National Park Service & Forest Stewards Guild

WEPA Forest Restoration Project

Final Project Report

Developed by

NATURE WORKS

10/22/2025

Introduction

The following report details all work phases of the National Park Service WEPA Forest Restoration Project completed by Nature Works, in conjunction with the Forest Stewards Guild. The project began in early 2024 and fieldwork concluded in early Fall 2025. This report will describe all phases of the project.

Mapping

The following report includes more than a dozen maps, illustrating each phase of work across the various project sites. All maps are available as a georeferenced PDF upon request.

Phase 1:
Scouting (January-April 2024)

The initial phase of the WEPA project included a scouting phase, during which Nature Works personnel collected spatial data within each project site. This data included the location, extent, and species of any invaded area, along with the location and quality of any potential candidate planting site. The data from this scouting phase was instrumental in planning and executing treatment. Nature Works personnel analyzed the data to prepare and plan tactical operations in the field, saving time, effort, and energy for an optimized treatment schedule. The following maps display much of the spatial data collected during this phase, included in their original operational style.

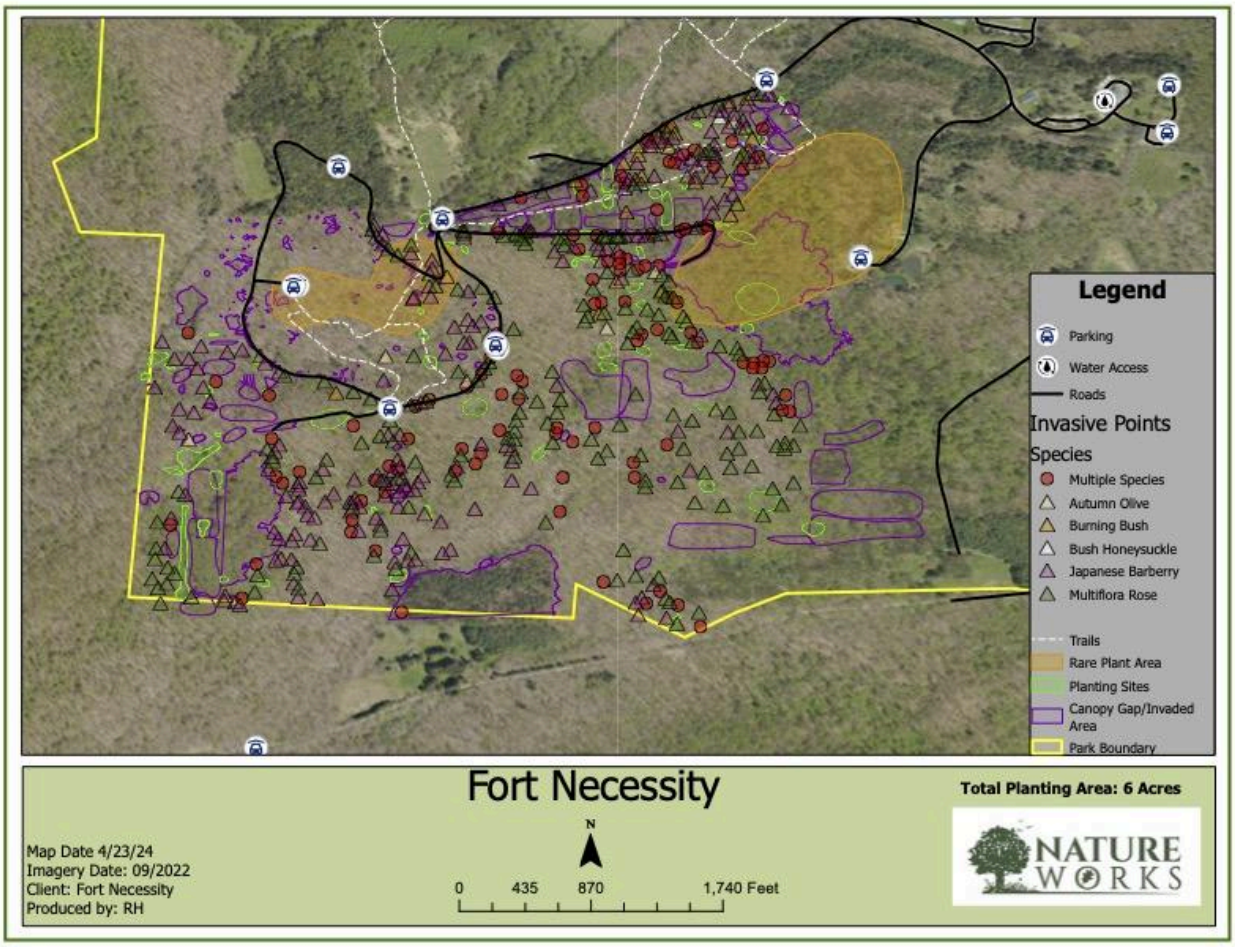


Image 1. Scouting data collected at Fort Necessity.

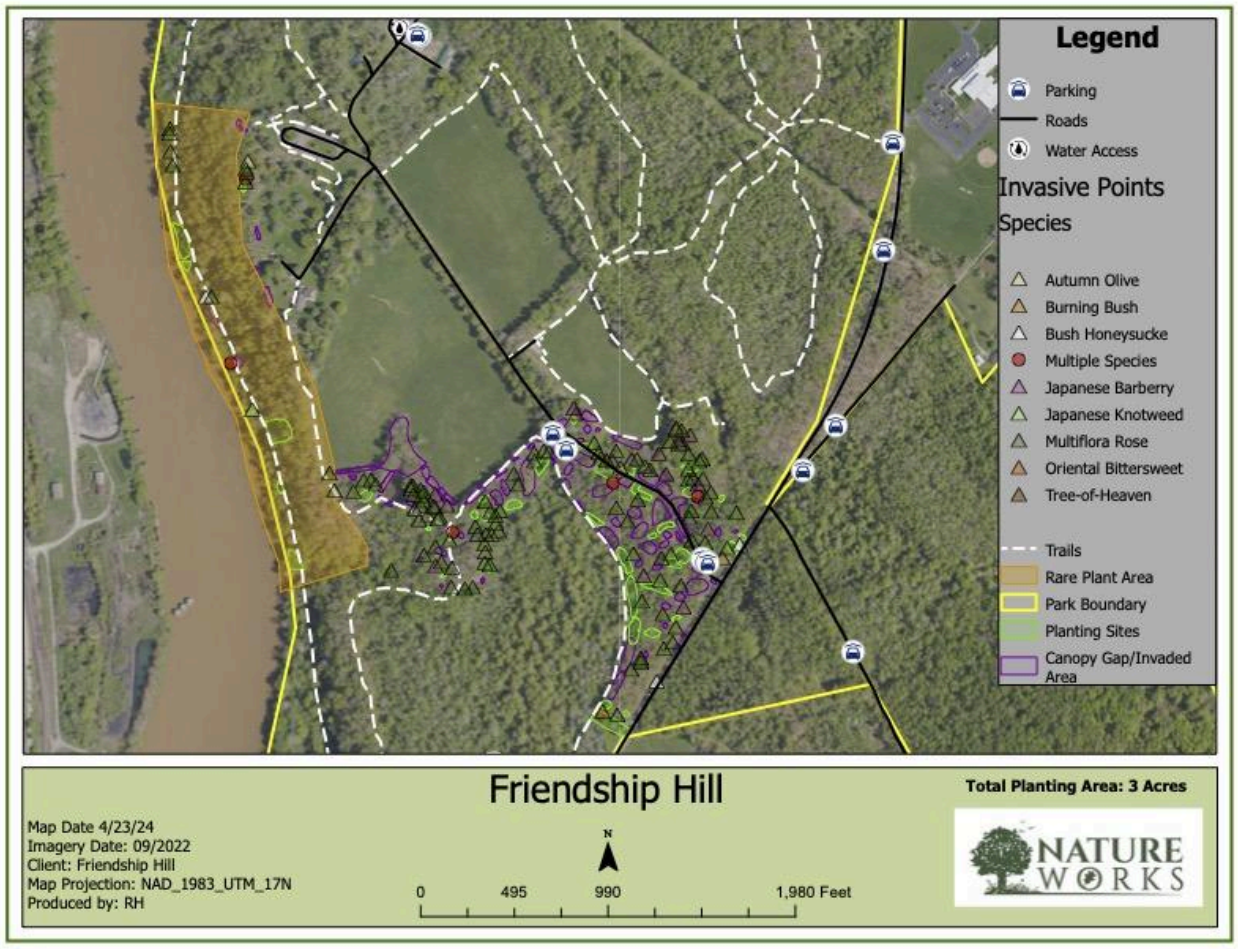


Image 2. Scouting data collected at Friendship Hill.

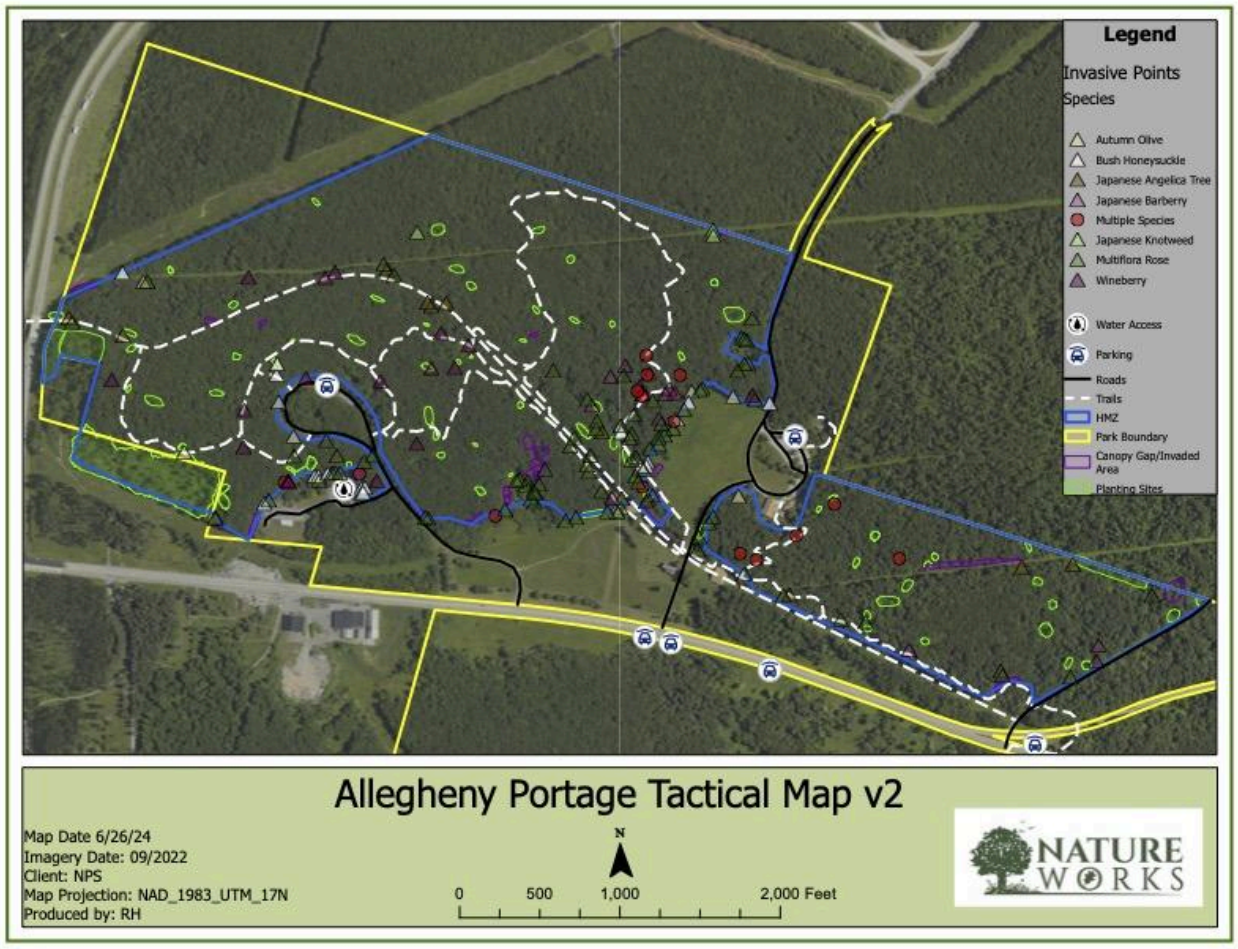


Image 3. Scouting data collected at Allegheny Portage.

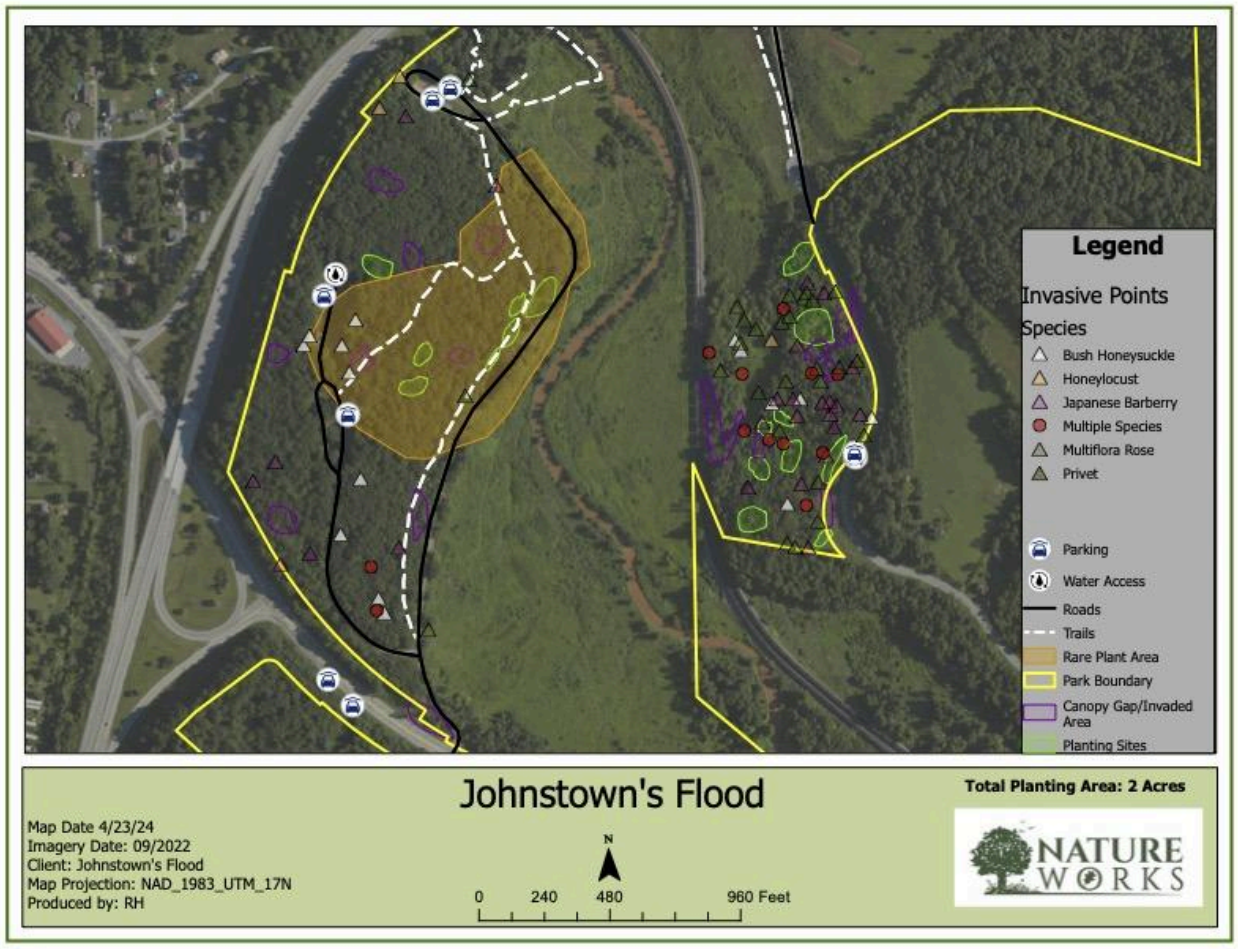


Image 4. Scouting data collected at Johnstown Flood.

Phase 2:
Initial Treatments (May-November 2024)

The second phase of this project was the initial treatment of invaded areas within the project areas. Nature Works restoration crews used both mechanical and chemical methods of controlling invasive species. Crews exclusively utilized cut-and-paint application within rare plant zones to protect the sensitive species within these areas. Treatments occurred over 497 acres across the four project sites. This treatment occurred during the 2024 growing season. The adjacent chart displays treatment acreage by park unit. The maps below illustrate the extent of the treatment in each park unit.

Fort Necessity	178 ac
Friendship Hill	53 ac
Allegheny Portage	215 ac
Johnstown Flood	51 ac
TOTAL INITIAL TREATMENT AREA:	**497 ac**



Image 5. A Nature Works crew member surveys a heavily invaded area prior to treatment.

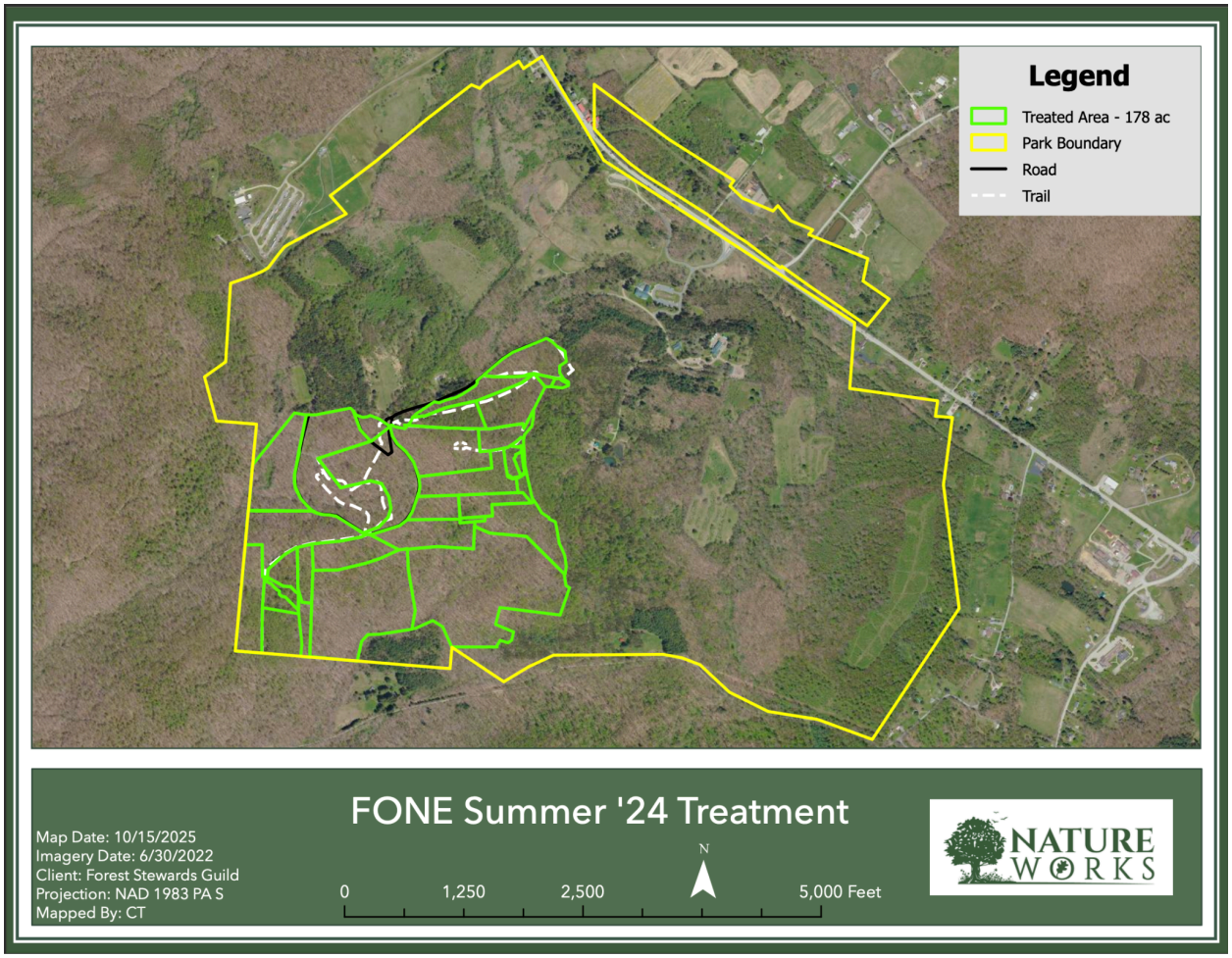


Image 6. Initial 2024 treatment area within Fort Necessity.

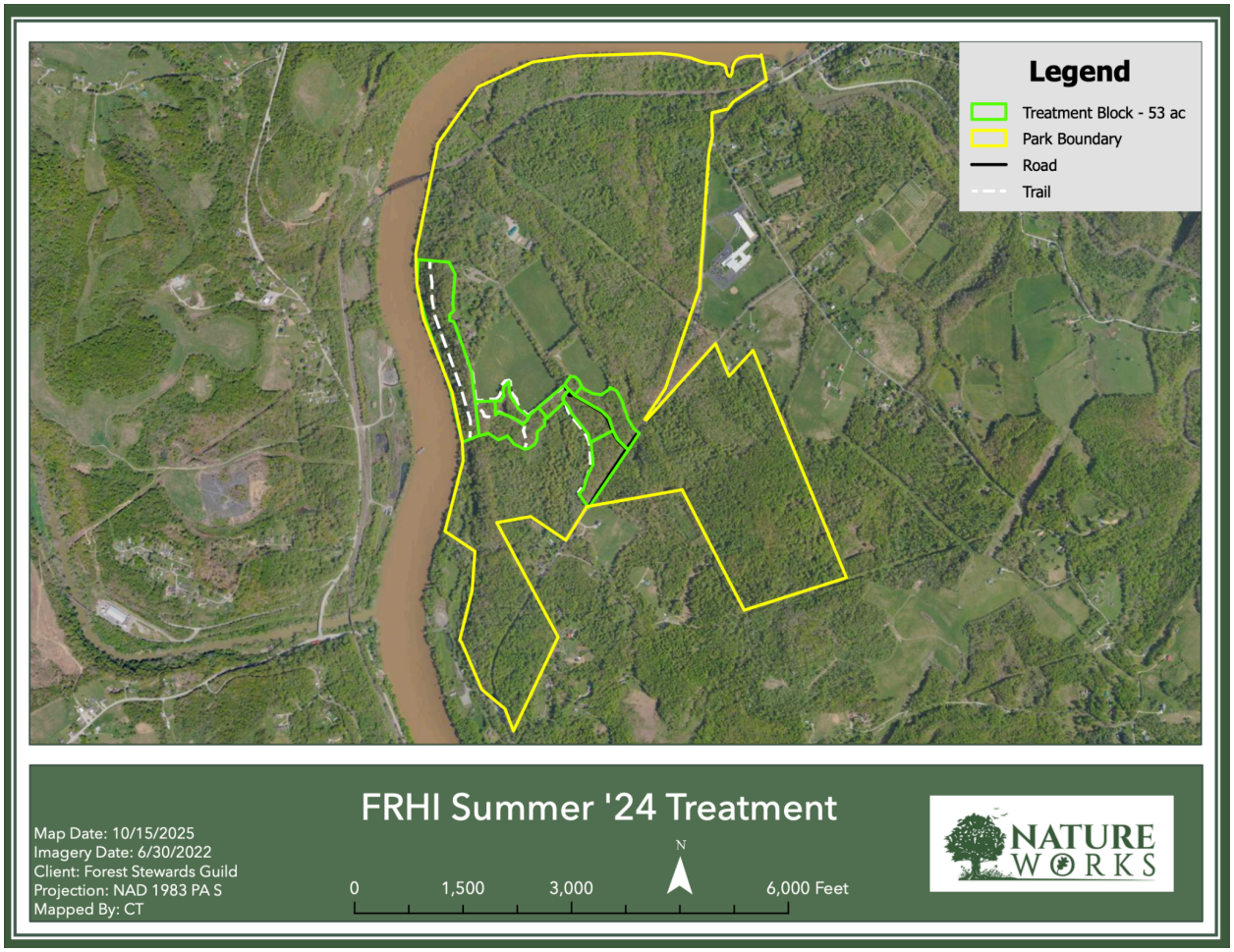


Image 7. Initial 2024 treatment area within Friendship Hill.

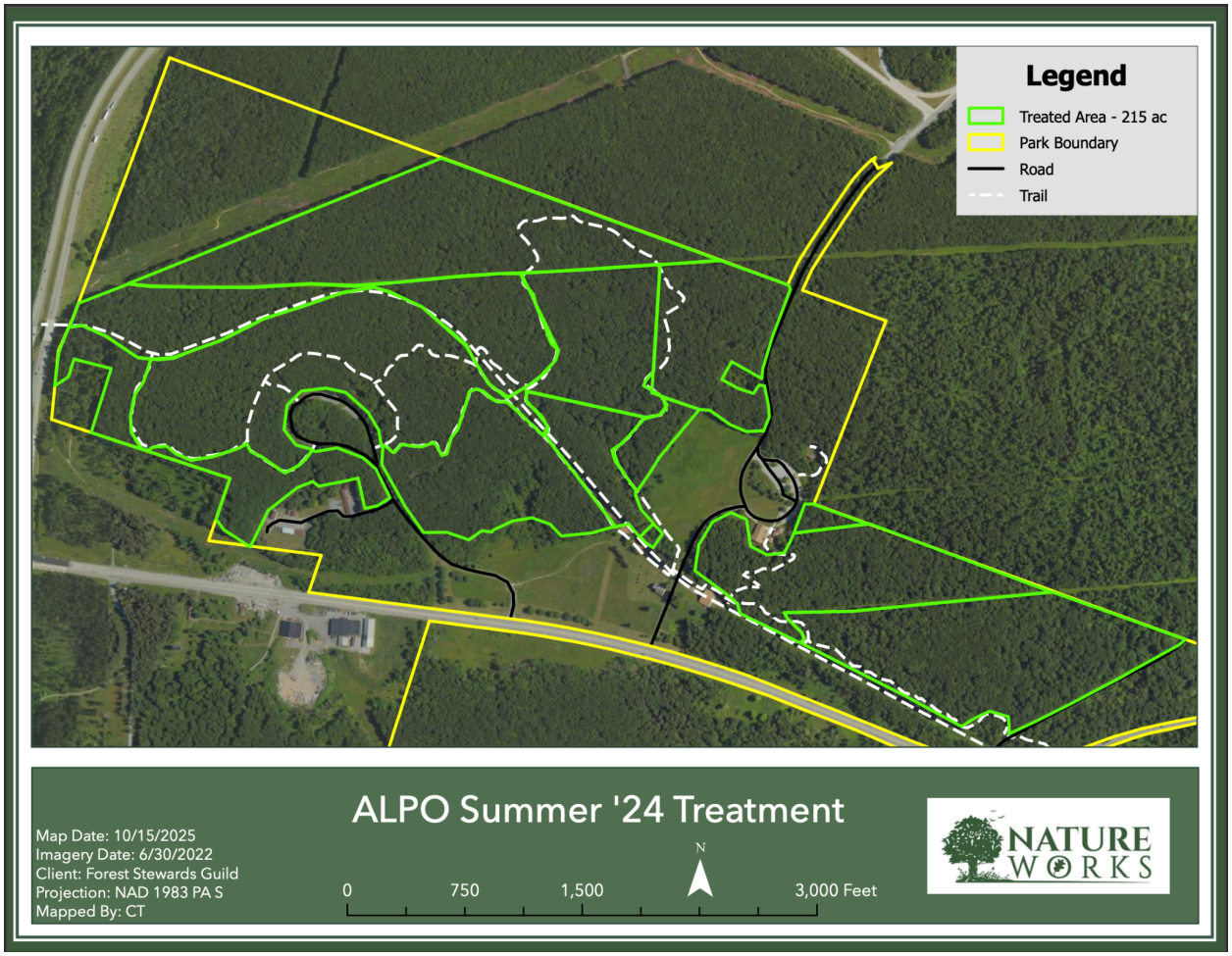


Image 8. Initial 2024 treatment area within Allegheny Portage.

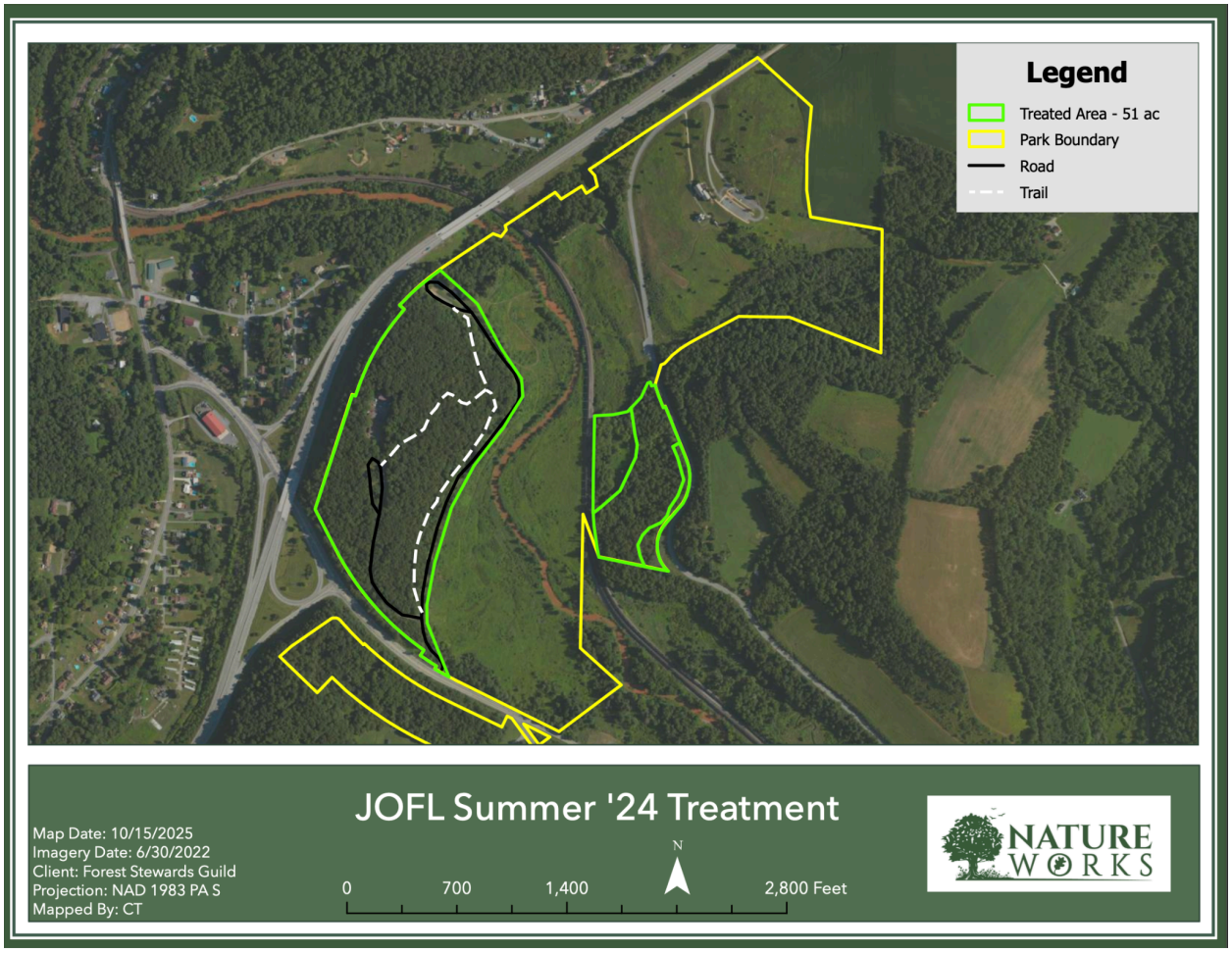


Image 9. Initial 2024 treatment area within Johnstown Flood.

Phase 3:
Retreatment & Planting (September-December 2024)

Fort Necessity	29.67 ac
Friendship Hill	24.61 ac
Allegheny Portage	24.03 ac
Johnstown Flood	19.11 ac
Total Retreatment:	**97.42 ac**

The third phase of the WEPA Forest Restoration project included the retreatment of priority areas and the preparation of planting sites. Drought conditions resulted in early leaf abscission, dramatically shortening the retreatment timeline. To counter this, Nature Works personnel prioritized sensitive areas and retreated 97.42 acres before field conditions deteriorated too far to continue. This phase of work also included preparing planting sites for planting by removing the dead plant material using hand tools and chainsaws. The chart above displays the retreatment acreage within each park.

Following the conclusion of retreatments, canopy plantings were installed within 16 delineated sites encompassing 3.13 acres. The planting locations and species selections were chosen in coordination with NPS managers to ensure success and continuity. Planted species included white oak, chestnut oak, pin oak, black gum, black walnut, black willow, river birch, yellow birch, American beech, and black cherry. A total 201 trees were planted across these 16 sites with a goal density of ~65 trees per acre. Nature Works achieved a final density of 64.2 trees per acre across the project areas. Additionally, all planted stock received deer protection to provide optimal growing conditions.

Fort Necessity	0.85 ac
Friendship Hill	0.46 ac
Allegheny Portage	1.21 ac
Johnstown Flood	0.61 ac
Total Planting Area:	**3.13 ac**

The adjacent table displays the total planted area within each park. Further information regarding the specific placement of particular species or species totals is available upon request. The following maps illustrate the location of all planting areas.



Image 10. A Nature Works restoration crew member applies herbicide to an invasive shrub.



Image 15. Nature Works restoration crew planting and tubing species within a canopy gap.

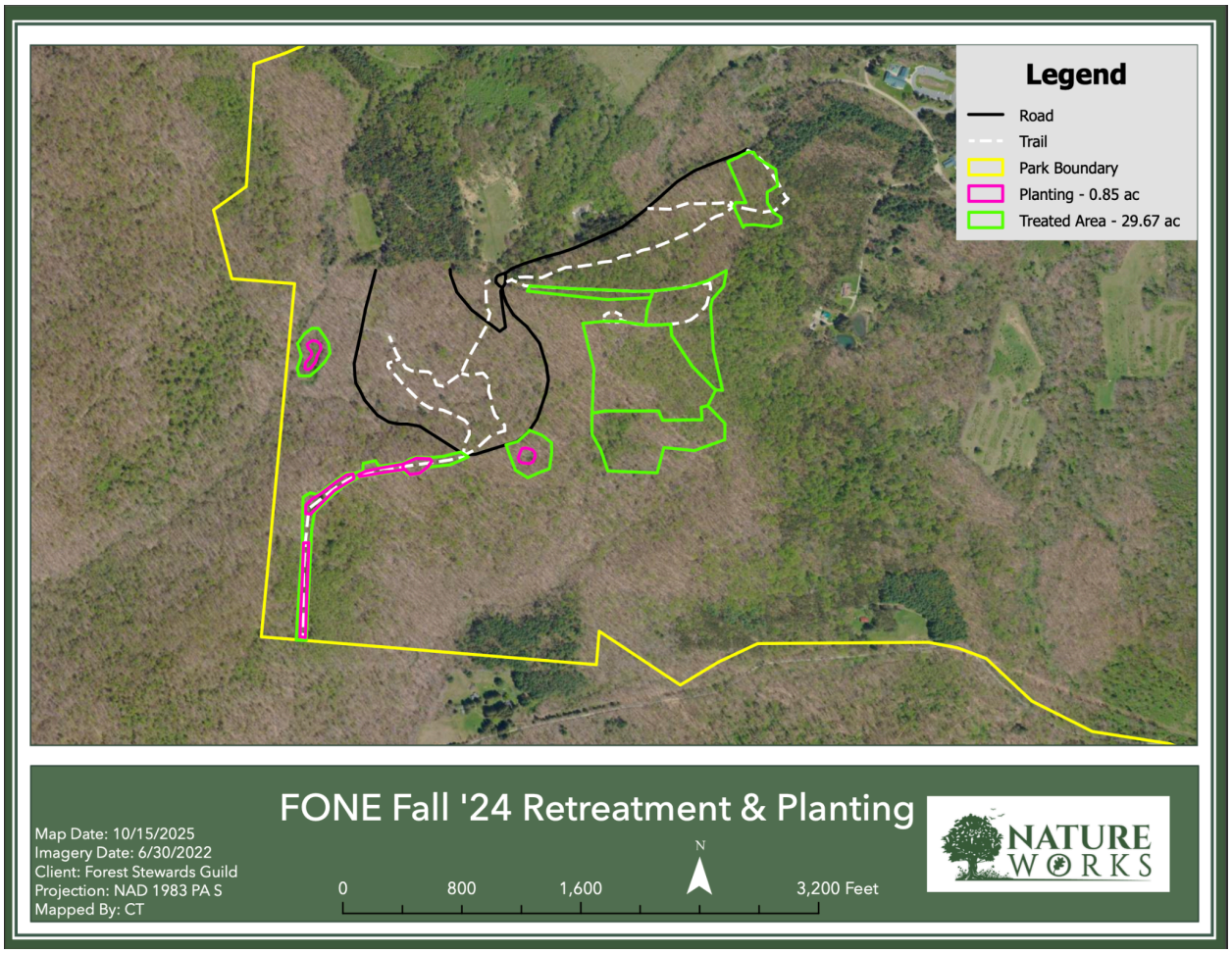


Image 11. Fall 2024 retreatment and planting areas within Fort Necessity.

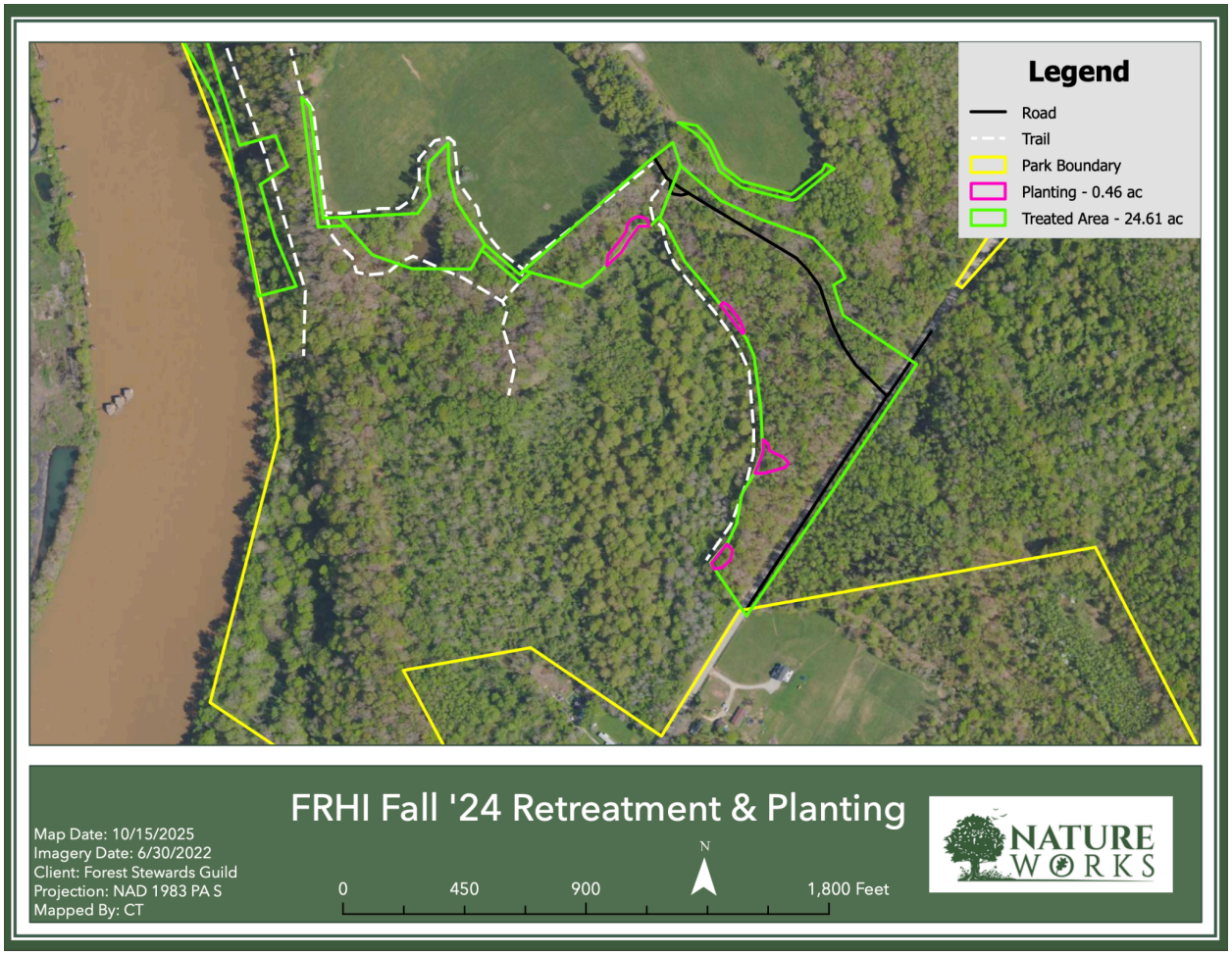


Image 12. Fall 2024 retreatment and planting areas within Friendship Hill.

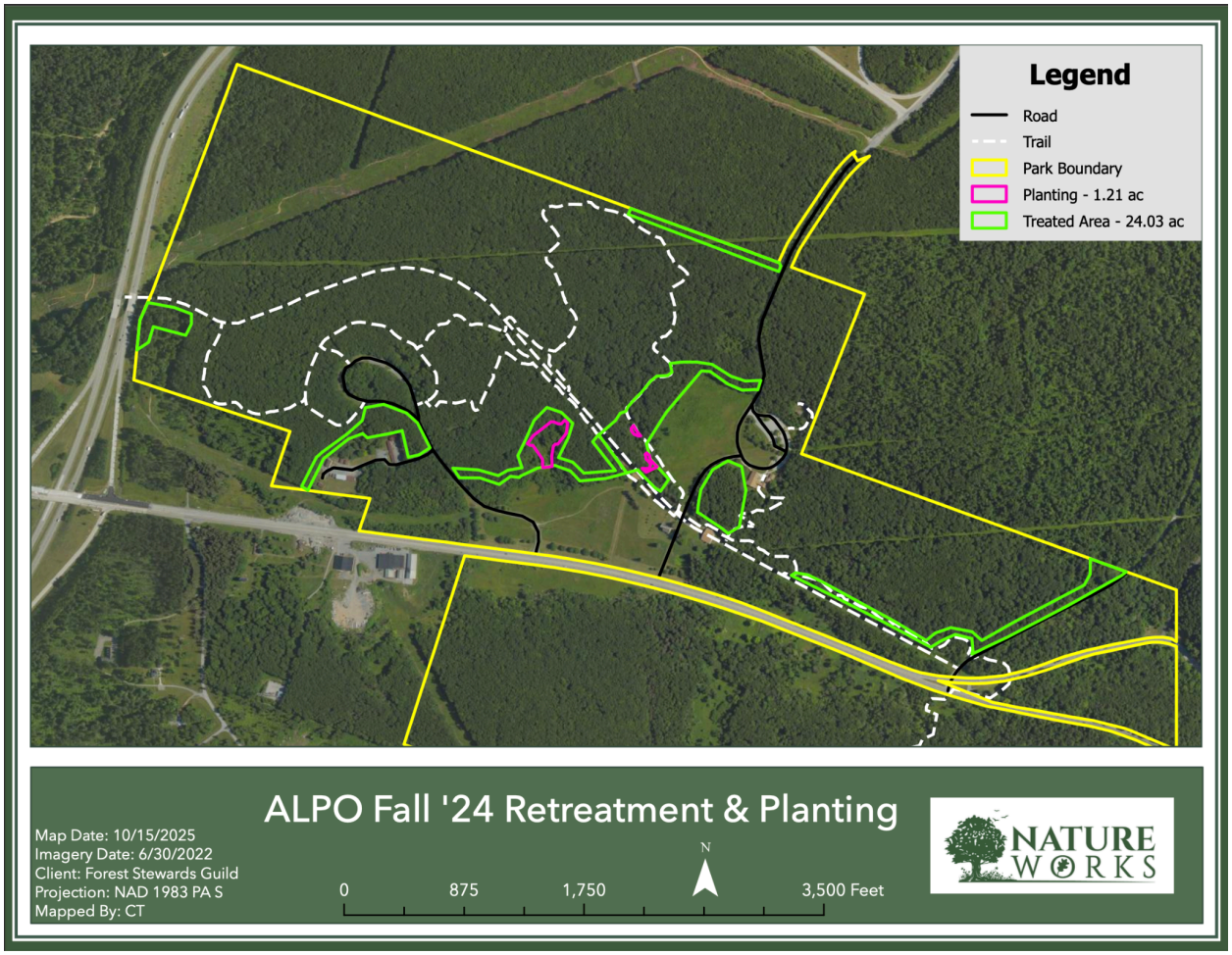


Image 13. Fall 2024 retreatment and planting areas within Allegheny Portage.

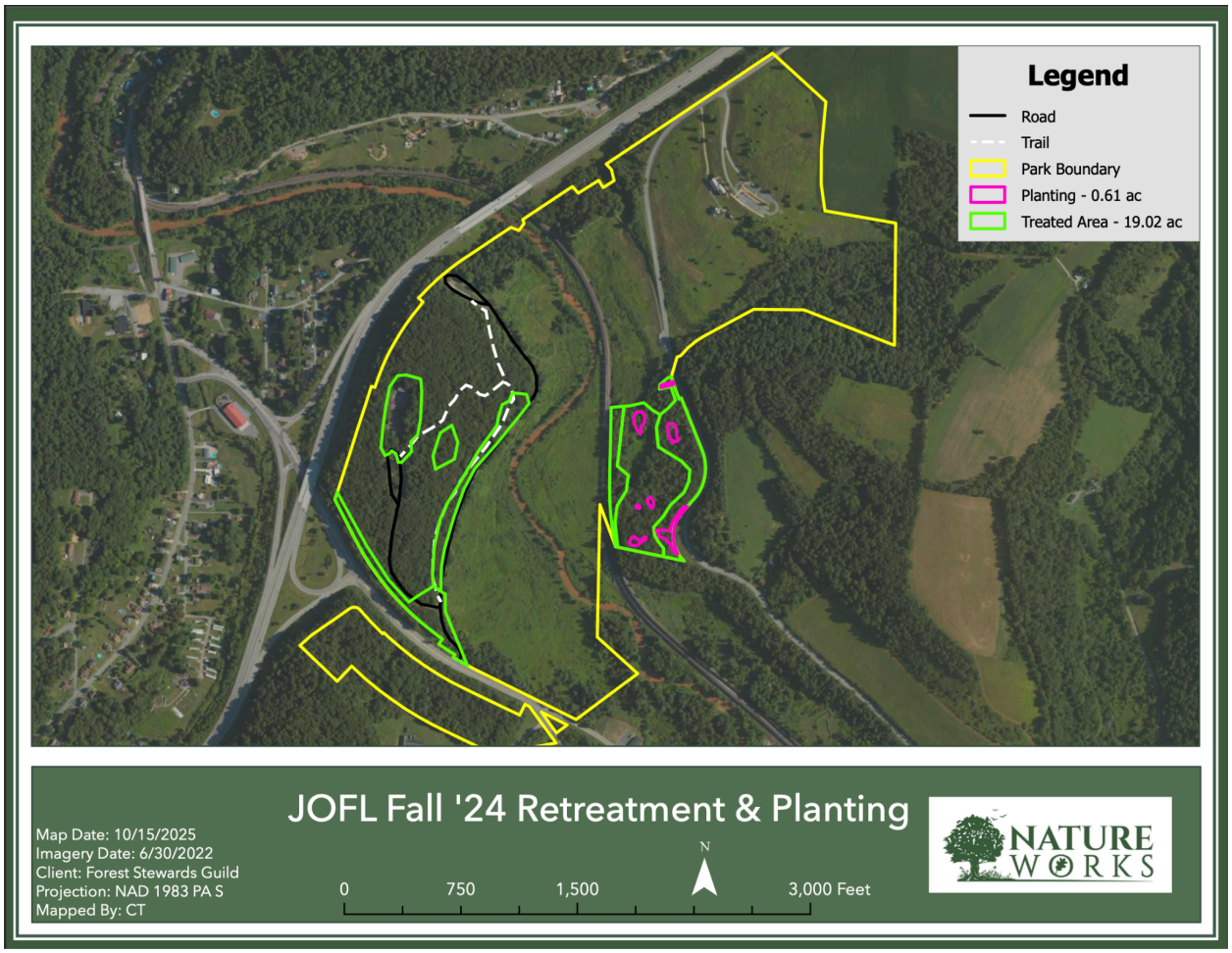


Image 14. Fall 2024 retreatment and planting areas within Johnstown Flood.

Phase 4:
Retreatment (May-October 2025)

The fourth phase of the WEPA Forest Restoration project included the widespread retreatment of areas across the four park units. Nature Works restoration crews retreated a total area of 321.6 acres across the park units. Approximately 65% of the original unit extent was retreated at least once during the course of this project. The adjacent chart displays the retreatment acreage within each park. The maps below display the spatial extent of the retreatments.

Fort Necessity	124.8 ac
Friendship Hill	30.5 ac
Allegheny Portage	122.9 ac
Johnstown Flood	43.4 ac
TOTAL 2025 RETREATMENT:	**321.6 ac**



Image 15: Nature Works restoration crew members treating invasive species at Fort Necessity.

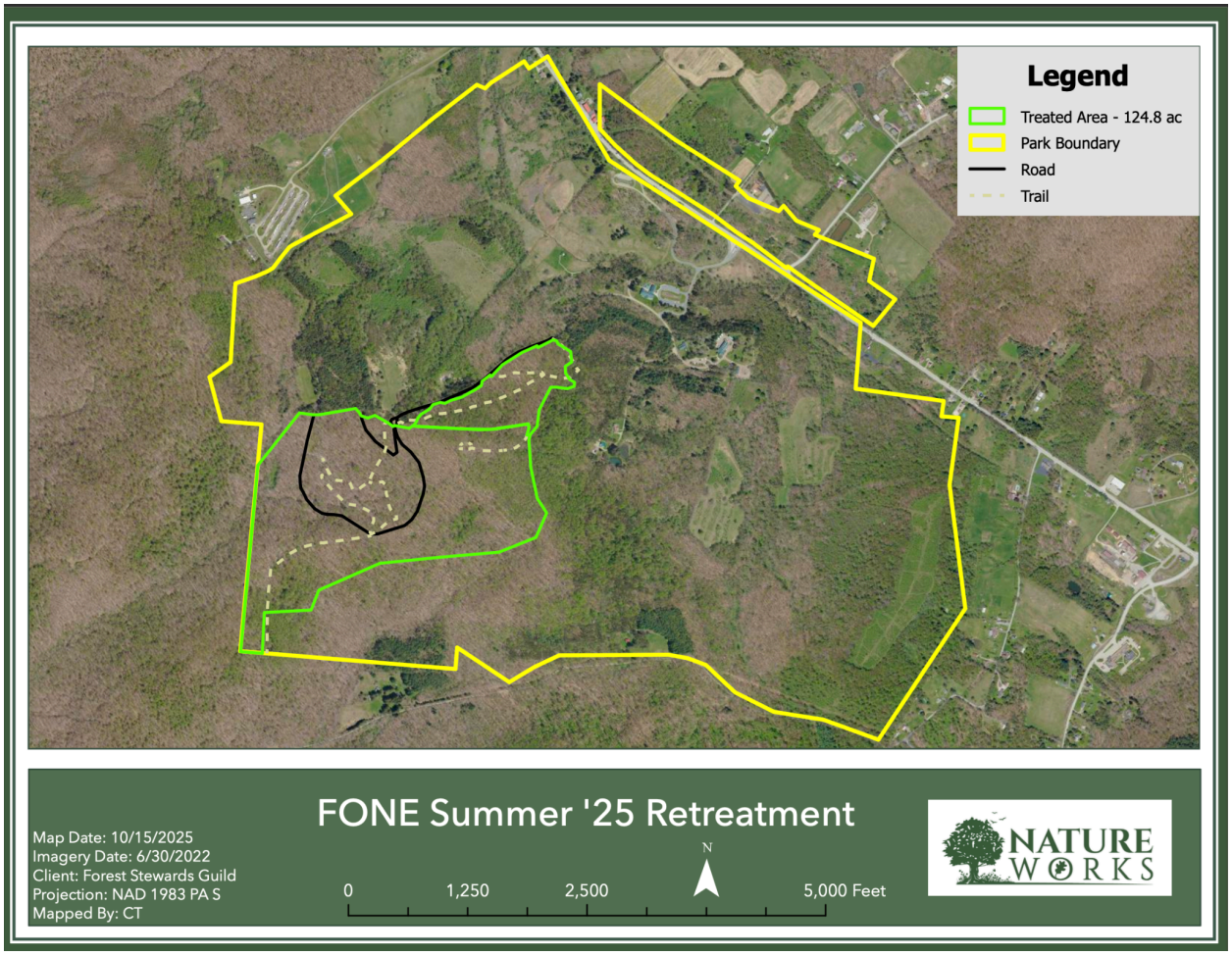


Image 16. 2025 retreatment areas within Fort Necessity.

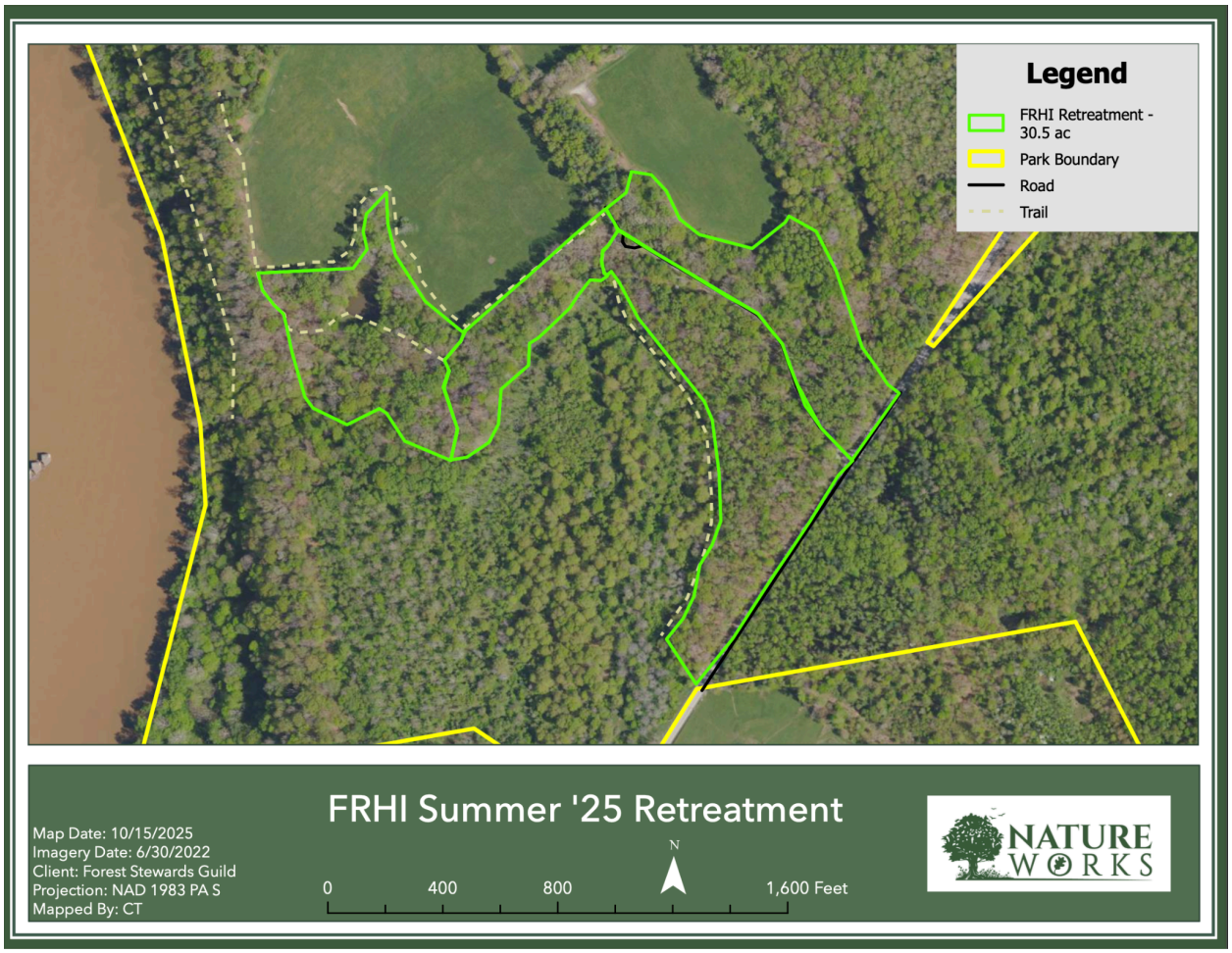


Image 17. 2025 retreatment areas within Friendship Hill.

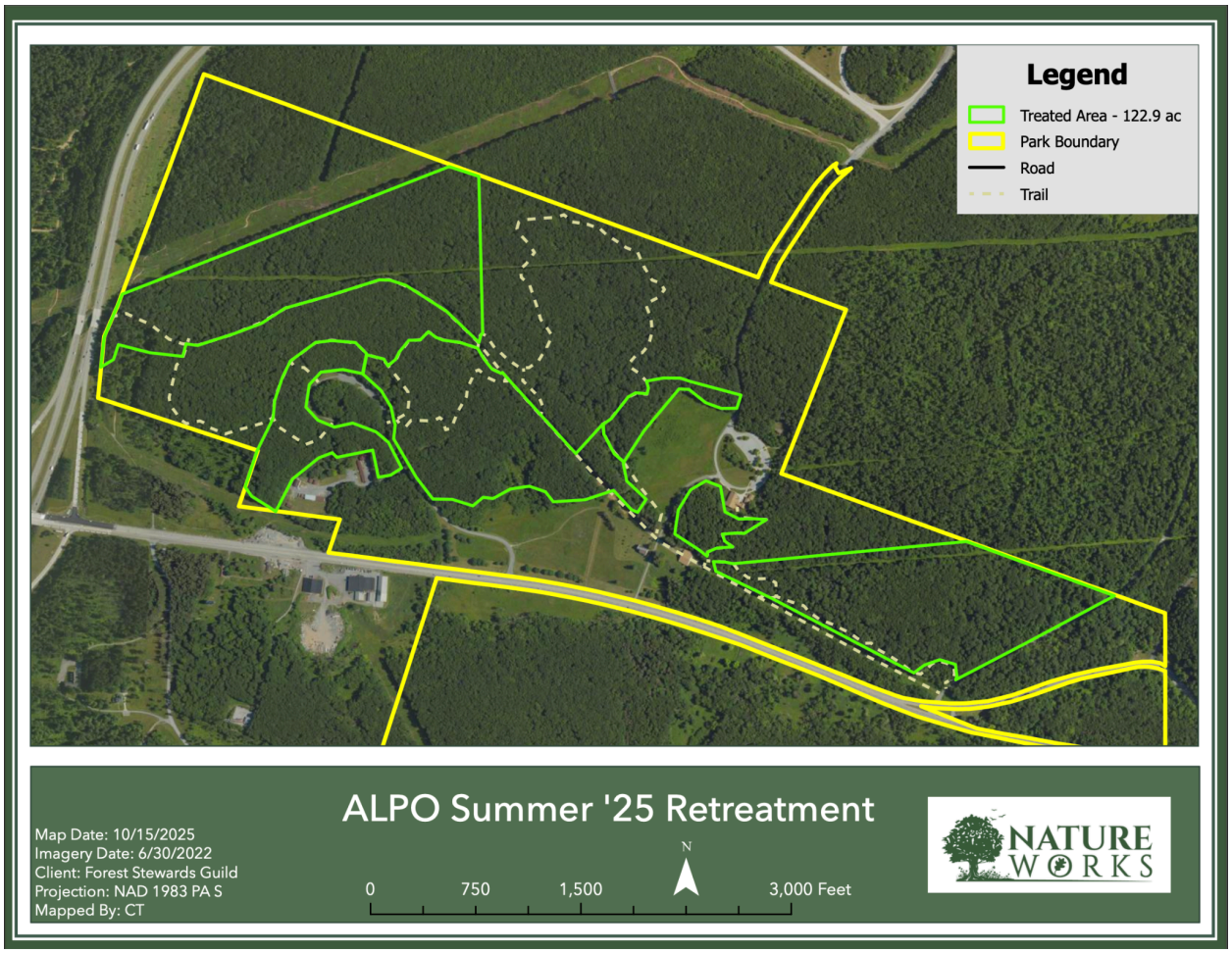


Image 18. 2025 retreatment areas within Allegheny Portage.

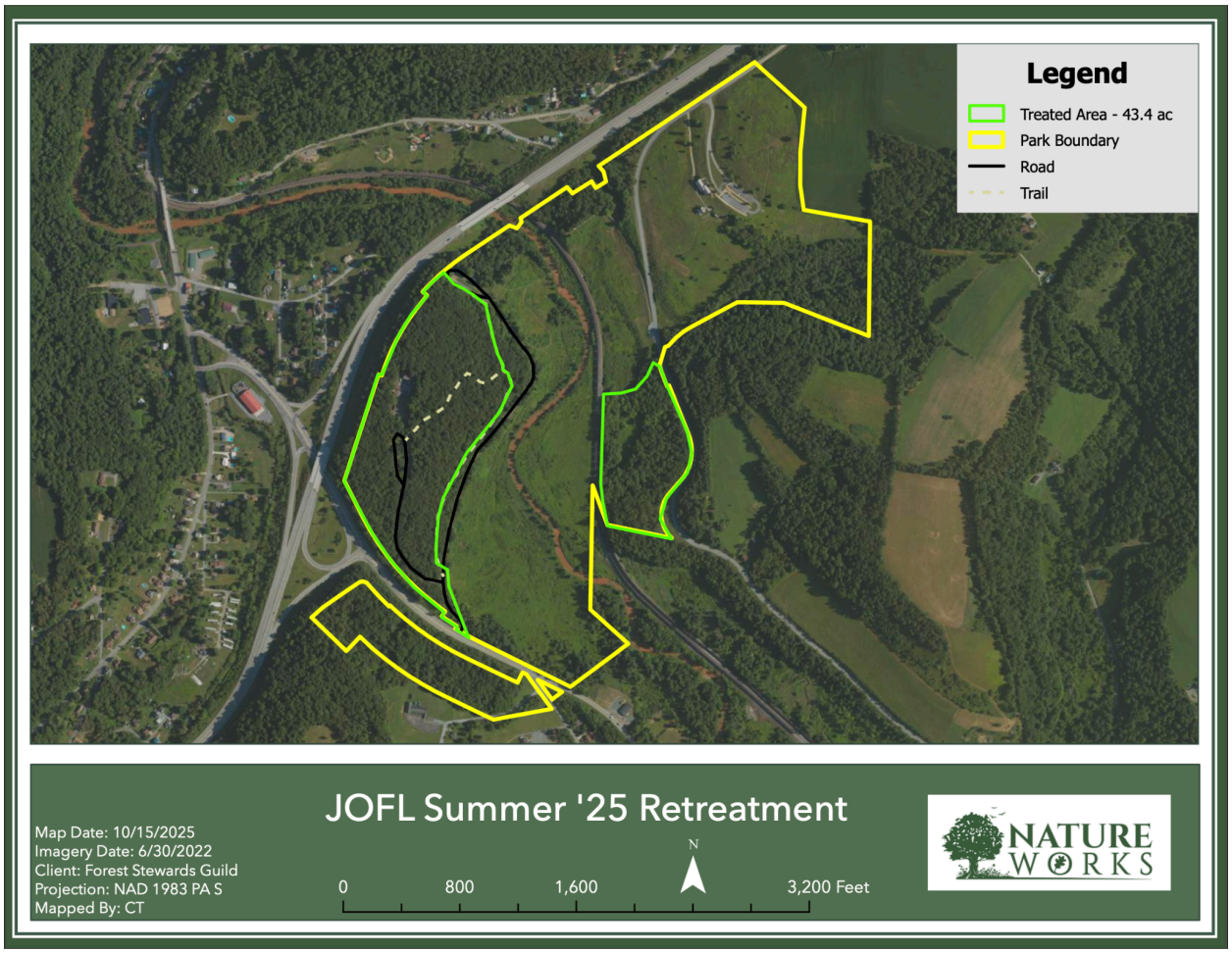


Image 19. 2025 retreatment areas within Johnstown Flood.

Photo-Monitoring Results

In early 2024, prior to initial treatment, Nature Works established 11 photo monitoring points across the project sites. Photo updates were collected in May 2024, prior to initial treatment, and again in September 2024, following the conclusion of initial treatment but prior to planting efforts. A Spring 2025 round was planned, but due to a temporary project shutdown, this was unable to be collected. A final round was completed in September 2025 after the conclusion of all project fieldwork.

A handful of the most dramatic visible-change photos have been included below. The remainder of the photo monitoring results will be made available along with this report. Included in this report are the results from ALPO Point B, FONE Point B, and FONE Point C. These three points illustrate a dramatic change in the vegetation visible from the photo point, and FONE B captures a planted site. See results below.



Image 20: Nature Works crew photo taken in Fall 2024 at Fort Necessity after completing all planned initial treatment.

Allegheny Portage (Point B)

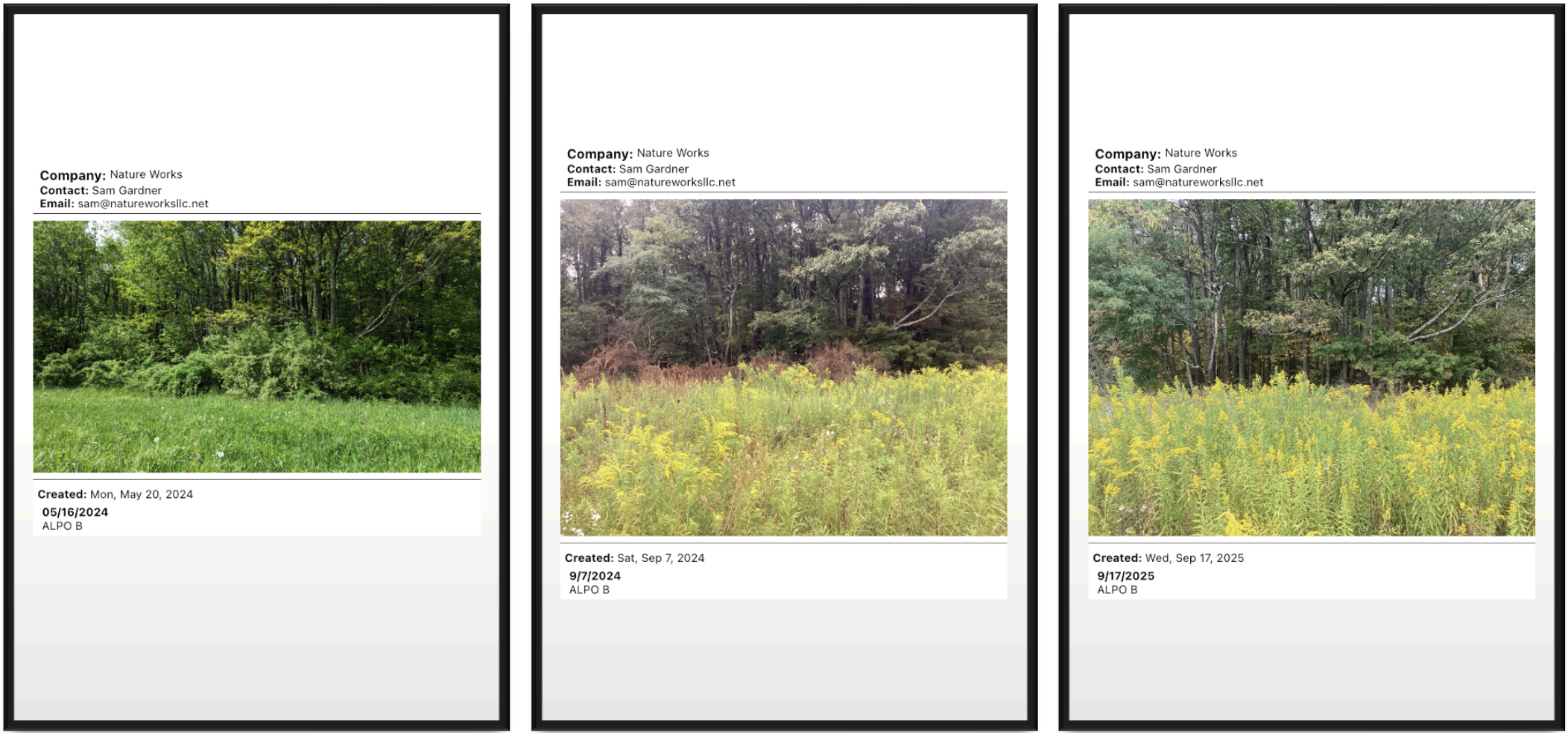


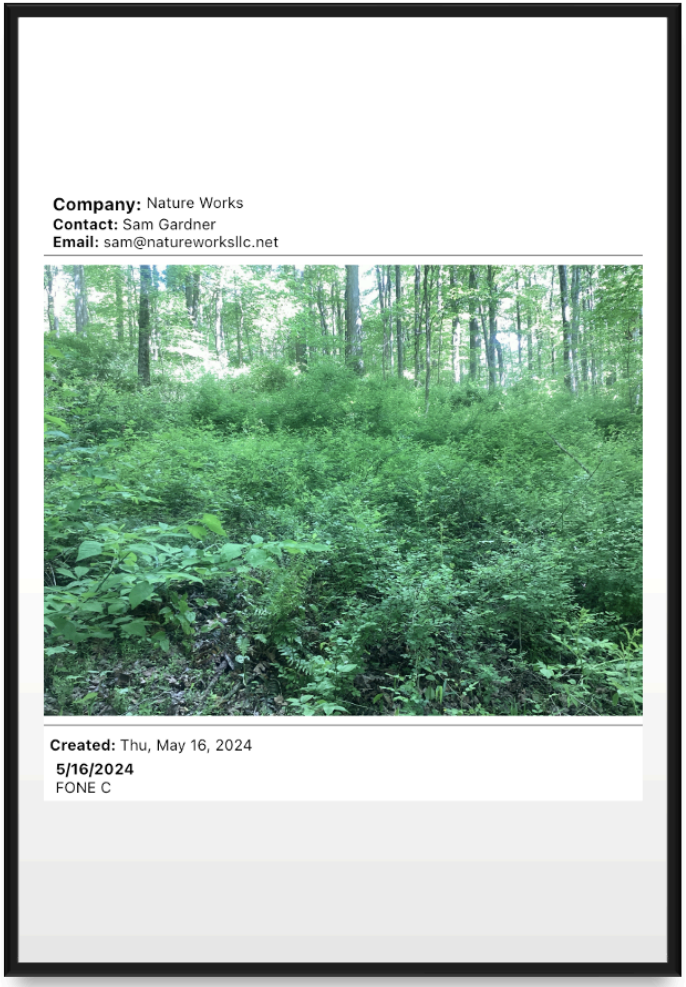
Image 21: Photo-monitoring results, collected from Allegheny Portage Point B. Note the large, invasive Multiflora Rose shrub visible in the left-most panel. In the middle panel, the shrub is browning and dying, and after a year (right panel), the shrub is gone.

Fort Necessity (Point B)



Image 22: Photo-monitoring results, collected from Fort Necessity Point B. Note the absence of the invasive shrubs in the middle panel, and the presence of planted trees inside protection tubes in the right-most panel.

Fort Necessity (Point C)





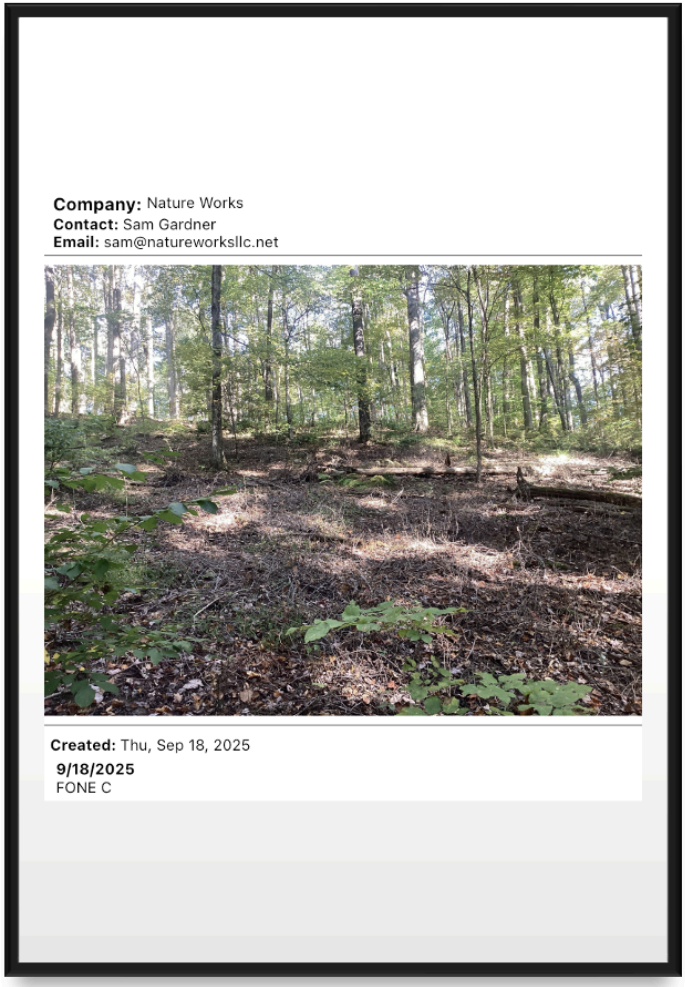


Image 23: Photo-monitoring results, collected from Fort Necessity Point C. In the first panel, near-impenetrable invasive Japanese Barberry shrubs cover the forest floor. Following treatment, these shrubs are absent in the following two panels

Key Project Outcomes

Nature Works accomplished a thorough restoration at scale over the course of this project. Highlighted accomplishments include:

- Restoration of ~500 acres of degraded Appalachian hardwood forest
    - Over 65% of the project area was *at least* treated twice
- Pioneered new planting methodology and planted over 3 acres of canopy gaps
- Created multiple spatial GIS databases to track, plan, and evaluate treatment efforts
- Captured restoration visually through 11 dispersed photo-monitoring points
- Developed and systematized a scalable ecosystem restoration framework
- Established a successful partnership between governmental, non-profit, and for-profit entities to achieve a complex, thorough restoration of project areas
- Created 8 well-paying private sector jobs in Appalachia that included training, advancement, and educational opportunities extending beyond this project

Future Recommendations

Nature Works recommends the expansion and maintenance of treated areas beyond the end of the planned 2025 project conclusion. Several areas within the project boundary will need regular maintenance over the next 3-5 years to fully remove the invasive pests and restore forest health. Further, planted areas should be monitored and maintained where possible. In the next several years, the tree tubes and stakes will need to be removed to allow the planted stock to continue to grow and thrive.

Many of these stands would benefit from additional treatments, including timber stand improvement to remove competing undesirable vegetation (ex. Striped Maple understory removal treatment at ALPO). Additionally, considerations for prescribed fire reintroduction, or additional underplanting, particularly now that the invasive plants have been treated, would be the natural next step in a complete and thorough restoration of these areas.