



Board of Supervisors

Project Introduction

May 19, 2025



Master Planning Team

OMNES

LANDSCAPE ARCHITECTURE, PLANNING, & ART



WILDLANDS CONSERVANCY

ECOLOGY & CONSERVATION



AKRF

RESILIENCY PLANNING & ENGINEERING



Public Engagement

3 PUBLIC MEETINGS



05/19/25, 7pm

Board of Supervisors' Meeting

8/25/25, 7pm

Venue TBD

10/20/25, 7pm

Venue TBD

2 POP-UP EVENTS



05/17/25, 9am

Easton Farmer's Market

8/15 - 8/16/25

Palmer Community Weekend

2 SURVEYS



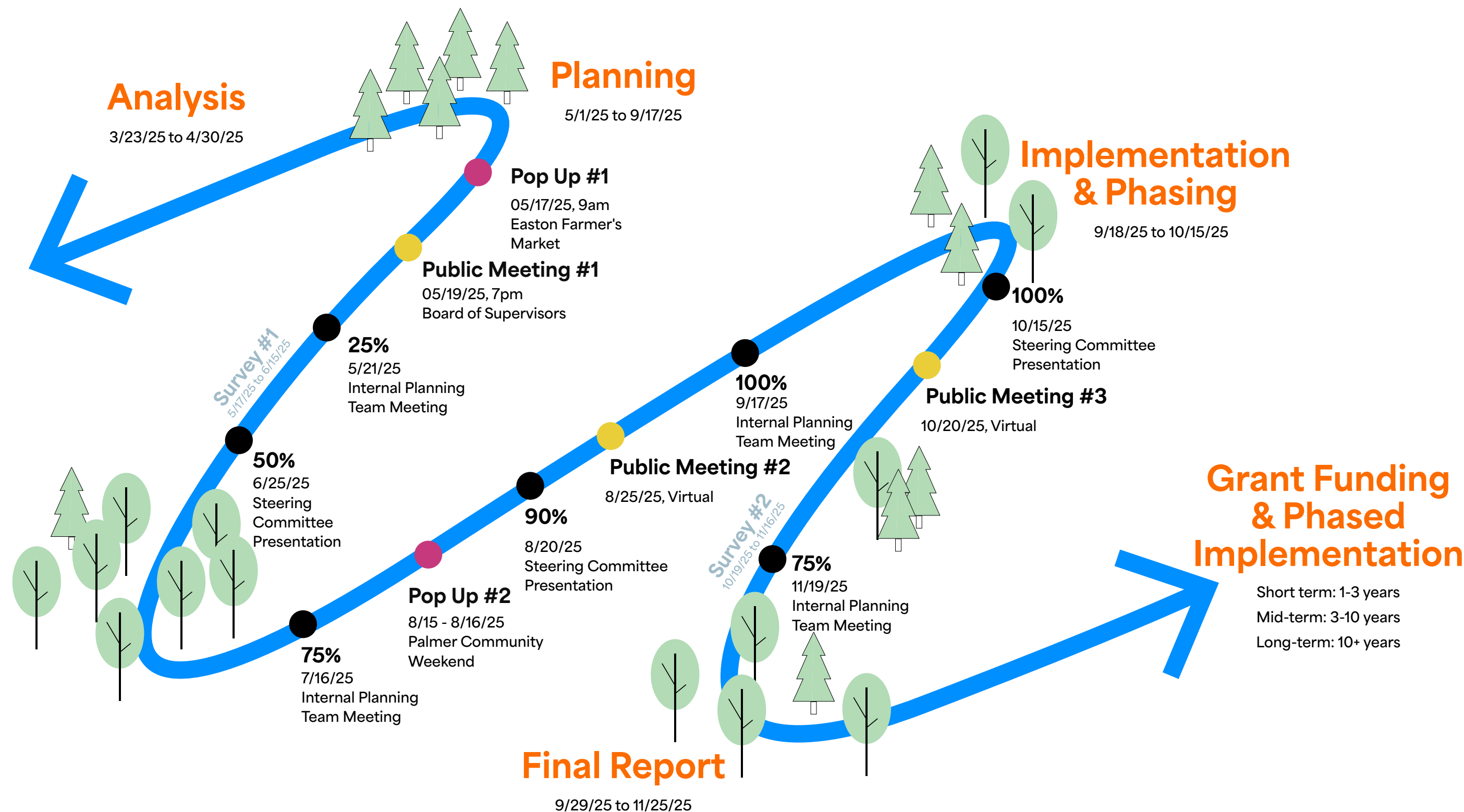
Survey #1

5/17/25 to 6/15/25

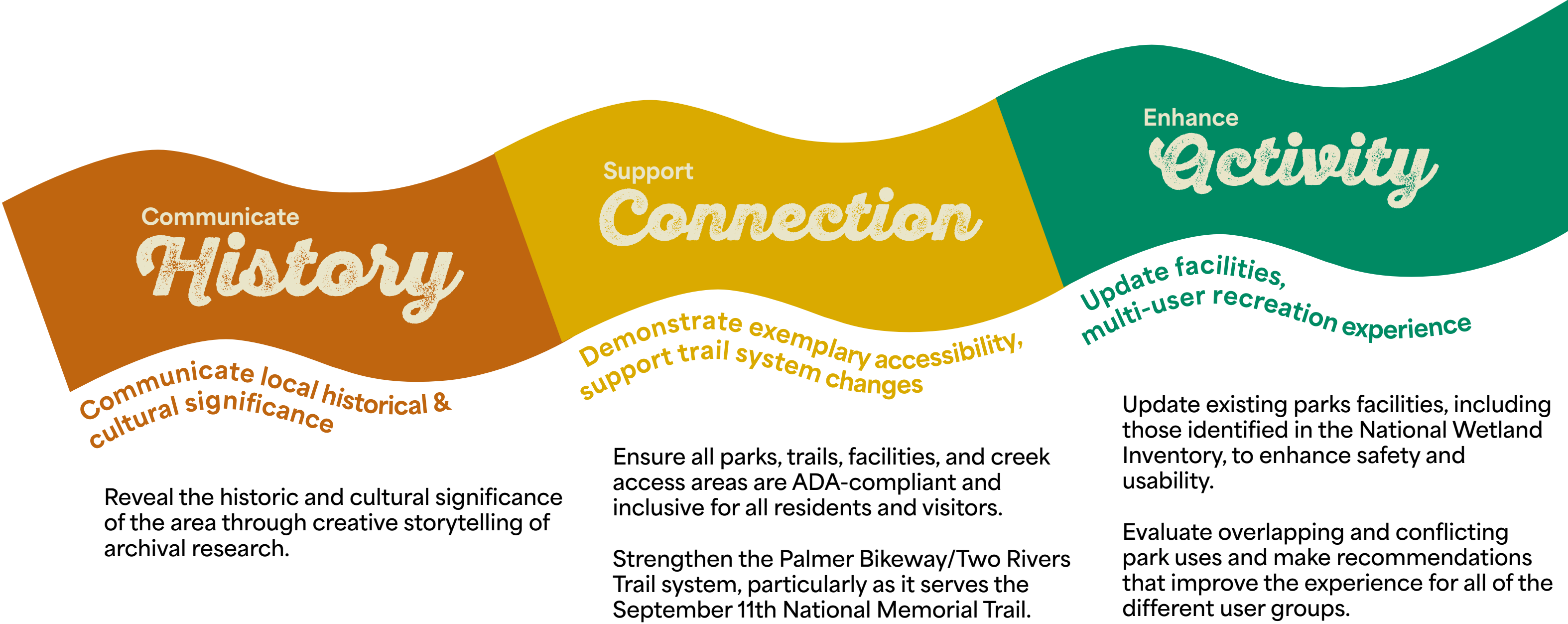
Survey #2

10/19/25 to 11/16/25

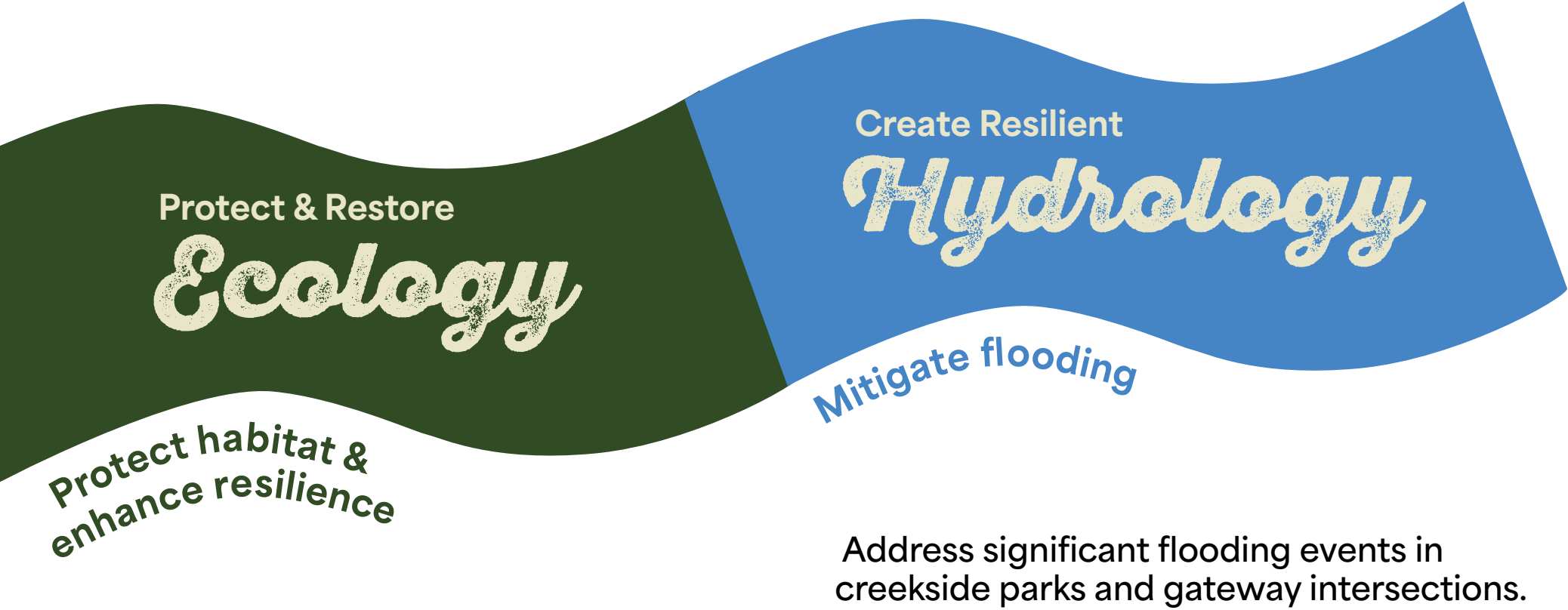
Master Planning Process



Project Goals



Project Goals



Protect and enhance the creek’s habitat to withstand the potential effects of global climate change.

Bushkill Creek Greenway

PARKS & OPEN SPACE

PARKS INCLUDED IN THIS STUDY:

- 1 Mill Race Park & Tot Lot (Villages at Mill Race Open Space, Bushkill Open Space)
- 2 Penn's Grant Open Space
- 3 Two Fool's Island (Potential Future Acquisition)
- 4 Keystone Park
- 5 Penn Pump Park & Potential Future Open Space at Northwood Ave
- 6 Binney & Smith Preserve (Binney & Smith Open Space)
- 7 Hillcrest Open Space & Tot Lot

TRAILS INCLUDED IN THIS STUDY:

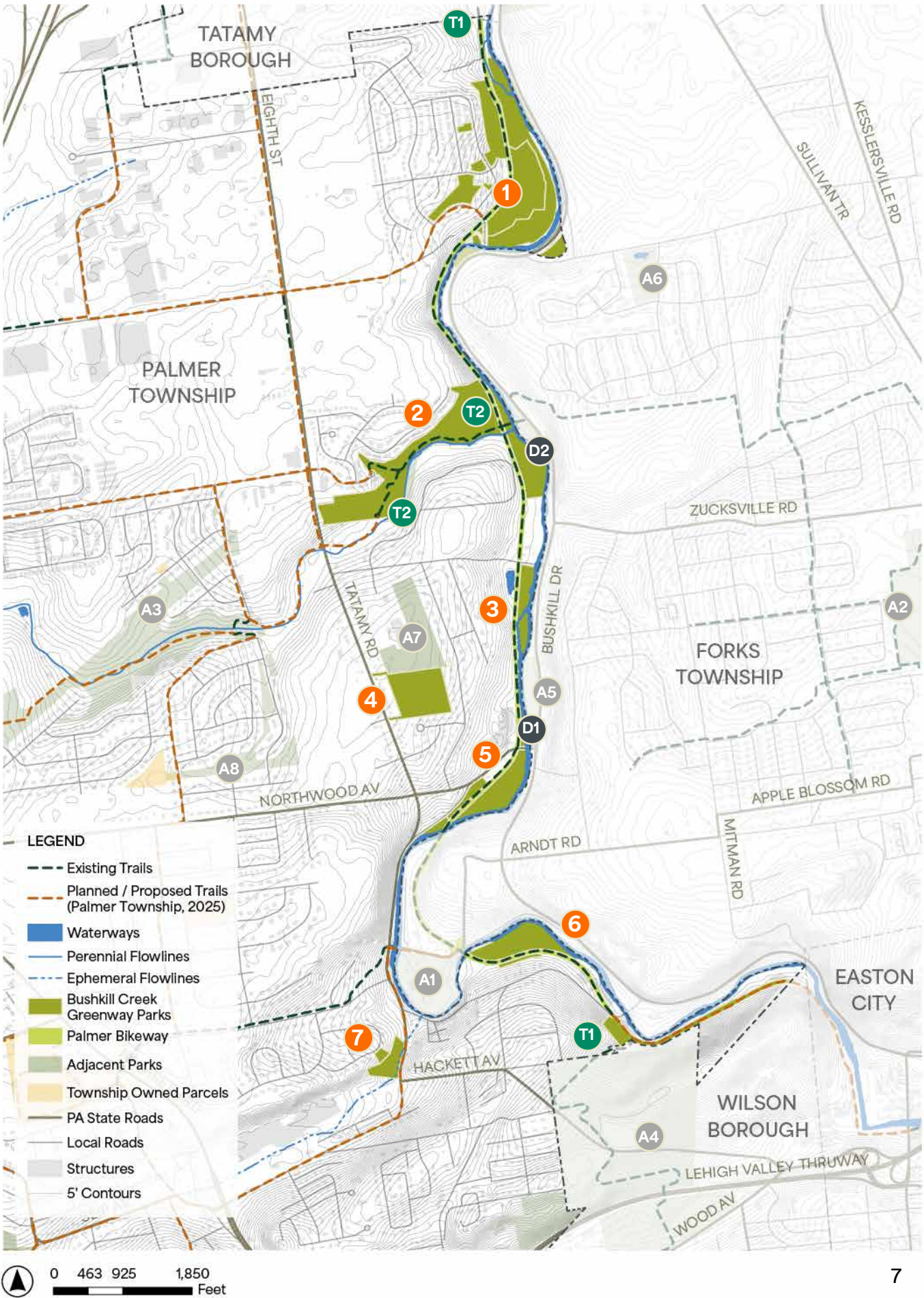
- T1 Palmer Bikeway (Connects to Tatamy Trail to North & Two Rivers Trailway to South)
- T2 Schoeneck Creek Trail A.K.A. Penn's Grant Path (Connects to Palmer Bikeway to East)

ADJACENT PARKS NOT INCLUDED IN THIS STUDY:

- A1 Bushkill Park, Forks Township
- A2 Forks Community Park, Forks Township
- A3 Fox Run Park, Palmer Township
- A4 Hackett & Lower Hackett Park, City of Easton
- A5 Lion's Park, Forks Township
- A6 Penn's Ridge Park, Forks Township
- A7 Tracy Elementary School, Palmer Township
- A8 Wolf's Run Open Space, Palmer Township

DAMS WITHIN STUDY AREA:

- D1 Dam #6 Penn Pump Park
- D2 Dam #7 Penn's Grant Open Space



Regional Context

TRAIL NETWORKS

REGIONAL TRAIL NETWORKS:

- 1 9/11 National Memorial Trail (1,500 miles)
- 2 D&L Trail (140 miles)
- 3 Delaware River Water Trail (200 miles)
- 4 Forks Township Recreation Trail (2 miles)
- 5 Karl Stirner Arts Trail (2.2 miles)
- 6 Lehigh River Water Trail (75 miles)
- 7 Palmer Township Trail Network (1.4 miles)
- 8 Plainfield Township Recreation Trail (6.7 miles)
- 9 South Bethlehem Greenway (2.4 miles)
- 10 Stockertown Rail Trail (1 mile)
- 11 Tatamy Trail (0.25 miles)
- 12 Two Rivers Trailway (20 miles)

EXISTING TRAILS INCLUDED IN THIS STUDY:

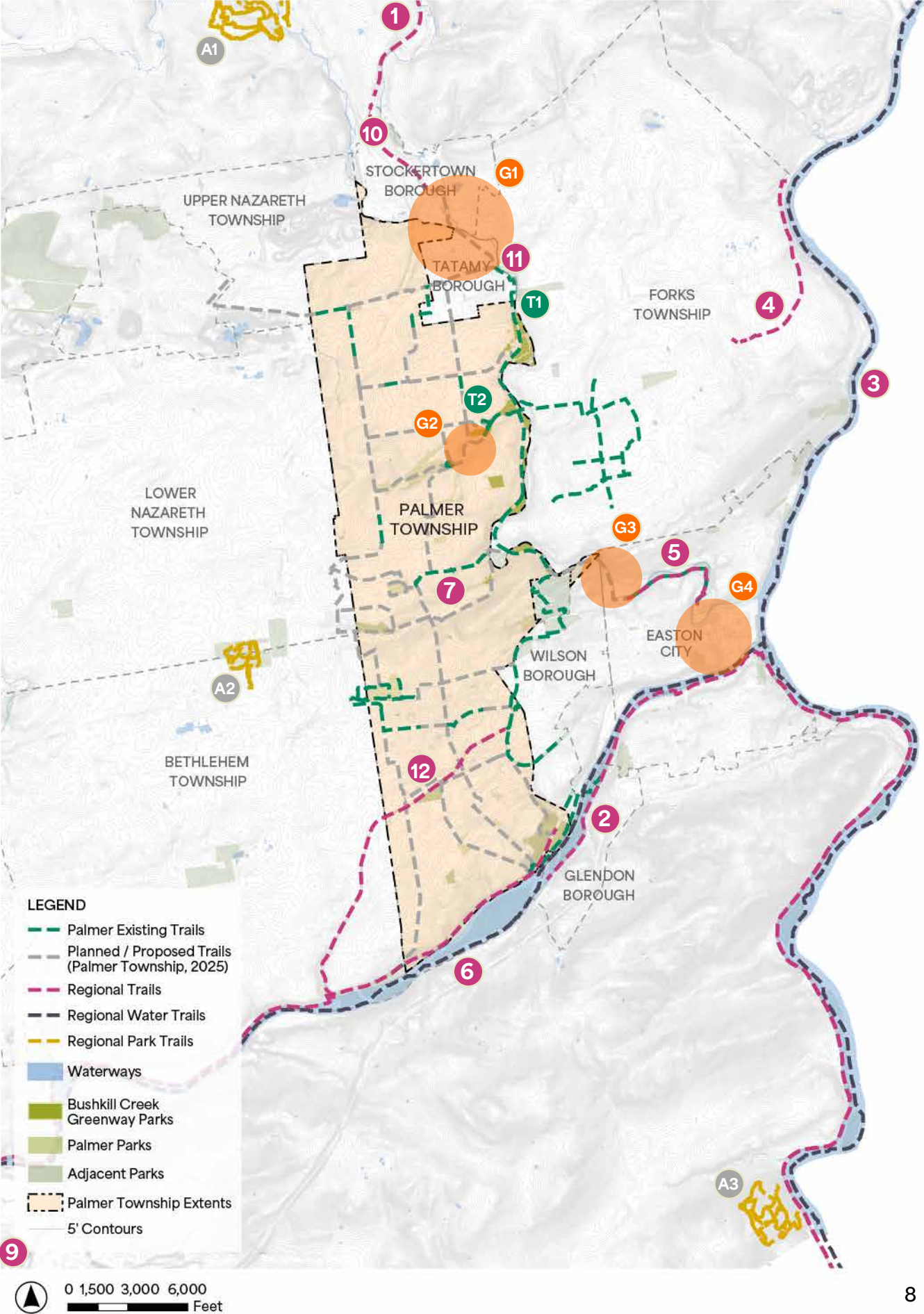
- T1 Palmer Bikeway (3.0 miles)
- T2 Schoeneck Creek Trail A.K.A. Penn's Grant Path (0.7 miles)

ADJACENT PARK TRAILS:

- A1 Jacobsburg Environmental Education Center Trails (19.7 miles)
- A2 Louise W. Moore County Park Trails (2.7 miles)
- A3 Marlton Wildlife Sanctuary Trails (4.2 miles)

REGIONAL TRAIL NETWORK GAPS:

- G1 Between Tatamy Trail & Stockertown Rail Trail
- G2 Between Schoeneck Creek Trail & Trail at Fox Run Open Space
- G3 Between Palmer Bikeway & KSAT at 13th Street
- G4 Between KSAT & D&L Trail through the City of Easton



Recreational Resources

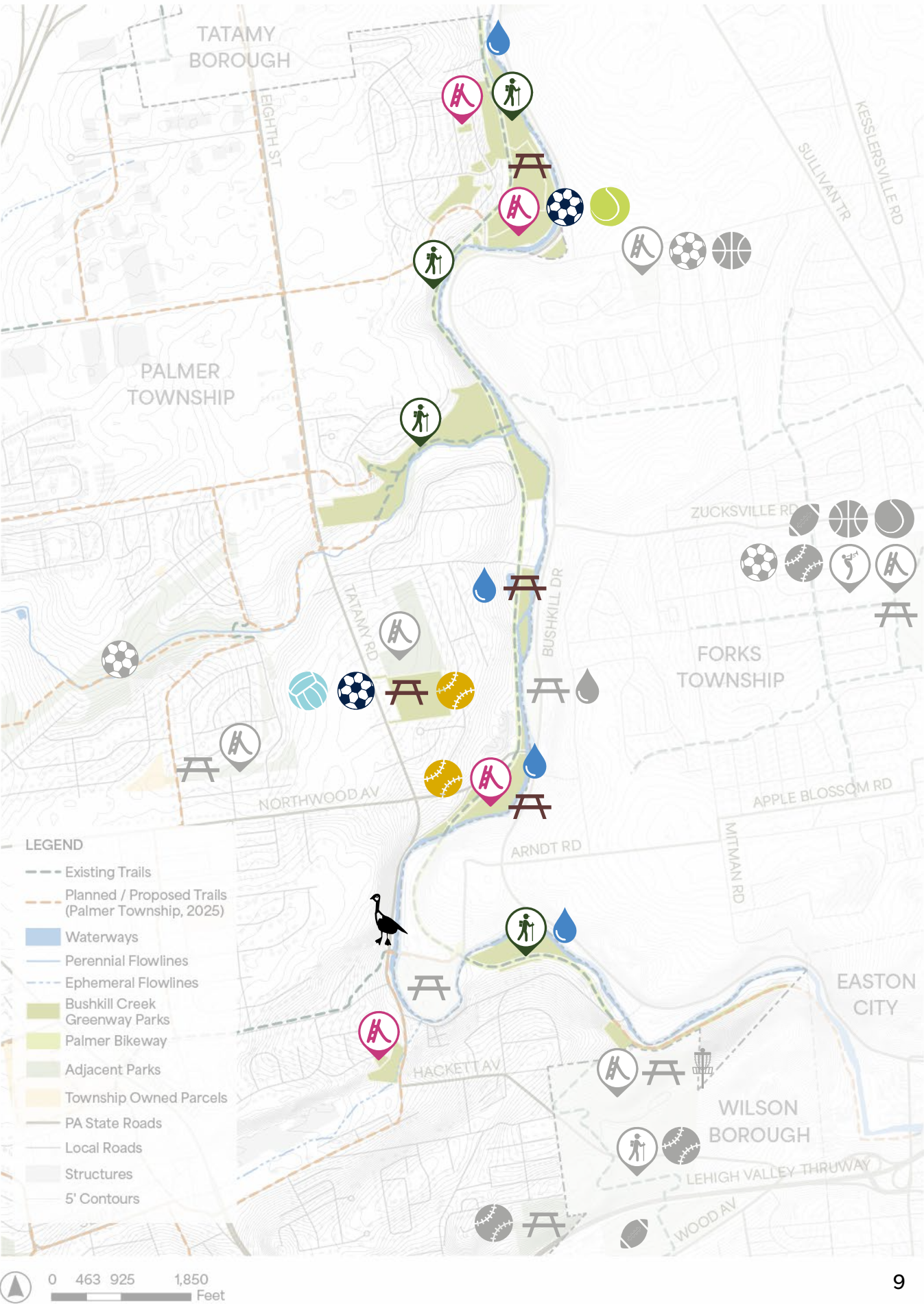
AMENITIES & PROGRAMMING

OBSERVATIONS:

- Recreational programming is concentrated at Mill Race Park, Keystone Park and Penn Pump Park, all of which have high levels of visitation
- Picnicking areas are the most well-represented category of recreational resource within the adjacent area

LEGEND:

- Hiking / Walking Trails
- Play Areas
- Live Music
- Picnicking Areas
- Baseball Fields
- Basketball Courts
- Disc Golf Courses
- Football Fields
- Soccer / Multi-use Fields
- Tennis / Pickleball Courts
- Volleyball Courts
- Water Access Areas
- Waterfowl Observation Area
- Gray Icon: Recreational Resource Not Within Scope



Evolution of the Bushkill

HISTORIC MILL & DAM LOCATIONS



Walter's Mill & Dam
Sources: Sigal Museum, NCHGS Marx Room at the Easton Public Library



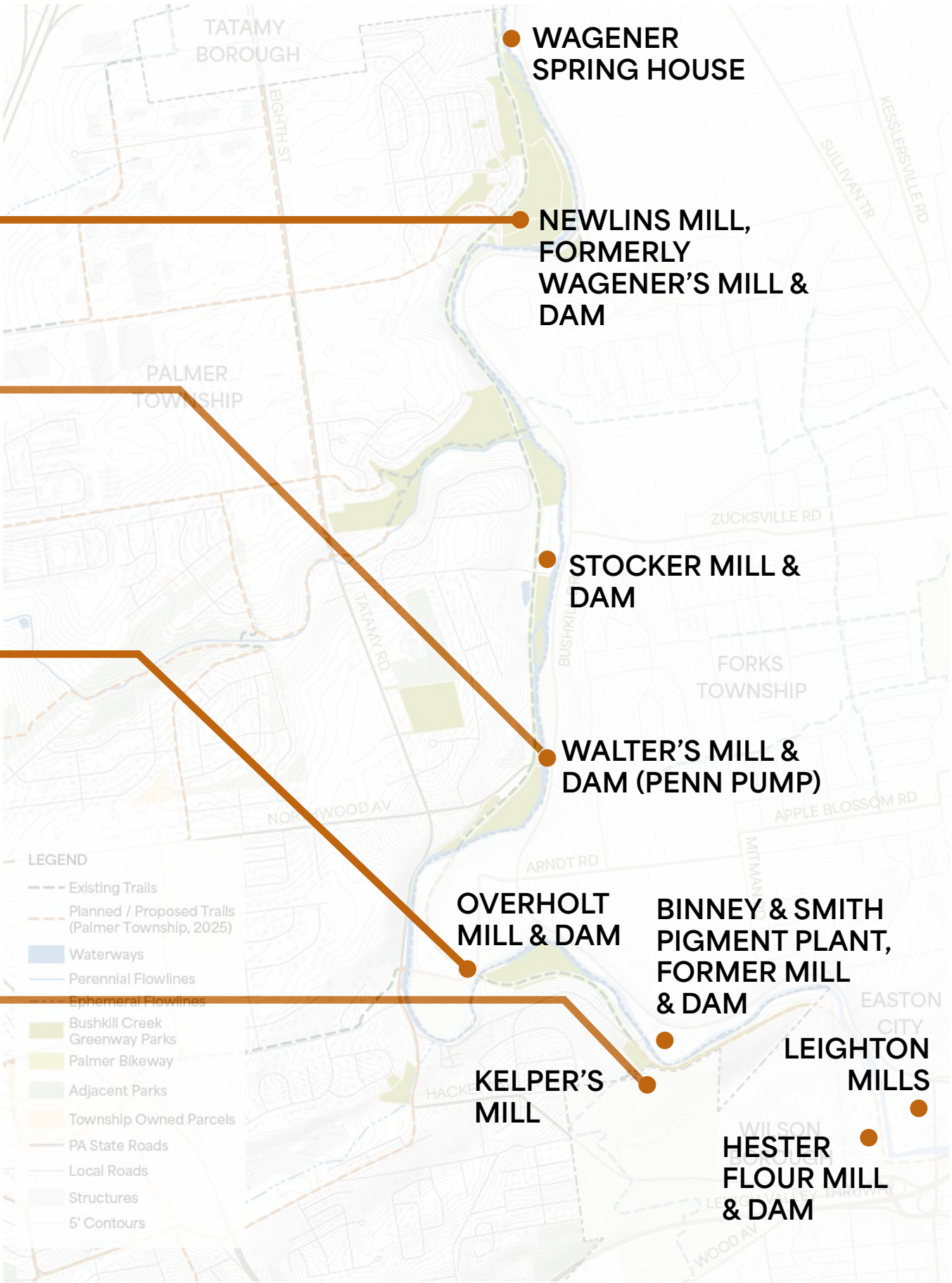
Wagener Homestead & Dam
Source: Marx Room at the Easton Public Library



Overholt Mill, 1944
Source: NCHGS



Kelper's Mill
Source: Sigal Museum, NCHGS



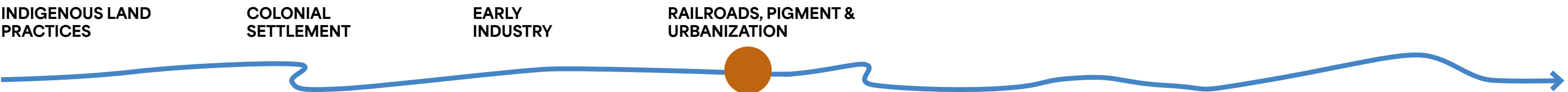
Evolution of the Bushkill

RAILROAD & INDUSTRY

Railroads were built along the creek to transport coal and other materials.

New industries developed along the Bushkill including the Binney & Smith company which bought one of the mills along the creek to manufacture pencils.

Source: Central Railroad of New Jersey Wikipedia; (<https://www.fundinguniverse.com/company-histories/binney-smith-inc-history/>)



Easton & Northern Railroad along Bushkill Creek

Conrail, 1985

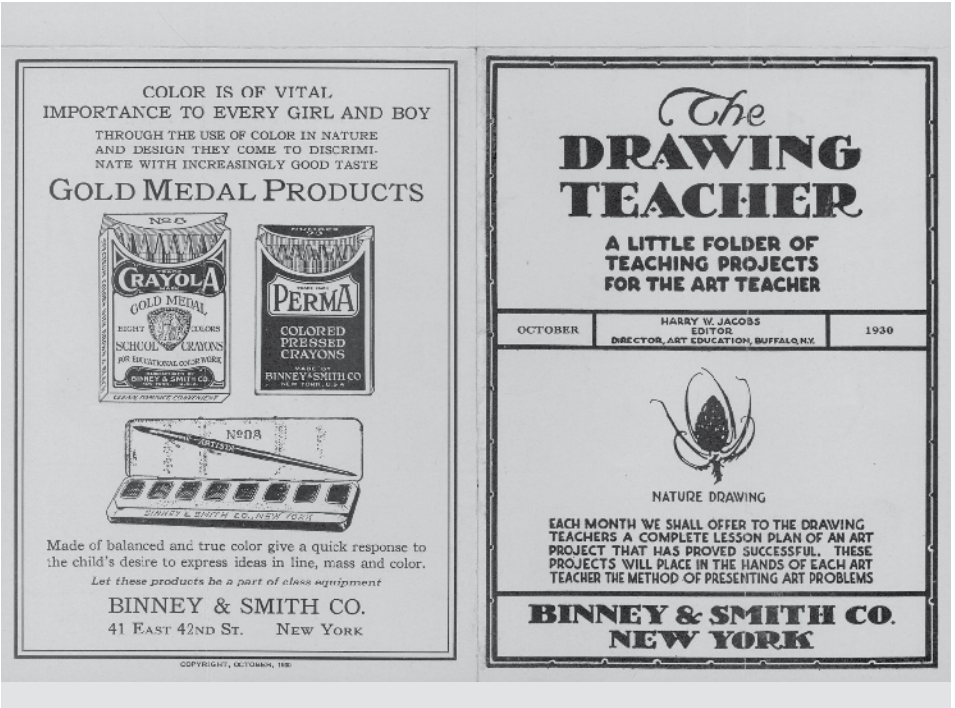
Binney & Smith Co, 1930



Source: Marx Room at the Easton Public Library



Source: Marx Room at the Easton Public Library



Source: Binney & Smith, Inc., Records, 1897-1998, Archives Center, National Museum of American History.

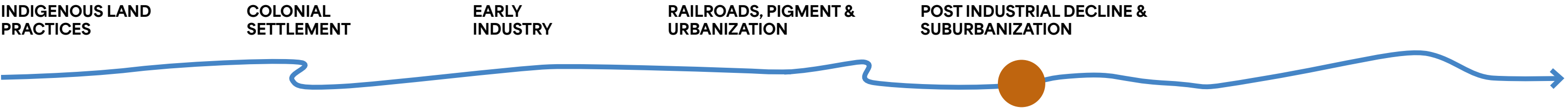
Evolution of the Bushkill

STRAIGHTENING & WIDENING OF BUSHKILL DRIVE, 1968

“The Highway Department felt that the road was too full of curves and therefore hazardous for trucks and school buses...”

“...A lot of public protest resulted from the rechanneling of the creek - many trees were bulldozed down, cliffs were dynamited, and creek banks were destroyed.”

Source: A water quality study of the Bushkill Creek from Easton to Tatamy, Northampton County, Pennsylvania, Marx Room at the Easton Public Library.

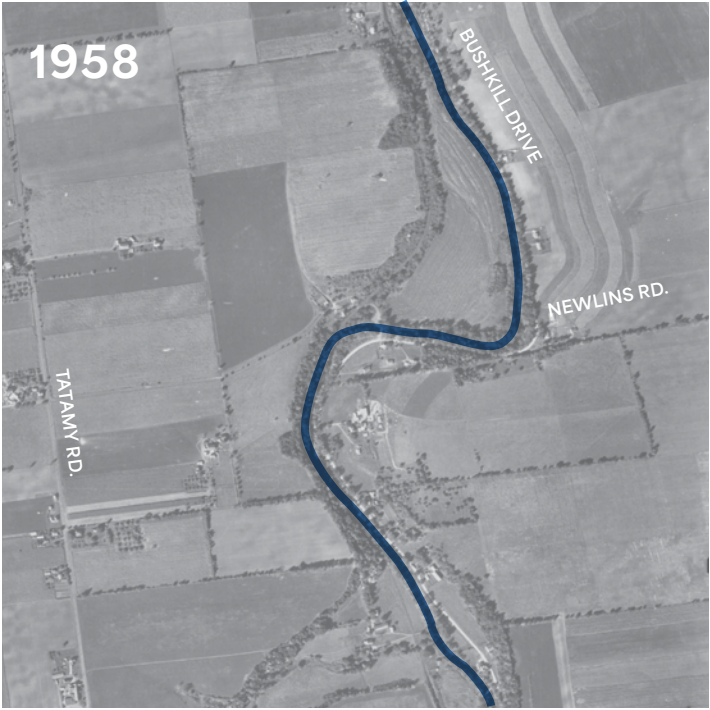


Construction work on Bushkill Drive, 1968

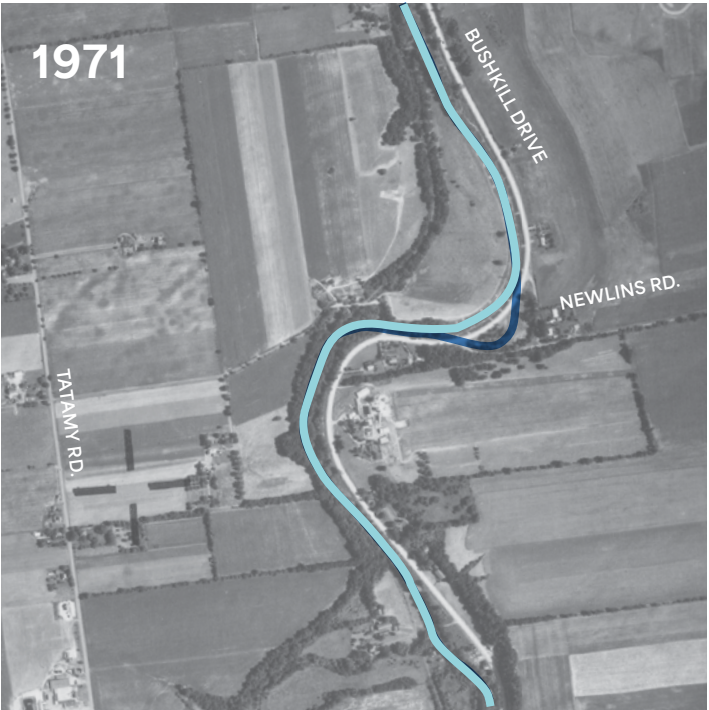


Source: Marx Room at the Easton Public Library

Before & after views of the 1968 Bushkill Drive construction and creek rechanneling



Source: PennPilot (Historical Aerial Photo Library) 1938 - 1980 - The Pennsylvania State University



Source: PennPilot (Historical Aerial Photo Library) 1938 - 1980 - The Pennsylvania State University

PATH OF BUSHKILL CREEK
BEFORE 1968
AFTER 1968



KEY MAP

Access & Connectivity

BRIDGE & GREENWAY ACCESS INVENTORY



1 Bridge at Tatamy Trail (Bushkill Street)



2 Bridge at Mill Race Park (Newlins Mill Road)



3 Abandoned Bridge (located between Newlins Mill Road and Stocker mill Road)



4 Pedestrian Bridge at Penn's Grant Open Space



5 Bridge at Two Fool's Island (Stocker Mill Road)



6 Bridge at Penn Pump Park (Northwood Avenue)



7 Pedestrian Bridge at Penn Pump Park (Bridge B) [1]



8 Pedestrian Bridge at Binney & Smith Preserve



9 Pull over area at Waterfowl Observation Area



10 Bridge at Bushkill Park (Bushkill Park Drive)



11 Bridge at Hillcrest Open Space (Hackett Ave-)



12 Bridge at Binney & Smith (Edgewood Avenue)

Source: [1] Tony Rhodin File Photo for Lehighvalleylive.com

Signage & Wayfinding Visual Inventory

EXISTING ASSETS



Palmer Township Standard Park Entry Signage



Palmer Bikeway Trail Signage



Standard Playground Rules Signage



Palmer Township Standard Park Entry Signage - Alternate



Palmer Trail Map Standard Signage



Palmer Township Standard Park Rules Signage

Signage & Wayfinding Visual Inventory

EXISTING RELEVANT BRANDING IDENTITIES

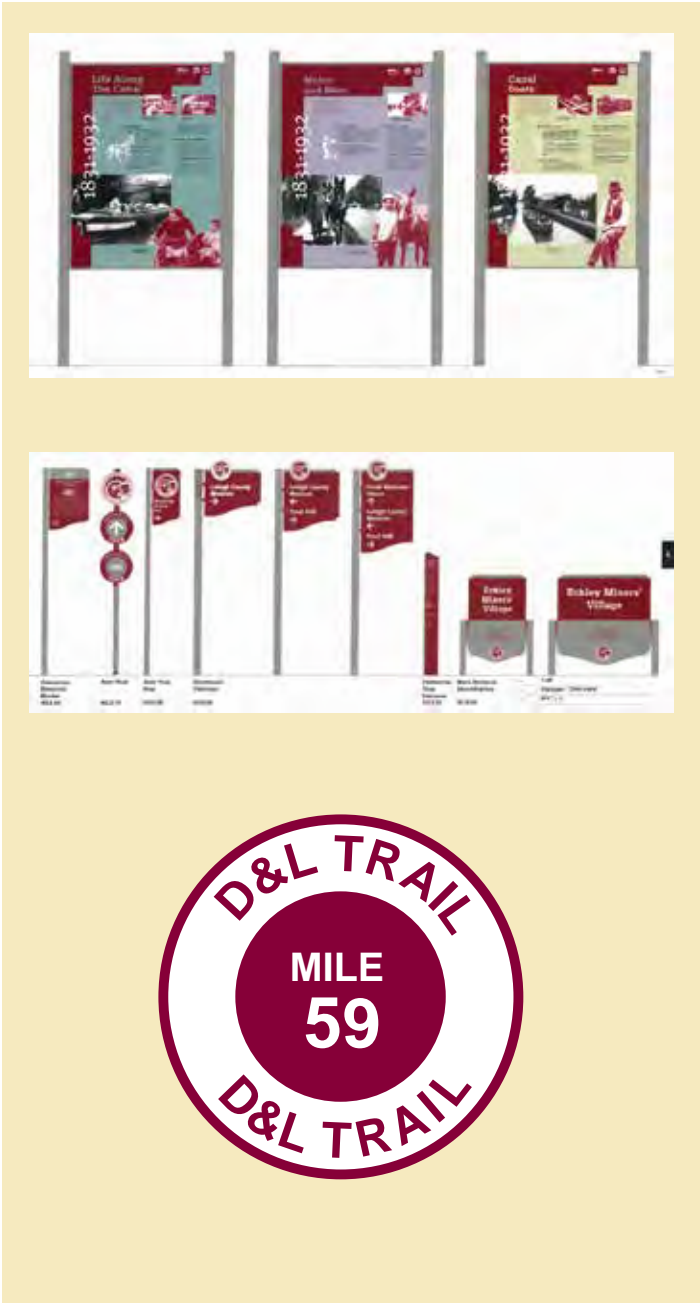
LIVABLE LANDSCAPES GRANT



TWO RIVERS TRAILWAY



DELAWARE & LEHIGH (D&L) TRAIL



9/11 NATIONAL MEMORIAL TRAIL



Evolution of the Bushkill

WATER QUALITY & FISHING

“Depleted fish populations brought about concern. The aristocracy of the New World enjoyed sport fishing, but there were no fish! Their solution to the problem was to stock new fish. There was little thought about restoring or improving habitat. They believed that stocking fish would bring back good populations. It also gave them an opportunity to duplicate the species that they once caught in their homeland -- Europe... Brown trout from Europe were introduced in the late 1800s...”

"Rainbow trout were eventually transferred from western North America to the East Coast. Brown, rainbow and brook trout were raised in hatcheries and then released into the wild.

Little did they know that they were providing a source of competition for the native brook trout. When they co-exist in the same habitat, brown trout compete with brook trout for resources.” - Walt Dietz

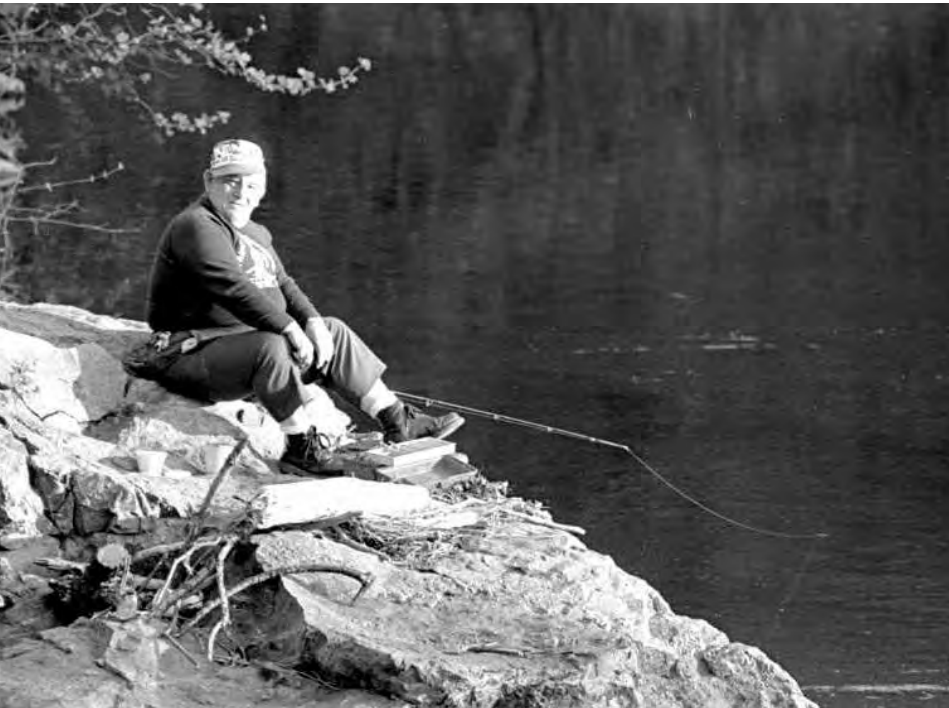
Source: Bushkill Stream Conservancy. (2005). Sobers Run Coldwater Conservation Plan. Bushkill Township, PA. Retrieved from <https://bushkill.org/wp-content/uploads/2019/11/2005-sobers-run-conservation-plan.pdf>

INDIGENOUS LAND PRACTICES

COLONIAL SETTLEMENT

EARLY INDUSTRY

Fishing on the Bushkill Creek, 1987



Source: Marx Room at the Easton Public Library

Trout Fishing



Source: Marx Room at the Easton Public Library

1st Day of Fishing On The Bushkill
April 14, 1975



Source: Marx Room at the Easton Public Library

Hydrology

WATER QUALITY

KEY TERMS:

- Impaired: A classification given to water bodies that cannot support their designated uses due to pollution and other factors.

WATER QUALITY

- 2,983 LF of stream is impaired for Aquatic Use (Cause: Flow Modification) [1]
- 46,056 LF of stream is impaired for Fish Consumption (Cause: Mercury) [1]
- 28,871 LF of stream is impaired for Recreational Use (Cause: Pathogens) [1]
- 1,034 acres of cropland are located within the drainage area; This is estimated to contribute 3.1 tons of nitrogen and 1.5 tons of phosphorus per year [2]

PLANNING CONSIDERATIONS:

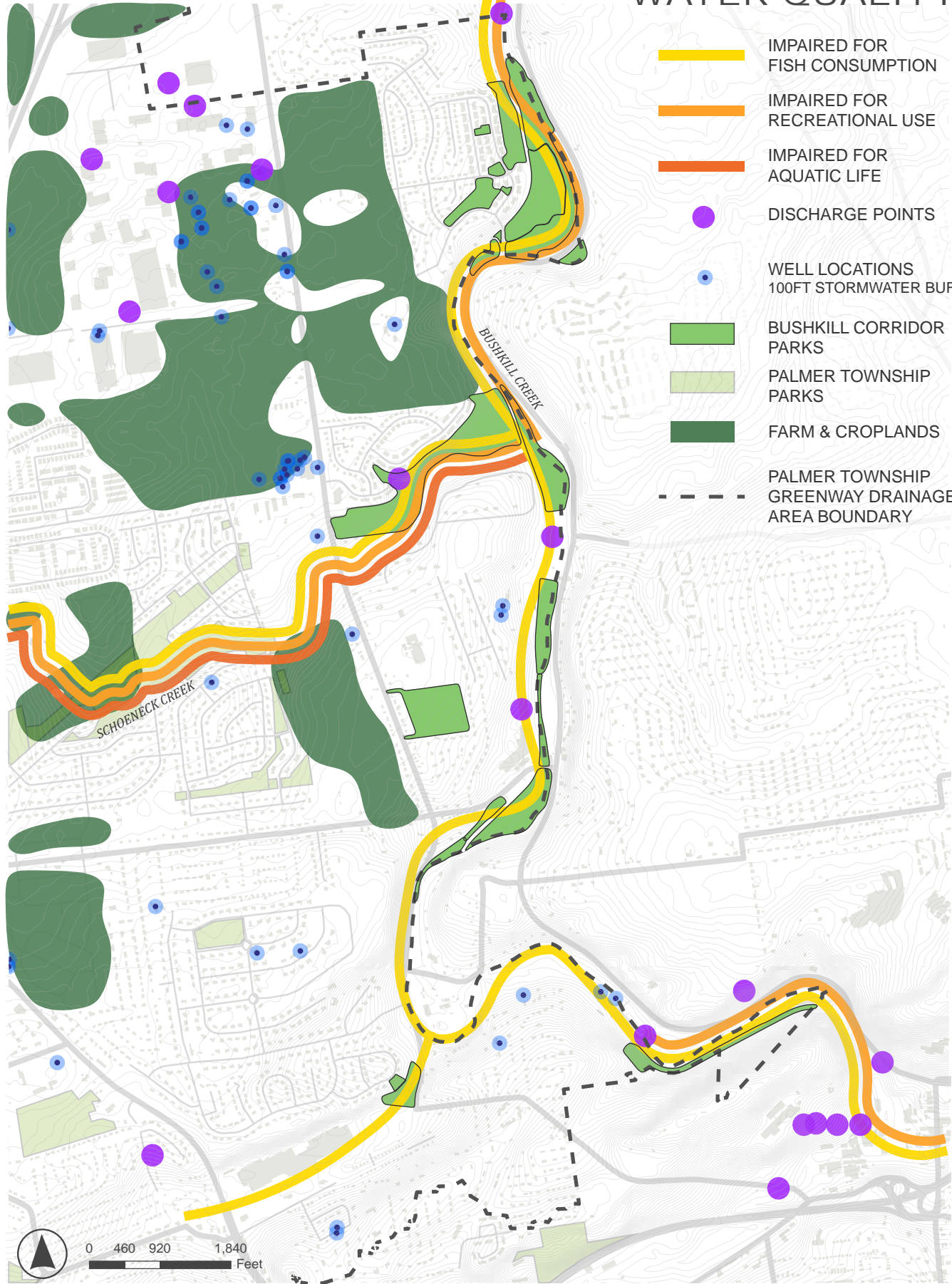
- Stormwater systems should be located at least 100 feet from wells to protect well groundwater.
- Stormwater practices downslope of cropland should be chosen to maximize nutrient removal.
- Stormwater practices along impaired water ways should target known contaminants causing the impairments.
- The location of future stormwater discharges should be planned to mitigate the mixing of flows with other stormwater discharges that may exacerbate erosion.

TROUT STREAMS:

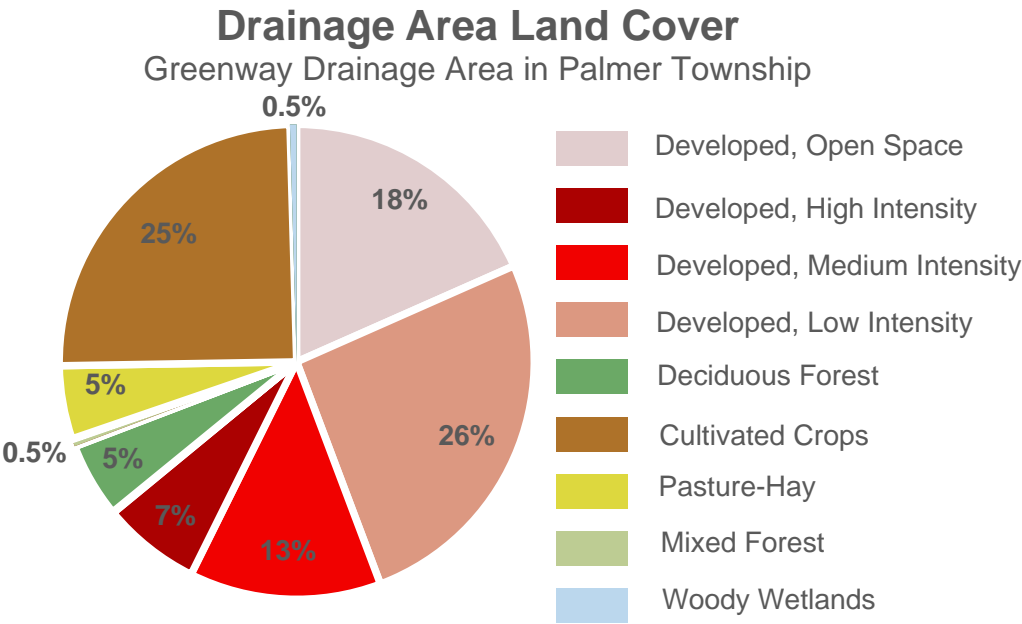
- Areas North and South of this portion of the Bushkill Creek are Class A Trout Streams [3]

[1] Impairment information retrieved from Pa.gov 2024 Integrated Water Quality Report, Water Quality classifications are from the Federal Impaired Water List (303D)
[2] Strouds Water Research Center's Model My Watershed tool was used to estimate nutrient loading in the drainage area within Palmer Township.
[3] <https://pfbc.maps.arcgis.com/apps/webappviewer/index.html?id=65a89f6592234019bdc5f095eaf5c6ac>

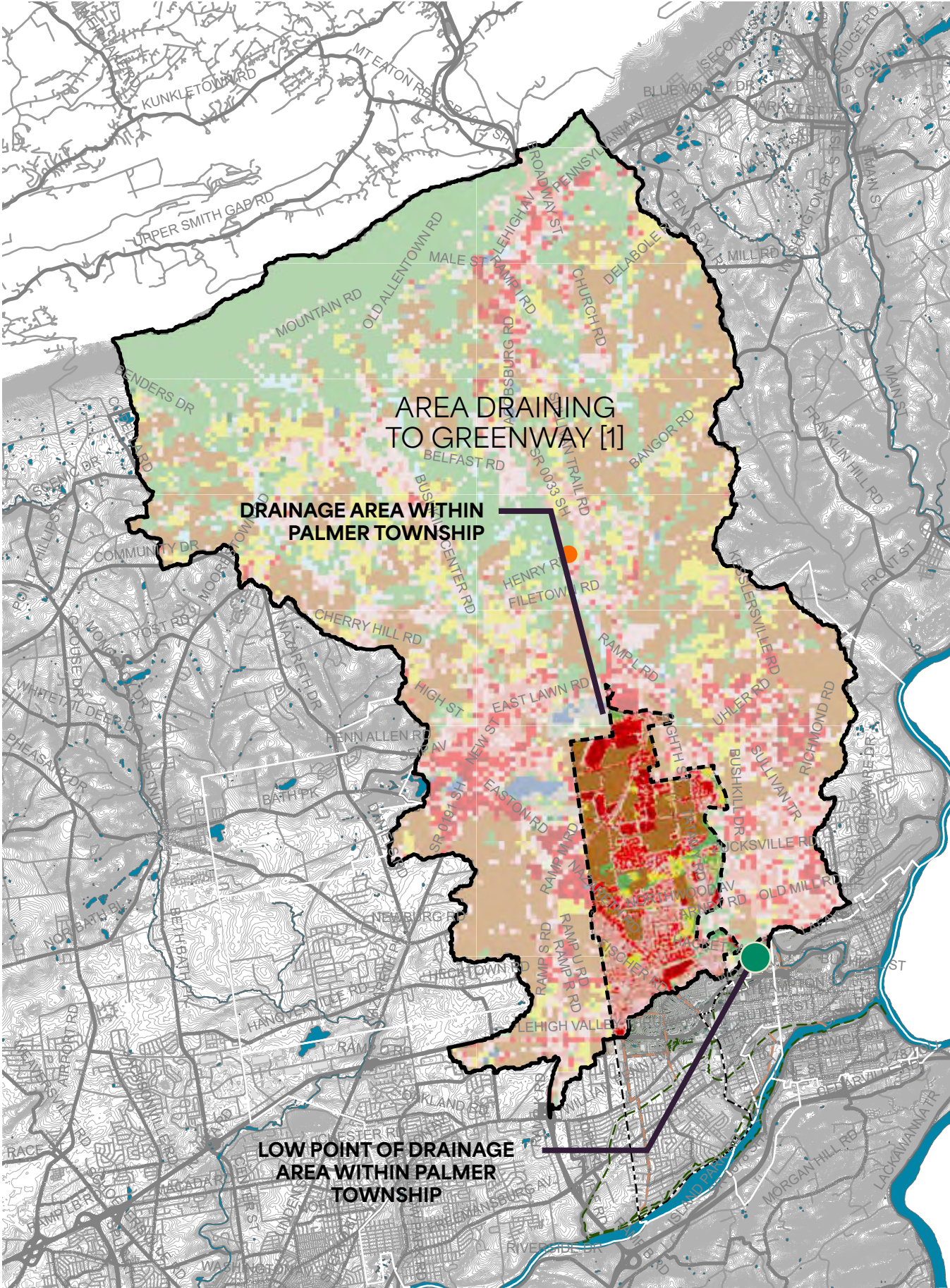
BUSHKILL CREEK CORRIDOR ANALYSIS



What's draining to the Greenway?

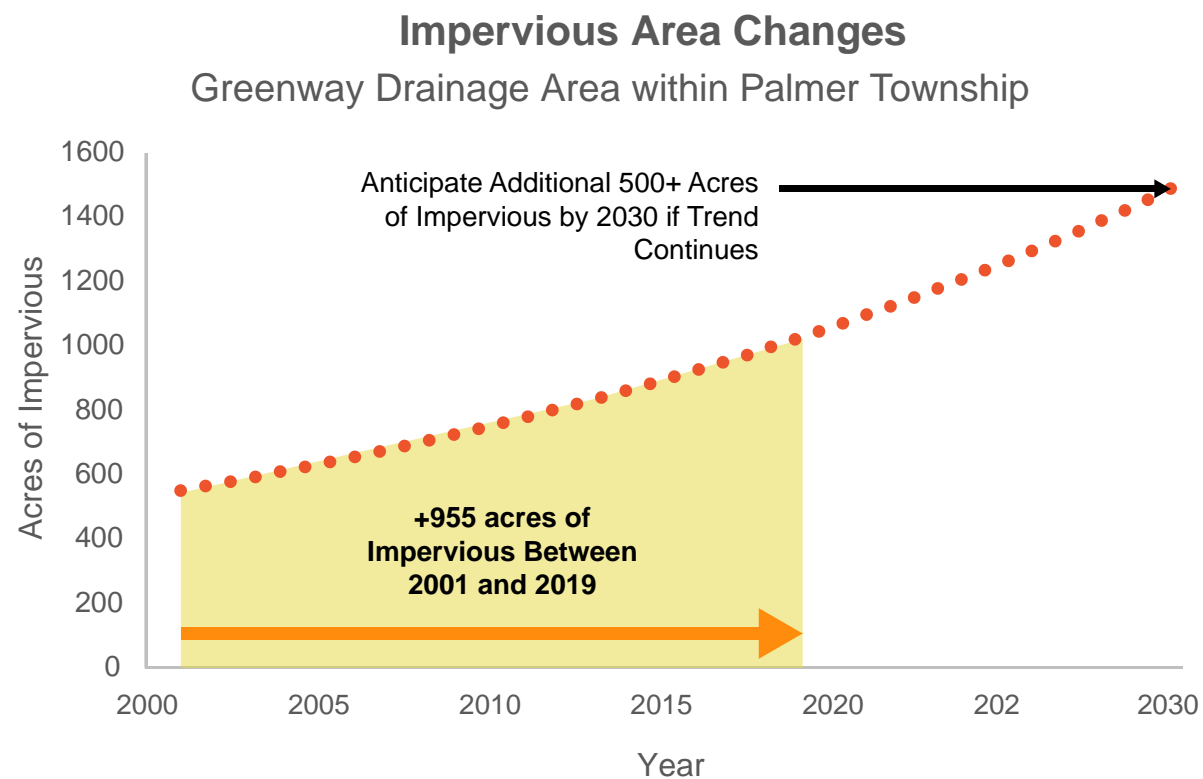


The drainage area includes less than 1% of land consisting of a mix of Barren Land, Shrub/Scrub, Mixed Forest, and Evergreen Forest.

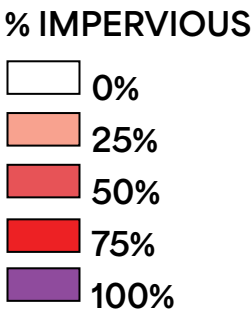
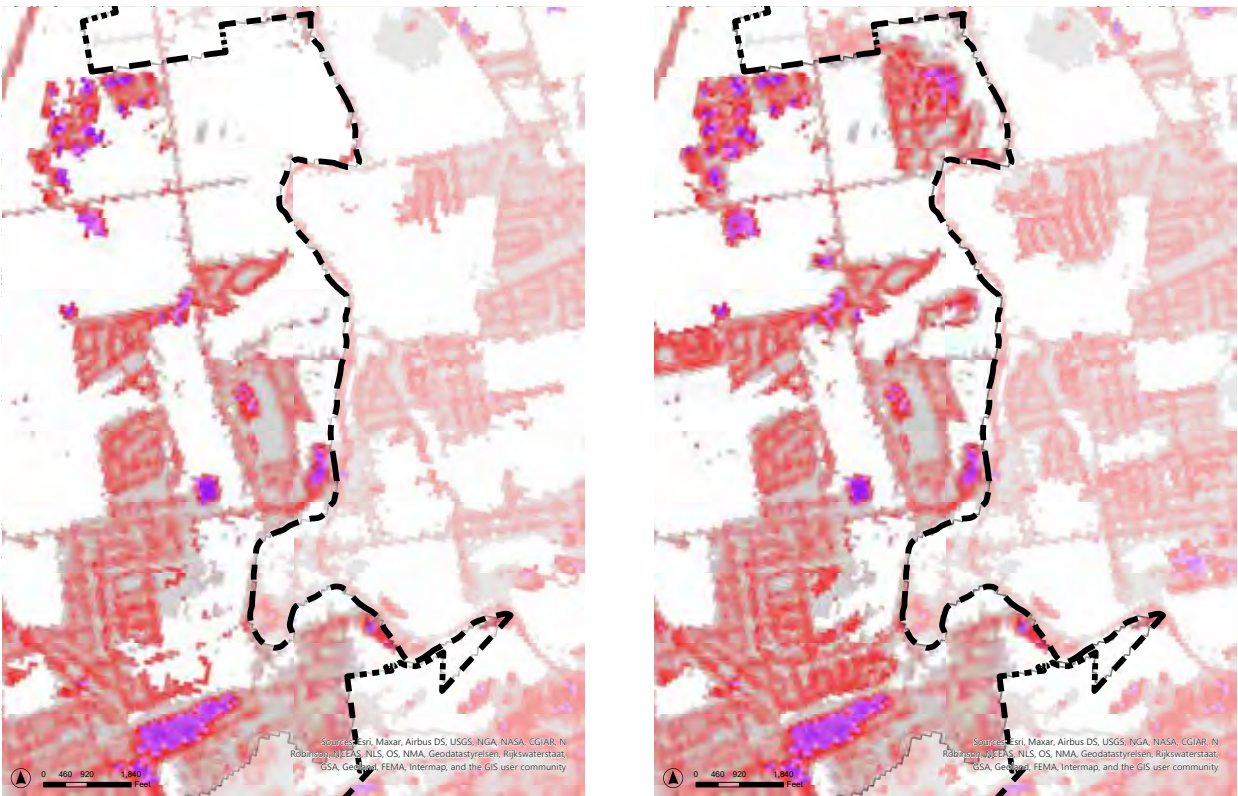


[1] Drainage area for the Greenway was determined using Stroud Water Research Center's Model My Watershed tool.
[2] 2019 National Land Cover Database data was retrieved from Pennsylvania Spatial Access Data.

How has impervious cover changed in the drainage area?



Impervious cover data retrieved from Pennsylvania Spatial Data Access for 2001, 2008, 2013, and 2019.
Best fit equation used for projection: $y = 4E-28e^{0.0347x}$ $R^2 = 0.9984$



Evolution of the Bushkill

FLOODING & DROUGHT

“A lot of the dams were built for past industrial use and the mills are no longer there. But the dams are still there and creating a lot of environmental issues and a lot of stormwater issues, too.”

- Kristie Fach, Director of Ecological Restoration, Wildlands Conservancy

Source: Bilinski, Molly. “The Creek’s Flowing Again: Easton Dam Removed as Part of Bushkill Creek Restoration.” LehighValleyNews.com, June 5, 2024. <https://www.lehighvalleynews.com/environment-science/the-creeks-flowing-again-easton-dam-removed-as-part-of-bushkill-creek-restoration>.

INDIGENOUS LAND PRACTICES

COLONIAL SETTLEMENT

EARLY INDUSTRY

RAILROADS, PIGMENT & URBANIZATION

POST INDUSTRIAL DECLINE & SUBURBANIZATION

1952 Flood



Source: Marx Room at the Easton Public Library

1956 Flood



Source: Marx Room at the Easton Public Library

1957 Drought



Source: Marx Room at the Easton Public Library

Hydrology

FLOODING

KEY TERMS:

- Floodway: Channel of a river or other watercourse and the adjacent area needed to convey the base flood elevation
- 100-Year Floodplain: Properties mapped by the Federal Emergency Management Agency as having a 1% chance of flooding in any given year.
- 500-Year Floodplain: Properties mapped by the Federal Emergency Management Agency as having a 0.2% chance of flooding in any given year.
- Base Flood Elevation: The elevation determined by FEMA to have a 1% chance of flooding at a specific location.
- Regulatory Flood Elevation: Elevation that impacts Township regulatory requirements for buildings in a floodplain (Base Flood Elevation + 18 inches)

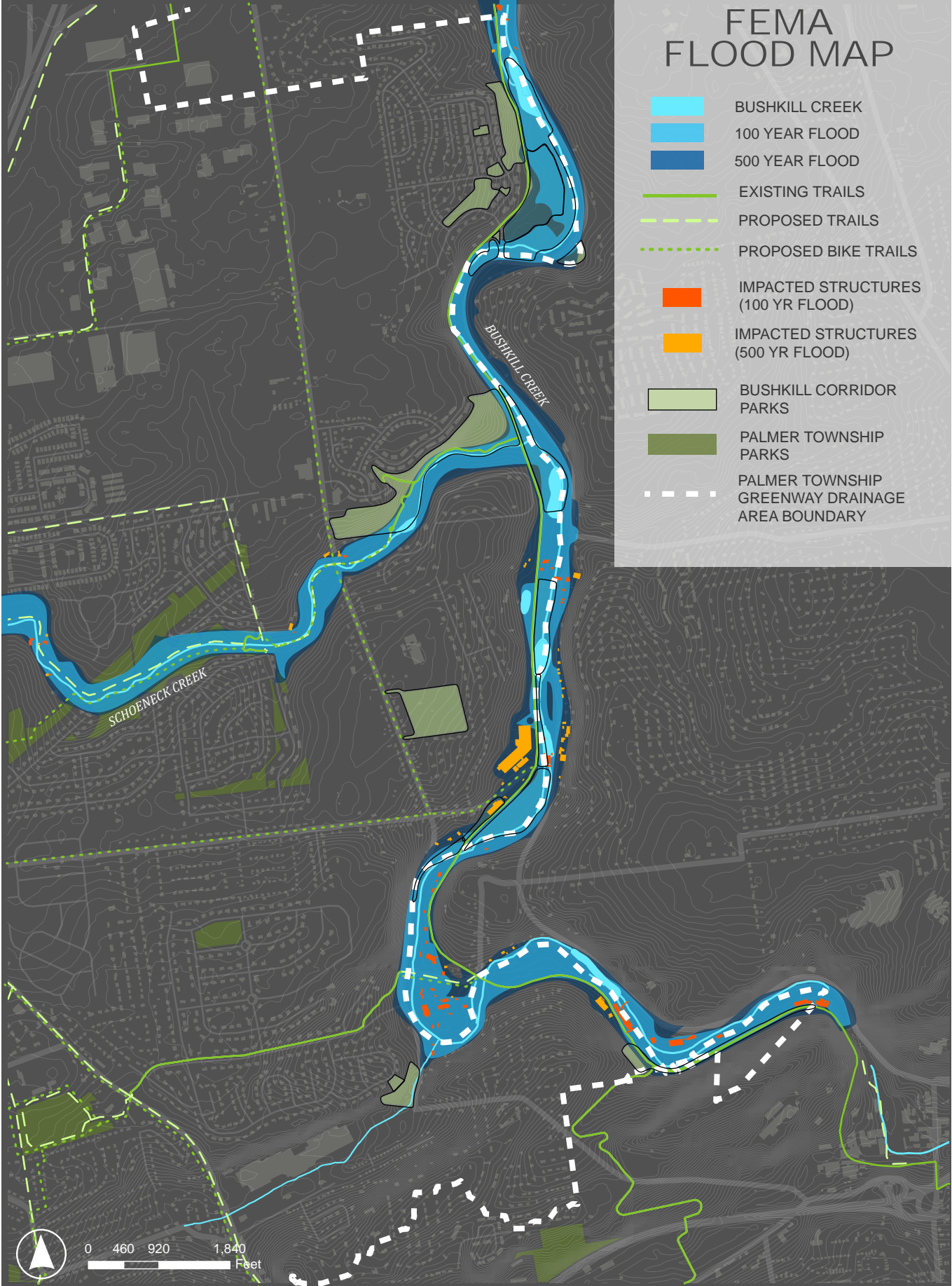
RISK:

- 7 Parks which are in a floodplain
- 71 Structures in the 100-Year Floodplain
- 110 Structures in 500-Year Floodplain
- 5,620 LF of Trail in 100-Year

- Floodplain
- 12,385 LF of Trail in 500-Year Floodplain
- PLANNING CONSIDERATIONS:**
- Look for opportunities to remove structures in the floodplain or adapt them to meet National Flood Insurance Program requirements
 - Consider raising commercial/residential structure finished floors to 500-Year floodplain elevations, particularly where proposing new structures, to meet new ASCE 24 guidance
 - Consider increasing flood storage along Greenway where space allows to reduce flood extents
 - Consider flood-damage resistant materials in parks such as rot-resistant wood and low-carbon concrete
 - Consider increasing size of culverts and/or elevating frequently flooded crossings

[1] FEMA mapping shapefiles were retrieved from FEMA.gov

BUSHKILL CREEK CORRIDOR ANALYSIS



Mill Race Park



1 Soccer field after a heavy rain, 2019
Image courtesy of Dave Dumpel



2 Soccer Field after flooding at elevation ~293, 2020
Image courtesy of Dave Dumpel



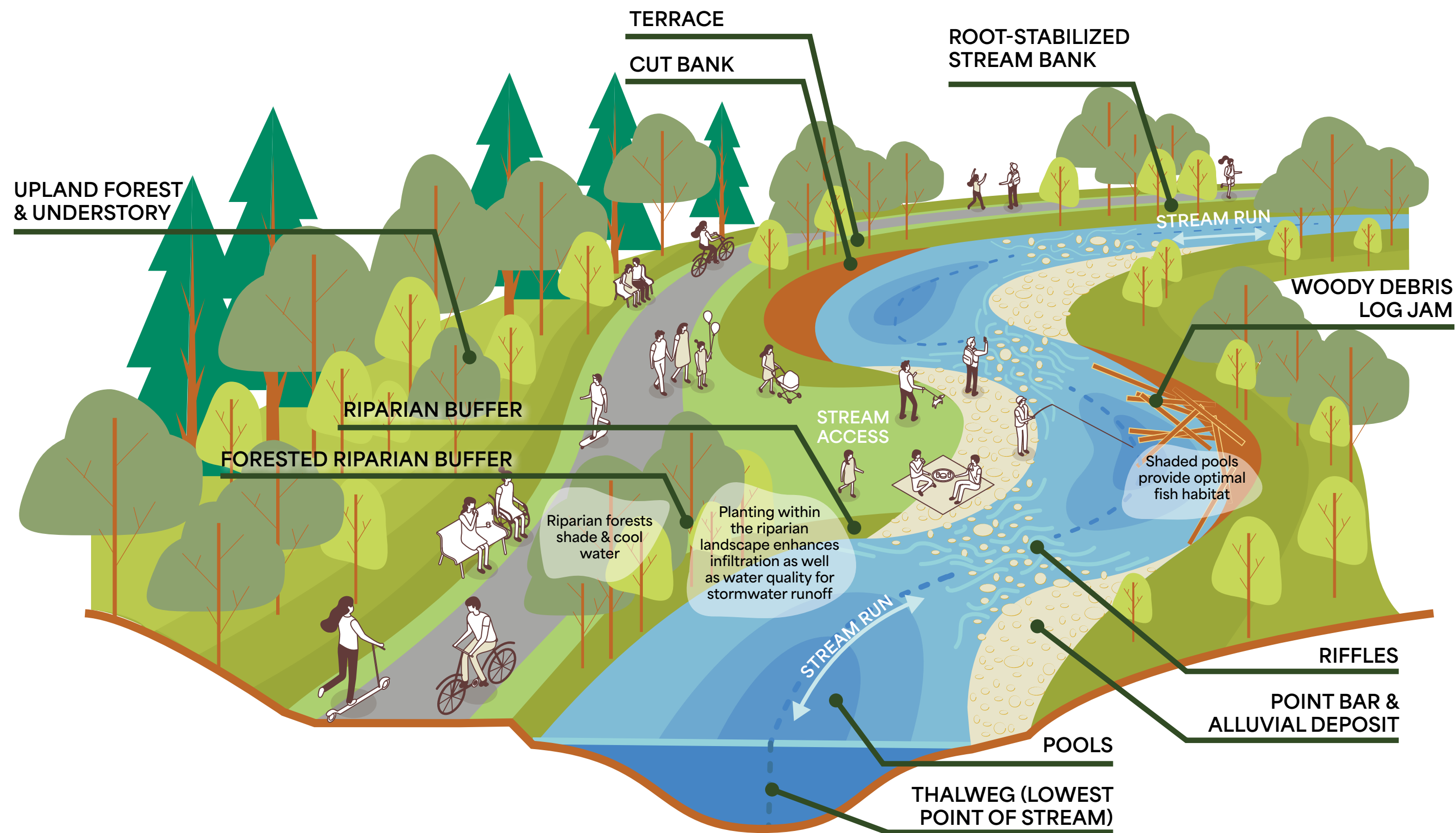
3 Soccer Field after flooding at elevation ~294, 2020
Image courtesy of Dave Dumpel



4 Soccer Field after flooding at elevation ~296, 2020
Image courtesy of Dave Dumpel



Planning Opportunities



Penn Pump Park - Dam No. 6



Image courtesy of Rudy Miller, Lehigh Valley Live

PROS OF DAM REMOVAL

Restoring creek banks enhances water retention capacity, thereby reducing both the frequency and severity of flooding events.

Stream restoration improves water quality by reducing sedimentation and enhancing overall ecosystem health.

Restored fish passage & aquatic habitat for fish & freshwater mussels

Removing dams eliminates a public safety hazard & increased liability for the Township

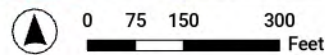
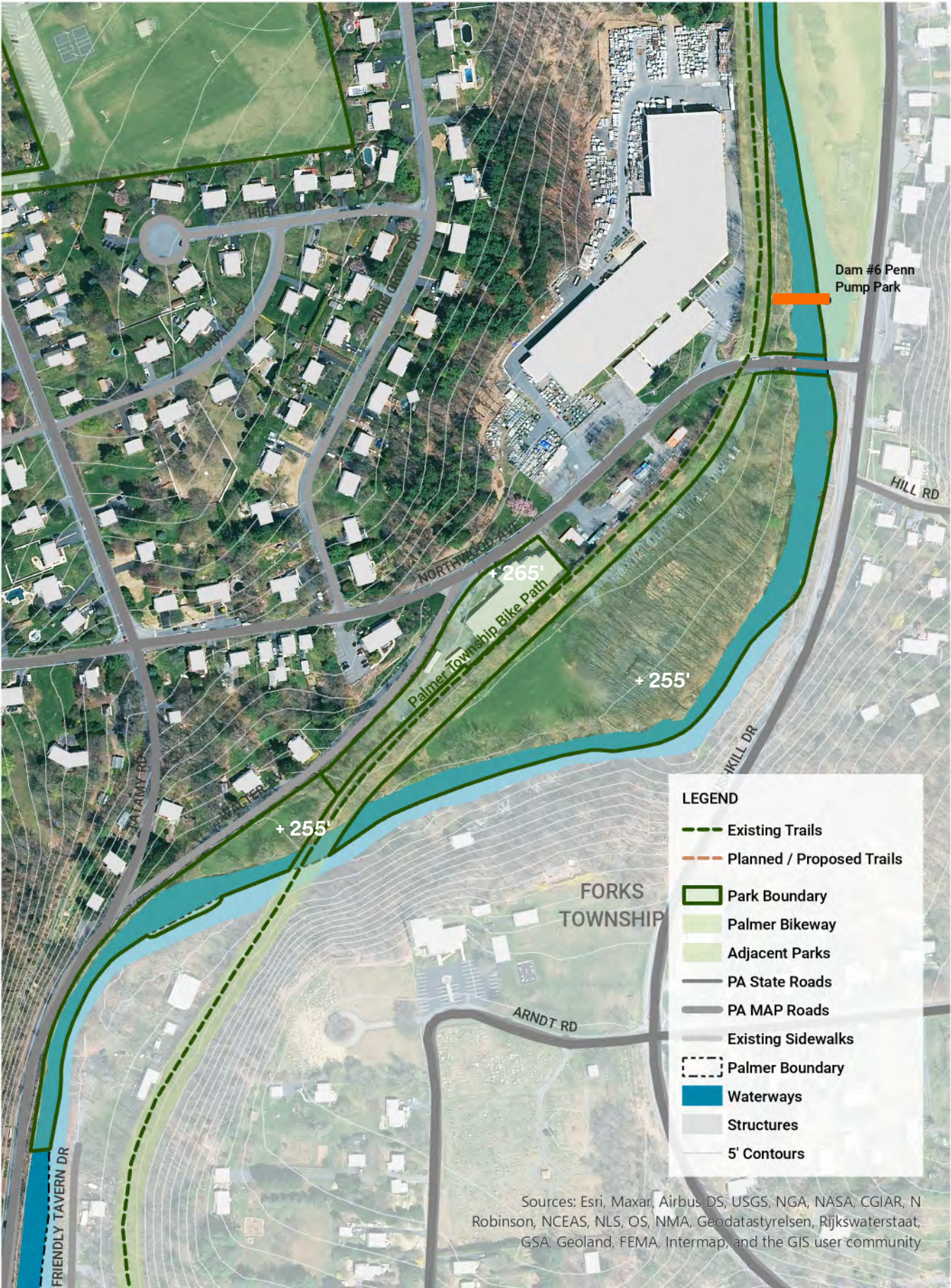
The dam is a focal point for recreation, contributing to park congestion and increased law enforcement presence.

Funds are available through DRBC mitigation funds, NFWF, PA DEP, PA DCNR, and Northampton County

CONS OF DAM REMOVAL

The dams are nostalgic to many in Palmer Township

The project requires an investment of time for cross-Township coordination and management of sub-consultants



Evolution of the Bushkill

ECOLOGICAL AWARENESS & REWILDING

“Every day there’s a new threat to Bushkill Creek. Within the last year there was extensive fish kill on the Little Bushkill. A new chemical plant went into operation on the flood plain a short distance from the creek. Just last week plans to rebuild the dam at Tatamy and approval for an oil pipe line which will cross the creek were announced...”

“...This is a rapidly urbanizing area without action on the part of residents, Bushkill Creek can change from an asset to a liability.”

- Raymond W. Grant, president of the Bushkill Watershed Association, February 16, 1973

Source: Bushkill Watershed Association Newsletter, February 1973. Marx Room at the Easton Public Library

INDIGENOUS LAND PRACTICES

COLONIAL SETTLEMENT

EARLY INDUSTRY

RAILROADS, PIGMENT & URBANIZATION

POST INDUSTRIAL DECLINE & SUBURBANIZATION

ECOLOGICAL AWARENESS & REWILDING

Nazareth High School Bio Students working in the Bushkill, May 30th, 1979



Source: Marx Room at the Easton Public Library

Palmer Township Recreation Trail, at former rail line (initiated in 1970s)



Source: Palmer Township, <https://palmertwp.com/bike-walking-paths.html>

Dam #1 removed along the Bushkill, 2023



Source: Princeton Hydro. “Bushkill Creek Dam #1 Removal Progress.” Photograph. Revitalizing Bushkill Creek: Dam Removal is Underway!, July 12, 2023. <https://princetonhydro.com/revitalizing-bushkill-creek-dam-removal-is-underway/>.

Restorative Potential

ECOLOGICAL CONNECTIVITY

Since 2020,
approximately \$3
million of funding
and over 15 partners
supported stream
restoration in the
Bushkill Creek.

Central Appalachian Alkaline Glade and Woodland

Trees	eastern redbud (<i>Cercis canadensis</i>) eastern red-cedar (<i>Juniperus virginiana</i>) chinquapin oak (<i>Quercus muehlenbergii</i>) hackberry (<i>Celtis occidentalis</i>) northern white cedar (<i>Thuja occidentalis</i>) pignut hickory (<i>Carya Glabra</i>) red oak (<i>Quercus rubra</i>) sugar maple (<i>Acer saccharum</i>) white oak (<i>Quercus alba</i>)
Shrubs	downy arrow-wood (<i>Viburnum rafinesquianum</i>) running serviceberry (<i>Amelanchier humilis</i>)
Herbaceous	barren strawberry (<i>Waldsteinia fragarioides</i>) glade flax (<i>Linum sulcatum</i> var. <i>sulcatum</i>) hairy beardtongue (<i>Penstemon hirsutus</i>) hairy pinweed (<i>Lechea mucronata</i>) orange-grass st. john's-wort (<i>Hypericum gentianoides</i>) prairie ragwort (<i>Packera plattensis</i>) bergamot (<i>Monarda fistulosa</i> ssp. 1) violet bushclover (<i>Lespedeza violacea</i>) western hairy rockcress (<i>Arabis hirsuta</i>) western wallflower (<i>Erysimum capitatum</i>) cliff stonecrop (<i>Sedum glaucophyllum</i>)* hidden spikemoss (<i>Selaginella eclipses</i>)* tall larkspur (<i>Delphinium exaltatum</i>)* three-lobed violet (<i>Viola triloba</i>)*

North-Central Appalachian Large River Floodplain

Trees	box elder (<i>Acer negundo</i>) cottonwood (<i>Populus deltoides</i>) silver maple (<i>Acer saccharinum</i>) sycamore (<i>Platanus occidentalis</i>)
Herbaceous	basil beebalm (<i>Monarda clinopodia</i>) green dragon (<i>Arisaema dracontium</i>) canada moonseed (<i>Menispermum canadense</i>) nodding trillium (<i>Trillium flexipes</i>) smooth burmarigold (<i>Bidens laevis</i>) american lotus (<i>Nelumbo lutea</i>)* coast violet (<i>Viola brittoniana</i>)* eastern prairie white-fringed orchid (<i>Platanthera leucophaea</i>)* heartleaf plantain (<i>Plantago cordata</i>)* limestone wild petunia (<i>Ruellia strepens</i>)* long's bulrush (<i>Scirpus longii</i>)* maryland bur-marigold (<i>Bidens bidentoides</i>)* navel-shape cornsalad (<i>Valerianella umbilicata</i>)* stalked bulrush (<i>Scirpus pedicellatus</i>)* tidal spikerush (<i>Eleocharis aestuum</i>)*

Northeastern Interior Dry-Mesic Oak Forest

Trees	black birch (<i>Betula lenta</i>) black oak (<i>Quercus velutina</i>) hickory (<i>Carya</i> spp.) red maple (<i>Acer rubrum</i>) red oak (<i>Quercus rubra</i>) scarlet oak (<i>Quercus coccinea</i>) white oak (<i>Quercus alba</i>) yellow birch (<i>Betula alleghaniensis</i>)
Herbaceous	American wintergreen (<i>Pyrola americana</i>) basil beebalm (<i>Monarda clinopodia</i>) blunt-lobe woodsia (<i>Woodsia obtusa</i>) bottlebrush grass (<i>Elymus hystrix</i>) common alexanders (<i>Zizia auwrea</i>) early buttercup (<i>Ranunculus fascicularis</i>) shinleaf (<i>Pyrola elliptica</i>) sicklepod (<i>Arabis canadensis</i>) climbing fern (<i>Lygodium palmatum</i>)* goldenseal (<i>Hydrastis canadensis</i>)* small whorled pogonia (<i>Isotria medeoloides</i>)*

ASSOCIATED SPECIES; *SPECIES OF CONCERN



Mill Race Park



Penn's Grant Open Space



Two Fool's Island



Keystone Park



Penn Pump Park



Hillcrest Open Space & Tot



Binney & Smith Preserve

Source: Nature.ly. "Habitat Guide." Accessed April 29, 2025. <http://nature.ly/HabitatGuide>.

How to get involved!

Take the Survey now at
www.tinyurl.com/bushkillcreek
or scan the QR code!



Follow along for project updates:
www.palmertwp.com/bushkill-creek-greenway.html

Attend the next public event at Palmer Community Days
August 14-18th at Fairview Park

Questions?
Email info@omnes.studio