Black Fork Planting
Initial Project Design Document

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PROTOCOL REQUIREMENTS

Project Operator (Section 1.1)
Identify a Project Operator for the project. A Project requires one Project Operator, which can be an entity organized and licensed under the laws of its jurisdiction or a governmental body. This is the entity who takes legal responsibility for the project and its reporting.

Commit to 26-year Project Duration in the Project Implementation Agreement (Section 1.3, 2.2)
Sign the Project Implementation Agreement. This is the 26-year agreement between the Project Operator and City Forest Credits (the "Registry") for an urban forest carbon project.

Project Location (Section 1.4)
Project must be located in or along the boundary of one of the following:

A. "Urban Area" per Census Bureau maps;
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;
E. The boundary of land owned, designated, and used by a municipal or quasi-municipal entity for source water or watershed protection;
F. A transportation, power transmission, or utility right of way, provided the right of way begins, ends, or passes through some portion of above criteria.

Ownership or Eligibility to Receive Potential Credits (Section 1.7)
The Project Operator must demonstrate ownership of property and eligibility to receive potential credits by meeting at least one of the following:

A. Own the land, the trees, 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, own the Project trees and credits within that easement, 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 or other benefits delivered by Project trees on that landowner's land. If Project trees are on private property, this agreement, or notice thereof, must be recorded in the property records of the county in which the land containing Project trees is located.

Defining the Project Area (Section 1.5)
Project Operators may include more than one planting site in a project. The initial planting of trees for all properties in a project must occur within a 36-month period or less. Project Operators may include multiple properties under one project.

Additionality (Section 4)
Project Operators must demonstrate compliance with the following additionality requirements:

- A Legal Requirements Test that declares city trees planted due to an enacted law or ordinance not eligible (Section 1.8);

- Either 1) a project-specific baseline or 2) the current version of the Registry's performance standard baseline developed in adherence with the WRI GHG Protocol (CFC Standard);
- Sign and comply with a Project Implementation Agreement with the Registry that requires a 26-year Project Duration.

Project Operators must also sign an Attestation of Additionality stating that its 26-year Project Duration commitment is additional to and longer than any commitment it makes to non-carbon project tree plantings.

Planting Designs and Quantification for Credits (Section 1.2, 10, Appendix A)
All Projects must use one of three different methods for quantifying CO_2. The quantification method used depends on the planting design. The Registry has developed spreadsheets and methods for Project Operators. The quantification methods include:

- Single Tree Quantification Method: trees planted in a dispersed or scattered design that are planted at least 10 feet apart (i.e. street trees). This method requires tracking of individual trees and tree survival for sampling and quantification.

- Clustered Quantification Method: trees planted at least 10 feet apart but are relatively contiguous and designed to create canopy over an area (i.e. park-like settings). This method requires tracking change in canopy, not individual tree survival.

- Area Reforestation Quantification Method: tree planting areas greater than 5 acres and where many trees are planted closer than 10 feet. Higher tree mortality is expected and the goals are to create canopy and a forest ecosystem. Project Operators have several quantification models to choose from, all of which produce a carbon index on a per-acre basis.

Attestation of No Net Harm and No Double Counting (Section 5)
Project Operators must 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. The Project Operator must submit documentation showing no overlap of Project Trees or Project Area with any other registered urban forest carbon project.

Social Impacts (Section 11)
Project Operators 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.

Validation and Verification by Third-Party Verifiers (Sections 12)
Project compliance and quantification must be verified by a third-party verifier known as a Validation and Verification Body approved by the Registry. Protocol Appendix B provides more detail.

Issuance of Ex Ante Carbon Forward Removal Credits to Project Operator (Section 6)
The forecasted amount of CO_2 stored during the project duration is the value from which the Registry issues ex ante Carbon Forward Removal Credits™. To ensure performance of the credits, the Registry issues credits at five times during the 26-year Project Duration:

- 10% of projected credits after planting
- 30% of projected credits at Year 4
- 30% of projected credits at Year 6
- 10% of projected credits at Year 14
- Remaining credits issued based on quantification of CO_2e at Year 26

Credits for Reversal Pool Account (Section 6.2)
The Registry will issue 95% of Project credits earned and requested and will hold 5% in the Registry's Reversal Pool Account.

Understand Reversals (Section 8)
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.

Commit to Monitoring and Reporting (Section 7)
Project Operators must submit an annual monitoring report to the Registry every year for the Project Duration. The reports must be in writing, and the Project Operator must attest to the accuracy of the reports.

Tree Sampling, Measurement, and Imaging Requirements (Appendix A)
To ensure performance of the credits, Project Operators must commit to the following at Years 4, 6, 14, and 26 based on the appropriate quantification method.

1) Single Tree
    a. Initial Credit: Use the carbon quantification tool which contains a worksheet called "Data Collection" for use in tracking each tree. In that file or another tree inventory system, document the GPS coordinates for each tree planted.
    b. Years 4 and 6: Project Operators must generate a random sample of project tree sites using the Single Tree Quantification Tool. Project Operators must visit those sampled tree sites and collect data on whether the sample contains a live tree, standing dead tree, or no tree. Provide geocoded photos or imaging of a minimum sample of 20% of the trees. The tracking file includes a column where each tree is assigned a unique serial number to help with tracking each coordinate and tree picture or image.
        i. Based on this data, the number and species of project trees is adjusted and a new CO2 projected amount by Year 26 is generated.
    c. Year 14: Project Operators must follow the same process as stated above for Years 4 and 6, except they must also measure DBH on the sample of trees. The DBH will be used to ensure growth curve consistent with the projected CO2 storage at Year 26.
        i. If the actual growth curves of project trees are less than was projected, the number of credits issued at Year 14 will be adjusted downward.
    d. Year 26: Project Operators must generate a random sample of project trees and measure DBH on the sample of trees. The DBH will be used to calculate CO2 storage at that time. Project Operators must also submit geocoded photos of the sampled trees.

i. Credits may be issued based on the actual CO2 storage at Year 26, minus credits already issued.

2) Clustered
   a. Initial Credit: Use the carbon quantification tool and input data. In addition, Project Operators must provide maps of the site, with boundaries, as well as a map showing the site within a larger context of land area, such as within a neighborhood, city, or region. Project Operators must document the planting through photos or imaging. Select points and take geo-coded photos that when taken together capture the newly planted trees in the Project Area. If site is rectilinear, take a photo at each of the corners. If the site is large, take photos at points along the perimeter looking into the Project Area. If necessary to capture the trees, take photos facing each of the cardinal directions while standing in the middle of the Project Area. If site is nonrectilinear, identify critical points along property boundaries and take photographs at each point facing in towards the middle of the site. Next, take photographs from the middle of the Project Area facing out at each cardinal direction.
   b. Year 4: Project Operators provide images of the Project Area from any telemetry, imaging, remote sensing, i-Tree Canopy, or UAV service, such as Google Earth and estimate the area in tree canopy cover (acres). Imaging from Google Earth with leaf-on may be used. Project Operators will calculate the percent of canopy cover from the Google Earth imaging. Projects can use i-Tree Canopy and point sampling to calculate canopy cover. Using i-Tree Canopy, continue adding points until the standard error of the estimate for both the tree and non-tree cover is less than 5%. i-Tree Canopy will supply you with the standard errors. If tree canopy cover is determined using another approach, such as image classification, a short description of the approach should be provided, as well as the QA/QC measures that were used. A tree cover classification accuracy assessment should be conducted, as with randomly placed points, and the percentage tree cover classification accuracy reported.
      i. If the canopy coverage equals or exceeds 2.8% (400 trees per acre with an average canopy area of 3.14 square feet per tree (2-foot diameter of canopy) is 2.8% of an acre), then the credits projected in the Clustered Quantification Tool may be issued. If canopy coverage is below 2.8%, then the number of credits issued is reduced by the same percentage as the canopy coverage falls below 2.8%.
   c. Year 6: Project Operators must follow the same process as stated above for Year 4.
      i. If the canopy coverage equals or exceeds 11.5% (400 trees per acre with an average canopy area of 12.56 square feet per tree (4-foot diameter of canopy) is 11.5% of an acre), then the credits projected in the Clustered Parks Quantification Tool may be issued. If canopy coverage is below 11.5%, then the number of credits issued is reduced by the same percentage as the canopy coverage falls below 11.5%.
   d. Year 14: Project Operators must follow the same process as stated above for Years 4 and 6.

i. If the canopy coverage equals or exceeds 46% (400 trees per acre with an average canopy area of 50 square feet per tree (8-foot diameter of canopy) is 46% of an acre), then the credits projected in the Clustered Quantification Tool may be issued. If canopy coverage is below 46%, then the number of credits issued is reduced by the same percentage as the canopy coverage falls below 46%.

e. Year 26: Project Operators must follow the same process as stated above for Years 4, 6, and 14.
    i. If the canopy coverage equals 100% of the Project Area at project outset, the credits projected in the Clustered Quantification Tool may be issued. If canopy coverage is below 100% of the Project Area, then the number of credits issued is reduced by the same percentage as the canopy coverage falls below 100%.

3) Area Reforestation
    a. Initial Credit: Project Operators must use local data or the GTR tables to demonstrate projected carbon storage by Year 26. In addition, Project Operators must provide maps of the site, with boundaries, as well as a map showing the site within a larger context of land area, such as within a neighborhood, city, or region. Project Operators must document the planting through photos or imaging. Select points and take geo-coded photos that when taken together capture the newly planted trees in the Project Area. If site is rectilinear, take a photo at each of the corners. If the site is large, take photos at points along the perimeter looking into the Project Area. If necessary to capture the trees, take photos facing each of the cardinal directions while standing in the middle of the Project Area. If site is nonrectilinear, identify critical points along property boundaries and take photographs at each point facing in towards the middle of the site. Next, take photographs from the middle of the Project Area facing out at each cardinal direction.
    b. Year 4: Project Operators must either conduct a physical tree count using plots or use imaging to determine canopy coverage at Year 4.
        i. If the canopy coverage equals or exceeds 2.8% (400 trees per acre with an average canopy area of 3.14 square feet per tree (2-foot diameter of canopy) is 2.8% of an acre), then the credits projected in the Quantification Tool may be issued. If canopy coverage is below 2.8%.
    c. Year 6: Project Operators must either conduct a physical tree count using plots or use imaging to determine canopy coverage at Year 6.
        i. If the canopy coverage equals or exceeds 11.5% (400 trees per acre with an average canopy area of 12.56 square feet per tree (4-foot diameter of canopy) is 11.5% of an acre), then the credits projected in the Quantification Tool may be issued. If canopy coverage is below 11.5%, then the number of credits issued is reduced by the same percentage as the canopy coverage falls below 11.5%.
    d. Year 14: Project Operators must either conduct a physical tree count using plots or use imaging to determine canopy coverage at Year 6.
        i. If the canopy coverage equals or exceeds 46% (400 trees per acre with an average canopy area of 50 square feet per tree (8-foot diameter of canopy) is

46% of an acre), then the credits projected in the Quantification Tool may be issued. If canopy coverage is below 46%, then the number of credits issued is reduced by the same percentage as the canopy coverage falls below 46%.

e. Year 26: Project Operators must either conduct a physical tree count using plots or use imaging to determine canopy coverage at Year 26.
    i. If the canopy coverage equals 100% of the Project Area at project outset, the credits projected in the Clustered Parks Quantification Tool may be issued. If canopy coverage is below 100% of the Project Area, then the number of credits issued is reduced by the same percentage as the canopy coverage falls below 100%.

INSTRUCTIONS

Project Operators must complete and submit this Initial Credit Project Design Document (PDD) to request credits after the last tree in a project has been planted. City Forest Credits 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. An amendment to the Project Design Document will need to be submitted for future verification at years 4, 6, 14, and 26.

The Protocol Requirements below are a list of eligibility requirements for informational purposes which are also found in more detail in the CFC Afforestation/Reforestation Protocol Version 11, dated February 24, 2023.

Project Operators should enter data and supporting attachments starting on page 9 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:

1. Regional Map
2. Project Area Map
3. Project Area Geospatial Data (shapefile or KML file)
4. Geocoded Photos – before planting
5. Geocoded Photos – after planting
6. Attestation of Land Ownership or Agreement to Transfer Credits
7. Attestation of Planting
8. Attestation of Planting Affirmation
9. Attestation of Additionality
10. Attestation of No Net Harm and Attestation of No Double Counting of Credits
11. No Double Counting Evidence
12. Carbon Quantification Initial Credits Tool
13. Tree Data (as appropriate per quantification method. For Cluster, list of species planted, and quantity. For Area Reforestation, list of species planted, quantity, and documentation supporting projected carbon storage)
14. Planting Design Map (for cluster ONLY – general depiction of which species were planted where)
15. I-Tree Canopy Baseline report
16. I-Tree Canopy baseline data points
17. Co-Benefit Quantification Initial Credits Tool
18. Social Impact Report
19. Project or Performance Standard Baseline
20. Quantifying Carbon Dioxide Storage and Co-Benefits for Urban Tree Planting Projects (Appendix A)

PROJECT OVERVIEW

Project Name: Black Fork Planting Project
Project Number: 056
Project Type: Planting Project (under the Afforestation and Reforestation Protocol – version 11, dated February 24, 2023)
Project Start Date: November 14, 2023
Project Location: Mifflin Township, Richland County, Ohio

Project Operator Name: Western Reserve Land Conservancy
Project Operator Contact Information: Sarah Blakely, sblakely@wrlandconservancy.org, 440-528-4168

Project Description
Describe overall project goals as summarized in the Project Application (2 paragraphs max). Include how many trees were planted and number of acres planted, where trees were planted, and the date range for when trees were planted.

The Black Fork Planting Project is part of the restoration plan for a 480-acre protected property owned by Natural Areas Land Conservancy, a supporting organization of Western Reserve Land Conservancy, with conservation restrictions held by Western Reserve Land Conservancy. The property is located in Mifflin Township, Richland County, Ohio, and the property had been a working farm since 1959 until 2020 when the Land Conservancy acquired the property. Despite portions of the property being systematically cleared and drained for agriculture, it still contains 94 acres of existing high-quality forest which were registered as a preservation carbon credit project in early 2023. The property also contains 115 acres of Category 3 wetlands with the remaining acres consisting of formerly active agricultural fields. The Black Fork Planting Project will reforest a portion of the former agricultural fields as part of restoration efforts to create forest, meadow, and wetland habitat.

The planting project includes approximately 62 acres of upland tree plantings and 26.4 acres of wetland tree and shrub plantings, for a grand total of 88.4 acres planted. The upland areas were planted April 26 and 27 of 2023 with approximately 4,340 trees. Upland species include Ohio buckeye, shellbark hickory, swamp white oak, burr oak, and pin oak. The wetland areas were planted on November 10, 12, and 14 of 2023 with approximately 1,198 trees. In addition to the trees, 650 shrub were planted though not included in the carbon quantification. Wetland species include pin oak, swamp white oak, eastern cottonwood, sycamore, and black walnut. The trees and shrubs were planted approximately 25 feet apart. This planting project is part of a larger restoration effort which is already demonstrating significant benefits for the region's water quality and wildlife. Restored wetlands are intercepting and treating runoff from surrounding agricultural land to capture nutrients and sediment before the water drains to the Black Fork of the Mohican River. Planting trees in the upland and wetland habitats will further reduce runoff into waterways by absorbing and slowing the flow of water allowing for increased filtration of pollutants and decreased soil erosion. Additionally, the planting includes a variety of oak and hickory species which will improve biodiversity and benefit wildlife. The restored property is already experiencing an increase in wildlife with regular sightings of Ohio Threatened sandhills cranes and amphibians populating the wetlands.

LOCATION (Section 1.4)

Project Location
Describe the city, town, or jurisdiction where the Project is located. State which urban location criteria is met from Protocol Section 1.4.

The project is located in Mifflin Township, Richland County, Ohio, which is within a planning area for a metropolitan planning agency or entity, Richland County Regional Planning Commission (RCRPC). RCRPC was formed under Section 713.21 of the Revised Code of the State of Ohio and encompasses Richland County, the Cities of Mansfield, Ontario and Shelby, townships and cooperating municipalities. The Bylaws can be found here:
https://www.rcrpc.org/_files/ugd/3fa60f_bd440808c3b1463b9b4cc4313873d2b7.pdf.

Address: Property Centroid: 40.797207, -82.409665
Parcel Number(s):

- 021-17-030-11-000 – Fleming Falls Road Mansfield, OH 44903,
- 021-17-030-08-000 – Bowen Rd Mansfield, OH 44903,
- 021-17-030-13-001 - Bowen Rd Mansfield, OH 44903,
- 021-17-019-13-001 – Bowen Rd Mansfield, OH 44903,
- 021-17-030-14-003 - Bowen Rd Mansfield, OH 44903

The reference address for this project is Fleming Falls Road and Bowen Road Mansfield, OH 44903.

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, and indicate where trees were planted as a defined Project Area, and a legend. Include numbered filename of attachments (Ex: 1 Regional Map).

- Project Area Map
  Location of planting sites for Single Tree, boundaries of Project Area for Cluster or Area Reforestation, provide as KML, KMZ, or shapefile format
  Attachment A: Black Fork Planting Project Area Map
  Attachment B: Black Fork Planting Shapefiles

- Regional Map
  Attachment: C: Black Fork Planting Regional Scale Map

- Planting Design Map
  Attachment: D: Black Fork Planting Design Map

- Geo-coded Photos of Project Site, before and after planting

Select points and take geo-coded photos that when taken together capture the newly planted trees in the Project Area. If site is rectilinear, take a photo at each of the corners. If the site is large, take photos at points along the perimeter looking into the Project Area. If necessary to capture the trees, take photos facing each of the cardinal directions while standing in the middle of the Project Area. If site is nonrectilinear, identify critical points along property boundaries and take photographs at each point facing in towards the middle of the site. Next, take photographs from the middle of the Project Area facing out at each cardinal direction. Provide photos as individual JPG files and/or embedded in a KML file.

Attachment: E: Black Fork Planting Geo-coded Pre-Planting Photos
E1: Black Fork Pre-Planting Photo Points Map
F: Black Fork Planting Geo-coded Post-Planting Photos
F1: Black Fork Post-Planting Photo Points Map

OWNERSHIP OR ELIGIBILITY TO RECEIVE POTENTIAL CREDITS (Section 1.7)

Project Operator must demonstrate ownership of potential credits or eligibility to receive potential credits. If the Project Operator is not the same as the landowner of the Project Area, provide agreement(s) between Project Operator and landowner authorizing Project Operator to execute this project. Include relevant documentation including numbered filename as an attachment.

Name of landowner of Project Area and explanation:
Natural Areas Land Conservancy, a supporting organization of Western Reserve Land Conservancy,

If there are multiple landowners, complete the following table. If not, delete the table:

Landowner	Parcel Number	Description/Notes *Include Project Area acres for each parcel*
Natural Areas Land Conservancy	021-17-019-13-001	20.4
Natural Areas Land Conservancy	021-17-030-08-000	5
Natural Areas Land Conservancy	021-17-030-11-000	18.9
Natural Areas Land Conservancy	021-17-030-13-001	15.1
Natural Areas Land Conservancy	021-17-030-14-003	29
	Total Project Area	88.4

Attachment: G: Black Fork Planting Agreement to Transfer Credits
G1: Black Fork Planting Agreement to Transfer Credits Supporting Documentation

PROJECT DURATION (Section 1.3, 2.2)

Project Operator commits to the 26-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 26-year project duration and signed a Project Implementation Agreement with City Forest Credits on January 10, 2024.

ATTESTATION OF PLANTING AND PLANTING AFFIRMATION (Section 3)

Complete and attach the following attestations: 1) Attestation of Planting, including supporting documentary evidence of how trees were paid for and who planted them such as invoices and event photos, 2) Attestation of Planting Affirmation, signed by a representative of a participating organization that can attest to the tree planting. Provide any additional notes as relevant.

Project Operator has signed the Attestation of Planting and provided supporting documentary evidence of planting. A participating organization in the tree planting, Willaims Forestry & Associates has signed the Planting Affirmation.

Attachment: H: Black Fork Planting Attestation
Attachment: I: Black Fork Planting Attestation of Planting Affirmation

ADDITIONALITY (Section 4)

Additionality is demonstrated by the Project in several ways, as described in the City Forest Credits Standard Section 4.9.2 and Afforestation and Reforestation Protocol. Complete and attach 1) Attestation of Additionality and 2) Project-specific baseline or Performance Standard Baseline. If Project Operator elects to use it, the Performance Standard Baseline is provided as Attachment 11 to this PDD.

Additionality is demonstrated by Project Operators per the Protocol in the following ways and in the Attestation of Additionality.

- Project trees are not required by law or ordinance to be planted (Protocol Section 1.8). See Attestation of Planting.
- The Project did not plant trees on sites that were forested and then cleared of trees within the prior ten years (Protocol Section 1.9)
- Project trees are additional based on a project-specific baseline or the Performance Standard Baseline attached to this PDD.
- Project Operator has signed a Project Implementation Agreement with City Forest Credits for 26 years.
- The 26-year Project Duration commitment is additional to and longer than any commitment our organization makes to non-carbon project tree plantings.
- Project Operator has signed the Attestation of Additionality.
- The revenue from the sale of carbon credits will play a material role in the successful and durable storage of Project Trees' carbon stock by providing funding that will help ensure the establishment and long-term health of Project Trees. Funding from carbon credits will support the management and stewardship of the property. Western Reserve Land Conversancy has one full-time Parks and Preserves Manager and one full-time Stewardship Specialist that are responsible for the management of Land Conservancy owned properties including monitoring and maintaining restored areas. The revenue generated from carbon credit sales will support these positions to allow for regular monitoring and maintenance of the planted trees.

This project is part of a preservation and restoration project. Despite portions of the property being systemically cleared and drained for agriculture, it still contains 94 acres of existing high-quality forest which were registered as a preservation carbon credit project in early 2023. As restoration plans were being finalized in June 2022, the Land Conservancy began discussions about carbon crediting the tree plantings. As the team planned for the plantings in spring 2023, the team discussed project requirements and confirmed alignment with the project's goals.

Attachment: J. Black Fork Planting Attestation of Additionality

PLANTING DESIGN AND CARBON QUANTIFICATION DOCUMENTATION (1.2, 10, Appendix A)

Describe the planting design and appropriate quantification method for the project – Single Tree, Clustered, or Area Reforestation. Include the project's climate zone and data collection. Outline the estimated total number of credits to be issued to the project over 26 years as well as the amount to be issued upon successful validation and verification in Year 1. Attach the quantification tool and provide the data you have collected for Project Trees.

Total number of trees planted	5,538
Project area (acres)	88.4
Total number of trees per acre	62.65
Credits attributed to the project (tCO2e)	20,106.1
Credits after mortality deduction (30%)	14,074.3
Contribution to Registry Reversal Pool Account (5%) (tCO2e)	704
Total credits to be issued to the Project Operator (tCO2e)	13,371
Total credits requested to be issued in Year 1 (10% of above)	1,337

GHG Assertion:
Project Operator asserts that the Project results in GHG emissions mitigation of 13,371 tons CO_2e over the 26-year Project Duration. Project Operator will provide imaging of canopy growth over the Project Area, quantify tons CO_2e, and submit documentation for validation, verification, and credit issuance at Years 4, 6, 14, and 26, per the Tree Planting Protocol and Cluster Planting Design and Quantification Method.

Project Operator asserts that, per Protocol guidelines, 10% of the Project GHG emissions mitigation is issued after initial tree planting, or 1,337 tons CO_2e.

Explanation of Planting Design:
The Project Area was planted using the Cluster planting design with 5,538 trees (and 650 shrubs not included in the project) across 88.4 acres approximately 25 feet apart. The Project Area is approximately 127.3 acres of old agricultural land that is being restored to wetland and forested habitat. The 88.4 acres planted with trees includes 62 acres of upland tree plantings and 26.4 acres of wetland tree plantings. This part of Ohio is located in climate zone 6a, and trees were selected that are native to Ohio and suited to each planting area whether upland or wetland.

Tree and shrub planting was performed by hand in early spring and fall when soil and moisture conditions are suitable for planting. The tree planting was planted in accordance with the planting guidelines set forth by the Ohio Division of Forestry. Tree species were chosen based on observed

healthy species and species listed as suitable in the Soil Survey of Richland County. The trees were 5-7' tall 3-gallon potted stock with 25' x 25', and the species and number of each planted in the upland and wetland areas was documented.

The upland area of the West and South Sections were planted in April of 2023. A native pollinator tree planting mix was also seeded into the upland fields and is specially designed to not compete with the trees and help increase nutrient uptake, diversify habitat, and provide critical food for pollinators. The wetland areas in the West and South Sections were planted in November of 2023. Earthwork within the lowlands of the West and South fields created vernal pools and mounds in roughly 50% of the area and were planted with 3-gallon potted native trees and shrubs (roughly 5-7' tall).

Attachments:
K1. Black Fork Tree Planting Data
K2. Black Fork iTree Canopy Report & Plot Points
K3. Black Fork iTree Canopy Data

CO-BENEFITS QUANTIFICATION DOCUMENTATION (Section 10 and Appendix A)

Summarize co-benefit quantification per year and provide supporting documentation. The Cluster Initial Credit tool includes a Co-Benefits Quantification calculator for quantifying rainfall interception, reduction of certain air compounds, and energy savings. For Area Reforestation, the Co-benefits Quantification calculator will be provided as a separate document.

Ecosystem Services	***Resource Units***	***Value***
Rainfall Interception (m3/yr)	34,377.88	$246,113.43
Air Quality (t/yr)	1.0013	$4,636.51
Cooling – Electricity (kWh/yr)	944,323.10	$71,674.12
Heating – Natural Gas (kBtu/yr)	13,744,090.91	$133,795.04
Grand Total ($/yr)		**$456,219.10**

Co-benefits were quantified using CFC's Co-Benefits Quantification Calculator. These ecosystem services represent values in avoided costs of $456,219.10 annually when the trees reach 25 years of age.

Attachment: L. Black Fork Planting Midwest Clustered Initial Credit Tool

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

Complete and attach the following attestation: 1) Attestation of No Double Counting of Credits and Attestation of No Net Harm. Provide a map that includes both the Project Area and the closest registered urban forest afforestation or reforestation project based on the registered urban forest planting project database KML/Shapefile provided by CFC to demonstrate that the Project does not overlap with any existing urban forest carbon projects.

Project Operator has mapped the Project Trees against the registered urban forest planting project database and determined that there is no overlap of Project Area or Project Trees with any registered urban forest afforestation or reforestation carbon project. This project is unique as there is an enrolled

Preservation Project on adjacent pieces of land with existing forest stands. However, as shown in the map attachment, there is no double counting of trees between the Preservation and Planting projects.

Project Operator has signed the Attestation of No Double Counting of Credits and No Net Harm on January 25, 2024.

Attachment: M. Black Fork Planting Attestation No Double Counting
Attachment: N. Black Fork Planting No Double Counting Map

SOCIAL IMPACTS (Section 11)

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.

Goal 3: Good Health and Well-Being - The Project Area is within a property located along a major interstate, and the trees planted as part of the Black Fork restoration project will screen pollutants from this highly-trafficked road. The trees are being planted in a larger restoration effort to benefit water quality, and the transformation of agricultural fields to forest, meadow, and wetland will increase stormwater infiltration rates of the site and protect the water resources in the area.

Goal 6: Clean Water and Sanitation - The trees planted as part of the Black Fork Planting project will transform agricultural fields to forest, meadow, and wetlands to reduce stormwater runoff, prevent soil erosion, improve infiltration rates, and buffer existing and newly created wetlands. The project will result in improved water quality by slowing and capturing runoff and decreasing nutrients and sediment entering waterways.

Goal 13: Climate Action - Planting trees will have soil and water quality benefits, and it will create additional wildlife habitat. The site's existing forest serves as habitat for state-listed bird and bat species that rely on forests for breeding, foraging, and nesting. Increasing forest habitat on site will greatly benefit these species.

Attachment: O: Black Fork Planting Social Impacts

MONITORING AND REPORTING (Section 7)

Throughout the Project Duration, the Project Operator must report on tree conditions across the Project Area through annual reports and with more detailed data at Years 4, 6, 14, and 26.

Monitoring Reports

Project Operator is required to submit an annual monitoring report on the anniversary of the date of the first Verification Report. For example, if the verification report is dated January 31, 2023, the first monitoring report will be due by January 31, 2024 and each January 31st thereafter for the duration of the project. CFC will provide the due dates for future monitoring reports to Project Operators 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.

Future Project Design Documents and Reporting
Project Operator is required to submit an updated Project Design Document at Years 4, 6, 14, and 26, as well as sampling, measurement of trees or canopy coverage, and/or quantification of CO_2e. Project Operators will submit the updated documentation for request of credit issuance in lieu of a monitoring report that year.

Monitoring Plans
Confirm and describe your plans for annual monitoring of this project and specifics on how sampling, measurement, and imaging (see Protocol Requirements and Appendix A) will be conducted based on your project's quantification method.

As part of this Project, the Project Area has been encumbered with an Environmental Covenant, held by Western Reserve Land Conservancy. The Environmental Covenant will preserve the planted trees and ensure frequent monitoring of the restored Project Area.

The Project Area will be regularly visited to monitor tree health and any maintenance needs. In May of 2024, many of the trees were tubed or wrapped to protect against deer rubbing. The site will not be mowed because of the pollinator prairie mix also planted as part of the restoration work to establish native wildflowers, sedges, and grasses that benefit pollinators and songbirds. The seed mix used was designed to not complete with trees and will result in native vegetation cover for the fields while the tree canopy establishes. The Land Conservancy intends to use aerial imagery for additional monitoring of the site and tracking tree growth, but given the planned vegetation coverage of the restored area, the use of drones and/or field sampling may be utilized for monitoring of tree health and growth in canopy.

Western Reserve Land Conservancy is an accredited land trust and has a professional team dedicated to property management and the stewardship of its conservation restrictions. Staff members will visit the Black Fork Forest regularly, walking the Project Area and property in their entirety to ensure that the trees and restored wetlands are maintained and functioning as designed, and to ensure the tenets of the Environmental Covenant are being upheld and to resolve any issues with encroachment or non-permitted activities on-site. Western Reserve Land Conservancy has demonstrated its ability to serve in this capacity, having conserved more than 70,000 acres in 29 different Ohio watersheds and holding conservation easements on over 900 properties, each of which are monitored annually.

PROJECT OPERATOR SIGNATURE

Signed on June 13 in 2024, by Alex Czayka, Chief Conservation Officer for Western Reserve Land Conservancy.

Signature

Alex M Czayka

Printed Name

440 813 4664

Phone

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Email

ATTACHMENTS

Update the attachments list as appropriate for your project.

A. Project Area Map
B. Project Area Geospatial Data (shapefile or KML file)
C. Regional Area Map
D. Planting Design Map
E. Geocoded Photos – before planting
E1. Pre-Planting Photo Points Map
F. Geocoded Photos – after planting
G. Agreement to Transfer Credits
G1. Agreement to Transfer Credits Supporting Documentation
H. Attestation of Planting
I. Attestation of Planting Affirmation
J. Attestation of Additionality
K1. Tree Planting Data
K2. iTree Canopy Report & Plot Points
K3. iTree Canopy Data
L. Midwest Clustered Initial Credit Tool
M. Attestation of No Net Harm and Attestation of No Double Counting of Credits
N. No Double Counting Map
O. Social Impacts Report
Performance Standard Baseline
Quantifying Carbon Dioxide Storage and Co-Benefits for Urban Tree Planting Projects (Appendix A)

Attachment 11

PERFORMANCE STANDARD BASELINE METHODOLOGY (Standard, Section 4)

There is a second additionality methodology set out in the WRI GHG Protocol guidelines – the Performance Standard methodology. This Performance Standard essentially allows the project developer, or in our case, the developers of the protocol, to create a performance standard baseline using the data from similar activities over geographic and temporal ranges.

The common perception, particularly in the United States, is that projects must meet a project specific test. Project-specific additionality is easy to grasp conceptually. The 2014 Climate Action Reserve urban forest protocol essentially uses project-specific requirements and methods.

However, the WRI GHG Protocol clearly states that either a project-specific test or a performance standard baseline is acceptable.[1] One key reason for this is that regional or national data can give a more accurate picture of existing activity than a narrow focus on one project or organization.

Narrowing the lens of additionality to one project or one tree-planting entity can give excellent data on that project or entity, which data can also be compared to other projects or entities (common practice). But plucking one project or entity out of its regional or national context ignores all comparable regional or national data. And that regional or national data may give a more accurate standard than data from one project or entity.

By analogy: one pixel on a screen may be dark. If all you look at is the dark pixel, you see darkness. But the rest of screen may consist of white pixels and be white. Similarly, one active tree-planting organization does not mean its trees are additional on a regional basis. If the region is losing trees, the baseline of activity may be negative regardless of what one active project or entity is doing. Here is the methodology described in the WRI GHG Protocol to determine a Performance Standard baseline, together with the application of each factor to urban forestry:

Table 2.1 Performance Standard Factors

WRI Performance Standard Factor	As Applied to Urban Forestry
Describe the project activity	Increase in urban trees
Identify the types of candidates	Cities and towns, quasi-governmental entities like utilities, watersheds, and educational institutions, and private property owners
Set the geographic scope (a national scope is explicitly approved as the starting point)	Could use national data for urban forestry, or regional data
Set the temporal scope (start with 5-7 years and justify longer or shorter)	Use 4-7 years for urban forestry
Identify a list of multiple baseline candidates	Many urban areas, which could be blended mathematically to produce a performance standard baseline

[1] WRI GHG Protocol, Chapter 2.14 at 16 and Chapter 3.2 at 19.

The Performance Standard methodology approves of the use of data from many different baseline candidates. In the case of urban forestry, those baseline candidates are other urban areas.[2]

As stated above, the project activity defined is obtaining an increase in urban trees. The best data to show the increase in urban trees via urban forest project activities is national or regional data on tree canopy in urban areas. National or regional data will give a more comprehensive picture of the relevant activity (increase in urban trees) than data from one city, in the same way that a satellite photo of a city shows a more accurate picture of tree canopy in a city than an aerial photo of one neighborhood. Tree canopy data measures the tree cover in urban areas, so it includes multiple baseline candidates such as city governments and private property owners. Tree canopy data, over time, would show the increase or decrease in tree cover.

Data on Tree Canopy Change over Time in Urban Areas

The CFC quantitative team determined that there were data on urban tree canopy cover with a temporal range of four to six years available from four geographic regions. The data are set forth below:

Table 2.2 Changes in Urban Tree Canopy (UTC) by Region (from Nowak and Greenfield, 2012, see footnote 7)

City	Abs Change UTC (%)	Relative Change UTC (%)	Ann. Rate (ha UTC/yr)	Ann. Rate (m2 UTC/cap/yr)	Data Years
EAST					
Baltimore, MD	-1.9	-6.3	-100	-1.5	(2001–2005)
Boston, MA	-0.9	-3.2	-20	-0.3	(2003–2008)
New York, NY	-1.2	-5.5	-180	-0.2	(2004–2009)
Pittsburgh, PA	-0.3	-0.8	-10	-0.3	(2004–2008)
Syracuse, NY	1.0	4.0	10	0.7	(2003–2009)
Mean changes	-0.7	-2.4	-60.0	-0.3	
Std Error	0.5	1.9	35.4	0.3	
SOUTH					
Atlanta, GA	-1.8	-3.4	-150	-3.1	(2005–2009)
Houston, TX	-3.0	-9.8	−890	-4.3	(2004–2009)
Miami, FL	-1.7	-7.1	-30	-0.8	(2003–2009)
Nashville, TN	-1.2	-2.4	-300	-5.3	(2003–2008)
New Orleans, LA	-9.6	-29.2	−1120	-24.6	(2005-2009)
Mean changes	-3.5	-10.4	-160.0	-7.6	
Std Error	1.6	4.9	60.5	4.3	
MIDWEST					
Chicago, IL	-0.5	-2.7	-70	-0.2	(2005–2009)
Detroit, MI	-0.7	-3.0	-60	-0.7	(2005–2009)

[2] See Nowak, et al. *"Tree and Impervious Cover Change in U.S. Cities,"* Urban Forestry and Urban Greening, 11 (2012), 21-30

City	Abs Change UTC (%)	Relative Change UTC (%)	Ann. Rate (ha UTC/yr)	Ann. Rate (m2 UTC/cap/yr)	Data Years
Kansas City, MO	-1.2	-4.2	-160	-3.5	(2003–2009)
Minneapolis, MN	-1.1	-3.1	-30	-0.8	(2003–2008)
Mean changes	-0.9	-3.3	-80.0	-1.3	
Std Error	0.2	0.3	28.0	0.7	
WEST					
Albuquerque, NM	-2.7	-6.6	-420	-8.3	(2006–2009)
Denver, CO	-0.3	-3.1	-30	-0.5	(2005–2009)
Los Angeles, CA	-0.9	-4.2	-270	-0.7	(2005–2009)
Portland, OR	-0.6	-1.9	-50	-0.9	(2005–2009)
Spokane, WA	-0.6	-2.5	-20	-1.0	(2002–2007)
Tacoma, WA	-1.4	-5.8	-50	-2.6	(2001–2005)
Mean changes	-1.1	-4.0	-140.0	-2.3	
Std Error	0.4	0.8	67.8	1.2	

These data have been updated by Nowak and Greenfield.[3] The 2012 data show that urban tree canopy is experiencing negative growth in all four regions. The 2018 data document continued loss of urban tree cover.

Table 3 of the 2018 article shows data for all states, with a national loss of urban and community tree cover of 175,000 acres per year during the study years of 2009-2014.

To put this loss in perspective, the total land area of urban and community tree cover loss during the study years totals 1,367 square miles – equal to the combined land area of New York City, Atlanta, Philadelphia, Miami, Boston, Cleveland, Pittsburgh, St. Louis, Portland, OR, San Francisco, Seattle, and Boise.

Even though there may be individual tree planting activities that increase the number of urban trees within small geographic locations, the performance of activities to increase tree cover shows a negative baseline. The Drafting Group did not use negative baselines for the Tree Planting Protocol, but determined to use baselines of zero.

Deployment of the Performance Standard baseline methodology for a City Forest Planting Protocol is supported by conclusions that make sense and are anchored in the real world:

- With the data showing that tree loss exceeds gains from planting, new plantings are justified as additional to that decreasing canopy baseline. In fact, the negative baseline would justify as additional any trees that are protected from removal.
- Because almost no urban trees are planted now with carbon as a decisive factor, urban tree planting done to sequester carbon is additional;
- Almost no urban trees are currently planted with a contractual commitment for monitoring. Maintenance of trees is universally an intention, one that is frequently reached when budgets are cut, as in the Covid-19 era. The 25-year commitment required by this Protocol is entirely

[3] Nowak et al. 2018. "Declining Urban and Community Tree Cover in the United States," *Urban Forestry and Urban Greening,* 32, 32-55

additional to any practice in place in the U.S. and will result in substantial additional trees surviving to maturity;

- Because the urban forest is a public resource, and because public funding falls far short of maintaining tree cover and stocking, carbon revenues will result in additional trees planted or in maintenance that will result in additional trees surviving to maturity;
- Because virtually all new large-scale urban tree planting is conducted by governmental entities or non-profits, or by private property developers complying with governmental regulations (which would not be eligible for carbon credits under our protocol), and because any carbon revenues will defray only a portion of the costs of tree planting, there is little danger of unjust enrichment to developers of city forest carbon projects.

Last, The WRI GHG Protocol recognizes explicitly that the principles underlying carbon protocols need to be adapted to different types of projects. The WRI Protocol further approves of balancing the stringency of requirements with the need to encourage participation in desirable carbon projects:

Setting the stringency of additionality rules involves a balancing act. Additionality criteria that are too lenient and grant recognition for "non-additional" GHG reductions will undermine the GHG program's effectiveness. On the other hand, making the criteria for additionality too stringent could unnecessarily limit the number of recognized GHG reductions, in some cases excluding project activities that are truly additional and highly desirable. In practice, no approach to additionality can completely avoid these kinds of errors. Generally, reducing one type of error will result in an increase of the other. Ultimately, there is no technically correct level of stringency for additionality rules. GHG programs may decide based on their policy objectives that it is better to avoid one type of error than the other.[4]

The policy considerations weigh heavily in favor of "highly desirable" planting projects to reverse tree loss for the public resource of city forests.

[4] WRI GHG Protocol, Chapter 3.1 at 19.

Attachment 12

QUANTIFYING CARBON DIOXIDE STORAGE AND CO-BENEFITS FOR URBAN TREE PLANTING PROJECTS (Appendix A)

Introduction

Ecoservices provided by trees to human beneficiaries are classified according to their spatial scale as global and local (Costanza 2008) (citations for Part Two are listed in References). Removal of carbon dioxide (CO_2) from the atmosphere by urban forests is global because the atmosphere is so well-mixed it does not matter where the trees are located. The effects of urban forests on building energy use is a local-scale service because it depends on the proximity of trees to buildings.

To quantify these and other ecoservices City Forest Credits (CFC) has relied on peer-reviewed research that has combined measurements and modeling of urban tree biomass, and effects of trees on building energy use, rainfall interception, and air quality. CFC has used the most current science available on urban tree growth in its estimates of CO_2 storage (McPherson et al., 2016a). CFC's quantification tools provide estimates of co-benefits after 25 years in Resource Units (i.e., kWh of electricity saved) and dollars per year. Values for co-benefits are first-order approximations extracted from the i-Tree Streets (i-Tree Eco) datasets for each of the 16 U.S. reference cities/climate zones (https://www.itreetools.org/tools/i-tree-eco) (Maco and McPherson, 2003). Modeling approaches and error estimates associated with quantification of CO_2 storage and co-benefits have been documented in numerous publications (see References below) and are summarized here.

Carbon Dioxide Storage

Project Operators must use one of three different methods for quantifying carbon dioxide (CO2) storage in urban forest carbon projects. Selection of the quantification method depends on the planting project design:

- Single Tree Method - trees planted in a dispersed or scattered design and that are planted at least 10 feet apart (i.e. street trees). This method requires tracking of individual trees and tree survival for sampling and quantification.
- Clustered Method - to trees planted at least 10 feet apart but are relatively contiguous and designed to create canopy over an area (i.e park-like settings). This method requires tracking change in canopy, not individual tree survival
- Area Reforestation Method – tree planting areas greater than 5 acres and where many trees are planted closer than 10 feet. Higher tree mortality is expected and the goals are to create canopy and a forest ecosystem. Project Operators have several quantification models to choose from, all of which produce a carbon index on a per-acre basis.

In all cases, the estimated amount of CO2 stored 26-years after planting is calculated. The forecasted amount of CO2 stored during this time is the value from which the Registry issues ex ante Carbon Forward Removal Credits.TM

To ensure performance of the credits, the Registry issues Carbon Forward Removal Credits at five times during the 26-year Project Duration:

- 10% after planting

- 30% in Year 4, after sampling and mortality check or imaging and calculating canopy
- 30% in Year 6, after sampling and mortality check or imaging and calculating canopy
- 10% in Year 14, after measuring sampled trees or imaging and calculating canopy and
- "True-up" credits at the end of the initial Project Duration in Year 26, when CO2e is quantified from tree measurement and final credits are issued for CO2e stored minus credits already issued.

The mortality checks at Years 4 and 6 correspond to nationality mortality data that shows increased survival rates after three years and six years.

The Registry will issue 95% of Project Credits earned and will hold 5% of total credits in the Registry's Reversal Pool Account. This 5% Reversal Pool Account deduction is applied in all three quantification methods before calculation of any crediting, with these funds going into a program-wide pool to insure against unavoidable reversals due to catastrophic loss of trees.

All ex-ante Carbon Forward Removal Credits convert to ex post City Forest Carbon+ Credits at Year 26 and are marked in the registry of credits.

Scientific Basis for Carbon Dioxide Quantification

Estimates of stored (amount accumulated over many years) and sequestered CO_2 (i.e., net amount stored by tree growth over one year) are based on the U.S. Forest Service's recently published technical manual and the extensive Urban Tree Database (UTD), which catalogs urban trees with their projected growth tailored to specific geographic regions (McPherson et al. 2016a, b). The products are a culmination of 14 years of work, analyzing more than 14,000 trees across the United States. Whereas prior growth models typically featured only a few species specific to a given city or region, the newly released database features 171 distinct species across 16 U.S. climate zones. The trees studied also spanned a range of ages with data collected from a consistent set of measurements. Advances in statistical modeling have given the projected growth dimensions a level of accuracy never before seen. Moving beyond just calculating a tree's diameter or age to determine expected growth, the research incorporates 365 sets of tree growth equations to project growth.

Users select their climate zone from the 16 U.S. climate zones (Fig. 1). Calculations of CO_2 stored are for a representative species for each tree-type that was one of the predominant street tree species per reference city (Peper et al., 2001). The "Reference city" refers to the city selected for intensive study within each climate zone (McPherson, 2010). About 20 of the most abundant species were selected for sampling in each reference city. The sample was stratified into nine diameter at breast height (DBH) classes (0 to 7.6, 7.6 to 15.2, 15.2 to 30.5, 30.5 to 45.7, 45.7 to 61.0, 61.0 to 76.2, 76.2 to 91.4, 91.4 to 106.7, and >106.7 cm). Typically 10 to 15 trees per DBH class were randomly chosen. Data were collected for 16 to 74 trees in total from each species. Measurements included: species name, age, DBH [to the nearest 0.1 cm (0.39 in)], tree height [to the nearest 0.5 m (1.64 ft.)], crown height [to the nearest 0.5 m (1.64 ft.)], and crown diameter in two directions [parallel and perpendicular to nearest street to the nearest 0.5 m (1.64 ft.)]. Tree age was determined from local residents, the city's urban forester, street and home construction dates, historical planting records, and aerial and historical photos.

Figure 1. Climate zones of the United States and Puerto Rico were aggregated from 45 Sunset climate zones into 16 zones. Each zone has a reference city where tree data were collected. Sacramento, California was added as a second reference city (with Modesto) to the Inland Valleys zone. Zones for Alaska, Puerto Rico and Hawaii are shown in the insets (map courtesy of Pacific Southwest Research Station).

Species Assignment by Tree-Type

Representative species for each tree-type in the South climate zone (reference city is Charlotte, NC) are shown in Table 1. They were chosen because extensive measurements were taken on them to generate growth equations, and their mature size and form was deemed typical of other trees in that tree-type. Representative species were not available for some tree-types because none were measured. In that case, a species of similar mature size and form from the same climate zone was selected, or one from another climate zone was selected. For example, no Broadleaf Evergreen Large (BEL) species was measured in the South reference city. Because of its large mature size, *Quercus nigra* was selected to represent the BEL tree-type, although it is deciduous for a short time. *Pinus contorta*, which was measured in the PNW climate zone, was selected for the CES tree-type, because no CES species was measured in the South.

Table 1. Nine tree-types and abbreviations. Representative species assigned to each tree-type in the South climate zone are listed. The biomass equations (species, urban general broadleaf [UGB], urban general conifer [UGC]) and dry weight density (kg/m^3) used to calculate biomass are listed for each tree-type.

Tree-Type	Tree-Type Abbreviation	Species Assigned	DW Density	Biomass Equations
Brdlf Decid Large (>50 ft)	BDL	*Quercus phellos*	600	*Quercus macrocarpa* [1.]
Brdlf Decid Med (30-50 ft)	BDM	*Pyrus calleryana*	600	UGB [2.]
Brdlf Decid Small (<30 ft)	BDS	*Cornus florida*	545	UGB [2.]
Brdlf Evgrn Large (>50 ft)	BEL	*Quercus nigra*	797	UGB [2.]

Brdlf Evgrn Med (30-50 ft)	BEM	*Magnolia grandiflora*	523	UGB [2.]
Brdlf Evgrn Small (<30 ft)	BES	*Ilex opaca*	580	UGB [2.]
Conif Evgrn Large (>50 ft)	CEL	*Pinus taeda*	389	UGC [2.]
Conif Evgrn Med (30-50 ft)	CEM	*Juniperus virginiana*	393	UGC [2.]
Conif Evgrn Small (<30 ft)	CES	*Pinus contorta*	397	UGC [2.]
[1.] from Lefsky, M., & McHale, M.,2008. [2] from Aguaron, E., & McPherson, E. G., 2012				

Calculating Biomass and Carbon Dioxide Stored

To estimate CO_2 stored, the biomass for each tree-type was calculated using urban-based allometric equations because open-growing city trees partition carbon differently than forest trees (McPherson et al., 2017a). Input variables included climate zone, species, and DBH. To project tree size at 25-years after planting, we used DBH obtained from UTD growth curves for each representative species.

Biomass equations were compiled for 26 open-grown urban trees species from literature sources (Aguaron and McPherson, 2012). General equations (Urban Gen Broadleaf and Urban Gen Conifer) were developed from the 26 urban-based equations that were species specific (McPherson et al., 2016a). These equations were used if the species of interest could not be matched taxonomically or through wood form to one of the urban species with a biomass equation. Hence, urban general equations were an alternative to applying species-specific equations because many species did not have an equation.

These allometric equations yielded aboveground wood volume. Species-specific dry weight (DW) density factors (Table 1) were used to convert green volume into dry weight (7a). The urban general equations required looking up a dry weight density factor (in Jenkins et al. 2004 first, but if not available then the Global Wood Density Database). The amount of belowground biomass in roots of urban trees is not well researched. This work assumed that root biomass was 28% of total tree biomass (Cairns et al., 1997; Husch et al., 2003; Wenger, 1984). Wood volume (dry weight) was converted to C by multiplying by the constant 0.50 (Leith, 1975), and C was converted to CO_2 by multiplying by 3.667.

Error Estimates and Limitations

The lack of biometric data from the field remains a serious limitation to our ability to calibrate biomass equations and assign error estimates for urban trees. Differences between modeled and actual tree growth adds uncertainty to CO_2 sequestration estimates. Species assignment errors result from matching species planted with the tree-type used for biomass and growth calculations. The magnitude of this error depends on the goodness of fit in terms of matching size and growth rate. In previous urban studies the prediction bias for estimates of CO_2 storage ranged from -9% to +15%, with inaccuracies as much as 51% RMSE (Timilsina et al., 2014). Hence, a conservative estimate of error of ± 20% can be applied to estimates of total CO_2 stored as an indicator of precision.

Co-Benefit: Energy Savings

Trees and forests can offer energy savings in two important ways. In warmer climates or hotter months, trees can reduce air conditioning bills by keeping buildings cooler through reducing regional air temperatures and offering shade. In colder climates or cooler months, trees can confer savings on the fuel needed to heat buildings by reducing the amount of cold winds that can strip away heat.

Energy conservation by trees is important because building energy use is a major contributor to greenhouse gas emissions. Oil or gas furnaces and most forms of electricity generation produce CO_2 and other pollutants as by-products. Reducing the amount of energy consumed by buildings in urban areas is one of the most effective methods of combatting climate change. Energy consumption is also a costly burden on many low-income families, especially during mid-summer or mid-winter. Furthermore, electricity consumption during mid-summer can sometimes over-extend local power grids leading to rolling brownouts and other problems.

Energy savings are calculated through numerical models and simulations built from observational data on proximity of trees to buildings, tree shapes, tree sizes, building age classes, and meteorological data from McPherson et al. (2017) and McPherson and Simpson (2003). The main parameters affecting the overall amount of energy savings are crown shape, building proximity, azimuth, local climate, and season. Shading effects are based on the distribution of street trees with respect to buildings recorded from aerial photographs for each reference city (McPherson and Simpson, 2003). If a sampled tree was located within 18 m of a conditioned building, information on its distance and compass bearing relative to a building, building age class (which influences energy use) and types of heating and cooling equipment were collected and used as inputs to calculate effects of shade on annual heating and cooling energy effects. Because these distributions were unique to each city, energy values are considered first-order approximations.

In addition to localized shade effects, which were assumed to accrue only to trees within 18 m of a building, lowered air temperatures and windspeeds from increased neighborhood tree cover (referred to as climate effects) can produce a net decrease in demand for winter heating and summer cooling (reduced wind speeds by themselves may increase or decrease cooling demand, depending on the circumstances). Climate effects on energy use, air temperature, and wind speed, as a function of neighborhood canopy cover, were estimated from published values for each reference city. The percentages of canopy cover increase were calculated for 20-year-old large, medium, and small trees, based on their crown projection areas and effective lot size (actual lot size plus a portion of adjacent street and other rights-of-way) of 10,000 ft^2 (929 m^2), and one tree on average was assumed per lot. Climate effects were estimated by simulating effects of wind and air-temperature reductions on building energy use.

In the case of urban Tree Preservation Projects, trees may not be close enough to buildings to provide shading effects, but they may influence neighborhood climate. Because these effects are highly site-specific, we conservatively apply an 80% reduction to the energy effects of trees for Preservation Projects.

Energy savings are calculated as a real-dollar amount. This is calculated by applying overall reductions in oil and gas usage or electricity usage to the regional cost of oil and gas or electricity for residential customers. Colder regions tend to see larger savings in heating and warmer regions tend to see larger savings in cooling.

Error Estimates and Limitations

Formulaic errors occur in modeling of energy effects. For example, relations between different levels of tree canopy cover and summertime air temperatures are not well-researched. Another source of error stems from differences between the airport climate data (i.e., Los Angeles International Airport) used to model energy effects and the actual climate of the study area (i.e., Los Angeles urban area). Because of

the uncertainty associated with modeling effects of trees on building energy use, energy estimates may be accurate within ± 25 percent (Hildebrandt & Sarkovich, 1998).

Co-Benefit: Rainfall Interception

Forest canopies normally intercept 10-40% of rainfall before it hits the ground, thereby reducing stormwater runoff. The large amount of water that a tree crown can capture during a rainfall event makes tree planting a best management practice for urban stormwater control.

City Forest Credits uses a numerical interception model to calculate the amount of annual rainfall intercepted by trees, as well as throughfall and stem flow (Xiao et al., 2000). This model uses species-specific leaf surface areas and other parameters from the Urban Tree Database. For example, deciduous trees in climate zones with longer "in-leaf" seasons will tend to intercept more rainfall than similar species in colder areas shorter foliation periods. Model results were compared to observed patterns of rainfall interception and found to be accurate. This method quantifies only the amount of rainfall intercepted by the tree crown, and does not incorporate surface and subsurface effects on overland flow.

The rainfall interception benefit was priced by estimating costs of controlling stormwater runoff. Water quality and/or flood control costs were calculated per unit volume of runoff controlled and this price was multiplied by the amount of rainfall intercepted annually.

Error Estimates and Limitations

Estimates of rainfall interception are sensitive to uncertainties regarding rainfall patterns, tree leaf area and surface storage capacities. Rainfall amount, intensity and duration can vary considerably within a climate zone, a factor not considered by the model. Although tree leaf area estimates were derived from extensive measurements on over 14,000 street trees across the U.S. (McPherson et al., 2016a), actual leaf area may differ because of differences in tree health and management. Leaf surface storage capacity, the depth of water that foliage can capture, was recently found to vary threefold among 20 tree species (Xiao & McPherson, 2016). A shortcoming is that this model used the same value (1 mm) for all species. Given these limitations, interception estimates may have uncertainty as great as ± 20 percent.

Co-Benefit: Air Quality

The uptake of air pollutants by urban forests can lower concentrations and affect human health (Derkzen et al., 2015; Nowak et al., 2014). However, pollutant concentrations can be increased if the tree canopy restricts polluted air from mixing with the surrounding atmosphere (Vos et al., 2013). Urban forests are capable of improving air quality by lowering pollutant concentrations enough to significantly affect human health. Generally, trees are able to reduce ozone, nitric oxides, and particulate matter. Some trees can reduce net volatile organic compounds (VOCs), but others can increase them through natural processes. Regardless of the net VOC production, urban forests usually confer a net positive benefit to air quality. Urban forests reduce pollutants through dry deposition on surfaces and uptake of pollutants into leaf stomata.

A numerical model calculated hourly pollutant dry deposition per tree at the regional scale using deposition velocities, hourly meteorological data and pollutant concentrations from local monitoring stations (Scott et al., 1998). The monetary value of tree effects on air quality reflects the value that society places on clean air, as indicated by willingness to pay for pollutant reductions. The monetary value of air quality effects were derived from models that calculated the marginal damage control costs

of different pollutants to meet air quality standards (Wang and Santini 1995). Higher costs were associated with higher pollutant concentrations and larger populations exposed to these contaminants.

Error Estimates and Limitations

Pollutant deposition estimates are sensitive to uncertainties associated with canopy resistance, resuspension rates and the spatial distribution of air pollutants and trees. For example, deposition to urban forests during warm periods may be underestimated if the stomata of well-watered trees remain open. In the model, hourly meteorological data from a single station for each climate zone may not be spatially representative of conditions in local atmospheric surface layers. Estimates of air pollutant uptake may be accurate within ± 25 percent.

Conclusions

Our estimates of carbon dioxide storage and co-benefits reflect an incomplete understanding of the processes by which ecoservices are generated and valued (Schulp et al., 2014). Our choice of co-benefits to quantify was limited to those for which numerical models were available. There are many important benefits produced by trees that are not quantified and monetized. These include effects of urban forests on local economies, wildlife, biodiversity and human health and well-being. For instance, effects of urban trees on increased property values have proven to be substantial (Anderson & Cordell, 1988). Previous analyses modeled these "other" benefits of trees by applying the contribution to residential sales prices of a large front yard tree (0.88%) (McPherson et al., 2005). We have not incorporated this benefit because property values are highly variable. It is likely that co-benefits reported here are conservative estimates of the actual ecoservices resulting from local tree planting projects.

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Attachments

Agreement to Transfer Credits & Supporting Documentation

Planting Design Map

Project Area Map

Regional Area Map

Attestation of Planting

Attestation of Planting Affirmation

Attestation of No Double Counting and No Net Harm

Attestation of Additionality

Carbon Quantification Initial Credit Tool

Tree Planting Data

Pre & Post Planting Photo Points

Social Impacts

Agreement to Transfer Credits & Supporting Documentation

Black Fork Planting Project
Agreement to Transfer Potential Credits

This Agreement to Transfer Potential Credits ("**Agreement**") is entered into this 25th day of January, 2024 (the "**Effective Date**") by Natural Areas Land Conservancy, an Ohio nonprofit corporation (the "**Landowner**"), and Western Reserve Land Conservancy, an Ohio nonprofit corporation (the "**Project Operator**") whose mission is to provide the people of our region with essential natural assets through land conservation and restoration and who has undertaken an afforestation or reforestation project ("**Tree Project**") on the Property of Landowner (the "**Property**").

1. **Purpose and Intent**

Project Operator and Landowner desire to help Project Operator fund this Tree Project by allowing Project Operator to develop potential carbon and environmental credits that it can attempt to sell to defray project costs or to plant additional trees. The Landowner will receive the benefits of the trees planted in this project at little to no cost to the Landowner.

These potential carbon or environmental credits or offsets include amounts of carbon dioxide stored, stormwater runoff reductions, energy savings, and air quality benefits arising from the planting and growth of trees in the Tree Project ("**City Forest Carbon Forward Removal Credits**" or "**Credits**"). The Credits will be developed using the protocols and registry of City Forest Credits, a non-profit organization ("**CFC**").

2. **Rights Granted**

Landowner grants Project Operator the title and rights to any and all Credits developed from the Tree Project during the term of this agreement, including rights to register with CFC, and develop and sell the Credits.

3. **Subject Lands**

The Property specified in Exhibit A.

4. **Obligations of Landowner**

Landowner shall not cut, harvest, or damage trees in the Tree Project except in cases of emergency involving fire or flooding or to mitigate hazard if trees are identified as a hazard by a certified arborist.

5. **Obligations of Project Operator**

Project Operator will pay all costs and assume all responsibilities for development and sale of Credits from the Tree Project.

6. **Landowner Representations**

Landowner represents that it has authority to enter this agreement, and that the Property is free from any liens, claims, encumbrances, tenancies, restrictions, or easements that would prevent or interfere with the rights to Credits granted under this Agreement.

7. **Project Operator Representations**

Project Operator represents that it has the capacities necessary to execute its obligations under this agreement.

8. Default

If either party is in default of this agreement, the other party may notify the defaulting party of the specific nature of the default. The defaulting Party has 30 days from the date of notice to correct the default. If the default is not corrected in 30 days, the non-defaulting party may cancel this agreement. Notice of cancellation shall be delivered in writing to the current contact address of the defaulting party.

9. Term of Agreement and Option to Renew

This Agreement shall remain in force for 26 years after the Effective Date of the Agreement. Project Operator may renew this Agreement for a second 26 years if it delivers written notice of renewal to Landowner at least 90 days prior to expiration of this Agreement.

10. Governing Law

This agreement shall be construed and enforced in accordance with the laws of the State of Ohio.

11. Parties

Project Operator: Western Reserve Land Conservancy		Landowner: Natural Areas Land Conservancy	
Name:	Robert B. Owen	Name:	Richard D. Cochran
Title:	Assistant Secretary	Title:	President
Address:	3850 Chagrin River Road, Moreland Hills, OH 44022	Address:	3850 Chagrin River Road, Moreland Hills, OH 44022
Phone:	440-528-4150	Phone:	440-528-4150
Email:	rowen@wrlandconservancy.org	Email:	rcochran@wrlandconservancy.org
Signature:		Signature:	
Date:	January 25, 2024	Date:	January 25, 2024

EXHIBIT A
LEGAL DESCRIPTION

PARCEL 1: 021-17-030-14-000 (PARENT PARCEL)
Situated in the Township of Mifflin, County of Richland, State of Ohio and being a part of the Southwest Quarter of Section 9, of Township 23 North, Range 17 West, and being more particularly described as follows:

Beginning for the same at a stone found and accepted as marking the northeast corner of the southwest quarter of Section 9; Thence, South 01 degree 08 minutes 16 seconds East with the east line of said quarter section, 1961.45 feet to a point in the right of way of Interstate 71 and referenced by an iron pin set on a bearing of North 88 degrees 21 minutes 45 seconds West and at a distance of 289.24 feet

Thence, the following fourteen (14) courses and distances:
1. North 88 degrees 21 minutes 45 seconds West 289.24 feet to an iron pin set on the westerly right of way of Interstate 71
2. North 30 degrees 20 minutes 15 seconds East with said right of way, 112.43 feet to an iron pin set
3. South 69 degrees 02 minutes 41 seconds West 256.70 feet to an iron pin set
4. North 88 degrees 21 minutes 45 seconds West 765.23 feet to an iron pin set
5. North 01 degree 29 minutes 08 seconds West 461.60 feet to an iron pin set
6. North 87 degrees 05 minutes 14 seconds West 735.60 feet to an iron pin set
7. North 02 degrees 11 minutes 28 seconds West 198.55 feet to an iron pin set
8. North 85 degrees 20 minutes 26 seconds West 314.99 feet to an iron pin set
9. South 09 degrees 35 minutes 14 seconds West 197.85 feet to an iron pin set
10. South 86 degrees 16 minutes 53 seconds West, passing through an iron pin set for reference at 385.88 feet, a total distance of 405.88 feet to a point on the west line of said quarter section, the same being a point in Bowen Road (C.H. 288)
11. North 01 degree 03 minutes 54 seconds West with said west line, 438.34 feet to a point, said point being the southwest corner of a parcel currently owned by A. and J. Porter (O.R.V. 2449, Page 17) and referenced by an iron pin found on a bearing of South 89 degrees 48 minutes 10 seconds East and at a distance of 28.74 feet
12. South 89 degrees 48 minutes 10 seconds East, with the south line of said Porter parcel, passing through said reference pin, a total distance of 522.96 feet to an iron pin found on the southeast corner thereof
13. North 01 degree 04 minutes 30 seconds West with the east line of said Porter parcel and the northerly prolongation thereof, 999.14 feet to an iron pin found on the northeast corner of a parcel currently owned by M and A. Gatts (O.R.V. 2376, Page 852), the same being a point on the north line of said quarter section
14. South 89 degrees 47 minutes 13 seconds East with said north line, 2188.11 feet to the place of beginning, containing 90.29 acres, of which 1.61 acres are located within the right of way of Interstate 71 according to survey by Chad F. Craig P.S. #8195 for Seiler & Craig Surveying, Inc. on December 23, 2019, but subject to all easements, right of ways and highways of record.

Iron pins set are 5/8" rods with caps stamped "CRAIG 8195".

Bearings are based on State Plane Grid North, NAD 83 (2011), Geoid 12A, Ohio North Zone and are intended to be used for angular determination only.

PARCEL 2: 021-17-030-10-000
Situated in the Township of Mifflin, County of Richland and State of Ohio, and bounded and described as follows:

Being a part of the Southwest Quarter of Section 4, Township 23, Range 17, Mifflin Township, Richland County, Ohio, and more fully described as follows:

Beginning at a point, said point being the intersection of the centerlines of Bowen Road and T.R. No. 288, and the south line of the Southwest Quarter of Section 4, Township 23, Range 17; thence North 1 degree and 12 minutes East, along the centerline of said road a distance of 475 feet; thence South 82 degrees and 14 minutes East a distance of 186

feet; thence easterly parallel to the south line of said Quarter Section a distance of 7.40 feet; thence southerly parallel to the east line of said Quarter Section a distance of 100 feet; thence easterly parallel to the south line of said Quarter Section a distance of 602 feet; thence northerly parallel to the east line of said Quarter Section a distance of 541 feet; thence easterly parallel to the south line of said Quarter Section a distance of 1143. 7 feet; thence southerly along the east line of said Quarter Section a distance of 60 rods to the southeast corner of said Quarter Section; thence westerly along the south line of said Quarter Section a distance of 160 rods to the point of beginning and containing 41.11 more or less acres, subject to all easements and restrictions of record.

PARCEL 3: 021-17-030-13-000 (PARENT PARCEL)
Situated in the Township of Mifflin, County of Richland, State of Ohio and being a part of the Northwest Quarter of Section 9, of Township 23 North, Range 17 West, and being more particularly described as follows:

Beginning for the same at an iron pin found and accepted as marking the northwest corner of the northwest quarter of Section 9. the same being a point in the centerline of Bowen Road (C.H. 288), Thence, South 89 degrees 31 minutes 37 seconds East with the north line of the northwest quarter of Section 9, a distance of 2669.47 feet to an iron pin found and accepted as marking the northeast corner of said quarter section;

Thence, South 01 degree 36 minutes 15 seconds East with the east line of said quarter section, 1365.10 feet to a point referenced by an iron pin found on a bearing of North 89 degrees 56 minutes 10 seconds West and at a distance of 300.00 feet;

Thence, North 89 degrees 56 minutes 10 seconds West, passing through said reference pin, a total distance of 1620.80 feet to an iron pin found and accepted as marking the northeast corner of a parcel currently owned by S. and L. Sauder (O.R.V. 446, Page 688);

Thence, North 89 degrees 45 minutes 52 seconds West with the north line of said Sauder parcel, 81.18 feet to an iron pin set;

Thence, North 03 degrees 28 minutes 37 seconds East 229.54 feet to an iron pin set;

Thence, North 79 degrees 18 minutes 33 seconds West 626.62 feet to an iron pin set;

Thence, South 85 degrees 24 minutes 49 seconds West 104.09 feet to an iron pin set;

Thence, South 56 degrees 49 minutes 13 seconds West 89.72 feet to an iron pin set;

Thence, North 80 degrees 21 minutes 10 seconds West, passing through an iron pin set for reference at 189.96 feet, a total distance of 214.96 feet to a point on the west line of said quarter section and in the centerline of Bowen Road;

Thence, North 00 degrees 43 minutes 15 seconds West with said west line and said centerline, 1064.20 feet to the place of beginning, containing 77.71 acres according to survey by Chad F. Craig P.S. #8195 for Seiler & Craig Surveying, Inc. on March 31, 2020, but subject to all easements, right of ways and highways of record.

Iron pins set are 5/8" rods with caps stamped "CRAIG 8195".

Bearings are based on State Plane Grid North, NAD 83 (2011), Geoid 18A, Ohio North Zone and are intended to be used for angular determination only.

PARCEL 4: 021-17-030-17-000
Situated in the State of Ohio. County of Richland, Township of Mifflin.

Being the Northeast Quarter of Section Nine (9), Township Twenty-three (23) of Range Seventeen (17), containing one hundred and sixty (160) acres, subject to an easement to the State of Ohio for highway purposes over 20.85 acres. which easement is recorded in Volume 449, Pages 98, 98 and 99 of the Deed Records of Richland County, Ohio.

PARCEL 5: 021-17-019-13-001
Situated in the Township of Mifflin, County of Richland, State of Ohio and being a part of the NW Quarter Section 9, of Township 23 North, Range 17 West, more particularly described as follows:

Beginning for the same at a stone (found) marking the SE corner of said quarter; Thence North 84 ° 26 minutes 10 seconds West, with the south line of said quarter as marked by a woven wire fence, a distance of 1609.12 feet to an iron pin set;

Thence, North 3 degrees 07 minutes 50 seconds East with a woven wire fence a distance of 1286.68 feet to an iron pin set on the northerly line of an 80-acre parcel presently owned by Gardner as recorded at Deed Vol. 688, Page 98;

Thence, South 84 degrees 37 minutes 15 seconds East with the northerly line of said Gardner parcel, passing through a 5/8" iron pipe found at 1320.35 feet, a total distance of 1620.35 feet to a point on the east line of said quarter.

Thence, South 3 degrees 38 minutes 20 seconds West with said east line, passing through a 5/8" iron pipe found at 457.35 feet, a total distance of 1291.47 feet to the Place of Beginning, containing 47.75 acres, according to survey by Douglas C. Seiler, Registered Surveyor #6869 on February 25, 1986.

The grantee, his heirs and assigns do hereby covenant and agree that the parcel of land described in this instrument will not be conveyed by said grantee, heirs and assigns independently and separately from any adjoining or contiguous parcel fronting on a public highway or street of less than 5 acres without the approval of the Richland County Regional Planning Commission

Bearings are based on a magnetic observation.
Iron pins set are 5/8" reinforcing rods with plastic caps stamped "Seiler 6869".

PARCEL 6: 021-17-030-08-000
Situated in the Township of Mifflin, County of Richland and State of Ohio, and bounded and described as follows: Being a part of the Southeast Quarter of Section 5, Township 23, Range 17, and further described as follows:

Beginning at a point on the Easterly line of said Quarter Section, 80 rods North of the Southeast corner thereof;

Thence West, parallel with the South line of said Quarter Section to a point in the center of Kohler Run;

Thence in a Northeasterly direction along and with the centerline of said Kohler Run to the East line of said Quarter Section;

Thence South along the East Quarter Section line to the place of beginning, containing nineteen (19) acres of land.

PARCEL 7: 021-17-030-11-000
Situated in the State of Ohio, County of Richland and Township of Mifflin, and bounded and described as follows:

A part of the Southeast Quarter of Section 5, Township 23, and Range 17, commencing at the Southeast corner of said Quarter Section;

Thence West with the South line of said Quarter Section, 21 chains and 75 links to a stone;

Thence North 20 chains;

Thence East, parallel with the South line of said Quarter 21 chains and 50 links to a post on the East line of said Quarter;

Thence South on the East line of said Quarter, 20 chains to the place of beginning, containing Forty-three (43) acres of land, more or less.

Black Fork Forest Parcel Number Change

During the purchase of the property, portions of the two parent parcels 021-17-030-13-000 and 021-17-030-14-000 were acquired and received new parcel numbers as a result of the change in ownership.

Table 1. Parcel number change

Parent Parcel	**Created Child Parcel**
021-17-030-13-000	021-17-030-13-001
021-17-030-14-000	021-17-030-14-003

Supporting documents:

Below is an email exchange between Western Reserve Land Conservancy (Bob Owen) and the title company handling the transaction (Michelle Britton – Title Manager/Licensed Agent at Ohio Real Title) confirming the parcel number changes.

Email 1, confirming parcel number change according to county auditor

From: Michelle Britton <michellebritton@ohiorealtitle.com>
Sent: Thursday, January 5, 2023 12:27 PM
To: Bob Owen <rowen@wrlandconservancy.org>
Cc: Krista Futrel <kfutrel@wrlandconservancy.org>
Subject: Parcel Numbers for Rogers/Nalc/Hemlock

Caution: This email originated outside of the organization. Think before you click!

Good afternoon – please find info below regarding Parcel Numbers etc.

Parcels in Deed and Covenant	Parcel numbers according to county auditor	ACREAGE	OWNER
021-17-030-08-000	021-17-030-08-000	19	NALC
021-17-019-13-001	021-17-019-13-001	47.75	NALC
021 -17-030-10-000	021 -17-030-10-000	41.11	NALC
021-17-030-11 -000	021-17-030-11 -000	43	NALC
021-17-030-17-000	021-17-030-17-000	160	NALC
portion of 021-17-030-13-000	021-17-030-13-001	77.71	NALC
portion of 021-17-030-14-000	021-17-030-14-003	90.29	NALC

Please let me know if you need anything further.

Thanks,
Michelle

MICHELLE BRITTON
Title Manager/Licensed Agent

1213 Prospect Avenue, Suite 200, Cleveland, OH 44115

Phone: (216) 373-8262 | Mobile: (216) 548-1514 | Fax: (216) 453-1420
michellebritton@ohiorealtitle.com | www.ohiorealtitle.com

Planting Design Map

Planting Design

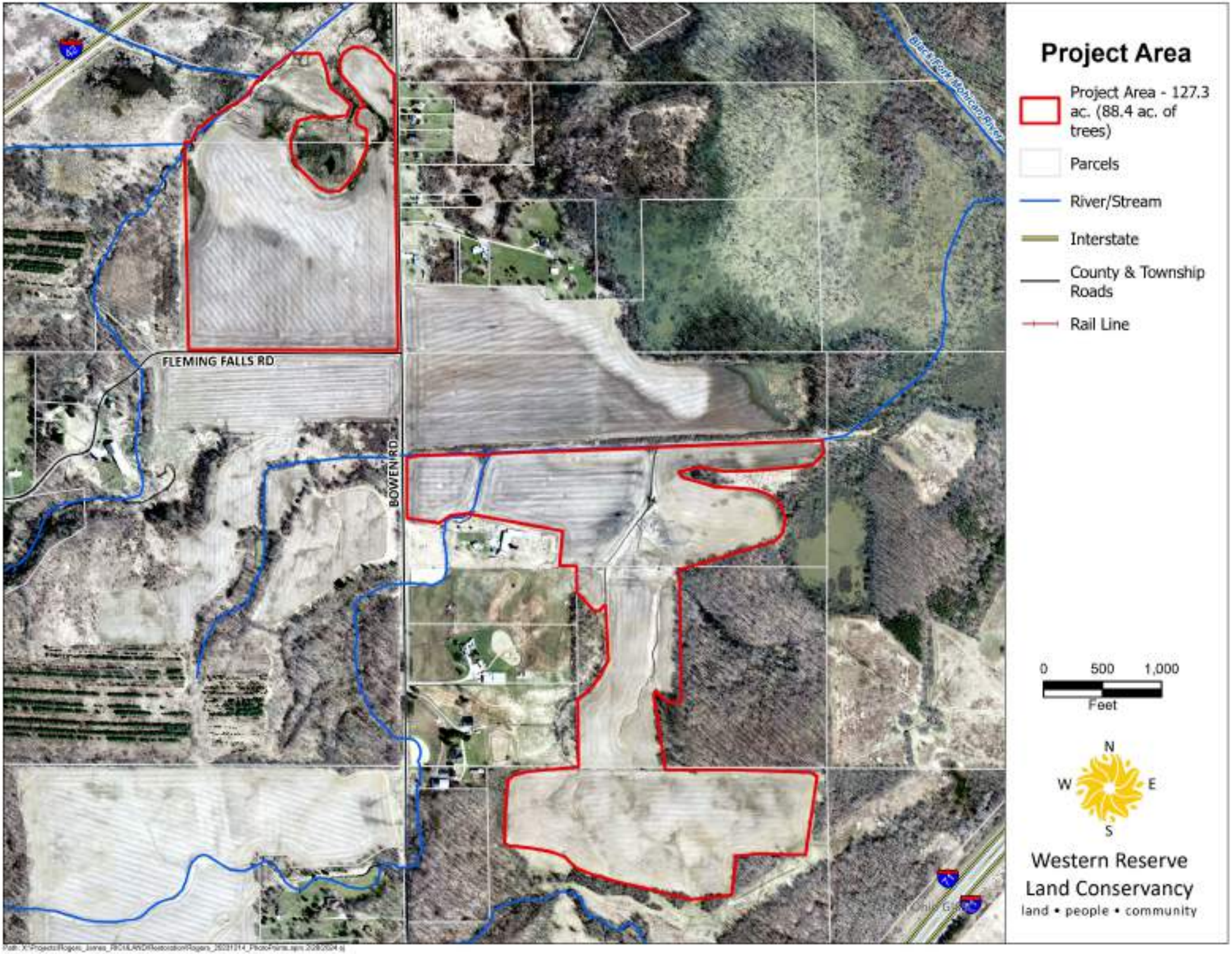
- Project Area - 127.3 ac. (88.4 ac. of trees)
- Upland Tree Planting (Spring 2023) 62 ac. (4,340 trees)
- Wetland Tree Planting (Fall 2023) 26.4 ac. (1,198 trees)
- Vernal Pools
- River/Stream
- Interstate
- County & Township Roads
- Rail Line

0 500 1,000
Feet

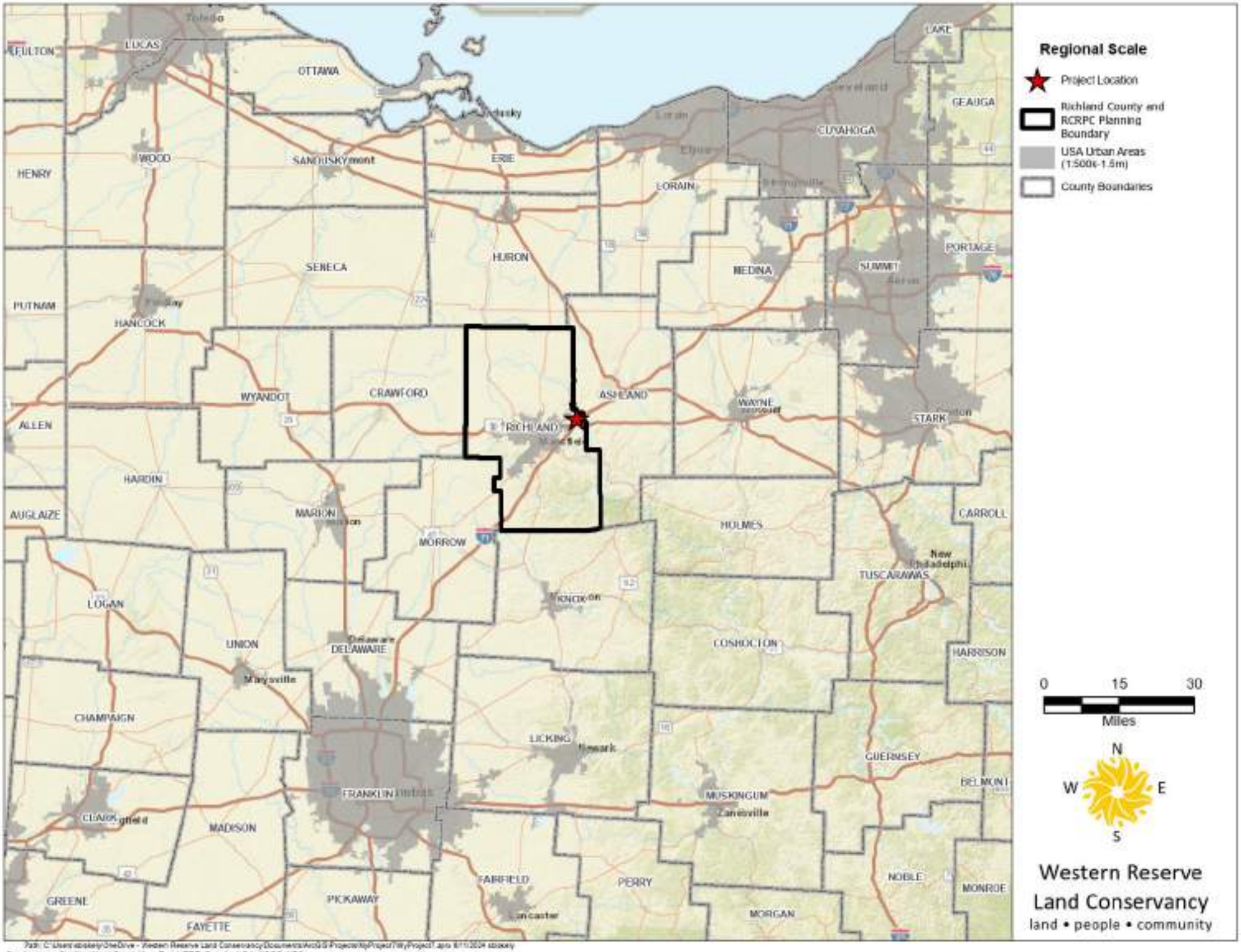
N
W E
S

Western Reserve Land Conservancy
land • people • community

Project Area Map


FLEMING FALLS RD
BOWEN RD
Black River Mohican River
Project Area
Project Area - 127.3 ac. (88.4 ac. of trees)
Parcels
River/Stream
Interstate
County & Township Roads
Rail Line
0
500
1,000
Feet
N
W
E
S
Western Reserve Land Conservancy
land • people • community

Regional Area Map


Regional Scale
Project Location
Richland County and RCRPC Planning Boundary
USA Urban Areas (1:500k-1.5m)
County Boundaries
0
15
30
Miles
N
W
E
S
Western Reserve Land Conservancy
land • people • community
LUCAS
OTTAWA
SANDUSKY
ERIE
LAKE
GEAUGA
CUYAHOGA
LORAIN
MEDINA
SUMMIT
PORTAGE
STARK
WAYNE
HENRY
WOOD
SENECA
HURON
PUTNAM
HANCOCK
WYANDOT
CRAWFORD
ASHLAND
RICHLAND
ALLEN
HARDIN
AUGLAIZE
MARION
MORROW
HOLMES
CARROLL
TUSCARAWAS
LOGAN
UNION
DELAWARE
COSHOCTON
HARRISON
CHAMPAIGN
LICKING
GUERNSEY
BELMONT
FRANKLIN
MUSKINGUM
CLARK
MADISON
FAIRFIELD
PERRY
NOBLE
MONROE
GREENE
PICKAWAY
MORGAN
FAYETTE

Attestation of Planting

CITY FOREST CREDITS

Black Fork Planting Project
Project Operator Attestation of Planting

I, Robert B. Owen, Assistant Secretary of Western Reserve Land Conservancy, the undersigned Project Operator for the Planting Project named Black Fork, located at Bowen Road Mansfield, Ohio 44903 and submitted to City Forest Credits by application dated December 14, 2023, attest to the following in order to confirm the planting of trees under this Project:

- Trees planted were not required by any law or ordinance to be planted;
- Trees were planted under this project on the following dates: April 26-27; November 10, 12, and 14;
- The organizations or groups that participated in the planting events are listed in the attached documents;
- Planting events are shown in photos attached, which can include photos of tree stock and planting activities;
- The number of trees planted by species are, to a reasonable certainty, 5,538 trees across 88.4 acres.

These planting numbers are confirmed by one or more of the following supporting and attached documents:

1. Invoices for trees planted, or
2. Invoices or a statement from the party who funded the tree purchase or supplied the trees attesting to the number of trees purchased, or
3. Any reporting to the owner or public body regarding the planting, invoices, costs, or other data regarding the planting, or
4. Any other reliable estimate of trees planted that is approved by the Registry

Signed on February 29th in 2024, by Robert B. Owen, Assistant Secretary of Western Reserve Land Conservancy.

Signature

ROBERT B. OWEN

Printed Name

440. 528.4150

Phone

rowen@wrlandconservancy.org

Email

Partners involved in the planting include:

- Western Reserve Land Conservancy
    - Oversaw the planting of trees and shrubs in Spring 2023 and Fall 2023
    - Added tree protection to reduce damage from deer
- US Fish and Wildlife Service
    - Consulted on planting design
- Forrest Keeling Nursery
    - Provided all trees and shrubs for planting in Spring 2023 and Fall 2023
- Williams Foresty & Associates
    - Provided labor to plant all trees and shrubs in Spring 2023 and Fall 2023

Exhibit A

The following documents represent the majority of invoices for trees planted as part of this project. All invoices are on file with Western Reserve Land Conservancy.

FORREST KEELING NURSERY
P.O. Box 135
Elsberry MO 63343
Phone: (573) 898-5571
Fax: (573) 898-5803
www.fknursery.com
info@fknursery.com

Invoice

Invoice Number:
SI-144373-1

Bill To:
Western Reserve Land Conservancy
3850 Chagrin River Road
Moreland Hills OH 44022
Robin Christensen
(440) 528-4150

Ship To:
Western Reserve Land Conservancy
9568 Pennimen Rd
Orwell OH 44076
Robin Christensen
(440) 528-4150

ORDER DATE	CUSTOMER PO	TERMS
04/21/2023		Net Cash

SALESPERSON	ENTERED BY	SHIP VIA	SHIP DATE	DUE DATE
Mary Gibler	Nikki	Deliver	04/21/2023	04/22/2023

QUANTITY SHIPPED	ITEM #	DESCRIPTION	SIZE	UNIT PRICE	EXT. PRICE
130	1006	Acer rubrum Native Red Maple *wanted 375*	S3-3CG RPM	$13.95	$1,813.50
370	1056	Aesculus glabra Ohio Buckeye	S3-3CG RPM	$14.35	$5,309.50
370	1203	Carya laciniosa Shellbark Hickory *small*	S3-3CG RPM	$14.35	$5,309.50
370	1261	Celtis occidentalis Hackberry	S3-3CG RPM	$13.45	$4,976.50
370	1282	Cercis canadensis Redbud	S3-3CG RPM	$13.45	$4,976.50
370	1505	Juglans nigra Black Walnut	S3-3CG RPM	$13.45	$4,976.50
130	1562	Liriodendron tulipifera Tulip Tree or Tulip Poplar	S3-3CG RPM	$14.35	$1,865.50

2110 Total Plants

FORREST KEELING NURSERY
P.O. Box 135
Elsberry MO 63343
Phone: (573) 898-5571
Fax: (573) 898-5803
www.fknursery.com
info@fknursery.com

Invoice

Invoice Number:
SI-144373-1

Bill To:
Western Reserve Land Conservancy
3850 Chagrin River Road
Moreland Hills OH 44022
Robin Christensen
(440) 528-4150

Ship To:
Western Reserve Land Conservancy
9568 Pennimen Rd
Orwell OH 44076
Robin Christensen
(440) 528-4150

RPM Patent 7,308,775 8,236,322 8,460,677

Extended Total with Discount:	**$29,227.50**
Freight:	**$2,300.00**
Total:	**$31,527.50**
Balance Due:	**$31,527.50**

SIGNATURE _____ **DATE**_____

TERMS:

Unless credit has been established, all sales are on a cash in advance of shipping basis. Credit may be obtained by submitting a credit application. For Customers with approved **credit, payment is due within 30 days of invoice.** Payment may be made with Cash, Check, American Express, Master Card, Visa or Discover Card. Past due accounts will be subject to a service charge of 2% per month (24% annum).

A 3% surcharge will be added to all credit card sales.

SHIPMENTS WILL NOT BE MADE TO CUSTOMERS WHOSE ACCOUNTS ARE DELINQUENT.

FORREST KEELING NURSERY
P.O. Box 135
Elsberry MO 63343
Phone: (573) 898-5571
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Invoice

Invoice Number:
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Moreland Hills OH 44022
Robin Christensen
(440) 528-4150

Ship To:
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9568 Pennimen Rd
Orwell OH 44076
Robin Christensen
(440) 528-4150

ORDER DATE		CUSTOMER PO	TERMS	
08/19/2022			Net Cash	
SALESPERSON	**ENTERED BY**	**SHIP VIA**	**SHIP DATE**	**DUE DATE**
Leah Schumacher	Mary	Deliver	04/21/2023	04/22/2023

QUANTITY SHIPPED	ITEM #	DESCRIPTION	SIZE	UNIT PRICE	EXT. PRICE
200	15412	Prunus serotina Black Cherry	S3-3CG RPM	$14.35	$2,870.00
370	1724	Quercus alba White Oak small	S3-3CG RPM	$14.35	$5,309.50
600	1734	Quercus bicolor Swamp White Oak	S3-3CG RPM	$13.45	$8,070.00
610	1758	Quercus macrocarpa Bur Oak or Mossycup Oak	S3-3CG RPM	$13.45	$8,204.50
450	1789	Quercus palustris Pin Oak	S3-3CG RPM	$13.45	$6,052.50

2230 **Total Plants**

RPM Patent 7,308,775 8,236,322 8,460,677

Extended Total with Discount:	**$30,506.50**
Freight:	**$2,300.00**
Total:	**$32,806.50**
Balance Due:	**$32,806.50**

SIGNATURE _____ **DATE**_____

TERMS:

Unless credit has been established, all sales are on a cash in advance of shipping basis. Credit may be obtained by submitting a credit application. For Customers with approved **credit, payment is due within 30 days of invoice.** Payment may be made with Cash, Check, American Express, Master Card, Visa or Discover Card. Past due accounts will be subject to a service charge of 2% per month (24% annum).

A 3% surcharge will be added to all credit card sales.

SHIPMENTS WILL NOT BE MADE TO CUSTOMERS WHOSE ACCOUNTS ARE DELINQUENT.

FORREST KEELING NURSERY
P.O. Box 135
Elsberry MO 63343
Phone: (573) 898-5571
Fax: (573) 898-5803
www.fknursery.com
info@fknursery.com

Invoice

Invoice Number:
SI-146337

Bill To:
Western Reserve Land Conservancy
3850 Chagrin River Road
Moreland Hills OH 44022
Robin Christensen
(440) 526-4154

Ship To:
Western Reserve Land Conservancy
2600 Fleming Falls Rd
Mansfield OH 44903
Jim Sturges
(404) -30-4873

ORDER DATE		CUSTOMER PO	TERMS	
06/29/2023			Net Cash	
SALESPERSON	**ENTERED BY**	**SHIP VIA**	**SHIP DATE**	**DUE DATE**
Mary Gibler	Mary	Plant Peddlers-Delivery	11/09/2023	11/10/2023

QUANTITY SHIPPED	ITEM #	DESCRIPTION	SIZE	UNIT PRICE	EXT. PRICE
70	15406	Alnus serrulata Smooth Alder *wanted 125*	S3-3CG RPM	$14.79	$1,035.30
125	15350	Aronia melanocarpa Black Chokeberry	S3-3CG RPM	$12.00	$1,500.00
125	13797	Cephalanthus occidentalis Buttonbush	S3-3CG RPM	$12.00	$1,500.00
125	15359	Cornus amomum Silky Dogwood	S3-3CG RPM	$12.00	$1,500.00
125	13800	Cornus stolonifera (sericea) Redosier Dogwood	S3-3CG RPM	$12.00	$1,500.00
125	1505	Juglans nigra Black Walnut	S3-3CG RPM	$14.79	$1,848.75
125	1554	Liquidambar styraciflua Sweetgum	S3-3CG RPM	$14.79	$1,848.75
25	1554	Liquidambar styraciflua Sweetgum	S3-3CG RPM	$15.90	$397.50
153	1644	Platanus occidentalis Sycamore	S3-3CG RPM	$14.79	$2,262.87
125	1651	Populus deltoides Cottonwood	S3-3CG RPM	$14.79	$1,848.75
125	1734	Quercus bicolor Swamp White Oak	S3-3CG RPM	$14.79	$1,848.75
25	1734	Quercus bicolor Swamp White Oak	S3-3CG RPM	$15.90	$397.50
125	1789	Quercus palustris Pin Oak	S3-3CG RPM	$14.79	$1,848.75

FORREST KEELING NURSERY
P.O. Box 135
Elsberry MO 63343
Phone: (573) 898-5571
Fax: (573) 898-5803
www.fknursery.com
info@fknursery.com

Invoice

Invoice Number:
SI-146337

Bill To:
Western Reserve Land Conservancy
3850 Chagrin River Road
Moreland Hills OH 44022
Robin Christensen
(440) 528-4154

Ship To:
Western Reserve Land Conservancy
2600 Fleming Falls Rd
Mansfield OH 44903
Jim Sturges
(404) -30-4873

ORDER DATE	CUSTOMER PO	TERMS
06/29/2023		Net Cash

SALESPERSON	ENTERED BY	SHIP VIA	SHIP DATE	DUE DATE
Mary Gibler	Mary	Plant Peddlers-Delivery	11/09/2023	11/10/2023

QUANTITY SHIPPED	ITEM #	DESCRIPTION	SIZE	UNIT PRICE	EXT. PRICE
0	13791	Salix nigra Black Willow	S3-3CG RPM	$14.79	$0.00
50	13791	Salix nigra Black Willow	S3-3CG RPM	$15.90	$795.00
125	15393	Sambucus canadensis Elderberry	S3-3CG RPM	$12.00	$1,500.00
25	15393	Sambucus canadensis Elderberry	S3-3CG RPM	$12.90	$322.50
125	1950	Ulmus americana American Elm	S3-3CG RPM	$14.79	$1,848.75
125	1979	Viburnum lentago Nannyberry Viburnum	S3-3CG RPM	$15.72	$1,965.00

1848 Total Plants

RPM Patent 7,308,775 8,236,322 8,460,677
Shipping Seth Yoho 304-244-9380

Extended Total with Discount:	**$25,768.17**
Freight:	**$2,000.00**
Total:	**$27,768.17**
Balance Due:	**$27,768.17**

SIGNATURE _____ **DATE** _____

TERMS:

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SHIPMENTS WILL NOT BE MADE TO CUSTOMERS WHOSE ACCOUNTS ARE DELINQUENT.

INVOICE

PLEASE REMIT TO:
Williams Forestry & Associates
P.O. Box 1543
Calhoun, GA 30703

Williams Forestry & Associates
P.O. Box 1011
Jackson, OH 45640

INVOICE #WRLC23-01
INVOICE DATE: 04/27/23

Bill to:
Western Reserve Land Conservancy 3850 Chagrin River Rd Moreland Hills, OH 44022

Site:
Rogers Restoration Richland County Ohio Spring 2023

Site POC	Customer PO	Payment Terms	
Robin Christensen	N/A	Net 30 days	
WFA Rep ID	Shipping Method	Dates of Service	Due Date
Jim Sturges	N/A	April 24 – April 25 2023	05/29/23

Description Of Services	Units	Price	Total
Labor only to hand plant 3-Gallon container seedlings	4,340	$16.72	$72,564.80
Provided by the client			

Subtotal	$72,564.80
Sales Tax	N/A
Total Amount Due	$72,564.80

Invoice completed and submitted by: *Patricia Hollingshead*
Patricia (Pat) Hollingshead, Adm Assistant
Williams Forestry & Associates
Ohio Office

INVOICE

PLEASE REMIT TO:
Williams Forestry & Associates
P.O. Box 1543
Calhoun, GA 30703

Williams Forestry & Associates
P.O. Box 1011
Jackson, OH 45640

INVOICE #WRLC23-02
INVOICE DATE: 11/15/23

Bill to:
Western Reserve Land Conservancy 3850 Chagrin River Rd Moreland Hills, OH 44022

Site:
Rogers Restoration Richland County Ohio Fall 2023

Site POC	Customer PO	Payment Terms	
Robin Christensen	N/A	Net 30 days	
WFA Rep ID	Shipping Method	Dates of Service	Due Date
Jim Sturges	N/A	November 10 & November 14, 2023	12/15/23

Description Of Services	Units	Price	Total
Labor only to hand plant 3-Gallon container seedlings	1,848	$17.89	$33,060.72
Provided by the client			

Subtotal	$33,060.72
Sales Tax	N/A
Total Amount Due	$33,060.72

Invoice completed and submitted by: *Patricia Hollingshead*
Patricia (Pat) Hollingshead, Adm Assistant
Williams Forestry & Associates
Ohio Office

Attestation of Planting Affirmation

CITY FOREST CREDITS

Black Fork Planting Project
Attestation of Planting Affirmation

I, the undersigned working on behalf of Williams Forestry & Associates, attest and confirm that tree planting(s) occurred on the following dates under the project named in the City Forest Credits Registry Black Fork Planting by the Project Operator, Western Reserve Land Conservancy.

Trees were planted under this project on the following date(s): April 26-27; November 10, 12, and 14;

The approximate number of trees planted is: 5,538

Signed on February 26 in 2024, by Patricia M Hollingshead, planting coordinator and assistant for Williams Forestry & Associates.

Patricia M. Hollingshead
Signature

Patricia M. Hollingshead
Printed Name

(704) 352-5981
Phone

pat@wfatrees.com
Email

Attestation of No Double Counting and No Net Harm

CITY FOREST CREDITS

Black Fork Planting Project
Attestation of No Double Counting of Credits and No Net Harm

I am the Assistant Secretary of Western Reserve Land Conservancy (**WRLC**) and make this attestation regarding no double counting of credits and no net harm from this tree planting project, the Black Fork Planting 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

WRLC 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

WRLC 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. WRLC has checked the location of the Project Area against registered urban forest carbon afforestation and reforestation projects. WRLC has determined that there is no overlap of Project Area or Project Trees with any registered urban forest carbon afforestation and reforestation project.

4. No Net Harm

The trees planted in this project will produce many benefits, as described in our Application and PDD. Like almost all urban trees, the project trees are planted not for harvest but for the benefits they deliver to people, communities, and the environment as living trees 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 January 25th in 2024, by Robert B. Owen, Assistant Secretary of Western Reserve Land Conservancy.

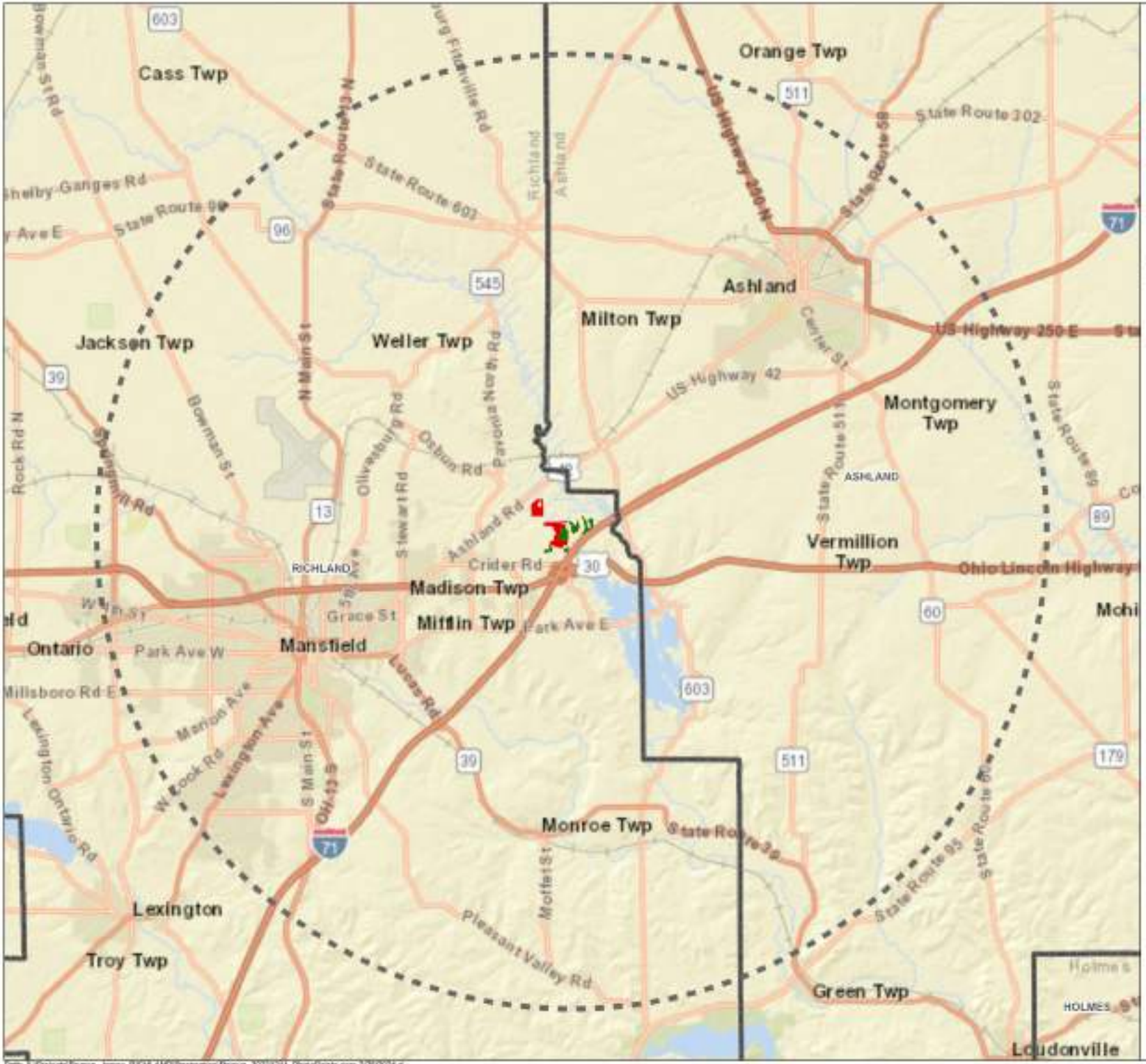
Signature

440 528-4150

Phone

rowen@wrlandconservancy.org

Email



No Double Counting

- Planting Project Area - 127.3 ac. (88.4 ac. of trees)
- Existing Preservation Projects
- County Boundaries
- 10 mile buffer

0 2.5 5
Miles

N
W E
S

Western Reserve Land Conservancy
land • people • community

Path: X:\Projects\Rogers, James R\ASHLAND\Preservation\Rogers_20231219_PhotoPoints.aprx 2/6/2024
Service Layer Credits: World Street Map: City of Mansfield, Esri, HERE, Garmin, NGA, USGS, NPS

Attestation of Additionality

CITY FOREST CREDITS

Black Fork Planting Project
Attestation of Additionality

I, Robert B. Owen, am the Assistant Secretary of Western Reserve Land Conservancy (**WRLC**) and make this attestation regarding additionality from this tree planting project, the Black Fork Planting Project.

- 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.
- Legal Requirements Test (Protocol Section 1.8)
  - Project trees are not required by law or ordinance to be planted.
- The Project did not plant trees on sites that were converted out of a forest use or that were cleared of healthy trees and then planted with project trees (Protocol Section 1.9)
- Project-Specific Baseline or Performance Standard Baseline
  - Project trees are additional based on a project specific baseline. See PDD; or
  - Project trees are additional based on the Performance Standard baseline; see attached baseline to the PDD.
- Project Implementation Agreement for Project Duration
  - WRLC has signed a Project Implementation Agreement with City Forest Credits for 26 years.
- The 26-year Project Duration commitment is additional to and longer than any commitment WRLC makes to non-carbon project tree plantings.
- The revenue from the sale of carbon credits will play a material role in the successful and durable storage of Project Trees' carbon stock by providing funding that will help ensure the establishment and long-term health of Project Trees. Funding from carbon credits will support the management and stewardship of the property. Western Reserve Land Conversancy has one full-time Parks and Preserves Manager and one full-time Stewardship Specialist that are responsible for the management of Land Conservancy owned properties including monitoring and maintaining restored areas. The revenue generated from carbon credit sales will support these positions to allow for regular monitoring and maintenance of the planted trees.
- This project is part of a preservation and restoration project. Despite portions of the property being systemically cleared and drained for agriculture, it still contains 94 acres of existing high-quality forest which were registered as a preservation carbon credit project in early 2023. As restoration plans were being finalized in June 2022, the Land Conservancy began discussions about carbon crediting the tree plantings. As the team planned for the plantings in spring 2023, the team discussed project requirements and confirmed alignment with the project's goals.

[SIGNATURE PAGE TO FOLLOW]

Signed on January 25 in 2024, by Robert B. Owen, Assistant Secretary of Western Reserve Land Conservancy.

Signature

ROBERT B. OWEN, ASST. SECRETARY
Printed Name

440 528-4150
Phone

rowen@wrlandconservancy.org
Email

Carbon Quantification Initial Credit Tool

Directions

1) In Table 1 record the number of sites planted for each tree species.
2) If species are not listed, add them to the bottom of Table 1.

Table 1. Planting List

Scientific Name	Common Name	Tree-Type Abbreviation	No. Sites Planted
Carya species	hickory	BDL	370
Juglans nigra	black walnut	BDL	495
Quercus bicolor	swamp white oak	BDL	750
Quercus palustris	pin oak	BDL	575
Acer rubrum	red maple	BDL	130
Aesculus glabra	Ohio buckeye	BDL	370
Celtis occidentalis	northern hackberry	BDL	370
Cercis canadensis	eastern redbud	BDS	370
Magnolia grandiflora	southern magnolia	BEM	
Prunus serotina	black cherry	BDL	200
Quercus alba	white oak	BDL	370
Quercus rubra	northern red oak	BDL	
Fagus grandifolia	American Beech	BDL	
Acer saccharinum	silver maple	BDL	
Liquidambar styraciflua	sweetgum	BDL	150
Platanus occidentalis	American sycamore	BDL	153
Populus deltoides	eastern cottonwood	BDL	125
Ulmus americana	American elm	BDL	125
Acer ginnala	Amur maple	BDS	
Acer negundo	boxelder	BDM	
Acer nigrum	black maple	BDL	
Acer palmatum	Japanese maple	BDS	
Acer platanoides	Norway maple	BDL	
Acer saccharum	sugar maple	BDL	
Acer species	maple	BDL	
Albizia julibrissin	mimosa	BDS	
Alnus species	alder	BDM	
Betula nigra	river birch	BDM	
Betula papyrifera	paper birch	BDL	
Betula species	birch	BDM	
Broadleaf Deciduous Large	broadleaf deciduous large	BDL	
Broadleaf Deciduous Medium	broadleaf deciduous medium	BDM	
Broadleaf Deciduous Small	broadleaf deciduous small	BDS	
Broadleaf Evergreen Large	broadleaf evergreen large	BEL	
Broadleaf Evergreen Medium	broadleaf evergreen medium	BEM	
Broadleaf Evergreen Small	broadleaf evergreen small	BES	
Castanea dentata	American chestnut	BDL	
Catalpa species	catalpa	BDL	
Catalpa speciosa	northern catalpa	BDL	
Cladrastis kentukea	yellowwood	BDM	
Conifer Evergreen Large	conifer evergreen large	CEL	
Conifer Evergreen Medium	conifer evergreen medium	CEM	
Conifer Evergreen Small	conifer evergreen small	CES	
Cornus florida	flowering dogwood	BDS	
Cornus species	dogwood	BDS	
Fraxinus americana	white ash	BDL	
Fraxinus nigra	black ash	BDM	
Fraxinus pennsylvanica	green ash	BDL	
Fraxinus species	ash	BDM	
Ginkgo biloba	ginkgo	BDM	
Gleditsia triacanthos	honeylocust	BDM	
Gymnocladus dioicus	Kentucky coffeetree	BDL	
Hibiscus syriacus	rose-of-sharon	BDS	
Ilex opaca	American holly	BES	
Ilex species	holly	BES	
Juniperus species	juniper	CEM	
Juniperus virginiana	eastern red cedar	CEM	
Liriodendron tulipifera	tulip tree	BDL	130
Magnolia virginiana	sweetbay	BEM	
Malus species	apple	BDS	
Morus alba	white mulberry	BDM	
Morus species	mulberry	BDM	
Ostrya virginiana	eastern hophornbeam	BDM	
Phellodendron amurense	Amur corktree	BDM	
Picea abies	Norway spruce	CEL	
Picea mariana	black spruce	CEM	
Picea pungens	blue spruce	CEM	
Picea species	spruce	CEL	
Pinus contorta	Bolander beach pine	CES	
Pinus nigra	Austrian pine	CEM	
Pinus ponderosa	ponderosa pine	CEL	
Pinus resinosa	red pine	CEL	
Pinus strobus	eastern white pine	CEL	
Pinus sylvestris	Scotch pine	CEM	
Pinus virginiana	Virginia pine	CEM	
Populus nigra	black poplar	BDL	
Populus species	cottonwood	BDL	
Populus tremuloides	quaking aspen	BDL	
Prunus cerasifera	cherry plum	BDS	
Prunus serrulata	Kwanzan cherry	BDS	
Prunus species	plum	BDS	
Prunus virginiana	common chokecherry	BDS	
Pyrus calleryana	Callery pear	BDM	

Table 2. Summary of Planting Sites

Tree-Type	Tree-Type Abbreviation	No. Sites Planted
Brdlf Decid Large (>50 ft)	**BDL**	4923
Brdlf Decid Med (30-50 ft)	**BDM**	50
Brdlf Decid Small (<30 ft)	**BDS**	565
Brdlf Evgrn Large (>50 ft)	**BEL**	0
Brdlf Evgrn Med (30-50 ft)	**BEM**	0
Brdlf Evgrn Small (<30 ft)	**BES**	0
Conif Evgrn Large (>50 ft)	**CEL**	0
Conif Evgrn Med (30-50 ft)	**CEM**	0
Conif Evgrn Small (<30 ft)	**CES**	0
	Total Sites Planted	5538

Pyrus species	pear	BDM	
Quercus coccinea	scarlet oak	BDL	
Quercus ellipsoidalis	northern pin oak	BDL	
Quercus macrocarpa	bur oak	BDL	610
Quercus nigra	water oak	BEL	
Quercus species	oak	BDL	
Rhamnus species	buckthorn	BDS	
Rhus species	sumac	BDS	
Robinia pseudoacacia	black locust	BDL	
Salix discolor	pussy willow	BDS	
Salix species	willow	BDL	
Sorbus species	mountain ash	BDS	
Syringa reticulata	Japanese tree lilac	BDS	
Syringa species	lilac	BDS	
Thuja occidentalis	northern white cedar	CEL	
Tilia americana	American basswood	BDL	
Tilia cordata	littleleaf linden	BDM	
Tilia species	basswood	BDL	
Tsuga canadensis	eastern hemlock	CEL	
Ulmus parvifolia	Chinese elm	BDL	
Ulmus pumila	Siberian elm	BDM	
Ulmus species	elm	BDL	
Nyssa sylvatica	blackgum	BDM	
Malus spp.	crabapple, flowering	BDS	
Ulmus x	elm, hybrid	BDL	
Ulmus thomasi	elm, rock	BDL	
Crataegus crusgalli	hawthorn, cockspur	BDS	
Crataegus viridis	hawthorn, green	BDM	
Crataegus spp.	hawthorn, spp.	BDS	
Gleditsia triacanthos inermis	honeylocust, thornless	BDL	
Cercidiphyllum japonicum	katsuratree	BDM	
Parrotia persica	persian ironwood	BDS	
Platanus x acerifolia	planetree, London	BDL	
Amelanchier laevis	serviceberry, Allegheny	BDM	
Amelanchier canadensis	serviceberry, shadblow	BDS	
Amelanchier spp.	serviceberry, spp.	BDS	
Salix nigra	Black Willow	BDM	50
Viburnum lentago	Nannyberry	BDS	125
Alnus serrulata	Smooth Alder	BDS	70
Alnus incana	Smooth Alder	BDS	

5538

Directions

Using the information you provide and background data, the tool calculates the amount of Credits that could be issued after planting (10%), at Year 4 (30%), at Year 6 (30%), at Year 14 (10%), and at Year 26 (20%). A mortality deduction (% loss) is applied to account for anticipated tree losses (Cell D6). A 5% Reversal Pool Account deduction is applied that will go into a program-wide pool to insure against catastrophic loss of trees. This tool is used to determine credits issued after planting (Intial Crediting). A different tool is used for credit issuance in Years 4, 6, 14, and 26. The tool in those years requires determination of tree canopy over the Project Area.

Mortality Deduction (%):	30%

Table 3. Projected CO2 stored by live trees 25 years after planting, issued at five times over the Project Duration. These values account for anticipated tree losses and the 5% Reversal Pool Account deduction.

							10%	30%	30%	10%	20%	
	No. Sites Planted	No. Live Trees	Mortality Deduction (%)	25-yr CO_2 stored (kg/tree)	Tot. 25-yr CO_2 stored w/ losses and 5% deduction (t)	Year 0 10% CO_2 (t)	Year 4 30% CO_2 (t)	Year 6 30% CO_2 (t)	Year 14 10% CO_2 (t)	Year 26 20% CO_2 (t)	
BDL	4923	3446	0.30	3,978.85	13025.9	1302.59	3907.78	3907.78	1302.59	2605.19	
BDM	50	35	0.30	2,451.33	81.5	8.15	24.45	24.45	8.15	16.30	
BDS	565	396	0.30	700.27	263.1	26.31	78.93	78.93	26.31	52.62	
BEL	0	0	0.30	0.00	0.0	0.00	0.00	0.00	0.00	0.00	
BEM	0	0	0.30	0.00	0.0	0.00	0.00	0.00	0.00	0.00	
BES	0	0	0.30	0.00	0.0	0.00	0.00	0.00	0.00	0.00	
CEL	0	0	0.30	0.00	0.0	0.00	0.00	0.00	0.00	0.00	
CEM	0	0	0.30	0.00	0.0	0.00	0.00	0.00	0.00	0.00	
CES	0	0	0.30	0.00	0.0	0.00	0.00	0.00	0.00	0.00	
	5538	3877	0.30	7,130.5	13370.6	1337.06	4011.17	4011.17	1337.06	2674.11	
											sumcheck
Credits issued					13371	1337	4011	4011	1337	2675	13371
Buffer Credits					704	70	211	211	70	142	704

	A	B	C	D	E	F	G	H	I
1		This copy assigned to Western Reserve Land Conservancy. Proprietary and confidential CFC information. Do not forward to third parties without CFC permission.							
2									
3		In Table 4 the tool infers the amount of CO2 stored after 25 years from the sample to the population of live trees. Values in column H account for anticipated tree losses and the 5% Reversal Pool Account deduction.							
4									
5		**Table 4. Grand Total CO_2 Stored after 25 years (all live trees, includes tree losses and buffer pool deduction)**							
6		**Tree-Type**	**No. Sites Planted**	**Mortality Deduction (%)**	**Total Live Trees After Mortality**	**25-yr CO_2 stored (kg/tree)**	**CO_2 Tot. - No Deductions (t)**	**Grand Total CO_2 w/ Deductions (t)**	
7		**Brdlf Decid Large (>50 ft)**	4923	0.30	3446	3,978.85	19,587.9	13,025.9	
8		**Brdlf Decid Med (30-50 ft)**	50	0.30	35	2,451.33	122.6	81.5	
9		**Brdlf Decid Small (<30 ft)**	565	0.30	396	700.27	395.7	263.1	
10		**Brdlf Evgrn Large (>50 ft)**	0	0.30	0	0.00	0.0	0.0	
11		**Brdlf Evgrn Med (30-50 ft)**	0	0.30	0	0.00	0.0	0.0	
12		**Brdlf Evgrn Small (<30 ft)**	0	0.30	0	0.00	0.0	0.0	
13		**Conif Evgrn Large (>50 ft)**	0	0.30	0	0.00	0.0	0.0	
14		**Conif Evgrn Med (30-50 ft)**	0	0.30	0	0.00	0.0	0.0	
15		**Conif Evgrn Small (<30 ft)**	0	0.30	0	0.00	0.0	0.0	
16			5538		3877	7130	20,106.1	13,370.6	

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Using the information you provide and background data, the tool provides estimates of co-benefits per year after 25 years.

Table 5. Co-Benefits per year after 25 years (all live trees, includes tree losses)

Ecosystem Services	Resource Units Totals	Total $
Rainfall Interception (m3/yr)	34,377.88	$246,113.43
Air Quality (t/yr)		
O3	0.4270	$1,426.21
NOx	0.0682	$227.95
PM10	0.2214	$628.77
Net VOCs	0.2847	$2,353.57
Air Quality Total	1.0013	$4,636.51
Energy (kWh/yr & kBtu/yr)		
Cooling - Electricity	944,323.10	$71,674.12
Heating - Natural Gas	13,744,090.91	$133,795.04
Energy Total ($/yr)		$205,469.16
Grand Total ($/yr)		$456,219.10
		$11,405,477.47

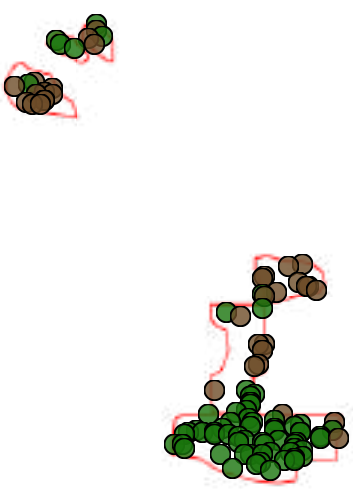
Tree Planting Data

Count	Scientific Name	Common Name	Project Name	Quantity	Planting Zone
19	Quercus macrocarpa	bur oak	Black Fork Planting Project	610	Upland
4	Quercus bicolor	swamp white oak	Black Fork Planting Project	600	Upland
6	Quercus palustris	pin oak	Black Fork Planting Project	450	Upland
1	Carya species	hickory	Black Fork Planting Project	370	Upland
2	Juglans nigra	black walnut	Black Fork Planting Project	370	Upland
9	Aesculus glabra	Ohio buckeye	Black Fork Planting Project	370	Upland
10	Celtis occidentalis	northern hackberry	Black Fork Planting Project	370	Upland
11	Cercis canadensis	eastern redbud	Black Fork Planting Project	370	Upland
13	Quercus alba	white oak	Black Fork Planting Project	370	Upland
12	Prunus serotina	black cherry	Black Fork Planting Project	200	Upland
15	Platanus occidentalis	American sycamore	Black Fork Planting Project	153	Wetland
5	Quercus bicolor	swamp white oak	Black Fork Planting Project	150	Wetland
14	Liquidambar styraciflua	sweetgum	Black Fork Planting Project	150	Wetland
8	Acer rubrum	red maple	Black Fork Planting Project	130	Upland
18	Liriodendron tulipifera	tulip tree	Black Fork Planting Project	130	Upland
3	Juglans nigra	black walnut	Black Fork Planting Project	125	Wetland
7	Quercus palustris	pin oak	Black Fork Planting Project	125	Wetland
16	Populus deltoides	eastern cottonwood	Black Fork Planting Project	125	Wetland
17	Ulmus americana	American elm	Black Fork Planting Project	125	Wetland
21	Viburnum lentago	Nannyberry	Black Fork Planting Project	125	Wetland
22	Alnus serrulata	Smooth Alder	Black Fork Planting Project	70	Wetland
20	Salix nigra	Black Willow	Black Fork Planting Project	50	Wetland
				5538	

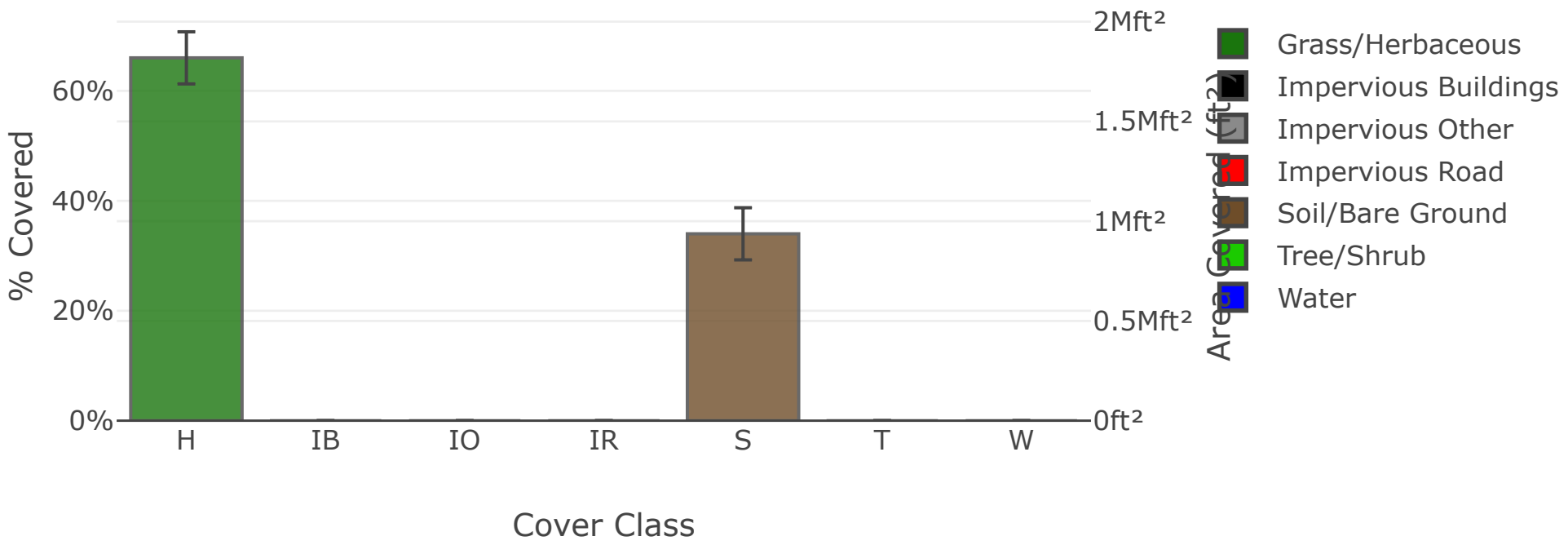
i-Tree Canopy

Cover Assessment and Tree Benefits Report

Estimated using random sampling statistics on 1/18/2024



Land Cover



Abbr.	Cover Class	Description	Points	% Cover ± SE	Area (ft²) ± SE
H	Grass/Herbaceous		66	66.00 ± 4.74	1818552.55 ± 130524.89
IB	Impervious Buildings		0	0.00 ± 0.00	0.00 ± 0.00
IO	Impervious Other		0	0.00 ± 0.00	0.00 ± 0.00
IR	Impervious Road		0	0.00 ± 0.00	0.00 ± 0.00
S	Soil/Bare Ground		34	34.00 ± 4.74	936830.10 ± 130524.89
T	Tree/Shrub		0	0.00 ± 0.00	0.00 ± 0.00
W	Water		0	0.00 ± 0.00	0.00 ± 0.00
Total			**100**	**100.00**	**2755382.65**

Tree Benefit Estimates: Carbon (English units)

Description	Carbon (oz)	±SE	CO_2 Equiv. (oz)	±SE	Value (USD)	±SE
Sequestered annually in trees	0.00	±0.00	0.00	±0.00	$0	±0
Stored in trees (Note: this benefit is not an annual rate)	0.00	±0.00	0.00	±0.00	$0	±0

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 1.006 oz of Carbon, or 3.690 oz of CO_2, per ft²/yr and rounded. Amount stored is based on 25.273 oz of Carbon, or 92.667 oz of CO_2, per ft² and rounded. Value (USD) is based on $0.01/oz of Carbon, or $0.00/oz of CO_2 and rounded. (English units: oz = ounces, ft² = square feet)

Tree Benefit Estimates: Air Pollution (English units)

Abbr.	Description	Amount (oz)	±SE	Value (USD)	±SE
CO	Carbon Monoxide removed annually	0.00	±0.00	$0	±0
NO2	Nitrogen Dioxide removed annually	0.00	±0.00	$0	±0
O3	Ozone removed annually	0.00	±0.00	$0	±0
SO2	Sulfur Dioxide removed annually	0.00	±0.00	$0	±0
PM2.5	Particulate Matter less than 2.5 microns removed annually	0.00	±0.00	$0	±0
PM10*	Particulate Matter greater than 2.5 microns and less than 10 microns removed annually	0.00	±0.00	$0	±0
Total		**0.00**	**±0.00**	**$0**	**±0**

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 oz/ft²/yr @ $/oz/yr and rounded:
CO 0.000 @ $0.00 | NO2 0.002 @ $0.00 | O3 0.018 @ $0.00 | SO2 0.001 @ $0.00 | PM2.5 0.001 @ $0.19 | PM10* 0.006 @ $0.01 (English units: oz = ounces, ft² = square feet)

Tree Benefit Estimates: Hydrological (English units)

Abbr.	Benefit	Amount (oz)	±SE	Value (USD)	±SE
AVRO	Avoided Runoff	0.00	±0.00	$0	±0
E	Evaporation	0.00	±0.00	N/A	N/A
I	Interception	0.00	±0.00	N/A	N/A
T	Transpiration	0.00	±0.00	N/A	N/A
PE	Potential Evaporation	0.00	±0.00	N/A	N/A
PET	Potential Evapotranspiration	0.00	±0.00	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 oz/ft²/yr @ $/oz/yr and rounded:
AVRO 0.002 @ $0.00 | E 0.125 @ N/A | I 0.126 @ N/A | T 0.170 @ N/A | PE 0.951 @ N/A | PET 0.776 @ N/A (English units: oz = ounces, ft² = square feet)

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

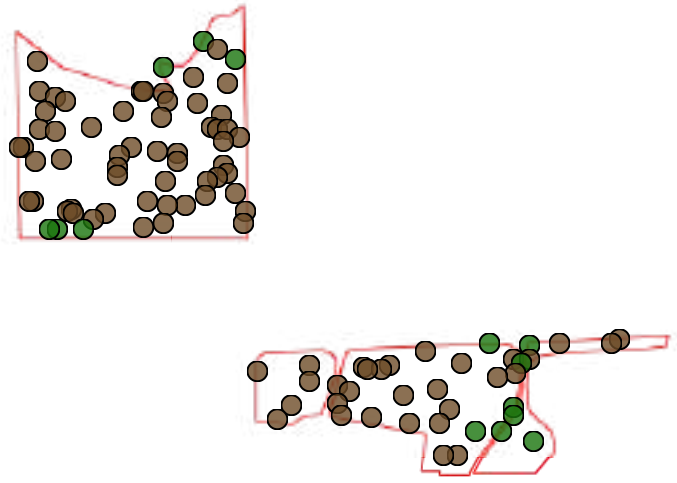
The accuracy of the analysis depends upon the ability of the user to correctly classify each point into its correct class. As the number of points increase, the precision of the estimate will increase as the standard error of the estimate will decrease. If too few points are classified, the standard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


Upland Planting Area
iTree random sample points pre-planting
283
Fleming Falls Rd
Jones Rd
Google Earth
N
2000 ft

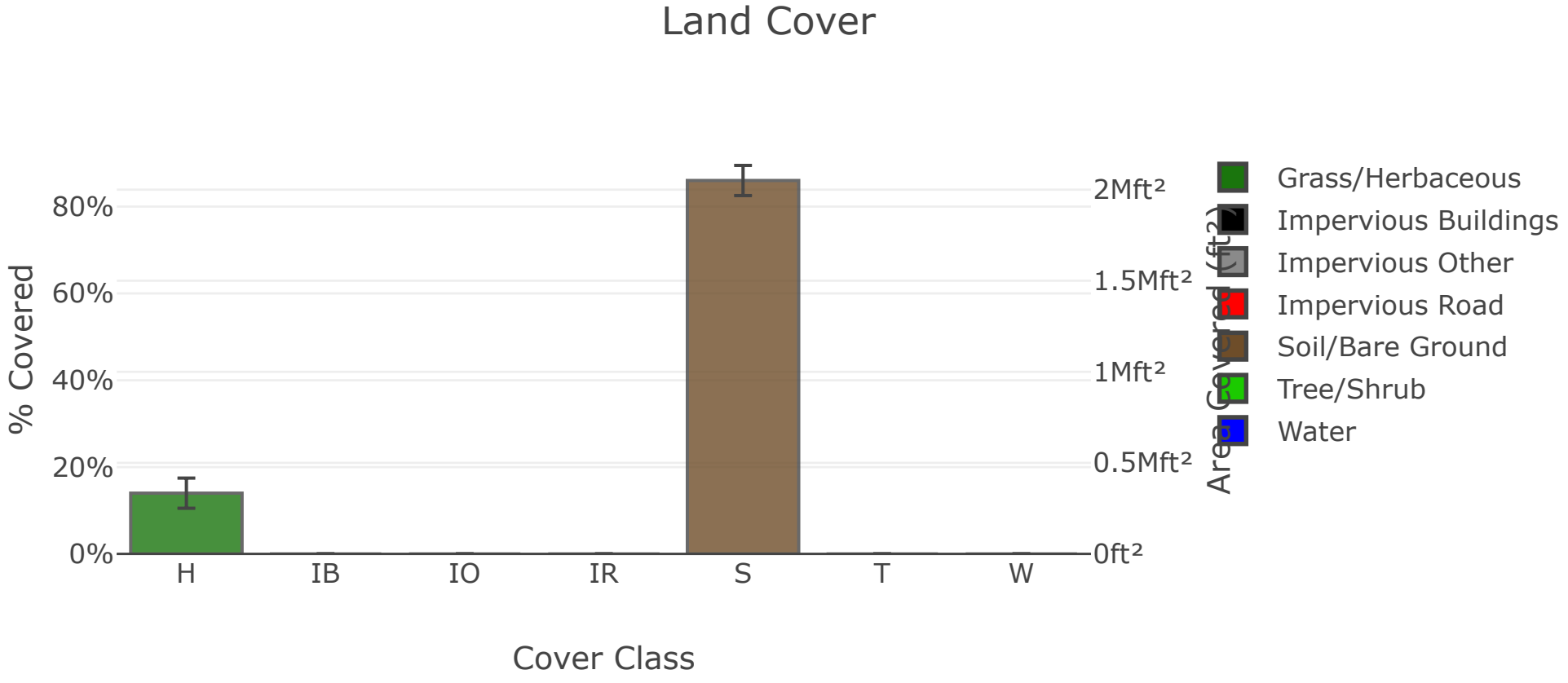
i-Tree Canopy

Cover Assessment and Tree Benefits Report

Estimated using random sampling statistics on 1/18/2024



Land Cover



Abbr.	Cover Class	Description	Points	% Cover ± SE	Area (ft²) ± SE
H	Grass/Herbaceous		14	14.00 ± 3.47	333755.87 ± 82720.68
IB	Impervious Buildings		0	0.00 ± 0.00	0.00 ± 0.00
IO	Impervious Other		0	0.00 ± 0.00	0.00 ± 0.00
IR	Impervious Road		0	0.00 ± 0.00	0.00 ± 0.00
S	Soil/Bare Ground		86	86.00 ± 3.47	2050214.61 ± 82720.68
T	Tree/Shrub		0	0.00 ± 0.00	0.00 ± 0.00
W	Water		0	0.00 ± 0.00	0.00 ± 0.00
Total			**100**	**100.00**	**2383970.48**

Tree Benefit Estimates: Carbon (English units)

Description	Carbon (oz)	±SE	CO_2 Equiv. (oz)	±SE	Value (USD)	±SE
Sequestered annually in trees	0.00	±0.00	0.00	±0.00	$0	±0
Stored in trees (Note: this benefit is not an annual rate)	0.00	±0.00	0.00	±0.00	$0	±0

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Tree Benefit Estimates: Air Pollution (English units)

Abbr.	Description	Amount (oz)	±SE	Value (USD)	±SE
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NO2	Nitrogen Dioxide removed annually	0.00	±0.00	$0	±0
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Total		**0.00**	**±0.00**	**$0**	**±0**

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Tree Benefit Estimates: Hydrological (English units)

Abbr.	Benefit	Amount (oz)	±SE	Value (USD)	±SE
AVRO	Avoided Runoff	0.00	±0.00	$0	±0
E	Evaporation	0.00	±0.00	N/A	N/A
I	Interception	0.00	±0.00	N/A	N/A
T	Transpiration	0.00	±0.00	N/A	N/A
PE	Potential Evaporation	0.00	±0.00	N/A	N/A
PET	Potential Evapotranspiration	0.00	±0.00	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 oz/ft²/yr @ $/oz/yr and rounded:
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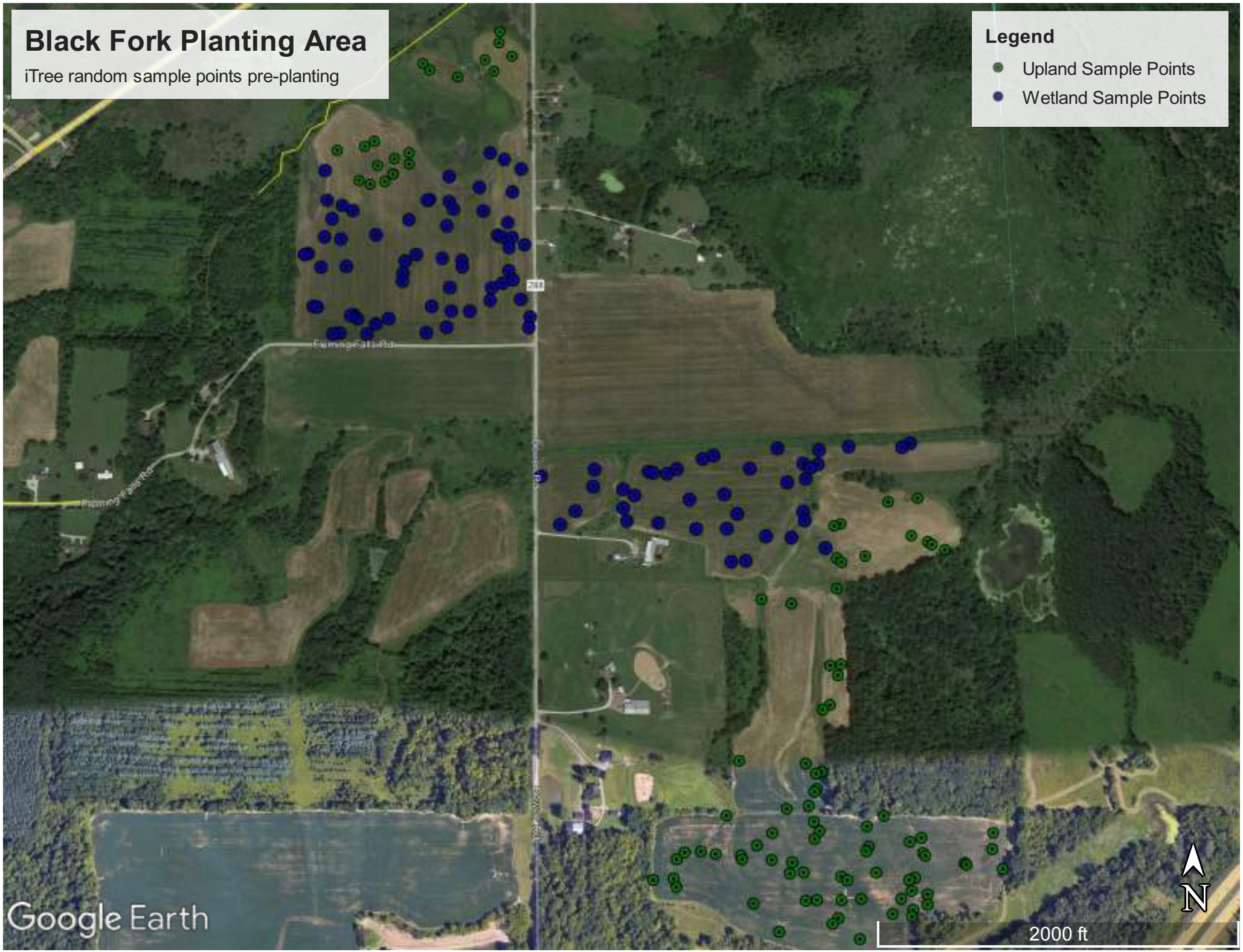
Wetland Planting Area
iTree random sample points pre-planting
Google Earth
N
2000 ft


Black Fork Planting Area
iTree random sample points pre-planting
Legend
Upland Sample Points
Wetland Sample Points
Google Earth
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2000 ft

Id	Cover Clas	Latitude	Longitude
1	Grass/Herl	40.79207	-82.412
2	Grass/Herl	40.80404	-82.4215
3	Grass/Herl	40.80536	-82.4201
4	Soil/Bare G	40.7973	-82.4108
5	Grass/Herl	40.79727	-82.4114
6	Grass/Herl	40.79246	-82.4125
7	Soil/Bare G	40.7974	-82.4092
8	Soil/Bare G	40.80584	-82.4186
9	Grass/Herl	40.79267	-82.4135
10	Soil/Bare G	40.80357	-82.4208
11	Grass/Herl	40.79333	-82.4138
12	Grass/Herl	40.80561	-82.4183
13	Grass/Herl	40.79277	-82.4098
14	Grass/Herl	40.79242	-82.4115
15	Soil/Bare G	40.79332	-82.4106
16	Grass/Herl	40.79372	-82.4119
17	Soil/Bare G	40.79307	-82.4084
18	Grass/Herl	40.79286	-82.4109
19	Grass/Herl	40.79347	-82.4121
20	Grass/Herl	40.79267	-82.4129
21	Grass/Herl	40.79663	-82.413
22	Grass/Herl	40.79248	-82.4108
23	Grass/Herl	40.79277	-82.4146
24	Soil/Bare G	40.79816	-82.4103
25	Grass/Herl	40.79237	-82.4114
26	Grass/Herl	40.79273	-82.4098
27	Grass/Herl	40.79263	-82.4125
28	Grass/Herl	40.79237	-82.4153
29	Grass/Herl	40.79316	-82.4109
30	Soil/Bare G	40.79562	-82.4114
31	Grass/Herl	40.79368	-82.412
32	Grass/Herl	40.79201	-82.4098
33	Soil/Bare G	40.79748	-82.4094
34	Grass/Herl	40.7924	-82.41
35	Grass/Herl	40.79202	-82.4133
36	Grass/Herl	40.79187	-82.4105
37	Soil/Bare G	40.79781	-82.4113
38	Grass/Herl	40.79181	-82.4116
39	Soil/Bare G	40.8034	-82.4213
40	Soil/Bare G	40.80397	-82.4221
41	Soil/Bare G	40.80393	-82.4205
42	Grass/Herl	40.79323	-82.412
43	Grass/Herl	40.79679	-82.4114

44	Grass/Herl	40.79173	-82.4117
45	Grass/Herl	40.79259	-82.409
46	Soil/Bare G	40.79762	-82.4099
47	Soil/Bare G	40.80344	-82.421
48	Soil/Bare G	40.79753	-82.4095
49	Soil/Bare G	40.80374	-82.4205
50	Soil/Bare G	40.79656	-82.4124
51	Grass/Herl	40.79239	-82.4148
52	Grass/Herl	40.79283	-82.4084
53	Grass/Herl	40.79221	-82.4101
54	Soil/Bare G	40.80383	-82.4208
55	Grass/Herl	40.79206	-82.4122
56	Soil/Bare G	40.80371	-82.4212
57	Grass/Herl	40.80548	-82.4203
58	Grass/Herl	40.79207	-82.4115
59	Grass/Herl	40.79262	-82.409
60	Grass/Herl	40.79309	-82.4119
61	Grass/Herl	40.79227	-82.4148
62	Grass/Herl	40.79294	-82.4101
63	Soil/Bare G	40.79492	-82.4118
64	Grass/Herl	40.79343	-82.4126
65	Grass/Herl	40.79161	-82.4127
66	Grass/Herl	40.79209	-82.4111
67	Soil/Bare G	40.80413	-82.4213
68	Grass/Herl	40.7941	-82.4122
69	Grass/Herl	40.79268	-82.4148
70	Soil/Bare G	40.79822	-82.4097
71	Soil/Bare G	40.80357	-82.4208
72	Soil/Bare G	40.79778	-82.4115
73	Soil/Bare G	40.80555	-82.4189
74	Grass/Herl	40.80525	-82.4195
75	Grass/Herl	40.79151	-82.4111
76	Grass/Herl	40.79395	-82.4119
77	Soil/Bare G	40.79721	-82.4113
78	Grass/Herl	40.79288	-82.4132
79	Grass/Herl	40.79237	-82.4101
80	Grass/Herl	40.79299	-82.4099
81	Grass/Herl	40.79216	-82.4098
82	Grass/Herl	40.80604	-82.4186
83	Soil/Bare G	40.79253	-82.4082
84	Soil/Bare G	40.7956	-82.4116
85	Grass/Herl	40.79279	-82.4143
86	Grass/Herl	40.79183	-82.4101
87	Grass/Herl	40.79248	-82.4122

88	Grass/Herl	40.79193	-82.4101
89	Soil/Bare G	40.79545	-82.4115
90	Grass/Herl	40.79298	-82.412
91	Grass/Herl	40.7928	-82.411
92	Soil/Bare G	40.80534	-82.4187
93	Grass/Herl	40.79275	-82.414
94	Grass/Herl	40.79398	-82.4118
95	Soil/Bare G	40.80346	-82.4216
96	Soil/Bare G	40.79415	-82.4135
97	Soil/Bare G	40.795	-82.4116
98	Grass/Herl	40.79209	-82.4103
99	Grass/Herl	40.79273	-82.4135
100	Grass/Herl	40.79306	-82.4129

Pre & Post Planting Photo Points

Photo Points South Field

- Project Area
- NRCS Fields
- Photo Points
- Upland Tree Planting (Spring 2023)
- Wetland Tree Planting (Fall 2023)
- Vernal Pools
- River/Stream
- County & Township Roads
- Rail Line

0 250 500
Feet

N
W E
S

Western Reserve Land Conservancy
land • people • community

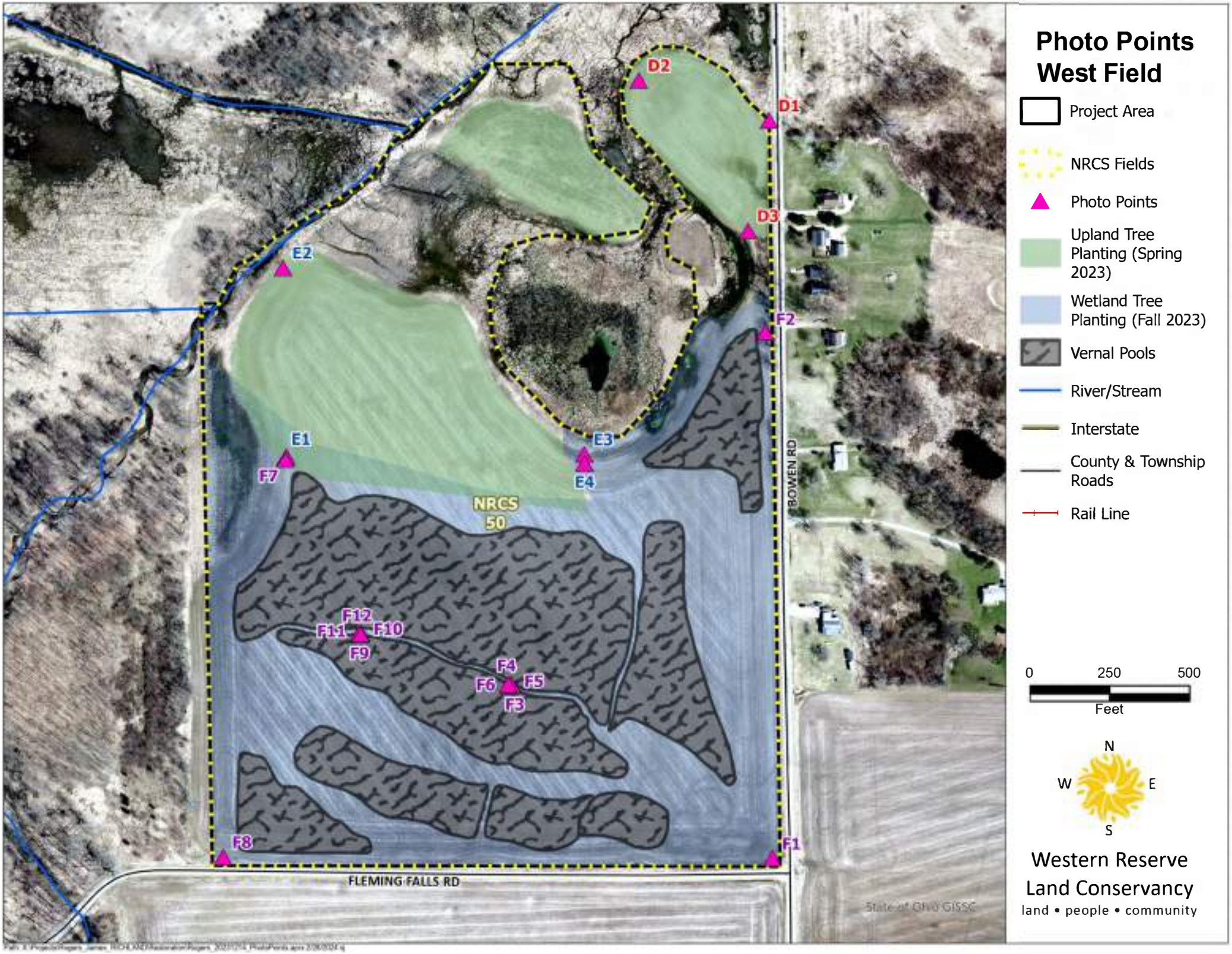
Photo Points
West Field
Project Area
NRCS Fields
Photo Points
Upland Tree Planting (Spring 2023)
Wetland Tree Planting (Fall 2023)
Vernal Pools
River/Stream
Interstate
County & Township Roads
Rail Line
D1
D2
D3
E1
E2
E3
E4
F1
F2
F3
F4
F5
F6
F7
F8
F9
F10
F11
F12
NRCS 50
BOWEN RD
FLEMING FALLS RD
0
250
500
Feet
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Western Reserve Land Conservancy
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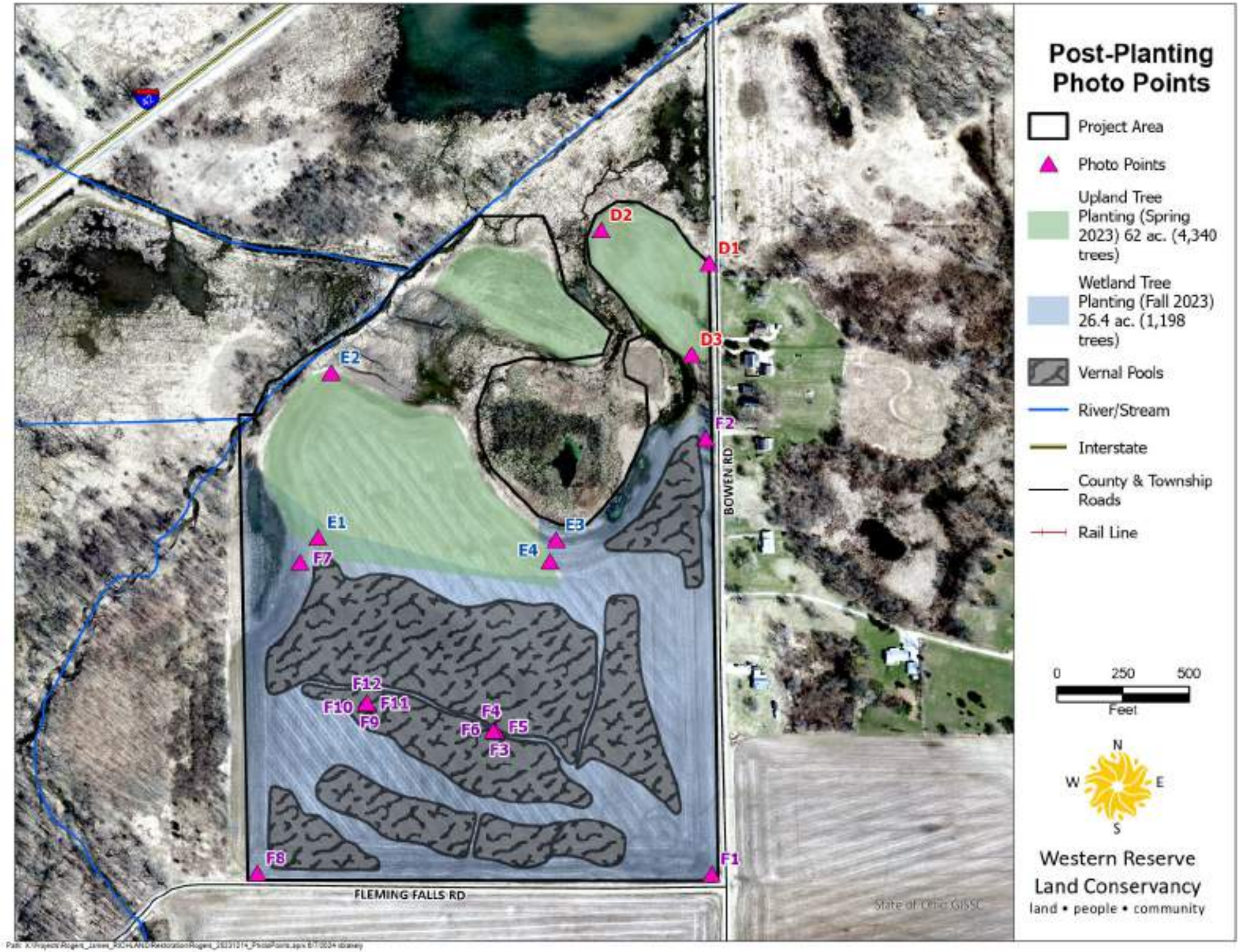
State of Ohio GISSC


Post-Planting Photo Points
Project Area
Photo Points
Upland Tree Planting (Spring 2023) 62 ac. (4,340 trees)
Wetland Tree Planting (Fall 2023) 26.4 ac. (1,198 trees)
Vernal Pools
River/Stream
Interstate
County & Township Roads
Rail Line
D1
D2
D3
E1
E2
E3
E4
F1
F2
F3
F4
F5
F6
F7
F8
F9
F10
F11
F12
BOWEN RD
FLEMING FALLS RD
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500
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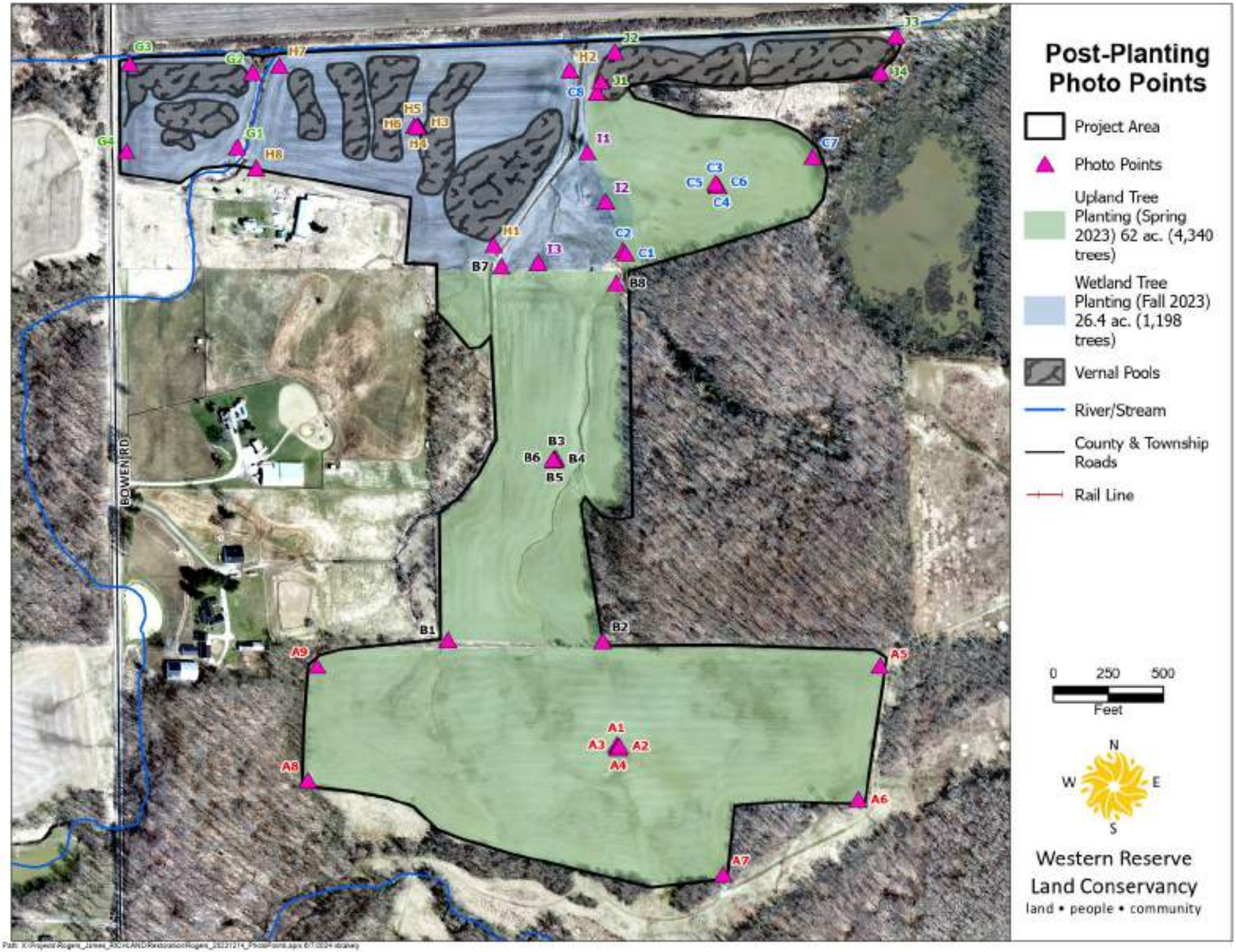
Post-Planting Photo Points
Project Area
Photo Points
Upland Tree Planting (Spring 2023) 62 ac. (4,340 trees)
Wetland Tree Planting (Fall 2023) 26.4 ac. (1,198 trees)
Vernal Pools
River/Stream
County & Township Roads
Rail Line
BOWEN RD
G1
G2
G3
G4
H1
H2
H3
H4
H5
H6
H7
H8
I1
I2
I3
J1
J2
J3
J4
C1
C2
C3
C4
C5
C6
C7
B1
B2
B3
B4
B5
B6
B7
B8
A1
A2
A3
A4
A5
A6
A7
A8
A9
0
250
500
Feet
N
W
E
S
Western Reserve Land Conservancy
land • people • community

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 Project Area is within a property located along a major interstate, and the trees planted as part of the Black Fork restoration project will screen pollutants from this highly-trafficked road. The trees are being planted in a larger restoration effort to benefit water quality, and the transformation of agricultural fields to forest, meadow, and wetland will increase stormwater infiltration rates of the site and protect the water resources in the area.

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 trees planted as part of the Black Fork Planting project will transform agricultural fields to forest, meadow, and wetlands to reduce stormwater runoff, prevent soil erosion, improve infiltration rates, and buffer existing and newly created wetlands. The project will result in improved water quality by slowing and capturing runoff and decreasing nutrients and sediment entering waterways.

SDG 13 - Climate Action

Goal: Take urgent action to combat climate change and its impacts.

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

- ☒ Plant or protect trees to reduce or remove air pollutants
- ☐ Plant or protect trees to create shade or reduce temperatures to relieve urban heat effects
- ☐ Promote community capacity for social and climate resilience by engaging local residents or users in tree management, or other events to connect people to the project
- ☐ Reflect cultural traditions and inclusive engagement for climate resilience
- ☒ Design project to improve soil health
- ☐ Provide cooling benefits and energy savings by shading impervious surfaces such as streets or parking lots, or planting trees on south and west sides of buildings
- ☒ Plant or protect trees to reduce stormwater runoff
- ☐ Select water-efficient trees for climate zone and drought resistance
- ☒ Create and/or enhance wildlife habitat
- ☐ Other

Planting trees will have soil and water quality benefits, and it will create additional wildlife habitat. The site's existing forest serves as habitat for state-listed bird and bat species that rely on forests for breeding, foraging, and nesting. Increasing forest habitat on site will greatly benefit these species.

Summary of Project Social Impacts

The Project Area is within a property located along a major interstate, and the trees planted as part of the Black Fork restoration project will screen pollutants from this highly-trafficked road. The trees are being planted in a larger restoration effort to benefit water quality, and the transformation of agricultural fields to forest, meadow, and wetland will increase stormwater infiltration rates of the site and protect the water resources in the area.

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