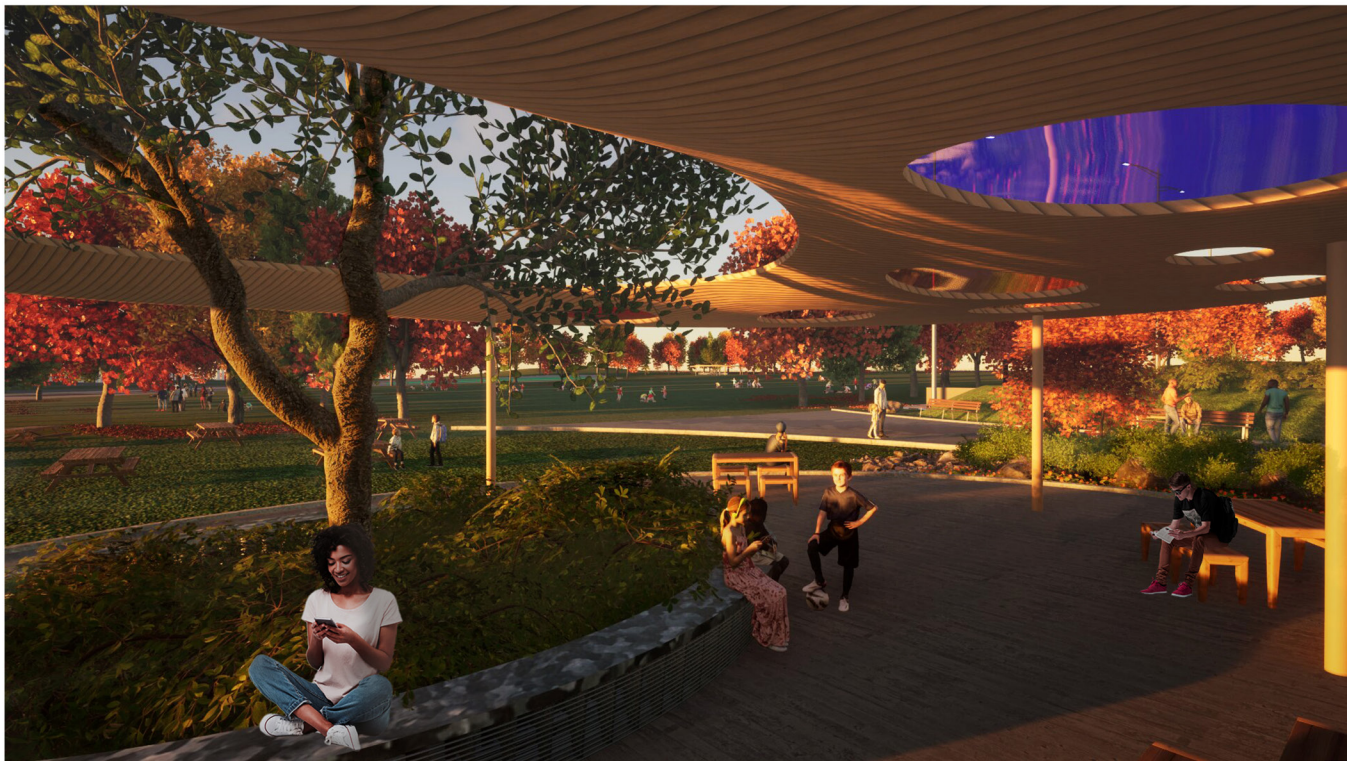
Teen Pavilion, Event Lawn, and Sports Courts



The Teen Pavilion and Event Lawn



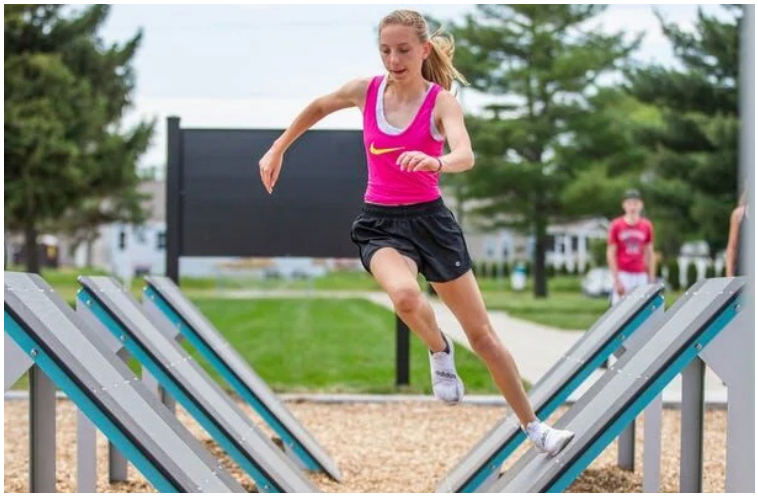
Underneath the Teen Pavilion



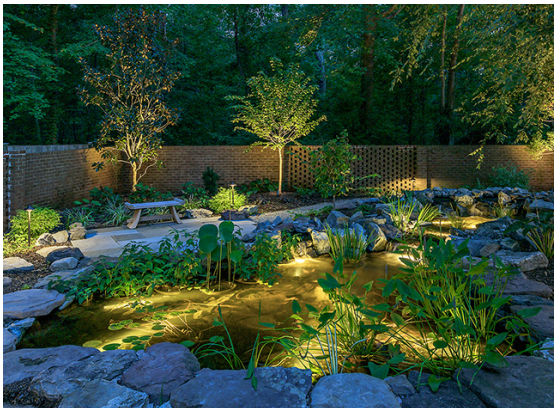
MAPLE CIVIC YOUTH PARK PREFERENCES

The following photos, provided by Marple Civic Youth, highlight the types of recreation opportunities and facilities the group would like to see in Delco Woods. These images reflect their vision for a vibrant, inclusive space that supports active play, social gathering, nature exploration, and multigenerational use. From playgrounds and walking trails to open green areas and seating spaces, the photos offer a window into the amenities that could help transform Delco Woods into a park that meets the diverse needs and interests of the community overall and especially teens. In particular, the inclusion of features that engage teens is essential to creating a park that offers positive, age-appropriate spaces for recreation, connection, and personal growth.

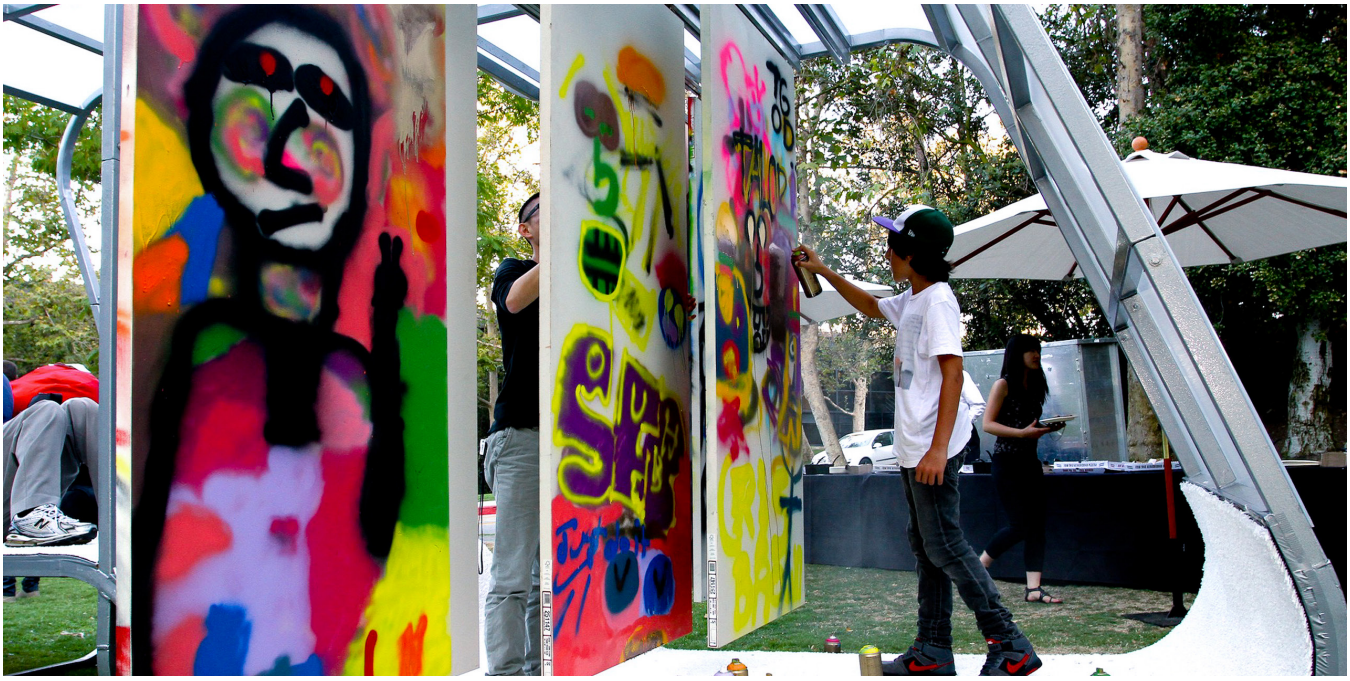








Photos provided by Marple Civic Youth





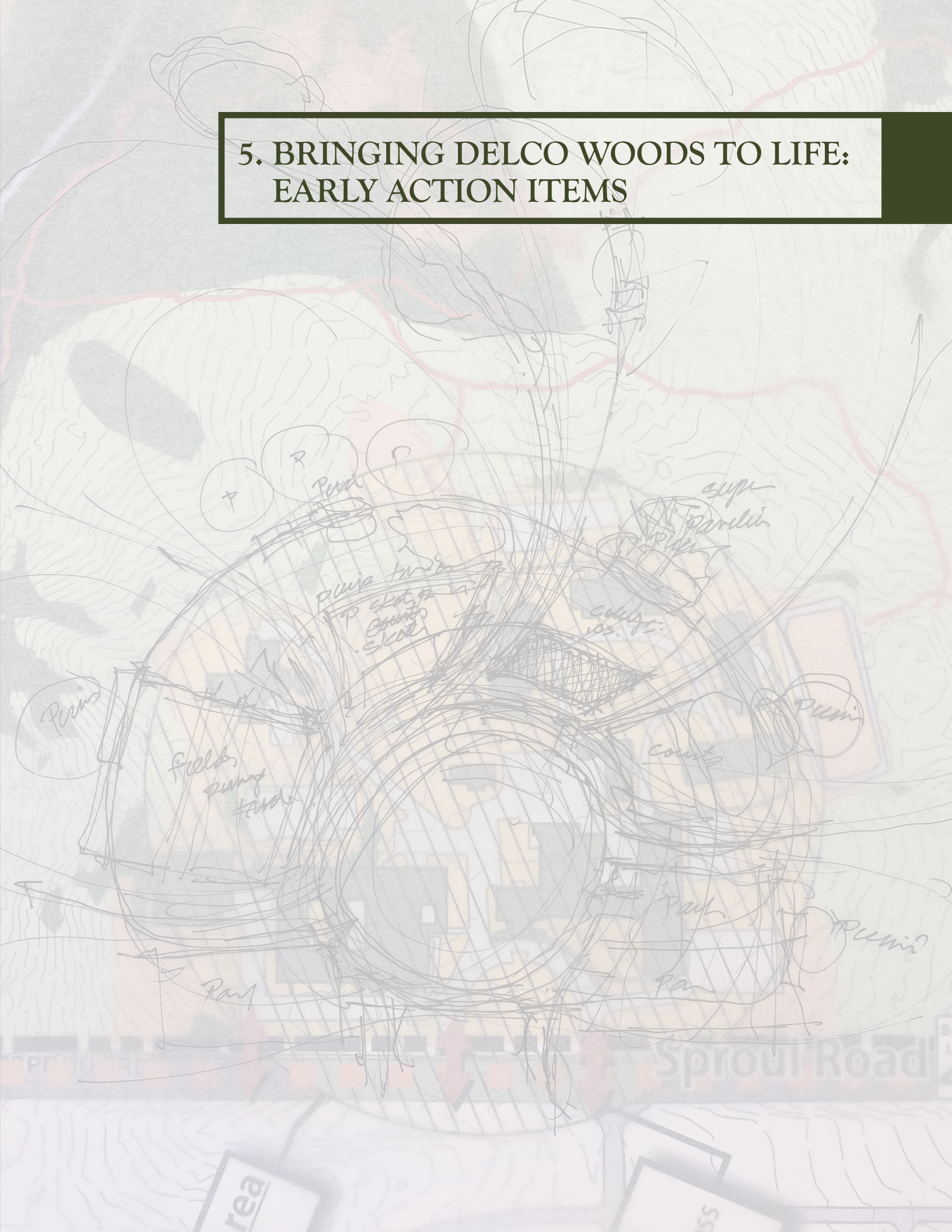






Photos provided by Marple Civic Youth

5. BRINGING DELCO WOODS TO LIFE: EARLY ACTION ITEMS



BRINGING DELCO WOODS TO LIFE: EARLY ACTION ITEMS

Early action items for the Delco Woods Master Plan will serve as a starting point towards achieving the park vision and goals. By balancing ecological preservation, accessibility, and financial responsibility, these projects aim to create an environment that community members can use immediately to achieve the goal of the park: Community in Nature.

Early action items are as follows:

1. Implementing the Woodland Loop Trail
2. Tree Safety Study followed by improving trail markings and signage at Delco Woods
3. Improving security of buildings at Delco Woods
4. Creating a stormwater management plan for Delco Woods
5. Creating a MOU with BMX Group

Each of these early action steps is described in greater detail below to show how they contribute to the overall vision for Delco Woods.

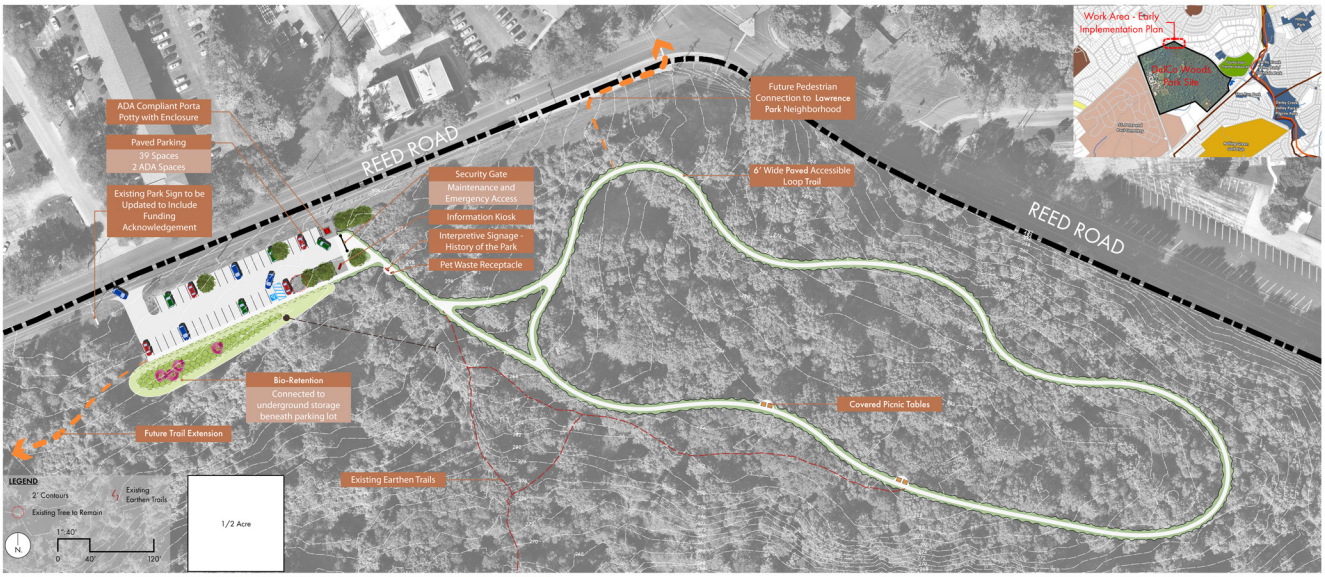
Implementing the Woodlands Loop Trail

An accessible, paved half-mile loop trail will serve as a gateway to unpaved trails and as a recreational space that is accessible for people using strollers, wheelchairs, bikes or simply walking within nature. Winding through mature woodlands, the trail will offer a peaceful retreat for walkers, runners, wheelers, and nature enthusiasts.

The loop trail is the most elaborate of the early action items. With a projected cost of $1 million, the half-mile Woodland Loop Trail will be a thoughtfully designed, accessible trail that immerses visitors in the beauty of the forest. This paved loop trail will serve as a gateway to unpaved trails and as a recreational space that is accessible for people using strollers, wheelchairs, bikes or simply walking within nature.

To help fund this project, Delaware County will actively seek grants and other external funding sources. This approach will reduce the County's direct costs while bringing in additional resources to enhance the project. By securing outside funding, the County can stretch its budget further, ensuring the trail is completed efficiently, on time, and to a high standard.

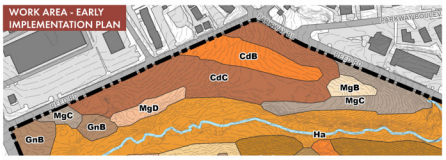
SITE MAP FOR THE TRAIL





PLAN NOTES

1. Delco Woods Park, consisting of approximately 213 acres, is owned by Delaware County. The street address of these improvements is 1797 Sproul Road, Springfield, PA 19064. The work area for the early implementation project consist of approximately 2.50 acres.
2. The site boundary information was plotted from the existing deed. Soils and Water resource data was compiled from FEMA flood maps, PASDA, and NearMap aerial imagery. Supplemental information was gathered by the design team from site visits conducted over the course of the master planning process.
3. The Whetstone Run originates immediately outside of the southwestern site boundary . Whetsone Run and its unnamed tributary (originating directly beyond the northern site boundary) flow eastward across the property, terminating in a detention basin located just beyond the eastern property line. The water courses are designated by the Pennsylvania Department of Environmental Protection as Warm Water Fisheries (WWF) under Chapter 93 of the Pennsylvania Code (Water Quality Standards) and connect to Darby Creek, a Trout Stocking Fishery.
4. The area of work is not located withing a designate 100 year floodplain.
5. Structures currently on the site include buildings associated with the former Don Guanella Village. The buildings and surrounding areas will be secured and remain inaccessible until such times as they can be razed.
6. The project is anticipated to be completed in multiple phases as outlined in the Master Plan Report.
7. There is a total of 39 parking spaces within the park with 2 ADA accessible parking spaces in this phase.
8. The site soils include the following 7 classifications:



Map Symbol	Map Unit Name	Hydrologic Class	Drainage Class	Site Acreage	Depth to Bedrock	Topsoil Depth	Limitations to Site Development
CdB	Chester silt loam, 3 to 8 percent slopes	B	Well drained	28.3	5+ feet	0-8 inches	-
CdC	Chester silt loam, 8 to 15 percent slopes	B	Well drained	10.4	5+ feet	0-8 inches	Slope, depth to soft bedrock
GnB	Glenville silt loam, 3 to 8 percent slopes	C/D	Moderately Well drained	20.3	1-1.5 feet	0-10 inches	Depth to saturated zone, ponding, depth to thin cemented pan, depth to thick cemented pan
Ha	Hatboro silt loam	B/D	Poorly Drained	23.6	6.5 feet	0-9inches	Flooding, depth to saturated zone, ponding
MgB	Manor loam, 3 to 8 percent slopes	B	Well Drained	6.8	5+ feet	0-7 inches	-
MgC	Manor loam, 8 to 15 percent slopes	B	Well Drained	9.7	5+ feet	0-7 inches	Slope
MgD	Manor loam, 15 to 25 percent slopes	B	Well Drained	5.2	5+ feet	0-7 inches	Slope, depth to soft bedrock, depth to hard bedrock, depth to saturated zone, depth to think cemented pan, depth to thin cemented pan

DELCO WOODS Woodland Loop Trail — March 7Th, 2025.

RENDERING



Delco Woods Woodland Loop Trail

Budget Estimate

PLAN DATE: 3.7.2025

ITEM	DESCRIPTION	EST. QTY.	UNITS	UNIT PRICE	TOTAL COST
A.	**Site Improvements**				
A.1	**General Requirements**				**$87,500**
A.1.1	Bond, Mobilization	1	LS	$70,000	$70,000
A.1.2	Survey/Construction Layout	1	LS	$12,000	$12,000
A.1.3	Project Sign/DCNR Acknowledgement	1	EA	$5,500	$5,500
A.2	**Site Preparation and Demolition**				**$31,700**
A.2.1	Clearing and Grubbing	2	AC	$4,500	$9,900
A.2.2	Load and Haul Debris from Site	1	LS	$10,000	$10,000
A.2.3	Strip and Stockpile Topsoil (6" deep)	1,000	CY	$1.50	$1,500
A.2.4	Remove and stockpile existing stone base	1,900	SY	$5	$9,500
A.2.5	Construction Project Sign	1	EA	$800	$800
A.3	**Earthwork**				**$60,000**
A.3.1	Bulk Excavation and Fill				
A.3.1.1	Bulk Cut (Common Earth)	2,500	CY	$12	$30,000
A.3.1.2	Bulk Fill (Common Earth)	2,500	CY	$12	$30,000
	Balance:	*0*	CY	$30	$0
A.4	**Parking Improvements**				**$122,450**
A.4.1	Bituminous Paving and Base	1,900	SY	$55	$104,500
A.4.2	Pavement Markings/Stalls	1	LS	$1,500	$1,500
A.4.3	Traffic Control Signage	3	EA	$500	$1,500
A.4.4	Parking Space Curb Stop	39	EA	$250	$9,750
A.4.5	Split Rail Fence	130	LF	$40	$5,200
A.5	**Bituminous Pavement Trails**				**$111,000**
A.5.1	Bituminous Trail Paving and Base	2,000	SY	$55	$110,000
A.5.2	ADA Trail Signs	2	EA	$500	$1,000
A.6	**Stewardship Plantings**				**$120,000**
A.6.1	Invasive Plant Management	1	LS	$100,000	$100,000
A.6.2	Hazard Tree Management (Year 1)	1	EA	$10,000	$10,000
A.6.3	Deer Management Program (Year 1)	1	EA	$10,000	$10,000
A.7	**Site Amenities**				**$56,000**
A.7.1	Covered Picnic Tables	4	EA	$7,000	$28,000
A.7.2	Manual Security Gate	1	EA	$5,000	$5,000
A.7.3	Funding Acknowlegement Sign	1	EA	$1,500	$1,500
A.7.4	Portable Restroom Enclosure	1	EA	$8,000	$8,000
A.7.5	Information Kiosk	1	EA	$8,500	$8,500
A.7.6	Interpretive Signs	2	EA	$2,500	$5,000
A.8	**Concrete Pavement**				**$18,700**
A.8.1	Concrete Covered Picnic Table Pads	500	SF	$11	$5,500
A.8.2	Concrete Pad - Portable Restroom	500	SF	$11	$5,500
A.8.3	Concrete Pad - Information Kiosk	350	SF	$11	$3,850
A.8.4	Concrete Pad - Interpretive Signs	350	SF	$11	$3,850

A.9	**Landscaping**					**$22,025**
	A.9.1	Spread Topsoil, Fine Grade, Fertilize	575	CY	$3	$1,725
	A.9.2	Seeding	30,000	SF	$0.10	$3,000
	A.9.3	Shade Trees	7	EA	$700	$4,900
	A.9.4	Ornamental Trees	6	EA	$400	$2,400
	A.9.5	Shrubs	1	LS	$10,000	$10,000
A.10	**Storm Drainage**					**$154,375**
	A.10.1	Geotextile	1,200	SY	$3.5	$4,200
	A.10.2	CL 1 Excavation	1,500	CY	$20	$30,000
	A.10.3	AASHTO No. 57	350	CY	$85	$29,750
	A.10.4	Outlet control structure	1	EA	$5,000	$5,000
	A.10.5	WQ Hood	1	EA	$750	$750
	A.10.6	Anti-seep collar	2	EA	$150	$300
	A.10.7	Amended Soils	275	CY	$85	$23,375
	A.10.8	6" PVC drain pipe	200	LF	$30	$6,000
	A.10.9	15" SLCPP	600	LF	$65	$39,000
	A.10.10	Engergy Disapator	400	SF	$40	$16,000
A.11	**Erosion and Sedimentation**					**$31,950**
	A.11.1	Construction entrance	1	EA	$2,500	$2,500
	A.11.2	12" Compost Filter Sock	3,000	LF	$5	$15,000
	A.11.3	Basin bottom seed mix	5	LB	$60	$300
	A.11.4	Mulching Straw	15.0	TON	$500	$7,500
	A.11.5	Concrete Washout	1	EA	$150	$150
	A.11.6	Pumped water filter bag	1	EA	$1,000	$1,000
	A.11.7	Replacement PWFB	1	EA	$500	$500
	A.11.8	Erosion Control Matting (CWD)	500	SY	$10	$5,000
					Subtotal :	**$815,700**
					10% GENERAL CONTINGENCY:	**$81,570**
					TOTAL PROBABLE COST (BASE BID):	**$897,270**
1	Professional Design Fees				12%	**$107,672**
2	Miscellaneous Costs				2.5%	**$22,432**
	Includes but is not limited to: Test Borings, Sink Hole Investigation, Builders Risk Insurance, Building Permit, Labor and Industry Fee, Document Printing, Construction Testing, Storm Water Permit					
3	**Total Soft Costs**					**$130,104**
	TOTAL PROJECT ESTIMATE					**$1,027,374**

Note: Probable cost for site work does not include the following:

1. Rerouting gas, CATV, or phone lines. Additional improvements as may be required by municipal or other reviewing agencies having jurisdiction
2. Utility service and or connection fees.
3. Interpretive signage design.
4. Removal of unsuitable materials, sink hole remediation, or on lot disposal system designs.
5. Off site drtainage improvements.
6. Project financing costs
7. Rock Removal

JMT, Inc. is not a construction contractor and therefore probable construction cost opinions are based solely upon our experience with construction. This requires JMT to make a number of assumptions as to actual conditions which will be encountered on the site; the specific decisions of other design professionals engaged; the means and methods of construction the contractor will employ; contractors' techniques in determining prices and market conditions at the time, and other factors over which JMT has no control. Given these assumptions which must be made, JMT states that the above probable construction cost opinion is a fair and reasonable estimate for construction costs.

Tree Safety Study and improving trail markings and signage at Delco Woods

To support a safe and enjoyable experience for all visitors, a professional tree safety study will be conducted to identify and address trees that may pose risks due to age, disease, or structural instability. This effort is focused solely on maintaining public safety while preserving the overall health and character of the wooded landscape. In addition, new signage will be installed to help community members navigate the trail system and enjoy the natural beauty of the park with greater ease and confidence

Improving security of buildings at Delco Woods

Vacant buildings located in public parks can present serious challenges, including safety hazards, vandalism, graffiti, and the risk of unauthorized entry or illegal use. While the former Don Guanella School buildings are planned for future demolition, it is still essential to manage the site responsibly in the interim. The County has previously retained structural engineers to evaluate the buildings. Regular safety inspections should continue. Additional security measures—such as fencing, surveillance, and alarm systems—should be considered to prevent unsafe or undesirable conditions and to protect the safety of park visitors and the surrounding community.

Appendix 3 of the plan proposes additional strategies to further secure the vacant campus buildings beyond the work already completed. It also identifies the safety measures necessary to address immediate concerns. Further design work is required to determine the type, configuration, location, and cost of fencing.

Creating a stormwater management plan for Delco Woods

A stormwater management plan will play a crucial role in controlling runoff within Delco Woods. By addressing stormwater flow, this plan will help prevent erosion and mitigate the impact of runoff on the park's trails and ongoing activities. Ensuring proper stormwater management will safeguard the park's natural features and enhance its usability for visitors.

Creating a MOU with BMX Group

A volunteer-run, private nonprofit organization (501(c)(3)) has planned, designed, constructed, and maintained the BMX track on the site for more than 20 years. It has been actively used by the community and supported through consistent volunteer efforts. The group has also contributed to the site's upkeep by collecting trash, monitoring stormwater runoff, and engaging in other stewardship activities. Establishing a formal Memorandum of Understanding (MOU) between the County and the BMX organization would help solidify this long-standing relationship, support continued collaboration, and ensure clear communication going forward. An MOU, while not legally binding, serves as an important framework that outlines shared responsibilities, clarifies expectations, and can address issues such as site access, liability, and maintenance standards—helping to protect both the County and the nonprofit while supporting a successful partnership.

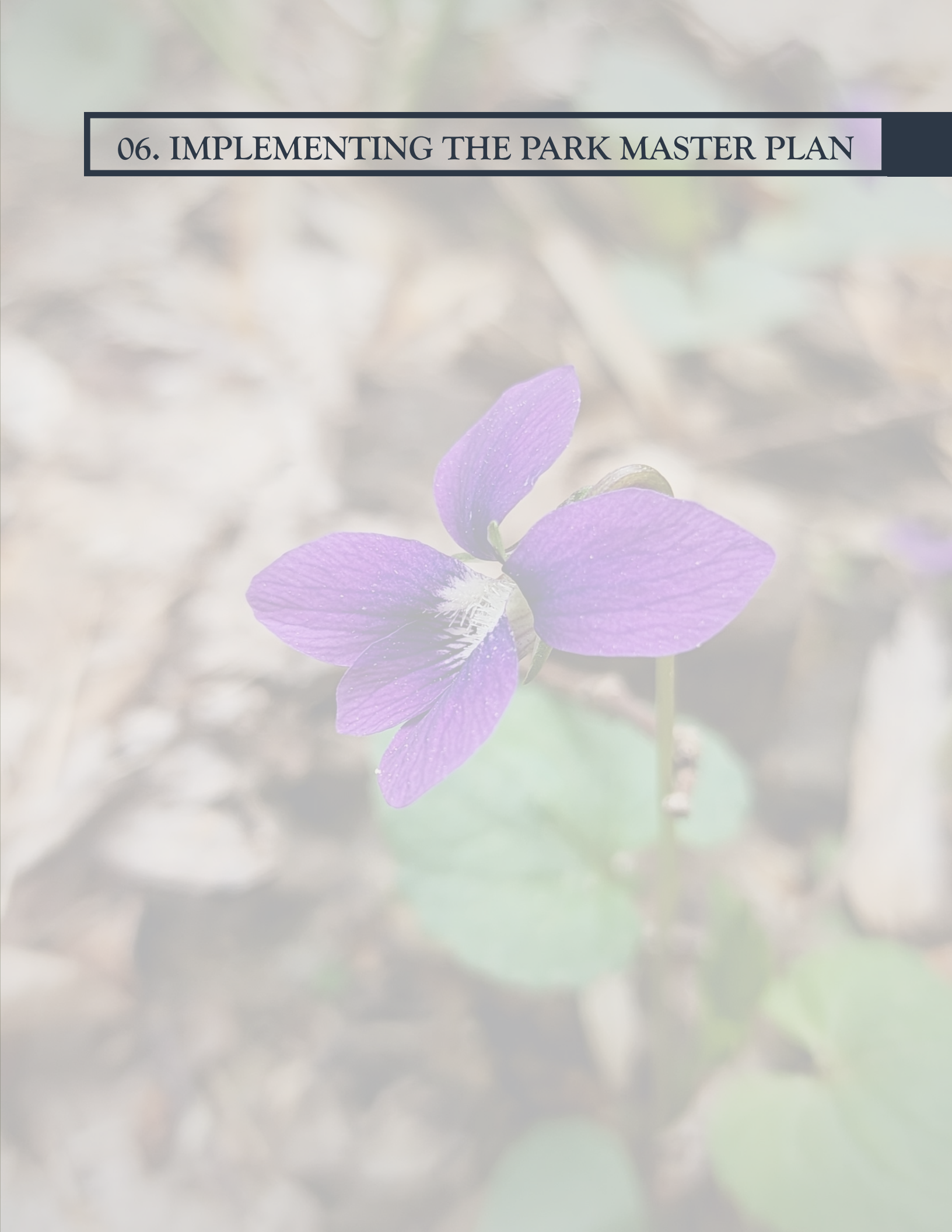
Future Development Modules

Once early action items have been implemented, the next stage of park development could begin when resources and funding are available. The projects are grouped into "Modules"—logical phases that cluster related elements of the park's design and function as shown in Table 2.

Table 2 Future Development Modules

Module	Project
A	Celebration Pavilion, multistory with restrooms, catering space, seating, green infrastructure, and water feature with flatwater fishing area, teen area.
B	Tree Canopy Walk, meadows, community gardens, trails., natural play area
C	Community Recreation Hub – Great lawn gathering and event area, sports courts, playground, pavilions, restrooms.

06. IMPLEMENTING THE PARK MASTER PLAN



IMPLEMENTING THE PARK MASTER PLAN

"Obstacles don't have to stop you. If you run into a wall, don't turn around and give up. Figure out how to climb it, go through it, or work around it." - Michael Jordan

This chapter outlines the implementation strategy for the Delco Woods Master Plan, focusing on phased development, resource management, community engagement, and long-term sustainability. Below is a summary of key priorities:

- **Early Priorities** – Initial projects focus on safety, accessibility, and foundational improvements.
- **Phased Development** – A modular approach allows for systematic progress based on resources.
- **Community Engagement** – Ongoing collaboration with residents and stakeholders ensures success.
- **Strategic Funding** – A mix of public and private resources supports implementation.
- **Clear Milestones** – Timelines and benchmarks track progress and allow for adjustments.
- **Flexible Management** – Adaptability ensures the plan evolves with changing conditions.
- **Monitoring & Evaluation** – Regular assessments guide decision-making and improvements.
- **Sustainability Focus** – Long-term strategies protect the park's ecology and ensure upkeep.
- **Lasting Impact** – A balanced vision of recreation and conservation for future generations.

The table on the following page outlines projects for each phase of the Delco Woods Master Plan. The timelines and vision in this plan must be balanced with the knowledge that demands on County budgets and the resolution of the Eminent Domain process may warrant mid-course revisions and flexibility in timelines and implementation.

Table 3. Master Plan Implementation Early Action Items				
Project	**Type of Project**	**Cost**	**Resources**	**Comment**
Tree Assessment and Hazardous Tree Removal	Capital Project (Short Term/ Ongoing)	Tree Assessment: $0 Tree Removal: $30,000-40,000	Contractor with Park Superintendent as manager. Tree assessment is usually pro bono by contractor on condition of doing tree removal.	Must be done to prepare the site for Woodland Loop Trail development and ongoing maintenance.
Woodland Loop Trail	Capital Project (Short Term)	$1 million - County funds leveraged with state grant from PA DCNR	Contractor with Parks & Recreation Department and Planning Department support	Project will include improvements to existing trailhead parking lot on Reed Road, including paving, striping, ADA and signage. Construction documents must be prepared by or in consultation with professional trail planner. Trail can spark safe and appropriate trail use and can be an important public relations opportunity.
Securing buildings in Delco Woods	Capital Project (Short/Long Term)	TBD	Park Police and Marple Township Police; Park Superintendent with Contractors; County Public Relations	Includes police patrol of the site, installation of fencing, signage, and other safety & security measures deemed necessary, and public communications – see recommendations in Chapter 5
Stormwater Management Plan	Capital Project (Short Term)	$100,000 - $150,000	Consultant with Parks & Recreation Department as manager	Plan for physical improvements as well as O&M procedures necessary to address park stormwater impacts
Establish MOUs with BMX Group	Operations & Management (Short Term)	County Solicitor and staff time	Solicitor with support from Council and Parks & Recreation Director	Essential to clarify use, responsibilities, and insurance

Operations and Management Support				
Continue park maintenance tasks	Operations & Management (Ongoing)	Annual budget	Parks & Recreation Department staff	Mowing about 30 acres, potential snow removal, trash removal, monitor Don Guanella campus for safety, damage, and improper use.
Develop Capital Improvement Financing Strategy and try to leverage all funds available for park development	Operations & Management (Short Term)	Staff time	Council, County Executive with support from Directors of Planning and Parks & Recreation	Will position County to secure a mix of public and private resources to develop and operate the park.
Progress Assessment for Plan Implementation	Operations & Management (Ongoing)	Staff time	Parks & Recreation, Planning, Facilities, Public Works, and Park Police Departments with Parks and Planning as lead collaborators and County Council Support	Evaluate implementation progress, needs, and opportunities at least annually before budget discussions and more frequently in accordance with park development and resources.
Optimize parks and recreation governance	Operations & Management (Ongoing)	Staff time; potential organizational development specialist: $50,000-70,000	Parks & Recreation, Planning, Facilities, Public Works, Park Police, Conservation District	Establish an MOU among the six County departments supporting parks and recreation. Hold an annual summit for park, recreation, trails, and open space planning. Monitor progress with quarterly communication.
Seek previous maintenance staff	Operations & Management (Short Term)	$200,000 for two salaries and benefits	Parks & Recreation Department Management team	Seek two maintenance positions
Retain grants and lobbying experts to pursue funding	Operations & Management (Short Term)	TBD	County Executive, Office of Sustainability Director, Parks & Recreation and Planning Directors	Pursue an agreement with a multi-skilled grant team and a lobbyist with success in securing funds from various sources for parks.

Promotional program for Delco Woods	Operations & Management (Short Term)	Staff time, potential partners	Parks & Recreation, Marketing and Communications Manager in partnership with the Public Relations Department	Plan, create, and carry out a digital marketing program to establish, support and increase public awareness and support for the new park.
Creation position of Park Coordinator and recruit for this half time position, evolving into full time	Operations & Management (Short Term)	$25,000-50,000 salary and benefits	Parks & Recreation Department Management team	Seek part-time position growing to full-time; coordinator would address revenue potential of park
Establish Delco Woods Friends' Group	Operations & Management (Short Term)	Staff time	Deputy Parks & Recreation Director with support from existing park friends groups	Continue employee development in maintenance, programming, promotion, and technology
Facilitate programs in park	Operations & Management (Ongoing)	Staff time	Parks & Recreation Deputy Director, New County Park Advisory Committee	Outreach on park programming with potential partners or community-based organizations. Park Coordinator could assume some program responsibility.
Training	Operations & Management (Ongoing)	1%-2% of budget	Parks & Recreation Department Management Team	Continue employee development in maintenance, programming, promotion, and technology as needs are identified.
Develop Strategy Plan	Operations & Management (Short Term)	$18,000 grant plus $1,800 match	Parks & Recreation Department Management team with support from five County departments involved with park operations	Develop the strategic plan in-house or consider obtaining a Peer grant from the PA DCNR to facilitate plan development with support from a consultant.

Module A				
Project	**Type of Project**	**Cost**	**Resources**	**Comment**
Building Demolition in School Campus	Capital Project (Short-Long Term)	TBD	Contractor	Critical to allow further park implementation to progress. Consider reuse of materials on site where possible.
Advanced Design	Capital Project (Long Term)	$250,000-300,000	Consultant with Parks & Recreation Department	Design development of vision established in park master plan. Necessary for financial planning, fundraising, and subsequent park development. Requires landscape architect with park planning and design expertise.
Carry out the restoration of the woodland area	Capital Project (Long Term)	$400,000-420,000	Contractor with experience in forestry and natural resources with Parks & Recreation Department as PM	Phase in forest restoration over approximately 10 years at $40,000-50,000 annually. Will enable Parks & Recreation Department to carry out ongoing maintenance of park forest and other natural features.
Community Recreation Hub	Capital Project (Long Term)	$20-25 million	Contractor with Parks & Recreation Department as PM	Development of community recreation hub including great lawn gathering and event area, sports courts, playground, pavilions, restrooms, teen area, and associated green infrastructure
Additional Trails	Capital Project (Long Term)	TBD	Contractor with Parks & Recreation Department as PM	Development of additional trails per design development
Operations and Management Support				
Hire a recreation coordinator	Operations & Management (Long Term)	$100,000 salary and benefits	Parks & Recreation Department Management Team	Revenue generating position

Update the strategic plan	Operations & Management (Long Term)	Staff time	Parks & Recreation Department Management Team with support from five County departments involved with park operations	Review before budget season annually and update with needs and opportunities. Full update recommended every three years.
Use Maintenance Plan as a management tool	Operations & Management (Long Term)	Staff time	Parks & Recreation Department Management Team with support from five County departments involved with park operations	Analyze data, develop reports, and deliver to key stakeholders for support in operations, budget, staffing
Move Park Program Coordinator to Full-Time	Operations & Management (Long Term)	$100,000 with salary and benefits	Parks & Recreation Director	As facilities increase, so will programming and revenue generation opportunities.
Create Park Ambassadors Program	Operations & Management (Long Term)	$150,000-200,000	Parks & Recreation Department Management Team	Add ambassadors as facilities and programs increase.

Module B				
Project	**Type of Project**	**Cost**	**Resources**	**Comment**
Meadows, community gardens, trails, natural play area; Water feature with flatwater fishing area; Public Art	Capital Project (Long Term)	$10-$15 million	Contractors with Parks & Recreation Department as PM	Development of Module 3 per design development

Module C				
Project	**Type of Project**	**Cost**	**Resources**	**Comment**
Celebration Pavilion (multistory), Tree Canopy Walk	Capital Project (Long Term)	$10-15 million	Contractors with Parks & Recreation Department as PM	Development of Module 4 per design development

MOVING FORWARD

The successful implementation of this park master plan depends on continued collaboration, strategic investment, and adaptive management. As each phase progresses, community engagement and careful oversight will guide Delco Woods' evolution to both protect the forest and meet the needs of future generations. By remaining committed to the vision outlined in this plan, Delaware County can create a lasting and transformative park experience for all.

A PATH TO LONGTERM SUCCESS

Creating the park master plan involved detailed planning and implementation strategies. The action plan serves as the guide for turning the envisioned master plan into reality. The following are key conclusions or summary points for the implementation action plan:

1. **Modular Approach:** The action plan emphasizes a modular implementation strategy, allowing for the systematic accomplishment of different elements of the master plan. This approach outlines manageable steps in concert with available resources and timelines.

2. **Prioritization:** The plan identifies priority areas or components within the park master plan. These could be based on factors such as community needs, environmental impact, or immediate benefits. Prioritization enables focused efforts on critical aspects for maximum impact.

3. **Stakeholder Engagement:** A crucial aspect highlighted in the action plan is ongoing stakeholder engagement. It underscores the importance of involving the community, local authorities, environmental experts, and other relevant stakeholders throughout the implementation process to garner support and advance implementation of the recommendations as resources become available.

4. **Resource Allocation:** Clear resource allocation strategies are outlined, encompassing financial, human, and material resources required for implementation. This includes budget allocation, work force requirements, and potential funding opportunities through a mix of public and private resources.

5. **Timeline and Milestones:** The action plan includes a timeline with achievable milestones at various stages of implementation that are tied to current park conditions and county resources and opportunities. This supports progress tracking, evaluation, and necessary adjustments to stay on course.

6. **Adaptability and Flexibility:** Acknowledging the dynamic nature of projects, the plan stresses the need for adaptability and flexibility. It allows for adjustments to be made in response to unforeseen challenges or emerging trends without compromising the overall vision.

7. **Monitoring and Evaluation:** A sound monitoring and evaluation framework is established to assess the effectiveness of implemented actions. Regular assessments help gauge progress, identify bottlenecks, and make informed decisions for continuous improvement.

8. **Sustainability and Maintenance:** The implementation plan underscores the importance of ongoing sustainability practices and maintenance schedules. It includes measures to ensure the park's longevity, ecological balance, and ongoing upkeep to preserve its quality and functionality.

In summary, the implementation action plan provides a clear and strategic roadmap for transforming the park master plan into a thriving reality. It highlights phased development over time as resources allow, stakeholder collaboration, resource allocation, adaptability, monitoring, and sustainability as essential components for successful execution.

Conclusion

Protecting Delco Woods as a county park ensures that future generations may continue to benefit from the site's mature forests, clean streams, and striking open spaces. The early action items cited in this Park Master Plan will facilitate immediate public enjoyment of the space while details concerning the Eminent Domain process, budget, and timelines are addressed. While the development of the newly acquired park will be a long-term process that will unfold over many years, this master plan will serve as a blueprint to guide the County in establishing the ultimate vision of Delco Woods as imagined by the community.

07. SUSTAINING OUR LEGACY: MAINTENANCE AND STEWARDSHIP AT DELCO WOODS

SUSTAINING OUR LEGACY: MAINTENANCE AND STEWARDSHIP AT DELCO WOODS

"The parks belong to the people...and the people must protect them as well as enjoy them." - Theodore Roosevelt

This chapter outlines the essential role of park maintenance and stewardship in preserving Delco Woods as both a forest and a vibrant community space. Effective management requires a combination of routine maintenance, ecological conservation, and long-term support. Below is a summary of key topics:

- Park Maintenance & Stewardship – Balancing upkeep of facilities with active land management to ensure ecological health.
- Operations & Management Plan – Strategies for routine maintenance, staffing, and resource allocation.
- Stewardship Priorities – Conservation of the forest, wetlands, and wildlife habitats to sustain biodiversity.
- Investment in Maintenance – Viewing upkeep as a long-term asset that enhances public health, economic value, and resilience.
- Challenges & Resource Needs – Addressing budget limitations, workforce requirements, and innovative funding solutions.
- Adaptive Management – Using data-driven strategies to respond to environmental changes and evolving park needs.
- Collaborative Partnerships – Engaging community-based organizations and volunteers in conservation efforts.
- Community Engagement – Encouraging stewardship through volunteer programs, education, and public participation.
- Sustaining Delco Woods – Financial strategies, projected costs, and revenue opportunities to support long-term care.

Park maintenance involves the upkeep of parks, facilities, and greenspaces managed by the Parks and Recreation Department staff. It is the backbone of any dynamic parks and recreation agency. Stewardship is the active process of engagement with the land to direct toward a desired state. Because natural processes in Pennsylvania have been, and continue to be, significantly altered by human activities, natural lands left to themselves will, in most cases, become degraded and dysfunctional. It is not good enough to leave natural lands alone. They need active stewardship.

To ensure effective park maintenance and stewardship, detailed plans have been developed to guide operations, management, and conservation efforts. The following appendices provide comprehensive recommendations, resources, and strategies to support these initiatives:

Appendix 5 — Park Maintenance Management Plan including:

- Operations and management plan
- Management impact statement
- Maps of park maintenance area
- Proposed programming
- Sample infographic to help make the case for investing in maintenance

Appendix 6 — Park Stewardship Plan including:

- Conservation priorities
- Stewardship issues and opportunities
- Best practices
- Staffing and volunteer considerations

A VITAL GREEN SPACE FOR COMMUNITY AND ENVIRONMENT

Maintaining and protecting Delco Woods is essential for both the health of our environment and the well-being of the communities that depend on it. As a sanctuary amid an urban landscape, the park offers a breath of fresh air—literally and figuratively. Its mature tree canopies, clear streams, and diverse ecosystems provide critical ecological services, such as air and water purification, soil conservation, flood prevention, and climate resilience. In this way, every dollar allocated to park maintenance is an investment that yields measurable returns: improved public health, increased property values, and enhanced quality of life for residents of all ages and backgrounds.

Stewardship for Parks refers to the responsible planning, management, and preservation of parks and natural spaces to ensure their long-term health, accessibility, and sustainability. It involves a commitment to protecting ecological integrity, enhancing recreational opportunities, and fostering community engagement. Effective stewardship includes conservation efforts, sustainable maintenance practices, resource management, and active participation from stakeholders, including local governments, organizations, and the public. The goal is to balance environmental protection with recreational use, ensuring that parks remain vibrant, resilient, and beneficial for present and future generations.

MAINTENANCE AS AN INVESTMENT, NOT A COST

Traditionally, park maintenance has been viewed as a recurring expense. However, this perspective overlooks the long-term benefits that a well-maintained park delivers. Investments in Delco Woods' upkeep—ranging from infrastructure improvements and specialized staffing to public-private partnerships—pay dividends by reducing future clean-up costs, preventing disaster recovery expenses, and fostering a resilient natural system. Well-maintained parks attract tourism, stimulate local economies, and create green jobs, thereby reinforcing the idea that maintenance is a strategic investment in the future rather than a short-term cost burden.

CHALLENGES AND RESOURCE NEEDS

Ensuring the sustained vitality of Delco Woods comes with challenges. The extensive responsibilities of

maintaining its mature tree canopies, water sources, and recreational amenities require significant financial commitment, highly trained personnel, and innovative partnerships. Budget constraints and resource limitations make creative, adaptive strategies a necessity. Yet it is precisely this challenge that underscores the need for comprehensive, forward-thinking maintenance practices—a system where investment in the park secures both environmental integrity and community health over the long term.

INTEGRATING STEWARDSHIP INTO PARK MANAGEMENT

Park maintenance addresses immediate physical needs like mowing, trash removal, and facility repairs. Stewardship actions make progress towards identified land management goals, if possible, within the limitations of available resources and site conditions. Both are essential to a well-managed park.

DEFINING STEWARDSHIP FOR DELCO WOODS

In this context, stewardship means focusing on the conservation of natural resources, safeguarding native biodiversity, and preserving our natural heritage for future generations. This continuous effort involves:

- Forest Stewardship — Maintaining a mosaic of forest ages — from young, maturing, to mature stands—to increase resiliency and habitat diversity. Active management, such as planting native understory trees and controlling invasive species, supports natural regeneration and forest succession.

- Wetland and Hydrology Management — Protecting water quality and maintaining stream integrity by preserving wetlands and riparian buffers—vegetated areas along waterways that help filter pollutants, reduce erosion, and support wildlife. This approach includes minimizing erosion, managing stormwater runoff, and promoting healthy stream channels to sustain aquatic life.

- Invasive Species Control — Addressing invasive plants and pests (e.g., spotted lanternfly, emerald ash borer, beech leaf disease) through early detection, targeted removal, and replacement with native species. This preserves the ecological balance and prevents the degradation of natural habitats.

- Wildlife Habitat and Ecosystem Health — Maintaining diverse habitats that support birds, bats, pollinators, amphibians, and other wildlife. Through habitat enhancements and monitoring, the park continues to serve as a refuge for local flora and fauna, even in the face of environmental pressures.

CONSERVATION PRIORITIES AND STRATEGIC MANAGEMENT

The first step in any stewardship approach is identifying key conservation priorities. For Delco Woods, these priorities include water quality, habitat integrity, and climate change resilience. Protecting forested riparian buffers is essential for maintaining water quality and reducing flood risks, while managing the deer population and controlling invasive species—non-native plants or animals that spread aggressively and disrupt ecosystems—are crucial for preserving the forest's natural structure and biodiversity.

The implementation of these strategies requires:

- Targeted Action Plans — Each component—whether forest health, wetland protection, or invasive species management—is guided by best management practices, continuous monitoring, and adaptive interventions.

- Monitoring — Detailed assessments of forest age classes, hydrological conditions, and species diversity inform ongoing management decisions. Regular monitoring helps detect early signs of ecological stress followed by timely and effective responses.

- Adaptive Management — As environmental conditions evolve, especially under pressure from climate change, stewardship practices must be flexible. Adaptive management

ensures that conservation strategies remain effective over time, with regular updates to action plans and conservation priorities.

COLLABORATIVE PARTNERSHIPS AND COMMUNITY ENGAGEMENT

THE POWER OF PARTNERSHIPS

Effective maintenance and stewardship at Delco Woods depend on strong, collaborative partnerships. County government, community organizations, private stakeholders, and academic institutions each play a crucial role in supporting the park's conservation efforts. By combining financial resources, expertise, and volunteer support, these partnerships make it possible to implement comprehensive programs that might not be feasible within existing budget limitations.

For example, strategic partnerships can unlock additional funding sources, support specialized training for park staff, and facilitate research projects that enhance understanding of the park's ecological dynamics. This collaborative model not only spreads the financial and operational load but also fosters a sense of shared ownership and community pride—a key element in sustaining long-term conservation efforts.

COMMUNITY STEWARDSHIP, VOLUNTEER PROGRAMS, AND PROFESSIONAL GUIDANCE

Engaging the local community is integral to the park's stewardship. Volunteer programs and a "Friends of the Park" group can provide essential support for routine maintenance tasks, invasive species control, habitat monitoring, and public education. These grassroots efforts complement professional management and help extend the reach of the park's conservation initiatives.

Community-based stewardship also serves as an educational platform. By involving residents in hands-on projects and training workshops, Delco Woods can transform into a living classroom where participants learn about native species, sustainable practices, and the critical importance of environmental stewardship. Such engagement not only deepens community bonds but also builds a constituency of informed citizens dedicated to the park's future.

Preparation of this master plan included on-site training for Delaware County Parks & Recreation Department staff, conducted by Natural Lands. Continuation of similar training can lend professional eyes to the park and provide new and adaptive land management techniques for staff, ensuring the long-term health of the forest and streams. Such training also allows staff to receive education in state-of-the-art land management techniques, which can be applied to the entire park system.

MONITORING, MANAGEMENT, AND FUTURE INVESTMENTS

THE IMPORTANCE OF CONTINUOUS MONITORING

Ongoing monitoring is a cornerstone of both maintenance and stewardship. Whether it is tracking the health of forest stands, measuring water quality in the streams and wetlands, or assessing the effectiveness of invasive species control, data-driven management is essential. Monitoring helps:

- Identify Trends — Regular surveys can reveal shifts in species composition, invasive plant encroachment, or the impacts of climate change.
- Evaluate Interventions — By assessing the outcomes of maintenance and stewardship actions, managers can refine their approaches to achieve better results.
- Guide Future Investments — Monitoring data provides a basis for informed decision-making, ensuring that financial and human resources are directed where they are needed most.

ADAPTIVE MANAGEMENT FOR A CHANGING ENVIRONMENT

Delco Woods, like many natural areas, faces the unpredictable challenges of climate change—rising temperatures, altered precipitation patterns, and increased storm intensity. Adaptive management

is a dynamic process that enables the Parks and Recreation Department and its partners to modify practices in response to environmental feedback. This includes:

- Adjusting Planting Strategies — Incorporating native species that are resilient to shifting climate zones and sourcing plant materials from regions that reflect future climatic conditions.

- Enhancing Structural Diversity — Maintaining a healthy mix of young and mature trees while promoting strong plant growth in the forest understory (the layer of vegetation beneath the trees). This helps protect against pests, disease, and extreme weather.

- Innovating Stormwater and Erosion Controls — Upgrading riparian buffers and implementing green infrastructure projects to ease the impacts of heavy rains and flooding.

LONG-TERM VISION AND INVESTMENTS

The maintenance and stewardship of Delco Woods represent a long-term commitment to sustaining the park for decades of use. Investments in physical infrastructure, such as improved trail systems and enhanced recreational facilities, must be coordinated with efforts to protect and restore natural ecosystems. These combined efforts will keep Delco Woods a resilient and vibrant destination for both nature and people.

The establishment of management units in the park—each with targeted conservation and maintenance objectives—enables a systematic approach to stewardship. From dense riparian buffers to mature forest areas and newly established meadows, each management unit is designed to maximize ecological benefits while welcoming public use. These units serve as models for resource allocation and facilitate focused interventions that collectively build Delco Woods' overall health.

SUSTAINING DELCO WOODS, AN INVESTMENT OVER TIME

The 213-acre site with about 173 acres of woodland and 40 acres of the former Don Guanella School campus is projected to cost about $200,000 annually for natural resource management, including trails after the forest is restored. The Delco Woods Park Master Plan also calls for a comprehensive forest restoration initiative as a Capital Improvement Program with an annual budget of approximately $45,000 over the next ten years. Once recreation facilities are developed over time in the community hub on the former school campus grounds, a projected maintenance estimate would be about $8,260 per acre of developed areas. Revenues could be raised from rentals, park programs, and environmental education, of about $50,000 to $100,000 to offset maintenance expenses.

A SHARED COMMITMENT TO THE FUTURE

Delco Woods stands as a testament to our collective responsibility—a place where the beauty of nature, the benefits of ecological services, and the promise of community well-being converge. Recognizing that maintenance and stewardship are strategic investments, our approach champions proactive, collaborative efforts that safeguard this irreplaceable resource.

By committing to ongoing maintenance, adaptive management, and community engagement, we honor the legacy of Delco Woods and ensure that it continues to flourish as a beacon of environmental and social resilience. Every investment, every partnership, and every volunteer hour contribute to a future where our park remains a sanctuary of biodiversity, an exciting hub for public recreation, and a living classroom for sustainable stewardship.

In embracing these principles, Delaware County affirms that the health of our natural environment is inseparable from the vitality of our communities—a legacy to be protected and nurtured today for the benefit of tomorrow's generations.



08. DELCO WOODS: A STRATEGIC FUNDING APPROACH

DELCO WOODS: A STRATEGIC FUNDING APPROACH

"Outdoor recreation contributed $13.64 billion to Pennsylvania's economy in 2022. Unlike economic development through other industries, outdoor recreation also stimulates physical health, mental well-being, social cohesion, and environmental sustainability." - U.S. Bureau of Economic Analysis.

This chapter of the park master plan outlines the costs associated with both capital improvements and ongoing operations. Given the County's financial constraints, a proactive strategy is essential to securing diverse funding sources while maintaining high standards in design, construction, and maintenance. The following are recommended:

- Leveraging a blend of public and private funding
- Assembling a specialized team of grant experts and lobbyists to help secure funding
- Establishing a Friends/Affinity group and/or a parks conservancy to stretch available funding
- Expanding collaboration through partnerships, sponsorships, donations, gifts, bequests, and private fundraising initiatives.

This multi-faceted approach aims to provide a sustainable financial foundation for Delco Woods, ensuring its successful development and long-term vitality.

As Delaware County's parks, recreation, and trail system continues to evolve and increase in visitation, with 16 parks and five miles of trails, the addition of a new county park presents an exciting opportunity. However, successfully developing and maintaining Delco Woods requires careful financial planning to cover both capital improvements and ongoing operational costs. A well-rounded funding strategy that includes both public and private support is essential. This section of the park master plan outlines various approaches to securing funding for the park's creation and long-term upkeep, ensuring it becomes a seamless part of the county's thriving recreational network. Investing in parks, recreation, and trails not only enhances quality of life but also drives economic growth while providing environmental, social, and health benefits.

Parks rely on two primary forms of funding: capital and operating. Capital funds facilitate the creation and implementation of park enhancements, encompassing design, engineering, and construction. Presently, the most advantageous federal and state capital funding for parks and recreation, centers on forestry, justice, environmental protection, and even the military. Although federal funding is now in flux, recent federal programs have even included program and workforce development funds. On the other hand, operational funding is generated though a mix of public and private funding leveraged through the county's support for the continual maintenance and programming of the park. Operational funds support park operation and maintenance aligning with community expectations by offering a welcoming, clean, and safe experience. Nationally, communities are increasingly exploring alternative financial models like earned revenue, private fundraising, philanthropy, and sponsorship to bridge funding gaps.

ESTIMATED CAPITAL COSTS

As a master plan, **"Construction Costs"** provide a rough estimate based on 2023/24 cost figures, with the understanding that these costs will increase over time. **"Total Project Cost"** encompasses expenses beyond construction, including design, engineering, and permitting fees. It also accounts for project management and legal costs associated with overseeing governance and contract negotiations.

Additionally, fundraising expenses may be required to support project development.

The total park development cost is projected at $40 million to $50 million as shown in Table 4. Securing this level of funding may take a decade or longer. As with any large-scale park, development is phased. The phases include Early Implementation, Site Readiness, and Park Development Phases 1, 2, and 3 as shown in Table 4.

Table 4. Delco Woods Capital Cost Estimates

Project	Cost Estimate
Early Action Items - Tree Safety Study and Trail markings and signage, Woodland Loop Trail, building security, park stormwater management plan, memorandum of understanding (MOU) with BMX group	Tree Safety Study $0, tree safety measures, and trail signage Woodland Loop Trail - $1 million Building Security – TBD Stormwater Management Plan - $100,000 – 150,000 BMX MOU – Staff Time
Module A - Community Recreation Hub: great lawn gathering and event area, sports courts, playground, pavilions, restrooms, and teen area, green infrastructure	$20 million - $25 million
Module B - Meadows, community gardens, trails, natural play area; water feature with flatwater fishing area	$10 million - $15 million
Module C - Multistory Celebration Pavilion with restrooms, catering space, seating, tree canopy walk	$10 million - $15 million
Total Estimated Cost	$40 million - $50 million
Site Preparation, Vacant Building Demolition, Hazard Tree Removal, Trail Markings and Signage, Building Security, Stormwater Management Plan, Parking, and Site Remediation	TBD

BUDGET ESTIMATE BASIS: PRECEDENT PROJECTS

The range of costs for establishing the budget estimate for the master plan is based on the design team's review and analysis of similar caliber parks. The selected projects while not all natural and large preservation-oriented parks, are all inspirational and just plain cool spaces that are transformational and high-caliber designed public spaces offering a variety of experiences like those to be implemented at Don Guanella.

At this stage of the park design process, detailed cost estimates are not possible as many of the key elements of the park still need to be better defined and quantified. There are numerous variables that can affect the overall costs of the park, including the site's existing condition, its location, sources to be protected and preserved, and other factors. Some items can vary considerably in size, type, materials, configuration, and other aspects that affect their cost.

The budget estimate assumes that the site is clean and ready for construction. Demolition of existing

structures and potentially necessary remediation for potential contaminants have not been included.

As outlined by the Association of Advancement of Cost Engineering (AACE), there are 5 estimating classes that align with the design and development process. Since the master plan estimate would be defined as a class 5 estimate having an accuracy range of -20% to +50%, it is recommended that schematic design be completed as early as possible to quantify the project parameters and establish an overall budget for the project.

	Primary Characteristic	*Secondary Characteristic*		
ESTIMATE CLASS	**MATURITY LEVEL OF PROJECT DEFINITION DELIVERABLES** Expressed as % of complete definition	**END USAGE** Typical purpose of estimate	**METHODOLOGY** Typical estimating method	**EXPECTED ACCURACY RANGE** Typical variation in low and high ranges at an 80% confidence interval
Class 5	0% to 2%	Functional area, or concept screening	SF or m^2 factoring, parametric models, judgment, or analogy	L: -20% to -30% H: +30% to +50%
Class 4	1% to 15%	or Schematic design or concept study	Parametric models, assembly driven models	L: -10% to -20% H: +20% to +30%
Class 3	10% to 40%	Design development, budget authorization, feasibility	Semi-detailed unit costs with assembly level line items	L: -5% to -15% H: +10% to +20%
Class 2	30% to 75%	Control or bid/tender, semi-detailed	Detailed unit cost with forced detailed take-off	L: -5% to -10% H: +5% to +15%
Class 1	65% to 100%	Check estimate or pre bid/tender, change order	Detailed unit cost with detailed take-off	L: -3% to -5% H: +3% to +10%

Table 1 – Cost Estimate Classification Matrix for Building and General Construction Industries

Governors Island

New York City Harbor
Precedent Project 1

Acreage: 87 Acres developed
Costs: 130 MM,
Cost/Ac.: 1.5 MM

Project Overview

Governors Island is a 172-acre island in the heart of New York Harbor. Just minutes from Lower Manhattan and the Brooklyn waterfront by ferry, the Island is a popular and unique destination with an award-winning park complemented by dozens of historic buildings, year-round educational and cultural facilities, a rich arts and culture program and 22-acre National Monument managed by the National Park Service.

Public spaces encompass 87 acres that were developed in two phases. Phase 1 Park and Public Space of 33 acres and phase 2 The Hills of 40 acres.





Source: West 8 urban design & landscape architecture p.c., The Hills | Governors Island (en-US) (govisland.com), Governors Island Park and Public Space Masterplan - West 8

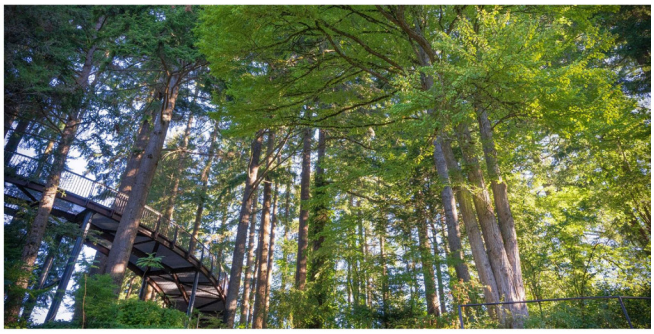
Leach Botanical Garden

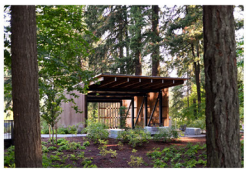
Portland, OR
Precedent Project 2

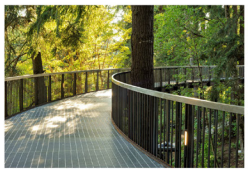
Acreage: 17.35
Costs: 12.6 MM
Cost/Ac.: 0.72 MM

Project Overview

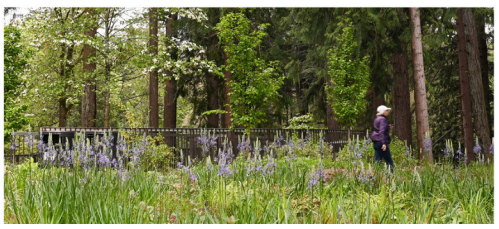
Leach Botanical Garden is a unique urban gem offering a place to explore and enjoy nature in outer Southeast Portland. The garden is situated on a free-flowing creek and features an aerial tree walk, a four-season pollinator garden, a variety of unique collections, including ferns, camellias, and spring ephemerals, meandering pathways, and many plants native to the Pacific Northwest. Leach Botanical Garden is committed to providing positive experiences to the diverse community upon which it relies for support.











Source: https://www.portland.gov/parks/leach-botanical-garden + https://www.landmorphology.com/leach-botanical-garden + https://www.portland.gov/parks/news/2021/4/16/ppr-and-leach-botanical-garden-announce-completion-extensive-improvements

Arkins Park and Promenade

Denver, CO
Precedent Project 3

Acreage: 6.6
Costs: 8 MM
Cost/Ac.: 1.25 MM

Project Overview

The Arkins Promenade project transforms an existing industrial backroad along the river into a key part of a mile-long riverfront pedestrian corridor that includes walking and bicycle access, gathering and play areas, overlooks and seating areas. The Promenade will complement adjacent mixed-use development, providing outdoor areas with trees, planting areas, shade and stormwater management that improves water quality in the river. The project will create an important connection between the growing Five Points neighborhood and other surrounding communities such as Globeville, Elyria-Swansea, and the South Platte River Trail which connects to neighborhoods farther away.



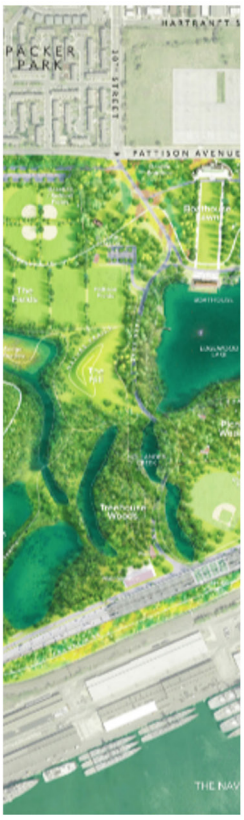




Source: Denver Parks Dept., https:https://www.aslacolorado.org/award/arkins-park-and-promenade/ + https://www.denvergov.org/files/assets/public/v/1/elevate-denver/documents/elevatedenver_arkinspromenade_052021.pdf +

FDR Park

Philadelphia, PA
Precedent Project 4





Acreage: 348
Costs: Projected upwards of 250MM
Cost/Ac.: 0.72 MM

Project Overview

FDR Park is the largest park in South Philadelphia. Today, people come from all over the region to picnic, play, and relax at what longtime park-goers call "The Lakes."

As the only park in Philly designed by the Olmsted Brothers, the sons of Frederick Law Olmsted, FDR Park is currently implementing a decades-long Park Plan – reimagining the historic park to serve 21st century Philadelphians.

The FDR Park Plan is a partnership of Philadelphia Parks & Recreation and Fairmount Park Conservancy, benefiting millions of annual users of this historic park. The plan sets a vision for FDR Park that balances nature, water, and human activity into a world-class public space.

Source: https://myphillypark.org/explore/parks/fdr-park/faqs/

Central Green

Philadelphia Navy Yard, Philadelphia, PA
Precedent Project 5









Acreage: 4
Costs: 9.6 MM
Cost/Ac.: 1.92 MM

Project Overview

Central Green is a five-acre park that offers a progressive mix of recreation, culture, serenity and fitness amenities.

The site was historically marked by wetlands, meadows, and bird habitat and is growing into Philadelphia's most innovative and progressive corporate neighborhood. The design unites the cutting edge urban potential of the site with its native habitat, resulting in a new type of environment that is sustainable, green, and natural as well as social, active, and urban. A 20-ft wide Social Track organizes the site's circulation and frames a unique, immersive interior park featuring flowering meadows, a hammock grove, an outdoor amphitheater, bocce courts, and fitness stations.

Source: https://navyyard.org/visit/parks/ +https://urbannext.net/navy-yards-central-green/+ https://whyy.org/articles/central-green-gives-navy-yard-creative-commons

ChesLen Preserve

Coatesville, PA
Precedent Project 6

Acreage: 1,282
Costs: 5 MM (management/parking area improvements)

Project Overview

ChesLen Preserve is the largest privately owned nature preserve open to the public in Chester County. Miles of marked hiking trails lead visitors through shady woodlands, flower-filled meadows, farm fields, and stream valleys.

Visitors can also explore Ollie Owl's Nature Play Ground, where young explorers can climb logs, build stick tee-pees, hunt for bugs, explore small streams, and get a little dirty, tired, and inspired. Free play is encouraged and is a great way for kids to gain an appreciation for nature.

Source: https://natlands.org/cheslen-preserve/





Haverford Reserve

Haverford Township Delaware County
Precedent Project 7

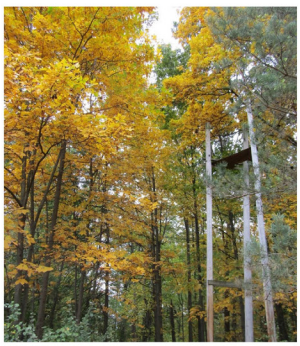
Acreage: 45 active community recreation
Costs: 19.6 MM (2010 – 2020)
Cost/Ac.: Multiple overlapping projects, could not be determined

Project Overview

The park consists of 169 total acres of which 124 acres were preserved as open space, and 45 acres developed to included a recreation center and other active recreation amenities. The property originally included 23 buildings and a coal power plant, was the largest remaining open tract along Darby Creek which fed the Delaware Bay Estuary. The township purchased the property from the Commonwealth of Pennsylvania and preserved over 80% of the land which included old growth forests, steep slopes, wetlands and first order streams. In June of 2012 the Community Recreation and Environmental Center (CREC) opened. The CREC was constructed on a brown-field, where the state hospital's coal burning facility once stood. The building is LEED Gold Certified and is powered by 40 geothermal wells.

Source: Haverford Township + DCNR Green Project Award Sheet







CAPITAL FUNDING

Securing the capital for this project will likely take at least a decade. According to the National Recreation and Park Association, the strategy relies on maximizing public investment by leveraging it with outside grants and private donations. Delaware County has shown remarkable commitment and foresight by acquiring the site. The county's investment in the acquisition and master planning for Delco Woods are important signals to foundations, corporations, and individuals of the park's priority to the County. Ways to leverage the strong county commitment with private sources include the use of Hotel Tax funds with increase from 3% to 5%, a potential voter referendum to secure a bond for park development; an organized strategy to secure state and federal funding with outside expertise; and extension of the Hotel Tax from three to five percent. Beyond day-to-day operations, park and recreation agencies nationwide have a median of $12 million in capital expenditures budgeted for the next five years. Not surprisingly, the larger the agency, the larger its five-year capital budget. The typical park and recreation agency serving a population of less than 20,000 has a median five-year capital budget of $1.81 million. Five-year capital budgets increase greatly as the population served increases to nearly $49 million at agencies in areas with more than 250,000 residents.[1] The 2025-2029 Delaware County Capital Improvement Program budget is $5,358,800. The County received a PA DCNR grant for improvements to Rose Tree Park, Upland Park, and New County Park at the former Little Flower Manor. The County also received grants for the Media-Smedley Connector Trail and the Chester Creek Trail. Beyond $250,000 for Delco Woods in 2024, no capital funds are proposed for park improvements. Another source of funds for capital improvements may be in the Hotel Tax allocation since the proposed improvements including early implementation will spur tourism for outdoor recreation.

[1] National Recreation & Park Association. (2024) 2023 NRPA Agency Performance Review. P. 24. 2023-agency-performance-review.pdf (nrpa.org). Accessed October 27, 2025.

OPERATING BUDGET

Operational funding covers ongoing maintenance and programming of the park.

> During the public engagement phase for the park master plan, residents emphasized the importance of a well-maintained, secure, and scenic park environment.

To fulfill Delaware County's commitment to delivering economic, environmental, and social advantages for its residents, the site necessitates an elevated level of service. Both the expansive forested area and the planned iconic facilities within this significant park demand specialized care. Meeting these standards calls for new funding sources and partnerships to support maintenance, programming, and operations.

Currently, the operating budget for parks and recreation is **0.6**% of the County's operating budget. PA DCNR recommends **5**% of jurisdiction's operating budget. Phasing in increases over time is needed to support parks in the way envisioned by the County and the public. As the County's **Return on Environment** publication shows, the parks and recreation budget is an investment rather than a cost, an important economic engine with social, health, and environmental benefits. A budget increase phased in over time to reach the 5% of the County operating budget or the per capita benchmark will enable the Department to secure additional staffing that could generate a higher level of nontax resources which mainly come from programming, partnerships, sponsorships, grants, gifts, and donations. None of these is possible with the current staffing levels. The primary nontax revenue streams will stem from pavilion rentals, program fees, charges for special events, partnerships, and sponsorships.

Additionally, grants, gifts, and bequests are considered as sources of philanthropic funding. Establishing a Parks Conservancy could aid in devising a continuous fundraising strategy, potentially including an endowment for Delco Woods or specific sections like the pavilion. An initial capital campaign might focus on developing a sustainable operational approach. In addition to revenue generating programs, it is crucial to consider supporting programs that may not yield revenue but rather provide valuable community benefits, aid those facing financial challenges, and preserve natural resources for future generations. The allocation of operational funding will evolve as park enhancements are phased in. Ideally, as operational expenses increase, so will the revenues, assisting in offsetting these costs.

Delaware County prudently manages its financial resources. Meeting the necessary resource levels for Delco Woods will necessitate collaborative partnerships with organizations to establish non-tax revenue sources. This could involve implementing fee-based programs, rentals, partnerships, sponsorships, donations, gifts, bequests, and other revenue-generating initiatives aimed at offsetting park operating costs.

Table 5, which follows, presents the Delaware County Parks and Recreation Department budget. The County provides additional support through the Planning Department, Facilities Management, Public Works, and employee benefits. These expenditures are not tracked but would undoubtedly add to the County's level of investment in parks and recreation.

Table 5. Delaware County Parks & Recreation Department Budget 2021 - 2025

	Actual			Budget	
	2021	**2022**	**2023**	**2024**	**2025**
Revenues	264,839	251,470	308,648	352,469.00	
Wages & Salaries	777,972	872,265	1,050,225	999,774.00	1,025,824.00
Overtime	32,552	48,740	34,251	48,673.00	40,000.00
Travel	904	875	1,529	2,069.00	2,250.00
Office Supplies	505	892	922	1,512.00	1,200.00
Other Services	735,746	773,018	837,429	694,846.00	871,200.00
General Fund	1,547,679	1,695,789	1,924,356	1,746,873.00	2,091,798.00
Net Cost to County	1,282,840	1,444,319	1,615,708	1,394,404.00	
Full Time Positions		21	24	20	19

FUNDING COMPARISONS

Comparisons, in and of themselves, are not inherently positive or negative.

- **Budget Ratio** – The Parks & Recreation Department budget of $2,093,874 is 0.6% of the County's operating budget. According to the National Recreation & Park Association Park (NRPA) Metrics report for 2023[2], a typical parks and recreation agency has an operating budget of about $5.5 million.

- **Per Capita** – The County invests $3.63 per capita in parks and recreation. The NRPA found a typical parks and recreation agency has an operating budget of $41.67 per capita for an organization the size of Delaware County, which approximates Pennsylvania's per capita operating investment[3].

- **Cost Recovery** – The Parks and Recreation Department recovers about 11% of its budget through fees and charges, largely from Clayton Park Golf Course. The national average is 22%. Nationally, park agencies serving a population this size would generate about $6.66 per capita in nontax revenues[4].

  Delaware County has a long tradition of offering all parks and recreation services for free. A Program Coordinator would be needed to enhance programming income.

- **Maintenance** – The Parks & Recreation Department has been maintaining 632 acres of parkland with a budget of about $1,524,906. This is a per acre cost of $2,413 per acre in contrast to the national median of $3,970 per acre[5]. In addition, the Department removes trash assembled by volunteers, coordinates with groups using the park, and conducts visual inspections of the site.

[2] Ibid. P. 18.
[3] Ibid, p.19.
[4] Ibid, p.19
[5] Ibid, p. 19.

OPERATION & MANAGEMENT FUNDING

Delco Woods is expected to draw a high volume of visitors, with peak usage from April through October and steady activity during the off-season months of November through March, reflecting current site trends. While the Master Plan emphasizes the use of high-quality, durable materials in park construction, the heavy use will place strain on the landscape. To mitigate this impact, a well-planned and comprehensive maintenance program will be essential.

The maintenance program will need to respond to the diversity of landscape types that comprise the Forest and Community Recreation Hub areas as well as the myriads of programs that enliven the Park. Although much of the park will be comprised of natural landscapes, it should not be perceived that these areas are maintenance free. The forest and stream suffer from decades of neglect and restoration is advised during the early stages of park development, to create a healthy natural legacy for generations to come.

PROPOSED OPERATING BUDGET FOR DELCO WOODS

The immediate goal should be to maintain this park consistent with the other county parks which is $2,413 per acre for an annual cost of $513,969 rounded to $514,000. This is in 2023 dollars with costs expected to increase annually.

Table 6. Proposed Operating Budget for Delco Woods	
Two Maintenance Workers with knowledge or capacity to develop skills with the proper training in natural resource management*	$200,000
Park Program Coordinator*	100,000
Park Ambassadors – seasonal part-time staff to provide presence in park and visitor services	$145,000
Supplies, Materials, Promotion at $6/per staff hour	$42,000
Training	$15,000
Contingency	$12,000
	$514,000.00
Capital Equipment	
Major Equipment Purchase: Gator, Trucks, and Minor Equipment, such as chain saws and other tools, such as tablets	$300,000 – 400,000
Revenues – Goals reflect County support and outside revenues consistent with benchmark findings.	
Initial nontax revenues from program, fees, charges, sponsorships, partnerships etc. as conservative estimate	$50,000
**Salary and benefits*	

PARKS, RECREATION, OPEN SPACE, AND TRAILS: AN INVESTMENT

The Delaware Regional Planning Commission's (DVRPC) recent publication, **Return on Environment: The Economic Impact of Open Space in Delaware County, Pennsylvania**, highlights the economic, social, environmental and health benefits of county parks. The case study on this property demonstrates the economic impact of Delaware County's open spaces is $52 million annually.

Through the ingenuity, passion, and dedication of all the partners and key stakeholders involved, Delco Woods is on the path to achieving its rightful place as a signature park of Delaware County.

STRENGTHS OF THE PARK'S OPERATION, MANAGEMENT, AND PROGRAMMING:

- Physical area – 213 acres with the largest forest in the region.
- The value of parks as an investment, **not a cost**, has been documented and published by DVRPC.
- A sanctuary for populations of resident and migratory wildlife
- Recreation, solitude, and education for all County residents.
- Strong public support for the establishment of the park.
- Volunteers are already rising to participate in park projects.
- Strong collaboration between the Public Relations Department and the Parks & Recreation Department. The resulting public engagement proved a powerful tool in generating public awareness and involvement.

CHALLENGES NOTED BY KEY STAKEHOLDERS AND THE PLANNING TEAM:

- Limited staff and budget resources in Parks and Recreation Department.
- The short-term cost of installing lasting, high-quality park features necessary to achieve the economic, environmental, and social benefits this park could offer.
- Park responsibilities extend across six departments, bringing organizational challenges. Lack of on-site park staff.
- Park usage by outside groups for the ballfields and BMX (Bicycle Motor Cross) require formal MOUs (Memorandum of Agreement).
- Access by non-motorized transit is difficult and improvements in trail connections are needed.
- Lower engagement and recognition by residents farther away from the park, especially in the disadvantaged communities.
- Lack of workload cost tracking to produce information for planning, allocation of resources and decision-making.
- Park programming is limited to special events, further challenged by lack of programming staff.

OPPORTUNITIES

- Build on high level of public support to launch a PR campaign around "Making the Case" for parks and recreation, specifically Delco Woods. Highlight the park in its role in mitigating climate change.
- Showcase Delco Woods as a tourism and economic development driver. Tapping the resources available at the state and federal levels for funding around climate change mitigation and serving under-represented populations.
- Increase park programing to generate park visitation countywide, including from underserved populations.
- Fundraise around signature features such as the iconic pavilion and tree canopy walk.
- Generate cost tracking data to justify funding requests.

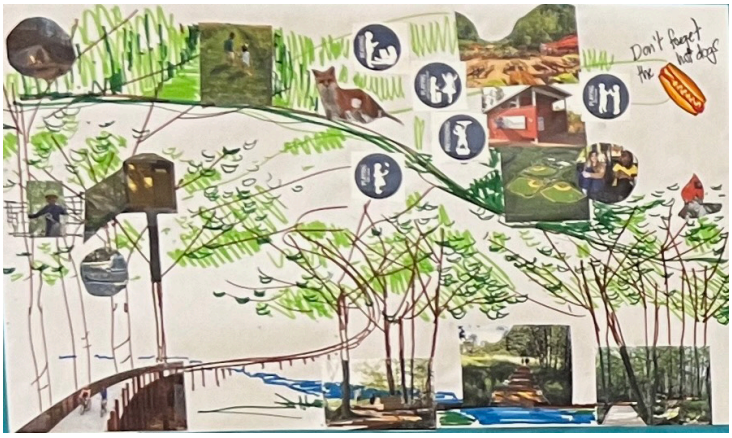
- Increase revenue through the addition of programs, services, events, and partnerships if staffing can include a recreation program coordinator.
- Extend public transit improvements to the park and more trail connections.
- Identify underserved "pockets" of the County and engage more people in park visitation.
- Develop a promotional plan for the park to increase public awareness and park visitation.

CONCLUSION

This chapter of the park master plan focuses on securing diverse funding sources while maintaining high standards in design, construction, and maintenance. It emphasizes the importance of expanding collaboration through partnerships, sponsorships, donations, gifts, bequests, and private fundraising initiatives. This multi-faceted approach aims to provide a sustainable financial foundation for Delco Woods, ensuring its successful development and long-term vitality.



Planning for the Future



Park visions drawn by future park visitors

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01. COMMUNITY ENGAGEMENT IN SHAPING THE MASTER PLAN

"Every great dream begins with a dreamer. Always remember, you have within you the strength, the patience, and the passion to reach for the stars to change the world." - Harriet Tubman

A park designed for the community must be shaped by the community. The planning process for Delco Woods was built on a foundation of extensive civic engagement, ensuring that residents from across Delaware County had a voice in shaping the vision for the county's largest park. With over 25,214 public interactions, the response was overwhelmingly supportive of conservation, recreation, and inclusive park development.

Key Takeaways from Community Engagement:

- **Strong Public Support –** Residents across the County backed the development of Delco Woods.
- **Extensive Outreach –** Engagement efforts included a Park Master Plan Advisory Committee, focus groups, interviews, public meetings, surveys, pop-up events, and digital outreach.
- **Diverse Participation –** Residents of all backgrounds contributed, with a committee reflecting Delaware County's demographics and a range of public input opportunities.
- **Survey Insights –** A total 4,977 from two surveys identified priorities such as forest conservation, trails, and recreation hubs.
- **Safety and Maintenance Matter –** Cleanliness and security were top concerns, with residents prioritizing maintenance funding.
- **Need for Continued Engagement –** Ongoing community involvement will help sustain support and ensure the park remains welcoming and inclusive.
- **Early Action is Key –** Visible improvements and effective promotion of park updates will maintain momentum and community enthusiasm.

PUBLIC SUPPORT FOR DELCO WOODS IS EVIDENT

The foundation of this park master plan was rooted in engaging the community countywide from Aldan to Yeadon and all 47 municipalities in between. With 25,214 interactions were initiated with the public. In general, there seems to be substantial backing from the public for Delco Woods. The County Council was greeted with applause and jubilation for their foresight and efforts in safeguarding the 213 acres of land on the former Don Guanella School site for conservation and outdoor activities.

The County Council issued a directive advocating for active participation from residents across Delaware County to shape the future of our largest county park in this park master plan. To achieve this, a welcoming and inclusive countywide outreach process brought together residents from all communities through the following 11 elements:

- Park Master Plan Advisory Committee
- Focus Groups
- Interviews
- Public Meetings
- Pop-Up Events
- Community Surveys
- Delaware County Newsletter, Website, Zencity, and Social Media. The County created a website via Zencity, an online public engagement tool, to host information about the Delco Woods Master Plan that has since expired.
- Two Videos
- Park Naming Contest

In addition, the Office of Sustainability created a Core Advisory Committee of 21 Delaware County departments or unit directors and managers and the consulting team. The Committee met for six months to coordinate interdepartmental or organizational efforts related to Delco Woods. The Committee provided information and ideas, produced the new county park logo, and supported mapping and trail marking in the park. The Planning Department coordinated community engagement for this project. The consulting team also met with representatives of county departments within the Office of Sustainability to discuss park master plan. A work session with County Council on plan findings and recommendations helped to validate items to address in the master plan.

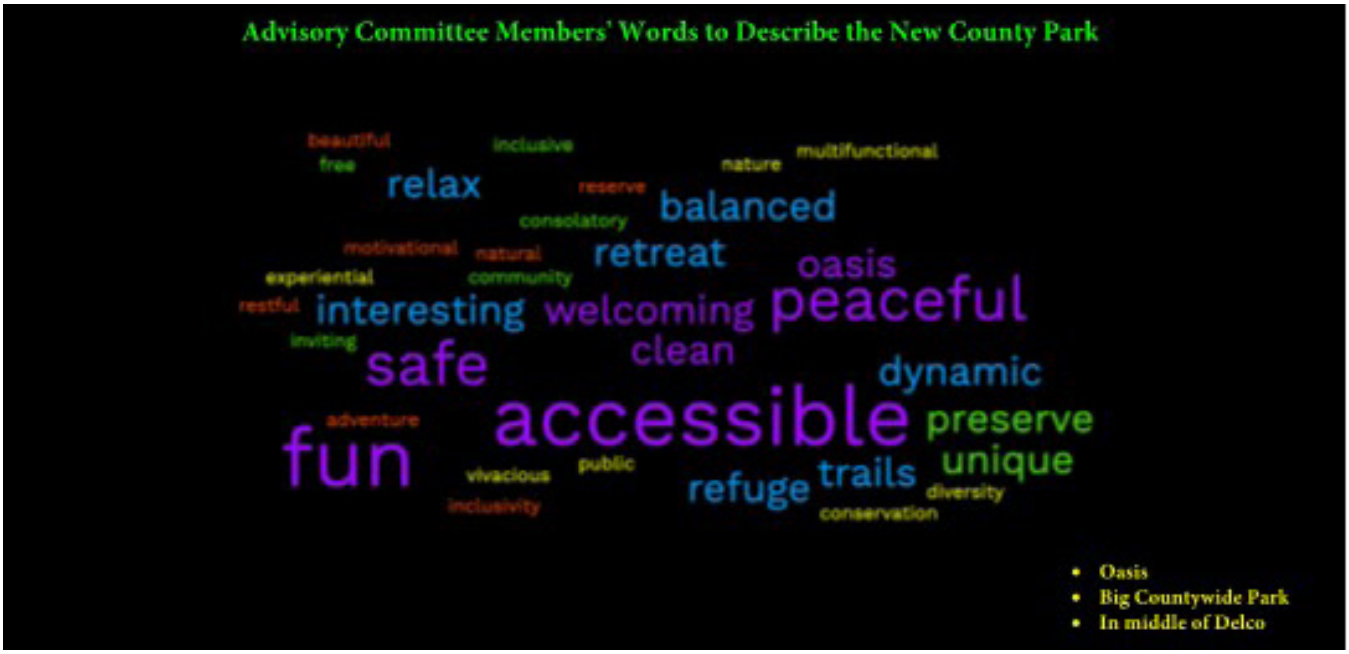
PARK MASTER PLAN ADVISORY COMMITTEE

In an extensive and purposeful outreach initiative, 330 residents from 40 out of 49 municipalities applied to join the Advisory Committee. The primary objective was to assemble a diverse panel that authentically mirrored the demographics of Delaware County. This encompassed individuals of varied ages, interests, races, cultures, geographical locations, occupations, and levels of experience in committee work or planning, including those entirely new to such roles.



Advisory Committee in action

Following an application and interview procedure, the consulting team meticulously selected 15 members who were then warmly welcomed onto the committee. From the initial workshop with a hike in the park to the subsequent public gatherings and draft stages, the Park Master Plan Advisory Committee collaborated closely with the consulting team throughout the planning process. They generously contributed insights, actively participated in vibrant discussions, and acted as representatives attuned to the pulse of the community. As the process moved forward a group of teens joined in the park planning activities. Notably, one member who was a professional filmmaker took the initiative to produce a video capturing the sentiments expressed by participants during an Open House event discussing the new park.



FOCUS GROUPS

The focus groups served as a valuable platform for fostering community engagement, gathering diverse perspectives, and ensuring that the park master plan would reflect the needs and desires of the community. The primary purpose of the focus groups was to engage participants in discussions and activities related to the development or enhancement of a park master plan. Two other focus groups were planned with the Delaware County COG (Council of Governments) and Marple Civic Youth, but alternative methods were used. The focus groups included:

- Save Marple Greenspace
- Delaware County Women's Commission
- BMX Groups
- Delaware County Parks and Recreation Board
- Delaware County Trail Alliance representatives
- Marple Township Commissioners in a public forum
- Cardinal O'Hara staff



On-site BMX focus group



Marple Civic Youth

INTERVIEWS

The Delaware County Planning Department, the Parks & Recreation Department, and the Advisory Committee recommended organizations and individuals to interview for the Delco Woods Master Plan. In total, approximately 55 interviews were conducted, in addition to informal intercept interviews with businesses, park visitors, and others throughout the planning process. Interviews included the following:

Marple Township Manager, Park Police, EMTs, Delaware County Conservation District, Delaware County Solicitor, Community Engagement Specialist, BMX Group manager and volunteers, Chester Community Center Director, Public Relations Department, DEI Manager, Marple Civic Youth President, Upper Darby Summer Stage Director, Special Needs Family, University Professors in Design, Construction and Park Partnerships, Delaware County Commerce Center Director and Deputy, Delaware County Visitors Bureau, State-elected officials, Cardinal O'Hara Principal and staff, USFS (Untied States Forest Service) staff, Rochambeau Heritage Trail National Park Service representative, Glen Providence and Smedley Park Friends Group Presidents, Video producers, KCBA Architects, Delaware County Foundation, Save Marple Woods representatives, Office of Employment and Training, Black Girls with Green Thumbs, Delaware County Drug & Alcohol Commission.

PUBLIC MEETINGS

The turnout for two public meetings for Delco Woods echoed significant public support for moving forward with creating Delaware County's newest and largest park. About 500 people participated in the Open House at Cardinal O'Hara High School. The Open House yielded many ideas and insights for the park. County Council hosted the second public meeting that focused on plan recommendations. A total of 120 participants voiced their support for the plan and its recommendations.



Residents contributing their ideas during the Open House

POP-UP EVENTS

Three pop-up events were held to capture ideas from residents when they were close-to-home. The consulting team participated in Upper Darby's International Festival, one of the largest festivals in the County attended by an estimated 12,000 people. The Planning Department, with support from Plan Advisory Committee members, held two pop-up events, one in the City of Chester and one in Upper Darby Township reaching about 30 people. The Pop-Up events were very important in reaching residents who do not usually participate in public meetings or surveys. The Planning Department Team captured important information for the plan's guiding principle of making the park welcoming and inclusive.

FOCUS GROUPS

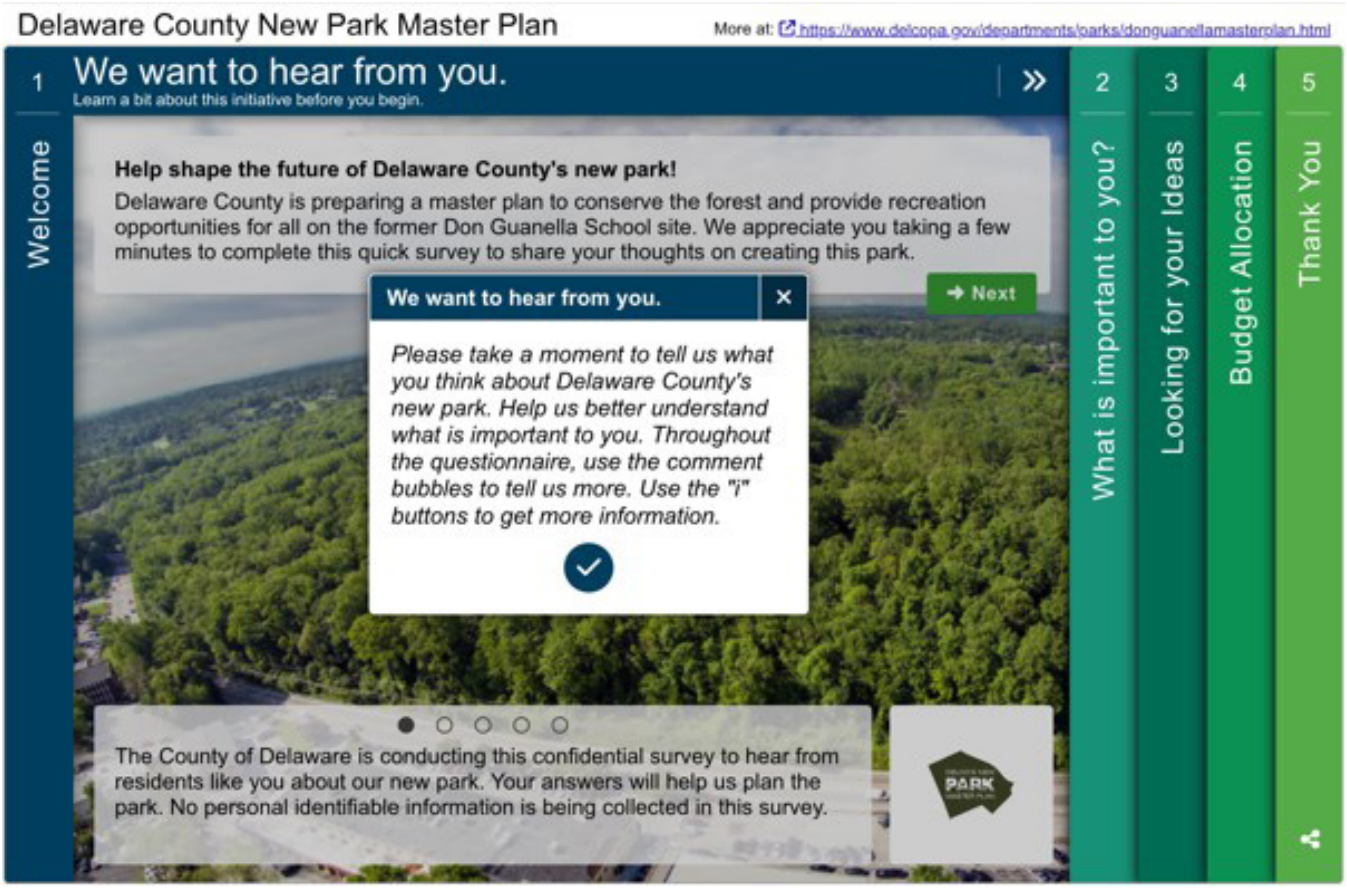
The consulting team conducted seven focus groups to engage stakeholders with special interests in the master plan for the new county park.

- Delaware County Trail Alliance – 8 participants
- BMX Organization – 5 participants
- Marple Youth – 18 participants
- Save Marple Woods – 5 participants
- Hike with Trail Users – 68 participants, 56 more turned out than the expected 12 participants
- Upper Darby Township Parks and Recreation advisory group – 10 participants
- Marple Township Board of Commissioners – 12 participants

COMMUNITY SURVEYS

Information collected in the civic engagement process informed the development of two interactive public opinion surveys. Incorporating a strong base of information, the surveys were detailed in asking specific questions unique to Delaware County and Delco Woods. A total of 4,977 residents responded to two public opinion surveys for the park master plan. The first survey generated 3,996 responses with ideas and concerns from the residents for planning Delco Woods from the residents. The second survey, with 981 responses, focused on the park's design and recommendations.

In the first survey, respondents indicated that they'd most like to experience connecting with nature, exercise and fitness, and play and fun in Delco Woods. They preferred having a balance of forest conservation and recreation. They anticipate visiting the park frequently and staying about an hour or two. Programs were important to the respondents with nature, special events and health and fitness being most preferred. When asked how they'd spend



Interactive public opinion surveys generated 4,000 responses

$100 on Delco Woods, their priorities were trail, conservation of the forest, and park maintenance.

SURVEY FINDINGS

Since the survey questions were specific and based on the outreach generated for the project, the consulting team used the outreach and survey findings as guidance to create the draft park master plan. When the draft master plan was formulated, the consultants administered a second survey to gauge public opinion on the proposed plan and recommendations.

Using a five-star rating scale commonly used in gauging public opinion, 83% of the respondents gave the master plan four or five stars, rating the master plan good to excellent.

About seventy-five percent of the respondents gave the park master plan four (28%) or five (46%) stars while only 12% rated the master plan one or two stars. The most positive responses were for the conservation of the forest. Respondents were in favor of improving the forest with woodland restoration, trails, tree canopy walk, nature play area, making the park welcoming for all, and public and non-motorized access to the park. They were also in favor of creating the Community Recreation hub with the Celebration Pavilion, a great lawn, game courts, support facilities, and a community recreation center while 82% were in favor of keeping the two-acre BMX Trail.

SAFETY AND MAINTENANCE: CRITICALLY IMPORTANT

The survey findings in both surveys verify the importance of park safety and maintenance to the public. When asked how they would spend their money on Delco Woods, the respondents chose Park Maintenance as the third highest priority out of ten choices to improve the park. This is a notable finding as maintenance is generally regarded as "a given," an expected government service. The top reasons cited that would keep residents from using the park were lack of cleanliness and park safety with 79% in the first survey indicating if the park is perceived as unsafe or unclean, they will not use the park.

DELAWARE COUNTY OUTREACH

The Delaware County Public Relations Department is responsible for all county outreach to the residents. The Department used a multipronged approach including the newsletter, website, and social media. The professionals in this department coordinated and advanced most of the public outreach for the park master plan. Their work was instrumental in generating the significant involvement of the public in every part of the civic engagement process. The newsletter had about 5,500 views while social media and website analytics were not available. In addition to the outreach of county departments, other organizations such as the Delaware County Foundation, municipalities, libraries, and general citizens promoted the surveys and public meetings. The Delaware County Times regularly covered the planning process while the television networks covered major meetings.

The Planning Department and the Parks & Recreation Department worked on the promotion of the surveys, public meetings, and pop-up events. The Office of Sustainability launched Zencity, an online civic engagement platform, in 2023. The Planning Department created a page within Zencity for Delco Woods as a county project. The IT (Information Technology) Department provided all support for online engagement and the analytics for tracking online public touchpoints. Combined 25,214 interactions with the community provided guidance for the development of the Delco Woods Concept Plan.

VIDEOS

Two videos highlighted the park master planning process and zeroed in on public involvement, its importance, and how Delaware County takes public opinion to heart. The first video was generously produced pro bono by Mark Gambol/MG Pictures, ltd., and Chris Emmanouilides/Emmanouilides Productions. Mr. Gambol serves as a member of the Park Master Plan Advisory Committee. The video featured participants in the Park Master Plan Open House expressing their ideas for the new park. The video perfectly captures the spirit and support of the community along with a wide range of opinions. The video can be seen on https://vimeo.com/799161798. It was viewed 428 times.

The Delaware County Public Relations Department created the second video, viewed 846 times, to promote the park naming contest. The video and their promotion were instrumental in generating responses from residents countywide. The video can be seen on https://www.youtube.com/watch?v=EwankE43n00.

PARK NAMING CONTEST

True to its focus on involving the public in creating the newest county park, Delaware County Council launched a park naming contest in the fall of 2023. Residents from 38 of the 49 municipalities submitted 514 nominations. The County established a new property naming policy. The Property Naming Committee consists of two members of County Council as appointed by Council, the County's Executive Director, the Solicitor, and the Diversity, Equity and Inclusion Officer and a judge of the County Court of Common Pleas appointed by Council. Delco Woods is the first naming project that went through with the County's public property naming policy process.

KEY FINDINGS FROM COMMUNITY ENGAGEMENT

The civic engagement process yielded consistent results across all outreach methods, highlighting several key conclusions:

1. There is widespread countywide support for acquiring and developing the site.

2. Continued engagement with residents during subsequent planning phases will greatly benefit the County by building on existing public support for the project.

3. Priority should be given to conserving the forest while revitalizing the former school campus into a community recreation hub.

4. Top recreational preferences include trails, social areas, restrooms, pavilions, and play spaces.

5. Residents value on-site recreation programs, particularly those related to nature, special events, fitness, and leisure activities.

6. The park's safety, cleanliness, and usability is crucial and must be ensured, as any perception of unsafety or uncleanliness will deter its use.

7. Visible improvements must be implemented in the park sooner rather than later.

8. The promotion of park information is essential in maintaining and growing public awareness and support for the new park. Establishing social media marketing campaigns would be to the county's advantage. Social media proved to be a boon as the website is difficult to navigate. Seeking every opportunity possible to bring the evolution of this park to the public's attention will likely build support for Delaware County overall.

9. A welcoming and inclusive park environment must be created and is vital for success. Targeted programming and information efforts should be directed towards communities less involved in the engagement process. Identified districts for increased outreach include Chester Upland, Chichester, Southeast Delco, Interboro, Garnet Valley, Penn Delco, Radnor, Ridley, and William Penn School Districts. At the same time ongoing engagement must be emphasized in Marple Newtown, Rose Tree Media, Springfield, Wallingford Swarthmore, Haverford, and Upper Darby based on residency tracking by school district in the survey results.

02. SITE RESOURCE ASSESSMENT

Delco Woods is a vital ecological asset, serving as the largest forested natural area in the lower Darby Creek Watershed within a densely developed region. This chapter assesses the site's natural and built resources, highlighting its significant environmental functions, diverse ecosystems, and existing infrastructure. The forest provides critical wildlife habitat, helps mitigate climate change impacts, and supports water quality and stormwater management. Understanding these site conditions is essential for shaping future conservation and recreation strategies.

Key Takeaways from the Site Resource Assessment:

- **Ecological Importance** – Delco Woods plays a crucial role in supporting biodiversity, maintaining water quality, and mitigating climate change effects.
- **Forest Communities** – The site contains 107 acres of mixed hardwood forest, 69 acres of mature Tuliptree-Beech-Maple forest, and several smaller but ecologically valuable plant communities.
- **Water Resources** – Whetstone Run and its tributary flow through the site, supporting wetlands and a 100-year floodplain, but also facing erosion and pollution challenges.
- **Soils and Topography** – The site features a mix of prime farmland soils, steep slopes, and a central plateau, influencing its suitability for development and conservation.
- **Wildlife Habitat** – The property supports diverse wildlife, including species of concern identified by the Audubon Society, such as the Blackburnian Warbler and Scarlet Tanager.
- **Existing Infrastructure** – The former school buildings remain unoccupied and will be demolished, while informal trails, a BMX course, and a baseball field are actively used.
- **Conservation Priorities** – High-priority areas for protection include wetlands, riparian buffers, and forests vulnerable to invasive species and human impact.
- **Opportunities for Restoration** – Areas of degraded habitat, such as shrublands and eroded streambanks, present opportunities for ecological restoration and sustainable recreation.

SIGNIFICANCE OF THE DELCO WOODS FOREST

The importance of this property as the largest forested, natural area in the lower half of the Darby Creek Watershed and within a primarily densely developed area cannot be overstated. The forests provide habitat for wildlife, including species dependent on interior areas away from disturbances. They also counteract the effects of climate change, including flooding and temperature increases, by storing carbon, slowing and infiltrating stormwater, and providing shade in an area otherwise dominated by impervious surfaces.

NATURAL RESOURCES

GEOLOGY

The property is in the Piedmont Physiographic Province. According to the Pennsylvania Department of Conservation and Natural Resource's (DCNR) Geological Survey, the site is underlain by two geologic formations. The area beneath the school buildings consists of Wissahickon Formation, which dates from the lower Paleozoic and is an Oligoclase-mica schist. The remainder of the site is underlain by Bryn Mawr Formation, which dates from the Tertiary and is a sedimentary rock.

SOILS

The soils on site are silty loam, channery loam, manor loam, and made land. Most soils on site are prime farmland or farmland of statewide importance (see **Soils Map** on page 27). The soils are almost completely nonhydric, with one small pocket of hydric soils located at the western edge of the site.

The Chester soils have low to medium runoff and are well drained and not hydric. They also range from not highly erodible to highly erodible. The Glenelg soils have medium runoff. They are potentially highly erodible to highly erodible and are not hydric. The Glenville soils have medium to high runoff and are somewhat poorly drained to moderately well drained. They are also potentially highly erodible and partially hydric. The Manor soils have medium to high runoff. They are highly erodible, well drained, and not hydric to partially hydric. The Wehadkee soils have very high runoff and are potentially highly erodible. They are not hydric and poorly drained. Finally, the Worsham soils have very high runoff. They are poorly drained, potentially highly erodible, and hydric.

Delaware County, Pennsylvania (PA045)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CdA	Chester silt loam, 0 to 3 percent slopes	1	0.40%
CdB	Chester silt loam, 3 to 8 percent slopes	30.3	13.60%
CdC	Chester silt loam, 8 to 15 percent slopes	10.8	4.80%
GeB	Glenelg channery loam, 3 to 8 percent slopes	29.6	13.20%
GeC	Glenelg channery silt loam, 8 to 15 percent slopes	29.5	13.20%
GeC2	Glenelg channery silt loam, 8 to 15 percent slopes, moderately eroded	29	12.90%
GeC3	Glenelg channery silt loam, 8 to 15 percent slopes, severely eroded	8.8	3.90%
GeD	Glenelg channery silt loam, 15 to 25 percent slopes	7	3.10%
GnB	Glenville silt loam, 3 to 8 percent slopes	5.1	2.30%
GnB2	Glenville silt loam, 3 to 8 percent slopes, moderately eroded	17.6	7.90%
Me	Made land, schist and gneiss materials	0.7	0.30%
Mf	Made land, sanitary land fill	5.6	2.50%
MgB	Manor loam, 3 to 8 percent slopes	6.8	3.00%
MgC	Manor loam, 8 to 15 percent slopes	10.3	4.60%
MgD	Manor loam, 15 to 25 percent slopes	6.4	2.90%
We	Wehadkee silt loam	25.2	11.30%
WoA	Worsham silt loam, 0 to 3 percent slopes	0.1	0.00%
Totals for Area of Interest		**224**	**100.00%**

Source: USDA-NRCS Web Soil Survey

TOPOGRAPHY

The landscape consists of a relatively flat plateau along the western side of the property where the unoccupied school buildings are located (see Hydrology Map). The plateau is bounded to the north and south by two valleys, which run eastward down to the Whetstone Run and its tributary. To the southeast of the primary plateau is another relatively flat area bordering Cardinal O'Hara High School.

The plateau itself slopes gradually to the east, where it eventually runs, at an approximately 14% slope, down to the waterways. The two valleys converge at the toe of this slope, which is also where the Whetstone Run and its tributary converge.

Elevation ranges from a high point of +/-340 feet along the western boundary (the central school building) to +/-170 feet where the Whetstone Run leaves the site at the far eastern corner.

WATER RESOURCES

The Whetstone Run originates immediately outside of the southwestern site boundary (see Hydrology Map). Whetstone Run and its unnamed tributary (originating directly beyond the northern site boundary) flow eastward across the property, terminating in a detention basin located just beyond the eastern property line. The watercourses are designated by the Pennsylvania Department of Environmental Protection as Warm Water Fisheries (WWF) under Chapter 93 of the Pennsylvania Code (Water Quality Standards) and connect to Darby Creek, a Trout Stocking Fishery.

A small pocket of hydric soils is located along the western boundary of the site. On the eastern side of the site, an approximately 65,000 square foot wetland is located at the confluence of the Whetstone Run and its tributary. Along the tributary, to the northwest of the confluence, is an approximately 250,000 square foot area of 100-year floodplain.

Along Whetstone Run and its tributary, the hydrologic conditions generally do not produce any notable change in plant communities – the Tuliptree-Beech-Maple community found throughout most of the eastern side of the site is also present up to the banks of the runs. An exception to this is a +/-5.2-acre red maple palustrine forest along the southern boundary. Additionally, a +/-1.8-acre wetland is present at the western edge of the site, where the small pocket of hydric soils is located.

There are several areas of streambank erosion visible on site. Some of the erosion issues occur where the trails cross the stream, causing the banks to erode from foot and bike traffic. The other areas of streambank erosion noted during the site visits were likely created from overland stormwater runoff and outfall drainage pipes.

According to the Academy of Natural Sciences' Stream Reach Assessment Tool (SRAT), urban development is the major or sole contributor of nitrogen, phosphorous, and sediment in the water courses. The phosphorous levels are past the SRAT's water quality threshold. These pollutants are introduced to the waterways through overland stormwater runoff from the large amounts of impervious surfaces in the area and from the outfall pipes along Reed Road.

PLANT RESOURCES

Six plant communities were identified at the Property during site visits (see **Plant Communities Map** on page 31). Communities are described below. Plant lists can be found in the Plant Communities Appendix.

Mixed Hardwood Forest (+/- 107 acres)

The mixed hardwood forest constitutes the largest plant community on-site. This area was cleared for agriculture prior to 1937 and was then released from agriculture after 1971. The canopy is dominated by tuliptrees, although there is a moderate to high diversity of native plants within the canopy. However, there are gaps in the canopy that may allow for invasive species to gain a foothold. Invasive vines are present and pose a threat to the health of the canopy. The understory and property edges are heavily invaded, with the area bordering Reed Road across from Home Depot being the worst example. This area is a medium priority for conservation and stewardship, with a high priority area within 100 feet of the stream.

Red Maple Palustrine Forest (+/- 5.2 acres)

The red maple palustrine community is a part of the riparian buffer bordering an unnamed tributary near Cardinal O'Hara High School. The canopy layer is all native species, however, there is low species diversity. The shrub layer is heavily invaded. This community should be considered a high priority for stewardship given the proximity to the stream. This area was cleared prior to 1937. Some reforestation began between 1958-1971, but reforestation of most of the area began after 1971.

Shrubland (+/- 1.1 acres)

This area is located adjacent to the school campus. It is heavily invaded by shrubs, particularly around the edges. There are large areas of dumping, predominantly large chunks of concrete. The area is a low priority for protection, but would be suitable for a restoration project or active recreation once debris is removed.

Shrubland/Grassland (+/- 2.0 acres)

This area is also adjacent to the school campus and heavily invaded. There is also a problem with trash in this area. Like the shrubland, this area is a low priority for protection. It should be noted that there are several monitoring wells in this area, so any restoration projects would need to account for restrictions/contaminations related to the wells.

Wetland (+/- 1.8 acres)

The wetland, located at the western edge of the site, north of the school buildings, is an important protection area. It stretches from the culvert under Sproul Road along one of the tributaries to Whetstone Run. The wetland consists of primarily native plants and provides a stream buffer and habitat diversity. This is a high priority for conservation and stewardship. It should be considered in any development/redevelopment scheme, as any increase in impervious surface upslope would negatively impact this community.

Tuliptree-Beech-Maple (+/- 69.2 acres)

The second largest community on the site, the canopy in this area is dominated by tuliptrees and American beech. Based on site visits and historical aerial photography, this area is the most mature forest on site. There is moderate diversity observed in the understory and herbaceous layers. The understory layers are generally open and sparse, and invasive plants, including vines, are of concern. The invasive plants are far less pervasive than in the other forest areas. There is significant human impact in this area, primarily associated with the BMX course. This area also contains a wetland and 100 -year floodplain. It is a high priority for conservation and stewardship.

WILDLIFE

No wildlife survey was conducted as part of this plan. However, properties such as this typically support small mammals like rabbits, fox, squirrel, and deer. The Pennsylvania Natural Diversity Index report (PNDI) identifies bats as an important species for habitat protection.

Additionally, the Cornell Lab of Ornithology's eBird website includes publicly submitted checklists of birds identified at the Property. By the spring of 2023, 80 different species were identified at the Property The species range from common generalists such as American Robins to less frequently spotted birds such as the Blackburnian Warbler. The species identified require a range of habitat types, including mature forests for breeding, early successional forest for scavenging, marshy areas, and shrubby environments. Currently, the Property provides all these habitat types. It is important to maintain these habitats in the future.

The eBird checklists include ten species that the Audubon Society identified as a "Species of Concern" based on declining habitat and population numbers. This indicates that it is important to protect habitat for these species and avoid disrupting individuals of these populations during key periods such as nesting times.

- Blackburnian Warbler
- Black-throated Blue Warbler
- Black-throated Green Warbler
- Prairie Warbler
- Red-shouldered Hawk
- Scarlet Tanager
- Sharp-shinned Hawk
- Swainson's Thrush
- Winter Wren
- Wood Thrush

INFRASTRUCTURE/CURRENT USE

The former school structure located along the western border of the site are unoccupied and not currently maintained. The turf grass surrounding the buildings is mowed occasionally.

Within the wooded interior, there is no formal maintenance performed by the County. Save Marple greenspace has established a network of trails in the site and published a map of these trails, the Don Guanella Trail Map. Hikers were encountered on site visits. A BMX track occupies about two acres near the eastern side of the site. The course appears to have been professionally designed and constructed complete with engineering features. BMX volunteers report significant use of the BMX area from the region. The course is accessed from the eastern side of the site, most likely via Cardinal O'Hara High School. The High School also uses a baseball field on the southern corner of the site owned by Delaware County.



Green Stormwater Infrastructure will create the only public flatwater fishing area countywide

03. PARK SAFETY AND SECURITY MEASURES

IMPORTANCE OF SECURING VACANT BUILDINGS

Vacant buildings, particularly those located in public spaces like parks, pose several risks. Securing vacant buildings is not only a matter of protecting the structures themselves but also of preserving the integrity and safety of the entire park.

This section of the plan proposes strategies over and above work already done to secure the vacant campus buildings. It also identifies safety measures needed to address immediate safety concerns. Further design work needs to be done to identify fencing type, configuration, location, and cost.

Although the County retained structural engineers to evaluate the buildings in the past, regular inspections for safety should continue. Additionally, a tree assessment should be conducted in the area surrounding the campus and along existing trails to identify problematic trees and outline measures for their removal.

The primary purpose of designing fencing for the park's vacant buildings is to create a secure perimeter that:

- **Prevents Unauthorized Access to** deter trespassers, vandals, and potential criminals from entering the property.
- **Enhances Safety** to reduce the risk of accidents or injuries to the public and minimizes liability for Delaware County.
- **Protects the Property** by helping to prevent vandalism, theft, and other forms of damage or misuse of the vacant buildings.
- **Guides Future Use to** signal future development or redevelopment plans through a well-designed fence. This can help maintain the integrity of the site until further use.
- **Improves Aesthetics** by contributing to the overall visual appeal of Delco Woods, balancing functionality with a pleasing appearance.

REGULATORY AND LEGAL CONSIDERATIONS

Before proceeding with fencing and securing a vacant building, it is essential to understand the legal and regulatory framework that governs public parks and construction sites.

ZONING AND BUILDING CODES

- **Local Ordinances:** Municipal regulations often dictate the type of fencing allowed in public parks, with requirements on materials, height, and visibility.
- **Building Codes:** Some vacant buildings may be subject to specific codes that require certain safety standards, such as boarding up windows or removing hazardous materials.
- **Construction Permits:** Fencing off a building may require construction or temporary structure permits, depending on the scale of the work.
- **Environmental Impact Assessments:** In some jurisdictions, an environmental assessment is required to see if the fencing or construction could impact local wildlife or plant life.

PUBLIC LIABILITY AND INSURANCE

- **Public Liability Coverage:** Fencing contractors and park management should carry appropriate insurance to cover any incidents that occur during the securing process.
- **Legal Compliance:** Ensuring that all activities related to securing the buildings comply with public safety laws reduces the risk of lawsuits or penalties.

ASSESSING THE SITE AND BUILDING CONDITIONS

Site Inspection: A comprehensive site inspection should follow preliminary assessments already completed to evaluate the current condition of the buildings, the surrounding environment, and potential security risks. Key aspects to examine include:

- **Structural Integrity:** Evaluate whether the buildings poses any immediate threats, such as crumbling walls or exposed wiring.
- **Access Points:** Identify all potential entry points for trespassers, including doors, windows, and roof access.
- **Surrounding Landscape:** Consider the impact of nearby trees, shrubbery, or water sources that may either aid in securing the buildings or present additional challenges.
- Existing fell trees must be removed from the existing campus area. Additionally, tree assessments must be conducted along existing trails within the park and trimmed and or removed as necessary.
- **Risk Assessment:** Based on the site inspection, a risk assessment should be conducted to prioritize security measures. Risks could include:

Table 7

Risk	Description
Safety Hazards	Structural weaknesses, broken windows, or other dangerous features that could cause injury to trespassers.
Vandalism and Theft	Targets for graffiti, theft, and property damage, degrading the park's appearance and safety.
Fire Risks	Unsecured buildings can attract illegal activity, such as squatting or arson, increasing fire damage potential.
Public Liability	Injury inside an unsecured vacant building may have legal implications for the park's management or municipality.
Accidental Injuries	Potential for injury to the public from unsafe building elements.
Intentional Damage	Vandalism or arson by individuals who gain entry to the structure.
Environmental Damage	Hazards posed by the buildings to the park's ecosystem, such as leakage of harmful substances.

TYPES OF FENCING AND SECURITY MEASURES

Selecting the appropriate fencing for vacant buildings in a public park is crucial. The fence should consider security, aesthetics, and environmental impact. Fencing should include anti-climb features to further deter intruders. Furthermore, based on conclusions from follow-up site and risk assessments, the extent of site and building security measures will need to be evaluated. Individual buildings or specific areas might require fencing, or it might extend to the entire campus area.

The choice between permanent and temporary fencing depends on factors such as budget, security needs, property use, and duration of vacancy. For long-term security, permanent fencing is the best investment. For short-term needs or flexibility, temporary fencing is a practical solution.

Temporary Fencing: Temporary fencing is a flexible and cost-effective solution, particularly for buildings expected to be demolished soon. Common materials include:

- **Chain-link Fencing:** Durable and effective for deterring intruders, with options for additional security measures like barbed wire. Barbed wire should only be considered in areas identified as posing significant risks. While effective, barbed wire is not visually appropriate for public spaces.

- **Panel Fencing:** Freestanding and easy to install, panel fencing can be a quick solution to secure the area.

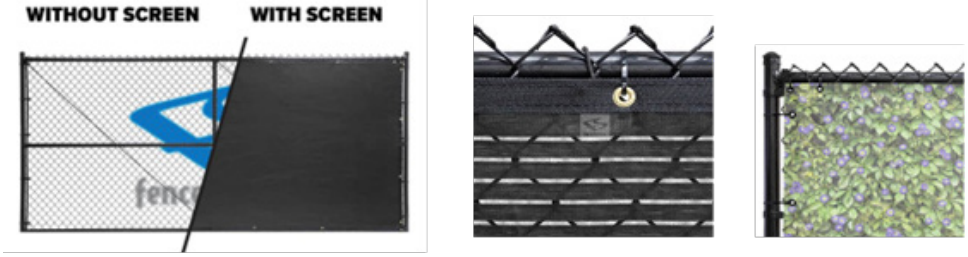
Table 8	
Pros	**Cons**
Quick installation and removal - Can be deployed rapidly in response to security concerns.	Can be easily scaled by determined trespassers.
Permitting Ease - Often does not require zoning approval, depending on location and duration.	May not blend well with the park's aesthetics.
No Long-Term Commitment - Ideal for short-term vacancies or construction sites.	Lower Security - Easier to breach, climb, or dismantle compared to permanent fencing.
Flexibility - Can be located or adjusted as property needs change.	Ongoing Rental Costs - If leased, rental fees can accumulate over time, making it expensive in the long run.
Cost-Effective - Lower upfront costs and no major installation expenses.	Less Durable - Prone to damage from weather, vandalism, or repeated use.
Minimal environmental disruption.	Aesthetic Drawbacks - Can appear industrial or unsightly, affecting property perception.
Reusable for other projects.	Potential Stability Issues - May require sandbags or additional supports to withstand strong winds or tampering.

Permanent Fencing: For buildings that may remain vacant for an extended period, permanent fencing solutions might be necessary.

Table 9	
Pros	**Cons**
Durability & Strength - Typically made of materials like steel, iron, or concrete, permanent offer long-lasting security.	High Initial Cost - Installation is expensive, including materials and labor.
Enhanced Security - Harder to breach compared to temporary fencing, deterring trespassers and vandals.	Lack of Flexibility - Once installed, it cannot be easily moved or adjusted if property use changes.
Aesthetic Appeal - Can be designed to complement surrounding architecture and landscaping.	Zoning & Permitting Issues - Some areas have regulations that may restrict fence height, material, or style.
Low Maintenance - Once installed, requires minimal upkeep beyond occasional repairs.	Vulnerability to Graffiti or Damage - Can become a target for vandalism if left unattended.
	Construction Time - Requires planning and time for proper installation.

VISIBILITY CONSIDERATIONS

The fencing should provide a balance between privacy and visibility. While solid barriers and fabric might prevent trespassing, they can also hide criminal activities. Chain-link allows visibility while maintaining security.



Source: https://www.fencescreen.com/



Nonclimbing Alternative – Source: https://localstore.amerifencemadison.com/collections/temporary-fence?view=bc-original

PROPER INSTALLATION OF FENCING

Securing the Perimeter: For maximum effectiveness, the fence must fully enclose the buildings, with no gaps or weak points. Considerations include:

- **Anchoring the Fence:** Ensure posts are driven deep into the ground to prevent tampering.
- **Gate Security:** Gates should be lockable, with heavy-duty locks to prevent forced entry.
- **Elevation Changes:** If the buildings is located on uneven terrain, special attention should be paid to the height and placement of the fencing to ensure it remains a consistent barrier.
- Since the park serves as natural habitats, any fencing or security measures must consider the environment and minimize the impacts to flora and fauna.
- **Tree Protection:** Ensure that the fencing does not damage trees or other important plants near the buildings.

ADDITIONAL SAFETY AND SECURITY MEASURES

Fencing alone may not be enough to secure vacant buildings. Supplementary measures including but not limited to the following should be considered and included if warranted:

Signage

- **Warning Signs:** Place clear, visible signs around the perimeter warning of the dangers of trespassing.
- **Legal Notices:** Signs may be required to notify the public of ongoing demolition, construction, or security measures.

Lighting

- **Security Lighting:** Well-placed lighting deters intruders, particularly in poorly lit areas of the park. Motion-sensitive lighting is both energy-efficient and effective.
- **Solar-Powered Options:** Solar-powered lights can provide a sustainable option.

Surveillance

- **CCTV Cameras:** Installing security cameras can both deter criminal activity and assist in identifying perpetrators if an incident occurs.
- **Remote Monitoring:** Modern systems allow remote access, so security personnel can monitor the site 24/7 from a central location.

Alarm Systems

- **Intrusion Alarms:** Installing alarms on the buildings themselves, connected to doors and windows, can alert authorities in the event of a breach.

Use of Eco-Friendly Materials

- Where possible, use materials that are recyclable, non-toxic, and sourced sustainably to minimize the environmental footprint.

COMMUNITY ENGAGEMENT AND PUBLIC COMMUNICATION

The County understands that park visitors, community members, and the general public may have concerns about the presence of vacant buildings in the park, especially as additional measures are undertaken to secure them. Proactive communication and community engagement is vital.

Public Information Campaigns

- **Transparency:** Explain the reasons for securing the buildings, the expected timeline, and the safety benefits.
- **Community Meetings:** Hold public meetings to discuss the future plans, the early implementation plan and gather additional input from park users.
- **Social media and Signage:** Leverage social media platforms and physical signage within the park to keep the public informed about the progress and purpose of the project.

MONITORING, MAINTENANCE, AND MANAGEMENT

Securing a building is not a one-time effort; it requires ongoing monitoring and maintenance to ensure continued safety.

- **Fence Integrity:** Inspect the fencing regularly to ensure it remains secure and undamaged.
- **Buildings Security:** Check the building's doors and windows to ensure they remain boarded up or sealed.
- **Graffiti Removal:** Act quickly to remove.

Securing the existing campus buildings at Delco Woods is essential not only for public safety but also for preserving the park's integrity and community value. The comprehensive strategies outlined—from thorough site inspections and risk assessments to the careful selection of fencing options and supplementary security measures—provide a robust framework for mitigating the risks associated with vacant structures. By balancing regulatory requirements, aesthetic considerations, and environmental impacts, the plan ensures that both temporary and long-term security needs are met effectively.

Furthermore, integrating community engagement and transparent communication into the process fosters public trust and supports the smooth implementation of these measures. Ongoing monitoring, regular maintenance, and adaptive management will be critical to sustaining these efforts over time. Ultimately, these proactive measures underscore the County's commitment to creating a safe, welcoming, and resilient park environment at Delco Woods.

CONCLUSION

In conclusion, implementing a comprehensive security strategy for the vacant campus buildings is essential for ensuring the safety and integrity of the entire park. By selecting appropriate fencing solutions and complementing them with supplementary measures—such as regular inspections, effective lighting, surveillance, and community engagement—Delaware County can protect these structures from unauthorized access, vandalism, and other risks. This proactive approach not only minimizes liability and preserves the aesthetic and environmental quality of Delco Woods but also lays the groundwork for future development and sustainable park management.

04. DELCO WOODS PLANT COMMUNITIES

This appendix provides a list of plant species identified during site visits to Delco Woods. The list includes both native and non-native plants, offering insights into the plant composition of the property. The list corresponds to the Plant Communities Map, on page 31. This compilation can be used for park stewardship and maintenance.

Tuliptree-Beech-Maple Forest

Canopy	
red maple	*Acer rubrum*
pignut hickory	*Carya glabra*
American beech	*Fagus grandifolia*
tuliptree	*Liriodendron tulipifera*
blackgum	*Nyssa sylvatica*
Japanese princess-tree	***Paulownia tomentosa***
red oak	*Quercus rubra*
black locust	*Robinia psuedoacacia*

Understory trees	
Norway maple	***Acer platanoides***
red maple	*Acer rubrum*
Japanese angelica-tree	***Aralia elata***
flowering dogwood	*Cornus florida*
crabapple	*Malus sp.*
black cherry	*Prunus serotina*
weeping cherry	***Prunus sp.***

Shrubs and Vines	
oriental bittersweet	***Celastrus orbiculatus***
spicebush	*Lindera benzoin*
privet	***Lingustrum sp.***
shrub honeysuckle	***Lonicera sp.***
multiflora rose	***Rosa multiflora***
wineberry	***Rubus phoenicolasius***
grape	*Vitis sp.*
wisteria	***Wisteria sp.***

Herbaceous plants	
garlic mustard	***Alliaria petiolata***
jack-in-the-pulpit	*Arisaema triphyllum*
spring-beauty	*Claytonia virginica*
hay-scented fern	*Dennstaedtia punctilobul*
yellow trout-lily	*Erythronium americanum*
Japanese stiltgrass	***Microstegium vimineu***
mayapple	*Podophyllum peltatum*
Christmas fern	*Polystichum acrostichoide*
lesser celandine	***Ranunculus ficaria***
skunk-cabbage	*Symplocarpus foetidus*
poison ivy	*Toxicodendron radicans*
violets	*Viola spp.*

Mixed Hardwood Forest

Canopy	
Norway maple	***Acer platanoides***

KEY

Invasive plants are listed in **bold** font

Common Name *Scientific Name*

05. INVASIVE PLANT SPECIES IDENTIFICATION GUIDE

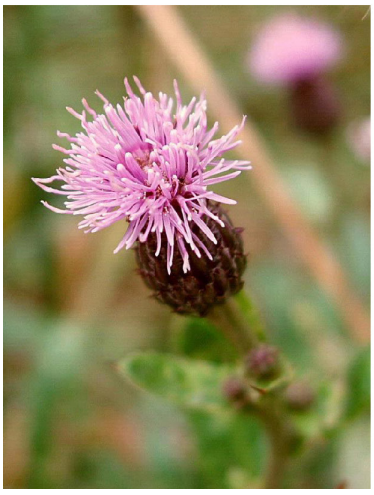
The following text and photographs feature common invasive plants in the region, laying out identifying features and control methods. The information can be printed as laminated cards and used as field guides to identify invasive plants within the property and to guide management.

Natural Lands

Invasive Plant Species Identification Guide











The purpose of these cards is to aid in the identification of invasive plants in the field. Each card features photos and key identification features.

Additionally, the cards also contain potential look-alikes and control methods. For any control measures that include herbicide applications, all applications must be done by a licensed applicator following all product directions. Where trade names are used no endorsement is implied; Natural Lands and the authors of this document are not liable for problems associated with the use of herbicides described therein.

For easy use, plants are organized by type of plant – tree, shrub, vine, and herbaceous. Citations are included after the plant cards.

This material was financed in part by a grant from the Community Conservation Partnerships Program, Keystone Recreation, Park and Conservation Fund, under the administration of the PA Department of Conservation and Natural Resources, Bureau of Recreation and Conservation.







ID Features

MATURE HEIGHT: 1 – 4 ft.

LEAVES: Irregularly toothed, spiny, alternate, leaf base encircles stem

FLOWERS: Numerous, pink to purple

FLOWERING PERIOD: June – October

SEEDS: Fall, feathery, windblown, numerous

STEMS: Thin, grooved, branched at top

HABITAT: Disturbed, open sites; fields; roadsides; agricultural fields; streambanks

OTHER: Large, spreading roots; colony forming

Canada Thistle
Cirsium arvense

Canada Thistle
Cirsium arvense



Control Methods

**Any control methods will need to be repeated for multiple years due to Canada thistle's extensive root system and rapid regrowth*

MECHANICAL: Cut or pull small colonies, including the taproot, in the early spring

CHEMICAL: Crossbow can be used, typically with moderate results, to control larger colonies

Native Plants Look A-likes

field thistle (*Cirsium discolor*) – Can grow up to 8ft tall. Flower buds are 2 inches across compared to Canada thistle which is 1/5-4/5 inches across. Has spiny leaves (bracts) at the base of flower buds, which are lacking for Canada thistle.

pasture thistle (*Cirsium pumilum*) – Stems and bottoms of leaves have dense, wooly hairs. Stems typically have single or a few branches. Flowers reddish to a deep purple. Buds are 1.5-3 inches wide. Spiny leaves (bracts) at base of flower head.



ID Features

MATURE HEIGHT: 1 – 4 ft.

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OTHER: Large, spreading roots; colony forming

Castorbean *Ricinus communis*
Highly Poisonous

Castorbean *Ricinus communis*
Highly Poisonous



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ID Features

MATURE HEIGHT: Up to 15 ft.

LEAVES: Long, elongated leaves

FLOWERS: Purple or golden, feathery plumes

FLOWERING PERIOD: July and August

SEEDS: Abundant, wind-dispersed, occurring on feathery plumes

STEMS: Hollow

HABITAT: Wetlands, streambanks, pond edges, freshwater or brackish marshes

OTHER: Spreads by seeds or rhizomes, forms large colonies

Common Reed
Phragmites australis

Common Reed
Phragmites australis



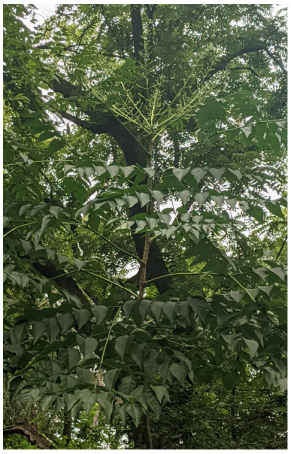
Control Methods

CHEMICAL: Wetland approved herbicide applied to stalks or by drip application into a cut stalk

Native Plants Look A-likes

common cattail (*Typha latifolia*) – Dense, oval seed head with a spike at the top compared to common reed's feathery seed head. Up to 9 feet tall.

narrow leaved cattail (*Typha angustifolia*) – Dense, oval seed head with a spike at the top compared to common reed's feathery seed head. Up to 9 feet tall.





ID Features

MATURE HEIGHT: 40 ft.

LEAVES: Leaves either have leaflets along a central stem (bi-pinnately compound) or sets of leaflets on a side stem that then connect to the main stem (tri-pinnately compound), small hairs underneath, toothed

FLOWERS: White flowers on a large, multi-branched flower stalk (inflorescence), generally 30-60cm tall and is wider than tall

FLOWERING PERIOD: Late summer

SEEDS: Small purple to black fruit

STEMS: Multi-stemmed, sharp spines on trunk

HABITAT: Wood edges, thickets, disturbed areas

OTHER: Spreads from root sprouts and bird dispersal of fruits

Japanese Angelica Tree
Aralia elata

Japanese Angelica Tree
Aralia elata





Control Methods

CHEMICAL: Foliar application or cut stump application

Native Plants Look A-likes

Devil's walking stick (*Aralia spinosa*) – Flower head (inflorescence) is generally 100 cm tall and is taller than wide. The flowering head of Japanese angelica tree is 30-60cm tall and is usually wider than it is tall.







ID Features

MATURE HEIGHT: 60 ft.

LEAVES: 6 – 12 in. long, alternate, heart-shaped, hairy underside

FLOWERS: Long flower stalk (inflorescence) with purple, trumpet-shaped flowers

FLOWERING PERIOD: Spring

SEEDS: Large, gray-brown pods

STEMS: Smooth and shiny to rough gray-brown bark

HABITAT: Forest edges, streambanks, roadsides, disturbed areas

OTHER: Spreads through seed dispersal and fast-growing sprouts

Japanese Princess Tree
Paulownia tomentosa

Japanese Princess Tree
Paulownia tomentosa



Control Methods

CHEMICAL: Basal bark application during the fall

Native Plants Look A-likes

catalpa (*Catalpa bignonoides*) – Catalpa has a white, solid pith while Japanese princess tree has a hollow pith. Catalpa also has long, bean pod-like pods compared to Japanese princess tree's round seed pods.





ID Features

MATURE HEIGHT: 80 ft. in length

LEAVES: Opposite, semi-evergreen, generally oval, bottom-most (basal) leaves lobed

FLOWERS: White to yellow, fragrant

FLOWERING PERIOD: April – July

SEEDS: Small black fruits in the fall

STEMS: Woody vine

HABITAT: Forests, hedgerows, roadsides, wetlands, meadows, disturbed areas

OTHER: Spreads by seed dispersal, root growth, and runners

Japanese Honeysuckle
Lonicera japonica

Japanese Honeysuckle
Lonicera japonica





Control Methods

MANUAL: Cut vines at ground level and 5 ft. above the ground

CHEMICAL: Cut and herbicide stumps in the fall

Native Plants Look A-likes

Trumpet honeysuckle (*Lonicera sempervirens*) – Yellow to reddish-pink flowers. Leaves immediately beneath flowers are fused.





ID Features

MATURE HEIGHT: Potential to grow 35 ft. in one growing season

LEAVES: Opposite, generally 5 lobed with rough surface and toothed edges

FLOWERS: Female flowers are hop-shaped, clustered flowers

FLOWERING PERIOD: Mid-summer

PODS: Yellow-brown, oval shaped

SEEDS: Flattened seeds on flower stalk (inflorescence)

STEMS: Vine with prickles

HABITAT: Disturbed areas, forest edges, fields, riverbanks, moist soil, full sun

OTHER: Spread through seeds and vegetative growth including root pieces

Japanese Hops
Humulus japonicus

Japanese Hops
Humulus japonicus





Control Methods

MANUAL: Pull vines prior to flowering, remove roots as possible, bag and remove plant material

CHEMICAL: Preemergent application followed by foliar application in July – September

Native Plants Look A-likes

Native common hop (*Humulus lupuloides, neomexicanus,* and *pubescens*) – Single to three lobes on leaves compared to five lobes of Japanese hops.

Bur cucumber (*Sicyos angulatus*) – Stem has tendrils and no prickles.





ID Features

MATURE HEIGHT: 3-12 ft.

LEAVES: Broadly oval with pointed tip, alternate

FLOWERS: Greenish-white flowers, 4 in. long

FLOWERING PERIOD: Aug – Oct

SEEDS: 3-sided brown seed in a papery fruit

STEMS: Straight, hollow stems with swollen joints at the nodes; new stems purplish to green then green in summer and reddish brown in the fall

HABITAT: Roadsides, streambanks, other moist and disturbed sites with sun

OTHER: Spreads easily through broken stem pieces and rhizomes, forms dense stands

Japanese Knotweed
Fallopia japonica

Japanese Knotweed
Fallopia japonica





Control Methods

CHEMICAL: Smaller infestations can be treated with stem injections. Larger colonies can also be treated with a foliar application after July 1; taller stems should be cut in June and treated once the leaves have regrown in late summer.

Native Plants Look A-likes

Pokeweed (*Phytolacca americana*) – Distinguishable by its purple-hued stem, more elongate leaves, and purple berries.

Bamboo (*Bambusa* sp.) *invasive – Similar jointed stem to knotweed. Leaves are narrow and elongated. Bamboo also grows to a height of 30-75 feet.





ID Features

MATURE HEIGHT: 12 in. high

LEAVES: Evergreen, alternate, 2-4 inches long and 1-1 ½ inches wide, oval with toothed end

FLOWERS: White, upright flower stalk (inflorescence)

FLOWERING PERIOD: March – April

SEEDS: Small fruits occur on end branches

STEMS: Ground runners

HABITAT: Meadow and forest edges

OTHER: Mat forming, dense groundcover, spreads by underground stems and roots

Japanese Pachysandra
Pachysandra terminalis

Japanese Pachysandra
Pachysandra terminalis



Control Methods

MANUAL: Hand pull anytime

CHEMICAL: Apply an herbicide after plant has emerged

Native Plants Look A-likes

Virginia creeper (*Parthenocissus quinquefolia*) – Leaves are made up of five elongated leaflets with a point on the end all around a central stem. Bright red fall color.

Allegheny spurge (*Pachysandra procumbens*) – Clump forming rather than mat forming, leaves 2-4 inches long and 2-3 inches wide, lacks shine of Japanese pachysandra leaves





ID Features

MATURE HEIGHT: 1 – 3 ft.

LEAVES: Narrow, elongated, center silver stripe, 1 – 3 inches long

FLOWERS: White, tiny flowers

FLOWERING PERIOD: August – September

SEEDS: Seeds produced in Fall

STEMS: Slender stems

HABITAT: Widely adaptable, moist soils, forests, wetlands, fields, roadsides

OTHER: Spreads through prolific seeds, easily transferred accidentally on equipment, annual, forms dense thatch when it dies off which can smother vegetation

Japanese stiltgrass
Microstegium vimineum

Japanese stiltgrass
Microstegium vimineum





Control Methods

MANUAL: Hand pull anytime

CHEMICAL: Late summer herbicide application

MECHANICAL: Mow just before flowering

Native Plants Look A-likes

Virginia cutgrass (*Leersia virginica*) – Japanese stiltgrass has a silvery stripe down the center of the leaf, while Virginia cutgrass does not. Virginia cutgrass stays green in the fall while Japanese stiltgrass changes to brown.

Smartweeds (*Persicaria* spp.) – Smartweeds have a dark blotch on the leaves and pink flowers.







ID Features

MATURE HEIGHT: 20 – 30 ft. long

LEAVES: Alternate, triangular, 1 – 3 in. wide, underside is barbed, smaller round leaf-like structures surround stem along length of plant (called ocreae)

FLOWERS: Small, inconspicuous, white

FLOWERING PERIOD: Early summer

SEEDS: Fruits start green then turn metallic blue, first form in mid-July

STEMS: Trailing vine, recurved barbs, forms dense, large, intertwined mats

HABITAT: Sun, moist soils, wetlands, streambanks, roadsides, hedgerows

OTHER: Can grow 6 in. a day, forms dense smothering mats, primarily spreads by seeds

Mile-a-Minute
Persicaria perfoliata

Mile-a-Minute
Persicaria perfoliata





Control Methods

MANUAL: Hand pull small infestations prior to flowering

CHEMICAL: Summer herbicide applications

MECHANICAL: Mow prior to flowering

Native Plants Look A-likes

Halbard-leaved tearthumb (*Polygonum arifolium*) – Lacks barbs and ocreae.

Climbing false buckwheat (*Polygonum scadens*) – Lacks barbs and ocreae. Has a purplish-red stem and leaves are rounder.





ID Features

MATURE HEIGHT: 10 – 50 ft.

LEAVES: Alternate, each leaf has leaflets along a central stem, 5-10 inches long, resemble ferns

FLOWERS: Pink, fluffy-appearing, 1 – 2 inches long

FLOWERING PERIOD: May – July

SEEDS: Flat pod, 6 in. long

STEMS: Thin, brown, nearly smooth

HABITAT: Full sun, forest edges, disturbed areas, streambanks

OTHER: Spreads vegetatively and by seed

Mimosa
Albizia julibrissin

Mimosa
Albizia julibrissin





Control Methods

MANUAL: Hand pull small plants

CHEMICAL: Cut stump treatment in the fall

MECHANICAL: Girdle trunks

Native Plants Look A-likes

Staghorn sumac (*Rhus typhina*) – Mimosa has smaller leaflets and pink, fluffy flowers compared to the upright flower stalk of staghorn sumac with yellow-greenish flowers followed by deep red fruit.





ID Features

MATURE HEIGHT: 24 – 63 in.

LEAVES: Alternate, lobed, papery

FLOWERS: Small, whitish-green flowers that turn to yellowish green as ages

FLOWERING PERIOD: Late summer to early fall

SEEDS: Fruit with single seed, oblong with tiny bristles, August – October

STEMS: Purplish-brown, branched, short hairs

HABITAT: Meadows, forest edges, roadsides, diches

OTHER: Spreads by rhizomes, forms dense patches, has a distinctive herbal scent when crushed

Mugwort
Artemisia vulgaris

Mugwort
Artemisia vulgaris





Control Methods

CHEMICAL: Preemergent or post emergent herbicide

Native Plants Look A-likes

Ragweed (*Ambrosia artemisiifolia*) – Lacks distinctive herbal scent.



ID Features

MATURE HEIGHT: 15 ft.

LEAVES: 7-9 dark green leaflets on each leaf midrib off the main stems, toothed leaflets, at the base of each leaf is a fringed and small leaf-like structure (stipule)

FLOWERS: Clusters of small, white to pink flowers

FLOWERING PERIOD: May – June

SEEDS: Small red rose hips in the summer through winter; extremely large amount of seeds that stay viable in the soil for up to 20 years

STEMS: Arching stems with curved thorns

HABITAT: Forms dense thickets in fields, riparian areas, woods, roadsides

OTHER: There have been some instances of Rose rosette disease infecting and killing multiflora rose, particularly in sunny areas.

Multiflora Rose
Rosa multiflora

Multiflora Rose
Rosa multiflora



Control Methods

CHEMICAL: Basal bark or cut stump application

Native Plants Look A-likes

Native roses, including pasture rose (*Rosa carolina*), swamp rose (*Rosa palustris*), wild rose (*Rosa virgniana*) – All native roses have pink flowers. All roses mentioned have a leaf-like structure at the base of leaves, called a stipule. Stipules for native roses are rounded and entire. Stipules for muliflora rose are fringed.







ID Features

MATURE HEIGHT: 65 ft.

LEAVES: Deciduous, dark green with five to seven lobes, 5 in. long by 6 in. wide, long-lasting yellow fall color

BARK: Gray-brown and smooth

FLOWERING PERIOD: May – June

SEEDS: Flattened seed pods with papery wings

HABITAT: Forests, particularly in urban and suburban areas; also used a specimen tree in landscaping

OTHER: Key ID feature is that leaf stems ooze white, milky sap when pulled off branches. Spreads prolifically through wind-dispersed seeds.

Norway Maple
Acer platanoides

Norway Maple
Acer platanoides



Control Methods

MANUAL: Manually remove

CHEMICAL: Cut stump treatment, or a basal bark application can be used for trees with 6 in. dbh or smaller

MECHANICAL: Girdle

Native Plants Look A-likes

Sugar maple (*Acer saccharum*) – Sugar maple has sharp buds, while Norway maple buds are large and blunt. Only Norway maple has the distinct, milky-white sap when leaves are pulled off branches.

Red maple (*Acer rubrum*) – Red maple has 3-lobed leaves, while Norway maple has 5-lobed leaves. Only Norway maple has the distinct, milky-white sap when leaves are pulled off branches.







ID Features

MATURE HEIGHT: 60 ft. in length

LEAVES: Deciduous, alternate, light green, finely toothed, round to somewhat elliptical

FLOWERS: Flowers and fruits form at the base of leaves

SEEDS: Bright red fruit in fall and winter that are easily spread by birds

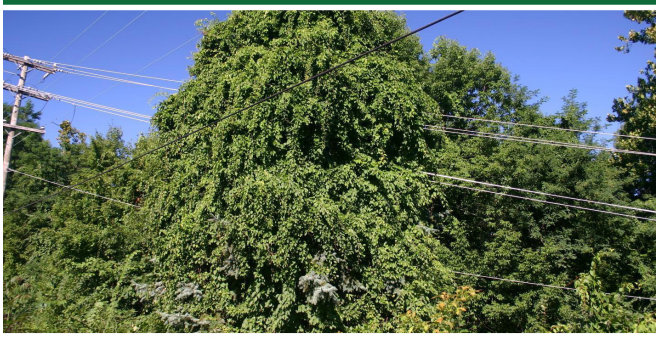
STEMS: Woody vines, rough, grayish-brown bark

HABITAT: Fields, forest edges, hedgerows, tolerates shade but prefers sun

OTHER: Wraps around trees and other vegetation as well as other bittersweet vines. Has bright orange roots

Oriental Bittersweet
Celastrus orbiculatus

Oriental Bittersweet
Celastrus orbiculatus





Control Methods

CHEMICAL: Cut vines at ground level and 5 ft. off the ground, apply herbicide to stump

Native Plants Look A-likes

American bittersweet (*Celastrus scandens*) – Flowers and berries form at the end of branches as opposed to at the base of leaves for Oriental bittersweet.





ID Features

MATURE HEIGHT: 6 – 20 ft. depending on species

LEAVES: Elongate, opposite, some have a pointed tip

FLOWERS: White to yellow, tubular, fragrant

FLOWERING PERIOD: May – June

SEEDS: Red to yellow, small, abundant berries

STEMS: Have a hollow, brown pith

HABITAT: Shade-intolerant, wood edges, hedgerows, roadsides, fields

OTHER: Spreads both vegetatively and by seeds

Shrub Honeysuckle
Lonicera sp.

Shrub Honeysuckle
Lonicera sp.





Control Methods

CHEMICAL: Basal bark application or cut stump treatment in the fall

Native Plants Look A-likes

Native bush honeysuckle (*Diervilla lonicera*) – Native bush honeysuckle has a solid center of the stem (pith) when cut open. Invasive shrub honeysuckles have a hollow pith.





ID Features

MATURE HEIGHT: 80 ft.

LEAVES: Long leaves with 10-41 leaflets along the midrib, smooth leaf margins, "thumb" at the bottom of each leaflet

FLOWERS: Large clusters of yellowish flowers

FLOWERING PERIOD: Early summer

SEEDS: Papery, tan to reddish seed pods with single wings (samaras), late fall

BARK: Brownish-green and smooth when younger, turning more gray and rougher with age

HABITAT: Forest edges, fields, roadsides

OTHER: Trees produce chemicals through roots that prohibit growth of other plants. Host plant for spotted lanternfly. Spreads through extensive suckering. Has a distinctive rotten peanut butter smell when cut.

Tree-of-Heaven
Ailanthus altissima

Tree-of-Heaven
Ailanthus altissima





Control Methods

MANUAL: Small seedlings can be hand pulled, making sure to remove root system.

CHEMICAL: Carry out herbicide applications between July and the change of leaf color. Options include a basal bark application for trees 6 in. dbh or smaller, foliar application, or hack and treat. Applications will have to be repeated for at least a second year due to extensive suckering.

Native Plants Look A-likes

Black walnut (*Juglans nigra*) – Leaflets have a serrated edge. Leaves end with one leaflet at the tip while tree of heaven leaves end with two leaflets. Black walnut has a large, green, round fruit.

Staghorn sumac (*Acer rubrum*) – Leaflets have serrated edges. Lacks distinctive rancid peanut butter scent of tree of heaven. Staghorn sumac has a large, deep red seed head at the top of each trunk during the fall.



ID Features

MATURE HEIGHT: 9 ft.

LEAVES: Each leaf consists of three heart-shaped leaflets on a central stem with toothed edges. Leaves are alternate. Leaflets are green on top and white and hairy underneath.

FLOWERS: Clusters of small, five-leafed, white flowers.

FLOWERING PERIOD: May

SEEDS: Fruit produced in June through August. Clusters of red, raspberry-shaped fruit.

STEMS: Arching canes covered with small red hairs, giving all of the branches a distinctive red shade.

HABITAT: Can form dense patches in moist, open fields, forest edges, and roadsides.

OTHER: Spreads through seed spread through wildlife, suckering from branches, and shoots from root nodes. lanternfly. Spreads through extensive suckering. Has a distinctive rotten peanut butter smell when cut.

Wineberry
Rubus phoenicolasius

Wineberry
Rubus phoenicolasius







Control Methods

CHEMICAL: Basal bark application or cut-stump treatment in the fall.

Native Plants Look A-likes

Common blackberry (*Rubus allegheniensis*) and flowering raspberry (*Rubus odoratus*) – Both species lack the distinctive red hairs on the branches.

06. POTENTIAL SOURCES OF CAPITAL AND PROGRAM FUNDING

Funding for the Delco Woods Master Plan will require a mix of public and private resources, grants, financing mechanisms, and private fundraising. A dedicated grants team could enhance the county's ability to secure emerging funding opportunities.

Key Takeaways:

- **State & Federal Grants** – Key programs include ORLP (National Park Service Outdoor Recreation Legacy Program), STORM (climate resilience loans), BRIC (infrastructure resilience), and ATIIP (active transportation).
- **Special Appropriations** – Work with state and federal officials to secure dedicated funding.
- **County-Based Revenue** – Options include property tax allocations, a use tax, bond issues, and increasing and allocating funds from the hotel tax.
- **Private Fundraising** – Corporate sponsorships, philanthropy, and partnerships with community -based organizations and foundations and national foundation grant programs.
- **Grant Writing & Advocacy** – Professional grant writers and policy advocates can improve funding success.
- **Revenue-Generating Strategies** – Explore non-tax funding and revenue management training.

Ideally, Delaware County would have a team of grant writers, possibly on retainer, to identify funding opportunities amid the uncertainty of evolving government programs and the implementation of the Park Master Plan for Delco Woods. To simplify the process, the following are key sources of capital funding that are most relevant for consideration:

- **County Property Tax** – Given the demands on the county budget, it is unlikely that the current budget can include capital funding for park development in this scale.
- **Use Tax** – Allegheny County and Philadelphia have added a 1% use tax onto the sales tax for capital funding.
- **Borrowing, Bond Issue, Referendum** – Explore the potential to borrow funds to develop the New County Park. This can be done in phases. County Council can make decisions on acquiring debt and/or can place the question of borrowing for the new park and related projects on a non-binding voter referendum.

- **Hotel Tax –** The hotel tax does not affect residents. Hotel owners statewide have reported an understanding that the five percent hotel tax is the norm. Delaware County is one of the few counties in which the hotel tax is three percent including the only county in the Delaware Valley. The Hotel Tax can be used for hospitality and tourism related initiatives including:

    - *(vi) Any other tourism or travel marketing or promotion program, expenditure or project that does not compete with private sector tourism or travel efforts as deemed necessary by the recognized tourist promotion agency.*[6] The Delaware county Hotel tax is set at 3% and can be raised to 5%. This tax does not impact residents, only those that stay overnight in hotels, Airbnb's and so on.

- **Grants –** Delaware County has a history of applying for both RACP and RAISE grants which should be considered for the new County Park. In 2023, new sources of grants related to parks and conservation emerged and existing grant programs had increased funding. The grant world is fast paced, ever changing, and requires focus and expertise to capture significant and emerging funding. Ideally a grants team with skilled advocates and lobbyists at the state and federal level are needed to secure the significant levels of funding needed for this park. Two major sources of information on funding are the NRPA (National Recreation and Park Association) at Grant Opportunities, Fundraising Resources, Funding | National Recreation and Park Association (nrpa.org) and the City Park Alliance at https://cityparksalliance.org/funding-hub/community-development-funding/. Delaware County has been securing state grant funds via PA DCNR Community Conservation Partnerships Program and PA DCED. Aside from these well-known funds, below are a few examples of potential funding sources.

    - **Special Appropriations**

      Special appropriations are designated for particular projects, initiatives, organizations, or specific needs that require funding beyond what is covered in the regular budget. These can include grants to nonprofit organizations, infrastructure development, emergency relief, research grants, or other designated programs. Working closely with federal and state elected officials is a key in securing special appropriations.

    - **LWCF Outdoor Recreation Legacy Partnership (ORLP)**

      This grant should receive immediate consideration from Delaware County based upon available match funding. These grants can be in the ballpark of $10 million. Pennsylvania can send one project forward and Delaware county would have a decent chance of being that submission The Outdoor Recreation Legacy Partnership (ORLP) program is a nationally competitive grant program funded through the Land and Water Conservation Fund. The ORLP focuses on providing outdoor recreation in disadvantaged communities within urban areas for land acquisition, new park development, or the renovation of existing parks, all with the goal of reconnecting people with the outdoors. The Department of Interior opened the seventh application round with more than $224 million in grant funding for local communities across the United States. This is the largest grant funding round since the launch of the program. Applications are now being accepted at Grants.gov through

April 30, 2024, giving communities the chance to access these funds even sooner.

- **Safeguarding Tomorrow through Ongoing Risk Mitigation (STORM) Act**

  Led by FEMA, this new revolving loan fund will be eligible for mitigation projects and activities to increase resilience and mitigate the impacts of events such as drought, extreme heat, severe storms, wildfires, floods, and earthquakes. This provides an opportunity to prioritize low-impact development, wildland-urban interface management, conservation areas, reconnection of floodplain and open space projects. These low-interest funds will allow for cities, counties, and states to repay the loan with savings from mitigation projects.

- **Five Star and Urban Waters Restoration Program**

  Co-sponsors, the EPA, and the Urban Waters Federal Partnership, work to develop community capacity with modest financial and technical assistance to diverse local partnerships for urban restoration and education programs. Streambank and shoreline stabilization, stormwater management, urban tree canopy restoration, and projects to prevent trash in waterways are just a few of the projects awarded grants. The grants are administered by the National Fish and Wildlife Foundation's (NFWF) Five Star and Urban Waters Restoration Grant Program.

- **Building Resilient Infrastructure and Communities (BRIC)**

  The Building Resilient Infrastructure and Communities (BRIC) aims to categorically shift the federal focus away from reactive disaster spending and toward evidence-based investment in resilience through nature-based solutions to enhance the resilience of infrastructure. BRIC supports innovative approaches and enhanced partnerships, like those that share funding mechanisms or project design. An innovative project might have multiple funding sources or in-kind resources from private- and public-sector stakeholders or offer benefits to the community beyond risk reduction.

- **Safe Streets and Roads for All (SS4A)**

  Established by the Bipartisan Infrastructure Law, the new Safe Streets and Roads for All (SS4A) will provide $5 billion between 2022-2026 to support local initiatives aimed at preventing serious injuries and fatalities that occur on our nation's roadways. Project could include the implementation of improvements that expand multimodal networks with separated bicycle lanes and improved pedestrian crossing safety features, installing safety enhancements like sidewalks, and creating safe routes to school and public transit services through multiple activities that lead to people safely walking, biking, and rolling in underserved communities.

- **Active Transportation Infrastructure Investment Program (ATIIP)**

  The ATIIP provides grants to states and localities to strategically invest in projects that connect active transportation networks and spines, such as safe bike paths and walking

trails, while reducing carbon emissions and creating new jobs. The program will help connect people to destinations within or between communities, including schools, workplaces, and other community areas. Active transportation spines can connect communities, metropolitan regions, and states. *The US Department of Transportation has just released information on the application timeline or directions on how to apply but provides updates as information is available.*

- **Fundraising -** The National Recreation and Park Association developed a guide for fundraising for parks. It is available through the following link: https://www.nrpa.org/contentassets/a867f5d151c2404ba5f4510bd83abdd6/nrpa-fundraising-guide.pdf

  The Delco Woods Master Plan contains catalyst projects that could spur private fundraising efforts by attracting donors with a compelling project. The NRPA also offers a Revenue Management School that provides training on revenue generation from non-tax sources which the County is attending via the Parks & Recreation Director in 2025. The National Association of Park Foundations is a membership-based organization that offers expertise, webinars, and training in strengthening park friends' groups and conservancies. Information is available at https://www.the-napf.org/



07. DELCO WOODS PARK MAINTENANCE

"If you can visualize it, if you can dream it, there's a way to do it." - Walt Disney

With the expansion of the county park system and the addition of Delco Woods, the Parks & Recreation Department and its allied departments are undergoing significant transformation. This chapter outlines the park system's evolving structure, maintenance strategies, and best practices to ensure safe, well-maintained, and welcoming parks. It also highlights the importance of sustainable maintenance, strategic staffing, and community engagement in shaping the future of Delaware County's parks.

Key Takeaways:

- **Department Growth & Training –** New leadership, added staff, and training investments signal strong County Council support.
- **Interdepartmental Collaboration –** Maintenance involves multiple departments, including Public Works and Planning.
- **Sustainable Maintenance Practices –** Prioritizing conservation, preventive care, and organic practices to reduce environmental impact.
- **Defined Maintenance Zones –** High-Activity, Medium-Activity, and Conservation Zones guide resource allocation based on park usage.
- **Strategic Staffing & Volunteer Engagement –** Hiring specialized personnel and developing volunteer programs to supplement maintenance efforts.
- **Community Programming –** Expanding recreation programs to serve diverse populations, including youth, seniors, and cultural groups.
- **Safety & Security –** Park Police and local law enforcement ensure public safety, with plans to increase on-site presence.
- **Long-Term Planning –** Use of the proposed Maintenance Impact Statement as a tool to align park improvements with available resources.

STRATEGIC OPERATIONS AND MANAGEMENT FOR OPTIMAL EFFICIENCY

During the master planning process, Delaware County identified the importance of preparing for the park's future management and operation. About 75% of the cost of a park over its lifetime is in operations and maintenance[1]. By addressing operations, management, and financing during master planning, the County will be able to make informed decisions about the allocation of resources, budget, staffing, and partnerships.

[1] Lay, Francis. 1978. Management of Grounds or Site Operations Manual, **Manual of Site Management**, Environmental Design Press. p4.

The County has been working on key parks and recreation plans diligently since 2014. This Operations and Management Plan, the latest addition to that planning effort, should be viewed within the context of the County's management system. What needs to happen in Delco Woods will impact staffing, budget, and resources of the park operations and management system in six different county departments.

OUR CONSTITUTIONAL RIGHT

Article I Section 27 of the Pennsylvania constitution states:

The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come.

DELAWARE COUNTY'S CROWN JEWEL

Delco Woods began with an extraordinary vision to transform the largest forest in the region and a former school campus into a dynamic, interactive environment. "Community in Nature" embodies the park theme of conserving a landscape that not only protects air and water but also provides a significant public benefit through recreational and educational opportunities and access to nature close to home.

ABOUT DELAWARE COUNTY'S PARKS AND RECREATION SYSTEM

Delaware County has 16 parks encompassing 884 acres. These range in size from three to 213 acres. A highlight of the park and recreation system is the countywide trail network that Delaware County has been developing since 2014 with five miles of trails established and more in the planning stage. Delaware County is home to nationally recognized "trails-in-the-making," such as the East Coast Greenway, the Rochambeau National Heritage Trail, 911 Trail, and connections to the John Heinz National Wildlife Refuge at Tinicum that could be part of the County's trail network. Delaware County's trails are part of the Circuit Trails, an 800-mile trail network. Once connected, the Circuit Trails will be one of our nation's premiere urban trail networks that brings multiple benefits to our County.

WHY IS THE OPERATIONS AND MANAGEMENT PLAN NEEDED?

An operations and management plan aids in the efficient and effective management of the park. Specific advantages and functions of the operations and management plan include:

1. Consultation, involvement and consensus •

- To resolve conflicts of interest.
- To promote interest and support.
- To encourage community involvement.
- To ensure that all interested parties agree to standards.
- To involve all stakeholders, officers and elected members.

2. Continuity and capacity

- To guide future management and ensure continuity of management.
- To review the nature and performance of the management structure.
- To identify and describe the management required to achieve the objectives.

3. Preparing for change

- To monitor and assess change on the site.
- To identify future requirements.
- To identify external factors that may affect the site.

4. Information and recording

- To ensure a site is properly described.
- To achieve comparability of data collection and recording.
- To identify areas of responsibility within a local authority for managing the green space.

5. Framework for decisions

- To help managers react positively to a changing world.
- To ensure clear objectives of management are laid down.
- To identify what we are aiming to achieve.

6. Setting standards

- To assess a site's importance relative to recognized standards.
- To ensure that all interested parties agree to standards.
- To set benchmarks against which delivery and performance can be measured.

7. Strategic planning

- To enable communication within and between sites and organizations
- To achieve comparability of approach to different sites.
- To ensure a balance of provision within a catchment area.

8. Action planning

- To cost work, to bid for funds or to assess grant aid.
- To program and schedule work.
- To develop and cost a way of managing and maintaining a park to safeguard its values.
- To promote positive use of the site, for example by reducing anti-social behavior.
- To establish the resources required to achieve and sustain quality and value.
- To identify and secure the skills required.
- To identify and attract additional resources where necessary.

Source: (2011) Commission on Architecture and the Built Environment. A Guide to Producing Green Space and Built Environment Management Plans. https://parkscommunity.org.uk/how_to_guide/a-guide-to-producing-green-space-and-park-management-plans/ Accessed November 1, 2023

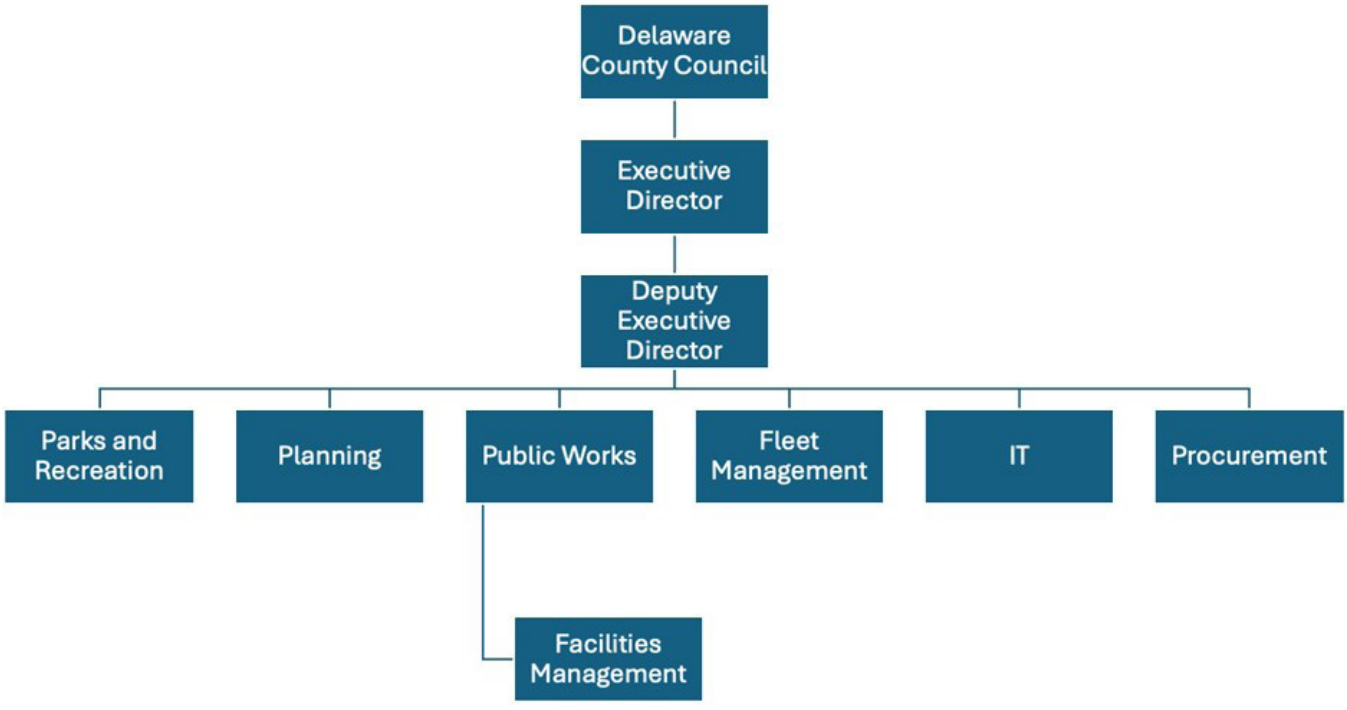
Table 10. The Parks of Delaware County			
Park	**Acreage**	**Location**	**Description**
Delco Woods	213	Marple Township	Approximately 173 acres of forest and the 40-acre former school campus
Catania Park *(Joint maintenance with sports organizations)*	14.9	Ridley Park Borough	Baseball and soccer recreational facility, batting cages, picnic pavilion, tennis and volleyball courts, and maintenance building
Clayton County Park	148.3	Concord Township	Multipurpose recreation facility featuring a nine-hole golf course
Glen Providence County Park	32.3	Media & Upper Providence	Trails, great lawn, forest, picnic area, outdoor stage
Incinerator Field	27.9	Marple Township	Open space and a multipurpose athletic field alongside the County Solid Waste Authority's facilities
Kent County Park	5.2	Upper Darby Township	Dog park and tot lot
Leedom Estates Park *(Maintenance by Ridley Township)*	14.9	Ridley Township	Baseball field, Leedom Community Center, and a Boy Scout cabin. Leedom Community Center hosts Township recreation programs.
New County Park at the former Little Flower Manor	37.5	Darby Borough/ Upper Darby Township	Master planned park development underway using grant funding. Trails, walkways, community gardens, playground, parking, creek access, and natural areas. Severely deteriorated large buildings on site.
Martin County Park	22.4	Upper Providence Township	Undeveloped stream valley used for hiking
Mineral Hill County Park	43.2	Middletown Township	Combined with two adjacent municipal parks in Upper Providence and Middletown, the total 123 acres was master planned as a passive recreation park with implementation slated using grant funding.
Ridley Township Municipal Park *(Maintenance by Ridley Township)*	8.6	Ridley Township	This Delaware County-owned property is under a lease agreement with Ridley Township. The agreement specifies that the Township has responsibility for all recreational facilities and maintenance at the park. It has a fitness trail with exercise stations, pavilion, soccer fields, parking lot, and playground.
Rose Tree County Park	117.9	Upper Providence Township	Amphitheater, plaza, community gardening, trails, memorials, large rolling lawn areas, wooded open space, and three historic structures. Major playground was recently developed with grant funding.
Pennock Woods	7.2	Lansdowne Borough	Wooded property containing Lansdowne Bird Sanctuary

Shrigley Park*	6.7	Lansdowne Borough	Open meadow surrounded by woodlands and rocky outcroppings, an old, short, stone wall with fireplace and picnic area.
Smedley County Park*	116.9	Nether Providence/ Springfield Township	Trails, woodlands, ballfields, playground, open lawns, picnic areas, and two buildings Friends of Smedley County Park
Upland County Park	60.1	Upland Borough	Redwood Community Center, ballfields, open playing fields, tot lot/playground, picnic areas, woodlands, and open lawn. Recently improved with grant funding.
Willow County Park *(Maintenance by Ridley Township)*	7.0	Ridley Township	Dense vegetation with dirt path leading to creek and ballfield.
16 Parks	884		

GOVERNANCE OF COUNTY PARKS, RECREATION, AND TRAILS

As the lead county department, Parks & Recreation has first-line contact with the public and relies on participation and support from five other partnering county departments. The collaborative relationships among the Planning, Facilities, Public Works, and Parks and Recreation Departments help to optimize county resources.

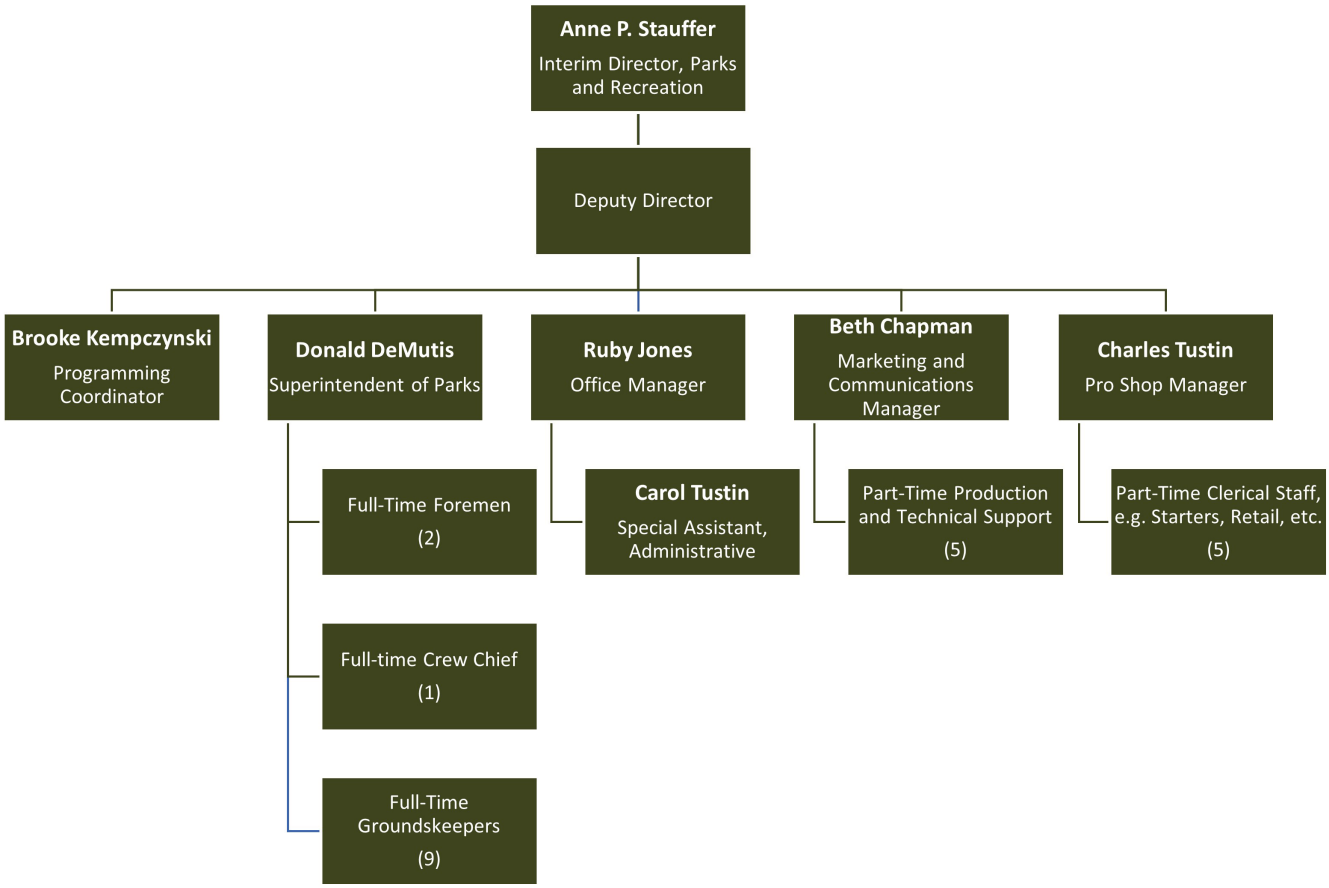
Delaware County Government Organizational Chart



PARKS & RECREATION DEPARTMENT ORGANIZATION AND OPERATIONS

Since this section of the master plan is about operations, maintenance, programming, and financing, the Parks and Recreation Department is the primary organizational focus. The Department is in transition with a new Director and Park Superintendent, and the addition of Delco Woods. County Council support is evidenced by the addition of new positions for the park system and employee development through Stewardship training by Natural Lands and park maintenance management certification through the National Recreation and Park Association.

Delaware County Parks & Recreation Department Organizational Chart



COUNTY PARK AND TRAIL MAINTENANCE

The goal of park maintenance is to keep parks functional, meeting the needs of the public while preserving natural resources and protecting public investment in land and facilities. Park maintenance includes work performed to keep public parks clean, safe, and operational. Functions include mowing grass, litter and trash removal, sports turf management, equipment management, vandalism and graffiti removal, planting flowers and shrubs, pruning trees, employee development and training, public relations, customer service, volunteer management, data collection, reporting and analysis. The Parks and Recreation Department provides the maintenance for all county parks, recreation facilities and trails. The Public Works Department maintains the 42 buildings in the county park system. Related County departments provide services that consider park maintenance such as master planning by the Planning Department, Capital Improvements administered through Public Works, building maintenance by Facilities Management, and equipment maintenance provided by Fleet Management.

PARKS AND RECREATION DEPARTMENT MISSION

The mission of the Department of Parks and Recreation is to be a source of pride and connection to the outdoors for all residents. Our mission is to provide all the residents of Delaware County with equitable access to high quality and sustainable recreation programs, outdoor natural spaces, facilities, and services, and to create environments that are safe, healthy, and enjoyable for all residents, while also protecting and preserving the natural resources within the County.

OPERATIONS AND MANAGEMENT PLAN FOUNDATION

In developing this Operations and Management Plan, the consulting team worked closely with the County's departments that are devoted to supporting the park's operations, programming, scheduling, maintenance, and promotion. In addition, the Master Plan Advisory Committee provided valuable information on what makes a park feel safe and welcoming. Two work sessions with key stakeholders, including County Council and representatives of the departments in the Office of Sustainability, provided both inspiration and reality checks regarding the capacity of the County to balance an increasing workload with constrained resources. Interviews and work sessions with representatives of department management and staff provided the information needed to establish a maintenance and operations framework. County reports, plans, and budget documents were important sources of information on park maintenance and financing. Critical input from management work sessions informed the park design, maintenance practices, identified challenges to address, and ideas to include in the master plan.

DELCO WOODS PARK MAINTENANCE PRINCIPLES

The park will be maintained by County employees, contractors, and volunteers in a manner that:

1. Establishes and carries out maintenance objectives and standards.
2. Follows a written maintenance plan.
3. Performs with economy of time, personnel, equipment, and materials.
4. Recognizes staff capacity and allocates their time according to sound polices and priorities.
5. Emphasizes preventive maintenance.
6. Advances interdepartmental communication and collaboration through formal written policies describing roles, responsibilities, coordination, and outcomes regarding operations and management of Delco Woods by all parties involved.
7. Allocates sufficient fiscal resources to support the maintenance program.
8. Provides adequate personnel to carry out maintenance functions. Adequate personnel means not only the number of positions, but also the staff's level of expertise and training available.
9. Conserves the natural environment.

"SAFE, CLEAN, AND READY TO USE" – Good maintenance plays a vital role in park safety. The presence of graffiti, litter, vandalism, poorly maintained paths, or plantings contribute to a perception of lack of safety. Lack of maintenance suggests that an area is uncared for and has minimal supervision. If ignored, a cycle of abuse is likely to occur in which legitimate users start to avoid an area as physical conditions deteriorate. The result is that the Park could be taken over by inappropriate users and uses. The park design incorporates the principles of Crime Prevention through Environmental Design. An elevated level of park use will increase park safety and public perceptions that the park is a welcoming and enjoyable place to visit.

10. Authorizes all park maintenance units to take responsibility for safety of the public, employees, and volunteers' safety.

11. Considers maintenance in the design and construction of park facilities, by including all relevant departments in subsequent design and management planning.

12. Projects a positive public image of the Parks & Recreation Department and the County.

13. Creates a sense of pride.

DELCO WOODS' BEST PRACTICES

Delco Woods holds a prominent place in the public eye, evident from the considerable public involvement and support seen during its master planning. The use of best practices will continue to nurture the enduring feeling of pride that is being championed as park development advances.

SUSTAINABILITY

The use of sustainable maintenance practices is an emerging best practice. Practices, such as using organic mulching programs and tactics for limiting the use of chemicals, are gaining traction nationwide. A summary of best practices includes the following[2]:

- Continue to use the staffing model that works for the park system including the "team approach" with the six County departments providing specialized expertise.

- Maintain an adequate level of expertise in specialty skills for the park staff (e.g., high-caliber park planning and design, environmental science, natural resource management, landscape architecture).

- Use volunteers to enhance staff and contractor efforts.

- Promote goals, standards, and design intent to all involved.

- Communicate sustainability expectations to maintenance staff and contractors.

- Monitor maintenance performance against landscape quality standards.

- Reward consistently high performance and address poor performance immediately.

- Promote respect through a zero-tolerance approach toward trash on the ground or overflowing from trash receptacles, graffiti, and other forms of vandalism.

- Organize maintenance work by the three maintenance and activity zones established in the park master plan and described below, managing to meet the standards for each zone.

- Explore the establishment of specialty teams for skills like natural resource management that work in all zones.

- Hire staff based on skills, expertise, experience, and attitude. Establish employee development programs for them.

- Support the professional development and upward mobility of employees to boost morale and satisfaction levels.

- Develop creative and flexible approaches and written schedules.

- Establish plans for routine and emergency maintenance and complaints.

- Continue to respond to complaints in a timely manner. Develop and maintain a system to track and convey that action has occurred.

[2] National Park Service. (2007) **Best Management Practices Used at Urban Parks in National and International Locations**. National Park Service: Washington, D.C. p.v.

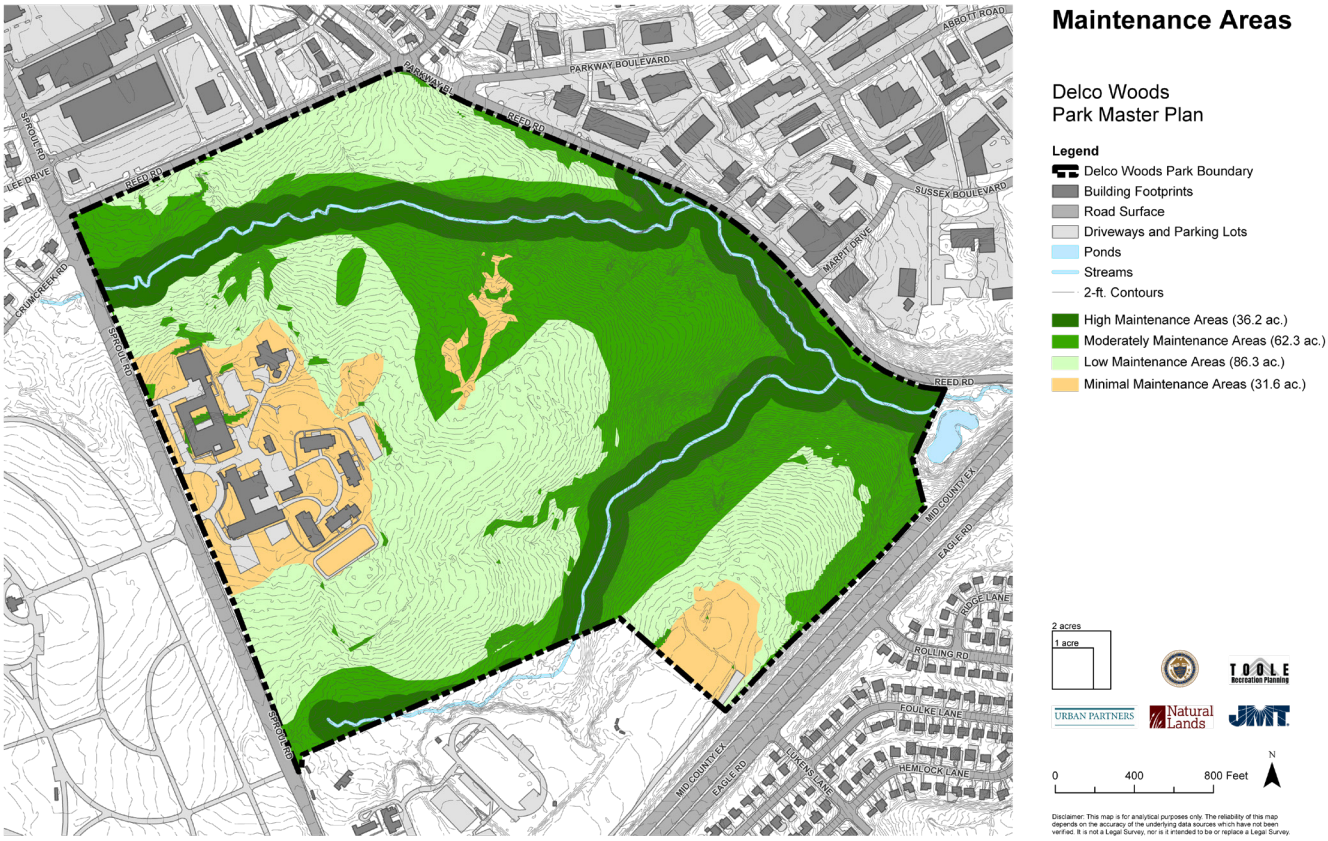
- Develop a system to monitor and track park conditions.
- Continue to move toward organic practices and implement as much as possible.
- Limit the use of commercial fertilizers, pesticides, and herbicides, using only when necessary.

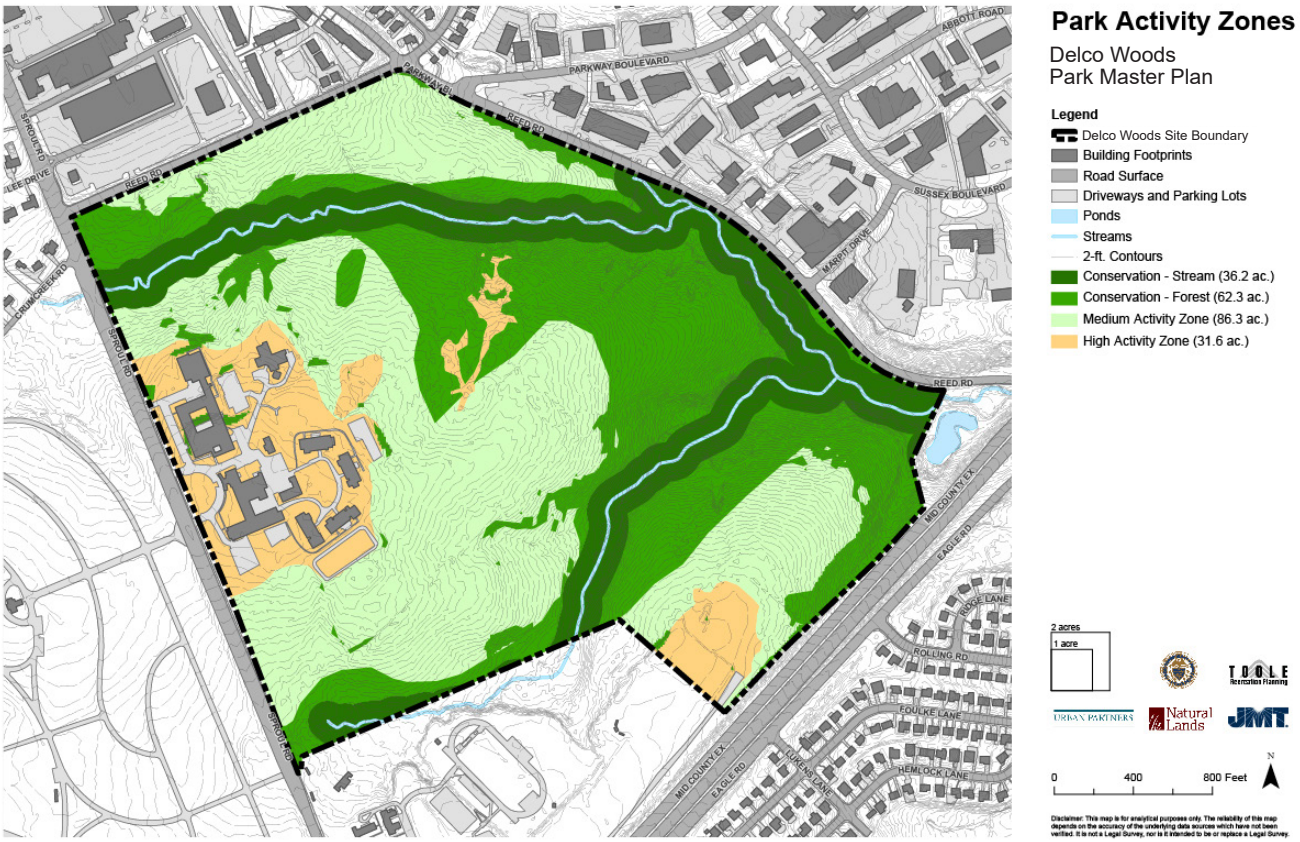
MAINTENANCE MANAGEMENT ZONES

The maintenance management plan is divided into three zones, according to the activity levels dictated by site conditions.

- The 31.6-acre High Activity Zone pertains to areas with the highest traffic or usage intensity, necessitating significant effort and resources for maintenance and supervision. Maintenance tasks in these spaces are recommended daily or weekly.
- The 86.3-acre Medium Activity Zone encompasses spaces with low to moderate usage intensity. While these areas expect regular usage, their scheduled maintenance occurs on a weekly, monthly, yearly, or as-needed basis.
- The 98.5-acre Conservation Zone (forest and stream) includes the most ecologically significant park spaces and therefore lacks formal amenities or areas for large events or programs. Despite needing land stewardship and oversight, these spaces are projected to require the least effort and resources for upkeep after the forest's major restoration has been completed.

The **Maintenance Areas Map** shows the maintenance level that occurs within specific park areas based on the projected use and physical elements. Park improvements will be phased in over time as resources become available. The forest area will be the first phase of development in accordance with the County's goal and public support for conservation of the forest. As the Community Recreation Hub is developed, the maintenance responsibilities for this High





Activity Zone will expand. As the Community Recreation Hub progresses to the final design stage, a maintenance impact statement should be developed in concert with the identification of facilities being included in the Hub.

The maintenance impact statement would include setting the standards of care consistent with this park master plan, determining staffing levels and equipment needs, and potential partners and revenues to help offset costs. The suggested maintenance regime in this chapter represents the entirety of facilities envisioned for the park. As final design and engineering is completed, the maintenance plan should be adapted accordingly.

MAINTENANCE MANAGEMENT ZONE: HIGH ACTIVITY

The **High Activity Zones Map** shown on the previous page occupies about 31.6 acres and includes the Celebration Pavilion with a kitchen, restrooms, playground, tree canopy walk, and water feature. High-activity areas are anticipated to be the most widely used spaces and require the most upkeep and maintenance.

HIGH-ACTIVITY ZONE 1 GENERAL MAINTENANCE

The following types of maintenance occur within the entire High Activity Zone and are not specifically associated with an individual maintenance category.

ADA ACCESSIBILITY

Each improved space shall be maintained to the standards the space was originally designed to achieve ADA compliance and accessibility.

EMERGENCY MANAGEMENT

In the event of a major emergency or disaster, call 911. Once the immediate danger has subsided, refer the incident to the Delaware County Parks and Recreation Department.

LITTER CONTROL

High-Activity Zones shall be patrolled five to seven times a week. Maintenance tasks include checking all trash and recycling receptacles and replacing the liners if they are over half full. Extremely

high visitation may increase the frequency of park patrolling and trash removal.

PARK SIGNAGE

Signage shall be inspected monthly and repaired as needed. Inspection confirms that signage is clean, free of graffiti, and that hardware and frames are intact and properly secured. It also guarantees there are no protrusions, exposed sharp edges or pointed corners that could pose a safety hazard. If damage or vandalism to signage is found, staff should report it to the Parks and Recreation Department to coordinate repairs.

LIGHTING

All area and security lighting shall be checked quarterly. The light pole base and pole shall be inspected for indications of damage and the lighting system, timers, and fixtures shall be checked for proper operations.

GRAFFITI AND VANDALISM

Maintenance staff shall report signs of graffiti or vandalism to the Parks and Recreation Department to coordinate with the appropriate maintenance staff to clean up or repair the incident as soon as possible.

HARDSCAPE MAINTENANCE

The term *Hardscape Maintenance* refers to nonporous features of park circulation and plazas. They are divided into either *Vehicular* or *Pedestrian + Nonmotorized Wheeled Vehicle* areas.

- **Hardscape Vehicular Areas** include all public and privately-owned streets, drives, and parking areas.
    - Parking lots shall be inspected every month as needed.
    - Service driveway and streets shall be swept every two months or as necessary.
- **Hardscape Pedestrian + Nonmotorized Wheeled Vehicle Areas** include all public sidewalks and paths.
    - Sidewalks and paved pathways shall be inspected quarterly to make sure that they are free of water collecting depressions, litter, and debris and that they are clear from low or protruding tree limbs or other objects. Grass growth and weeds should be removed from the cracks and expansion joints as needed.
    - Nonpaved paths shall be inspected quarterly and after heavy rainfall events to confirm they are free of water-collecting depressions and erosion, maintain a uniform surface with positive drainage, and remain clear of trip and head clearance hazards. Maintenance staff should report any damage or maintenance issues to the Park Superintendent and repair the areas as directed. A pre-emergent herbicide shall be applied quarterly to the surface of the path to minimize weed growth.
- Bike Racks shall be inspected monthly and repaired as needed.

SOFTSCAPE MAINTENANCE

Softscape Maintenance refers to landscape elements and features in either *natural* or *maintained* areas.

- **Softscape Natural areas** do not require gas or electrically powered machinery to conduct essential maintenance routines. All current and future softscape features within the High-Activity Zone area are to be maintained.
- **Softscape Maintained areas** require gas or electrically powered machinery to conduct essential maintenance routines.

- **Turf Care —** The following shall be required for all turf areas within the High Activity Zone:
    - All turf areas shall be aerated a minimum of twice a year
    - Mowing and edging of turf areas shall occur weekly between the months of March and November and every other week as needed between November and February. Maintenance staff shall fill any ruts caused by mowing and will use the utmost care to avoid hitting trees, shrubs, and planting beds during mowing
    - A pre-emergent herbicide shall be applied twice a year and general weeding preformed monthly
    - Reseeding or sodding shall occur twice a year or as needed
    - Application of fertilizers to turf areas shall occur two times a year or as needed
- **Native Grass and Wildflower Areas —** Native grass and wildflower areas should be maintained to have a natural look. Within these areas the following maintenance shall occur:
    - During the first year after initial installation, these areas shall be mowed regularly to a height of 8 inches when plants reach a height of 12 to 18 inches until the end of fall. As needed, reseed in the spring and fall and control weeds by hand, mowing, and/or chemical application.
    - After the first year, these areas shall be mowed once a year in March and weeding shall occur monthly. If invasive plants are a widespread issue, a third to half of the meadow can be mowed in July, rotating sections annually.
- **Tree and Shrub Care —** All maintenance activities shall coincide with low visitation periods or to take advantage of special growing characteristics. The following shall be required for all tree and shrub care within the High Activity Zone:
    - All newly planted trees shall be staked and tied until roots are established and are able to stand without support (between one and two years from tree installation).
    - Maintenance staff shall inspect the tree guys and adjust as needed to maintain tautness and avoid girdling of trees.
    - When appropriate maintenance staff will remove and dispose of guying system.
    - All newly planted trees and large shrubs should

be irrigated for three years.

- Maintenance staff shall inspect all trees and shrubs for hazardous limbs weekly between the months of March and October and every other week between November and February.

- Pruning should only be done after a tree or shrub's bloom cycle, and should only be done to promote the natural aesthetic appearance and removal of freeze damaged material.

- Maintenance staff shall prune trees eight inches in caliper or less twice a year.

- Safety pruning is required for all trees and shrubs adjacent to pedestrian areas. Limbs must be maintained to provide a 12-foot clearance over parking areas and a seven-foot clearance above walkways

- Sucker growth shall be removed to a height of six feet.

- Maintenance staff shall closely monitor and inspect all trees and shrubs during routine maintenance for insect and disease problems. If a problem is found, maintenance staff shall treat the area within 24 hours of observing the issue. All damaged or diseased trees (beyond help or treatment) shall be removed, and new trees installed as resources become available.

- Fertilizer applications shall be applied once a year before the growing season.

- Mulch shall be applied to the base of a tree or shrub twice a year.

- **Planting Beds —** Planting beds will only be installed if there is adequate staff capacity, or a volunteer group adopts the area with a formal MOU for the care of the bed(s). Planting beds shall be maintained to promote the health, visibility, natural colors, and variety of each species. Depending on the facility and landscape design, seasonal color replacement may be necessary. To highlight Delaware County's commitment to sustainability, these areas should feature native plants. The following maintenance is required for these areas:

  - Maintenance staff shall perform general maintenance (pruning, weeding, trimming, etc.) every week between the months of March and October, and every other week between November and February as needed.

  - Groundcovers shall be trimmed to prevent encroachment onto walkways.

- Pre-emergent herbicides shall be applied twice a year.
- Mulch shall be applied twice a year.
- Application of Insecticides — All_ application of herbicide or pesticide must be done in compliance with Delaware County Parks & Recreation Department's Integrated Pest Management Program.

WATER MAINTENANCE MANAGEMENT

The term *Water Maintenance Management* is used within this section to describe elements or features that detain, convey or clean water in either a Natural or Maintained system.

- **Water Natural** are native areas that were not man-made and require maintenance only when safety or the ecological habitat is in jeopardy.
- **Water Maintained** are man-made features that are not naturally occurring and require regular maintenance to continue performing as designed. Stormwater control systems are designed to help mitigate and control stormwater during rainfall events by reducing downstream flooding, erosion, and filtering pollutants from water. They can be designed in many forms, but within Zone 1 it will mostly consist of: detention ponds, wet/retention ponds, and rain gardens. These systems are both a necessity and an amenity that should be treated and cared for equally as such. These features should be inspected monthly and within 24 hours after a heavy rain event. For all Water Maintained areas, the following general maintenance is required:
    - Mow vegetation that exceeds 18 inches in height; care should be taken that special plantings are not disturbed and are maintained as appropriate;
    - Remove trash, debris, and sediment buildup as necessary, especially at inlet and outlet structures;
    - Provide corrective maintenance when a control does not drain properly;
    - Repair any deterioration or damage to concrete elements as needed;
    - Nonvegetated or washed-out areas should be replanted as soon as possible to minimize erosion.
    - Remove nuisance and invasive plant species.
- **Wet Ponds** (also referred to as stormwater ponds) — The physical wet pond area shall be maintained to the quality established by the Parks and Recreation Department in consultation with the Conservation District. The grass area around the wet pond's perimeter should be kept at 18 inches or less.
- **Additional Rain Garden Requirements** — These areas shall be inspected for trash and debris removal every two weeks and as needed following large storm events.

STRUCTURES AND ACTIVITY HUB MAINTENANCE

Structures and Activity Nodes Maintenance refers to places or man-made features in Delco Woods.

- **Structures + Activity Nodes Utility Service areas that require any combination of electrical, water, or wastewater service**s.

- **Restrooms —** Maintenance staff or contractors will clean, sanitize, and restock all restrooms daily. During peak usage, additional cleanings may be required. Maintenance shall include wiping down floors, walls, ceilings, toilets, and urinals. During routine cleanings, maintenance staff shall inspect all plumbing fixtures, lighting, and hand dryers so that they work properly.

- **Water Features and Fountains —** All water fountains and features will be turned off from November through March. While they are in operation, water features shall be inspected and tested daily by maintenance staff to be safe, clean, in good condition and are operating properly. Drinking fountains shall also be inspected daily for operation and cleanliness during this time, and maintenance staff will remove debris from basins and repair as needed.

- **Structures and Activity Hubs — No Utility Service areas that do not require any combination of electrical, water, or wastewater services**.

  - **Art Installations —** Art installations shall be inspected annually for safety and visual appearance. Maintenance staff should inform the Park Superintendent if there are signs of vandalism or degradation. Repairs and maintenance are unique to each individual piece depending on its location, material construction, and purpose. A separate maintenance plan should be created for individual pieces for optimal care.

  - **Flagpole(s) —** Flagpoles shall be inspected monthly. This includes inspecting the ropes, cables, lighting, and flags. Flags will be replaced as needed due to wear and damage.

  - **Playgrounds and Natural Play Areas —** Maintenance staff shall inspect all natural play features and playground equipment and areas daily to ensure they are safe, clean, in operating condition, and surfacing is free and clear of hazards. This includes visually inspecting to determine that the area is in conformance with CPSC (Consumer Product Safety Commission) guidelines.

  - **Pavilions and Picnic Areas —** Maintenance staff will inspect and clean pavilions three times a week and as needed prior to an event. This will include cleaning the barbecue grills, emptying trashcans, sweeping the area, and cleaning tables.

  - **Park Benches —** Benches shall be inspected daily to ensure they are structurally sound. This includes verifying that hardware is intact, nails, bolts, or screws are flush with the surface, and that seats and backing are smooth with no protrusions or exposed shared edges.

MAINTENANCE MANAGEMENT ZONE: MEDIUM ACTIVITY

The Medium Activity Zone of 86.3 acres is associated with low to moderate level of use and amount of maintenance.

MEDIUM ACTIVITY ZONE GENERAL MAINTENANCE

The following types of recommended maintenance occur within the Medium Activity Zone and are not specifically associated with an individual maintenance category. These tasks are considered universal to the area and not specific to only one type of use or space.

ADA ACCESSIBILITY

Each improved space within the area shall be maintained to the standards the space was originally designed to achieve regarding ADA compliance and accessibility.

EMERGENCY MANAGEMENT

In the event of a major emergency or disaster, call 911. Once the immediate danger has subsided, refer to the Delaware County Parks and Recreation Department.

LITTER CONTROL

Maintenance staff shall check all trash and recycling receptacles five times a week and replace liners if they are over half full.

PARK SIGNAGE

Signage shall be inspected monthly and repaired as needed. Inspection ensures that signage is clean, free of graffiti, and that hardware and frames are intact and is properly secured. It also guarantees there are no protrusions, exposed sharp edges or pointed corners that could pose a safety hazard. If damage or vandalism to signage is found, maintenance staff should report it to the Parks & Recreation Department to coordinate repairs.

LIGHTING

All area and security lighting shall be checked quarterly. The light pole base and pole shall be inspected for indications of damage or rust and the lighting system, timer and fixtures shall be checked for proper operations.

GRAFFITI AND VANDALISM

Maintenance staff shall report signs of graffiti or vandalism to the Parks & Recreation Department. The park manager shall coordinate with the appropriate maintenance staff to clean up or repair the incident as soon as possible.

HARDSCAPE MAINTENANCE

The term *Hardscape Maintenance* is used within this section to refer to paved elements and are divided into either Vehicular or Pedestrian + Bike spaces.

- **Hardscape Vehicular areas** include all public streets and parking areas. Parking areas within this area shall be inspected once a week. This consists of sweeping parking lots and picking up miscellaneous trash and debris. All service drives shall be inspected and swept on a quarterly basis

- **Hardscape Pedestrian + Bike areas** include all public and privately-owned paved sidewalks.

    - Sidewalks — Maintenance staff will sweep sidewalks weekly and inspect surfaces for debris and hazards.

    - Bike Racks — Bike racks shall be inspected monthly and repaired as needed.

SOFTSCAPE MAINTENANCE

Softscape Maintenance refers to landscape elements and nonpaved paths in either Natural or Maintained spaces.

- **Softscape Natural areas** do not require gas or electrically powered machinery to conduct essential maintenance routines.

    - Tree Care — Trees shall be inspected yearly and trimmed as needed for public safety. All damaged or diseased trees should be removed, and new trees installed as resources are available.

- **Softscape Maintained areas require gas or electrically powered machinery to conduct essential maintenance routine.**
    - Turf Care — The following shall be required for all turf areas within a Tier 2 area:
        - All turf areas shall be aerated once at the beginning of the growing season.
        - Mowing shall occur once every one to two weeks from March through October as needed and every other week during the months of November through February. Maintenance staff shall fill any major ruts caused by mowing and will use the utmost care to avoid hitting trees, shrubs, and planting beds during mowing.
        - Reseeding or sodding shall occur twice a year.
        - Application of fertilizers to turf areas shall be applied once a year.
    - Native Grass and Wildflower Care — Natural native grass and wildflower areas within Level 2 areas are intended to be maintenance free once established.
        - During the first year after initial installation, these areas shall be mowed regularly to a height of 8 inches when plants reach a height of 12 to 18 inches until the end of fall. As needed, reseed in the spring, and fall and control weeds by hand, mowing, or chemical application.
        - After the first year, these areas shall be mowed once a year in March and weeding shall occur monthly. If invasive plants are a widespread issue, one-third to half of the meadow can be mowed in July, rotating sections annually.

WATER MANAGEMENT

All water systems within a Medium Activity Zone are expected to be maintained.

- Water Maintained — Stormwater control systems are designed to help mitigate and control stormwater during rainfall events by reducing downstream flooding, erosion, and filtering pollutants from water. They can be designed in many forms, but within Level 2 they will mostly consist of: detention ponds, wet/retention ponds, rain gardens, and vegetated filter strips. At a minimum, these features should be inspected once a month and as needed after a heavy rain event. For all maintained water areas (except for wet ponds) the following general maintenance is required:
    - Mow vegetation that exceeds 18 inches in height.
    - Care should be taken that special plantings are not disturbed and are maintained as appropriate.
    - Remove trash, debris, and sediment buildup, especially at inlet and outlet structures.

- Provide corrective maintenance when a control does not drain properly;
- Repair any deterioration or damage to concrete elements as needed;
- Nonvegetated areas should be reseeded or sodded as soon as possible to minimize erosion; and
- Remove nuisance and invasive plant species.
- Maintenance staff shall report any inconsistencies, damage, or issues to the park manager as they arise.

- **Wet Ponds —** The grass area around the wet pond's perimeter should be kept at 18 inches or less.
- **Additional Rain Garden and Filter Strip Requirements —** These areas shall be inspected for trash and debris removal every two weeks and as needed following large storm events.

STRUCTURES AND ACTIVITY HUB MAINTENANCE

The term "Structures and Activity Nodes Maintenance" is used in this section to refer to places or man-made features that add to this area of the park. They are divided into areas that either require or do not require utility service.

- **Structures and Activity Hubs Utility Service areas that require any combination of electrical, water, or wastewater services.**
  - **Water Fountains_—** All water fountains will be turned off from November through March. While they are in operation, drinking fountains shall be inspected daily for operation and cleanliness, and maintenance staff will remove debris from basins and repair as needed.
- **Structures + Activity Nodes No Utility Service areas** that do not require any combination of electrical, water or wastewater services.
  - **Art Installations —** Art installations shall be inspected annually for safety and visual appearance. Maintenance staff should inform the park manager if there are signs of vandalism or degradation. Repairs and maintenance are unique to each individual piece depending on its location, material construction, and purpose. A separate maintenance plan should be created for individual pieces for optimal care.
  - **Bird Blinds —** The type of bird blind and design for the observation towers has not been determined. Once there is an adopted program, this section shall be revised, as necessary.
  - **Playgrounds and Natural Play Spaces —** Maintenance staff shall inspect all playground equipment and natural play areas weekly to ensure that they are safe, clean, in operating condition, and surfacing is free of hazards. Fitness stations are to be inspected weekly to verify they are functioning properly. This includes visually inspecting that all nails, bolts, or screws are flush with surfaces, equipment is clean and free of graffiti.
  - **Park Benches —** Benches shall be inspected monthly to check that they are structurally sound. This includes verifying that hardware

is intact; nails, bolts, or screws are flush with the surface, and seats and backing are smooth with no protrusions or exposed shared edges.

MAINTENANCE MANAGEMENT ZONE: CONSERVATION (FOREST AND STREAMS)

The 98.5-acre Conservation Maintenance Management Zone is associated with conservation of the forest (62.3 acres) and buffered streams (36.2 acres) and would involve visitor use of only a passive nature along trails. This zone carries a focus on stewardship and natural resource management. Conservation Zone maintenance will occur in phases as the Stewardship Plan is implemented. With the amount of disturbance on the site resulting from lack of care for many decades, the site will require extensive site preparation before routine natural area maintenance can occur. The removal of hazardous trees and invasive species, tree planting, deer management, riparian area restoration and other site requirements for both human and property safety need to occur first. The tasks below in the Conservation Zone provide for routine maintenance once the site is restored. Between now and when the forest restoration occurs, the tasks below are important and include litter pick up and trash removal, removal or posting of hazards, control of illegal uses, and other measures that arise as use of the park increases.

ESTABLISHING STEWARDSHIP AS A REGULAR MAINTENANCE FUNCTION

Conservation Zone maintenance requires weaving stewardship functions into traditional park maintenance that typically focuses on litter and trash removal, mowing, playground safety, and custodial services. The Delaware County Parks & Recreation Department already does an excellent job in conservation projects, such as establishing riparian buffers, tree planting, and greenway work, and this experience can be transferred to the larger challenge of managing the new, predominantly forested park. In larger parks and recreation systems, a specialized conservation crew would be in place to work solely on natural resource management. Another approach would be to train maintenance workers in natural resource management as an add-on to their traditional maintenance tasks. In the Delaware County Parks and Recreation Department, all maintenance workers perform all tasks as needed. The Conservation District helps to support the Department's work in conservation activities with their expertise and guidance in projects. Natural Lands conducted a Stewardship Training work session with the park maintenance division, and it was held as part of this park master plan. They also produced a series of plant identification cards for workers to use in their work in caring for the Conservation Zone.

IMPORTANCE OF CONSERVATION PARTNERSHIPS

Conservation partnerships will be invaluable to managing the park. The BMX group has already removed tons of trash and illegal dumping of large items like cars, mattresses, and furniture. About 330 people countywide wanted to be part of the advisory committee for the park master plan. Community-based youth organizations, such as Black Girls with Green Thumbs and Marple Civic Youth, could be valuable partners in forest projects and developing the next generations of park stewards. Volunteers and public private partnerships are not "free." They require management and staff time to recruit, train, and supervise. A well-developed volunteer program could yield FTE's (Full-Time Equivalent) well beyond the number that could be paid for in the department's budget. The value of a volunteer hour in Pennsylvania is $29.78, which translates into an FTE salary of $60,000.

CONSERVATION ZONE GENERAL MAINTENANCE

The following types of maintenance occur within the entire Conservation Zone and are not specifically associated with an individual maintenance category. These tasks are considered universal to the area and not specific to only one type of use or space.

ADA ACCESSIBILITY

Each improved space within the park shall be maintained to the standards the space was originally designed to achieve ADA compliance and accessibility.

EMERGENCY MANAGEMENT

In the event of a major emergency or disaster, call 911. Once the immediate danger has subsided, refer to the Delaware County Parks and Recreation Department.

LITTER CONTROL

Trash receptacles shall be placed at major trailhead. Maintenance staff will check all trash receptacles once per week and replace bags if they are over half full. General litter and trash pickup around the trailheads shall be done once a month or as needed.

ILLEGAL CAMPSITES

Within less populated areas, illegal and transient campsites may form. If maintenance staff find an illegal campsite, they will notify the Park Superintendent immediately; The Park Superintendent shall notify the appropriate social service contacts to manage the circumstances in conformance with laws, County policy, and social service practices.

PARK SIGNAGE

Signage shall be inspected monthly and repaired as needed. Inspection can verify that signage is clean, free of graffiti, and that hardware and frames are intact and properly secured. It also guarantees there are no protrusions, exposed sharp edges or pointed corners that could pose a safety hazard. If damage or vandalism to signage is found, maintenance staff should report it to the Parks & Recreation Department to coordinate repairs.

GRAFFITI AND VANDALISM

Maintenance staff shall report signs of graffiti or vandalism to the Parks & Recreation Department. The Parks & Recreation Department shall coordinate with the appropriate maintenance staff to clean up or repair the incident as soon as possible.

SOFTSCAPE MAINTENANCE: CONSERVATION ZONE MAINTENANCE

The term Softscape Maintenance in all the Maintenance Zones refers to vegetative areas and nonpaved paths. They are divided into the following areas: those with man-made features and those that are natural. In the Conservation Zone, land management is the most significant maintenance function.

- **Softscape Maintained areas that have man-made elements or require gas or electrically powered machinery to conduct essential maintenance routines**.
    - **Trailheads –** Trailhead area shall be mowed weekly and pre-emergent herbicides applied three times a year. Inspection for hazardous limbs and diseased trees shall occur whenever maintenance staff are on-site.
    - **Unpaved and Mulch Trails –** Paths shall be inspected after extreme rainfall events to ensure paths are free of litter and debris, and provide unobstructed access from low, protruding or fallen tree limbs. Maintenance shall occur as needed.

- **Softscape Natural areas require limited gas or electrically powered machinery to conduct essential maintenance routines.** Natural softscape areas within the Conservation Zone consist of forested areas, nonprogrammed or unplanned open areas, and untouched vegetated spaces. Implementing the stewardship section of this master park plan is the highest priority and are divided as follows:
    - Parkwide Conservation Management
    - Riparian Forest Buffer Management
    - Wetland Management
    - Mature Forest Management
    - Mixed Hardwood Forest Interior and Red Maple Palustrine Forest Management
    - Exterior Mixed Hardwood Forest Management
    - Meadow Areas Management

Priority	Table 11. Park-Wide Conservation Management Unit	
	Task	**Timing**
1	Administer a hazard tree monitoring program	Annually and after severe storms
1	Install and maintain boundary postings	Anytime
1	Administer an invasive plant management program	Ongoing
1	Administer a deer management program.	Ongoing
	Address debris throughout Park	
2	Follow proper disposal methods and quarantine requirements	Regularly
2	Remove trash, prioritizing debris accessible to visitors, especially children	Anytime
3	Remove nuisance structures	Anytime
	Emerald Ash Borer	
1	Monitor for EAB	Year-round
1	Continue to identify and remove ash trees that can become hazardous if infested.	Year-round
1	Follow quarantine requirements when moving wood or materials that can harbor EAB	Year-round
3	Replant areas of ash dieoff if canopy gaps occur	As needed
	Spotted Lanternfly	
1	Follow quarantine requirements when moving wood or materials that can harbor SLF	Year-round
	Climate Change	
1	Monitor for deterioration of plant communities or species	Annually
1	Maintain riparian buffers	On a scheduled basis
2	Design climate resilient plantings (include more southern and hardier native species)	Pre-planting

3	Leave dead and downed wood to retain carbon in natural areas whenever possible	Year-round
4	Plant for increased carbon storage and sequestration within interior forests	Spring or Fall
	Staffing	
1	Train staff in key stewardship techniques and concepts	Annually for new staff or topics
1	Conduct wildlife studies for species diversity, abundance, and habitat areas	As feasible
	Conduct water quality and quantity studies	As feasible
	Conduct indepth vegetation surveys across multiple years and season	As feasible
3	Employ a natural resources manager	Ongoing
4	Employ a natural resources assistant	Ongoing
	Monitoring	
2	Monitor climate change impacts to precipitation and temperature	As feasible
2	Conduct water quality and quantity studies	As feasible
3	Conduct in-depth vegetation surveys across multiple years and seasons	As feasible
3	Conduct wildlife studies for species diversity, abundance, and habitat areas	As feasible

Priority	Table 12. Riparian Forest Buffer Management Unit	
1	Utilize formal stream crossings where trails need to cross a stream	As needed
1	Protect the current extent of the forested riparian buffers	Year-round
1	Conduct an initial hydrologic study to determine if streambank restoration is needed	Anytime
2	Expand the width of the riparian buffer where possible as needed to reach at least 100 feet in width. Choose native tree species that are predicted to be climate change resilient.	Spring or Fall
4	Increase the density of the forested riparian buffers by planting shrubs and understory trees. Protect plantings with tree tubes and/or fencing until able to withstand deer browse and rubbing	Spring or Fall
	Control invasive plants. See invasive plant appendix.	
	Beech Leaf Disease	
1	Monitor for BLD.	Year-round
2	Stay current on BLD research.	Year-round

Priority	Table 13. Wetland Management Unit	
1	Establish a 300 foot nondisturbance buffer around wetland. Use of mechanical equipment should be minimized in this area. Avoid establishing structures within this area.	Year-round
1	Control invasive plants. See Invasive Plant Appendix.	Year-round

Priority	Table 14. Mature Forest Management Unit	
1	Avoid removal of trees unless for safety. In particular, retain trees over 12 inches dbh and trees that are used by bats for roosting (see Wildlife section). Avoid cutting trees during nesting and roosting seasons.	Year-round
2	Prevent further spread of the BMX course and close trails that cross the stream.	Year-round
3	Allow dead and downed wood to remain in place where not a nuisance.	Spring or Fall
3	If natural regeneration does not increase with deer control, plant understory trees to establish the understory layer. Also have a cohort of younger trees in place to replace canopy trees as they die off. Choose a diversity of species that are expected to be resilient to climate change. Protect with tree tubes or fencing	Spring or Fall
4	If natural regeneration does not increase with deer control, plant native shrubs in clusters surrounded by fencing to protect from deer. Control invasive plants within fencing. Fencing can be removed when shrubs can withstand deer browsing, approximately 5 to 10 years.	Spring or Fall
	Beech Leaf Disease	Year-round
1	Monitor for BLD	As needed
2	Be prepared to replant areas as needed if beeches decline	Year-round
1	Stay current on BLD research	Year-round

Priority	Table 15. Mixed Hardwood Forest Interior and Red Maple Palustrine Forest Management Unit	
1	Avoid infrastructure, including trails, through the wet areas of the red maple palustrine forest. These areas are distinguishable from the footing and skunk cabbage.	Year-round
1	Avoid removal of trees unless for safety. In particular, retain trees over 12 inches dbh and trees that are used by bats for roosting (see Wildlife section). Avoid cutting trees during nesting and roosting seasons.	Year-round
	Control invasive plants. See Invasive Plants Appendix	
2	Leave snags and dead wood in place where not a nuisance.	Year-round
4	Plant understory trees and shrubs to build forest layers. Protect plantings with tree tubes and/or fencing. Choose species that are projected to be resilient to climate change as possible. Consider adding some tree species that are projected to move into the area as their habitat zones expand north.	Spring or Fall

Priority	Table 16. Meadow Areas Management Unit	
4	Once established, mow once annually, cutting to a height of 8 to 12 inches	March
4	Control invasive plants. See Invasive Plant Control Appendix.	Ongoing

MAKING THE CASE FOR PARK MAINTENANCE

The public often lacks an understanding that parks require maintenance. At the same time, residents can be the first to complain over lack of maintenance! County messaging around the importance of maintenance can help an already supportive public understand the responsibilities the new park brings.

PROGRAMMING

The Parks and Recreation Department has multiple roles in programming: direct provider, facilitator of programs offered by others, and supplier of facilities for programs in county parks offered by community-based organizations. As a direct provider of programs, the Department offers special countywide events including the Rose Tree Summer Festival, the Festival of Lights, Redwood Playhouse senior programs, the community gardens at Rose Tree Park, and Senior Games. Currently, only the Redwood Playhouse has a program coordinator. The Marketing & Communications Manager is responsible for special event coordination and the Rose Tree Summer Festival. A system-wide Program Coordinator would enable the Department to provide more programs and generate more revenue.

RECREATION AND COMMUNITY WELLNESS BUREAU AND COMMUNITY RECREATION NEEDS

In the public engagement process, the most important recreation programs needed are:

1. Adult fitness and wellness programs
2. Children's camps
3. Teen spaces and activities
4. Outdoor environmental/nature camp programs
5. Historical park programs
6. Cultural enrichment programs
7. Senior health and wellness programs
8. Community special events
9. Community meeting space, including space for the many performing arts groups.

PROGRAMMING MATTERS IN DELCO WOODS

Park programming enhances the inclusivity and accessibility of public spaces, to meet the diverse needs and interests of various demographic groups, including minorities, the elderly, families, children, and those with special needs.

For minorities, park programming serves as a means of representation and cultural inclusion. By organizing events that celebrate diverse traditions, cuisines, music, and art, parks become spaces where different ethnic groups feel acknowledged and valued. It helps in breaking down barriers and encouraging cross-cultural understanding, fostering a more cohesive and harmonious community.

The elderly, teens and those who work from home often face social isolation. Park programs tailored to their needs provide opportunities for social interaction, physical activity, and mental stimulation. Activities like tai chi classes, walking groups, gardening clubs, or storytelling sessions not only help improve physical and mental health but also offer people a chance to connect with others, reducing feelings of loneliness, and improving overall well-being.

Families greatly benefit from park programming as it offers them a place for bonding and recreation. Events, such as family picnics, movie nights, educational workshops, and nature exploration activities, create avenues for quality time spent together. These initiatives also contribute to the development of children by providing them with safe and stimulating environments for play, learning, and socialization. Accessible playgrounds,

storytelling hours, arts and crafts, music, and sports catered to children help in their holistic growth.

Programming in collaboration with these diverse groups not only increases their use of parks but also fosters a sense of ownership and pride in the community. It encourages a sense of ownership and care among the residents towards these public spaces, leading to their improved maintenance and sustainability.

To increase the participation of minorities, the elderly, families, and children in park programming, it is essential to involve these communities in the planning and decision-making processes. Understanding their specific needs and preferences is crucial for designing relevant and engaging activities. Additionally, outreach efforts and multilingual communication support the accessibility of programs (both physically and economically) which are vital to generating inclusivity.

DELCO WOODS — COMMUNITY IN NATURE

A primary goal of Delco Woods is to be a welcoming and inclusive park for everyone. Offering a wide range of programs will ensure that Delco Woods has something for everybody, including neighborhood, local, and regional visitors. Programming can be varied and extensive in the Forest and the Community Recreation Hub.

- **The Forest** offers woodlands, Whetstone Run and historic features. The forest can become a retreat for visitors to escape the stress of daily living. Spending time in a natural setting can improve physical, mental, and social well-being.
    - As an outdoor classroom for both children and adults, the park can offer educational opportunities and programs. It can serve as a living laboratory for study and exploration by students from grade school through advanced studies at area universities.
    - As a retreat, residents can get to the park by car, public transit, bicycling, or walking if close enough. Plans are underway to make improvements to the bicycle trail network. Park visitors can soak in the park's scenic beauty with a walk, a run, a bike ride, or by reading a book or resting on a bench in a beautiful setting.
- **Community Recreation Hub** will offer a wide range of activities for play, fitness, civic engagement, relaxation, de-stressing and reducing social isolation. Research has shown that the single most important way to increase park use, make it feel welcoming and safe, and attract those who are less likely to use parks but need to, is programming[3].
    - **Community Hub Gathering Area** — This area provides opportunities for socializing, entertainment, and cultural events. Cultural elements can include food fairs, concerts, performances, outdoor movies, and launch points for walking tours. Food events can build on the locally popular farm-to-table culture. Rotating arts and culture offerings would encourage repeat visits. One of the needs that this park can fulfill is providing space for smaller more intimate social events for families and friends, such as parties, weddings, school programs and others.
    - **Pavilions** – Public requests for more pavilions are increasing. The Celebration Pavilion, a unique facility for the County, will feature a kitchen and restrooms, therefore becoming an important

[3] City Parks Alliance. (2021) Active Parks, Healthy Cities: Recommendations from the National Study of Neighborhood Parks. Accessed August 2022. https://cityparksalliance.org/wp-content/uploads/2019/06/active-parks-healthy-cities.pdf?pdf=report

revenue source from rentals as well as programs. A large pavilion, such as the one planned here, can make programs possible, including environmental camps, art camps, and recreation camps, that would serve the public and generate revenues.

- **Balance of Activities —** Both casual and organized activities strike a balance so that the park has optimal use. Organized programming could include yoga, fitness programs, pop-ups, sports leagues, dances, art lessons, music performances, and others. Programs, like nature walks and clubs, history and culture tours, and plant identification classes, could connect visitors to the land and the history of Delaware County. Casual activities might include stretching out in the sun, playing Frisbee, or catch.

- **Raising Awareness and Honoring Our Rich Cultures —** Temporary exhibits, markers, and memorials are traditional means of celebrating diverse cultures and interpreting the history of an area. Interpretive signage and public art related to culture, history, and contemporary life can be installed in specific locations to recognize important cultural features, historical figures, and events. The importance of recognizing Lenni Lenape was raised throughout the planning process.

- **The Arts —** Creative works can share and interpret the complicated and invisible histories of the site as well as celebrate our lives today. Local and regional artists as well as visiting artists can use this space that is especially welcoming to events, performances and exhibits small in scale.

- **Trails —** Pathways of about five miles, will support the most preferred recreation and fitness activity identified by the residents: walking with safe cycling opportunities a close second. The park's pathways will connect to trails in the region including the Circuit Trails and Delaware County's proposed trail network.

SAFETY AND SECURITY

The Delaware County Park Police is a countywide police force of 86 officers, responsible for providing police services and fire safety for all parks, trails, physical property, and government buildings of Delaware County. The Park Police provides police services for the Department of Special Events and handles roughly 500,000+ visitors yearly. The Delaware County Park Police contains multiple divisions and units within the department as well as a joint task force comprised of members of the Park Police, Delaware County Sheriff's Office, and the Delaware County District Attorney's Office known as the Special Response Team (SRT). Other divisions and units include the Patrol Division, Detectives Division, Fire Safety Division, Training Division, Communications Division, and the Bike Patrol Division.

Marple Township Police regularly patrol the park site. The Township's EMT responds to emergencies in the park. The Township has indicated that it will continue to provide such services.

OTHER PARK USERS

Cardinal O'Hara High School and the BMX group have been using the site since it was owned by the Archdiocese of Philadelphia. Cardinal O'Hara uses parkland for its athletic fields. The BMX trails occupy less than two acres. The County needs to establish MOUs with both organizations including provisions for insurance, safety, and security.

MANAGEMENT RECOMMENDATIONS

1. **Create a plan to "make the case" for parks and recreation investment**. Promoting the mindset of the "park as an economic engine and a tool to spur public recognition of Delco as a unique and special place in which to live, work, and visit." By capturing testimonials, photographs, and other imagery to broadcast the positive importance of the county park system, the county can communicate the benefits of parks and recreation for the public. Develop a digital marketing campaign to increase public awareness about the park system including Delco Woods. Coordinate efforts with the Public Relations Department, leveraging the expertise of professionals in both departments.

2. **Continue routine maintenance until improvements begin**. Routine maintenance covers monitoring the site including the former school campus, mowing about 30 acres of, trail maintenance, trash removal, and coordination of community park uses.

3. **Build on current opportunities to plan, implement, and track maintenance.** Support the park maintenance staff with training and addressing requests for maintenance needs. Hire two positions in park maintenance with a goal of attracting candidates interested and passionate about parks and natural resource care. They may or may not have expertise or experience in these areas, but they must show a strong interest in training and skill development. Enable the Director and Park Superintendent to implement the ideas they brought from participation in the NRPA and North Carolina State University national park maintenance management school. Their attendance at this two-year school results in certification in park maintenance management from NRPA and NC State University. Also draw on the Director's NGICP (National Green Infrastructure Certification Program) expertise in the planning, design, and maintenance of Delco Woods as one of only 35 certified in the United States. Create a longer-term goal to develop a park asset management system with software that is effective and easy to use in real time on mobile devices. This will enable workload cost tracking to create support for decision-making, the allocation of resources, and making the case for staffing and budget increases. Governmental units that are successful in getting budget commensurate with their needs can document the benefits and results of the increases. Elected and appointed officials need solid data to support budget requests. This is one of the reasons that public testimonials and imagery are also needed: to make the case for investing in parks and recreation. The importance of public sentiment in justifying decision-making cannot be overstated.



Hard at work! Park maintenance crew keeping our green spaces beautiful and well-maintained.

4. **Support the Planning Department's efforts to reconstitute and amend Delco Woods Advisory Committee to advance design and construction of the park**. Hold quarterly meetings to track progress in advancing this master plan.

5. **Start a park friends' group and explore the establishment of a Park Conservancy**. Bring together existing interested groups such as the BMX Group, residents who helped to "Save Marple Woods," Black Girls with Green Thumbs, Cardinal O'Hara personnel, Marple Civic Youth, and others to be determined. A recruiting process like the outreach used in forming the DGMP Advisory Committee, the Green Space Task Force, and the Trail Alliance could serve as a model as it resulted in increased diversity and county-wide representation.



Friends of Glen Providence Park Tree Planting

6. **Continue to collaborate with the Planning Department and related county departments on the planning and final design of future phases of Delco Woods.** Continue to be involved in the park design process. Providing maintenance and programming information throughout the next phases of design is important for long-term care and cost savings through design that addresses maintenance. Hold an annual summit of the related departmental providers of park support including Planning, Public Facilities, Park Police, Public Works, the Conservation District, and Public Relations. Hold the summit after the peak summer season and before budget discussions. Set forth goals for the summit of enhanced communication and understanding of the challenges and opportunities regarding parks and recreation including Delco Woods. Create an interdepartmental list of prioritized needs for the operating and capital budget. Make it an enjoyable and productive event with food to establish a sense of camaraderie. For the other three quarters of the year, formalize a briefer "check-in" meeting to coordinate issues of mutual interest.

7. **Hire the Park Program and Services Coordinator**. Charge this position with customer service, program development, and promotion of Delco Woods in concert with Marketing and Communication.

8. **Hire Park Ambassadors or coordinate a county ranger presence.** Having a park presence during peak hours will improve operations and customer experiences exponentially. Montgomery County's Lorimer County Park provides an inspiring example. Lorimer Park is virtually a clone of Delaware County's Delco Woods with its 238 wooded acres and trails, picnic areas, and support facilities, such as restrooms. County staff report that once park rangers were placed in the park, previous challenges disappeared, customer service improved, and facilities were better protected. The park now has two park rangers on site for every shift.

9. **Develop and use a Maintenance Impact Statement**. For every major improvement to Delco Woods, develop a **Maintenance Impact Statement** as shown on the following pages as part of the design or decision-making process. Use this information to advocate for the maintenance support needed to protect the investment long term. Note that although difficult, it is sometime prudent to defer a park improvement due to lack of maintenance capacity. However, it is much easier to get capital development funds than it is to get increased staff or budget.

DELCO WOODS

MANAGEMENT IMPACT STATEMENT

PURPOSE

- To assess the impact of a proposed project or program in terms of costs, including capital cost, human resources required for operations, maintenance costs including labor, equipment, materials, supplies and cyclic repair, and the effect on other Delaware County Park operations, budgets, programs, and projects.
- To use this information to make an informed decision about the proposed project or program.

METHOD

Determine:

1. **Capital cost of proposed project or program.**
2. **Operating costs for proposed project or program**. Include:
    a. Number of staff hours required
    b. Cost of staff hours in salary, wages, benefits, and payroll taxes.
    c. Cost of materials and supplies.
    d. Utility costs.
    e. Miscellaneous costs.

3. **Impact on other facilities or responsibilities should the proposed project be undertaken.**

    a. Will the project/program require funds needed for other facilities or services?

    b. Will the project/program require staff time needed for other facilities or services?

    c. How will the project impact the quality of services that the Delaware County Parks and Recreation Department has set as a goal?

4. **Revenue Sources and Other Means of Support**

    a. County funds – additional appropriation

    b. County funds – within current budget

    c. Other county sources

    d. Grants

    e. Gifts or donations

    f. Non-tax funds to be generated for the project/program through fees, charges, sponsorships, partnerships, and/or other means.

    g. What partner(s) will make a commitment to support the project or program for a defined time period? Will they support the project over its life expectancy?

DECISION-MAKING

Based upon the above information, does Delaware County have the resources from any source (public, private, or combination of sources) to move ahead with this project or program? State your recommendation.



Keeping our parks clean, green, and beautiful! Huge thanks to our dedicated park maintenance crew for their hard work and commitment.

City Parks Improve Health and Reduce Costs

PHYSICAL BENEFITS

Over **HALF** of US adults have **chronic health conditions,** such as heart disease, diabetes, and obesity.[1]

About **1 in 3** children in the U.S. is either **obese or overweight.**[2]

People with access to safe **PARKS** and trails **EXERCISE MORE** and have lower rates of obesity,[3] heart disease,[4,5] and diabetes.[6]

MENTAL BENEFITS

40% of Americans suffer from anxiety or depression.[7]

People who live near parks and green spaces are **44% LESS LIKELY** to have a **diagnosed anxiety disorder.**[8]

20 MINUTES in a park **improved the concentration of children** with **attention deficits** to a level comparable to those without attention deficits.[9]

COMMUNITY BENEFITS

Greening of vacant urban land has been shown to decrease crime.[10]

COST SAVINGS

The **high costs** of chronic diseases each year in the U.S. include:

OBESITY
$260 BILLION[11]

DIABETES
$237 BILLION[12]

HEART DISEASE
$216 BILLION[13]

PARKS HELP TO REDUCE THE COSTS OF HEALTHCARE.

Maintaining a healthy weight **SAVES $1,861** **per person per year in healthcare costs.**[14]

CITY PARKS ALLIANCE

cityparksalliance.org

08. STEWARDSHIP: FOSTERING A SUSTAINABLE PARK

"Here is your country. Cherish these natural wonders, cherish the natural resources, cherish the history and romance as a sacred heritage, for your children and your children's children. Do not let selfish men or greedy interests skin your country of its beauty, its riches or its romance." - Theodore Roosevelt

This chapter focuses on integrating traditional park maintenance with long-term stewardship strategies to protect and enhance Delco Woods' natural resources. By balancing conservation priorities with recreational use, the plan establishes a framework for sustainable management. Below is a summary of key topics:

- **Stewardship vs. Maintenance –** Combining routine upkeep with sustainable resource management.
- **Conservation Priorities –** Water quality, habitat protection, and climate change resilience.
- **Stewardship Issues & Strategies –** Addressing invasive species, forest health, wetlands, and hydrology.
- **Wildlife Habitat Management –** Enhancing biodiversity for birds, bats, pollinators, and amphibians.
- **Forest & Meadow Restoration –** Strategies to improve ecological health and long-term sustainability.
- **Climate Change Adaptation –** Strengthening resilience through habitat restoration and strategic plantings.
- **Hazard & Debris Management –** Monitoring and mitigating risks for visitor safety and ecological integrity.
- **BMX Course Stewardship –** Preserving the existing BMX area while minimizing environmental impact.
- **Staffing & Volunteer Engagement –** Expanding resources through trained staff, partnerships, and community support.
- **Long-Term Monitoring & Adaptive Management –** Using data-driven strategies to ensure ongoing ecological health.

Following the chapter on traditional park maintenance—where the emphasis lies on tasks, such as mowing, trash removal, and maintaining recreational facilities—attention now turns to Park Stewardship. This chapter on Stewardship is intended to help the Parks and Recreation Department integrate traditional park maintenance with sustainable stewardship practices, or management of natural resources. This Appendix presents a strategy that can be integrated into a more detailed, future Stewardship Plan. Such plans identify stewardship actions that make progress towards identified goals in a way that is feasible within the constraints of time, budget, and staffing. Over time, active stewardship can resolve issues and lead to fewer management needs. The following map presents the stewardship issues and their locations in Delco Woods including erosion, dumping, tree stands and others.

This Stewardship Plan will enable the Delaware County Parks and Recreation Department and its partners to establish a consistent strategy for the restoration and maintenance of the natural areas in Delco Woods. Stewardship plans guide management of natural areas by assessing existing conditions, identifying priorities for management, and laying out stewardship tasks. These plans can guide annual work plans and allocation of resources, as well as support applications for funding. In addition to the Parks and Recreation Department, other organizations and individuals can become increasingly involved in the management of County parks and green space. These include community-based organizations such as park support groups such as Save Marple Woods, friends' groups, charitable and trust-based organizations, and companies with a focus on sustainability and conservation and Delaware County overall.

The Plan offers recommendations for addressing areas of concern and defining desired outcomes. When determining the necessary actions, those participating should consider the unique features of this 173-acre forest – understanding its value, vulnerabilities, and possibilities. Most importantly, they should ascertain what is suitable, enhance the valuable aspects, safeguard the vulnerable elements, and disregard anything impossible or unsuitable.

CREATING A LEGACY DESTINATION PARK: ADDRESSING NATURAL RESOURCE CHALLENGES

Saving the largest remaining intact forest in Delaware County is remarkable, yet it is only the first step in creating a legacy, destination park. The adage, "It's nature, let it take care of itself" no longer rings true. Natural areas need help to become—and remain—places where people, plants, and wildlife can thrive. The site has experienced intensive surrounding development that allowed invasive plants to outcompete many natural areas of forest, thereby losing habitat and the next generation of forest cover. The site shows loss of new forest growth due to an overabundant deer population that feeds on the newly emerging trees and shrubs that would replace older trees and shrubs as they die. The stream banks show signs of erosion that can be repaired by replanting the trees and shrubs that line healthy stream banks. These riparian buffers shade the stream and help produce clean water.

This Appendix presents Conservation Priorities, Stewardship Issues and Opportunities, and Recommendations for how best to handle natural resource management.

CONSERVATION PRIORITIES

Every property has numerous conservation values — those resources worth conserving and enhancing. They can range from a highly threatened plant or animal species to a venue for environmental education. The values of the highest importance to the site based on their ecological significance and the landowner's desires are designated conservation priorities. The protection and enhancement of the conservation priorities becomes the most important goal for the management of the site, while protection and improvement of the other values become secondary. This helps determine the allocation of staff time and funding when implementing stewardship activities.



Stewardship Features and Issues

Delco Woods
Park Master Plan

Legend

- Property Boundary
- Roadways
- Waterways
- Trash Dump
- Firepit/Gathering Area
- Concrete Dump
- Tree Stand
- Seeps and Springs
- Streambank Erosion
- Stormwater Erosion
- Vernal Pool

2 acres
1 acre

Scale: 1" = 1,500'
0 400 800 Feet
N

Disclaimer: This map is for analytical purposes only. The reliability of this map depends on the accuracy of the underlying data sources which have not been verified. It is not a Legal Survey, nor is it intended to be or replace a Legal Survey.

For Delco Woods, the conservation priorities are:

1. Water quality
2. Habitat
3. Climate change mitigation

These priorities must be balanced with the recreation needs and priorities for the property.

All three priorities depend heavily on having a healthy forest with areas of diverse plant communities. High water quality depends on having forested riparian buffers to filter and infiltrate stormwater and shade the waterways. The wetlands on site also help in maintaining water quality. Habitat diversity and health is also underpinned by the mature forest and by the diversity of plant communities within the site. Finally, the forest is critical for climate mitigation and resiliency. The trees sequester and store carbon, decreasing the amount of greenhouse gases in the atmosphere. They also mitigate flood impacts and lower the temperature of the area through shading.

The primary stewardship goal for Delco Woods is to protect and enhance the conservation priorities listed above through targeted stewardship strategies as described below. These strategies are based on site analysis and current best management practices. The previous page's **Stewardship Features and Issues Map** depicts significant features and issues identified during the site visits.

STEWARDSHIP ISSUES AND OPPORTUNITIES

The following stewardship issues and opportunities are important for protecting and improving Delco Woods' natural resources, particularly the conservation priorities. The stewardship issues and opportunities addressed in this plan include the following:

1. Forest Stewardship
2. Wetlands
3. Hydrology
4. Invasive Plants
5. Native Plants
6. Deer Management
7. Pests and Diseases
8. Climate Change
9. Wildlife Habitat
10. Meadows
11. Hazards and Debris
12. BMX (Bicycle Motocross)

These topics include management and monitoring. Monitoring data is important to indicating if the health of a resource is increasing, decreasing, or remaining stable, providing insight into how effective stewardship efforts are and where additional action may be needed. Monitoring can also support conservation efforts in the larger landscape. For instance, bird surveys within Delco Woods can add to information about regional population health and abundance. Water quality monitoring can pinpoint issues that affect downstream waterways. Also, studies may be recommended to answer specific questions like what plant species are present in the seed bank or how to best restore the streambank. Monitoring and studies also provide opportunities to collaborate with nonprofits, master watershed stewards, students, professors, and community members. In some cases, the County may want to hire a consultant to carry out specific monitoring or studies.

1. Forest Stewardship

The goal of forest stewardship should be to create a mosaic of healthy, sustainable forests with mixed ages to increase resiliency and provide a range of habitat types. Resilient landscapes include a diversity of forest ages, ranging from young to old growth forest. Eastern Pennsylvania forests typically are only one or two ages, with few old growth forests. Having mixed age forests makes the landscape less vulnerable to widespread forest loss from disturbance or disease. Different ages of forest also provide a range of habitat types for wildlife.

Forests can generally be grouped into four age classes: young (less than 30 years), maturing (30 to 75 years), mature (75 to 150 years), and old growth (greater than 150 years). The Delco Woods forest is maturing with mature stands. Young forest develops where there has been a disturbance (fire, high wind event, timber harvest) and the area transitions from meadow or shrubland to a tree-dominated area. They are characterized by many small trees growing close together, with a sparse shrub and herb layer. Maturing forests have few, more widely spaced trees, allowing shrubs and herbs to become established. In a mature forest each structural layer (canopy, understory tree, shrub, and herb) is well developed. Old growth forests are characterized by a multiage canopy (scattered large canopy trees interspersed with canopy trees of younger age classes), a multilayered understory, and abundant down and standing dead wood.

For greatest resiliency (ability to withstand physical and biological stresses), a forest should have a variety of plants, preferably native species, but at the least, noninvasive species, to ensure good biological and structural diversity. Biodiversity creates resiliency by having multiple plants that provide similar ecological functions including food for wildlife, shelter, nutrient filtration, and water infiltration. If a plant species is impacted by a pest or disease, other species will still be present to supply similar functions. Forests should have all structural layer's characteristic of their age present with a range of plants in each layer.

Forests go through a cycle of natural succession over time. A complete cycle goes from early successional habitat, which is characterized by herbaceous plants with scattered shrubs or trees, to young forest through old growth forest. However, it is often the case that natural disturbances like fire or storms will reset the forest to an earlier age class or early successional habitat. This means that forest aging is often not linear but is instead a back-and-forth progression. Under ideal conditions, a forest can recover naturally from disturbance. However, in areas with invasive plants and high deer populations, these stressors prevent natural regeneration of native species and can halt forest succession. Active management is then needed to control these stressors and support forest progression. This can be done through planting trees to encourage transition to older forests, planting shrubs and understory trees to build out structural layers, or even creating early successional habitat.

A note about early successional habitat. This habitat is declining in the region due to development, loss of natural disturbance from fire, and proliferation of even-aged forest. Early successional habitat is critical habitat for certain species, particularly some bird species.

Forests should have a variety of age classes and early successional habitat. This helps build resiliency, as different forest ages are more resilient to various disturbances, increasing the likelihood that at least some areas of the forest will withstand a given disturbance event. Additionally, the variety of ages provides a range of habitat.

Forests also provide many ecological benefits, including protection of waterways, climate change mitigation, and flood mitigation.

MATURE FOREST

The tuliptree-beech-maple forest is a mature forest with a healthy canopy, sparse understory, and limited native plants. This forest should be supported to allow it to transition to an old growth forest. This will involve introducing understory trees to create a multiage canopy over time and a multilayered understory, introducing native shrubs to further diversify the understory, and allowing snags, dead wood, and other debris to remain in place. Natural disturbance may occur and reset this area back to a young forest or early successional habitat. If this occurs, invasive plants and deer should be managed to allow for natural transition through the forest cycle.

There are key hinderances to achieving an old growth forest. Invasive plants can outcompete native plants, restricting the development of different structural layers. Deer preferentially browse native plants, restricting native plant regeneration and growth. Also, beech disease is spreading in the area, which may threaten a significant portion of the canopy. These topics are discussed in subsequent sections.

INTERIOR MIXED HARDWOOD FOREST AND RED MAPLE PALUSTRINE FOREST

The mixed hardwood area's interior is moderately to heavily colonized by invasive plants but still has areas of relatively intact native canopy. The red maple palustrine forest is of similar age and has few invasive plants and greater native plant diversity. These areas can be supported as a maturing forest that can transition to mature forest over time. Similar to the tuliptree-beech-maple forest, these areas can benefit from tree and shrub plantings to increase plant diversity, support wildlife, and sustain the canopy over time. Control of invasive plants and deer will also benefit these areas.

EXTERIOR MIXED HARDWOOD FOREST

The exterior mixed hardwood forest areas are heavily invaded and generally have sparse or dying canopy. This creates an opportunity to clear the invasive plants and replant the area immediately after invasive plant control to restart the area as early successional habitat or young forest. Early successional habitat is characterized by primarily herbaceous plants with scattered shrubs or trees. This community type provides important habitat, especially for bird species that rely on these areas for nesting and shelter. Audubon Mid-Atlantic recommends that 10% of natural areas be patches of early successional habitat. The patches should be at least 2.5 acres in size. It is generally better to have square or circular habitat areas with less edge, than long rectangular areas. Edge areas are at greater risk of colonization by invasive plants and subject wildlife to greater weather impacts and predation by species that thrive on edges.

Early successional habitat can be created by removing the existing invasive plants. The snags can be felled if they pose a hazard to those working in the area or future plantings. Scattered trees and shrubs can be planted in this area to create the conditions for early successional habitat. Additional denser plantings of trees or shrubs can be added closer to the remaining forest. This will provide a buffer for the existing forest, as light and wind increase the prevalence of invasive plants, and it will provide a gradual transition in habitat for wildlife. The area can then be allowed to progress towards a forest. This approach will require diligent control of invasive plants and protection of any native trees or shrubs from deer. Mowing every three years will maintain the area as early successional habitat in perpetuity. If native trees regenerate in the area, it can be allowed to naturally progress to forest.

Alternatively, the entire area can be planted with trees to create a young forest. This will skip the early-successional habitat stage, preventing that habitat type from the Property. However, it will be easier to maintain as the areas can be managed by regular mowing between the forest rows and herbiciding around the tree tubes until the plantings are established. Shrubs can also be added later if needed to create forest layers.

Managing the Forest

The health and sustainability of the forest depends on controlling existing stressors, particularly deer and invasive plants. Deer preferentially browse native plants and can decimate structural layers and reduce plant diversity. Deer browsing can also lead to canopy loss over time if the deer eat the seedlings and saplings intended to replace the existing canopy trees. Invasive plants can outcompete native species, creating forests that have little native plant diversity and provide poorer food sources for wildlife. Natural Lands staff identified negative impacts from deer and invasive plants during the site visits, discussed later in this report. Pests and diseases can also impact the health of trees. (See subsequent section.)

Climate change may be the greatest threat to the forests over time. This could include stress to existing plants from heat, drought, and flooding. It may also include poorer regeneration of vulnerable species over time, leading to lower diversity and potentially a sparser canopy. Additionally, climate change is projected to cause more frequent and severe storms, which could lead to increased forest damage. If the forest has a high diversity of native plants and a range of forest ages, it should be able to better withstand the effects of climate change. Plant species diversity increases the likelihood that at least some plants will be resilient to climate change. A range of forest ages can decrease the likelihood that the full forest areas will succumb to a weather event and can help

the forest rebound from disturbance. (See Climate Change section).

Monitoring the Forest

The County or volunteers should monitor the health of the forests and the characteristics associated with different forest age classes. This can include monitoring the diversity and abundance of native plants, the prevalence of invasive plants, and the impact of deer browsing. The forest should also be monitored to gauge progression to the next forest age class.

2. Wetlands

Wetlands, the most sensitive areas within the Property, help manage stream quality by filtering nutrients and sediments. They reduce negative impacts of stormwater by retaining water and allowing for gradual infiltration. They also provide important habitat for wildlife, particularly as breeding areas for amphibians, such as frogs, toads, and salamanders. The main wetland occurs along the western section of the unnamed tributary near Sproul Road. Natural Lands staff also identified a wetland dominated by skunk cabbage in the red maple palustrine forest. Additionally, the National Wetland Inventory identified a third wetland in the tulip tree-beech-maple forest.

These areas are susceptible to changes in water volume that can dry out areas or cause flooding. Changes in microtopography that can redirect water away from the wetland is one way that water volume can change. Other risks include increases in impervious surfaces in the area or loss of a vegetative buffer. Both risks can cause flashier flooding and introduce pollutants to the wetland.

Managing the Wetlands

Any disruption or alteration to the hydrology should be avoided or mitigated as much as possible. County staff should establish a 300-foot nondisturbance buffer around the wetland, meaning that any activities within 300 feet of the wetland should be avoided except for critical actions. Habitat management may be carried out within the 300-foot buffer but should be carefully planned to avoid disturbance. All tasks should be completed by hand, if possible, without heavy motorized equipment. Any natural debris, such as leaves or branches that fall into the wetland, should be left in place to provide food and shelter for wildlife. Vernal pools were not identified during the site visits. However, if a vernal pool is identified, it should be given a 300-foot buffer.

Also, it is important to protect and restore the upland forest area between the wetland and Reed Road to manage stormwater before reaching the wetland. The area above Reed Road contains significant impervious surfaces, which create large volumes of stormwater. Loss of vegetation between Reed Road and the wetland would allow large volumes of fast-moving stormwater to reach the wetland and cause negative impacts, such as erosion and pollution loading. Restoration to early successional habitat or young forest would help prevent this issue. However, due to the risk of excessive stormwater and flooding, any removal of vegetation should be immediately followed by planting of native vegetation or conversion to meadow.

If trails are desired in this area, the County should construct boardwalks on the edges of the plant community to allow people to experience the wetland but not disturb it. The County should also use signage with Leave No Trace language to explain the sensitive nature of these areas and why it is important to make as little impact on them as possible. This type of language uses positive, educational messaging as opposed to listing restrictions, thereby encouraging people to take care of the environment.

Monitoring the Wetlands

The County should monitor the water quality and quantity in the wetlands to gauge any negative trends, such as rising nutrient levels, and take mitigating action if necessary.

3. Hydrology

The water resources on the site are one of the three conservation priorities for the Property's natural areas. The County should prioritize protecting and improving the water quality of the streams and

wetland. Climate change will make this increasingly difficult. Higher air temperatures, earlier springs, and later falls will all threaten water temperature by subjecting waterways to higher and longer heat. More frequent and intense storms combined with more precipitation in the form of rain instead of snowfall will increase the volume of stormwater runoff and risk of streambank erosion. This is of concern as the current levels of stormwater flow are already causing erosion channels, streambank erosion, and elevated phosphorous, nitrogen, and sediment levels.

Managing the Hydrology

A. Stream Channel Conditions

Healthy stream channels are important for water quality and aquatic life. Ideally, streams the size of Whetstone Run should have segments of pools, with deeper and slower water, and riffles, faster moving areas that are shallow and often have rocky beds. This stream should also have a riparian buffer, gently sloped streambanks, and some woody debris in the stream.

The streams within the park exhibit some of these characteristics. There are some areas of riffles, mostly at least 100 feet of riparian buffer, and some sections with woody debris. However, streambank erosion exists where the streambank is being undercut during periods of high-water flow. This is likely to worsen over time without active management. Increasing the riparian buffer will help address this issue by slowing down and infiltrating stormwater. Additionally, a hydrologist should assess Whetstone Run to determine if further mitigation, such as reconstructing the streambank, is needed to address the erosion. Additional erosion control efforts are discussed below.

B. Riparian Buffers

Riparian buffers protect waterways by shading streams, filtering, and infiltrating groundwater, holding streambank soil in place, and providing detritus for aquatic life habitat. The most effective riparian buffers are forested and at least 100 feet in width. Currently, the existing riparian buffers are adequate in width. However, they often lack understory and shrub layers. Increasing the density of the riparian buffers will increase their effectiveness. Retaining at least a 100-foot buffer along the streams and wetland in perpetuity is critical.

C. Stormwater and Erosion Control

Impervious surfaces prevent rainfall from infiltrating into the ground. They cause it to flow gathering in volume, until the water reaches the end of the impervious surface. This leads to a concentrated flow of stormwater that can transport pollutants, create erosion channels, and erode streambanks. Stormwater may become flashier and more intense due to climate change. The streams already have elevated levels of nitrogen, phosphorus, and sediment from the surrounding developed areas. Natural Lands staff noted erosion channels and areas of streambank erosion, which were caused by stormwater.

To combat this within the park, impervious surfaces should be minimized. This can be done by limiting development, increasing natural areas, or by using pervious surfaces as much as possible. New meadow areas along Sproul and Reed roads will help mitigate stormwater flow off the roads from the surrounding areas. If areas of flow from the roads are still causing issues, the County can add shrubs and trees or green stormwater infrastructure if appropriate to these areas to reduce stormwater volume and velocity. Erosion along and off trails is also currently an issue at the park.

The outfalls along Reed Road dump stormwater into Whetstone Run. Within the Park, the County should ensure that there is significant native vegetation at the outfalls to capture some of the stormwater.

D. Monitoring the Hydrology and Baseline Data

The County can monitor water quality and quantity to track stream health. Variables could include nutrients, sediment, dissolved oxygen, volume, and macroinvertebrates. Additionally, a hydrologist can be hired to assess streambank conditions and possible actions.

4. Invasive Plants

Invasive plants are primarily exotic species that can outcompete native vegetation and drastically reduce native species diversity. They offer fewer benefits to wildlife, providing low quality food and preventing growth of plants that provide better habitat. It is important to note that not all nonnative plants are invasive. An invasive species displays one or more of the following characteristics:

- Susceptible to few herbivores or diseases
- Adaptation to disturbance
- Fast germination
- High population growth
- Early reproductive maturity
- Vegetative as well as sexual reproduction
- Pollination by wind or multiple insect species
- Wide tolerance to many habitat types
- Fast growth rate
- Long-range seed dispersal capability
- Fruit used by wildlife (food) or humans (decoration)

These characteristics allow invasive plants to aggressively move into an area and outcompete native plants. Additionally, they are not readily used as a food source by native animals, including deer. This can lead deer to over browse native species, leaving invasive plants to further colonize the area. Climate change is likely to aid invasive species dispersal, with many invasive species expanding their range north because of increasing temperatures and increasing their growth due to additional carbon in the atmosphere.

Managing Invasive Plants

Invasive plants impact all Delco Woods' plant communities. To protect and improve biodiversity and wildlife habitat, invasive species should be managed to:

- Protect critical areas
- Limit further degradation
- Reduce the possibility of recolonization from previously controlled species and colonization by new invasive species
- Best use stewardship resources

Preventing new invasive species from colonizing is the most efficient way to save resources, as it takes less effort to eradicate a small, young population than a widespread and well-established population with an extensive seed bank. When soil is disturbed, dormant seeds within the ground, including those of invasive species, can spring to life. Therefore, it is as important to limit soil disturbance as it is to address existing invasive plant populations. Motorized equipment should be used selectively and cleaned often, especially when used at multiple properties, to reduce disturbance and introduction of invasive plant material.

Due to the generous size of the property, invasive plant species will have to first be prioritized for management with the highest quality areas as this will protect the existing ecological value. The two highest priority areas are the tulip tree-beech-maple forest and the wetland as these areas have the highest ecological integrity of the site and have few invasive plants. The red maple palustrine forest and interior mixed hardwood forest areas would be next, followed by the exterior mixed hardwood forest areas. Staff will also have to manage invasive plants in the active recreation areas if they occur in those areas.

Within each subsection, individual invasive species should be prioritized based on their ecological impact. Species that would have the greatest impact on an ecosystem should be addressed first. This includes those that can destroy the canopy layer. This follows a top-down strategy, where invasive plants in the canopy layer are addressed first, allowing for exceptions for extremely aggressive species. Within a given species, mature, seed-producing individuals should be targeted to eliminate spreading new seeds and to deplete the seed bank.

Finally, staff should prioritize controlling species that pose a specific risk to human health, safety, or welfare. Vines covering trees along trails and roads should be prioritized for management as they may cause the crowns or entire trees to fall, endangering people. Highly toxic plants, such as poison hemlock or giant hogweed, should also be prioritized if identified in Delco Woods. If these, or other similarly toxic plants, are found, they should be treated as soon as possible.

Where invasive species make up most of a structural layer, two approaches can be taken. The first is to remove all invasive plants in the structural layer and immediately plant native species to stabilize soil and provide habitat. This is appropriate where the entire area is already severely degraded, the area is of a size where it can be planted with native plants immediately after invasive plant removal, and the invasive plant could quickly recolonize the area if any is left in place. This could be appropriate for the exterior mixed hardwood forest areas where invasive plants are nearly all that remains.

The second option is to remove less than 50% of a structural layer at a time. This will avoid abruptly removing all wildlife food and cover and allow native plants time to regenerate in treated areas. Once invasive species have been removed, disturbed areas should be replanted with native species to restore habitat and discourage invasive plants from reestablishing. This is more appropriate for invasive shrubs and trees that provide habitat, soil stabilization, and shade for lower plants. They also grow more slowly and would not recolonize any open growing area as quickly. This is also appropriate when replanting with native species that grow slowly and take longer to establish.

Where there are sufficient native plants to still fill the structural layer, a piecemeal approach to invasive plant removal within a structural layer is not necessary. This approach applies to the tulip-tree-beech-maple forest, the red maple palustrine forest, and the wetland, though replanting with native trees and shrubs is still recommended.

A list of all invasive plants identified during the site visits and their control methods are included in the Appendix.

Monitoring Invasive Plants

Delco Woods should be monitored for new infestations, and likely invaders from neighboring areas should be noted. Boundary encroachment can be a source of invasive species as invasive ornamental plants may spread from neighboring properties. Additionally, yard waste discarded along property boundaries may contain seeds or clippings of invasive plants that can escape into Delco Woods. Early detection and treatment of new invasive plant species should be given high priority for management. To help prevent the spread of invasive plants from nearby properties, Delaware County staff can reach out to neighbors about the problems associated with invasive plants and encourage them to plant native species instead. Some options for outreach include presentations, articles in newsletters, neighbor-to-neighbor outreach, posts on social media, and native plant sales or giveaways.

Staff or volunteers should monitor the site on an ongoing basis to track the effectiveness of treatment of existing invasive species and to determine if further treatments are necessary. Treatment efforts often need to be repeated to be successful. Staff may also need to reassess efforts to determine effectiveness and pursue other treatments as needed. Monitoring is important after treatment to address any regrowth from the seed bank and to prevent re-establishment of the population.

5. Native Plants

Native plants, meaning plants that have evolved over time in our region, are critically important for ecosystem health and the health of wildlife, including insects. According to research led by the entomologist Doug Tallamy, nonnative plants are poorer hosts for native insects, including butterflies. Replacing nonnative plants with native plants can increase the diversity and abundance of insect species, even of generalist insect species that do not rely on a limited number of plant species (Doug Tallamy et al. 2010. "Can alien plants support generalist insect herbivores?" Biological Invasions). Studies have shown that 90% of insect herbivores can reproduce successfully only on plants with which they have an evolutionary history (Burghardt et al. 2008. "Impact of native plants on bird and butterfly diversity in suburban landscapes." Conservation Biology). Replacing nonnative plants with natives could provide better habitat for insects to feed and reproduce.

Supporting insects will also support birds. Approximately 96% of terrestrial birds raise their young in part or entirely on insects in North America (Burghardt et al. 2008). Therefore, increasing the abundance of insects by planting native plants will also support bird species. Additionally, native plants also provide better food sources for birds. While birds will eat the berries of invasive plants, they provide poorer nutrition for birds compared to berries from native plants.

Managing Native Plants

It is important to have a diversity of native plants in all structural layers of a community. Having a multitude of species can provide food and pollen at different times of year and various options for shelter. This will support a broad range of wildlife species. County staff should replace invasive plants with native species, following the guidance in the Invasive Plants section, and increase native plant diversity throughout the park. County staff should also work to fill gaps in structural layers with native plants. Additionally, landscaping should utilize native plants.

Monitoring Native Plants

County staff or volunteers can monitor the abundance and diversity of native plants across the park. This can include an in-depth, multi-season plant survey to add to the plant list included in this plan, potentially capturing more plant species. Follow up monitoring across multiple years can track trends in abundance and diversity. It can also be used to track plant population changes as climate change continues to impact the region.

6. Deer Population

There is ample evidence that the deer population is affecting forest health; such evidence includes low regeneration of native plants, sparse understory, visible browse line, and high prevalence of invasive plants. Deer management should be a high priority for the County. Without it, native plants will be unable to regenerate and plant communities will continue to degrade within the park.

Deer populations in this region have been increasing due to a loss of large predators, fragmentation of forests, and previously strict hunting limits (though this policy has been changed to better control deer populations). High population levels pose a risk to conservation lands due to overbrowsing of herbs, shrubs, and tree seedlings, which can dramatically decrease structural and species diversity. This creates plant communities with little or no understory except for invasive plants. Invasive plants, which are not a preferred food source for deer, can take advantage of the newly opened spaces and disturbed soil to colonize an area.

Based on the limited number of native plants in the understory, shrub, and herbaceous forest layers and lack of young trees to replace the canopy trees, the deer population is too high. Controlling the deer population can help support and sustain the native plant communities in the park. Options include deer removal or fencing. It appears that hunting occurred sporadically within the park in the past based on deer stands present during site visits. Deer removal can be done through multiple options, including a managed hunting program, hunting by County staff, or a contract with sharpshooters for

a cull. The Game Commission will have to vet and approve any options chosen. There may be restrictions on conducting a cull prior to other removal options.

Managing the Deer Population with Hunts

A managed hunting program could be used as a stand-alone option, or as a complement to a cull program. A managed program will require administrative time to organize and run in a manner that ensures the safety of visitors and hunters and is effective in removing deer. To that end, a limited number of qualified hunters would be granted permission to hunt the land. The number of hunters is based on the available space following safety zone restrictions and the number of deer that need to be removed. Hunters should be informed of all program regulations and tested for proficiency with their sporting arm before receiving a permit to hunt. Regulations should define allowed hunting times, reporting requirements, and safety procedures. Natural Lands implements a regulated hunting program on many of its preserves. See Appendices for Natural Lands' regulations and procedures as an example.

If there is interest, the County can explore having its own staff hunt the Property, following all safety rules and requirements by the Game Commission. Like a managed hunting program, this could also be done in conjunction with a deer cull. Additional benefits of a managed program include monitoring for unwarranted activities. Having permitted hunters on the property can reduce the presence of unregulated hunting and provide extra eyes to monitor the property.

Under a deer cull program, Delco Woods would be surveyed to determine the number of deer present and how many should be removed. Following approval from the Pennsylvania Game Commission, bait stations are set up to lure deer and then sharpshooters remove them at night, over a few nights. This would reduce risk to the public while quickly reducing the deer population. Repeated culls are likely to be needed until the deer population within the Property reaches a sustainable level. They may then be needed periodically to keep the population low.

For any program to better control the population size, an emphasis should be placed on removing does. Preferential harvesting of does can bring populations to tolerable levels far more quickly than would a random removal strategy. Preferentially harvesting bucks has almost no effect on birth rates and therefore will not control the population size.

Managing the Deer Population with Fencing

Fencing is the other main approach to deer management. Fencing can enclose defined areas in Delco Woods and protect new plantings from deer browsing and rubbing. However, fencing, even small areas, can be expensive to install and maintain. Fencing requires ongoing maintenance to make sure that any damage is fixed as soon as possible and that any deer that get inside the fence are removed. As such, it should be used strategically. Options for fencing could include areas of shrub plantings, sections replanted for early successional habitat, and areas where staff want to observe what plant species may regenerate from the seed bank without deer pressure.

Additionally, fencing or tree tubes should be placed around new plantings or naturally regenerating seedlings regardless of whether deer are actively removed. Fencing and tree tubes will still be needed until the deer population is reduced to, and maintained at, sustainable levels. The most important recommendation for deer management is to protect seedlings and new plantings with fencing or tree tubes until the plants are large enough to withstand deer browsing and rubbing. This would be six feet tall for trees.

Monitoring the Deer population

Staff, volunteers, or consultants should monitor deer populations annually based on the condition of the plant communities to determine the necessary level of control. Missing structural layers, such as a native understory in forests, or an elevated level of browsing on native meadow plants can indicate large deer populations. Monitoring that indicates an overabundant deer population would support the need for additional deer management.

Another monitoring option is to create enclosures throughout the forest areas to see what is present in the seed bank and can regenerate without deer pressure. This can also create areas with more complete structural layers as the deer population is managed.

7. Pests and Diseases

Like invasive plants, exotic insect pests have been introduced to the region, damaging native plant communities. They can be introduced in many ways, including importing, and transporting lumber products, firewood, and shipping crates.

A. Emerald Ash Borer

Emerald Ash Borer (EAB) is an exotic pest from Southeast Asia that is killing ash trees in the United States. EAB larvae feed on the inner bark of ash trees, which girdles the tree and disrupts the flow of nutrients and water within the tree. Trees typically die within three to four years of infestation.

Even prior to death, EAB significantly weakens ash trees, increasing the likelihood of falling branches and trunk snapping. Such breakage can occur unexpectedly and from forces much less than would be needed to damage a healthy tree.

EAB infestations are typically identified through the symptoms they cause. Signs and symptoms of an infestation include crown dieback, epicormic branching (new shoots emerging from buds along branches or trunk) bark splits and flaking, “D” shaped exit holes, and “S” shaped larval galleries under the bark.

A federal quarantine has been imposed on all of Pennsylvania and other affected states. The quarantine restricts the movement of all ash firewood and logs from EAB-affected states to nonimpacted states. The quarantine also restricts the export of ash firewood and logs out of the United States.

Managing EAB

Ash trees, mainly in the mixed-hardwood forest, show signs of EAB infestation. Ash tree removal should be considered when the tree is a potential hazard, such as near a road, trail, building, parking area, or other gathering area. Ash trees should be removed prior to infestation, if possible, to reduce the risk of a dead tree causing injury or damage before it can be safely removed. Any removal of trees showing symptoms of EAB infestations should be carried out with extreme caution due to the likely weakened state of the tree and potential for limb and trunk snapping. If canopy gaps form where the ash trees die, the County should replant these areas with native trees.

Ash trees can be injected with a pesticide, such as Arborjet, to protect the tree from EAB prior to infestation. However, this is expensive in a forest setting and repeated applications are needed. No ash trees were identified for treatment at the park due to their location and the advanced stage of the infestation.

B. Spotted Lanternfly

The spotted lanternfly (SLF) is an exotic pest that originated in China, India, and Vietnam. Adult SLF feed on smooth-barked trees and then lay their eggs on smooth surfaces in large masses covered with a mudlike substance. They generally prefer tree-of-heaven for food but will also feed on other trees. They can cause weeping sap that attracts bees and fosters sooty mold, but it has not yet been determined if they cause tree mortality. Adult SLF can be identified by their bright red hind wings with black spots, yellow abdomen with black bands, and black legs and head. Egg masses can be identified by their gray mud-like casing and oblong shape. Symptoms of SLF infestation include mold around the base of the tree and weeping sap wounds. The eggs are laid from late September through late November/early

December. The eggs then hatch in late April to mid-May.

A quarantine restricts movement of all products that can harbor the spotted lanternfly. This includes timber products, yard waste, and outdoor household items with smooth surfaces. The Park is located within the quarantine area.

Managing SLF

The Department of Agriculture and the Pennsylvania State Extension recommend several methods of control. Populations of SLF may also decline over time naturally.

4. Trap Trees (mid-May-August)

   Trap trees are used to efficiently kill SLF using insecticide. Trap trees are created by reducing the number of tree-of-heaven in an area, as they are the preferred host for SLF, and leaving a limited number that are then treated with insecticide. By limiting the number of host sites, fewer trees need to be treated with insecticide and SLF will be more likely to feed on the treated trees. The trap trees should be male tree-of-heaven plants that have a diameter of approximately 10 inches. Female trees should not be used as trap trees as they can produce seeds and increase the population of tree-of-heaven.

5. Egg Mass Scraping (October-late April)

   Egg masses can be scraped from their host trees using a tool with a hard, flat surface, such as a credit card. The eggs should then be deposited in a container or bag with rubbing alcohol or hand sanitizer. This will kill the eggs, whereas just scraping them off the tree is not known to be effective. This is an appropriate project for volunteers as it is easy to perform yet requires time-intensive, on-going work and monitoring. To help track the infestation, the number of egg masses scraped can be reported to the PA Department of Agriculture through the following site: http://www.agriculture.pa.gov/protect/plantindustry/spotted_lanternfly/Pages/default.aspx.

6. Circle Traps (May-July)

   Another option is a circle trap. Based on designs by Penn State Extension, these traps use insect screens around a portion of the tree to funnel SLF into a plastic bag at the top where they are collected. Directions for making this trap can be found on Penn State Extension's website.

   Spotted lanternfly appears to be decreasing in prevalence in Delaware County after peak years. If this trend continues, minimal control efforts may be needed. At this point, circle traps may be sufficient. If populations begin to increase again, additional efforts may be needed. The County should monitor the population of spotted lanternfly annually to follow population trends.

C. BLD (Beech leaf disease)

Beech leaf disease is a disease that is newly moved into the area. Symptoms of beech leaf disease include crispy, dry leaves and dark bands between leaf veins. BLD is particularly fatal for younger beech trees, especially saplings. Clonal colonies are also more susceptible, likely because of the root connections between trees. The effect on mature beech trees is still being studied. It appears that mature trees will also be susceptible but may take longer to die.

Managing BLD

Though research is being conducted, no known treatment or cure currently exists. Some research indicates that there may be effective pest control for large, specimen trees. The County should monitor the beech trees for any sign of BLD as an alert for potential beech die off. The County should also plan how to best support the forest should BLD impact it. Current steps can include:

- Plant trees that can replace the canopy if the beech trees die off. As discussed in the climate change section, the County should include a higher proportion of trees projected to be resilient to climate change.

- Reduce other stressors including invasive plants and deer.

Regularly check for new information and treatment guidance from reputable sources such as Penn State Extension or DCNR.

Treatment steps will need to be developed and incorporated into the plan as they are identified. The County should also consider potential beech tree die off when planning any recreational infrastructure in the forest. Beech trees should be left as undisturbed as possible, and they should not be used as anchors for recreational infrastructure unless there is a plan to replace the beeches if necessary.

8. Climate Change

According to the PA Department of Environmental Protection (DEP), Pennsylvania is already experiencing the impacts of climate change, and effects will continue to worsen into the future. **DEP's 2021 Climate Change Impact Statement** asserts that Pennsylvania has already warmed 1.8°F in the last century. Temperatures could increase by 5.9°F by 2050 compared to a 1971 to 2000 baseline depending on continued greenhouse gas emissions and mitigation efforts. This report also states that Pennsylvania is expected to see more extreme temperature events, including more days above 90°F, an increase in droughts, and more severe, though less frequent, rain events. In a highly developed area like that surrounding Delco Woods, the abundant impervious surfaces will worsen the effects of climate change by further raising temperatures and increasing stormwater volumes resulting from severe storms. These changes have implications for managing natural areas and protecting critical resources.

Managing Climate Change

G. Site Resilience

The Nature Conservancy's (TNC) Resilient Land Mapping Tool assesses site resilience based on physical characteristics, such as connectedness and landscape diversity. The tool also assesses carbon storage and sequestration and importance for species migration. The tool projects that at 2010 forest conditions, the forest within the park sequesters 15,644 metric tons of carbon. This is equivalent to the annual energy use of 2,000 households. By 2050, the forest is projected to store 17,127 metric tons, or the equivalent of the annual energy use of 2,150 homes, if there is no substantial disturbance. About half of the carbon is stored in belowground plant structure, one-third in aboveground plant structure, and the rest is woody debris.

According to this tool, Delco Woods ranks low for resiliency. Fragmentation of the Property from other natural areas plays into this lower ranking. However, the area along Whetstone Run ranks slightly above average for flow, meaning it is important for species to move through the area to reach habitat.

Despite this overall lower ranking, the TNC tool also shows how important Delco Woods is at the watershed level. The Darby Creek Watershed, particularly the lower half of the Watershed, has very low rankings for flow and resilience. In comparison, the Property

has the highest ranking in this watershed, which shows it is important to climate resiliency in the area.

H. Improve Overall Health of Native Plant Communities

To maintain and improve the Property's resilience and ability to mitigate the effects of climate change, the County should focus on the overall health of native plant communities. This can be done by controlling invasive plants, pests, and deer. This will reduce stress to individual plants and improve the structural and species diversity within communities. Healthier plants and communities will better withstand the increasing stresses of climate change. Additionally, plantings can be added to increase the diversity of plant species, improve plant community resilience, and fill structural layers.

These efforts would have additional co-benefits in water quality protection, habitat improvement, and preservation of recreational amenities. Protecting and improving the forest areas may also provide opportunities for carbon market credits as such programs expand to this area and are scaled to include various size properties.

I. Modifying Planting Choices

Temperature and precipitation changes will cause plant hardiness zones to shift over time. One study out of the Pennsylvania State University recommends incorporating plants from areas like what the climate will be here in 20 to 30 years. This can be done either by introducing more southern United States species or by using species that are already present here but sourcing the plants or seeds from more southern regions. When carrying out planting projects, these new species or plant materials should only be a portion of the total plants used.

DCNR's Climate Change Adaptation and Mitigation Plan includes a list of common tree species for each Pennsylvania province and the modeled impact of climate change on that species. This can help inform which tree species that are currently present could be favored or used less frequently in plantings.

Some of the negative impacts on forests may be offset by the positive effects of CO2 fertilization on growth, at least temporarily. Higher CO2 levels can enhance photosynthesis, leading to increased forest growth. This boost in growth may improve forest health and resilience. Given enough time though, the CO2 fertilization effect is likely to plateau, and the negative risks linked to climate change may have a greater impact. Therefore, it is important to take advantage of the positive effects now through continuing planting efforts.

J. Carbon Sequestration and Storage

Effective forest management can help maintain and enhance carbon storage capacity. Retaining mature trees whenever possible supports existing carbon stores, while increasing forest density further boosts carbon sequestration. Afforestation—establishing forests in areas without recent tree cover—also contributes to long-term carbon storage. Additionally, dead and downed trees should be preserved, as they continue to store carbon even as they gradually decompose.

K. Flooding

Maintaining and increasing riparian buffers will be more important to help mitigate increases in precipitation. Flooding may also affect the sustainability of trails and park access during flooding. Any stormwater management options installed at the park in the future should account for increased stormwater flow.

L. Public Use

Public use is likely to be impacted by climate change. Warmer winters may cause an increase in visitorship during those months as milder conditions make being outdoors more appealing, leading to more intense use in what may have traditionally been a slower time of year. Hotter temperatures in the summer will make water access and shading along trail even more important. Increasing precipitation and heavy storm events may increase the erosion and flooding issues already present within the Park's trail system.

Monitoring Climate Change

It is important for the County to carry out monitoring at the park, and other parks as applicable, to track how climate change may be impacting natural resources and potentially infrastructure. Variables to monitor include:

- Temperature trends
- Precipitation trends, both averages and frequency/severity of storms
- Population trends for native and invasive plants
- Stormwater erosion
- Timing of leaf set and flowering

These types of variables can indicate how the climate is changing and what impacts it may be having on natural resources.

9. Wildlife Habitat

The size of Delco Woods and the diversity of its habitat make this an important property for wildlife habitat. Retaining as much natural area as possible, improving habitat, and making developed areas wildlife friendly will sustain wildlife over time.

A. Birds

Based on reported sightings through The Cornell Lab of Ornithology's eBird website, birdwatchers have identified 80 bird species at the park. The bird species identified depend on a range of habitat, including mature forest, scrubby areas, wetlands, open fields, and large forest tracts. This range of habitat needs shows the importance of protecting habitat diversity at the park.

Managing for Birds

To support such diversity, the County should protect the existing wetland and mature forest. Snags, downed wood, and debris piles can be left in places where they are not a nuisance or hazard to increase shelter abundance and diversity. The forests can also be improved to benefit habitat. The County can enhance habitat in the interior young forests and mature forests by increasing structural diversity and density. This involves planting a diverse mix of native understory trees and shrubs. The exterior younger forests that are heavily invaded present an opportunity to create earlier successional habitat due to the high restoration needs (see Forest Management section).

In the developed areas, native plants in landscaping can increase habitat and food sources for birds. Bird boxes, such as kestrel and bluebird boxes, can also be added where appropriate.

Finally, disturbance of potential nesting areas, particularly the forests and wetland, should be avoided from May through July. This will mitigate the risk of disturbing or injuring nesting birds.

B. Bats

Delco Woods is part of an area that was identified as summer roosting habitat for bats. As bat populations continue to be stressed by habitat loss and white-nose syndrome, it is critical to protect and improve bat habitat. Bats depend on large, mature trees and close sources of water for roosting habitat, making Delco Woods suitable roosting habitat.

Managing for Bats

The mature forest and waterways should be protected to retain habitat. It is important to retain at least 60% canopy cover. Specifically, all hickories and trees that are 12 inches in diameter at breast height (dbh) or larger should be retained. Additionally, the following tree species are important roosting trees:

- American beech
- black birch
- black cherry
- black locust
- chestnut oak
- paper birch
- red maple
- red oak
- sassafras
- silver maple
- white ash
- white oak
- white pine

The County should avoid removing these other tree species as much as possible, particularly from June 1 to July 31, which is prime roosting time. Riparian forest areas and wetlands should be protected to support the insect species that bats rely on. Forest age diversity is also important to support different needs of bats for foraging and roosting. Finally, bat boxes can be used to increase roosting options.

Monitoring for bats can be done to better understand what species are present and their preferred habitat. This would help determine where and when to avoid disturbance. This type of monitoring would likely require a specialist.

C. Pollinators

Pollinators are in decline around the region due to habitat loss, degradation, and fragmentation. While there is often emphasis on meadows for pollinators, all plant communities in Delco Woods can support them.

Managing for Pollinators

The County can increase the diversity and abundance of native flowering plants, including trees and shrubs, throughout the park to increase food sources for pollinators. Beyond just diversity and abundance, it is important to include plants that bloom during different seasons to provide food sources throughout the year. Retaining dead wood, debris piles, and the remnants of herbaceous plants in the fall through winter provides shelter. Additionally, converting the mown roadside areas to meadow will increase pollinator habitat.

Replacing invasive plants with native species is also critical in supporting pollinator populations. According to research, nonnative plants are poorer hosts for native insects, including butterflies. Replacing nonnative plants with native plants can increase the diversity and abundance of insect species, even of generalist insect species that do not rely on a limited number of plant species (Doug Tallamy et al. 2010. "Can alien plants support generalist insect herbivores?" Biological Invasions). Studies have shown that 90% of insect herbivores can reproduce successfully only on plants with which they have an evolutionary history (Burghardt et al. 2008. "Impact of native plants on bird and butterfly diversity in suburban landscapes." Conservation Biology). Replacing nonnative plants with natives could provide better habitat for insects to feed and reproduce.

Supporting insects will also support birds. Approximately 96% of terrestrial birds raise their young in part or entirely on insects in North America (Burghardt et al. 2008). Therefore, increasing the abundance of insects by planting native plants will also support bird species. The meadows will also provide seeds for birds to eat and shelter for cover and nesting.

D. Amphibians

Amphibians rely on wetlands and vernal pools for breeding habitat and on upland areas for other stages of their life cycle.

Managing for Amphibians

It is important to protect and restore these areas to support amphibian populations. Specifically, a 1,000 feet upland buffer should be protected to provide habitat. Additionally, it is important to avoid creating small depressions, such as tire ruts, that can accumulate water in the early spring but do not retain water through the summer and full development period for tadpoles. These depressions can be used by amphibians to lay egg masses, but the juveniles die off as the water dries up. The County should avoid creating ruts, particularly when using heavy equipment, and repair any ruts greater than 6 inches in depth.

E. Other Habitat Improvements

Improving plant community characteristics can provide greater benefits to wildlife. Having diverse plant species in all natural communities increases food and shelter options.

Managing for Habitat Improvements

Improving forest structure includes creating dense layers (canopy, understory, shrubs, and vines, herbaceous) with a diversity of native plants. Conifers are valuable forest components as they provide food and shelter through the winter. Many species benefit from transitional areas between diverse types of vegetation cover. To support these species, the County can add a shrub area between the roadside meadows and the early successional habitat areas (if this is the chosen option for that area) along Reed Road. Additionally, it is important to leave snags and debris piles (only of materials that fell in the woods, not from nearby landscaping) in the park where they are not a hazard or nuisance. These provide shelter for a range of wildlife.

Monitoring Wildlife Habitat

Monitoring wildlife habitat for diversity and abundance can provide further insight into what areas the wildlife is using for habitat and at what time of year. This can inform management efforts and adaptations to avoid disturbing important bird species. There are many options for bird monitoring. EBird is a free online tool that supports citizen science efforts. Any visitor to the property can record what bird species they find. There may also be birding groups in the area or educational groups that may be interested in multiseason surveys.

Monitoring for bats can be done to better understand what species are present and their preferred habitat. This would help determine where and when to avoid disturbance. This type of monitoring would require a specialist.

If desired, monitoring for pollinators can be carried out by volunteers, educational groups, and others to understand what insect species are present. This can include efforts, such as bioblitz days, where people visit the site for one day to identify as many insect, wildlife, and plant species as possible. It can also include regular surveys by volunteers and studies focused on specific species.

Monitoring amphibian populations, such as by egg mass counts, in the wetland can increase the County's understanding of

what species are using the wetland, how the populations are changing, and if additional efforts are needed to protect amphibians.

10. Meadows

Native meadows provide many environmental and public use benefits including mitigation of stormwater runoff, habitat for wildlife, and a scenic setting for trails. Multiple areas are proposed for meadows, including along the roadsides. These are upland areas and would be terrestrial meadows. These areas are currently cool season grasses or developed land with impervious surfaces and structures that will be removed.

F. Installation

Meadow establishment depends on site preparation, planting, and maintenance. To prepare the sites, the County should eliminate existing vegetation, impervious surfaces, and structures to prepare the area prior to planting. Typically, elimination of existing vegetation, including woody plants (shrubs and trees), is achieved through mowing, plowing, and disking, manual removal, and/or herbicide application.

The meadows should be patchworks of various native plants and open ground—creating structural diversity—to provide a range of food sources and nesting sites with a variety of short and tall vegetation. Additionally, the plant mix should include species that bloom and go to seed during different seasons to provide food throughout the year. Climate change may affect what species should be planted over time as climate zones shift and temperature and precipitation regimes are affected. If effects from climate change become evident, such as plant flowering or bird migration times changing, hardier native plants or non-invasive southern U.S. species can be added to build resilience. Note that big blue-stem and switchgrass can be very aggressive; it is best to make them a minor component of the seed mixture.

The following seed mixes are recommended based on hydrology and desired vegetation community composition.

Terrestrial Meadows

- Ernst PA Piedmont Province UPL Meadow Mix ERNMX-260-1
- Ernst PA Piedmont Province UPL Grass Mix ERNMX-260

The first of these seed mixes contain forbs, which can be difficult to establish. To increase the likelihood of success, the County can hire an experienced professional to install and maintain the meadow at least until it is fully established.

Planting should be done in the spring, before June 1 and preferably in mid-May, or late fall/early winter after a few killing frosts, generally in November or December. This will avoid midsummer droughts that could negatively affect plant survival. In general, Natural Lands recommends a spring planting based on experience creating meadows. Site preparation should be done in April for spring planting or September or early October for a fall planting.

A. The County or contractor should use a no-till drill to plant the meadow. Seeds should be planted at a depth of ¼- ½," with ¼ inch being the preferred depth. Oats can be used as a cover crop and planted at the same time as the seed mixes. They should be planted at a rate of 30 pounds per acre.

B. Meadow Maintenance

It may take multiple growing seasons to establish a meadow with good diversity and limited invasive plants. Invasive plants and natural succession of woody plants are two common issues when creating and maintaining a meadow. Meadows only persist through periodic disturbances that keep larger woody vegetation at bay. During the first growing season meadows should

be mowed whenever they are approximately 18 to 24 inches to a height of 8 inches until mid-September. This will prevent cover crops, which are not intended to carry into subsequent years, from seeding and will encourage root establishment for the desired native plant species. It will also prevent incursion of woody plants. After the meadows are established (approximately two years), mowing should be done annually when there is least danger to wildlife and when the ground is dry or frozen, generally in March. In meadows that are typically wet in the spring, mowing should be done in the fall after the first hard frost. The meadows should be mowed to 10-12 inches.

Invasive plants can be harmful to the health of a meadow. They will out-compete native species, thereby decreasing biodiversity and reducing quality food sources for pollinators and wildlife. Often, invasive species can be controlled by mowing, cutting, and spot application of herbicides. If the area is heavily invaded, mowing can be done twice a year, the entire meadow once in March and one-third to one-half of the area in mid-July, rotating areas over two to three years. In addition to controlling invasive plants, a second mowing can encourage warm-season grasses by reducing competition from cool-season grasses.

Monitoring Meadows

As 100% germination is extremely unlikely, the County or contractor should monitor the successful germination and survival of plants for the first few seasons and areas should be replanted as needed.

The County or contractor should monitor the meadows to detect any invasives moving into the area before they become established. It is easier to remove young plants that have not yet formed dense colonies, saving time and resources.

11. Hazards and Debris

Hazards need to be managed to reduce liability, improve habitat quality, and enhance visitor experience. Hazards found at the park include standing dead trees and debris.

A. Hazard Trees

Dead or dying trees along roadways and at stopping points along trails (benches, signs) pose a risk to human safety and property. All landowners must make a reasonable effort to prevent trees within their property from causing injury or property damage. Hazard trees were noted during the site visits and their locations are included on the **Stewardship Features and Issues Map** on page 175. These are only some of the hazard trees present in the park.

Hazard Tree Management

A program should be established to manage hazard trees. This is best accomplished through a regular program of monitoring areas of high use, such as public roads, adjacent properties with structures, and recreational facilities, such as play areas, benches, parking lots, and any new structures. These areas should be monitored at least once each year and after major storm events. The County could consider training one or more staff members in the identification of hazard trees to reduce monitoring costs. Alternatively, a certified arborist should perform the inspection.

Hazard trees should be pruned or removed to eliminate the risk. Many trees may first be identified if hazard trees have not been addressed recently. The trees should be prioritized based on risk level, and those with the greatest risk should be addressed first.

B. Debris and Unwarranted Use

Trash is being dumped along the public roads and within the park. Historic dumping

areas, including the sanitary landfill, shrubland, and grassland, have large debris such as a washing machine and concrete blocks. Trash of any kind decreases the aesthetic value of the park and can be hazardous to people and animals.

Some of the trash and debris is also from what appears to be people previously camping within the park, setting up shelters, and making fires. These practices create the same issues as the trash but can also make an area feel unsafe to visitors and present a risk of forest fires, an increasing threat as climate change can cause more frequent and severe drought.

Management and Monitoring of Hazards and Debris

As the County encourages increased public use, efforts should be made to eliminate debris and to prevent unwarranted use of the park through boundary postings and regular monitoring of problem areas.

Posting boundaries can help deter illegal use by clearly identifying what is county land. It also shows that there is an active presence along the boundary. Signs marking the Park as county land should be installed every 50 to 100 feet along all boundaries. The signs should be uniform with a logo and/or standardized text. Natural Lands uses a combination of two sign types, a 3.25 inches x 3.25 inches diamond with our logo and a 6 inch x12 inch sign with additional language about ownership. The signs should be monitored once a year to make sure they are still in place and in good condition.

Regular monitoring followed by reasonable action will prevent potential injury or damage and help reduce liability if a tree causes it. Although the County is responsible for any injury or damage regardless of the actions taken, showing that the County has made a reasonable effort to identify and address hazard trees will help deter charges of negligence.

The final key to an effective hazard tree program is documentation. All activities related to the program should be cataloged, including monitoring and actions taken, noting when, where, and by whom. This will be the proof that the County made a reasonable effort to identify and address hazard trees in the unfortunate occurrence of injury or damage.

12. BMX Bicycle Motocross (BMX)

The BMX course is already well established within the mature forest area. It is a valued amenity that the BMX community has been building over the years. Additionally, members of the BMX group have been leading cleanup efforts to remove trash within the park. As the environmental disturbance has already occurred and it is the County's desire to keep the BMX course based on public feedback during the planning process, ongoing maintenance should focus on providing a premier BMX course while protecting the natural resources. The County and BMX group should contain the course to its existing main footprint, avoiding further expansion and eliminating the trail segments near the stream. This will protect the surrounding forest and water quality. All trails and jumps should be built following best management practices to promote safety, reduce erosion, and protect surrounding natural resources including trees. The BMX group has already been working to control stormwater runoff. If possible, stormwater management efforts should include natural design features, such as wetland pools and native vegetation. As much as possible, the BMX group should avoid compaction of soil around trees as this will harm the root system. Finally, the BMX group should work closely with the County to follow all county requirements and continue their partnership to care for the park.

RECOMMENDATIONS

Given the size of the area, importance of the site, and the current condition of the forest, this Stewardship Appendix recommends launching the restoration of the forest as a capital improvement project. It will position the Parks and Recreation Department to manage and maintain the site in a way that is

most suitable for its staffing and financial capacity. With a successful restoration project accomplished, the Parks & Recreation Department can use the Plan to define the maintenance of the forest. This Stewardship Appendix gives an overview of the existing conditions of the natural resources of the Property, identifies conservation priorities, and provides recommendations for how to best manage the natural resources. This should be seen as a living document that future research, studies, issues, and best management practices can influence over time. As such, it should be revisited at least every five years or as significant new issues and opportunities arise to adjust or reconsider the conservation priorities and stewardship recommendations.

Once the capital improvement project of forest restoration is accomplished, the management plan for the park and the management units would start. A management unit in Delco Woods is a defined spatial area designated for specific management practices and conservation objectives. The management units are delineated by natural features enabling targeted planning and implementation of stewardship activities. By establishing management units, the Parks and Recreation Departments and its partners can allocate resources effectively, tailor interventions to unique environmental conditions, and monitor the outcomes of conservation efforts within distinct areas of Delco Woods.

Park Wide Management Recommendations for Natural Resource Management

The overall goal for natural resources in Delco Woods is to establish systems for sustainable management that benefit both conservation and recreational uses.

a. Establish a hazard tree monitoring program.
    - Establish a hazard tree program.
    - Monitor for hazard trees by foot once a year and after severe storms. Contract an arborist as needed or train staff to carry out monitoring.
    - Prune or remove hazard trees to eliminate risk. Hazard trees in the forest areas can be dropped and allowed to decay.

b. Install and maintain boundary postings. Ensure that boundary signs are properly maintained and clearly mark property boundaries.

c. Establish an invasive plant management program.

d. Establish a deer management program.

e. Address debris throughout the park.
    - Remove nuisance structures within the woods.
    - Remove trash, prioritizing debris accessible to visitors, especially children.
    - Monitor the Park for new dumping.

f. Emerald Ash Borer
    - Monitor for EAB.
    - Continue to identify and remove ash trees that can become hazardous if infected.
    - Replant areas of ash die off if canopy gaps occur.
    - Follow quarantine requirements.

g. Beech leaf disease
    - Monitor for BLD.
    - Stay current on BLD research.
    - Plant trees that can replace the beech trees in the canopy if needed.

h. Spotted Lanternfly

- Follow quarantine requirements.
- Utilize circle traps.
- If SLF numbers increase again:
  - Create trap trees with tree-of-heaven.
  - Deploy volunteers to carry out egg mass scraping. Report the number of egg masses scraped to the PA Department of Agriculture.

i. Climate Change

- Monitor for deterioration of plant communities or species.
- Maintain riparian buffers.
- When carrying out plantings, add a higher percentage of species projected to be resilient to climate change. Consider adding native species with habitat zones farther south and/or source plants from areas further south.
- Retain dead and downed wood for carbon stores where not a nuisance.

j. Expand staffing to have dedicated stewardship staff for natural areas.

- Train staff in key stewardship techniques and concepts.
- Hire a natural resources manager.
- Hire a natural resources assistant.

k. Establish a Friends of the Park program.

l. Carry out further assessments of the natural resources. Studies can be carried out by consultants, volunteers, and schools. Possible study topics include:

- Wildlife studies for species diversity, abundance, and habitat areas
- In-depth vegetation surveys across multiple years and seasons
- Water quality and quantity studies
- Climate change impacts to precipitation and temperature

1. Management Units

The following Management Units are listed in priority order.

a. Management Unit 1: Riparian Forest Buffer

Goal: Maintain a dense riparian forest buffer to protect and improve water quality.

Riparian buffers are essential to protecting water quality, stabilizing streambanks, and mitigating flooding. The ability of riparian buffers to mitigate flooding is particularly important for this property as it is surrounded by impervious surfaces and is the southern-most large, forested property within the Darby Creek Watershed. As such, the riparian buffers are a high priority for maintenance and protection.

1. Utilize formal stream crossings where trails need to cross a stream.
2. Protect the current extent of the forested riparian buffers.

3. Expand the width of the riparian buffer where needed and as possible to reach at least 100 feet in width. Choose native tree species that are projected to be climate change resilient.

4. Increase the density of the forested riparian buffers by planting shrubs and understory trees. Protect plantings with tree tubes and/or fencing until they can withstand deer browsing and rubbing.

b. Management Unit 2: Wetland

Goal: Protect the wetland from disturbance to support water quality and wildlife habitat.

This area is important for water quality, flood mitigation, and habitat. Wetlands are sensitive areas that are easily disrupted by disturbance. As such, this is a key area to maintain and protect. As there is a sufficient diversity of native plants, the focus is on controlling invasive plants to allow the existing native plants to thrive.

1. Establish a 300 feet nondisturbance buffer around the wetlands. Use of mechanical equipment should be minimized in these areas. Avoid establishing structures within these areas.

2. Control invasive plants, including:

    - multiflora rose
    - Japanese siltgrass
    - lesser celandine

c. Management Unit 3: Mature Forest

Goal: Create a sustainable mature forest with diverse native plants and dense structural layers. Support progression to an old growth forest characterized by mixed height canopy, mature trees, and an abundance of dead and downed wood.

This area should be prioritized for management, particularly control of invasive plants, as this area already has high ecological quality that should be maintained.

1. Avoid removal of trees unless for safety. Retain trees over 12 inches dbh and trees that are used by bats for roosting. Avoid cutting trees during nesting and roosting seasons.

2. Prevent further spread of the BMX course and close trails that cross the stream.

3. Control invasive plants.

4. Allow dead and downed wood to remain in places where it is not a nuisance.

5. Monitor for beech leaf disease and be prepared to replant areas as needed if beeches decline.

6. If natural regeneration does not increase with deer control, plant understory trees to establish the understory layer and have a cohort of younger trees in place to replace canopy trees as they die off (including death from age). Choose a diversity of species that are expected to be resilient to climate change. Protect

with tree tubes or fencing until established and can withstand deer browsing and rubbing.

7. If natural regeneration does not increase with deer control, plant native shrubs in clusters surrounded by fencing to protect from deer. Control invasive plants within fencing. Fencing can be removed when shrubs can withstand deer browsing, approximately five to ten years.

d. Management Unit 4: Mixed Hardwood Forest Interior and Red Maple Palustrine Forest

Goal: Create a sustainable mature forest with diverse native plants and dense structural layers. Support progression to a mature forest characterized by mixed height canopy, mature trees, and increasing dead wood.

This area provides important habitat and other ecological benefits including stormwater management, carbon storage, and scenic value. These areas have more invasive plants than the mature forest area but are not heavily degraded like the exterior of the mixed hardwood forest. They will require a moderate amount of management to improve and sustain. The natural progression of the forest into later age classes should be supported. This may be disrupted by natural processes, such as blowdown during storms, but otherwise large-scale disturbance should be avoided.

1. Avoid infrastructure, including trails, through the wet areas of the red maple palustrine forest. These areas are distinguishable by the footing and skunk cabbage.

2. Avoid removal of trees unless for safety. In particular, keep trees over 12 inches dbh and trees that are used by bats for roosting. Avoid cutting trees during nesting and roosting seasons.

3. Control invasive plants.

4. Leave snags and dead wood in places where not a nuisance.

5. Plant understory trees and shrubs to build forest layers. Protect plantings with tree tubes and/or fencing until plants can withstand deer browsing and rubbing. Choose species that are projected to be resilient to climate change as much as possible. Consider adding some tree species that are projected to move into the area as their habitat zones expand north.

e. Management Unit 5: Exterior Mixed Hardwood Forest

Goal: Create young forest habitat by clearing dead trees and invasive plants and replanting with native tree species predicted to be resilient to climate change. Allow to progress to a maturing forest and introduce shrub species. Alternatively, create a transitional area with a gradient of meadow to shrubs to trees to support

wildlife in areas where meadows will be installed along the road. This will support early successional habitat, which is important for specific bird species. To do so, after clearing dead trees and invasive plants, plant a scattering of shrubs and trees to allow for mostly herbaceous plants with some perching and nesting areas. Consider creating a new young forest or early successional habitat every five to ten years unless it is naturally created by disturbances.

1. Clear invasive plants. This will involve widespread clearing and should only be carried out when the township has the resources to plant and maintain new trees.

2. While it is generally recommended that snags be left in place for habitat, dead trees can be felled and removed from this area as needed to protect new plantings and aid in management. Where not a nuisance, downed trees can be left in place to provide shelter for wildlife and windbreaks and shade for new plantings.

3. Replant the area using native species. Choose a mix of species that are likely resilient to climate change to increase diversity and support sustainability.

4. a. Create a transition area between early successional habitat. The shrubs can be sparse throughout most of the transitional area and then increase in density next to the forest. This area can be allowed to naturally transition to forest over time, while controlling invasive plants. Alternatively, the area can be mowed every three years to prevent tree growth while still allowing shrubs and herbaceous plants to persist. This would advance early-successional habitat in the newly planted forest area and the meadow with shrubs.

   b. Plant the entire area up to the meadow with trees to establish a young forest. Choose a mix of species projected to be resilient to climate change. Protect plantings with tree tubes or fencing. Maintain plantings by mowing in between rows and herbiciding around tree tubes. Support progress to maturing forest as needed by replacing trees that die and adding shrubs after the tree tubes are removed.

5. Use interpretive signs, social media posts, and other forms of outreach to inform the community about why the project is needed and what work will be done. This can help address the concern that community members will likely have when seeing a large part of the forest being removed, particularly if the community members are not familiar with invasive plants.

Because of the high presence of invasive species in this area of the forest, this plan recommends hiring a consulting firm to "jump start" restoration so that County staff have a more manageable resource to steward. This activity would occur in Phase 1 of park construction.

Table 17. Exterior Mixed Hardwood Forest Management Unit		
3	Clear invasive plants. This will involve a widespread clearing and should only be carried out when the County has the resources to plant and maintain new trees.	See Invasive Plants Appendix
3	While it is generally recommended that snags be left in place for habitat, dead trees can be felled and removed from this area as needed to protect new plantings and aid in management. Where not a nuisance, downed trees can be left in place to provide shelter for wildlife and windbreaks and shade for new plantings.	Anytime
3	Replant the area using native species. Choose a mix of species that are likely resilient to climate change to increase diversity and support sustainability.	Spring or Fall
4	a. Create a transition area between the newly planted forest area and the meadow with shrubs to support early-successional habitat. The shrubs can be sparse throughout most of the transitional area and then increase in density next to the forest. This area can be allowed to naturally transition to forest over time, while controlling invasive plants. Alternatively, the area can be mowed every three years to prevent tree growth while still allowing shrubs and herbaceous plants to persist, thereby allowing the early-successional habitat to persist.	Spring or Fall
	OR	
5	b. Plant the entire area up to the meadow with trees to establish a young forest. Choose a mix of species projected to be resilient to climate change. Protect plantings with tree tubes or fencing. Maintain plantings by mowing in between rows and herbiciding around tree tubes. Support progress to maturing forest as needed by replacing trees that die and adding shrubs after the tree tubes are removed.	Spring or Fall
6	Use interpretive signs, social media posts, and other forms of outreach to inform the community about why the project is needed and what work will be done. This can help address the concern that community members will likely have when seeing a large part of the forest being removed, particularly if the community members are not familiar with invasive plants.	At start of project

f. Management Unit 6: Meadow Areas

Goal: Create native meadows that highlight the natural beauty of meadows and provide key ecosystem benefits including stormwater management and habitat for wildlife.

As these areas are currently lawn, there is no risk of losing existing ecological benefits. As such, creating a meadow is a lower priority compared to maintaining the existing natural resources. However, the benefits to visitors and potential for habitat value justify early implementation of this work if desired by the County.

INSTALLATION

1. Remove current cool season grasses with herbicides (using only aquatic approved herbicides) for areas to be converted. Prepare site in April for spring planting or September/early October for a late fall/early winter planting.

2. Chose plants appropriate for desired vegetation community based on soils and hydrology.

3. Plant seeds in the spring (mid-May) or late fall/early winter (November or December) for terrestrial meadows or in the spring for wet meadows. Use a no-till drill for seed mixes and plant seeds at a depth of ¼- ½ inches.

4. Monitor plantings for germination, survival, and replant as needed.

ESTABLISHMENT AND MAINTENANCE

9. During the first growing season, mow meadows when they reach 18-24 inches to a height of 8 inches until mid-September.

10. Mow established meadows once annually to 10 to 12 inches when ground is dry or frozen, in March or if typically wet in spring, mow in the fall after the first hard frost, generally mid-November.

11. Control invasives plants through spot-herbicide application and annual mowing. A second mowing in mid-July of a third to half of the meadow may be necessary if the meadow is heavily invaded, alternating mown areas in subsequent years.

12. Monitor for newly established invasive species.

Meadows are difficult to establish as they require special equipment for installation and monitoring during the first 18 months to three years. Once established, native warm season grass meadows require less intensive maintenance. This plan recommends hiring outside contractors with expertise in establishing meadows to install the meadow. That contractor would also conduct inspections and advise the County, or be hired to conduct management of invasive plants during the introductory growing period.

Table 18. Meadow Areas Management Unit		
4	Install meadow	TBD
4	Establish meadow by mowing when meadows reach a height of 12 to 18 inches and mowing to a height of 8 inches until end of fall.	

STAFFING CONSIDERATIONS

Additional staffing and training will be necessary to fully carry out this plan's recommendations, designed to perpetuate the many public benefits of the park. A Stewardship Manager dedicated to natural areas management is critical to implementing the stewardship recommendations. This person should have a strong background in natural resource management and understand the science behind caring for natural lands. This person would oversee the rest of the maintenance staff in projects relating to natural areas stewardship. This position should be assigned to the entire Delaware County park system, rather than just this property. Some parks and recreation departments have organized their park maintenance work force to have a "Green Crew," specialists trained in natural resource management.

In addition to hiring a Stewardship Manager, providing training in the best stewardship practices for current maintenance staff can enhance the effectiveness of their efforts. Proper equipment and stewardship practice training will be necessary for all staff doing stewardship work. If staff capacity is not increased, the County will have to hire contractors to carry out much of the recommended work.

STAFF TRAINING

As part of this master plan process, Natural Lands led a training workshop for County parks staff. The training focused on the importance of actively managing natural resources, how to prioritize areas, and identification of invasive plants. Natural Lands and County staff also discussed the planning process and potential recommendations. This training sets the foundation for the following recommendations in this plan. Additional training is recommended to support County staff in stewarding the Park's natural resources. Training topics could include:

- Further plant identification, including native and invasive plants
- Invasive plant control techniques
- Tree planting and maintenance
- Meadow planting and maintenance
- Trail creation and maintenance

In addition to County Park Maintenance Staff, support from the community can be generated. Note that the following volunteer organizations require dedicated staff time from designated individuals to produce the work and meet the goals and objectives desired. Volunteers are not free. They require recruitment, training, supervision, and recognition.

A. Corp groups

Another option is to create a Corps program where the County can hire an annual crew of temporary staff members. These Corps members can be trained in natural resources management and assist in stewardship. This could provide much needed help for the County while also providing job training for the Corps members. The training described above can also be applicable to a Corps group.

B. Volunteers

Volunteers can contribute significantly to park maintenance. They can perform a variety of tasks, such as cutting and pulling invasive plants, installing bird boxes, and providing routine trail maintenance.

One of the most important roles volunteers can take on is to be a set of eyes and ears on the property. By having an active volunteer presence, unwarranted negative uses can be more quickly identified. Already the BMX group holds trash cleanup days and the Save Marple Woods group maintains the trails. The County should continue to maintain relationships with these groups and work with them on volunteer projects. Additionally, the County can further build out their volunteer base to increase volunteer capacity. This can involve volunteer events, individual volunteers, and a Friends Group.

An established Friends Group can provide a reliable volunteer base to perform regular maintenance with limited individual supervision. They can mobilize as a group to perform large tasks during designated volunteer days. Additionally, a Friends Group can monitor a property for inappropriate uses, trail issues, or trash problems and report any concerns to the County. Outreach to community members, especially neighbors, should generate a volunteer base.

A Friends Group can benefit from hands-on training that not only gives participants practical skills to carry out tasks in the field but also explains management practices and the importance of ongoing stewardship. This could be designed like the Natural Lands' Force of Nature volunteer program. Force of Nature volunteers participate in an in-depth training program, which prepares them to assist with stewardship and visitor outreach as either a Trail Ambassador or Team Leader. Trail Ambassadors walk the trails, greeting visitors and helping with property care. The Team Leaders can help lead projects with other Friends volunteers and manage event days with specific groups, such as college volunteers. The training should not only cover how to carry out tasks but also explain why they are important. This helps build the volunteers' knowledge base, provides motivation, and helps them to be better ambassadors if they encounter curious visitors. This training can be similar to what is described previously for staff but adapted to be appropriate for volunteer tasks.

A Friends Group can also be used for the entire county park system. This could engage more people and help alleviate the burden of stewardship and other ongoing maintenance or event needs.

C. Environmental Education

The park, located next to Cardinal O'Hara High School and near several K-12 schools, colleges, and universities, offers opportunities for educational use. Schools could incorporate Delco Woods into their curriculum, encouraging students to explore nature, while higher-level classes could collaborate on monitoring and research projects. As outlined in this plan, such studies could provide valuable insights for park management, including assessments of seed bank potential and water quality. The County should thoughtfully evaluate all potential educational uses to maximize benefits while ensuring that Delco Woods' resources remain protected and preserved.

09. NATURAL LANDS LAND USE REGULATIONS EXAMPLE

NATURAL LANDS TRUST REGULATED HUNTING PROGRAM
Rules and Regulations

Natural Lands Trust conducts controlled deer hunts on properties to manage deer populations consistent with the preserve's natural resource management goals. Hunters receiving permits for the deer management program are expected to conduct themselves in a safe, honest, and ethical manner. Any hunter who does not act accordingly will have his or her hunting permit revoked immediately. Listed below are the requirements that must be met to receive a permit, examples of what the Trust considers unacceptable behavior, and the regulations that must be followed while hunting on any Trust preserve.

Permit Requirements

1. All hunters must attend a preseason orientation course to be conducted by the preserve manager.
2. All hunters must present proof that they have completed the Pennsylvania Game Commission hunter-trapper education course. Bowhunters must present proof that they have completed a bowhunter education course.
3. Hunters must have an antlerless deer license for the deer management unit of the preserve.
4. All hunters must pass a proficiency test using the sporting arm they plan to hunt with. For firearms, a hunter must place 4 out of 5 slugs in a 9-inch paper plate at 45 yards. No buckshot allowed. Shooting from a treestand 10 feet above the ground, an archer must place 5 out of 6 arrows in the vitals of a 3-D target. The target will be placed at 5, 10, and 15 yards from the base of the tree.

Unacceptable Behavior (includes, but is not limited to, the following)

1. Shooting in marginal situations such as at running deer, when vital organs are obstructed, and at excessive distances.
2. Disrespect of Trust employees, adjacent landowners, and other preserve users.
3. Consumption of alcoholic beverages or use of controlled substances.
4. Failing to appropriately follow up every shot.
5. Displaying game animals unnecessarily.

Hunting Regulations

1. The Trust will determine the days and hours of hunting permitted at a site.
2. Hunters must comply with all Pennsylvania Game Commission regulations (including returning report cards).
3. Hunters must endeavor to harvest an antlerless deer. Any hunter that does not make a good faith effort to harvest an antlerless deer will have their permit revoked. Archers must take an antlerless deer before being eligible to harvest a buck.
4. Hunters must hunt at least 20 hours.
5. Only two shells can be loaded at any one time (one shell in the chamber, one in the magazine).
6. Only portable tree stands may be used and hunters must wear a safety belt. No screw-in steps are allowed. All tree stands must be removed by January 26th, or they will be forfeited.
7. Crossbows and .410 shotguns are not allowed.
8. Hunters must follow the hunting procedure listed below.

Hunting Procedure

A metal box will be placed in a convenient spot, accessible to all hunters. The box will contain armbands, a map of the preserve, and the hunting log. Prior to each hunting stand the hunter must: (1) remove one of the armbands from the box and put it on the exterior of his or her hunting coat (once the supply of armbands is exhausted, no additional hunters may hunt until a hunter returns from the field and returns an armband to the metal box); (2) mark the map to indicate where they plan to hunt; (3) sign in on the hunting log; and (4) display a parking permit on the dashboard of their vehicle. While hunting, the hunter must: (1) wear the armband; and (2) carry the permit. At the end of each stand, the hunter must: (1) return the armband to the metal box; (2) remove the mark from the map; and (3) fill in the hunting log completely.

Termination Procedure

If the preserve manager witnesses a case of unacceptable behavior or a violation of one of the hunting regulations by a permitted hunter, or is informed of such an incident by a reliable source, he will abide by the following procedure to address each incident:

1. The preserve manager will verbally inform the hunter of the infraction.
2. The hunter will be provided the opportunity to respond to the accusation.
3. If, in the opinion of the preserve manager, the hunter has clearly exhibited an unacceptable behavior or has violated one of the hunting regulations, he will verbally inform the hunter that his hunting permit is revoked immediately.
4. If there are legitimate extenuating circumstances surrounding a violation of hunting regulation 6 or 8, the hunter will be given a warning. A second violation of these regulations will result in immediate loss of hunting privileges. Violations of any other hunting regulation or unacceptable behavior rule will not receive a warning and will result in immediate termination of hunting privileges.
5. The hunter will be notified in writing of a warning or the loss of hunting privileges.