CITY FOREST CREDITS

Glade Run Lake Conservation Project
Project Design Document

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INSTRUCTIONS

Project Operators must complete and submit this Project Design Document (PDD) to request credits. City Forest Credits (CFC) then reviews this PDD as part of the validation process along with all other required project documents. An approved third-party verifier then does an independent check of all documents and compliance with the Protocol known as verification.

The Protocol Requirements at the end of this document are a list of eligibility requirements for informational purposes which are also found in more detail in the CFC Tree Preservation Protocol Version 12.40, dated February 22, 2023.

Project Operators should enter data and supporting attachments starting on page 3 under Project Overview where you find "[Enter text here]" as thoroughly as possible and provide numbered attachments for maps and other documentation (ex: 1 – Regional Map). Keep all instructions in the document.

Below is a list of documents that are needed to complete a successful project:

- *Geospatial Location Map*
- *Regional Map*
- *Project Area Map*
- *Proof of Land Ownership or Agreement to Transfer Credits*
- *Preservation Commitment*
- *Land Use Regulations*
- *Land Use/Zoning Map*
- *Overlay Zones or Restrictions*
- *Threat of Loss Demonstration*
- *Attestation of No Double Counting and No Net Harm*
- *Attestation of Additionality*
- *Carbon Quantification Calculator*
- *iTree Canopy Report and raw data*
- *Forest Composition Report*
- *Forest Age Imagery*
- *Stand Map*
- *Co-Benefit Quantification Calculator*
- *Social Impacts*

PROJECT OVERVIEW

Project Name: Glade Run Lake Conservation Area
Project Number: 48
Project Type: Preservation Project (under the Tree Preservation Protocol – version 12.40, dated February 22, 2023)
Credit Commencement Date: October 17, 2023
Project Location: Middlesex Township, PA

Project Operator Name: Allegheny Land Trust
Project Operator Contact Information: Alyson Fearon, Vice President of Land Conservation, 412.701.4073 or afearon@alleghenylandtrust.org

Project Description:
Describe overall project details and goals as summarized in application. Include information about where the Project is located, Project Area acreage and other relevant background. If the Project Area is part of a larger program or preservation effort, include one sentence with more information (2 paragraphs).

Allegheny Land Trust purchased the 53-acre property in May 2022 from a private organization in a joint effort with the Glade Run Lake Conservancy to expand the protected area around Glade Run Lake in Middlesex Township, PA. Increasing the conservation buffer around the lake is part of a long-term effort to improve water quality in the lake for habitat health and preserve recreational access. Allegheny Land Trust transferred the property to the Pennsylvania Fish and Boat Commission in October 2023, who manages the lake. As part of the transfer process, a deed restriction was recorded in the title that protects the trees for 40 years per the Preservation Protocol requirements and grants Allegheny Land Trust the rights to the carbon credits for the duration of the carbon project.

The project area includes 43.123 acres of an early succession forest recovering from early 1900s through 1950s agricultural uses. All areas of the carbon area were fully occupied by the end of the 1980s if not earlier. The main tree species are red maple, black cherry with mixed oaks throughout, there was a major component of ash before the Emerald Ash Borer. The property is zoned Rural-Residential (Ag-A).

The sale of carbon credits was added to the scope of this project early in the process to ensure financial viability for the transfer to the Pennsylvania Fish and Boat Commission because the costs are not otherwise funded.

DEFINING THE PROJECT AREA (Section 1.3 and 1.4)

Project Area Location
Describe the city, town, or jurisdiction where the Project is located. State which urban location criteria is met from Protocol Section 1.3.

The project is located in Middlesex Township, PA, within the planning area boundaries of the Southwestern Pennsylvania Commission, a regional metropolitan planning agency.

Property centroid: 40°42'43"N 79°53'08"W

Project Area Parcel Information
List parcel(s) in the Project Area.

Municipality	**Parcel Number**	**Notes** *Include total acres and acres included in Project Area*
Middlesex Twp	230-2F77-5-0000	*Total area: 52.884 Acres; Project Area: 43.123 Acres*
	Total Project Area	43.123

Project Area Maps
Provide three maps of the Project Area that illustrate the location: geospatial location, regional, and detailed. Maps should include project title, relevant urban or town boundaries, defined Project Area, and legend.

- Geospatial Location Map
  Show the boundaries of the Project Area in a KML, KMZ, or shapefile format
  Attachment: 1 Glade Run Lake Shapefiles

- Regional Map
  Show where the Project Area is located in relation to the state and/or region
  Attachment: 2 Glade Run Lake Regional Map

- Detailed map of Project Area
  Show the Project Area and parcel boundaries.
  Attachment: 3 Glade Run Lake Project Area Map

OWNERSHIP OR ELIGIBILITY TO RECEIVE POTENTIAL CREDITS (Section 1.5)

Project Operator must demonstrate ownership of potential credits or eligibility to receive potential credits. If Project Operator is the landowner, attach a deed showing ownership and explanation of when the property was acquired. If the Project Operator is not the landowner, provide the Agreement between Project Operator and landowner authorizing Project Operator to execute this project.

Name of landowner of Project Area and explanation
The Project Operator, Allegheny Land Trust, purchased this parcel in May of 2022 with a plan to transfer to Pennsylvania Fish and Boat Commission and enroll the property in a carbon project. Accordingly, the Project Operator reserved the rights to "any credits for carbon storage greenhouse gas benefits and other co-benefits delivered by the standing timber and forest on the property" for one carbon preservation project of 40 years in paragraphs 3 and 4 on page 4 of the transfer deed to PA Fish and Boat.

In summary, while the current landowner is PA Fish and Boat, the Project Operator had reserved the rights to the carbon credits in the deed of transfer, publicly recorded on October 17, 2023 in Butler County, PA.

Attachment: 4 Glade Run Lake Deed of Transfer

PROJECT DURATION (Section 2.2)

Project Operator commits to the 40- or 100-year project duration requirement through a signed Project Implementation Agreement with City Forest Credits and agrees to the statement below.

Project Operator has committed to the 40-year project duration and signed a Project Implementation Agreement with City Forest Credits on February 23, 2024.

PRESERVATION COMMITMENT (Section 4.1)

Describe the Preservation Commitment terms and attach a complete copy of the recorded document. If Project Area does not have the same boundaries as Preservation Commitment, please state the reasons why.

Preservation Term: 40 years

Date recorded: October 17, 2023

Preservation Commitment Explanation:
The Preservation Commitment language was included in the deed of transfer between the Project Operator and PA Fish and Boat, and is described in the document as the "Allegheny Land Trust Carbon Credit Restrictive Covenant".

Specific language in the deed of transfer protecting the trees:

- Paragraph 3 on page 4: "During the term of the 40-year Carbon Preservation Project, the Grantee [PA Fish and Boat] shall not engage in any commercial or other timbering on the Property conveyed hereby nor shall Grantee cut down, remove or destroy any trees on the Property except as may be necessary, in Grantee's reasonable judgement and discretion, (a) to control, prevent or mitigate hazard or threat to life or damage to or destruction of property, (b) to promote or protect forest health and habitat, (c) to remove diseased, dead, or damaged trees, or (d) to prevent or mitigate fire or conditions that may directly or proximately cause or exacerbate fire. Grantee will not cut down, remove, or destroy any trees in the Project Area as defined by the 40-year Carbon Preservation Project to develop new trails on the property; existing trails as identified in the Project Area may be maintained for the duration of the 40-year carbon project term.

Attachment: 4 Glade Run Lake Deed of Transfer

DEMONSTRATION OF THREAT OF LOSS (Section 4.2, 4.3, and 4.4)

Demonstrating the Threat of Loss is shown in several ways: land use designation that allows a non-forest use, overlay zones, existing restrictions, and one of three conditions that illustrate pressure to convert the Project Area to a non-forest use.

Land use designation

Describe the land use designation, including what types of non-forest use it allows. Attach a copy of the relevant land use designations, which may include development regulations such as zoning ordinances. Include a map depicting the designation of the relevant municipality, with the Project Area boundaries clearly indicated on the map.

The Land use designation for the project parcel is Rural Residential (AG-A) which allows for farming, single-family residential, two-family dwellings, schools and other uses.

Attachment: 5 Glade Run Lake Middlesex Twp Zoning Code
6 Glade Run Lake Zoning Map

Overlay zones or other restrictions

Describe any overlay zones that prohibit development or forest clearance such as critical areas, wetlands, or steep slopes and their protection buffers. Describe any legal encumbrances or other pre-existing tree/forest restrictions that may have hindered removal of the Project Trees (in the pre-Preservation Commitment condition). If present, attach a copy of the applicable restriction and a map depicting the overlay boundaries, with the Project Area boundaries clearly indicated on the map.

The 53-acre property included areas of floodplain designated as "Zone A" under the FEMA National Flood Hazard maps. These areas were excluded from the carbon Project Area, as depicted in Attachment 7.

One small unnamed tributary to Glade Run River runs through the southeast corner of the property; however, Middlesex Township does not appear to have an active riparian buffer ordinance, as seen in Attachment 7b, where the sections are "Reserved" but blank in the code (per the online Township code portal, accessed 2/28/2024).

Attachment: 7a Glade Run Lake Floodplain Map
7b Glade Run Lake Middlesex Twp Riparian Standards

Threat of loss demonstration (Section 4.4 A, B, or C)

Describe one of the three threat of loss conditions that are applicable prior to the Preservation Commitment. Provide supporting evidence such as maps, sale or assessed value documentation, or appraisal information.

A) *Developed or improved uses surrounding at least 30% of perimeter of Project Area*
   - *A map depicting the Project Area with parcel boundaries, perimeter of developed or improved uses, and calculation of the border with these uses*

B) *Sold, conveyed, or assessed in past three years at value greater than $8K/acre for bare land*
   - *A settlement statement, assessor statement, or other evidence of land transaction*

C) *Fair market value higher after conversion to a non-forested use*
   - *A "highest and best use" study from a state certified general real estate appraiser stating that the Project Area Would have a fair market value after conversion to a non-forested "highest and best use" greater than the fair market value after preservation]*

The Project Area is surrounded by developed and/or improved uses on over 30% of the property perimeter, as depicted in Attachment 8.

In addition, according to the draft Middlesex Township Comprehensive Plan 2023 provided as Attachment 8b, the population of Middlesex Township has grown by 32% since 2010 – a much faster growth rate than wider Butler County (7%) in the same time period. The latest census projections through 2028 indicate that the rapid pace of growth is likely to continue. Since 2020, Middlesex Township has produced the most housing units compared to 14 other municipalities in the region. With the advent of population growth and strong housing development pressure in the area, preserving and protecting this intact forest within Glade Run Lake's watershed is of vital importance.

Attachment: 8a Glade Run Lake Threat of Loss
8b Glade Run Lake Middlesex Twp Comprehensive Plan

ATTESTATION OF NO DOUBLE COUNTING OF CREDITS AND NO NET HARM (Section 5)

Complete and attach the following attestation: Attestation of No Double Counting of Credits and Attestation of No Net Harm. Provide any additional notes as relevant. Provide a map that includes both the Project Area and the closest registered urban forest Preservation Project based on the registered urban forest preservation database KML/Shapefile provided by CFC to demonstrate that the Project does not overlap with any existing urban forest carbon preservation projects.

Project Operator has mapped the Project Area against the registered urban forest preservation project database and determined that there is no overlap of Project Area with any registered urban forest preservation carbon project.

Project Operator has signed the Attestation of No Double Counting of Credits and No Net Harm on March 11, 2024.

Attachment: 9 Glade Run Lake Attestation of No Double Counting No Net Harm
10 Glade Run Lake No Double Counting Map

ADDITIONALITY (Section 6)

Additionality is demonstrated by the Project in several ways, as described in the City Forest Credits Standard Section 4.9.1 and Tree Preservation Protocol.

Project Operator demonstrates that additionality was met through the following:

- Prior to this project, the trees in the Project Area were not protected via easement or recorded encumbrance or in a protected zoning status that preserves the trees
    - See Demonstration of Threat of Loss section above
- The land use designation/zoning in the Project Area must currently allow for a non-forest use
    - See Demonstration of Threat of Loss section above
- The trees in the Project Area face some threat risk of removal or conversion out of forest
    - See Demonstration of Threat of Loss section above
- The Project Operator records in the public land records an easement, covenant, or deed restriction specifically protecting the trees for the project duration of 40 years or 100 years (40 or 100 years depending on the Protocol version)
    - See Preservation Commitment section above

Taken together, the above elements allow crediting only for unprotected trees at risk of removal, which are then protected by a Project action of preservation, providing additional avoided GHG emissions.

Additionality is also embedded in the quantification methodology. Projects cannot receive credits for trees that would have remained had development occurred, nor can they receive soil carbon credits for soil that would have been undisturbed had development occurred. Leakage is prevented by a deduction for displaced development in Protocol Section 11.4.

Additionality is also reflected in the project financing. The sale of carbon credits was added to the scope of this project early in the process to ensure financial viability for the transfer to the Pennsylvania Fish and Boat Commission because the costs are not otherwise funded. The Allegheny Land Trust has registered two prior carbon projects under the City Forest Credits Preservation Protocol, the first in 2020.

Project Operator has signed an Attestation of Additionality on March 11, 2024.

Attachment: 11 Glade Run Lake Attestation of Additionality

CARBON QUANTIFICATION DOCUMENTATION (Section 11)

Follow detailed instructions in the Protocol for conducting quantification and use the Carbon Quantification Calculator to show calculations. CFC will provide the Carbon Quantification Calculator and Forest Composition Report Template. Ensure that your requested credit issuance schedule (issuance dates) is accurate and complete in the calculator. Project Operators should describe and appropriately

reflect in their carbon quantification any and all planned future activities that may affect the percent canopy or carbon stocking.

Summary numbers from Carbon Quantification Calculator

Project Area (acres)	43.123
Percent tree canopy cover within Project Area	80.2%
Project stock (tCO_2e)	5,415
Accounting Stock (tCO_2e)	4,332
On-site avoided biomass emissions (tCO_2e)	3,899
On-site avoided soil carbon emissions (tCO_2e)	1,035
Deduction for displaced biomass emissions (tCO_2e)	713
Deduction for displaced soil emissions (tCO_2e)	314
Credits from avoided biomass emissions (tCO_2e)	3,185
Credits from avoided soil emissions (tCO_2e)	721
Total credits from avoided biomass and soil emissions (tCO_2e)	3,907
Credits attributed to the project (tCO_2e), excluding future growth	3,907
Contribution to Registry Reversal Pool Account	391
Total credits to be issued to the Project Operator (tCO_2e) *(excluding future growth)*	**3,516**

GHG Assertion:
Project Operator asserts that the Project results in GHG emissions mitigation of 3,516 tons CO_2e issued to the project.

Approach to quantifying carbon
Describe the forest conditions and general approach used to quantify carbon (e.g. 11.1.A with the US Forest Service General Technical Report NE-343 Tables). Attach the Carbon Quantification Calculator.

Carbon Quantification was completed using the 11.1.A method through the US Forest Service General Technical Report NE-343 Tables, B2 Maple Beech Birch. The forest assessment was completed by a consulting forester, Patrick Hulle, in collaboration with Project Operator staff.

Attachment: 12 Glade Run Lake Carbon Quantification Calculator

Accounting Stock Measurement Method
Provide an overview to describe quantification methods, including which method was used to assess canopy cover (e.g. i-Tree, inventory, other), forest type, and data sources.

The accounting stock was assessed through a combination of GIS analysis, i-Tree, and site visits. The property was first reviewed through historical imagery and the carbon area defined based on current high-resolution site imagery, and avoiding FEMA Floodplain and excessively steep slopes. Once the carbon area was determined, age was reviewed through a combination of historical imagery and site visits. Canopy cover was determined using i-Tree and visual observations during site visits, e.g. deep shade on i-Tree was likely canopy gap and not varied canopy height on this property. Forest composition

was determined through site visits to the property by Project Operator staff and consulting forester Patrick Hulle, who conducted basal area factor plot sampling to determine stand density and variation across the Project Area.

Canopy Cover

Describe which method was used to assess canopy cover (e.g. i-Tree Canopy, LiDAR, or other method approved by Registry). Provide the i-Tree Canopy report or other canopy cover assessment that shows estimated percentage of tree cover for the Project Area.

i-Tree Canopy was used to assess tree cover. Canopy was measured at 80.20% of Project Area using point sampling and classification of 101 randomized points overlaid on high-resolution satellite imagery.

Attachment: 13a Glade Run Lake i-Tree Canopy Report
13b Glade Run Lake i-Tree Canopy Data Points
13c Glade Run Lake i-Tree Canopy Data Points Map

Forest Composition

Summarize the forest composition and attach the Forest Composition Report.

The 43.123-acre Project Area forest consists of one stand, a standard "Red Maple" cover type that is typical of Southwestern Pennsylvania. Common species associated with red maple in this stand include black cherry and a variety of oak species. Prior to the emerald ash borer, white ash was also a major component to this stand. The most common soil types in the areas of interest are Gilpin silt loam varieties.

Attachment: 14 Glade Run Lake Forest Composition Report

Forest Age

Describe the forest age and how it was determined. Provide historical imagery or other materials as supporting evidence.

Forest age was determined through a combination of historical imagery dating back to 1938, verified by two site visits to ensure no prior logging had removed or altered the expected age composition.

Although the historical imagery showed a mix of forest ages from 60 to 35 years old, to be conservative and due to the smaller size of this Project, the youngest age of 35 years old was used for the carbon quantification across the entire Project Area.

Attachment: 14 Glade Run Lake Forest Composition Report
15 Glade Run Lake Historical Imagery

Stand Maps

Describe the methods used to determine forest stands (e.g. GIS) and provide a map.

GIS and historical imagery were used to determine the forest stands. In consultation with the forester, weighing the forest ages, project size, and variability across the site, the Project Operator opted to consider the Project Area as a single stand. Although the Project Operator could have broken the site

into three stands, ultimately the age difference in the stands did not result in a major quantifiable difference due to the smaller size of this project.

Attachment: 14 Glade Run Lake Forest Composition Report
16 Glade Run Lake Stand Map

Area Expected to Remain in Trees after Potential Development (11.2)
Describe the land use designation, any restrictions, and the method used to determine the area expected to remain in trees after potential development (fraction at risk of removal). If residential land use, follow 11.2.B. and provide the calculation showing which percentage of accounting stock at risk of removal is appropriate to include.

The Middlesex Township Zoning Code for AG-A allows for 1 acre lots for single family homes, or two acres per lot for Two-family dwellings. Assuming a single-family home use, there is a maximum of 43 dwellings that could be developed within the carbon project area.

Following the equation under Protocol Section 11.2.B.ii, which assumes clearing at 2 acres/unit plus 10% of the remaining area, avoided biomass emissions are 189% of the Project Area. Per Protocol Section 11.2.B, the smaller of 90% or the calculated Avoided Biomass Emissions should be used, so 90% was claimed as the fraction at risk for the Project Area.

Calculation of estimated clearing, per Protocol Section 11.2.B.ii:
Avoided Biomass Emissions = Accounting Stock * Estimated Percent Clearing
=Accounting Stock * (((2 * 43) + ((43.123 – (2 *43)) * 0.1)) / 43.123)
=Accounting Stock * ((86 + ((43.123 – 86) * 0.1)) / 43.123)
=Accounting Stock * ((86 + (-42.877) * 0.1)) / 43.123)
=Accounting Stock * ((86 + -4.2877) / 43.123)
=Accounting Stock * (81.7123/43.123)
=Accounting Stock * 1.8949
Attachment: 12 Glade Run Lake Carbon Quantification Calculator, "Residential" tab

Quantification of Soil Carbon - Existing Impervious Area and Impervious Limits (11.4)
The Project may claim avoidance of emissions from soil carbon caused by conversion of soils to impervious surfaces. Describe applicable land use designation and development rules, any restrictions, existing impervious area and maximum fraction impervious cover.

The Ag-A Rural Residential District of Middlesex Township specifies maximum lot coverage values for the following uses:

Maximum lot coverage:
Farms: 5%.
All others: 20%

Assuming a single family use development, the maximum lot coverage would be 20%, so 20% was claimed for the quantification of soil carbon.

Attachment: 5 Glade Run Lake Middlesex Twp Zoning Code

Future Planned Project Activities
Describe future activities that may affect the percent canopy or carbon stocking in any way. Describe maintenance and stewardship activities that could improve the carbon stock.

Pennsylvania Fish and Boat Commission, the current landowner, will not be conducting any activities in the carbon area. As noted in the deed, they are able to maintain the existing trails and remove hazardous trees as needed. They intend to manage the property as-is and allow natural forest regrowth over time.

CO-BENEFITS QUANTIFICATION DOCUMENTATION (Section 11.5)

Summarize co-benefit quantification per year and provide supporting documentation. CFC will provide a Co-Benefits Quantification calculator for quantifying rainfall interception, reduction of certain air compounds, and energy savings.

Ecosystem Services	***Resource Units***	***Value***
Rainfall Interception (m3/yr)	17,688.2	$37,385.87
Air Quality (t/yr)	1.2203	$3,008.35
Cooling – Electricity (kWh/yr)	53,710	$7,524.80
Heating – Natural Gas (kBtu/yr)	2,223,327	$31,096.10
Grand Total ($/yr)		**$79,015.12**

Co-benefits were quantified using CFC's Co-Benefits Quantification Calculator. These ecosystem services represent values in avoided costs of $79,015.12 annually and $3,160,604.76 over 40 years.

Attachment: 17 Glade Run Lake CoBenefit Calculator

SOCIAL IMPACTS (Section 12)

Project Operators shall use the Carbon Project Social Impacts template to evaluate how their Project aligns with the UN Sustainable Development Goals (SDGs). CFC will provide the template. Summarize the three to five main SDGs attributed to this Project.

Allegheny Land Trust selected the Glade Run Conservation Project in support of the Glade Run Lake Conservancy's efforts to increase the forested buffer around the lake to protect and improve overall water quality (SDG 6, 14). Preservation of the property includes a community trail network, which now provides additional public access for recreation and interaction with nature (SDG 3)

Attachment: 18 Glade Run Lake Social Impacts

MONITORING AND REPORTING (Section 8)

Throughout the Project Duration, the Project Operator must report on tree conditions across the Project Area.

Monitoring Reports

Monitoring reports are due every three years determined by the date of the verification report. For example, if the verification report is dated January 1, 2023, the first report will be due by January 1, 2026 and every three years thereafter for the duration of the project. CFC will provide a list of dates to Project Operator after the first verification report is approved. Project Operators must submit reports in writing and must attest to the accuracy of the reports. The reports must contain any changes in eligibility status of the Project Operator and any significant tree loss. The information includes updates to land ownership, changes to project design, changes in implementation or management and changes in tree or canopy loss. The reports must be accompanied by some form of telemetry or imaging that captures tree canopy, such as Google Earth, aerial imagery, or LiDAR. The reports must estimate any loss of stored carbon stock or soil disturbance in the Project Area.

Monitoring Plans

Describe your monitoring plans. If Project Operator plans to claim credits for future growth, describe methods that will be used to quantify future growth.

Allegheny Land Trust will be monitoring our carbon project area through several methods, first being an annual review of high-resolution imagery from our NearMap subscription to look for encroachments, unauthorized tree removal, or major storm damage. Second, we have a partnership with Glade Run Lake Conservancy and several adjacent neighbors, who will report direct observations of concern if noticed outside of our monitoring schedule. Finally, we will be conducting site tours and visual inspections as part of our annual boundary and easement monitoring for the shared boundary along the Conservation Easement to the south and east of the Glade Run Lake Conservation Project.

If serious conditions occur, especially with storm damage or new insect threats we will first share the information with City Forest Credits as our certifier, and we maintain contact with several foresters we can contract to review damage and update the forest health. We will also submit monitoring reports every three years, as required by the Protocol.

PROJECT OPERATOR SIGNATURE

Signed on March 11th in 2024, by Christopher J. Beichner, President & CEO for Allegheny Land Trust.

Signature

Christopher J. Beichner
412-741-2750
cbeichner@alleghenylandtrust.org

ATTACHMENTS

Update the attachments list as appropriate for your project.

1 – Geospatial Location Map
2- Regional Map
3- Project Area Map
4 – Proof of Land Ownership or Agreement to Transfer Credits
5 – Preservation Commitment
6 - Land Use Regulations
7 – Land Use/Zoning Map
8 – Overlay Zones or Restrictions
9 – Threat of Loss Demonstration
10 – Attestation of No Double Counting and No Net Harm
11 – Attestation of Additionality
12 – Carbon Quantification Calculator
13 – iTree Report and raw data
14 – Forest Composition Report
15 – Forest Age Imagery
16 – Stand Map
17 – Co-Benefit Quantification Calculator
18 – Social Impacts

PROTOCOL REQUIREMENTS

Project Operator (Section 1.1)
Identify a Project Operator for the project. This is the entity or governmental body who takes responsibility for the project for the 40-year duration.

Project Duration and Project Implementation Agreement (Section 1.2, 2.2)
Project Operator must commit to a 40-year duration and sign a Project Implementation Agreement. This is a 40-year agreement between the Project Operator and City Forest Credits (the "Registry") for an urban forest carbon project.

Location Eligibility (Section 1.3)
Projects must be located in or along the boundary of at least one of the following criteria:

A. "Urban Area" per Census Bureau maps; see https://www.census.gov/geographies/reference-maps/2010/geo/2010-census-urban-areas.html
B. The boundary of any incorporated city or town created under the law of its state;
C. The boundary of any unincorporated city, town, or unincorporated urban area created or designated under the law of its state;
D. The boundary of any regional metropolitan planning agency or council established by legislative action or public charter. Examples include the Metropolitan Area Planning Council in Boston, the Chicago Municipal Planning Agency, the Capital Area Council of Governments (CAPCOG) in the Austin area, and the Southeastern Michigan Council of Governments (SEMCOG)
E. The boundary of land owned, designated, and used by a municipal or quasi-municipal entity for source water or watershed protection. Examples include Seattle City Light South Fork Tolt River Municipal Watershed (8,399 acres owned and managed by the City and closed to public access);
F. A transportation, power transmission, or utility right of way, provided the right of way begins, ends, or passes through some portion of A through D.

Ownership or Right to Receive Credits Eligibility (Section 1.5)
Project Operator must demonstrate ownership of property and eligibility to receive potential credits by meeting one of the following:

A. Own the land and potential credits upon which the Project trees are located; or

B. Own an easement or equivalent property interest for a public right of way within which Project trees are located and accept ownership of those Project trees by assuming responsibility for maintenance and liability for them; or

C. Have a written and signed agreement from the landowner, granting ownership to the Project Operator of any credits for carbon storage, other greenhouse gas benefits, and other co-benefits delivered by Project trees on that landowner's land. If the Project Area is on private property, the agreements in this sub-section must be recorded in the public records in the county where the property is located. The recordation requirement can be satisfied if the agreements specified in this sub-section are contained in a recorded easement, covenant, or deed restriction on the property.

Demonstrate Tree Preservation (Section 4.1)

The Project Operator must show that the trees in the Project Area are preserved from removal by a recorded easement, covenant, or deed restriction (referred to hereafter as "Recorded Encumbrance") with a term of at least 40 years. This action is referred to as the "Preservation Commitment." This Recorded Encumbrance must be recorded not later than 12 months after Registry approval of the Project's Application.

Demonstrate Threat of Loss (Section 4.2, 4.3, and 4.4):
The Project Operator must show that prior to the Preservation Commitment:

- Project trees were not preserved from removal through a Recorded Encumbrance or other prohibitions on their removal,
- The Project Area was:
    - In a land use designation that allowed for at least one non-forest use. Non-forest uses include industrial, commercial, transportation, residential, agricultural, or resource other than forest, as well as non-forest park, recreation, or open space uses.
    - Is not in an overlay zone that prohibits all development. Examples include critical areas or wetland designations.
- The Project Area met one of the following conditions:
    - Surrounded on at least 30% of its perimeter by non-forest, developed or improved uses, or
    - Sold, conveyed, or had assessed value within three years of preservation for greater than $8,000 average price per acre for the bare land, or
    - Would have a fair market value after conversion to a non-forested "highest and best use" greater than the fair market value after preservation in subsection 4.1, as stated in a "highest and best use" study from a state certified general real estate appraiser in good standing

Additionality (Section 6)
Additionality is ensured through the following:

- Prior to the start of the project, the trees in the Project Area are not protected via easement or recorded encumbrance or in a protected zoning status that preserves the trees.
- The zoning in the Project Area must currently allow for a non-forest use
- The trees in the Project Area face a threat or risk of removal or conversion out of forest
- The Project Operator records in the public land records an easement, covenant, or deed restriction specifically protecting the trees for the project duration of 40 years or 100 years (40 or 100 years depending on the protocol version)

Quantification for Credits (Section 11)
The full Protocol describes the following steps for carbon stock and soil carbon quantification in detail:

1. Stored carbon stock present in Project Area (Section 11.1)
   Estimate the biomass stock present and adjust for uncertainty to calculate the "Accounting Stock". This can be done using the US Forest Service General Technical Report NE-343 tables, on-site inventory of some live trees with i-Tree methods and tools, or an on-site forest inventory

2. Areas expected to remain in trees after potential development (Section 11.2)

Calculate the fraction of the Accounting Stock that likely would be emitted as a result of development, to calculate "Avoided Biomass Emissions"

3. Quantification of soil carbon (Section 11.3)
   Calculate "Avoided Soil Carbon Emissions" caused by conversion of soils to impervious surfaces in the Project Area

4. Deduction for displaced development (Section 11.4)
   Apply the deductions in Section 11.5 and Appendix B to Biomass and Soil Carbon calculations to adjust for development and emissions that would be displaced by the preservation of the Project Area (leakage deductions). This will reduce the creditable tonnes of Avoided Biomass Emissions and Avoided Soil Carbon Emissions to adjust for displaced development

5. Quantify Co-Benefits (Section 11.5)
   The Project Operator will calculate co-benefits separately from $CO_2(e)$. The Registry will supply a spreadsheet template based on their climate zone, and will provide values for rainfall interception, reductions of air compounds, and energy savings.

6. Claiming additional credit for growth (Section 11.6)
   The Project Operator may elect to also account for ongoing growth of trees within the Project Area after Project Commencement

Social Impacts (Section 12)
The Project Operator will describe how the Project impacts contribute towards achievement of the global UN Sustainable Development Goals (SDGs). The Registry will supply a template to evaluate how the Project aligns with the SDGs.

Attestation of No Net Harm and No Double Counting (Section 5)
The Project Operator will sign an attestation that no project shall cause net harm and no project shall seek credits on trees, properties, or projects that have already received credits.

Validation and Verification by Third-Party Verifiers (Section 13)
Project compliance and quantification must be verified by a third-party Validation and Verification Body approved by the Registry.

Issuance of Credits to Project Operator (Section 7)
Ex-post credits are issued after the biomass is protected via a recorded encumbrance protecting the trees. Issuance is phased or staged over one and five years at the equivalent of 50 aces of crediting per year. This staged issuance reflects the likely staging of development over time if the Project Area were to have been developed.

After validation and verification, the Registry issues credits to the Project Operator based on the Project Area size:

- 50 acres or less: all credits are issued after validation and verification
- Greater than 50 but less than 200 acres: credits are issued in the equivalent of 50 acres per year
- Greater than 200 acres: credits are issued in equal amounts over five years

Credits for Reversal Pool Account (Section 7.3)
The Registry will issue 90% of Project credits earned and requested and will hold 10% in the Registry's Reversal Pool Account.

Understand Reversals (Section 9)
If the Project Area loses credited carbon stock, the Project Operator must return or compensate for those credits if the tree loss is due to intentional acts or gross negligence of Project Operator. If tree loss is due to fire, pests, or other acts of god (i.e., not due to the Project Operator's intentional acts or gross negligence), the Registry covers the reversed credits from its Reversal Pool Account of credits held back from all projects.

Monitoring and Reporting (Section 8)
The Project Operator must submit a report every three years for the project duration. The reports must be accompanied by some form of telemetry or imaging that captures tree canopy, such as Google Earth, aerial imagery, or LiDAR. The reports must estimate any loss of stored carbon stock or soil disturbance in the Project Area.

Attachments

Deed of Transfer & Preservation Commitment

Project Area Map

Regional Area Map

Zoning Maps

Zoning Description(s)

Threat of Loss Demonstration

Attestation of No Double Counting and No Net Harm

Attestation of Additionality

Carbon Quantification Tool

iTree Canopy Report

Forest Composition Report and Site Photos

Historical Photos

Cobenefit Calculator

Social Impacts

Deed of Transfer & Preservation Commitment

AFFIDAVIT FILED

PFBC 2023-0522.01

Instr: 202310170015573
Pgs: 7 F: $73.50 10/17/2023 1:44 PM
Michele Mustello T20230012512
Butler County Recorder PA
TOTAL TAX $0.00

Tax Parcel ID No.: 230-2F77-5-000
Middlesex Township, Butler County

SPECIAL WARRANTY DEED

THIS INDENTURE made the 10th day of October 2023, made effective as of October 11, 2023,

BETWEEN: ALLEGHENY LAND TRUST, a Pennsylvania non-profit corporation, having a mailing address of 416 Thorn Street, Sewickley, PA 15143, party of the first part, GRANTOR;

AND

The COMMONWEALTH OF PENNSYLVANIA, acting through the PENNSYLVANIA FISH AND BOAT COMMISSION, having a mailing address of Property Services, P.O. Box 67000, Harrisburg, PA 17106, party of the second part, GRANTEE;

WITNESSETH, that the GRANTOR, for and in consideration of the sum of – ONE AND NO/100 -- ($1.00) -- Dollars -- lawful money of the United States, to them in hand paid by the GRANTEE, at and before the ensealing and delivery of these presents, the receipt and payment whereof is hereby acknowledged, has/have granted, bargained, sold, released, and confirmed, and by these presents do/does grant, bargain, sell, release, and confirm unto the GRANTEE, and their heirs, successors, and assigns fee title to:

ALL THAT CERTAIN piece, parcel or tract of land situated in the Township of Middlesex, County of Butler, Commonwealth of Pennsylvania, bounded and described as follows, to wit:

BEGINNING at a point at the northwest corner of the tract herein described, said point also being in the centerline of Township Route T-484, also known as Sandy Hill Road, and the Northeasterly corner of lands now or formerly M. Oare as recorded in Deed Book Volume 1150, page 951 in the Butler County Recorder of Deeds Office; thence along said centerline of Township Route T-484 and along the southeasterly line of lands now or formerly of the Commonwealth of Pennsylvania

as recorded in Deed Book Volume 665, page 186 in said Recorder's Office the following three courses and distances: First – North 74° 06' 45" East, 61.79 feet; Second – North 31° 03' 45" East, 225.09 feet; Third – North 42° 46' 45" East, 289.75 feet to a point; thence leaving said centerline and along the northeasterly line of said lands now or formerly of the Commonwealth of Pennsylvania, North 61° 15' 15" West a distance of 359.17 feet to a point on the southerly line of lands now or formerly M.A. Brantner as recorded in Deed Book Volume 1003, page 59 in said Recorder's Office; thence along the southerly lines of said lands now or formerly M.A. Bratner and lands now or formerly A. Vento as recorded in Deed Book Volume 1231, page 159 in said Recorder's Office, South 86° 28' 12" East a distance of 1549.86 feet to a point on the westerly line of lands now or formerly G. Banzhoff, said lands being Parcel #4 described herein; thence along the westerly lines of said Parcel #4 and lands now or formerly Charles Jordan as recorded in Deed Book Volume 992, page 129 in said Recorder's Office and lands now or formerly J.T. Stremple as recorded in Deed Book Volume 1124, page 135 in said Recorder's Office, South 4° 02' 30" West a distance of 1528.93 feet to a point at the northeasterly corner of lands now or formerly J. Gowswell as recorded in Deed Book Volume 1466, page 826 in said Recorder's Office; thence along the northerly line of said lands now or formerly J. Gowswell, North 87° 47' 22" West a distance of 1546.72 feet to a stone at the southeasterly corner of said lands now or formerly M. Oare; thence along the easterly line of said lands now or formerly M. Oare, North 2° 54' 45" East a distance of 967.00 feet to the point of **BEGINNING**.

BEING further identified as Tax Parcel No: 230-2F77-5.

CONTAINING 52.876 acres, more or less.

BEING the same property which the Jones Estates Group, LLC by deed dated May 13, 2022, and recorded in the Butler County Recorder of Deeds Office as Instrument #202205230011196, granted and conveyed to ALLEGHENY LAND TRUST, the GRANTOR herein.

UNDER AND SUBJECT, NEVERTHELESS, to any and all existing easements, rights-of-way, conditions, restrictions, and covenants of record.

UNDER AND SUBJECT to the right to maintain a line for the treated effluent from the private wastewater treatment plant located on the Sandy Hills Mobile Home Park ("the Park Property"), and discharge said effluent into a stream located on the property conveyed herein, the location of such effluent line being its existing location as of May 13, 2022, which was reserved unto Jones Estate Group, LLC, for the benefit of Jones Estates Sandy Hills, LLC, and future owners of the Park Property.

TOGETHER with all and singular, the improvements, ways, waters, watercourses, rights, liberties, privileges, hereditaments, and appurtenances whatsoever thereunto belonging or in anywise appertaining, and the reversion and reversions, remainder and remainders, rents, issues, profits thereof; and all the estate, right, title, interest, property, claim, and demand whatsoever of the said party of the first part, in law, equity, or otherwise, howsoever, in and to the same and every part thereof.

TO HAVE AND TO HOLD the same, together with the premises hereby granted, or intended so to be, unto the said parties of the second part, their heirs, successors, and assigns, to the use of the said parties of the second part, their heirs, successors, and assigns, forever. And the said parties of the first part, for themselves, their heirs, executors, and administrators, do covenant, promise, and agree to and with the said parties of the second part, their heirs and assigns, by these presents, that they, the said parties of the first part, and their heirs, all and singular the hereditaments and premises hereby granted or mentioned and intended so to be, with the appurtenances, unto the said parties of the second part, their heirs, and assigns, against them, the said parties of the first part and their heirs, and against all and every person or persons whomsoever lawfully claiming or to claim the same or any part thereof, by, from and under GRANTOR, shall and will, subject as aforesaid, **SPECIALLY WARRANT** and forever **DEFEND.**

NOTICE – THIS DOCUMENT MAY NOT SELL, CONVEY, TRANSFER, INCLUDE OR INSURE THE TITLE TO THE COAL AND RIGHT OF SUPPORT UNDERNEATH THE SURFACE LAND DESCRIBED OR REFERRED TO HEREIN, AND THE OWNER OR OWNERS OF SUCH COAL MAY HAVE THE COMPLETE LEGAL RIGHT TO REMOVE ALL OF SUCH COAL AND, IN THAT CONNECTION, DAMAGE MAY RESULT TO THE SURFACE OF THE LAND AND ANY HOUSE, BUILDING OR OTHER STRUCTURE ON OR IN SUCH LAND. THE INCLUSION OF THIS NOTICE DOES NOT ENLARGE, RESTRICT OR MODIFY ANY LEGAL RIGHTS OR ESTATES OTHERWISE CREATED, TRANSFERRED, EXCEPTED OR RESERVED BY THIS INSTRUMENT. (This notice is set forth in the manner provided in Section 1 of the Act of July 17, 1957, P.L. 984, as amended, and is not intended as notice of unrecorded instruments, if any).

IN WITNESS WHEREOF, the said party(ies) of the first part has/have hereunto set his/her/their hand(s) and seal(s) the day and year first above written.

ATTEST:

10/10/23
(date)

ALLEGHENY LAND TRUST:

10/10/2023
Name: Christopher Beichner (date)
Title: President & CEO

HAZARDOUS WASTE: The GRANTOR hereby certifies that to the best of their knowledge the property is not contaminated with hazardous and toxic waste, and hazardous or toxic waste has not been stored or generated thereon, as toxic and hazardous waste are so defined by the Pennsylvania Department of Environmental Protection.

THIS PROPERTY, or interest in the property, was either acquired with or donated as match for funds provided by the Pennsylvania Department of Conservation and Natural Resources ("Department"). The source of funds is Keystone Recreation, Park and Conservation Fund Act, the act of July 2, 1993 (P.L. 359, No. 50) (32 P.S. §§ 2011 et seq.) ("Act"). This property, or any portion of it, may not be converted to purposes other than those authorized under the Act for property acquired with Department funds. Nor change of use and no transfer of ownership, control, or interest in this property may occur, and no encumbrance may be placed on this property, without the written consent of the Department or its successor. The restriction in this paragraph applies to both the surface and subsurface of the property. This restriction has the effect of a covenant running in perpetuity with the land and is binding upon the owner(s) of the property and upon all subsequent owners, successors, and assigns. This restriction is enforceable by the Department and its successors.

RESERVING unto the Grantor the rights to any credits for carbon storage greenhouse gas benefits and other co-benefits delivered by the standing timber and forest on the Property ("Carbon Credits"), for a term of 40 years from the Carbon Preservation Project Verification Date, as established in a duly executed Project Implementation Agreement in proper form for recording, which will be recorded as soon as possible upon its execution. During the term of the 40-year Carbon Preservation Project, the Grantee shall not engage in any commercial or other timbering on the Property conveyed hereby nor shall Grantee cut down, remove or destroy any trees on the Property except as may be necessary, in Grantee's reasonable judgment and discretion, (a) to control, prevent or mitigate hazard or threat to life or damage to or destruction of property, (b) to promote or protect forest health and habitat, (c) to remove diseased, dead or damaged trees, or (d) to prevent or mitigate fire or conditions that may directly or proximately cause or exacerbate fire. Grantee will not cut down, remove, or destroy any trees in the Project Area as defined by the 40-year Carbon Preservation Project to develop new trails on the property, existing trails as identified in the Project Area may be maintained for the duration of the 40-year carbon project term. The reserved 40-year Carbon Credits remain subject to the DCNR Non-conversion Restriction, as set forth in the preceding paragraph.

This reservation, known as the Allegheny Land Trust Carbon Credit Restrictive Covenant, will run with the land for 40 years from the Verification Date and are binding upon Grantee and its successors and assigns. At the end of the Project Implementation Agreement's 40-year term, the Carbon Credits shall revert to and become the property of the Grantee. Except for a parking area for up to 10 vehicles, the use of motorized vehicles or any vehicle with an internal combustion engine powered by petroleum is prohibited during the 40-year carbon project term.

Commonwealth of Pennsylvania }
}
County of Allegheny }

On this the 10th day of October, 2023, before me, the undersigned Officer, a Notary Public for the Commonwealth of Pennsylvania, personally appeared, **Christopher Beichner** (or satisfactorily proven to me) to be the person whose name is subscribed to the within instrument and acknowledged that they executed the same for the purposes therein contained.

In Witness Whereof, I hereunto set my hand and official seal.

Kimberly A. Lebak (Seal)
My Commission Expires:

Commonwealth of Pennsylvania - Notary Seal
Kimberly A. Lebak, Notary Public
Allegheny County
My commission expires November 7, 2026
Commission number 1427000
Member, Pennsylvania Association of Notaries

NOTICE – THE UNDERSIGNED, AS EVIDENCED BY THE SIGNATURE(S) TO THIS NOTICE AND THE ACCEPTANCE AND RECORDING OF THIS DEED, (IS, ARE) FULLY COGNIZANT OF THE FACT THAT THE UNDERSIGNED MAY NOT BE OBTAINING THE RIGHT OF PROTECTION AGAINST SUBSIDENCE, AS TO THE PROPERTY HEREIN CONVEYED. RESULTING FROM COAL MINING OPERATIONS AND THAT THE PURCHASED PROPERTY, HEREIN CONVEYED, MAY BE PROTECTED FROM DAMAGE DUE TO MINE SUBSIDENCE BY A PRIVATE CONTRACT WITH THE OWNERS OF THE ECONOMIC INTEREST IN THE COAL. THIS NOTICE IS INSERTED HEREIN TO COMPLY WITH THE BITUMINOUS MINE SUBSIDENCE AND LAND CONSERVATION ACT OF 1966.

ATTEST:

8/15/23
(date)

PENNSYLVANIA FISH &BOAT COMMISSION:

6/2/23
Name: Timothy D. Schaeffer (date)
Title: Executive Director

CERTIFICATE OF RESIDENCE

I hereby certify that the GRANTEE'S current address is Pennsylvania Fish and Boat Commission, Property Services, P.O. Box 67000, Harrisburg, PA 17106.

Witness my hand this 2nd day of June, 2023

Mackenzie Hogan

Agent for the Commonwealth of Pennsylvania
Pennsylvania Fish and Boat Commission

RECORDER OF DEEDS BUTLER COUNTY, PA

I hereby CERTIFY that this document is recorded in the Recorder's Office of Butler County, Pennsylvania

Michele M. Mustello

Michele M. Mustello - Recorder of Deeds

MAIL TO:
STEPTOE & JOHNSON
500 GRANT ST STE 4940
PITTSBURGH PA 15219

pennsylvania DEPARTMENT OF REVENUE (EX) MOD 06-19 (FI)

REV-183

BUREAU OF INDIVIDUAL TAXES
PO BOX 280603
HARRISBURG, PA 17128-0603

1830019105

REALTY TRANSFER TAX STATEMENT OF VALUE

COMPLETE EACH SECTION

RECORDER'S USE ONLY

State Tax Paid: 0

Book: Page:

Instrument Number: 202310170015573

Date Recorded: 10-17-23

SECTION I TRANSFER DATA

Date of Acceptance of Document: 10/11/2023

Grantor(s)/Lessor(s)	Telephone Number	Grantee(s)/Lessee(s)	Telephone Number
Allegheny Land Trust		Commonwealth of Pennsylvania	
Mailing Address		**Mailing Address**	
416 Thorn Street		PO Box 67000	
City / State / ZIP Code		**City / State / ZIP Code**	
Sewickley / PA / 15143		Harrisburg / PA / 17106	

SECTION II REAL ESTATE LOCATION

Street Address	City, Township, Borough	
0 Sandy Hill Road	Valencia, PA 16059 - Middlesex Twp	
County	**School District**	**Tax Parcel Number**
Butler	~~Middlesex~~ Mars	230-2F77-5-000

SECTION III VALUATION DATA

Was transaction part of an assignment or relocation? ○ YES ● NO

1. Actual Cash Consideration	2. Other Consideration	3. Total Consideration
0.00 (1.00)	+ 0.00	= 0.00 (1.00)
4. County Assessed Value	**5. Common Level Ratio Factor**	**6. Computed Value**
5,100.00	x 15.38	= 78,438.00

SECTION IV EXEMPTION DATA - Refer to instructions for exemption status.

1a. Amount of Exemption Claimed	1b. Percentage of Grantor's Interest in Real Estate	1c. Percentage of Grantor's Interest Conveyed
$ 78,438.00	100 %	100 %

2. Fill in the Appropriate Oval Below for Exemption Claimed.

- ○ Will or intestate succession. _____ (Name of Decedent) _____ (Estate File Number)
- ○ Transfer to a trust. (Attach complete copy of trust agreement and all amendments.)
- ○ Transfer from a trust. (Attach complete copy of trust agreement and all amendments.)
- ○ Transfer between principal and agent/straw party. (Attach complete copy of agency/straw party agreement.)
- ● Transfers to the commonwealth, the U.S. and instrumentalities by gift, dedication, condemnation or in lieu of condemnation. (If condemnation or in lieu of condemnation, attach copy of resolution.)
- ○ Transfer from mortgagor to a holder of a mortgage in default. (Attach copy of mortgage and note/assignment.)
- ○ Corrective or confirmatory deed. (Attach complete copy of the deed to be corrected or confirmed.)
- ○ Statutory corporate consolidation, merger or division. (Attach copy of articles.)
- ○ Other (Provide a detailed explanation of exemption claimed. If more space is needed attach additional sheets.)

Exempt under § 91.192(a) of the PA Code, this is a transfer to the Commonwealth.

SECTION V CORRESPONDENT INFORMATION - All inquiries may be directed to the following person:

Name	Telephone Number
Steven M. Regan, Esquire	412-504-8031
Mailing Address	**City / State / ZIP Code**
500 Grant Street, Suite 4940	Pittsburgh / PA / 15219

Under penalties of law, I declare that I have examined this statement, including accompanying information, and to the best of my knowledge and belief, it is true, correct and complete.

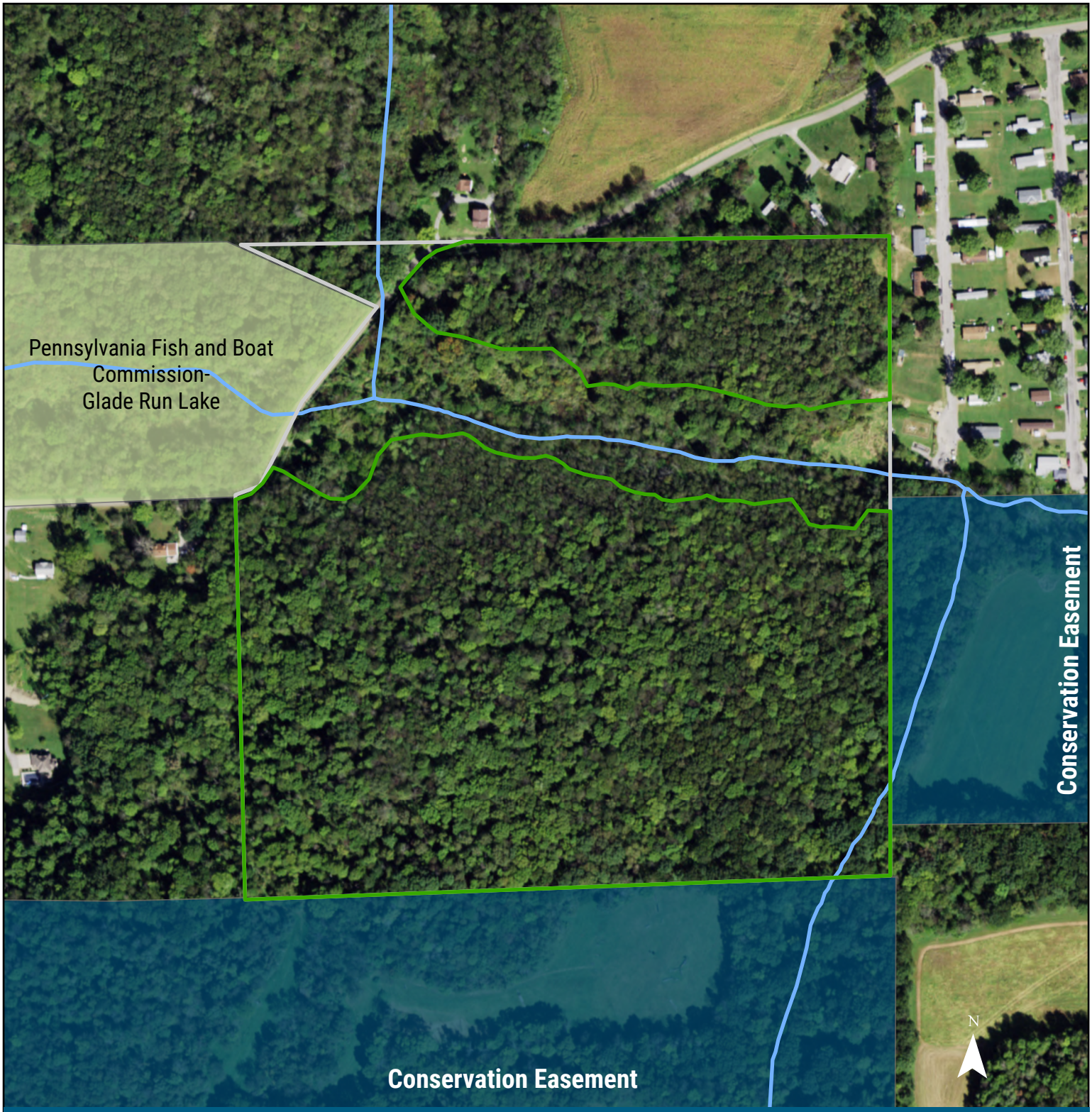
Signature of Correspondent or Responsible Party: _____ Date: 10/11/2023

FAILURE TO COMPLETE THIS FORM PROPERLY OR ATTACH REQUESTED DOCUMENTATION MAY RESULT IN THE RECORDER'S REFUSAL TO RECORD THE DEED.

1830019105

1830019105

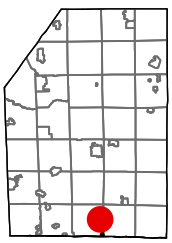
Project Area Map



Glade Run Lake Conservation Project

Legend

- Carbon Area- 43.123 Acres
- Survey Boundary- Survey Area 52.884 Acres
- Other Conserved Land
- ALT Property

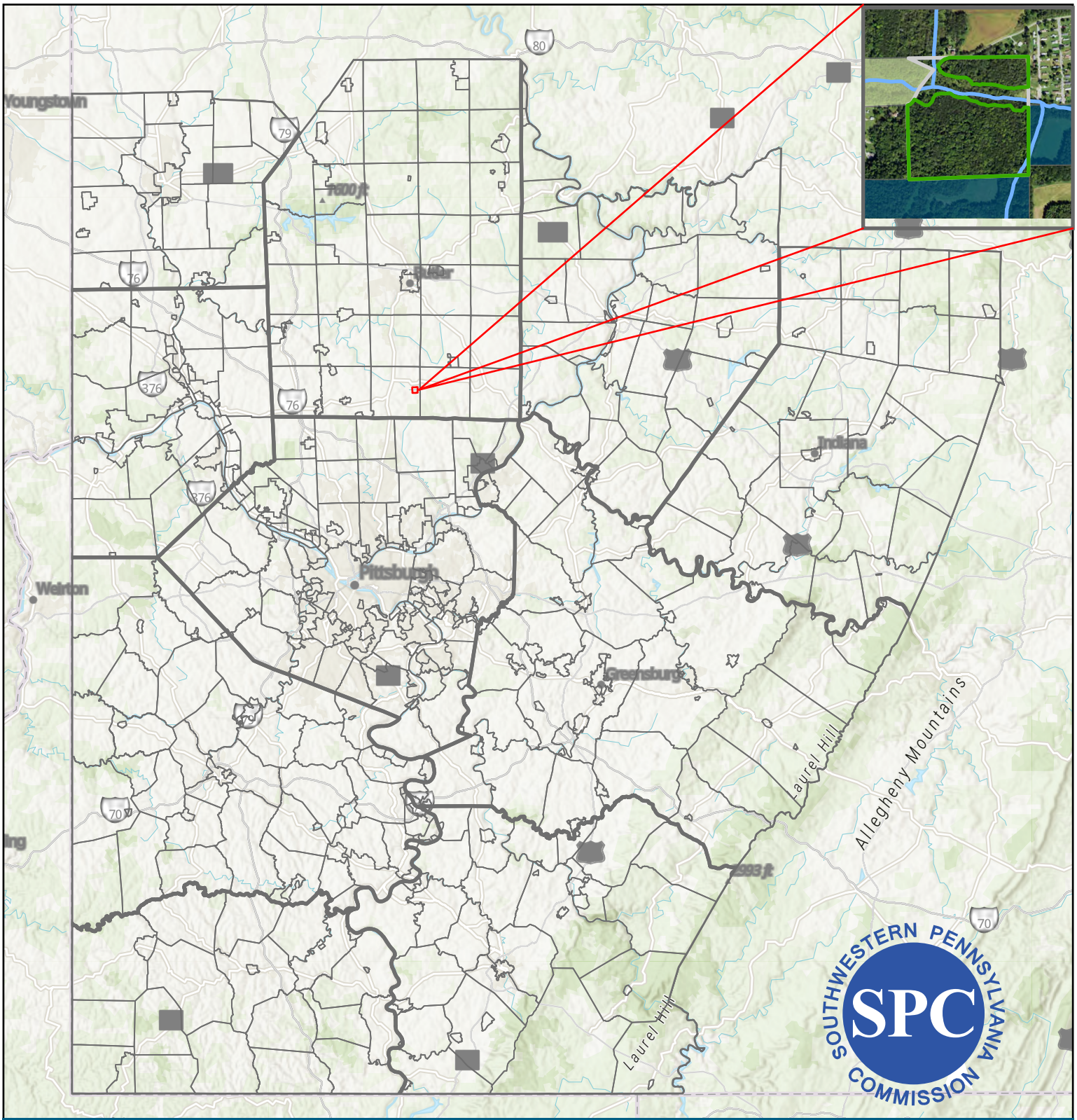


Middlesex Township,
Butler County,
Pennsylvania

0 95 190 380 570 760
Feet

ALLEGHENY LAND TRUST

Regional Area Map



Southwestern Pennsylvania Commission Service Area

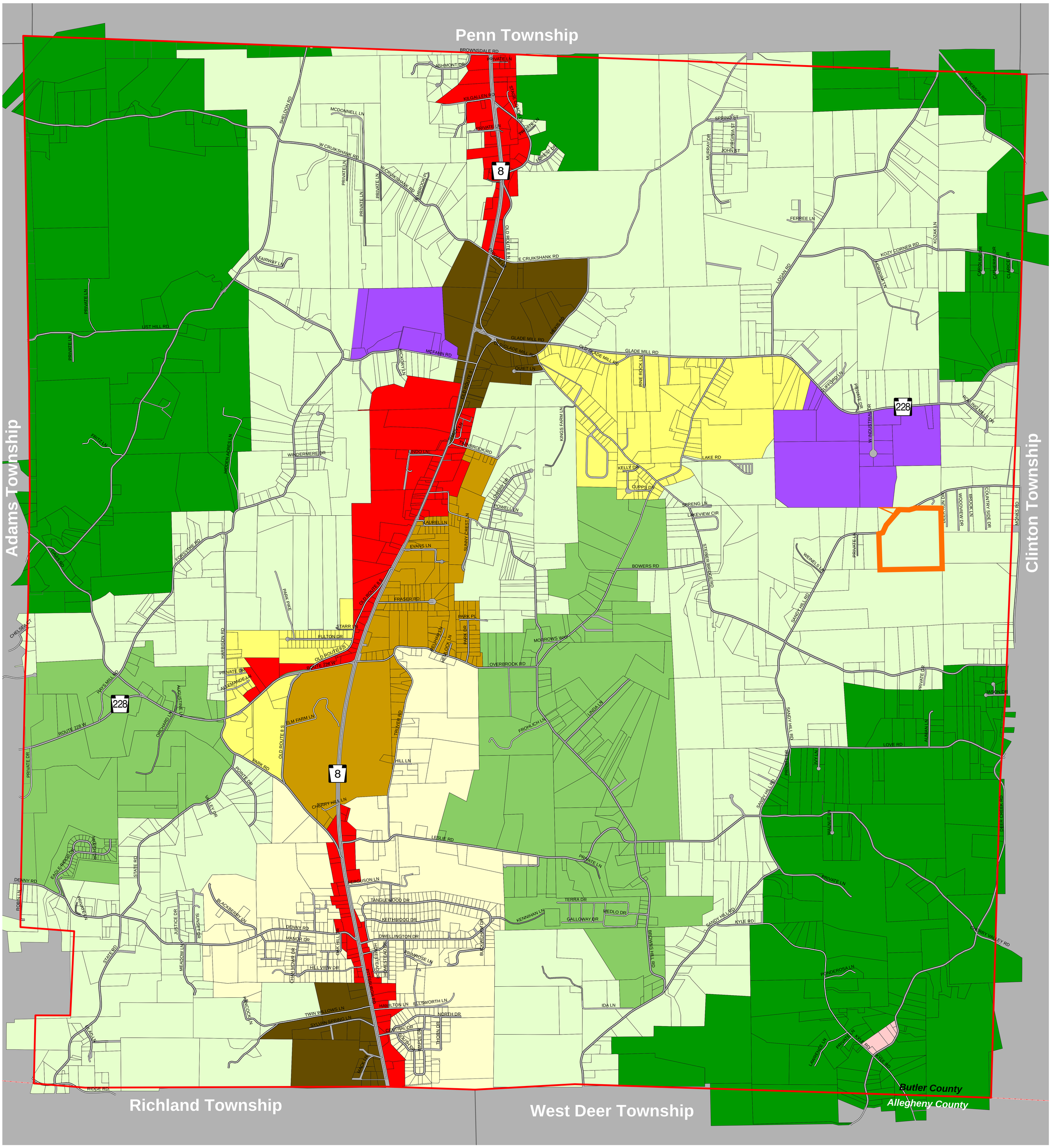
Legend

Glade Run Lake Conservation Area
Middlesex Township,
Butler County, Pennsylvania

ALLEGHENY LAND TRUST

0 500 1,000 2,000 3,000 4,000
Feet

Zoning Maps


Penn Township
Adams Township
Clinton Township
Richland Township
West Deer Township
Butler County
Allegheny County
BROWNSDALE RD
PRIVATE LN
ASHMONT DR
KILGALLEN RD
OLD ROUTE 8 S
MCDONNELL LN
SHELDON RD
W CRUIKSHANK RD
PRIVATE LN
PEMBROOK PL
FOREST DR
SPRING ST
VIRGINIA ST
JOHN ST
MURRAY DR
ANDERSON RD
FERREE LN
KOZAK LN
KOZY CORNER RD
KOZAK TR
CATHERINE DR
CLARICE DR
E CRUIKSHANK RD
FAIRWAY LN
LOGAN RD
LIST HILL RD
GLADE MILL RD
OLD GLADE MILL RD
HICKORY LN
MCFANN RD
QUIET LN
PINE ROCK LN
LIFFORD LN
PRIVATE DR
ROLLING MILLS DR
228
WINDERMERE DR
HIDDEN ACRES LN
LINDO LN
TROUTBROOK RD
KINGS FARM LN
LAKE RD
KELLY DR
CUPPS DR
LOWERY DR
POWELL LN
LAUREL LN
EVANS LN
SUNNY CREST LN
SPRENG LN
LAKEVIEW CIR
STEINER BRIDGE RD
BOWERS RD
WEINELS LN
SANDY HILL RD
FORSYTHE RD
PARK PIKE
OLD ROUTE 8 S
FRASER RD
PARK PL
PARK DR
STARR LN
FULTON DR
OLD ROUTE 8 S
ROUTE 228 W
HARBISON RD
PRIVATE DR
AVEMANDE LN
MORROWS WAY
OVERBROOK RD
LINDA LN
FROHLICH LN
TRIVER RD
ELM FARM LN
OLD ROUTE 8 S
PARK RD
POINTE DR
HILL LN
CHERRY HILL LN
VALLEY DR
ROUTE 228 W
TAYCS MILL RD
AUGUSTINE LN
ORCHARD LN
PRIVATE DR
JASON DR
SANDY HILL RD
IVY LN
LOVE RD
AUMAN LN
WALNUT
DEER CREEK RD
LESLIE RD
PRIVATE LN
FERGUSON LN
TANGLEWOOD DR
TERRA DR
KENNIHAN LN
GALLOWAY DR
MEDLO DR
KYLE RD
CHERRY VALLEY RD
PONDEROSA LN
IDA LN
BROWNS HILL RD
BUCKINGHAM DR
DENNY RD
MANOR DR
DWELLINGTON DR
KEITHWOOD DR
HOMESTEAD DR
PRIMROSE LN
HILL VIEW DR
OAK HILL DR
CHAN MOWR DR
PITTSBURGH RD
HAMILTON LN
ELLSWORTH LN
NORTH DR
CENTRAL DR
SOUTH DR
MAPLE DR
THORN DR
TWIN WILLOWS LN
SYLVAN SPRING LN
HANCOCK LN
JACKSON LN
BLACKBERRY LN
JUSTICE DR
SUNSET DR
MEADOW LN
STATE RD
EAGLE PIPER DR
MARSH DR
PRIVATE LN
ROBIN LN
DENNY RD
RIDGE RD
LAMBRIDGE LN
PRIVATE LN
KYLE RD
ROUTE 228 W
WINDUSTRIAL DR
COUNTRY SIDE DR
WOODVIEW DR
BROOK LN
DEER RUN DR
SPRING DR
LEGEND
Municipal Boundary
County Boundary
Lot Line
Road
Glade Run Project Area
ZONING
Rural Residential (AG-A)
Agricultural (AG-B)
Residential Agriculture (R-AG)
Low Intensity Residential (R-1)
Moderate Intensity Residential (R-2)
Town Center (TC)
Neighborhood-Scale Commercial (C-1)
Community-Scale Commercial (C-2)
Regional-Scale Commercial (C-3)
Restricted Industrial (I-1)
200 Acres
100 Acres
25 Acres
ZONING MAP
MIDDLESEX TOWNSHIP
Prepared for: Middlesex Township, Butler County
Prepared by: Environmental Planning and Design, LLC
Amended on November 21, 2012
by Ordinance No. 125
0
800
1,600 Feet
NORTH

Zoning Description(s)

Chapter 175. Zoning

Article IV. AG-A Rural Residential District

§ 175-15. Area and bulk regulations.

[Amended 11-21-2012 by Ord. No. 125]
In the AG-A Rural Residential District, all uses shall be subject to the following regulations, or by the express standards and criteria for the specific conditional uses or uses by special exception contained in Article **XI**.

A. Minimum lot size:

(1) Farms: 20 acres.

(2) Single-family dwellings:
[Amended 3-20-2019 by Ord. No. 133]

(a) On lots with both public water and public sewage: three-quarters (3/4) of an acre (32,670 square feet).

(b) On lots without public water or public sewage: one acre (43,560 square feet).

(3) Two-family dwellings:
[Amended 3-20-2019 by Ord. No. 133]

(a) On lots with both public water and public sewage: one and one-half (1.5) acres (65,340 square feet).

(b) On lots without public water or public sewage: two acres (87,120 square feet).

(4) Schools: five acres.

(5) All other uses: one acre.

B. Minimum lot width:

(1) Farms: 200 feet.

(2) Single-family dwellings: 125 feet.
[Amended 3-20-2019 by Ord. No. 133]

(3) Two-family dwellings: 175 feet.
[Amended 3-20-2019 by Ord. No. 133]

(4) All other uses: 150 feet.

C. Maximum lot coverage:

(1) Farms: 5%.

(2) All others: 20%

D. Minimum front yard: 50 feet from front lot line or 75 feet from street center line, whichever is greater.

E. Minimum rear yard:

(1) Principal structures: 75 feet.

(2) Accessory structures: 10 feet.

F. Minimum side yard:

(1) Dwellings: 25 feet each side.

(2) Accessory structures: 10 feet each side.

G. Special yard requirements: See § **175-142**.

H. Permitted projections into required yards: See § **175-143**.

I. Maximum height:

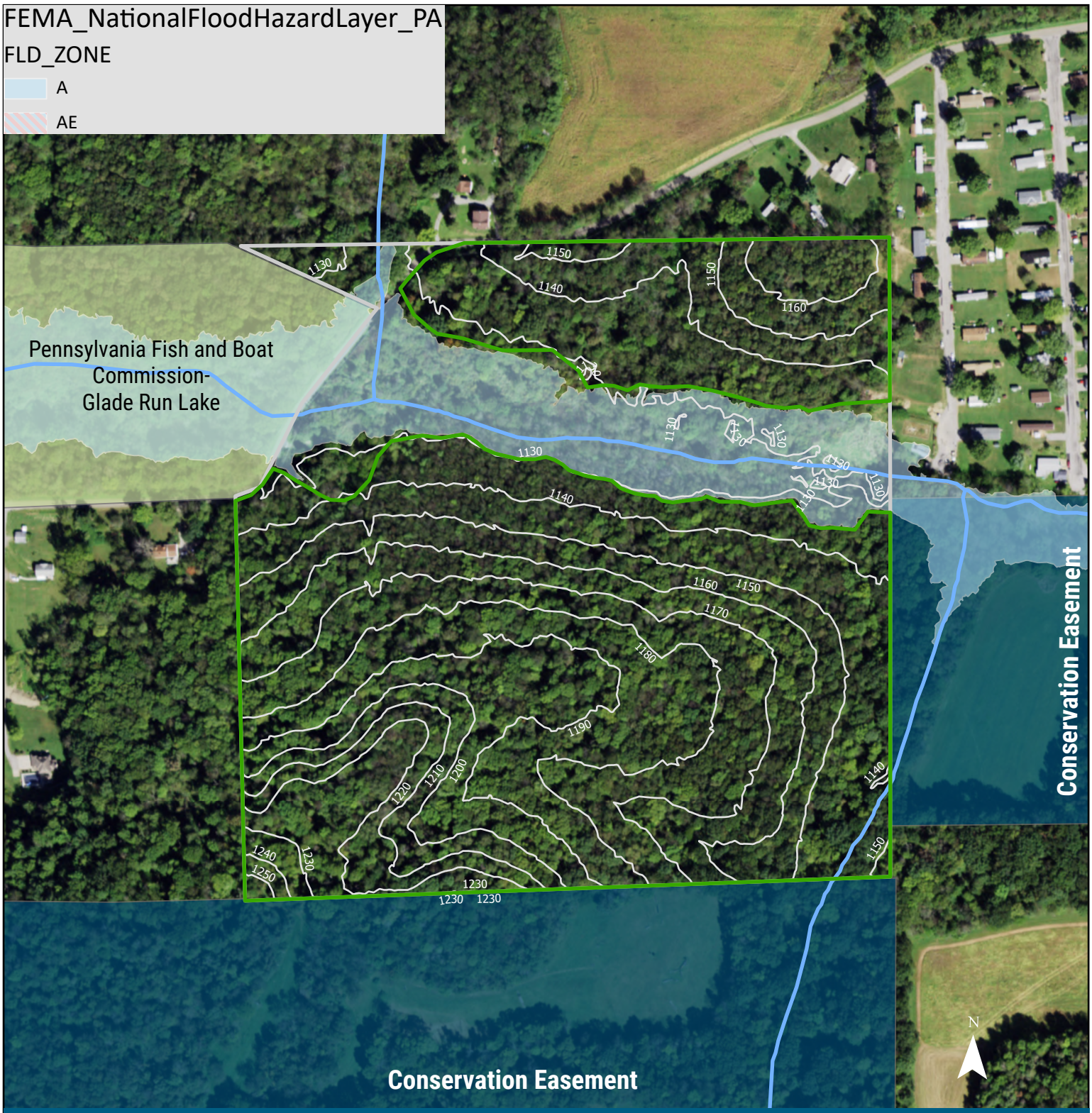
(1) All principal structures: 35 feet and 2 1/2 stories.

(2) All accessory structures.

(a) Less than two acres: 15 feet.

(b) Two or more acres: 25 feet.

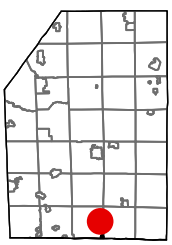
J. Height exceptions: See § **175-144**.



Glade Run Lake Conservation Project

Legend

- Carbon Area- 43.123 Acres
- Survey Boundary- Survey Area 52.884 Acres
- Other Conserved Land
- ALT Property



Middlesex Township,
Butler County,
Pennsylvania

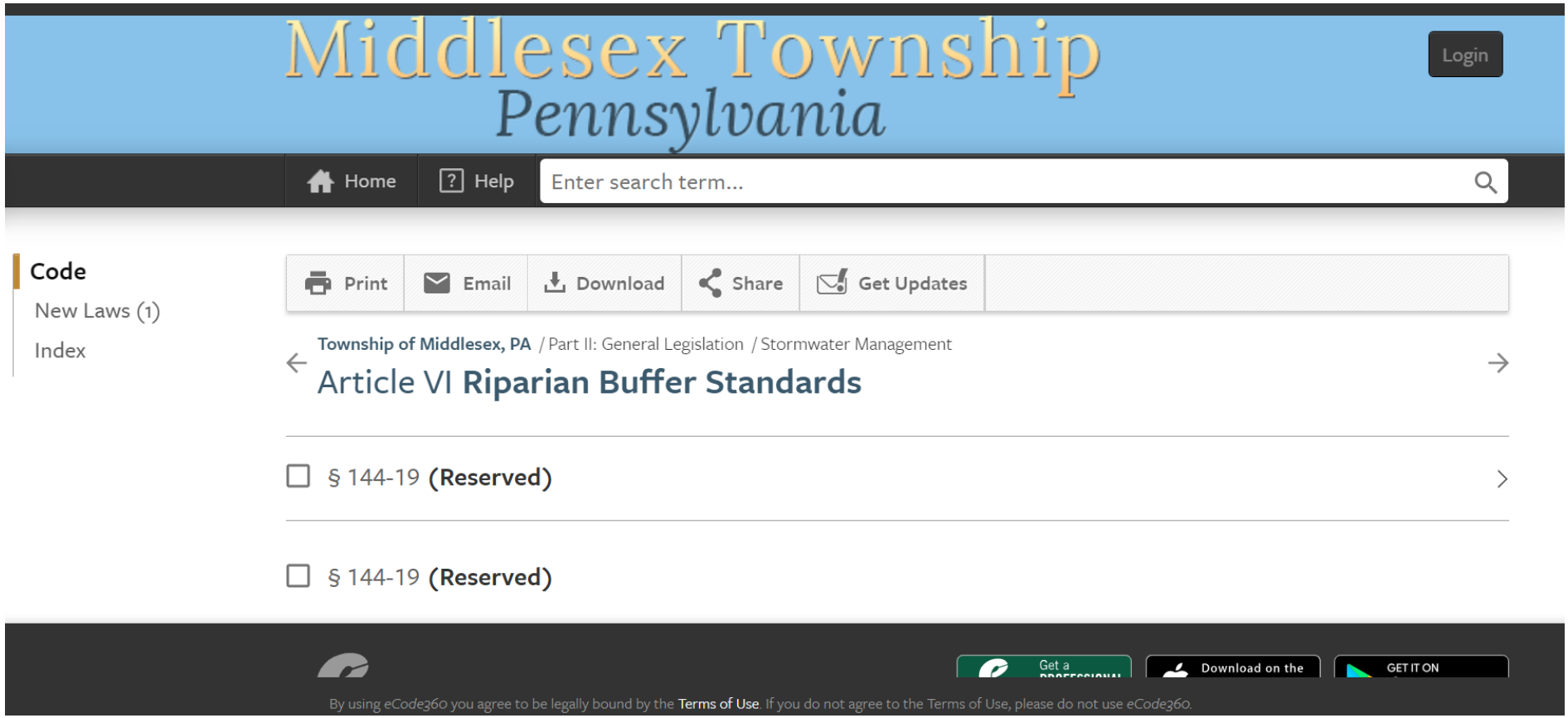
ALLEGHENY LAND TRUST

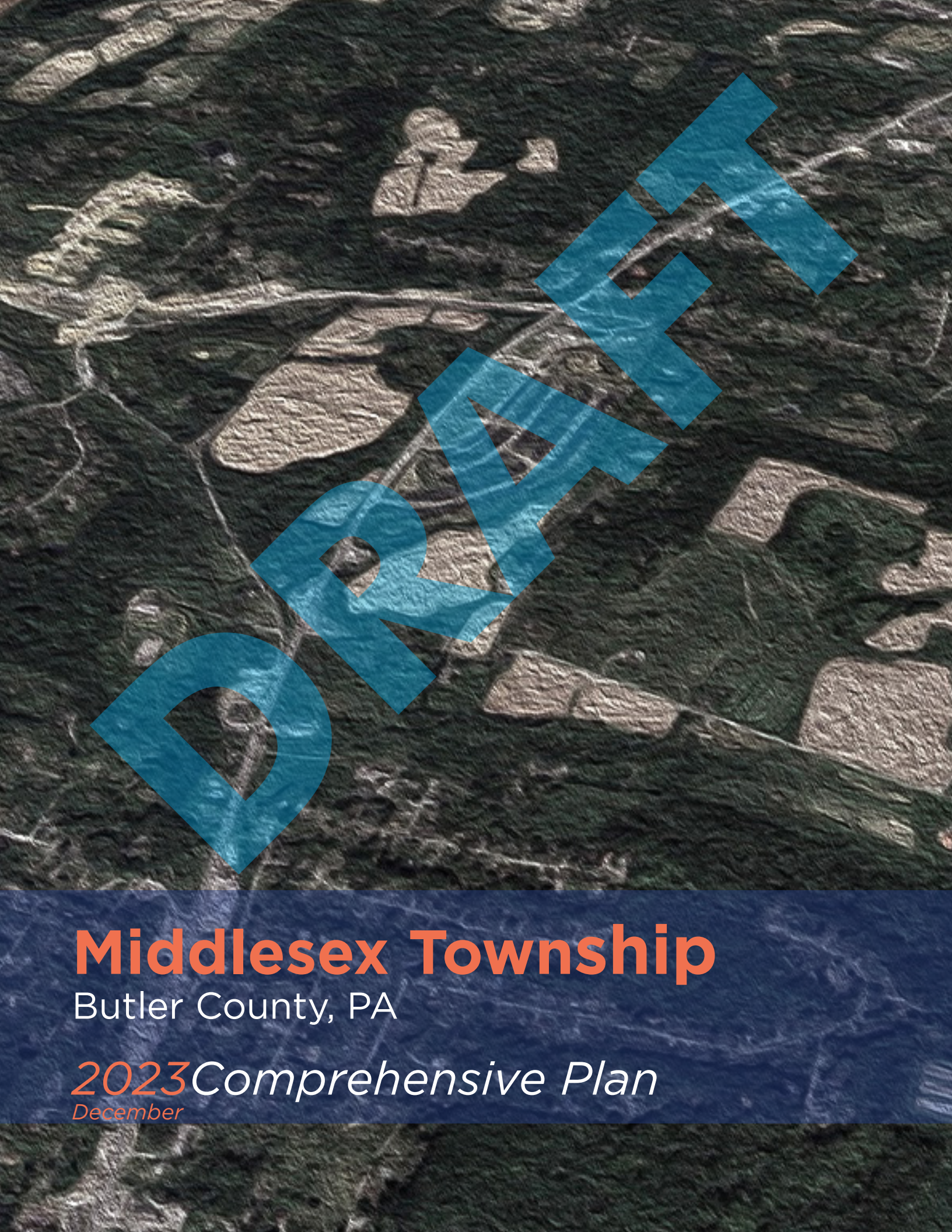
0 95 190 380 570 760 Feet

ARTICLE VI
Riparian Buffer Standards

§ 144-19. (Reserved)

Screenshot of Middlesex Township Riparian Buffer ordinance in "Reserved" status (as of 2/28/2024)





Middlesex Township

Butler County, PA

2023 Comprehensive Plan

December

DEMOGRAPHICS

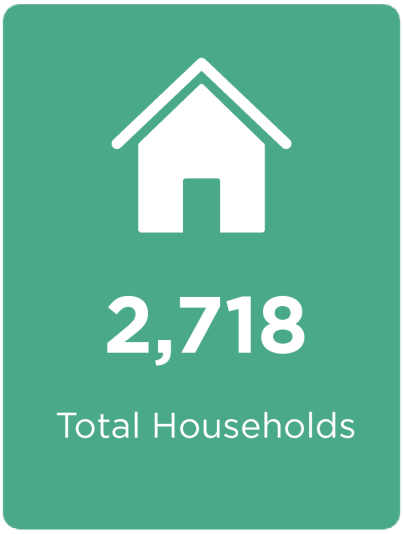
POPULATION & HOUSING GROWTH

Since 2010, there has been a 32% growth in population throughout Middlesex Township. For context, Butler County has only seen a 7% increase during this same time frame. Nearby, Cranberry Township, the most populous township in the County, has not even seen this amount of growth. In fact, Cranberry Township has seen a 20% growth in population since 2010. Current Census projections through 2028 indicate no signs the growth in population will slow in Middlesex Township.

Average household numbers in Middlesex Township are also increasing at nearly the same rate as the total population growth. Current Census estimates suggest that the Township has seen a 29% increase in the number of households since 2010.

The average household size has grown modestly during this period at just 3%. Yet, the number of family-based households have grown by 25%. Many of the stakeholders interviewed and feedback from the community suggest that the Mars Area School District is a primary incentive for families to locate in Middlesex Township. Regionally within Butler County, the trend of household growth is not consistent with what the Township has experienced.

Butler County has experienced an increase in the number of households and number of family-based households. However, based on the 2023 Census data the size of households have decreased by 3% since 2010.



DEMOGRAPHICS

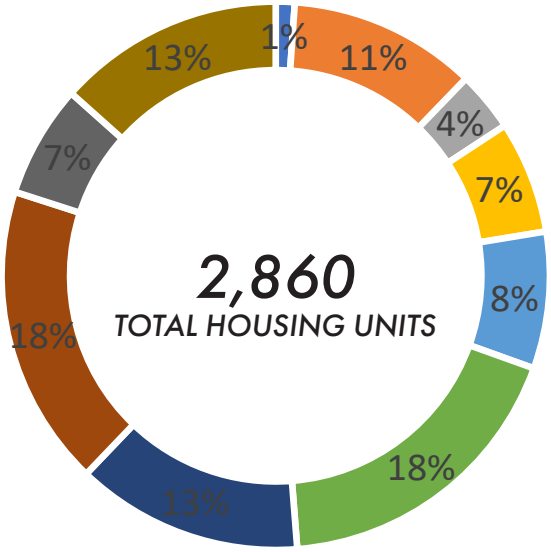
HISTORICAL HOUSING UNIT DEVELOPMENT

There are a total of 2,860 housing units in Middlesex Township. 36% of these units were developed between the years of 1950-1959 and 1970-1979. In fact, the peak of housing unit development occurred during the years between 1970-1979 with 525 units being constructed. Neighboring Cranberry Township and West Deer Township also saw significant housing unit development during this time in comparison to other municipalities in the region.

Since 2020, Middlesex Township has produced the most housing units compared to 14 other municipalities in the region. Compared to these 14 other municipalities, Middlesex Township ranks 5th in regards to the number of dwelling units. Cranberry Township has the most dwelling units in the region, totaling 13,626.

1950-1959 & 1970-1979

THE GREATEST AMOUNT OF HOUSING UNITS WERE DEVELOPED BETWEEN THESE YEARS **(1,040 UNITS/36% OF TOTAL UNITS).**



YEAR HOUSING UNITS BUILT

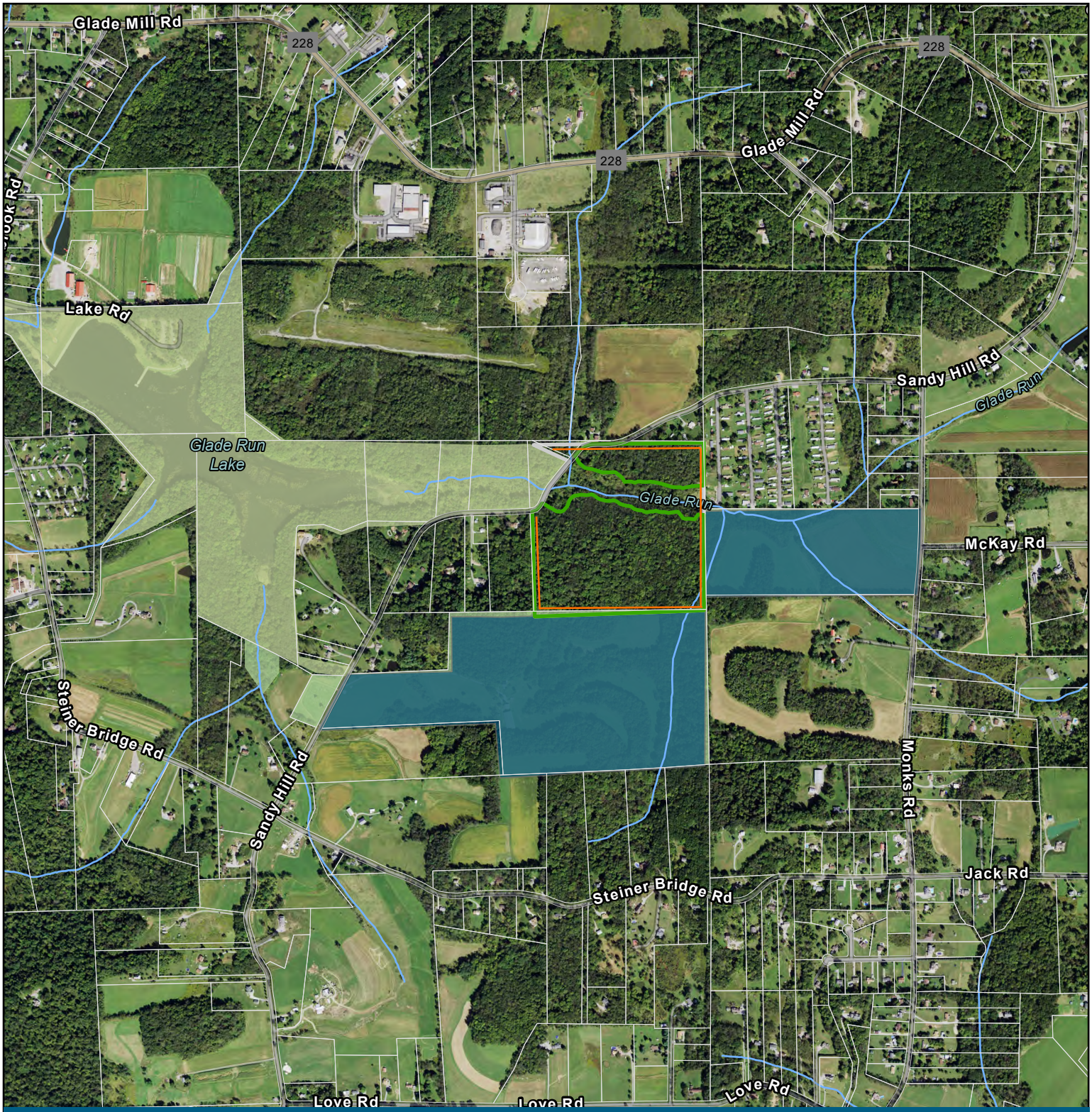
- *2020 OR LATER*
- *2010-2019*
- *2000-2009*
- *1990-1999*
- *1980-1989*
- *1970-1979*
- *1960-1969*
- *1950-1959*
- *1940-1949*
- *1939 OR EARLIER*

DRAFT

Middlesex Township

2023 Comprehensive Plan

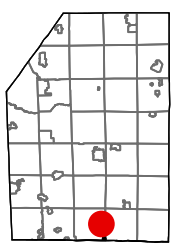
Threat of Loss Demonstration



Glade Run Lake Conservation Project -Threat of Loss

Legend

- Carbon Area- 43.123 Acres
- Survey Boundary- Survey Area 52.884 Acres
- Other Conserved Land
- ALT Property
- Improved Use Perimeter



Middlesex Township,
Butler County,
Pennsylvania

0 370 740 1,480 2,220 2,960
Feet

ALLEGHENY LAND TRUST

Attestation of No Double Counting and No Net Harm

CITY FOREST CREDITS

Glade Run Lake Conservation Project
Attestation of No Double Counting of Credits & No Net Harm

I am the President & CEO of the Allegheny Land Trust and make this attestation regarding the no double counting of credits and no net harm from this tree preservation project, Glade Run Lake Conservation Project.

1. Project Description

The Project that is the subject of this attestation is described more fully in both our Application and our Project Design Document (PDD), both of which are incorporated into this attestation.

2. No Double Counting by Applying for Credits from another Registry

Allegheny Land Trust has not and will not seek credits for CO_2 for the project trees or for this project from any other organization or registry issuing credits for CO_2 storage.

3. No Double Counting by Seeking Credits for the Same Trees or Same CO_2 Storage

Allegheny Land Trust has not and will not apply for a project including the same trees as this project nor will it seek credits for CO_2 storage for the project trees or for this project in any other project or more than once. Allegheny Land Trust checked the location of the Project Area against the Registry-provided geospatial database, which contains geospatial data on the project areas of all registered urban forest carbon preservation projects to date. Project Operator has determined that there is no overlap of Project Area or Project Trees with any registered urban forest carbon preservation project.

4. No Net Harm

The trees preserved in this project will produce many benefits, as described in our Application and PDD. Like almost all urban trees, the project trees are preserved for the benefits they deliver to people, communities, and the environment in a metropolitan area.

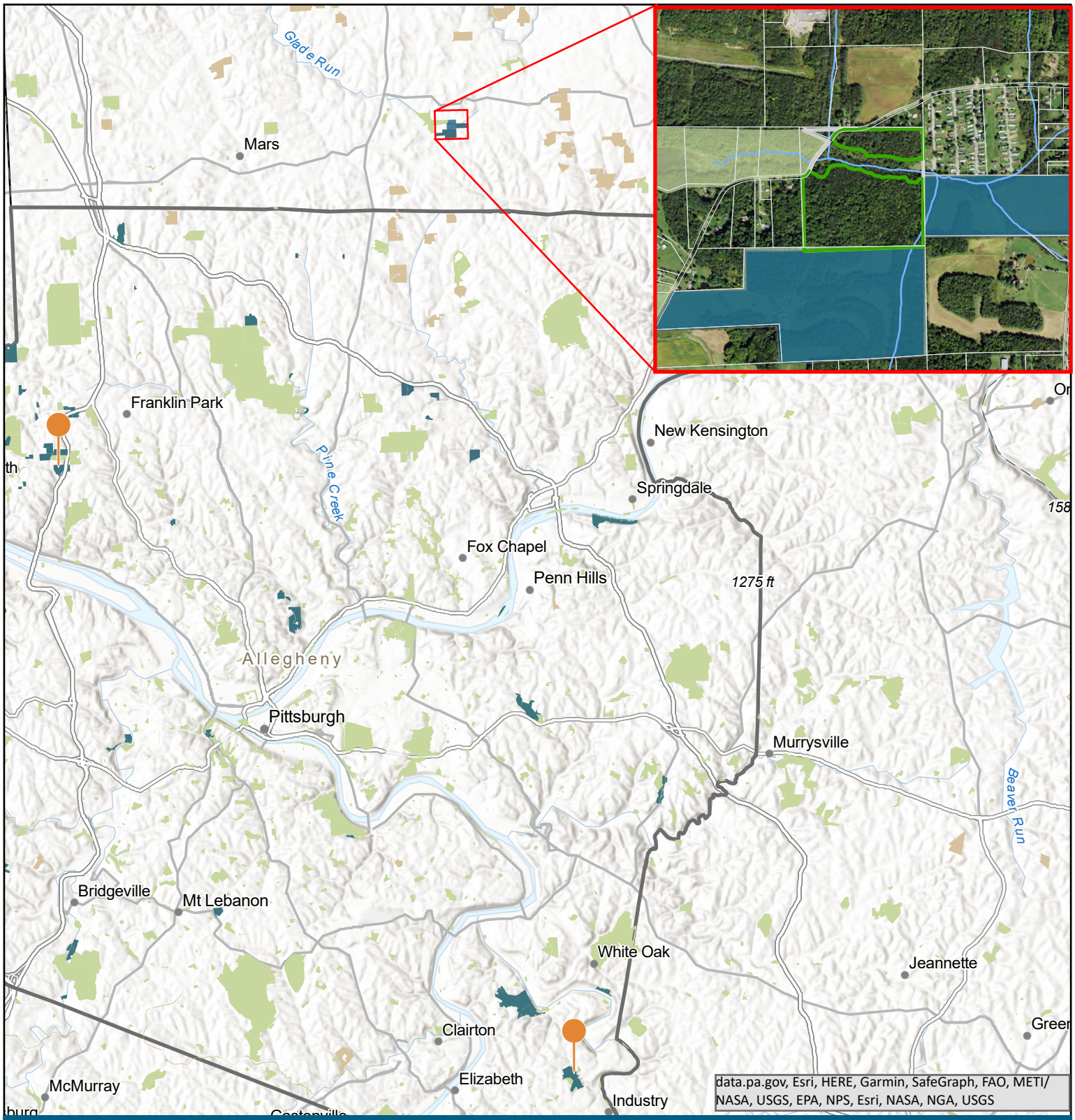
The project trees will produce many benefits and will not cause net harm. Specifically, they will not:

- Displace native or indigenous populations
- Deprive any communities of food sources
- Degrade a landscape or cause environmental damage

Signed on March 11th in 2024, by Christopher J. Beichner President & CEO, for Allegheny Land Trust.

Signature

Christopher J. Beichner
412-741-2750
cbeichner@alleghenylandtrust.org



Other Urban Forest (UF) Projects in the Region

Legend

- Glade Run Lake Conservation Area
  Middlesex Township,
  Butler County, Pennsylvania
- ALT Urban Forest (UF) Carbon Projects
- ALT Properties (NOT UF Carbon Projects)
- Conserved Lands (NOT UF Carbon Projects)
- Conservation and Farm Easements (NOT UF Carbon Projects)

0 0.1 0.3 0.5 0.8 1 Miles

ALLEGHENY LAND TRUST

Attestation of Additionality

Glade Run Lake Conservation Project
Attestation of Additionality

I am the President & CEO of the Allegheny Land Trust and make this attestation regarding additionality from this tree preservation project, Glade Run Lake Conservation Project.

- Project Description
  - The Project that is the subject of this attestation is described more fully in the Application and the Project Design Document (PDD), both of which are incorporated into this attestation.
- Prior to the Preservation Commitment, the trees in the Project Area were not protected via easement or recorded encumbrance or in a protected zoning status that preserves the trees
- Prior to the Preservation Commitment, the zoning in the Project Area allowed for a non-forest use.
- Prior to the Preservation Commitment, the trees in the Project Area passed one of three tests to demonstrate a threat or risk of removal or conversion out of forest
- Allegheny Land Trust recorded in the public land records an easement, covenant, or deed restriction specifically protecting the trees for the project duration of 40 years.
- Additionality is also embedded in the quantification methodology that our project followed. Projects cannot receive, and the project will not receive, credits for trees that would have remained had development occurred, nor can they receive soil carbon credits for soil that would have been undisturbed had development occurred. The project also had to apply a discount to credited carbon for potential displaced development due to the project.
- Project Implementation Agreement for Project Duration
  - Allegheny Land Trust signed a Project Implementation Agreement with City Forest Credits for 40 years.
- Financial Additionality: the sale of carbon credits was added to the scope of this project early in the process to ensure financial viability for the transfer to the Pennsylvania Fish and Boat Commission because the costs are not otherwise funded. The Allegheny Land Trust has registered two prior carbon projects under the City Forest Credits Preservation Protocol, the first in 2020.

Signed on March 11th in 2024, by Christopher J. Beichner, President & CEO, for Allegheny Land Trust.

Signature

Christopher J. Beichner
412-741-2750
cbeichner@alleghenylandtrust.org

Carbon Quantification Tool

CITY FOREST CREDITS - PRESERVATION CARBON QUANTIFICATION CALCULATOR
Credit calculator for use with standard carbon stock tables (Section 10.1.A)

Project Name	Glade Run Lake Conservation
Project Location	Middlesex Township, PA

Carbon Quantification Summary		**Protocol Section**	**Supplemental Information/Notes**
43.123	Total Project Area Acres		include project area for all parcels enrolled in carbon project
B2 Maple Beech Birch	US Forest Service General Technical Report NE-343 - Table Number	11.1.A	based on the GTR regions map and primary forest type
35	Stand age (years)	11.1.A	determine using aerial photos
42.7	Biomass tC/ac	11.1.A	use appropriate GTR table and stand age, use bottom half of table, find years on the left and use 'total nonsoil' number
156.6	Biomass tCO2e/ac	11.1.A	
80.2%	Percent cover	11.1.A	include i-Tree Canopy file containing coordinates of evaluated points
5,415	Project Stock, tCO2e	11.1.A	
4,332	Accounting Stock, tCO2e	11.1.A	
90%	Fraction at risk of tree removal	11.2	Based on zoning - see 11.2 in preservation protocol
3,899	Avoided Biomass Emissions, tCO2e	11.2	
20%	Avoided impervious surface, percent	11.3	Based on zoning - see 11.3 in preservation protocol
8.6246	Avoided impervious surface, acres	11.3	
1,035	Avoided Soil Carbon Emissions, tCO2e	11.3	
18.3%	Displacement	11.4	Fraction of avoided development that cannot be served by development or re-development of existing non-treed properties within the urban area
713	Displaced Biomass Emissions, tCO2e	11.4	
314	Displaced Soil Emissions	11.4	Assumes that redevelopment causes increase in impervious surface on reveveloped parcels
3,185	Credits from Avoided Biomass Emissions, tCO2e		
721	Credits from Avoided Soil Emissions, tCO2e		
3,907	Total Credits attributed to the project, tCO2e		
391	Registry Reversal Pool Account (10%), tCO2e		
3,516	**Total credits issued to the project, tCO2e**		
82	**Total credits issued to the project, tCO2e/acre**		

Year	Credits Issued This Year	Cumulative Credits Issued	Buffer Credits Issued
1	3516	3516	391
2	0	3516	0
3	0	3516	0
4	0	3516	0
5	0	3516	0

Fraction at Risk & Impervious Surface Worksheet - Residential Zoning

Fraction at Risk of Tree Removal		Supplemental Information/Notes
Estimated Clearing Calculation (11.2.B.ii)		
43.123	Project Area (acres)	
1.000	Minimum lot size (acres/unit)	Check the local zoning code
43.00	Max potential dwelling units	
86.00	Clearing estimated at 2 acres/unit	
-4.29	Clearing estimated at 10% of remaining area	
81.7	Total potentially cleared area	
189.49%	Fraction at risk of tree removal	
Since Fraction At Risk was calculated at greater than 90%, 90% was used (per 11.2.B)		

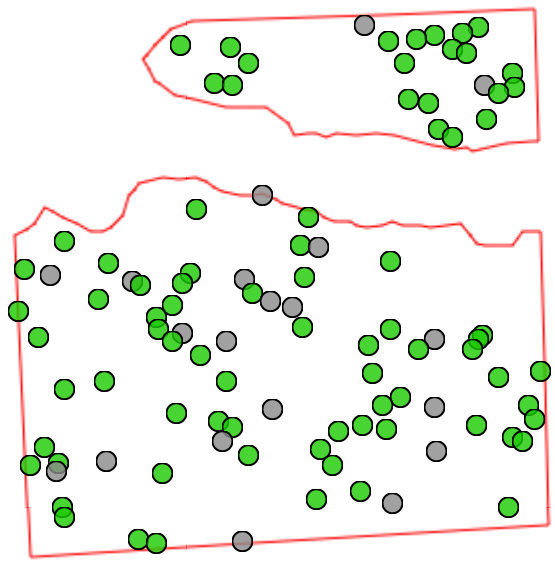
Impervious Surface		
The Zoning Code specifies maximum lot coverage		
20%	Avoided impervious surface (maximum lot coverage)	Check the local zoning code

iTree Canopy Report

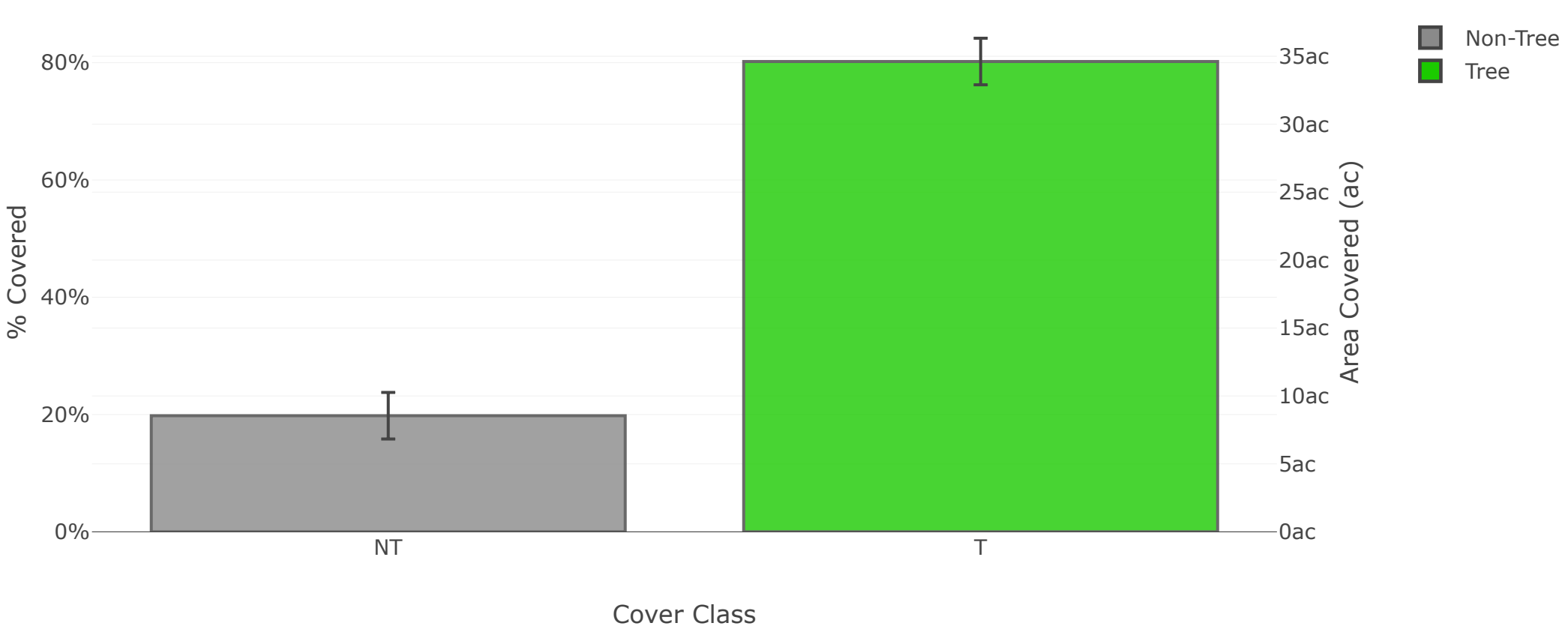
i-Tree Canopy

Cover Assessment and Tree Benefits Report

Estimated using random sampling statistics on 2/22/2024



Land Cover



Abbr.	Cover Class	Description	Points	% Cover ± SE	Area (ac) ± SE
NT	Non-Tree	All other surfaces	20	19.80 ± 3.97	8.55 ± 1.71
T	Tree	Tree, non-shrub	81	80.20 ± 3.97	34.62 ± 1.71
Total			**101**	**100.00**	**43.17**

Tree Benefit Estimates: Carbon (English units)

Description	Carbon (T)	±SE	CO_2 Equiv. (T)	±SE	Value (USD)	±SE
Sequestered annually in trees	37.68	±1.86	138.17	±6.83	$6,427	±318
Stored in trees (Note: this benefit is not an annual rate)	1,186.84	±58.68	4,351.75	±215.17	$202,416	±10,008

Currency is in USD and rounded. Standard errors of removal and benefit amounts are based on standard errors of sampled and classified points. Amount sequestered is based on 1.088 T of Carbon, or 3.991 T of CO_2, per ac/yr and rounded. Amount stored is based on 34.281 T of Carbon, or 125.697 T of CO_2, per ac and rounded. Value (USD) is based on $170.55/T of Carbon, or $46.51/T of CO_2 and rounded. (English units: T = tons (2,000 pounds), ac = acres)

Tree Benefit Estimates: Air Pollution (English units)

Abbr.	Description	Amount (lb)	±SE	Value (USD)	±SE
CO	Carbon Monoxide removed annually	35.27	±1.74	$2	±0
NO2	Nitrogen Dioxide removed annually	163.05	±8.06	$4	±0
O3	Ozone removed annually	1,278.09	±63.19	$188	±9
SO2	Sulfur Dioxide removed annually	110.75	±5.48	$1	±0
PM2.5	Particulate Matter less than 2.5 microns removed annually	79.85	±3.95	$493	±24
PM10*	Particulate Matter greater than 2.5 microns and less than 10 microns removed annually	592.04	±29.27	$149	±7
Total		**2,259.05**	**±111.70**	**$837**	**±41**

Currency is in USD and rounded. Standard errors of removal and benefit amounts are based on standard errors of sampled and classified points. Air Pollution Estimates are based on these values in lb/ac/yr @ $/lb/yr and rounded:
CO 1.019 @ $0.05 | NO2 4.710 @ $0.03 | O3 36.917 @ $0.15 | SO2 3.199 @ $0.01 | PM2.5 2.306 @ $6.17 | PM10* 17.101 @ $0.25 (English units: lb = pounds, ac = acres)

Tree Benefit Estimates: Hydrological (English units)

Abbr.	Benefit	Amount (Kgal)	±SE	Value (USD)	±SE
AVRO	Avoided Runoff	56.70	±2.80	$507	±25
E	Evaporation	2,408.78	±119.10	N/A	N/A
I	Interception	2,424.69	±119.89	N/A	N/A
T	Transpiration	4,151.62	±205.27	N/A	N/A
PE	Potential Evaporation	19,797.13	±978.85	N/A	N/A
PET	Potential Evapotranspiration	13,956.58	±690.07	N/A	N/A

Currency is in USD and rounded. Standard errors of removal and benefit amounts are based on standard errors of sampled and classified points. Hydrological Estimates are based on these values in Kgal/ac/yr @ $/Kgal/yr and rounded:
AVRO 1.638 @ $8.94 | E 69.576 @ N/A | I 70.036 @ N/A | T 119.917 @ N/A | PE 571.828 @ N/A | PET 403.127 @ N/A (English units: Kgal = thousands of gallons, ac = acres)

About i-Tree Canopy

The concept and prototype of this program were developed by David J. Nowak, Jeffery T. Walton, and Eric J. Greenfield (USDA Forest Service). The current version of this program was developed and adapted to i-Tree by David Ellingsworth, Mike Binkley, and Scott Maco (The Davey Tree Expert Company)

Limitations of i-Tree Canopy

The accuracy of the analysis depends upon the ability of the user to correctly classify each point into its correct class. As the number of points increase, the precision of the estimate will increase as the standard error of the estimate will decrease. If too few points are classified, the standard error will be too high to have any real certainty of the estimate.

Id	Cover Clas	Descriptio	Latitude	Longitude
1	Tree	Tree, non-s	40.71323	-79.8866
2	Tree	Tree, non-s	40.71352	-79.8842
3	Tree	Tree, non-s	40.71068	-79.8848
4	Tree	Tree, non-s	40.71082	-79.888
5	Tree	Tree, non-s	40.71196	-79.8884
6	Non-Tree	All other su	40.71059	-79.8862
7	Tree	Tree, non-s	40.71144	-79.8872
8	Tree	Tree, non-s	40.71015	-79.8885
9	Tree	Tree, non-s	40.71179	-79.8849
10	Tree	Tree, non-s	40.71294	-79.8839
11	Tree	Tree, non-s	40.71028	-79.8886
12	Tree	Tree, non-s	40.7105	-79.8867
13	Tree	Tree, non-s	40.71014	-79.8855
14	Tree	Tree, non-s	40.71045	-79.8866
15	Tree	Tree, non-s	40.71316	-79.8837
16	Non-Tree	All other su	40.71163	-79.8877
17	Non-Tree	All other su	40.71017	-79.8879
18	Tree	Tree, non-s	40.70979	-79.8836
19	Non-Tree	All other su	40.71142	-79.886
20	Tree	Tree, non-s	40.71114	-79.8872
21	Tree	Tree, non-s	40.71062	-79.8834
22	Tree	Tree, non-s	40.71111	-79.8851
23	Tree	Tree, non-s	40.71332	-79.8836
24	Tree	Tree, non-s	40.71369	-79.884
25	Tree	Tree, non-s	40.71193	-79.8859
26	Tree	Tree, non-s	40.71221	-79.887
27	Tree	Tree, non-s	40.71055	-79.8872
28	Tree	Tree, non-s	40.71026	-79.8856
29	Tree	Tree, non-s	40.71161	-79.8871
30	Tree	Tree, non-s	40.71046	-79.8852
31	Tree	Tree, non-s	40.71088	-79.8851
32	Tree	Tree, non-s	40.7134	-79.8847
33	Tree	Tree, non-s	40.71169	-79.887
34	Tree	Tree, non-s	40.7134	-79.8864
35	Non-Tree	All other su	40.71322	-79.8839
36	Non-Tree	All other su	40.71191	-79.8857
37	Tree	Tree, non-s	40.71286	-79.8844
38	Tree	Tree, non-s	40.71134	-79.8874
39	Tree	Tree, non-s	40.71148	-79.888
40	Tree	Tree, non-s	40.70979	-79.8884
41	Tree	Tree, non-s	40.71139	-79.8889
42	Non-Tree	All other su	40.71024	-79.8844
43	Tree	Tree, non-s	40.70992	-79.8852

44	Tree	Tree, non-s	40.71037	-79.8836
45	Tree	Tree, non-s	40.70986	-79.8857
46	Tree	Tree, non-s	40.71215	-79.8858
47	Tree	Tree, non-s	40.71062	-79.885
48	Non-Tree	All other su	40.71147	-79.8862
49	Tree	Tree, non-s	40.71124	-79.8874
50	Non-Tree	All other su	40.71061	-79.8844
51	Tree	Tree, non-s	40.71086	-79.8837
52	Tree	Tree, non-s	40.71103	-79.8869
53	Non-Tree	All other su	40.70983	-79.8849
54	Tree	Tree, non-s	40.71075	-79.8884
55	Tree	Tree, non-s	40.71311	-79.8847
56	Tree	Tree, non-s	40.71022	-79.8864
57	Tree	Tree, non-s	40.71349	-79.8841
58	Tree	Tree, non-s	40.71108	-79.884
59	Tree	Tree, non-s	40.71126	-79.8858
60	Tree	Tree, non-s	40.71355	-79.8872
61	Tree	Tree, non-s	40.71117	-79.8887
62	Tree	Tree, non-s	40.71353	-79.8866
63	Tree	Tree, non-s	40.71046	-79.884
64	Tree	Tree, non-s	40.71041	-79.8855
65	Tree	Tree, non-s	40.7112	-79.8839
66	Tree	Tree, non-s	40.71034	-79.8835
67	Tree	Tree, non-s	40.71173	-79.8888
68	Tree	Tree, non-s	40.70971	-79.8884
69	Tree	Tree, non-s	40.71365	-79.8841
70	Tree	Tree, non-s	40.71153	-79.8864
71	Tree	Tree, non-s	40.71324	-79.8868
72	Non-Tree	All other su	40.71165	-79.8865
73	Tree	Tree, non-s	40.71363	-79.8844
74	Tree	Tree, non-s	40.71116	-79.884
75	Non-Tree	All other su	40.71233	-79.8863
76	Non-Tree	All other su	40.71116	-79.8844
77	Tree	Tree, non-s	40.71013	-79.8888
78	Tree	Tree, non-s	40.71081	-79.8867
79	Non-Tree	All other su	40.71121	-79.8871
80	Tree	Tree, non-s	40.7128	-79.8842
81	Non-Tree	All other su	40.71009	-79.8885
82	Non-Tree	All other su	40.71168	-79.8885
83	Tree	Tree, non-s	40.71124	-79.8849
84	Tree	Tree, non-s	40.7136	-79.8846
85	Tree	Tree, non-s	40.71108	-79.8846
86	Non-Tree	All other su	40.71114	-79.8867
87	Non-Tree	All other su	40.71034	-79.8867

88	Tree	Tree, non-s	40.71358	-79.8849
89	Tree	Tree, non-s	40.7095	-79.8874
90	Tree	Tree, non-s	40.71167	-79.8858
91	Tree	Tree, non-s	40.70953	-79.8876
92	Non-Tree	All other su	40.70951	-79.8865
93	Tree	Tree, non-s	40.7132	-79.8836
94	Tree	Tree, non-s	40.71007	-79.8873
95	Tree	Tree, non-s	40.71308	-79.8845
96	Tree	Tree, non-s	40.71051	-79.8833
97	Tree	Tree, non-s	40.71089	-79.8833
98	Non-Tree	All other su	40.71372	-79.8852
99	Tree	Tree, non-s	40.71177	-79.8879
100	Tree	Tree, non-s	40.7116	-79.8876
101	Tree	Tree, non-s	40.71043	-79.8849

Forest Composition Report and Site Photos

Glade Run Conservation Area
Forest Composition Report

Instructions – Complete the report by providing a thorough description of the forest as outlined below. Include photos (at least four to five for each forest stand) as Exhibit A, a map with points where the photos were taken as Exhibit B, a map showing where the forest stands are located as Exhibit C, and supporting documentation for stand age as Exhibit D.

I am Alyson Fearon, the Vice President of Land Conservation for Allegheny Land Trust and, in collaboration with forester Patrick Hulle, created this Forest Composition Report for the Glade Run Conservation Area (Project 048), on February 12, 2024.

- The GIS mapping for this report was completed by Alyson Fearon on 7/1/2023. Alyson is the Vice President of Land Conservation at Allegheny Land Trust and manages pre-acquisition and carbon GIS data for the organization. Alyson also selects new carbon projects and completes all new project documentation for certification under the City Forest Credits Preservation protocols. To date, she has completed two urban forest carbon preservation projects under the City Forest Credits Preservation Protocol. Alyson has a B.S. in Environmental Science with a concentration in Sustainability and a Master of Sustainability and Master of Business Administration from Chatham University. She is also a certified Sustainability Excellence Associate (SEA), a certified Climate Change Professional (CC-P), and works as an Adjunct Instructor for Chatham University.
- Patrick Hulle, a contractor for Allegheny Land Trust, provided the Forest Composition information and the GIS data from his site visit to the Project Areaon 12/13/2023. Patrick Hulle is a Certified Forester through the Society of American Foresters and has been in consulting forestry for 10 years. Patrick has an AAS in Forest Technology from the SUNY College of Environmental Science and Forestry Ranger School (SUNY-ESF Ranger School), and BS in Forest Resources Management from SUNY-ESF main campus.

The description below is based upon 2 site visit(s) to the property on 7/11/2023 and 12/13/2023. ALT Employee Alyson Fearon visited the site to verify the conditions as seen in high resolution satellite imagery and attempted to determine how to stratify the Project Area into major stands within the site. Forester Patrick Hulle visited the site to be able to complete the characterization, species mix and stem counts in the various stands on the site. Images and other data from the site visit(s) are included as Exhibit A to this document. The stand characteristics and forest history and health sections are informed by forester Patrick Hulle's assessment of the forest. Basal area factor (BAF) random point sampling was conducted on nine plots throughout the 43-acre Project Area to assess stand density and variability, species composition, and forest type. The plot center was established with a GPS point, and data was collected using a 10 basal area factor prism. Results are summarized in Table 2 and the forest walk map is depicted in Exhibit B.

Stand Description and Cover Type:
The 43.123-acre Project Area forest is a standard "Red Maple" cover type that is standard to Southwestern Pennsylvania. Common species associated with red maple in this stand include black cherry and a variety of oak species. Prior to the emerald ash borer, white ash was also a major

component to this stand. The most common soil types in the areas of interest are Gilpin silt loam varieties.

Although the trees per acre (TPA) measurement determined via BAF sampling is less than 300 TPA, the basal area (BA) – a measure of tree density in a specific area – was comparable to that for Maple Beech Birch forests in Pennsylvania of comparable age sampled in the US Forest Service Forest Inventory Analysis database. See Exhibit E for data on basal area from the comparable FIA plots.

The species composition is outlined in Table 1 and the stand variability in Table 2.

Table 1. Species Composition

Tree species	**Percentage**
Black Cherry	33%
Red Maple	29%
Mixed Oak/Red Oak	26%
Other Hardwood	12%
Total	**100%**

Table 2. Stand Characteristics, based on 10 factor prism BAF sampling (nine plots)

Trees per acre (TPA)	**275 (count includes only living trees greater than 3" diameter)**
Avg Diameter	**13"**
Basal Area (BA)	**102**
Stand Variability	**Moderate variability diameter sizes throughout property, but overall similar enough to be considered 1 stand**

Stand Age and History:

This stand has reverted to forest from farm fields in the 1930s to a fully functional forest. Succession from agriculture to forest can be seen easily in the historical photos from west to east on the property. All areas of the carbon area were fully occupied by the end of the 1980s if not earlier. Since full occupation, the major disturbance to this property has been the Emerald Ash Borer which opened up the canopy and allowed invasive species to take hold.

There does not appear to be much evidence in the way of logging in the recent past. There is evidence that would suggest some of the ash trees were salvaged, likely for firewood, in the last 20 years, but large-scale logging operations are not obvious in that time frame. There are well established trails that might suggest logging or farming occurred more than 20 years ago.

Although the site could be broken into stands due to the regrowth pattern noted in the historical imagery, both ALT and the Forester felt it would not be necessary due to the similarly in composition and stand density observed across the site, the size of the certifiable area, and the minimal difference in age. The stand map is depicted in Exhibit C. The historical imagery shows that about 2/5 of the Project Area was canopied by 1967 (estimated age of 60 years old), and a further 2/5 of the Project Area was canopied by 1982 (estimated age of 45 years old), with the remainder of canopy closing out in the 1993 imagery (estimated age of 35 years old). To be conservative, an estimated age of 35 years old was used for the entire property. The historical imagery is provided as Exhibit D.

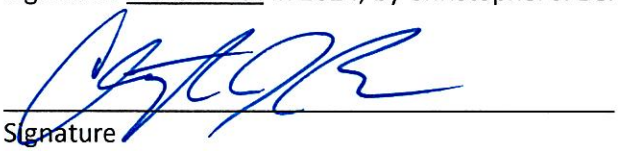
Forest Health:
As the stand ages it is obvious there is death and decay due to overcrowding. Many areas are afflicted by the emerald ash borer and have downed woody debris on the forest floor. A prior landowner may have tried to salvage some of these trees for firewood. T**here are no blatant forest health concerns to specific tree health of individual species.** Forest health concerns also include a variety of invasive species in the understory that could prevent future tree regeneration.

> Forest Health- Invasive Species: There are several invasive species located on this property with multi-flora rose being the dominant threat. Bush honeysuckle sp., Japanese barberry, Japanese stilt grass, Asian bittersweet, privet, and burning bush are all threats found on the property. Invasive species can be found in almost every area of this property.

Table 3. Forest composition breakdown (*include for each parcel or stand)*

Stand size (acres)	43.123
Stand age (years)	35
Forest Type	**Percentage**
Maple Beech Birch (GTR NE 343 Table B2)	100%

Signed on March 11th in 2024, by Christopher J. Beichner President & CEO, for Allegheny Land Trust.



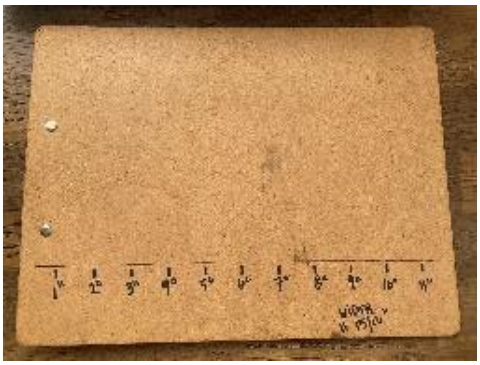
Signature

Christopher J. Beichner

412-741-2750

cbeichner@alleghenylandtrust.org

Exhibit A – Forest Photos and Data



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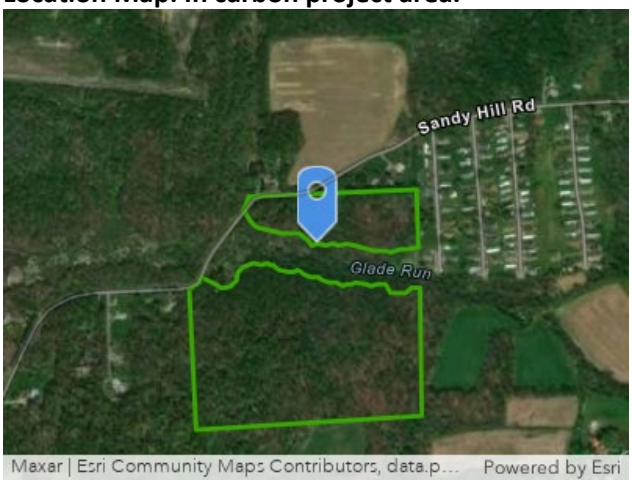
By who: AF
Location Map: In carbon project area.



Photos:

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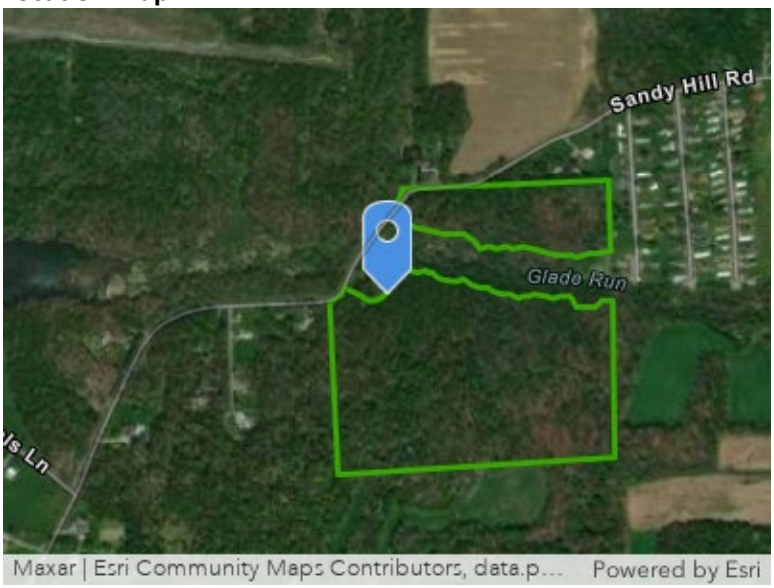

Photos:

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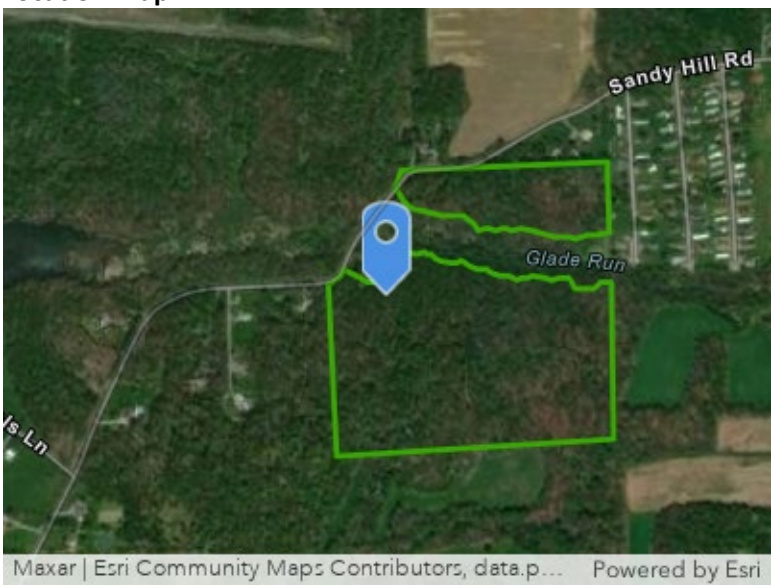
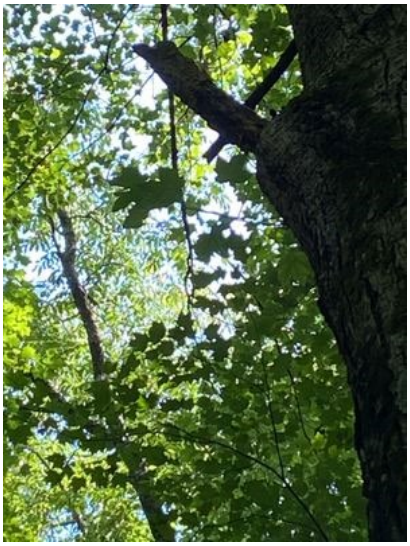
By who: AF
Location Map:



Photos:



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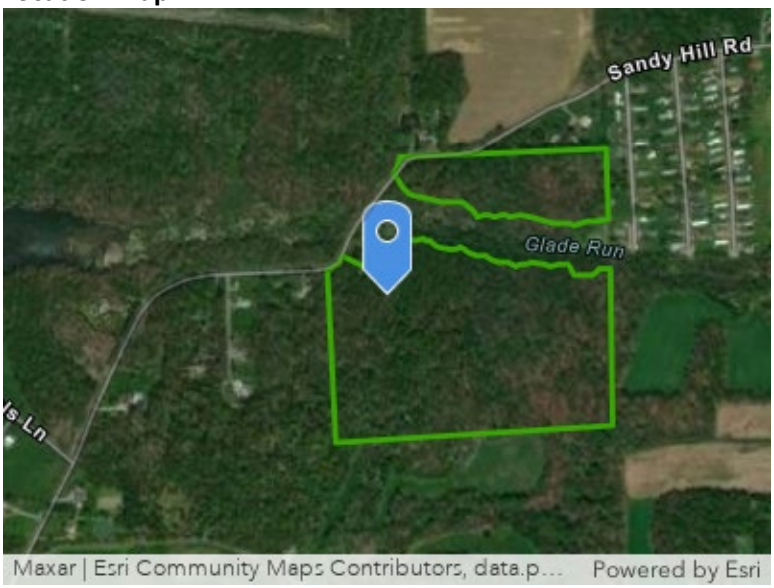
By who: AF
Location Map:



Photos:



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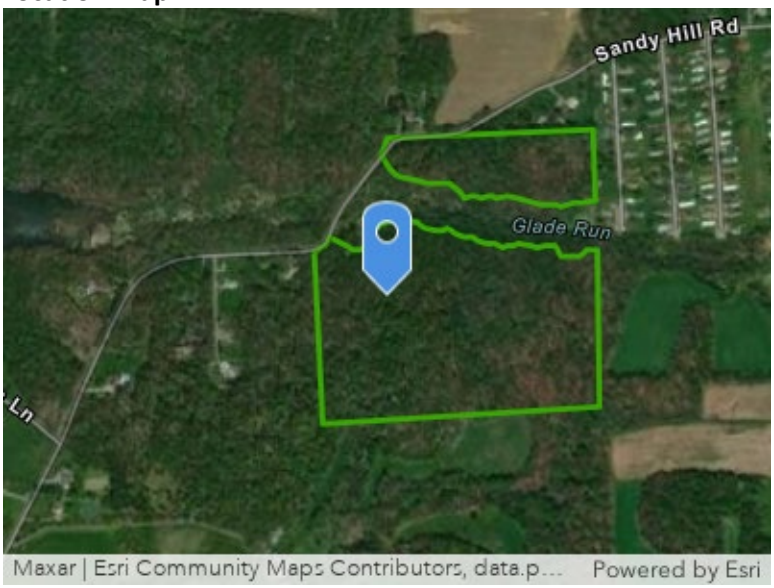
By who: AF
Location Map:



Photos:



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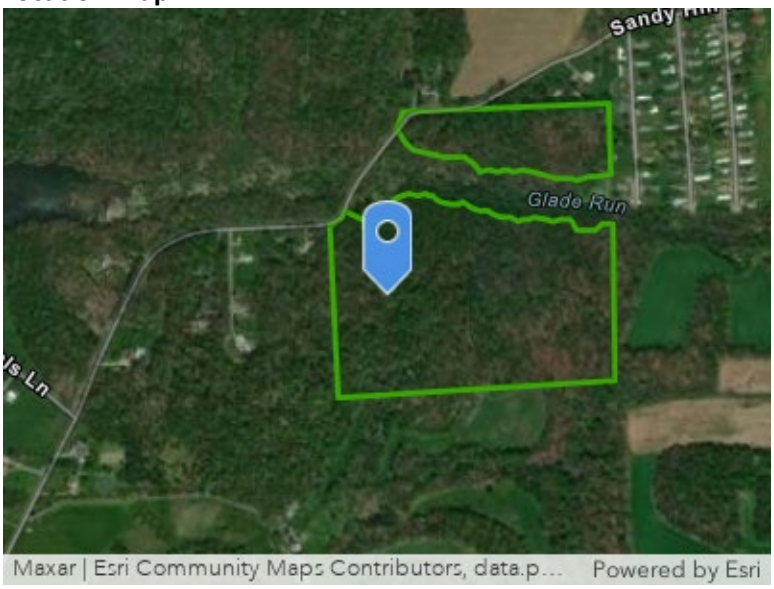

Photos:




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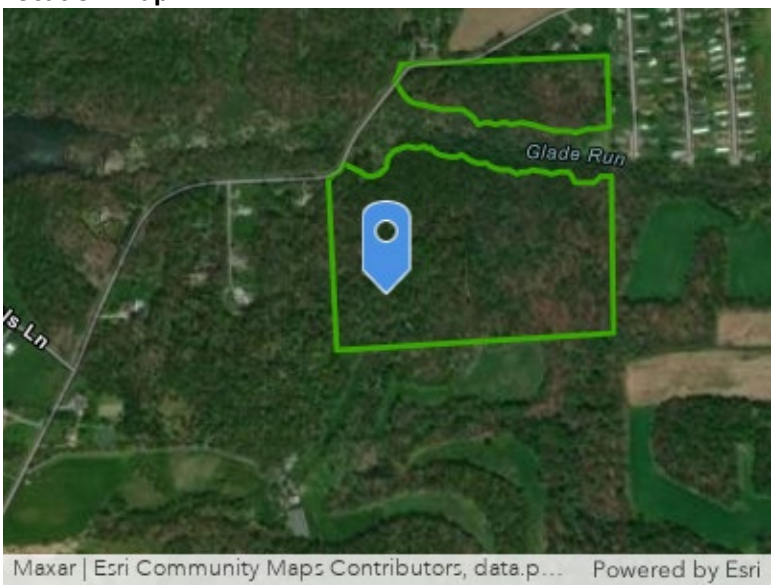

Photos:

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By who: AF
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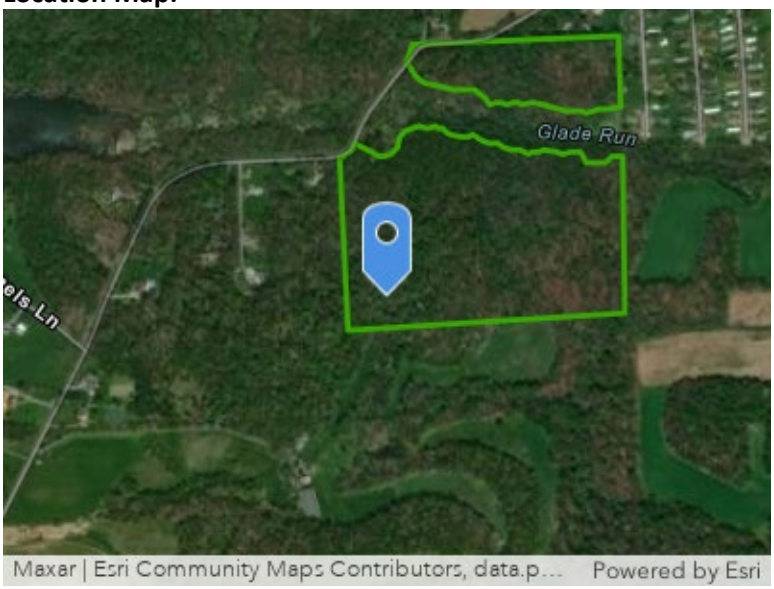

Photos:

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By who: AF
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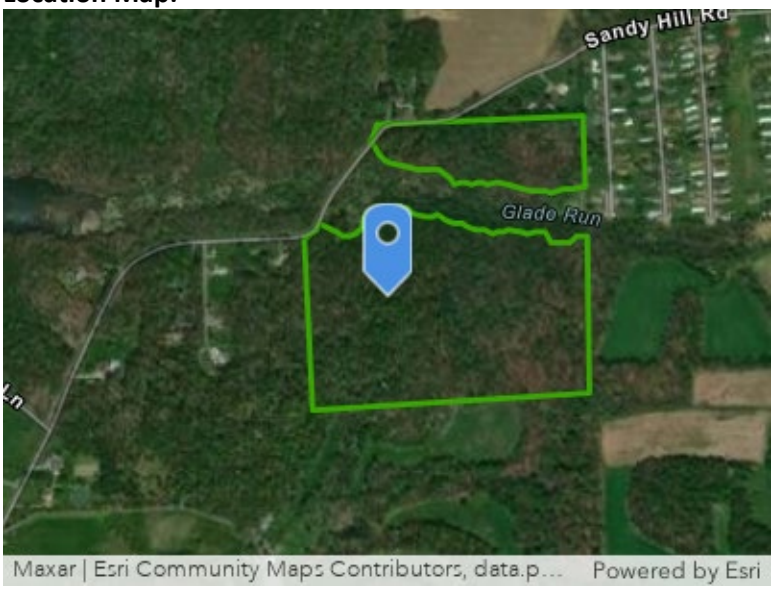

Photos:

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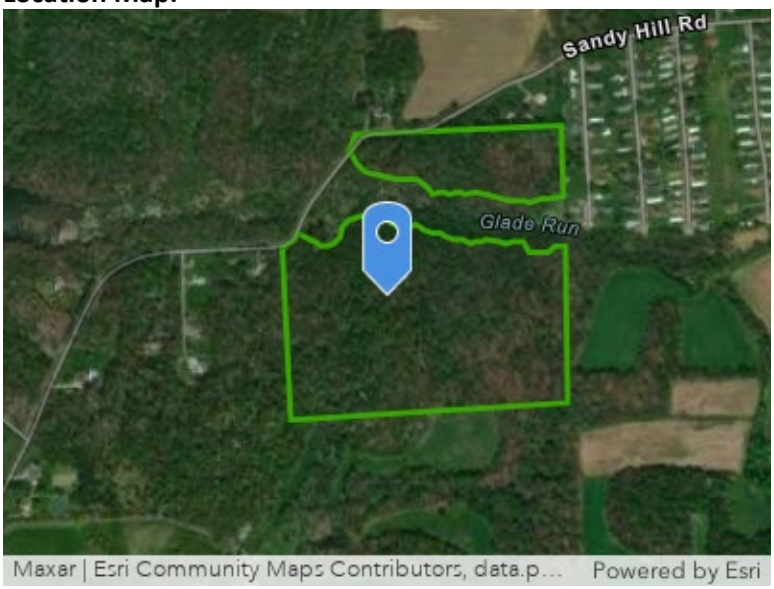

Photos:

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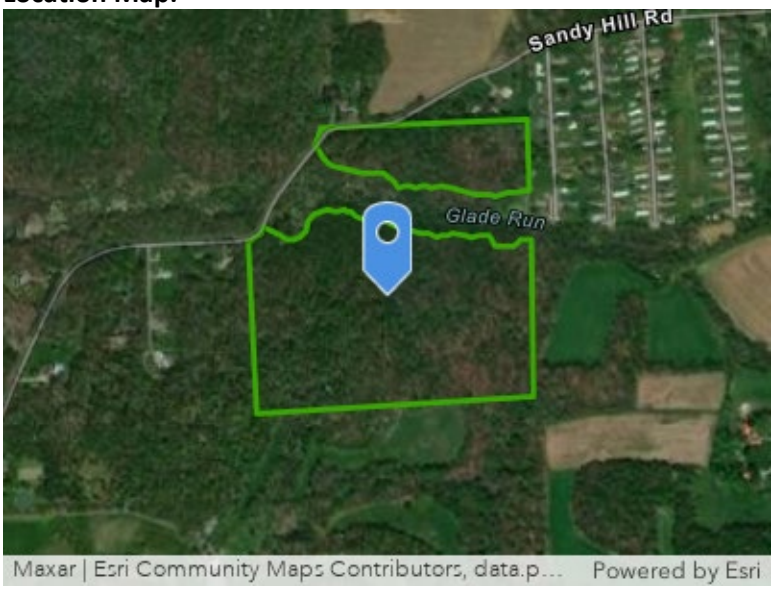

Field Notes: this is the thinner area on aerial
Photos:

Continues next page …






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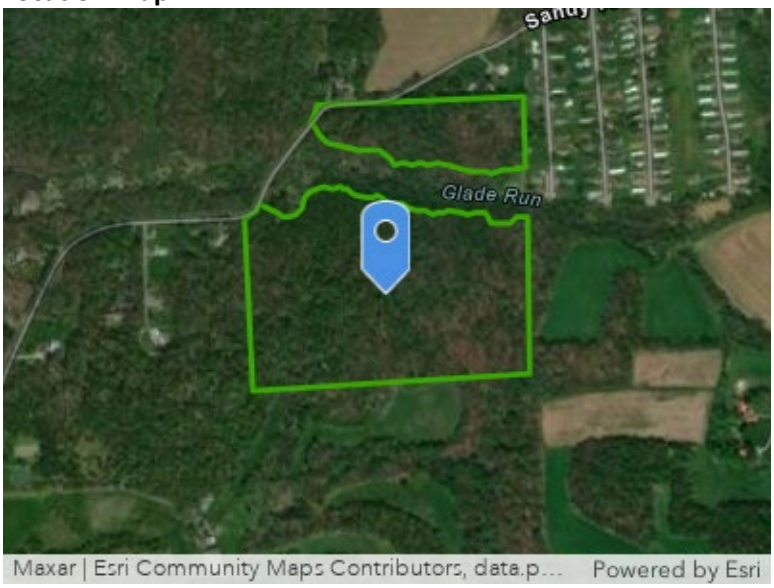

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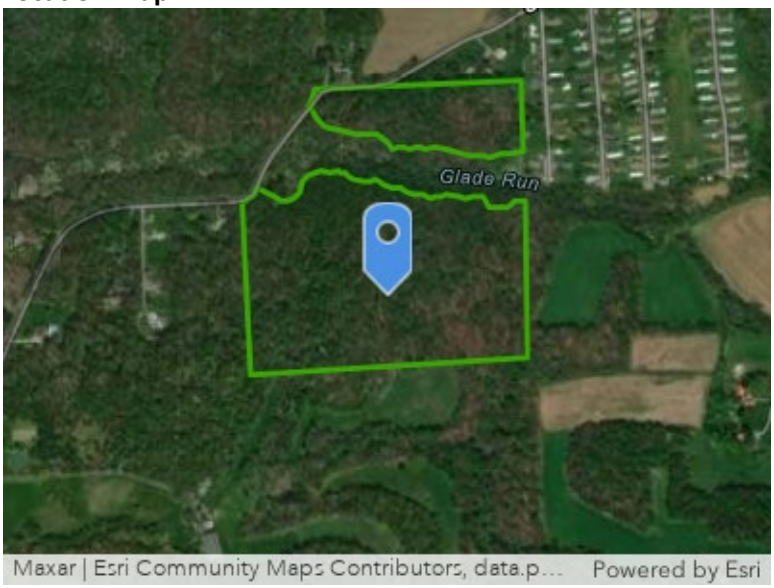

Photos:


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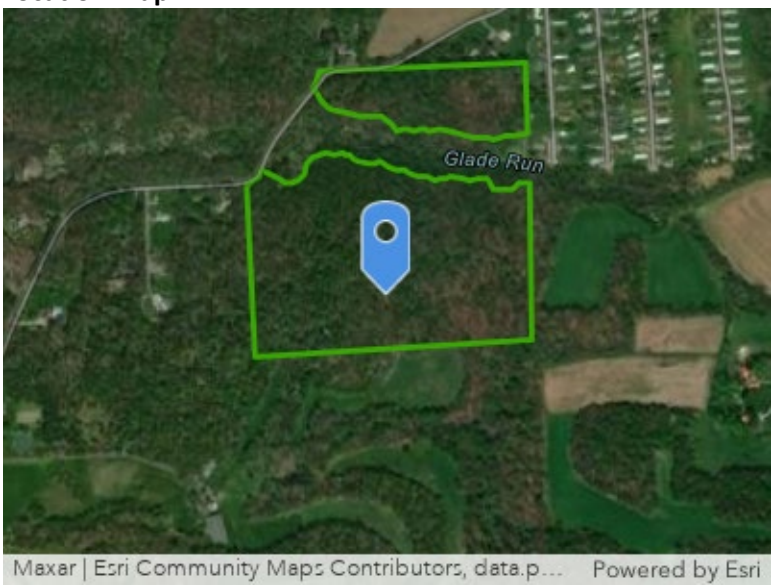
By who: AF
Location Map:



Photos:





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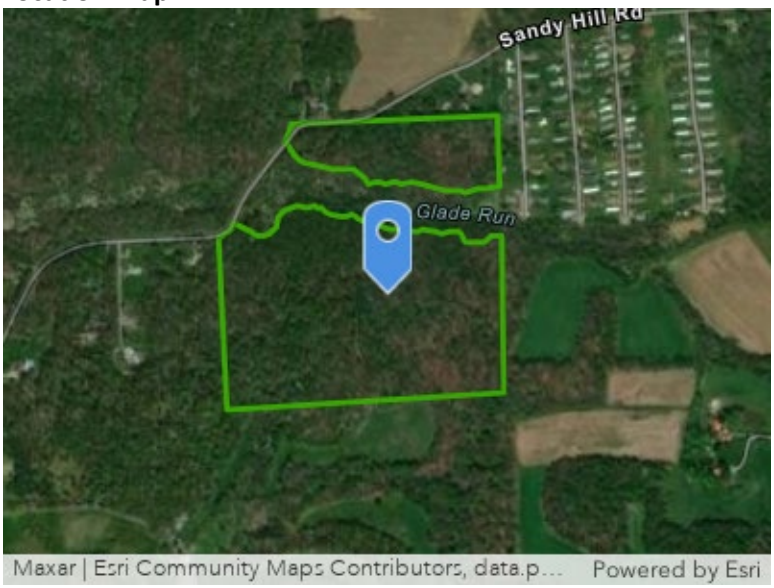

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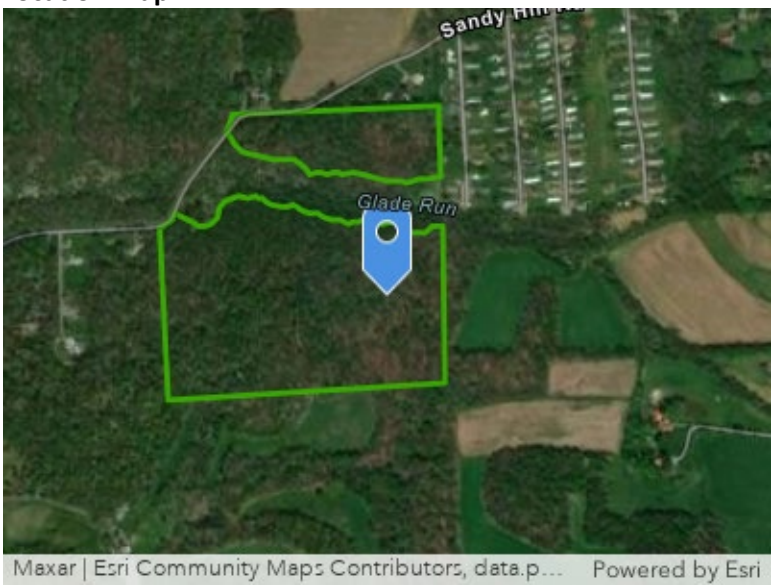


Photos:


...

Forester Patrick Hulle Photos
Photos were taken facing all four cardinal directions at each survey point location.
*NOTE: Plot 1 photos are not provided because this plot was outside of the Project Area. See Exhibit B Forest Walk map for location of Plot 1.

Plot 2

East

North

South

West

Plot 3

East

North

South

West

Plot 4

East

North

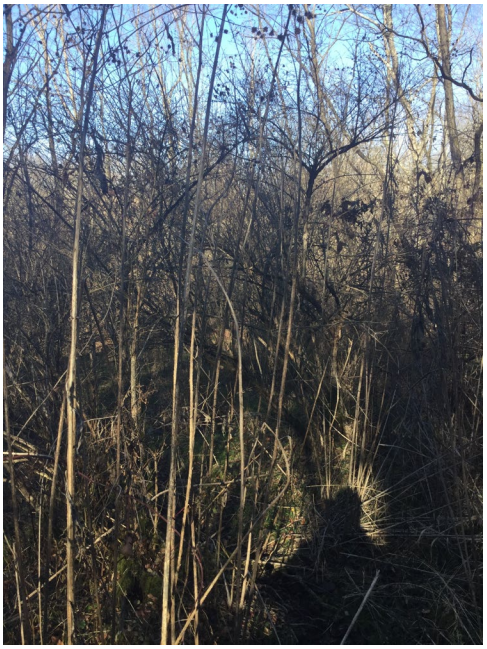
South

West

Plot 5

East

North



South

West

Plot 6

East

North

South

West

Plot 7

East

North

South

West

Plot 8

East

North

South

West

Plot 9

East

North

South

West

Plot 10

East

North

South

West

Exhibit B – Forest Walk Route Map

Legend

Carbon Area- 43.215 Acres

Patrick Hulle Site Visit

Site Visit Trail
(Note: this is drawn post-visit did not have a GPS tracker with me)

Survey Data Points

Alyson Fearon Site Visit

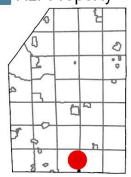
Site Visit Trail
(Note: this is drawn post-visit did not have a GPS tracker with me)

Survey Data Points

Survey Boundary-
Survey Area 52.884 Acres

Other Conserved Land

ALT Property



Middlesex Township,
Butler County,
Pennsylvania

0 65 130 260 390 520 Feet

ALLEGHENY LAND TRUST

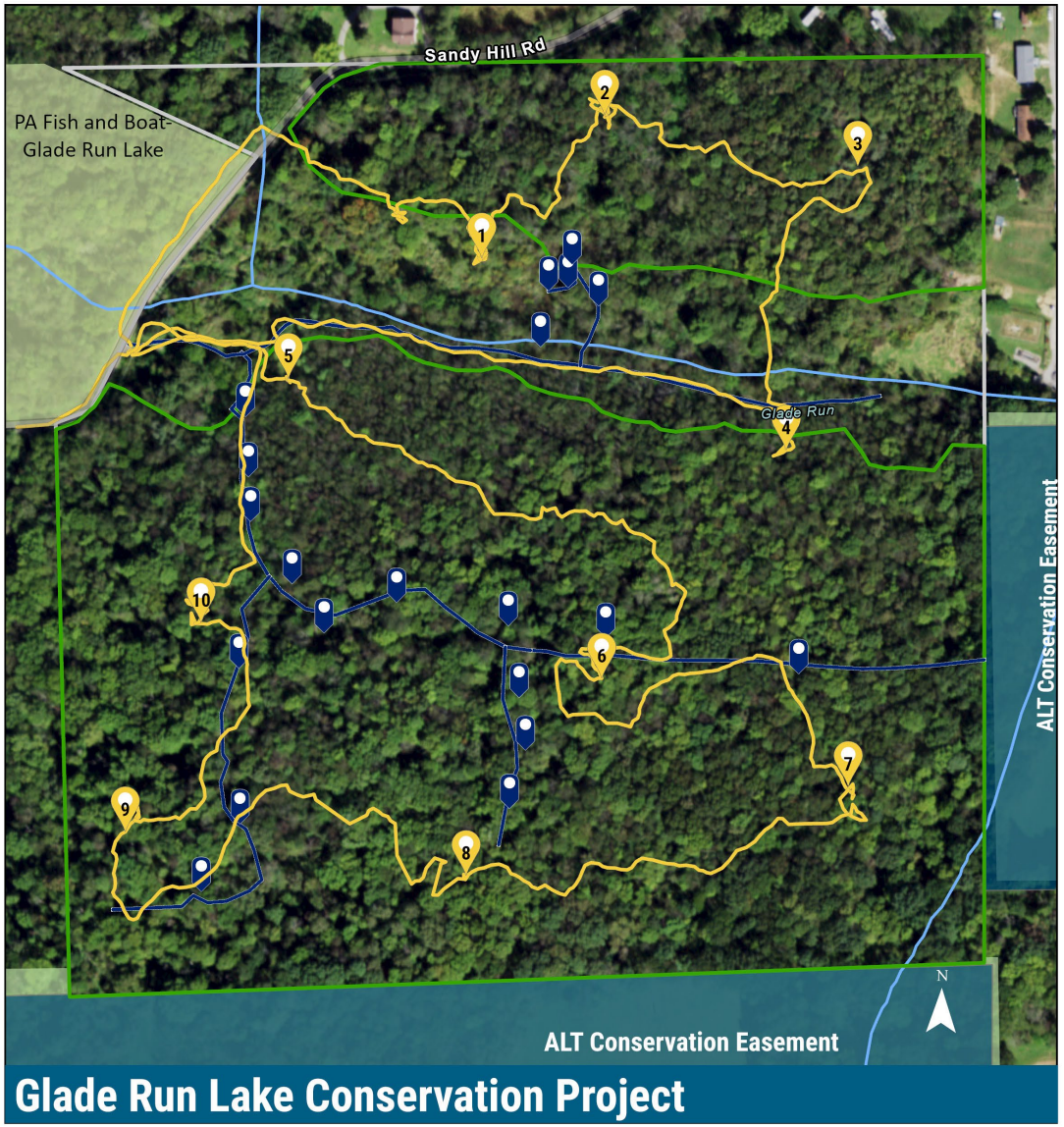


Exhibit C – Forest Stand Map

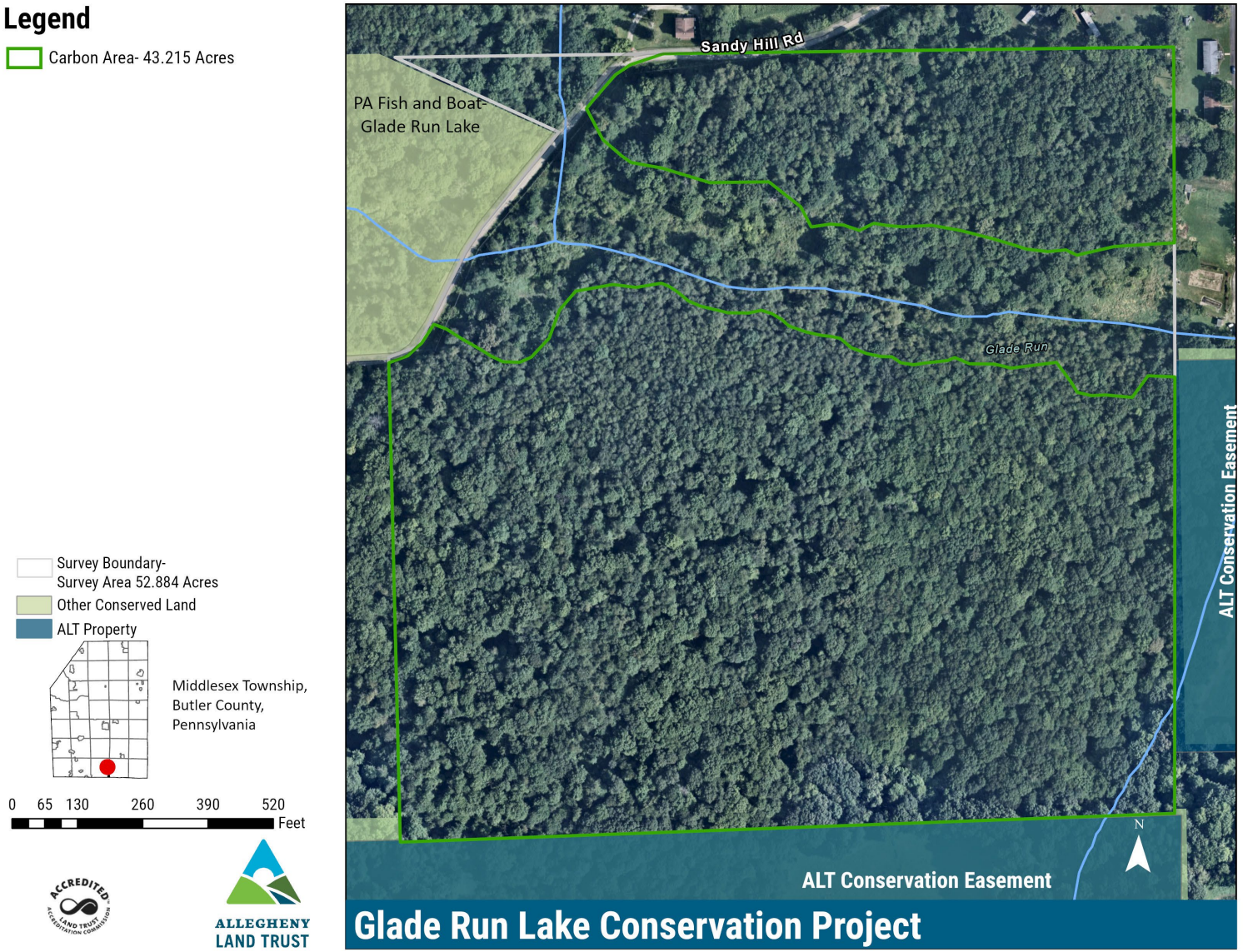
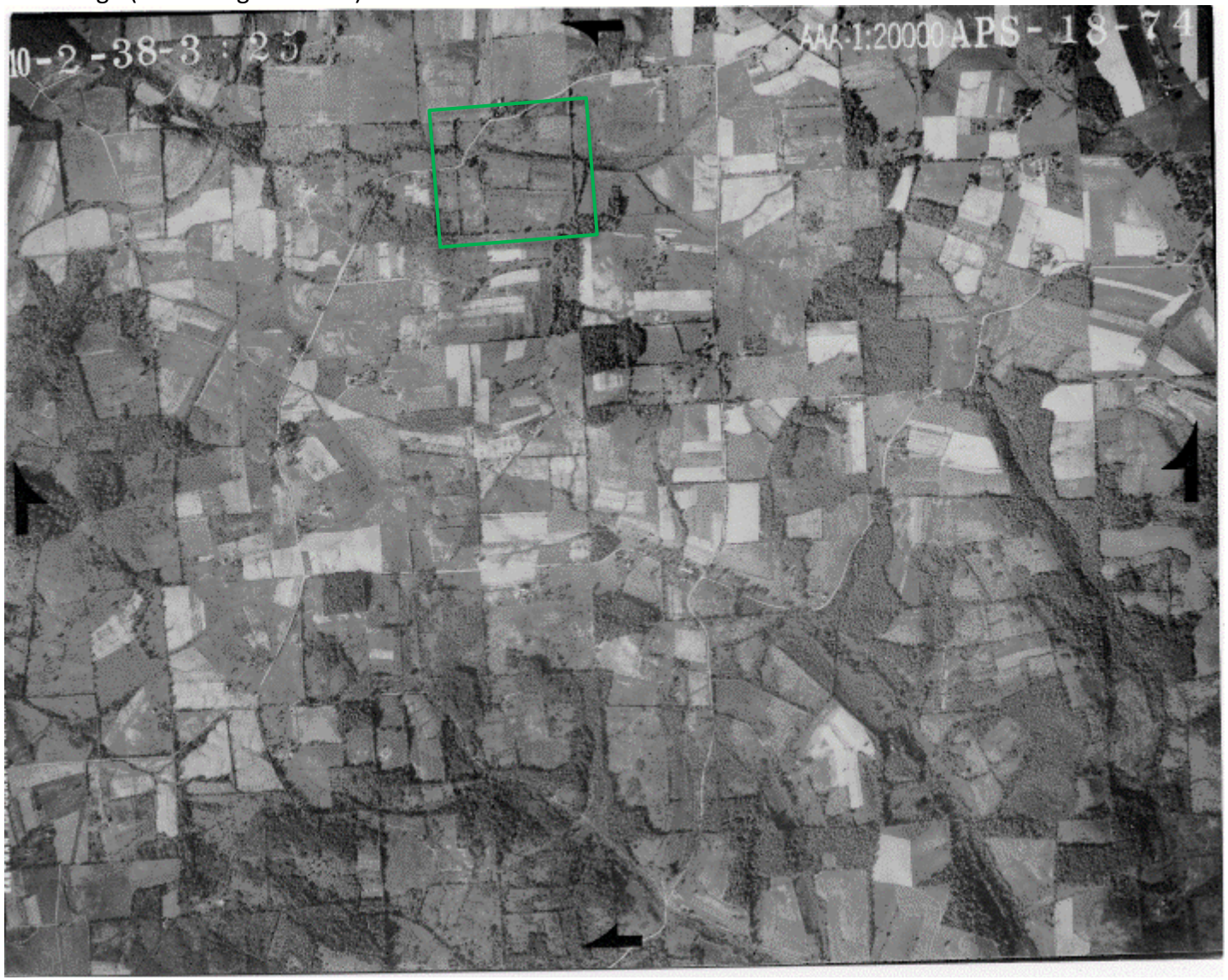


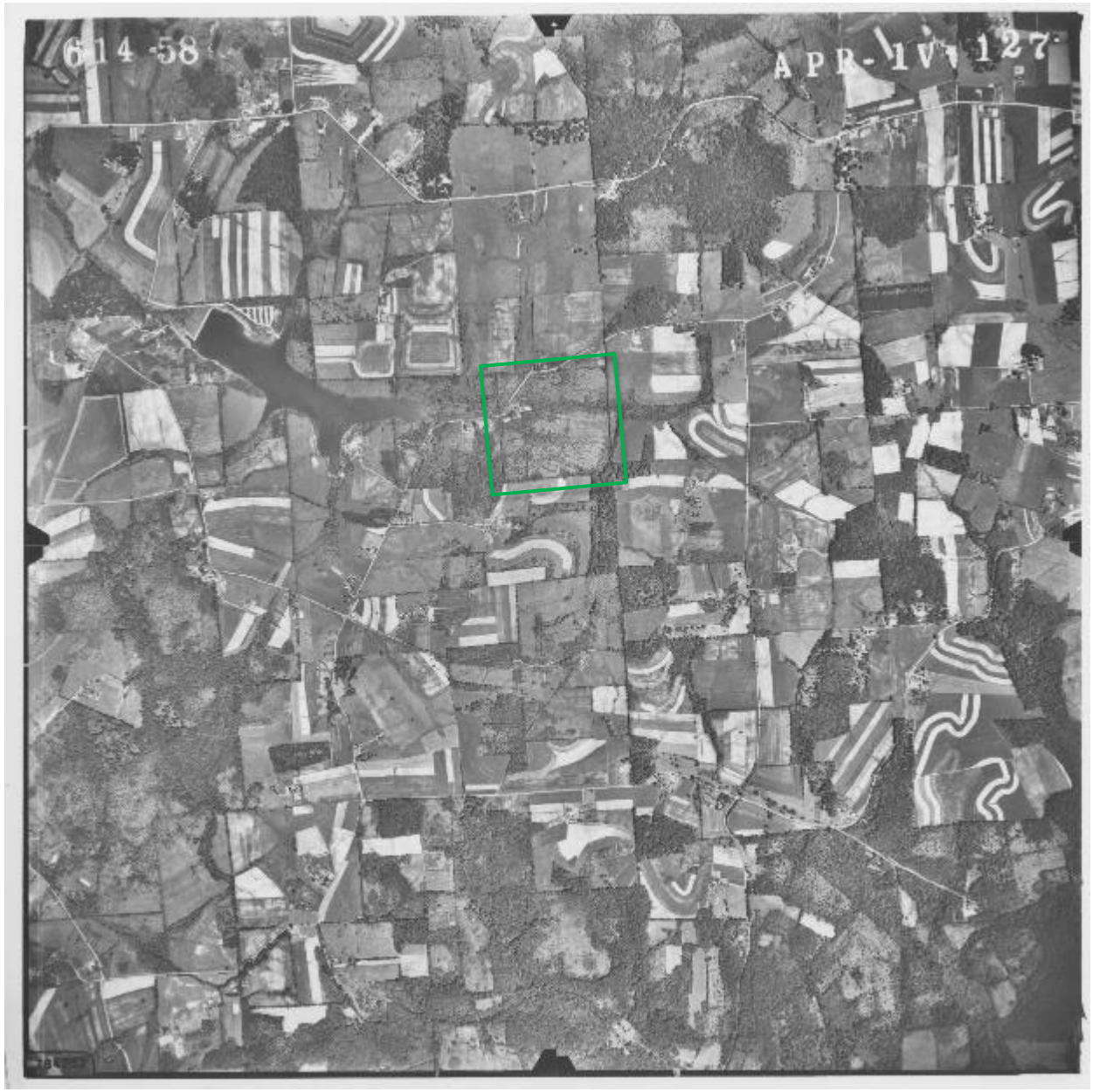
Exhibit D – Forest Age Supporting Documentation

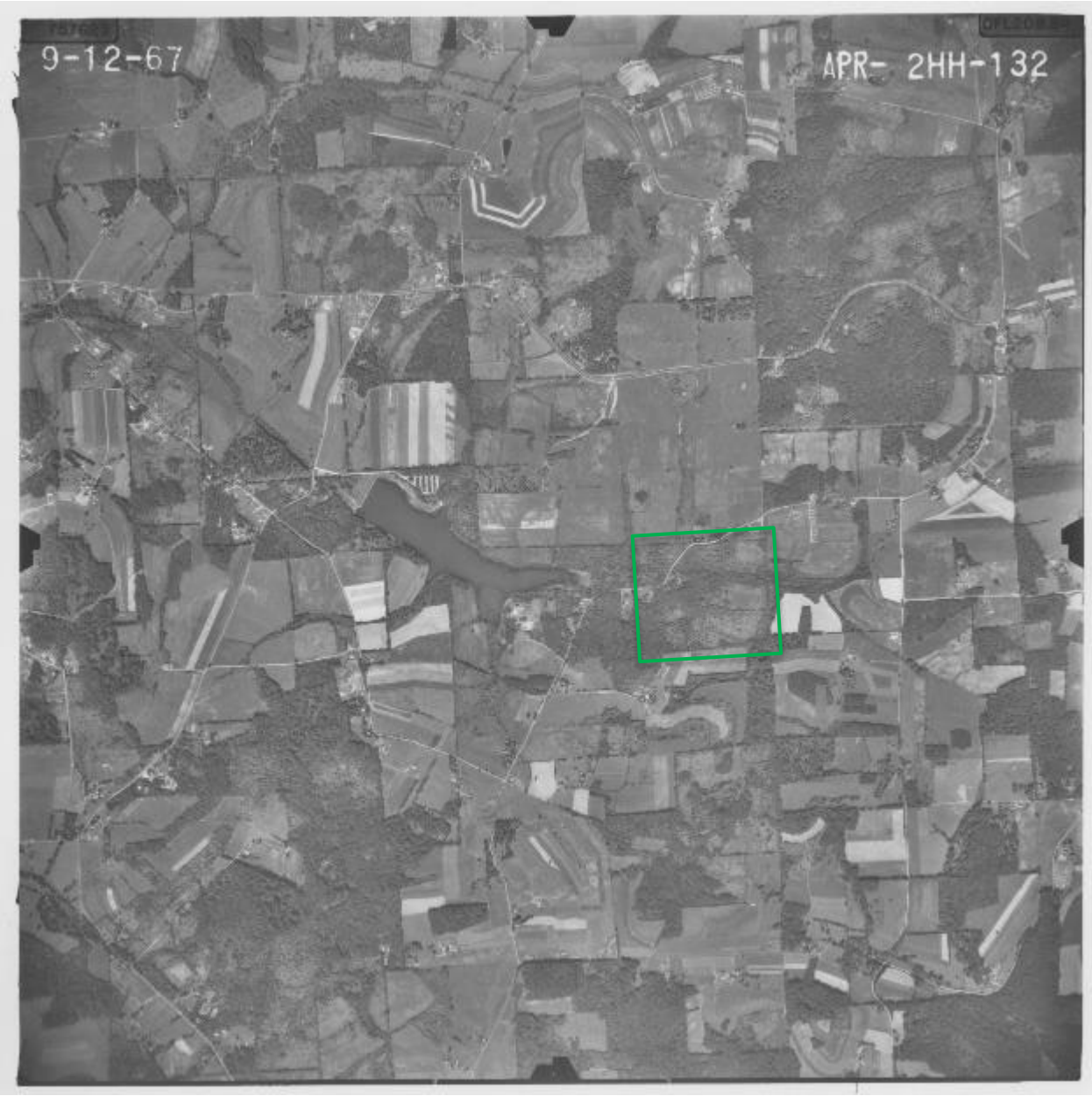
Forest Age (chronological order)

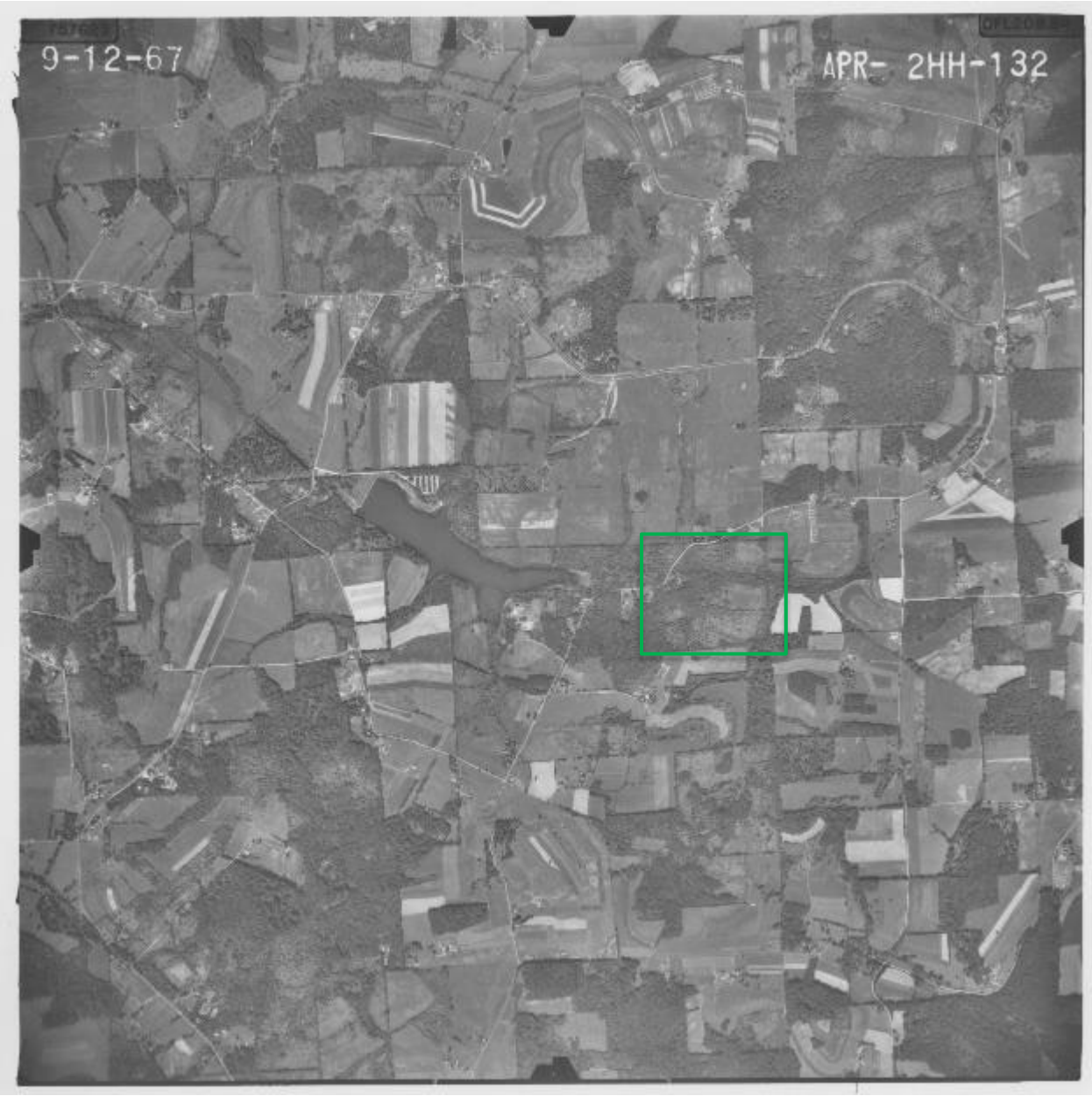



10-2-38
APR 17 24


OCT 16 1950
APR-2F-76


614 -58
APR-1V 127


9-12-67
APR- 2HH-132


9-12-67
APR- 2HH-132

1982 (Not fully georeferenced)

1993 (Georeferenced)

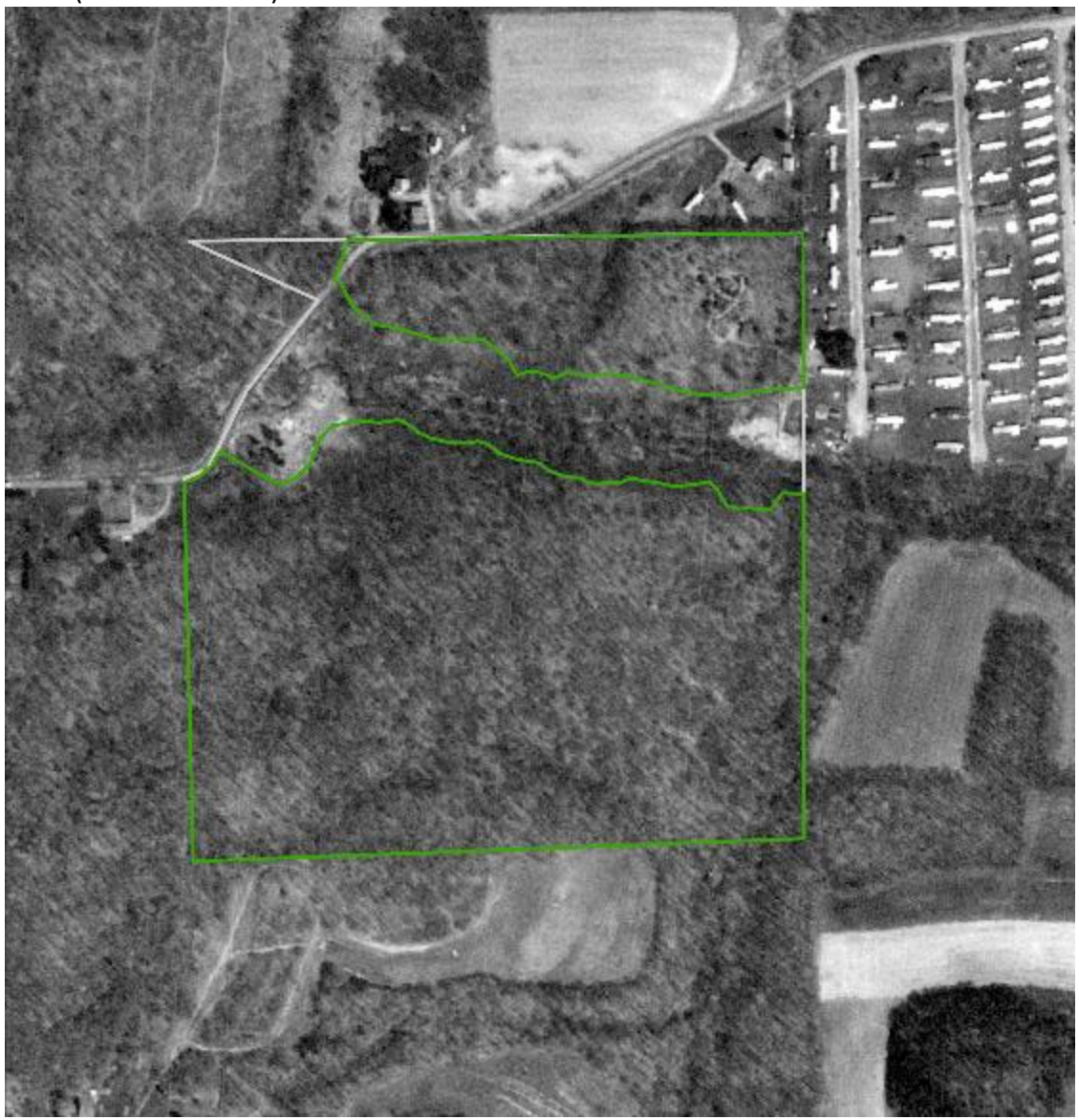


Exhibit E – Supporting Documentation for Comparable Basal Area

The US Forest Service EVALIDator tool allows users to produce population estimates of key forest metrics based on the current Forest Inventory Analysis database.

To understand the average basal area of maple beech birch forests of comparable age in Pennsylvania, the following parameters were entered into EVALIDator 2.1.0:

- Numerator: 1004 - Basal area of live trees (at least 1 inch dbh) in square feet, on forestland
- Denominator: 2- Area of forestland, in acres (Use FIA definition of forest land)
- Dataset: 422021N Pennsylvania 2015; 2016; 2017; 2018; 2019; 2020; 2021
- Page Variable: Forest Type Group
- Row variable: stand age 5 yr classes
- Filtering clause: None

The Basal area per acre (a measure of stand density) for the Project Area is comparable to that for similarly aged maple beech birch stands in Pennsylvania.

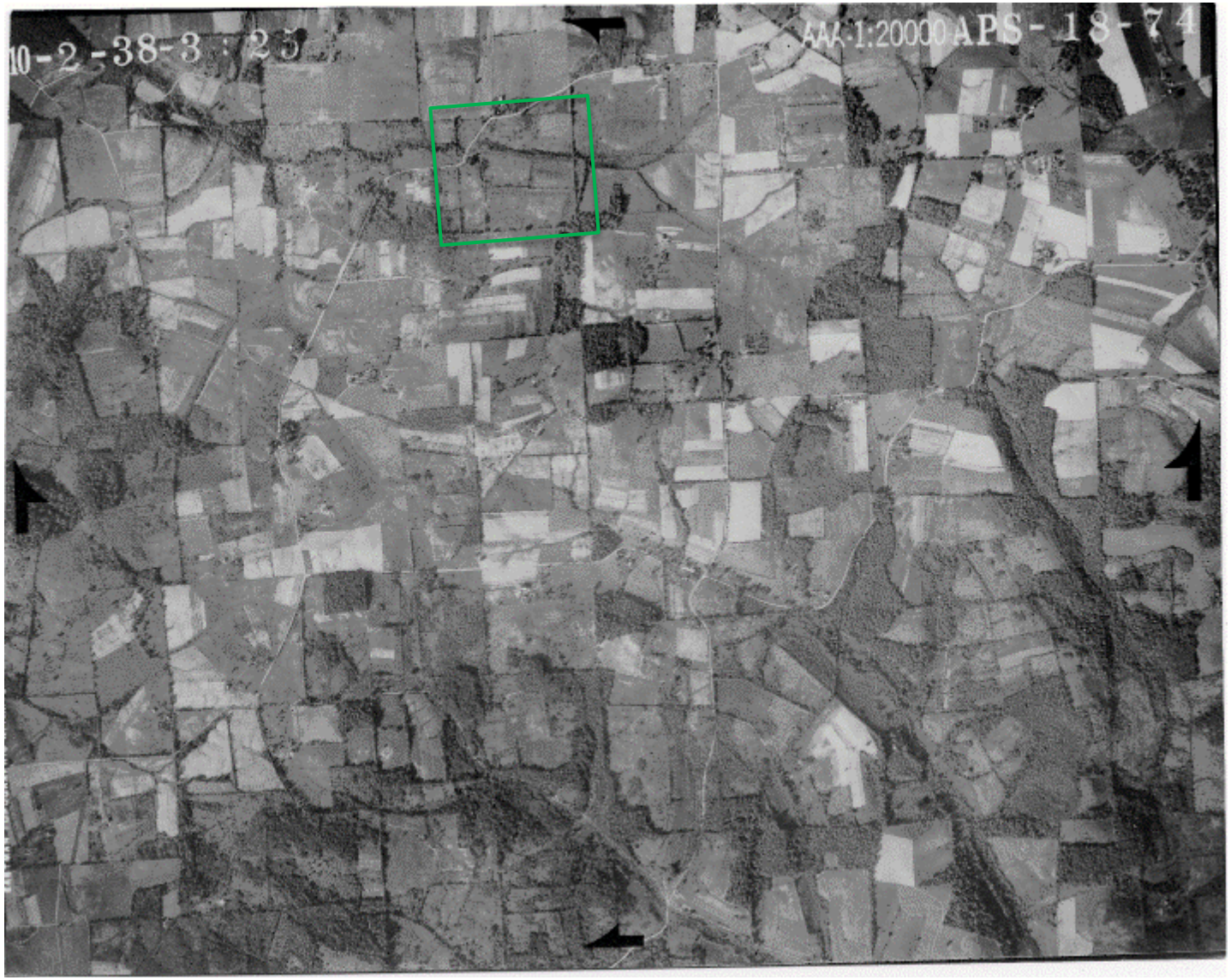
Age class	Basal Area per acre
Project Area: Glade Run	**102**
FIA data	
31-35 years	95.0347
36-40 years	78.539
41-45 years	90.1633
46-50 years	95.4105
51-55 years	108.9854
56-60 years	115.4467
61-65 years	113.6746

Historical Photos

Forest Age Supporting Documentation

Forest Age (chronological order)

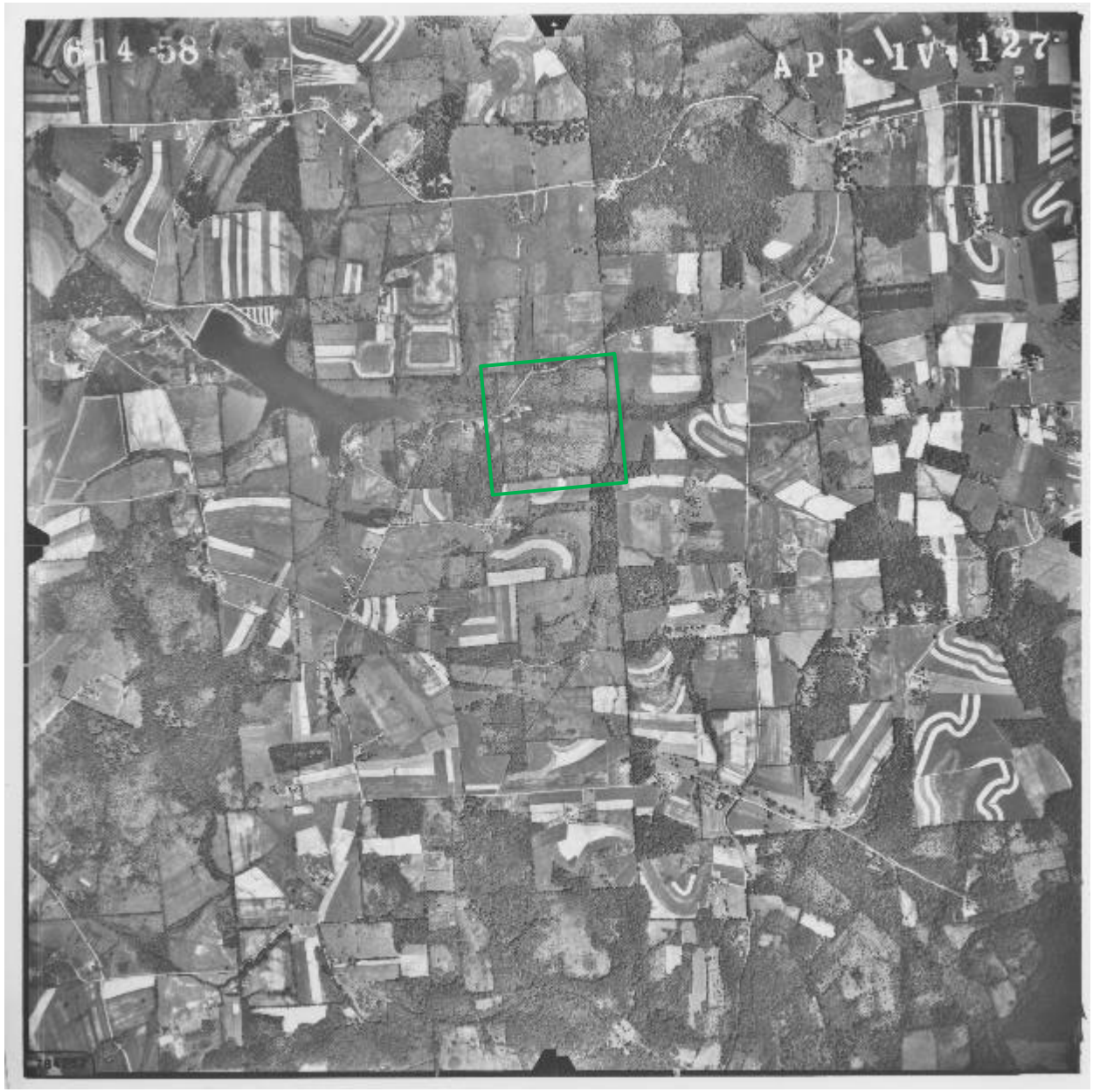
1938



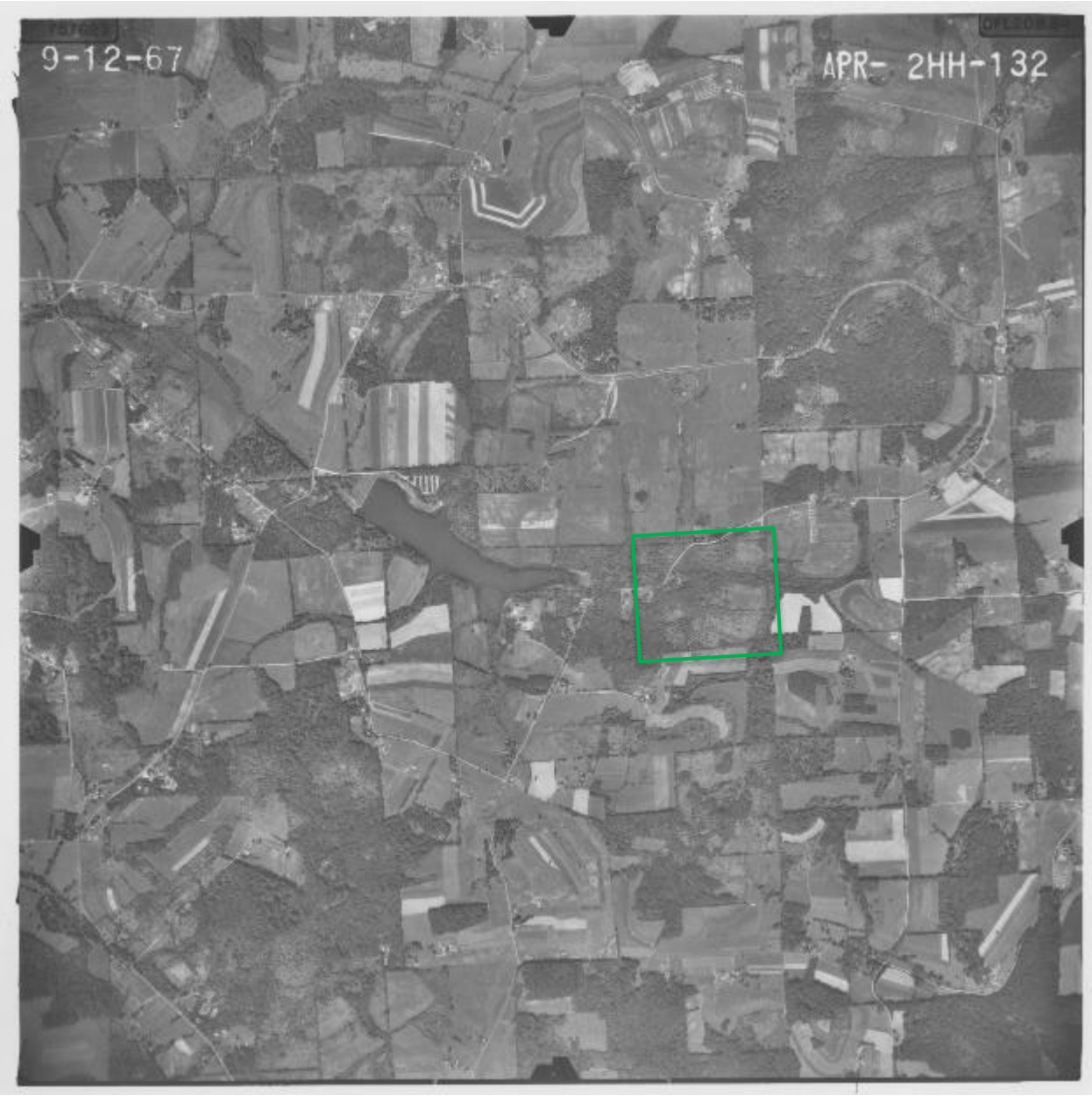
1938

1950

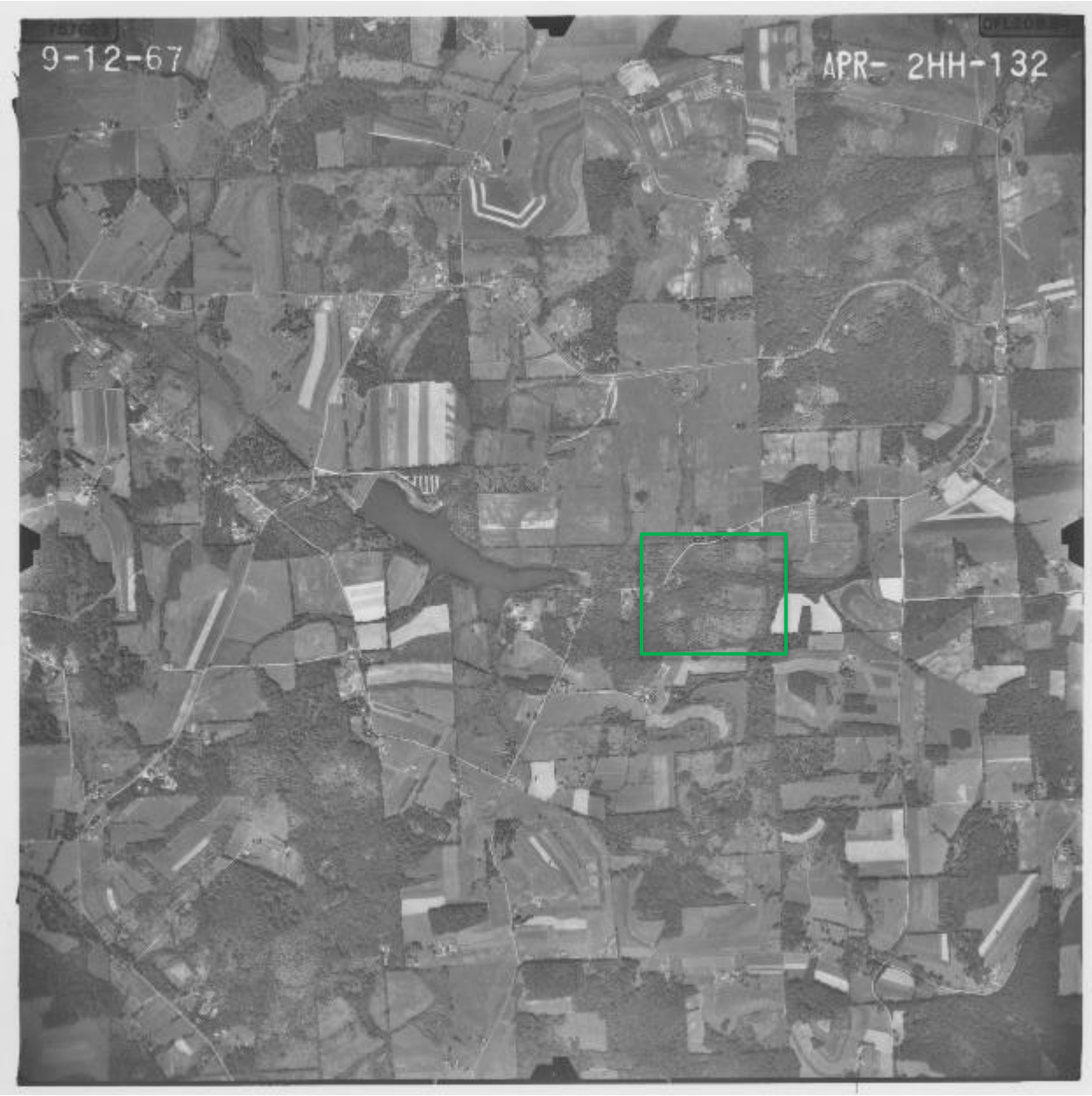
1958



1967

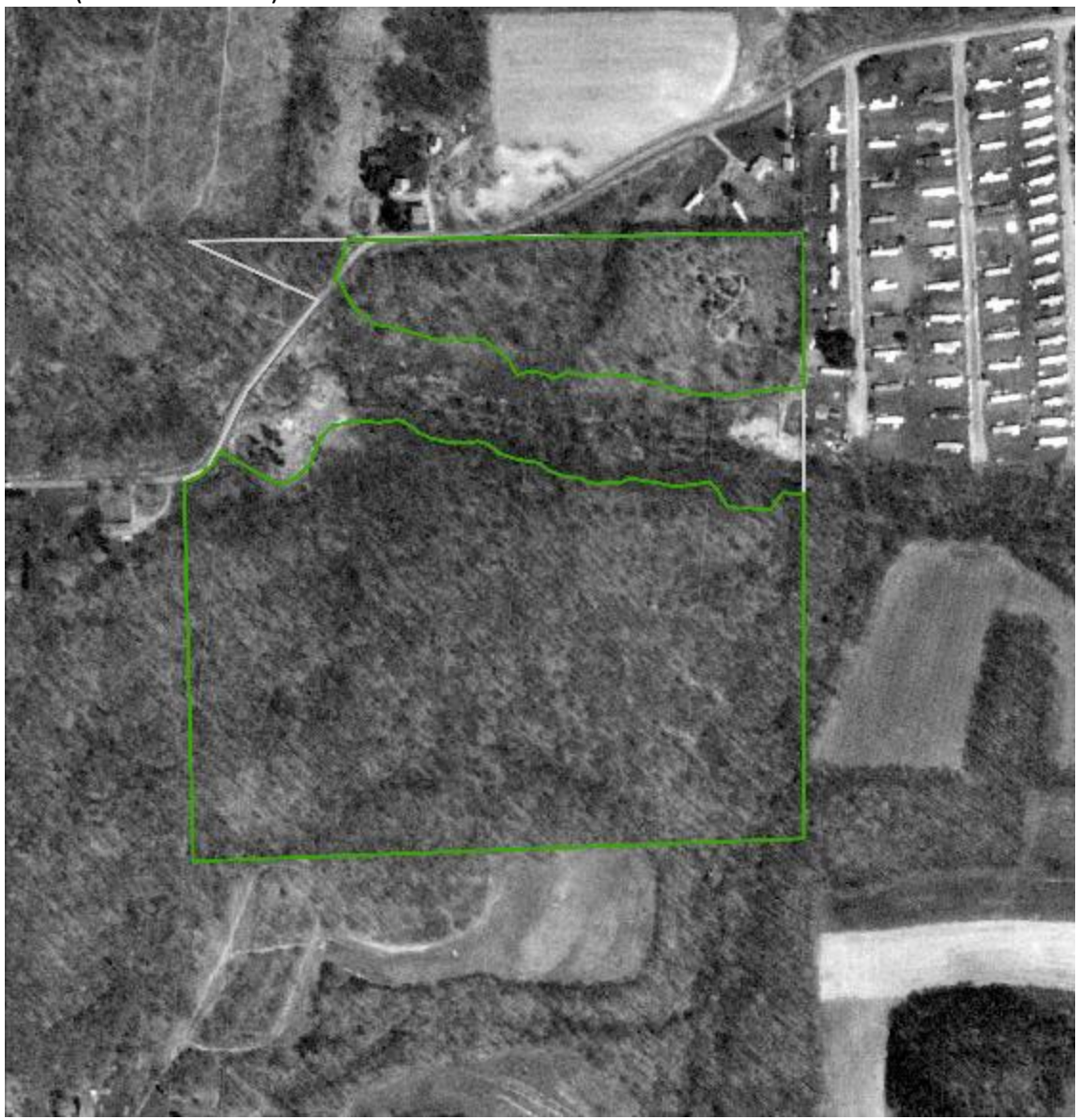


1967



1982 (Not fully georeferenced)

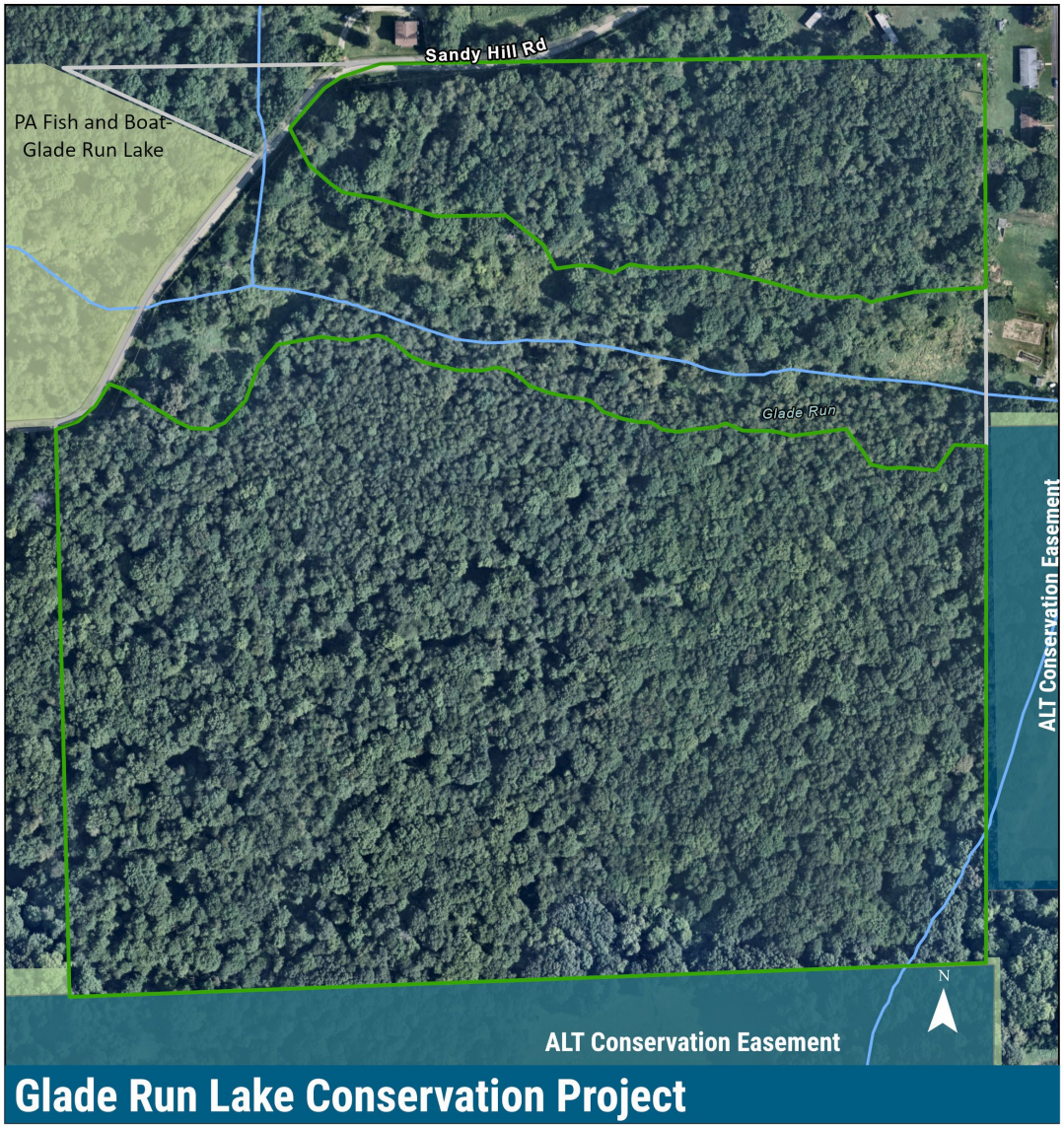
1993 (Georeferenced)



Forest Stand Map

Legend

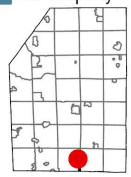
Carbon Area- 43.215 Acres



Survey Boundary-
Survey Area 52.884 Acres

Other Conserved Land

ALT Property



Middlesex Township,
Butler County,
Pennsylvania

0 65 130 260 390 520
Feet

ALLEGHENY
LAND TRUST

Cobenefit Calculator

Light yellow background denotes an input cell ->

Directions
1) Use i-Tree Canopy, or another tool, to estimate the amount of deciduous and coniferous tree cover area (acres) (Cell C20 and D20).
2) Use i-Tree Canopy, or another tool, to estimate the amount of non-tree cover area (acres) (Cell F20) in the project area.
3) In Cell G20 the total area of the project is calculated (acres). Prompt i-Tree Canopy to provide an estimate of the project area by clicking on the gear icon next to the upper right portion of the image and selecting ”Report By Area.”
4) Total Project Area, cell G17 should equal 100%.

Table 1. Tree Cover

	Deciduous Tree Cover	Coniferous Tree Cover	Total Tree Cover	Non-Tree	Total Project Area
Percent (%)	80.2%	0%	80.2%	19.8%	100%
Area (sq miles)	0.054	0.000	0.054	0.013	0.07
Area (m2)	139,958	0	139,958	34,553	174,511
Area (acres)	34.584646	0.00	34.58	8.54	43.123

ward to third parties without CFC permission.

Using the information you provide on tree canopy cover, the tool provides estimates of co-benefits in Resource Units and $ per year.

Table 2. Co-Benefits per year with current tree canopy cover.

Ecosystem Services	Resource Units Totals	Total $
Rain Interception (m3/yr)	17,688.2	$37,385.87
Air Quality (t/yr)		
O3	0.6146	$1,279.59
NOx	0.2633	$548.19
PM10	0.3020	$1,138.16
Net VOCs	0.0405	$42.41
Air Quality Total	1.2203	$3,008.35
Energy (kWh/yr & kBtu/yr)		
Cooling - Elec.	53,710	$7,524.80
Heating - Nat. Gas	2,223,327	$31,096.10
Energy Total ($/yr)		$38,620.90
Grand Total ($/yr)		$79,015.12

$3,160,604.76

Social Impacts

City Forest Carbon Project
Social Impacts

UN Sustainable Development Goals

The 17 United Nations Sustainable Development Goals (SDGs) are an urgent call for action and global partnership among all countries, representing key benchmarks for creating a better world and environment for everyone. Well-designed and managed urban forests make significant contributions to the environmental sustainability, economic viability and livability of cities. They help mitigate climate change and natural disasters, reduce energy costs, poverty and malnutrition, and provide ecosystem services and public benefits. See more details in the CFC Carbon Project Social Impact Reference Guide.

Instructions

This template sets out all relevant SDGs and lists various urban forest project activities that fall within each SDG. Evaluate the SDGs to determine how your carbon project provides social impacts that may contribute towards achievement of the global goals. Check the box(es) that contain one of your project activities and describe in no fewer than two sentences how your project activities align with the corresponding SDG. On page 12, select the icon for three to five of the most relevant SDGs to your project and provide any additional information.

SDG 3 - Good Health and Well Being

Goal: Ensure healthy lives and promote well-being for all at all ages.

Examples of project activities include, but are not limited to:

- ☒ Plant or protect trees to reduce or remove air pollutants
- ☐ If planting trees, select trees for reduced pollen counts and irritant production
- ☐ Plant or protect trees to create shade, provide UV exposure protection, reduce extreme heat negative effects, and/or reduce temperatures to relieve urban heat effects
- ☒ Design project to buffer sounds, optimize biodiversity, or create nature experiences
- ☐ Locate project near vulnerable populations, such as children or elderly
- ☐ Locate project near high volume roads to screen pollutants
- ☒ Locate project near people to encourage recreation, provide new parks or green space, or otherwise promote an active lifestyle
- ☐ Locate project near schools, elderly facilities, or mental health services to promote nature-based wellness, attention restoration, or other mental well-being
- ☐ Locate project in area with conditions of project-defined high inequity to trees, such as at schools, affordable or subsidized housing, formerly redlined neighborhoods, areas with high property vacancy rates, or area with high proportion of renters
- ☒ Reduce stormwater runoff or improve infiltration rates
- ☐ Design project to reduce human exposure to specific pollutants or toxins
- ☒ Other

The Glade Run Lake Conservation Project preserves a well-defined community trail network among the adjacent properties and has opened the opportunity for others to visit and enjoy nature. This property also contains a diversity of native species, such as the large populations of *Monarda didyma* shared in the provided photos, which creates an education point to inform visitors of the importance of native species.

SDG 6 - Clean Water and Sanitation

Goal: Ensure availability and sustainable management of water and sanitation for all

Examples of project activities include, but are not limited to:

- ☐ Research and assess environmental injustices related to water in project area
- ☐ Locate project near high-traffic roads or to otherwise improve, mitigate, or remediate toxic landscapes near water
- ☐ Protect or plant trees to improve historically or culturally important sites related to water that have been degraded and/or neglected
- ☒ Reduce stormwater by planting or protecting trees
- ☐ Plant forested buffers adjacent to streams, rivers, wetlands, or floodplains
- ☒ Prevent soil erosion by protect steep slopes
- ☒ Improve infiltration rates
- ☐ Improve, mitigate, or remediate toxic landscapes and human exposure to risk
- ☐ Drought resistance, such as selecting appropriate water-efficient trees for project climate zone
- ☒ Other

The Glade Run Lake Conservation Project was selected for conservation to increase the forested buffer around Glade Run Lake, a Pennsylvania Fish and Boat managed recreational reservoir. With threats from agricultural runoff threatening the water quality and therefore fish stocking for recreational fishing, the addition of this forested buffer will support water quality improvement efforts overall for the lake.

SDG 14 - Life Below Water

Goal: Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

Examples of project activities located in areas with marine ecosystems include, but are not limited to:

- ☐ Locate project near high-traffic roads or to otherwise improve, mitigate, or remediate toxic landscapes near water
- ☒ Plant or protect trees in project areas to reduce stormwater runoff
- ☐ Plant forested buffers adjacent to streams, rivers, wetlands, or floodplains
- ☒ Prevent soil erosion into by protecting steep slopes
- ☒ Improve infiltration rates
- ☐ Improve, mitigate, or remediate toxic landscapes and human exposure to risk
- ☐ Drought resistance, such as selecting appropriate water-efficient trees for project climate zone
- ☒ Enhance wildlife habitat, such as riparian habitat for fish, birds, and other animals
- ☐ Other

The Glade Run Lake Conservation Project was specifically chosen to expand the forested buffer and feeder streams into Glade Run Lake to maintain and improve water quality, improve stormwater infiltration in forested areas, and otherwise expand the riparian and larger forested areas around the lake for habitat and wildlife.

Summary of Project Social Impacts

The Glade Run Lake Conservation Project preserves a well-defined community trail network among the adjacent properties and has opened the opportunity for others to visit and enjoy nature. This property also contains a diversity of native species, such as the large populations of *Monarda didyma* shared in the provided photos, which creates an education point to inform visitors of the importance of native species.

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