

Preserving Coastal Parklands

HARRIET TUBMAN UNDERGROUND RAILROAD NATIONAL HISTORICAL PARK



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Executive Summary

Coastal parklands are culturally significant landscapes where unique natural and historical forms and forces are affected directly by marsh migration, coastal erosion, intense storm events, and habitat loss.Natural infrastructures work with natural forms and processes to produce desirable effects such as slowing salinization, protecting critical infrastructure, and improving habitat and human experiences of the landscape over time. Because they work with the natural qualities of a landscape, the implementation of natural infrastructure to combat subsidence, flooding, erosion, and increasingly strong and frequent storms in coastal parklands is both imperative and a unique challenge requiring an innovative approach.

Harriet Tubman is “memorialized in the land, water, and sky of the Eastern Shore of Maryland where she was born and where she returned again and again to free others” [1]. A historically low-relief, marshy and forested landscape, Harriet Tubman Underground Railroad Historical Park (HATU) faces escalating challenges from marsh migration and flooding. This necessitates nuanced interventions to rethink public access strategies and foster healthy landscape transitions, from historical agricultural land and woodland to marsh and open water. One of the most distinguishing features of HATU is its approach to land stewardship through the preservation of African American history. The park emphasizes Harriet Tubman’s use of natural landmarks in guiding enslaved people to freedom within the larger context of its rich heritage as a rural working landscape.

Our team aimed to explore how the park’s ethos regarding history and land stewardship could extend to the Jacob Jackson Home Site, a 480-acre property on Parson’s Creek which includes the historic farm owned by Jacob Jackson, a free black man who helped Harriet Tubman free her brothers from enslavement. The process of developing innovative approaches tailored to the park’s unique and changing landscape started with documenting current practices in use around the site, like marsh burning; as well as mapping historical sites and environmental processes, including marsh migration and forest conversion. In collaboration with National Park Service (NPS) partners, we identified three focuses

Executive Summary

where specific dynamics and needs warranted further exploration of new natural infrastructure: an elevated logging road running through the property, the Jacob Jackson Homesite itself, and ideas for marsh and vegetation restoration.

This research took place between January 2024 and January 2025 and was divided into five stages: 1) site investigation by researchers and collaborators at HATU to identify needs and opportunities, and to understand the historical and natural context of the Park (Figure 1), 2) interviews conducted with our Community Advisory Committee to discuss what makes this landscape special, 3) a design workshop held at the University of Virginia to collaboratively discuss design opportunities, 4) a meeting with the park and our Community Advisory Committee to develop natural infrastructure concepts framed in the workshop, and 5) concept review and refinement, incorporating comments from HATU leadership.

The multi-disciplinary team brings together landscape architectural and history expertise from the University of Virginia, social science and conservation expertise from The Nature Conservancy, and large-scale resilience and institutional coordination expertise from the NPS. Our approach leverages the tools of our team to investigate what is particular about this landscape, and how its specific qualities can play a role in generating more resilient and meaningful landscapes over time. Preserving the Jacob and Dinah Jackson Homesite memorializes the landscape of Harriet Tubman's youth, her escape, and her leadership in the struggle for freedom. We believe that the landscape itself is a powerful interpretive device, and that maintaining its integrity is critical to the conservation of its cultural and natural resources. This document outlines the team's approach to nature-based solutions in the Park and describes design concepts that primarily focus on the 98 acres surrounding the probable site of Jacob and Dinah Jackson's home (Figure 2).



Figure 1. May 2024 site visit, walking in Phragmites towards the Tall family cemetery



Figure 2. Jacob Jackson Home Site outlined in white

Figure 3. View of the marsh from Taylor's Island Road



Figure 4. Historic sites around Jacob Jackson home site highlighted, on a-10m (black) to 3m (white) Digital Elevation Model. Blackwater National Wildlife Refuge shown outlined in black.



Introduction

Harriet Tubman Underground Railroad National Historical Park spans across Dorchester, Caroline, and Talbot Counties on the Eastern Shore of Maryland. The Park includes 11,750 acres of land administered by the National Park Service (NPS), portions of Blackwater National Wildlife Refuge (BNWR) which is administered by the US Fish and Wildlife Service (USFWS), the 17-acre Harriet Tubman Underground Railroad State Park which is administered by the State of Maryland, and private land [2]. The Jacob Jackson Home Site sits on a 480-acre parcel of this larger site and was the home of Jacob and Dinah Jackson from 1848 - 1871. The Jacksons were a free Black family who aided Harriet Tubman in rescuing her brothers from slavery in 1854. As a literate man, Jackson was an important link to the local Underground Railroad community network. He was also a friend and neighbor of Tubman's parents, Ben and Harriet "Rit" Ross [3].

The Harriet Tubman Underground Railroad National Monument was added to the National Park System on March 28, 2013 by President Barack Obama and in 2014, Congress established the Harriet Tubman National Historical Park. The park was established to honor Tubman's life and work while she was enslaved and while she was a freedom fighter, and her deep familial connections to Maryland's Chesapeake Bay region [4]. Though planted and worked differently now, the mosaic of fields, woods, and wetlands, and the "midnight sky and silent stars" [5] are reminiscent of the forests and working landscapes of Harriet Tubman's time [6].

Much like parts of the Blackwater National Wildlife Refuge, where wetlands at sea level are being lost at a rate of 300 acres a year, the home site is at high risk of inundation and loss of culturally significant sites. Wet agricultural land and forest will get wetter; and the accelerating speed of the water level moving inland will make it very hard for natural systems to keep pace. This means that without intervention, much of this region may become a low-quality monoculture of invasive Phragmites, which is neither connected to the history of this place nor hospitable habitat for the future. This is the area's central challenge and the biggest threat to flora, fauna, and human use and experience of this landscape (Figure 5). More generally, HATU's 2019 Natural Resource Condition Assessment graded the natural resources of the park across categories which included air quality, water resources, biological integrity, and landscape dynamics. Condition scores were graded from 0 to 100% based upon the percentage of sites or samples that "met the threshold identified to maintain natural resources" [7]. The report revealed moderate concern for the park's total landscape dynamics, with only 54% of the reference conditions attaining the threshold needed for natural maintenance. The report further indicated that the park's minimal



Figure 5. Loblolly pine forest, Jacob Jackson home site. May 2024

impervious surface cover and large natural landscapes were deemed good, however, wetlands were deemed a significant concern due to reported elevation losses and the possibility of permanent inundation due to dynamic sea levels [8]. Our team was tasked with coming up with solutions for a 98-acre area within the 480-acre Jacob Jackson Homesite. This area encompasses the home site and some other historic properties, as well as some wet woodlots dominated by thin loblolly pines (Figure 5), a relatively high-elevation logging road from the 1990s, and brackish marshes at the perimeter of the site, scored with ditches, creeks, and canals. There are no buildings [9].

The Jacob Jackson Home Site

The Jacob Jackson Home Site property is wet and flat land quilted with fields, marsh, forests, rivers, and creeks (Figure 6, 8). Though much has changed over the years, the rural character of this working landscape remains intact: present-day land use practices continue to mold a sense of place not dissimilar to what Harriet Tubman and her kin would have experienced in the 1800s. The landscape's quiet wildness, open spaces, undeveloped coastal edges, and uninterrupted vistas enable visitors to bear witness to Tubman's experiences.

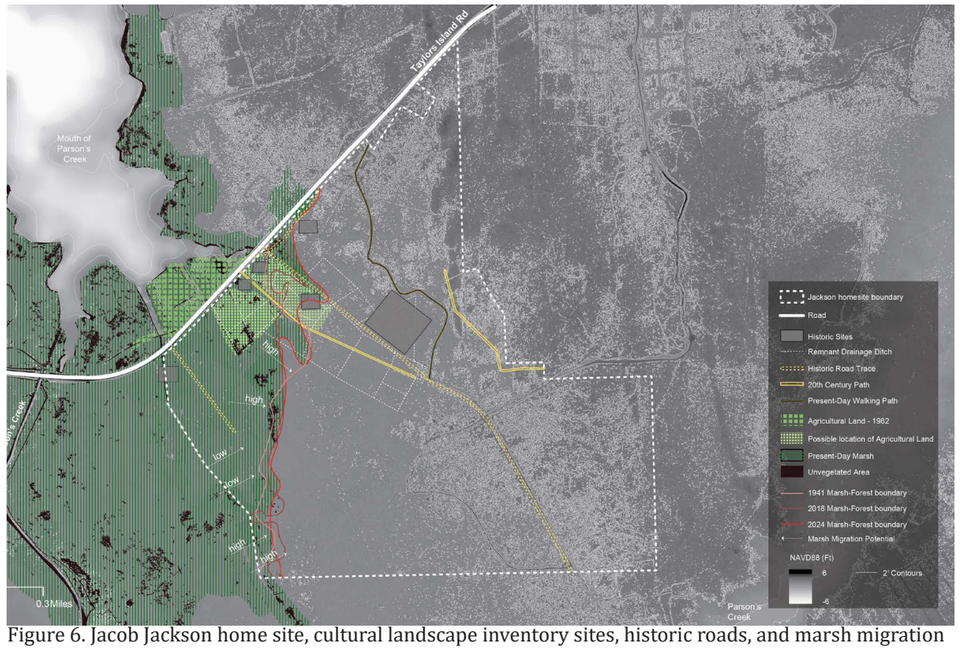


Figure 6. Jacob Jackson home site, cultural landscape inventory sites, historic roads, and marsh migration

Though the character of the cultural landscape remains, there is very little archaeological evidence from the 1848-1871 period of significance that has been found so far. An archaeological investigation of the Jacob Jackson parcel was conducted in 2018 [10]. It found six potential structures and one cemetery, but nothing that could be definitively identified as the Jackson home structure. Some of the structures can be attributed to families contemporary to the Jacksons, like the Tall family gravestones on the cemetery site by Taylor's Island Road (see Figure 20), but unlike closeby sites like the Ben's Ten site on Blackwater National Wildlife Refuge land, very little evidence of human habitation is visible so far.

There are traces of roads, including Taylor's Island Road before it was straightened in the 1960s [11], as well as Vince Green Road or Martin's Lane, a road constructed in 1806. Martin's Lane was named for William Martin originally, but was called Vince Green Road by the early twentieth century, after a black landowner and neighbor of Jacob Jackson. There are historic drainage ditches on the property that were used to drain agricultural fields during the period of interest, but further investigation is necessary [12]. Walking the site reveals a marked change in vegetative community around the likely site of the Jackson home (Figure 7).


Figure 7. Clearing at the home site - May 2024



Figure 8. Landscape types at the Jacob Jackson Home Site property

A Landscape of Labor

What was once a landscape on which a community of African Americans - both free and enslaved - and their White neighbors labored to cut a living from the hydric soils, is now a mosaic of marshlands and overgrown loblolly pine forests, planted by timber companies after clear cutting the hardwoods (oak, sweetgum) that once dominated the landscape [13]. The landscape of Jacob Jackson, a free Black man, was a landscape of labor, as demonstrated by the canals and ditches that managed the daily flows of brackish water that surround the marshy land. It was precisely this difficult, meticulous labor which created the conditions for Jacob and Dinah Jackson to own their own land. As written by Jennifer Hanna, Historical Landscape Architect with the Olmsted Center for Landscape Preservation, “the characteristics that decreased land’s economic value and made living difficult, including high water tables, clay soil, limited access to public rights of way, and dense scrubby woodland of little value, made the land attainable for newly free Black men and women who might not otherwise have gained a foothold in land ownership” [14].

Early in its history Dorchester County was a site of tobacco plantations, an agricultural product that greatly taxes soil health and requires a high degree of maintenance, which at the time would have been conducted by enslaved laborers. Given the rapid rate of soil depletion, agriculture in this landscape quickly shifted into grain and timber harvesting [15]. By the 19th century, forests in Maryland were depleted, matching the rate of population growth and urban expansion in the state [16]. Despite the marshy soils, timber harvesting pushed into Dorchester County, with the long poles being carried towards the Chesapeake and its tributaries to shipbuilding ports by canals, which were also cut by enslaved laborers (Figure 10). Stewart’s Canal, which traces to the southwest of the Jacob Jackson homesite, is one such of these canals, emptying into the mouth of Parsons Creek [17] (Figure 9) .

This landscape is where Harriet Tubman grew up, enslaved. Tubman is a figure who evades being fully known or understood. She was elusive by nature, having slipped in and out of various disguises and moving through challenging landscapes to achieve her daring rescues. Tubman never learned to read and write, and so her accounts are given to us second and third-hand by a few biographers with whom she entrusted her stories. What we risk with this limited historical account is that Tubman and her feats may become reduced down to a mythologized, solitary heroic figure, when in actuality, she is a figure who is shaped by her relationships both to the people and the landscape. She learned from her mother, Rit, who escaped into the woods with her young son, Moses, to evade his sale [18], and from her father Ben, whose skills as a forester allowed him to make a living, build a home for his family, and purchase Rit’s freedom after he was manumitted. Tubman’s father, Ben Ross, was a timber inspector and foreman well versed with the mixed hardwood and deciduous forests which once dominated the higher ground in the county [19]. Tubman had spent a great deal of time



Figure 9. Stewart’s Canal running into Parson’s Creek, under Taylor’s Island Road (Credit: WUSA9)

1.2 Introduction: A Landscape of Labor

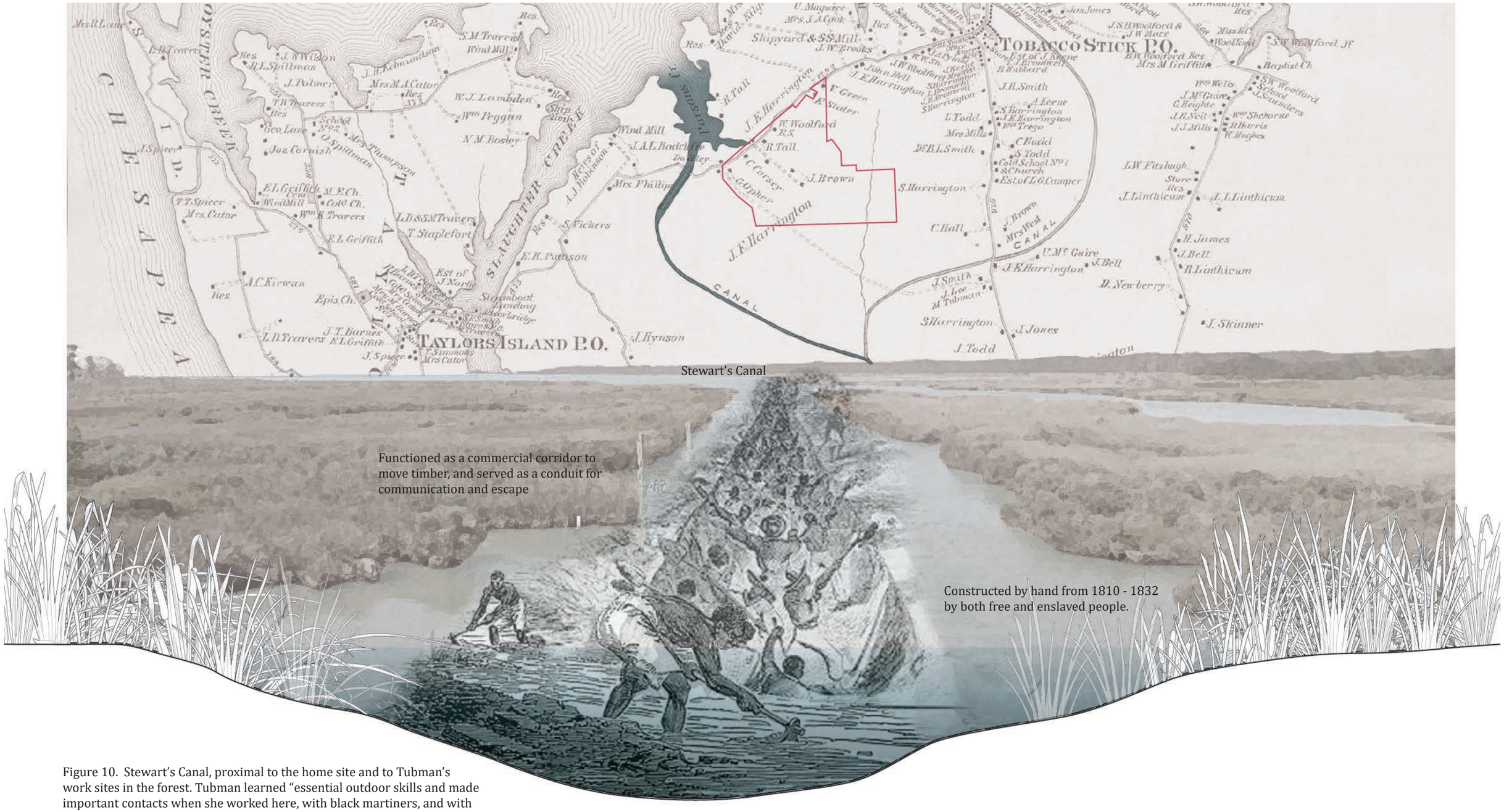


Figure 10. Stewart's Canal, proximal to the home site and to Tubman's work sites in the forest. Tubman learned "essential outdoor skills and made important contacts when she worked here, with black martiners, and with her father, Ben Ross, in nearby timbering operations." (HATU Stewart's Canal brochure https://npshistory.com/publications/hatu/brochures/

working out in the forests after having had a disastrous childhood working in the houses of her enslavers, famously suffering major head trauma after an overseer threw a lead weight at her [20]. The injury both grievously wounded Tubman, who suffered from seizures and other persistent effects for the rest of her life, and gave her complete clarity of the necessity to one day escape.

A Changing Landscape

Tubman would become the Underground Railroad's best-known conductor. Prior to the Civil War, she repeatedly risked her life to guide up to 80 enslaved people north to new lives of freedom [21]. While Tubman held her exact paths and routes close to her chest, historians have speculated that she traveled overland and along waterways such as the Choptank River [22]. Tubman achieved this incredible feat through both a deep knowledge of the environment and through the network of connections that comprised the Underground Railroad. The landscape of the Jacob Jackson homesite provides a glimpse into both of these powerful aids towards freedom.



Figure 11. Photo taken at Jacob Jackson Homesite, looking down Green Road. May 2024.



Figure 12. Illustration of Harriet Tubman's relationships with the marshes of the Eastern Shore

As "arguably the most famous Black woman ecologist in U.S. history", Harriet Tubman's life was filled with time in the forests and swamps of the Eastern shore "connecting with plants, trees, animals, and stars" [23]. Even before her work as a freedom fighter, as a young woman enslaved on the Eastern Shore, Tubman was in the woods chopping trees and working with her oxen to cart lumber out of the wetlands [24]. She "knew how to identify edible plants in the forest, like narrow-leaved sunflower, wintergreen, or swamp blackberry that Indigenous people of the Chesapeake pine woods had relied on for generations" [25]. The Harriet Tubman Underground Railroad National Historical Park preserves the landscapes that Tubman was born in, grew up on, and used to carry herself and others away from slavery (Figures 11, 12). But what were once sprawling wetlands, woods, swamps, and patchworks of diverse crops and livestock, are changed. Even during Tubman's time, the marshes were being drained, the agricultural fields were being depleted of their nutrients, and the forests were being logged. Marshes and woodlands that were logged and converted to farmland are now converting back to marsh, or becoming open water, and these changes are likely to accelerate in the future (Figure 13). The fact of these changes doesn't inherently mean the loss of their meaning or connection to history and community. Indeed, landscape change is inherent here, and is fundamental to the history of the place. However, the

loss of quality through the conversion of marsh and forest to phragmites wetland and open water is a threat to those connections. A phragmites marsh doesn't sustain and interpret the history of work, the experience of the open landscape and night sky, and the presence of the wildlife that were endemic here during Tubman's time. These values sustain the connection to the historical landscape and community from Tubman's time that make this landscape a national park.

The "Eastern Shore is one of the richest areas in this country in terms of African-American history" (Clara Small) [26]. With our work we want to honor this history while recognizing that a landscape cannot freeze time the way a statue or a museum exhibit might be able to. We believe that our work as researchers and designers in this landscape should invite people to imagine and understand the past, especially the life and work of Harriet Tubman, while accomodating the living and changing environments of the present and future.

The Home Site Today

"The wooden barns, houses, and fences that used to mark these long-abandoned fields are no longer there. Old Martins Lane/ Green Road, which is now filled with water like a straight narrow river, points toward the land Jacob and Dinah Jackson farmed in the mid-nineteenth century." [27]

The elevation of the Jacob Jackson Home Site starts from 0.5 ft and climbs to 2.5 ft NAVD88 east to west. The logging road elevation is 3.5 ft NAVD88 (USGS CoNED 2016). NOAA's water level projections for this area of Maryland are 1 ft of increase by 2043, which would affect around half of the 98-acre parcel of interest, and 2 ft by 2067, which would fully inundate the area [28] (see Figure 13). In tandem with the Preserving Coastal Parklands research, the NPS conducted a wetland delineation, which resulted in the designation of the whole area as wetland. As wetlands are a habitat of special concern in the region, this meant that any of the work we did would have to remain within the narrow elevation envelope described in the wetland delineation (see Appendix). The wetland delineation reflected our wider understanding of the site, which, though wooded, was soggy and difficult to navigate once off the elevated logging road.

Deep ditches dark with tannins open into dense patches of Phragmites, especially in the southwest portion of the site. Maps starting in 1998 show the marsh migrating into the site over time, especially down the historic Green Road, which is now a shallow canal (Figure 14). The historically hardwood forest is now almost entirely loblolly pine (Pinus taeda) due to historical and recent logging, but for some sparse willow oak (Quercus phellos), black gum (Nyssa sylvatica), and American holly (Ilex opaca). There are two notable exceptions to the relatively uniform forest vegetation - one small pocket of hardwoods in the northeast and a set of clearings around the home site.



Figure 13. Water level increase (1ft and 2ft), cultural landsape sites, and marsh migration.



Figure 14. Marsh migration overlaid on satellite image of the Jacob Jackson Home Site. Marsh is migrating southeast, deeper into the site.

Our Approach

The landscape of the Jacob Jackson Home Site (JJHS) posed unique challenges for conceptualizing designs that would both evoke the history of the place and serve as natural infrastructure for the park's future. The specific goals were to improve visitor access, maintain healthy habitat, and provide opportunities for interpretation and education. Our approach draws from local histories and practices to identify appropriate landforms and management regimes that preserve the core socio-ecological identity of this critical parkland as the landscape experiences marsh migration, forest conversion, and higher water levels.

Following several months of examining the JJHS's historical wetland migrations, local timber stock and density, and future projections of water level, our team estimated which areas are at higher risk of inundation and where patches of higher ground may extend the life of existing forest lands (Figure 15). This has been paired with historical research into the communities and families who lived in Dorchester County, with particular focus on the mid-nineteenth century period during which Jacob and Dinah Jackson lived in this area. This research was done in large part with support from our partners at the NPS, whose Cultural Landscape Index gave us a framework to interpret existing landscape features. We also worked with a community advisory committee. HATU staff have built strong relationships with their legislative partners and members of the Tubman/Ross descendant community. These non-NPS stakeholders have been integral to helping HATU advancing its mission to share the significance of Harriet Tubman through storytelling, visitor experiences, land management, and community outreach, among other activities. Given the importance of these partnerships, the project team asked Park leadership to identify key individuals from these communities to recruit for a project community advisory committee. The intent of convening this committee was to support these partnerships and create an inclusive process for integrating their insights and perspectives into the research to improve the relevance, impact, and feasibility of the recommended landscape designs and land management strategies. A total of nine advisory committee members were recruited including four descendant community members and five legislative partners.

As part of the recruitment process, HATU also expressed a desire to include local tribal communities given their significance in this landscape, both historically and present-day. In line with federal requirements around tribal consultations, invitations to participate on the advisory committee were extended to the federally recognized Delaware Nation, who claim territory in this landscape. While HATU was not able to recruit a participant from the Delaware Nation, project members from The Nature Conservancy later invited one of their key tribal partners from the non-Federally recognized Nause Waiwash Band of Indians to also participate in an advisory capacity given the tribe's active presence in this landscape and historical connections to this landscape.

The Community Advisory Committee included Dana Paterra, from the Maryland Park Service; Marcia Pradines Long and Matt Whitbeck, from Blackwater National Wildlife Refuge; Tina Wyatt and Douglass Mitchell, members of the Tubman descendant community; Paulette Greene and Donna Dear, owners of the Mt. Pleasant Acres Farms; Ed Stierle and Wendy O'Sullivan from the National Parks Conservation Association; and Chief Donna Abbot, of the Nause Waiwash Band of Indians. Advisory Committee members were first engaged through semi-structured interviews to explore their experiences with and perspectives on the significance of the Jackson Homesite and broader landscape in which the Jackson Homesite sites. Emergent themes were used to fine-tune the project team's focus as we worked towards the design phase. The interviews and analysis were conducted by Dr. Elizabeth Van Dolah, an environmental anthropologist on our research team.

Most of the design concepts emerged from a two day workshop held at UVA in June 2024, which was attended by many of our partners who brought with them

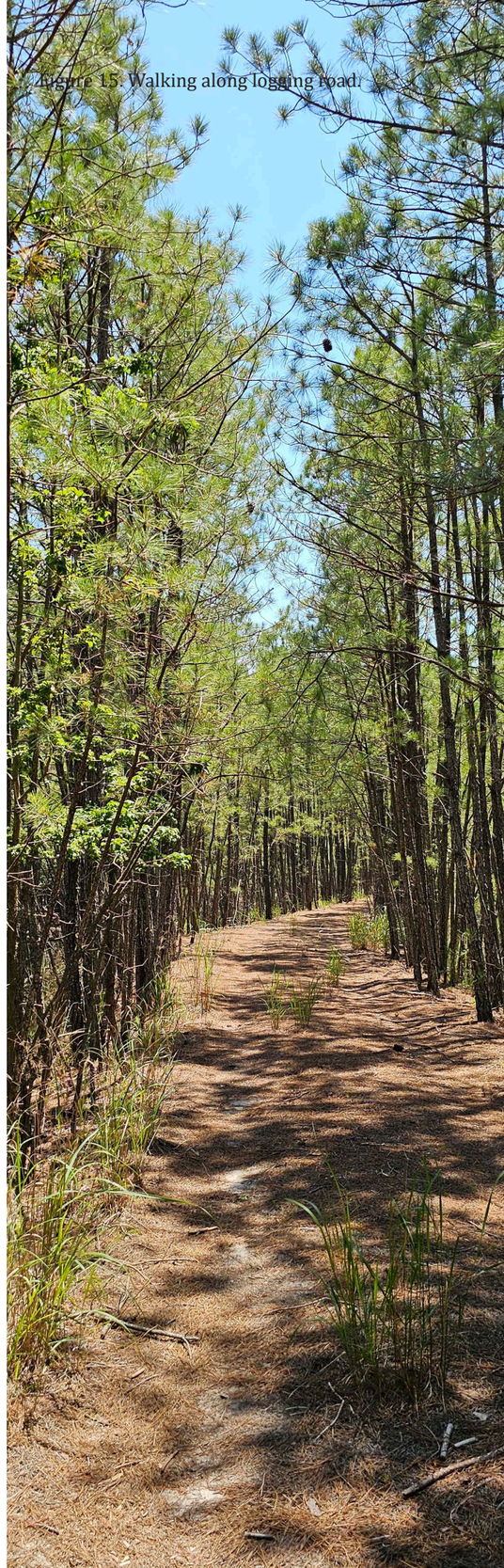


Figure 15. Walking along logging road.

a range of experience and expertise. Due to the absence of archaeological ruins on the site that can be clearly identified as belonging to the Jacob Jackson home site, the story of the Jacksons is told through subtle clues that remain in the landscape. The CLI identifies the landscape characteristics which contributed to the historic character of the home site. The list included the (1) faint topographic changes which stem from the "ruins of a system of drainage ditches used for agriculture," [29]; (2) the vegetative profiles of a forest dominated by loblolly pine, oak (Figure 16), and sweet gum, as well as the salt marshes fed by tidal inflows from Parsons's Creek; (3) views and vistas into and through the property; (4) as well as built features including road traces and scant building ruins which remain on the landscape. These elements are not structural, and they are not always legible. Though they have persisted for sometimes hundreds of years, they are often very understated features of the landscape.



Figure 16. Looking down in a hardwood stand



Figure 17. Looking over the marsh towards the home site

Several advisory committee members spoke of an authenticity to the past, often describing broader Dorchester County as a place where the separation between past and present are thinly veiled. An individual evocatively described how these features help "blur and blend" the intersections of time and place:

"It's the complete intersection of land, water, and communities, where they are blurring and blending. There's edges here that are blurred. And that is by the nature of the resources themselves -- the marsh and waterways, [and] it's by the nature of settlement, where from historic settlement probably arcing all the way back to Indigenous settlements through current, you still have the sense of place where people were … creat[ing] their livelihoods on those edges, in those spaces. ...And because of such a strong cultural connection to the rivers, and such a long [historical] arc of working lands…, there are still these broad vistas that give one a sense of heritage, a sense of connection to the past."

1.2 Our Approach

Some advisory committee members suggested that the authenticity of this landscape has potential to set HATU apart from other NPS units by allowing visitors to have more immersive experiences with the past, especially in places like the Jackson Homesite where the imagined landscape of Tubman's Dorchester County still feels very palpable. For example, advisory committee members described the immersive quality of marshes and wetlands (Figure 17, 18): the ubiquitous wetness, the biting flies and mosquitoes, soundscape, and the subversive quality of wetland grasses encourage the visitor to contemplate both the hardships encountered by enslaved Africans as well as the sanctuary that could be found in the marsh for those living under oppression. Several descendant community members shared stories about memorable nighttime visits in Lower Dorchester County, in which they described the ways that the night helps elevate the sensory experience of this landscape:

"I've been out there at two o'clock in the morning, taking photographs on a tripod to see what Harriet Tubman may have seen when she was conducting a rescue mission in the nighttime, and hearing the scary sounds that you hear at night …It's been fascinating for me to have that intimate hands-on five senses, plus the sixth sense of intuition and imagination, out there alone in the middle of the night, in the back country of Dorchester County."

Another individual similarly described how being in this landscape at night has allowed them to feel a deeper sense of connection to time and place, noting the role of chirping crickets and frogs, the stars, and the quiet, cloaking softness of night in facilitating this connection and a feeling of comfort.
To preserve the land is to preserve an



Figure 18. A waterlogged Green Road. May 2024.

1.2 Our Approach

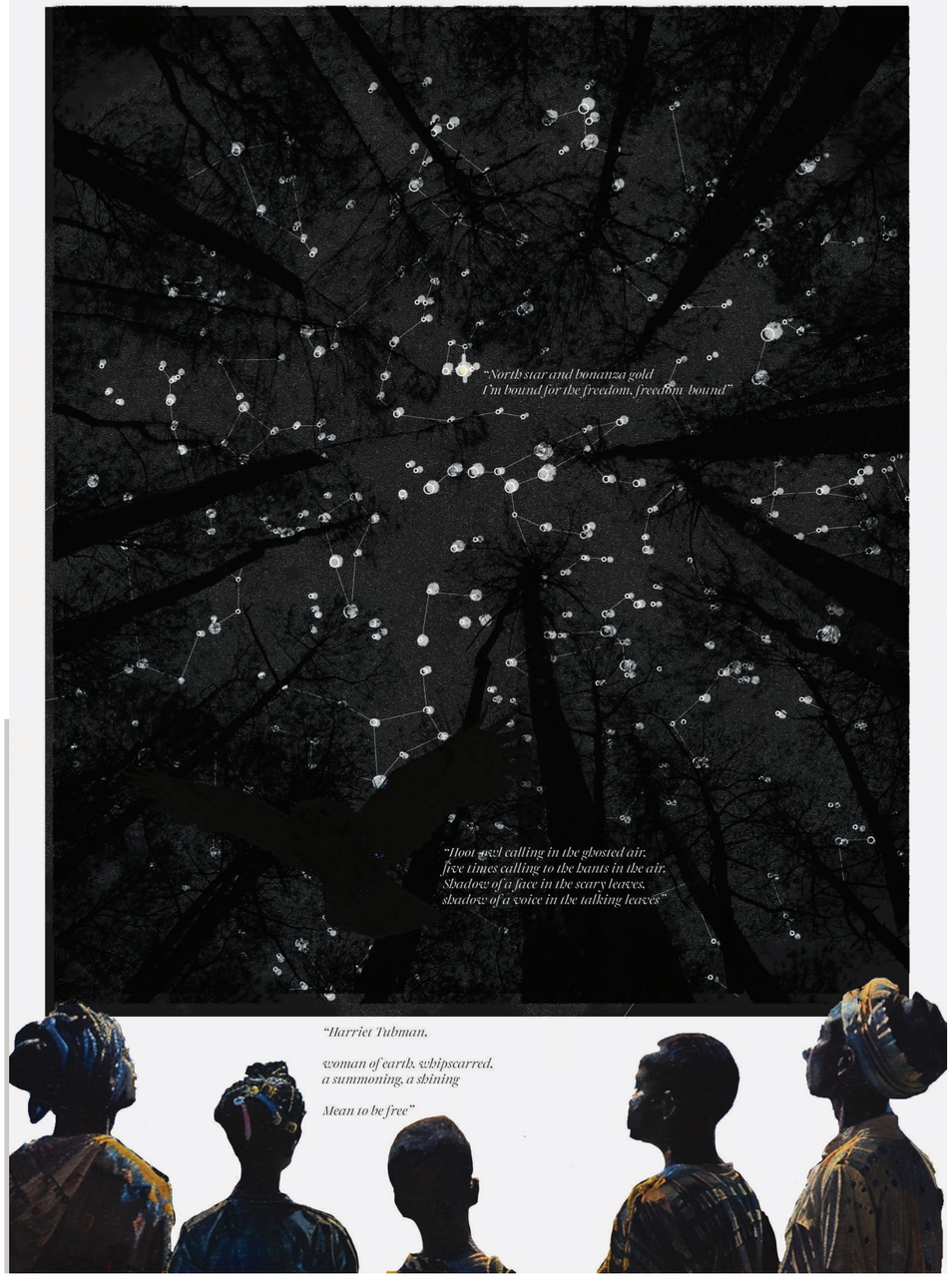


Figure 19. Night sky illustration

authentic connection to history. We believe that emphasising elements of the present-day landscape can evoke Tubman's life and work, but also those who came before and after her, to "reveal both alterations to and continuities of people's connections with the place over time" [30]. To this end, we worked with our advisory committee to undertand aspects of the landscape that natural infrastructures could work with:

What makes this landscape special?

- Archaeological sites (Figure 20)
- Trees: pines, pine needles, hardwoods, ghost forests
- Insects: biting flies, soundscape
- Water and wetness
- Ditches
- Wildlife: Delmarva Fox Squirrel, Deer, Muskrat, Birds
- Marshes

What experiences and activities should be elevated?

- Immersive experiences
- Connective experiences - historical connections, spiritual and community connections
- Experiences with nature
- Educational experiences about landscape change

Our team has taken this list of experiential and cultural characteristics and interpreted them into two primary



Figure 20. Investigating the Tall family cemetery on the Jacob Jackson Home Site

1.2 Our Approach

themes for the design process: an Oasis of Time, which is centered on visitor experiences of the history embedded in the landscape; and Tides of Transition, which is centered on managing for healthy landscape transition.

Taking into account the high vulnerability of the site and the park needs for visitor infrastructure, coupled with the relative low priority for development on this property [31], we developed a variety of landscape and maintenance concepts that span the whole 98-acre parcel. Each of these concepts are discussed individually later in the report, but they are best understood as a suite of interventions that work together. Therefore, we are providing a combined landscape stewardship plan which describes suggested park infrastructure and management regime for the next twenty years. This is a particularly critical time period for planning and decision-making as it is projected that higher water levels will rapidly change this low-lying landscape, and a large portion of the parcel will transition from forest and marsh to marsh and open water.

Our work does not aim to restore the landscape to its 19th century condition, but rather to use the inheritance of landscape features, especially from Tubman's time, to anchor a healthy, resilient, future ecosystem that honors its history. This includes using agricultural patterns and historic roads as the basis for forms of climate adaptation or as templates for management, or highlighting historically significant environments like hardwood patches and old home sites. Our ultimate goal is to create experiential connections to the site's history and promote healthy marsh migration through an adaptive reuse of historical landscape features.

Three main objectives:

- Echo forest and marsh landscapes of 19th c.
- Provide access to the site
- Help create conditions for healthy marsh migration

Seven strategies

- Parking area in the forest
- Creating outlooks at key moments
- Glade planting
- Hydrologically breach logging road
- Land shaping to create runnels and functional tidal creek
- Forest thinning
- Controlled burns



Figure 21. Looking up into the loblolly pines.

1.2 Our Approach

Landscape Stewardship Plan

Landscape plan objectives
- Connecting the property to its history and climate variability - designing visitor experiences that highlight unique elements of the landscape
- Visitor infrastructure
- Forest features - glades

Management objectives
- Managing the transition from forest to marsh, focusing on ecological health
- Marsh migration
- Forest management
- Phragmites control

Plans for a new parcel in a national park often emphasize the roads and buildings to be constructed, areas to be conserved, and spaces to be programmed. While those features are present here, the values and context here is different. This means that the focus is instead on precise constructions that limit impacts but enable visitor access for education and interpretive experiences (Figure 22). These incisions are paired with landscape stewardship practices that are historically appropriate, found in the region, and can work toward the transition of low-quality pine forest to high-quality marshland. This approach which de-emphasizes capital improvements and prioritizes ongoing work and engagement with the landscape is appropriate in a rural setting, and in a national park that valorizes Harriet Tubman's life, vision, and sacrifice. It is also more demanding from a management perspective, requiring special care and research.



Figure 22. Landscape and management plan

2.1 An Oasis of Time

Our design approach to attend to this oasis of time includes developing an interpretive trail system to provide access for descendants, community members, and visitors and to highlight key moments in the landscape that speak to this rich site history. We also propose the creation of forest glades that will restore some of the openness and forest density that would reflect the nineteenth-century conditions of the site.

Figure 23.



Figure 13.

3.1 An Oasis of Time

The coastal plain of Maryland has a long history of human habitation as generations of people have made a home amongst its marshes and woods. For the Jacob Jackson Home Site, the period of greatest significance for the national park is the mid-nineteenth century, 1848-1871, when Jacob and Dinah Jackson made their home in the watershed of Parson's Creek, just north of the free Black settlement of White Marsh (Figure 24). Prior to European settlement and land theft in the seventeenth century, Dorchester County was home to the Choptank, Nanticoke, Manokin, and Pocomoke peoples who lived off of the richness of the wetlands and woods. Their lives followed the patterns of floods and recessions that enriched the landscape - moving towards the water's edge for fish and shellfish and towards higher grounds for hunting in the winter. In the eighteenth century, Dorchester County was a primarily agricultural region, with tobacco plantations dominating the upland areas and requiring a large labor force that was mostly met by enslaved laborers [32]. As tobacco depleted the soil and the international trade industry became more volatile in the years following the Revolutionary War, the economic engine of the county turned to grain cultivation, timbering, and shipbuilding [33]. With the exit of tobacco from the landscape, the need for a large workforce of enslaved laborers began to decline and the region experienced both a high number of manumissions, but also the number of enslaved people sold southwards grew [34].

This is the climate of slavery in which Harriet Tubman and her family lived, where one hoped for freedom, but feared separation from family and worse conditions in the cotton fields of the deep south. Tubman's father, Ben Ross, worked as a timber inspector in the forests around the Blackwater River before he was manumitted [35]. The forests were where Tubman learned to read the land and gained a robust understanding of her environs, including learning to navigate via celestial bodies. It is well documented that Tubman, as well as other refugees seeking freedom to the north, would use constellations to travel under the cover of darkness [36]. The North Star, Polaris, would have appeared luminescent in the rich night skies and reflected below in the dark, tannin-rich pools and pannes of the lowlands. As Tubman moved through the thick, canopied woodlands, she would have looked for clearings through which she could regain her orientation.

Jacob Jackson, as a free, literate Black man living in antebellum Maryland, navigated its thorny socio-political environment while taking refuge in the relatively remote lands near Parson's Creek. Maryland, like many other slave states, had cracked down on the movements and gatherings of free and enslaved African Americans due to fears of uprisings such as the 1831 Nat Turner revolt in Southampton, Virginia. It was unusual at the time for African Americans to own their own farms, and so the Jacksons were likely well known in their community.



Figure 24. Timeline of the Jacob Jackson Home Site context - 1760-2010s.

3.1 An Oasis of Time

While the farm houses and buildings from the Jackson farm are either wiped away or not yet located by archaeological digs, the remnant agricultural ditches provide some clues as to their fields and pastures, and the trace of Vincent Green Road gives some sense to the orientation of the house towards the roadway. Although it is difficult to currently access, walking out to the homesite reveals a shift in the character of the greenery - more clearings, slightly higher ground, less underbrush - that suggests that this was a domestic landscape (Figure 25).

Many advisory committee members suggested that the Jackson homesite provides a rare opportunity at HATU for visitors to embody the landscape through immersive experiences. Committee members frequently placed value on activities that help activate the senses, awaken the imagination, and enable visitors to have more intimate and thought-provoking encounters with flora and fauna of cultural and ecological significance. Noted activities include nature walks, guided group walks, and group gatherings where visitors can meditate in place. Committee members pointed to the value of both positive and negative immersive experiences. The discomforts of wetness, biting flies, mud, and other similar experiences were noted by several individuals as important for evoking a sense of the hardships encountered in this place by enslaved people. Others elevated the peacefulness and sanctuary-like experience created by chirping birds, crickets, a night sky, and the cloak of the marshes and trees. Both positive and negative experiences can help visitors feel the landscapes' significance in more meaningful ways.

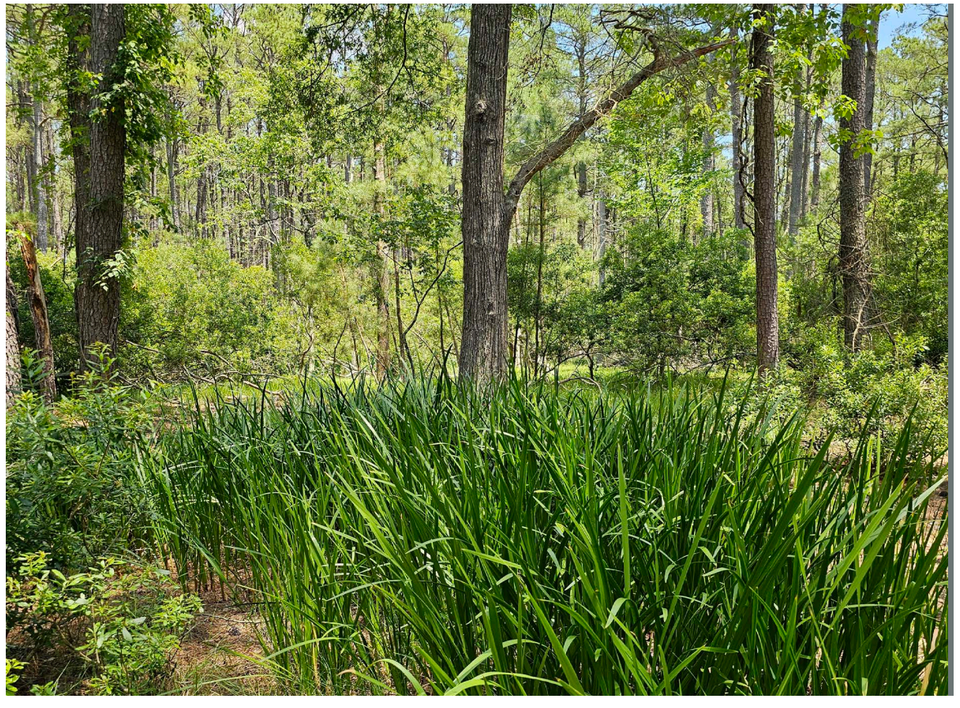


Figure 25. Atypical vegetation in a clearing at the Jacob Jackson home site

In addition to the immersive nature of the larger landscape, the team and our partners noted evocative "oases" of history like the clearings, the hardwoods, and the forests converting to marsh (Figure 25). Framing these oases with proposed Outlooks, described in the next section, is our way of creating experiences for visitors that connect them to larger stories of this place's history and future. Committee members expressed that experiences like these could inspire and mobilize the visiting public, "blurring the lines" between past, present, and future and in doing so enhancing the relevance of Tubman, the Jacksons, and others in the lives of present-day people.

The clearings of Outlook 1 were chosen as direct connections to the Jackson family and Tubman's relationship to Jacob Jackson. Outlook 2 frames contemporary landscape conversion, creating an experience that connects visitors to environmental change. One committee member describes how:



Figure 26. NPS Photo looking across the marsh towards the Jacob Jackson home site. (https://www.nps.gov/articles/new-beginnings-harriet-tubman-jacob-jackson-eastern-shore.htm)

3.1 An Oasis of Time

"[The Jacob Jackson Home Site] can be a place where people can [...] see, you know, the dead and dying forests converting the tidal marshes…These ghost forests are everywhere on the landscape. And I think it's a very visually stunning feature that can help make [environmental changes] real for people. And that's really important because [a lot of people] feel like it's something that's going *to happen. Not something that is happening and has happened and is having dramatic impacts on natural resources and the people that live here."*

The hardwoods we highlight in Outlook 3 were often described by our community advisory committee in relation to the historic timber industry's impact on the lives of enslaved people of Dorchester County. Several individuals in our community advisory committee suggested that the Jackson property's remnant hardwoods and its proximity to Stewart's Canal – a canal dug by the hands of the enslaved to transport the lumber to nearby shipping channels - are important vehicles for storytelling (Figure 26). In particular, these features can be used to explain the hardship and suffering endured by enslaved people, including Tubman and her family, as well as for illuminating their pathways to freedom. Several individuals noted, for example, how the historic lumber transport system (e.g., ditches, Stewart's Canal, Blackjack sailors of the Chesapeake) enabled Tubman to access secret communication networks to points north and to accrue critical environmental knowledge that she used to subversively move people through this landscape. From an environmental resilience perspective, several committee members also pointed to the importance of hardwoods for supporting the area's biodiversity (Figure 27), often noting how higher water levels are impacting remaining hardwoods in this coastal landscape.



Figure 26. The marshy edge of Stewart's Canal, May 2024.



Figure 27. A hardwood stand in the loblollies, June 2024.

3.2 An Oasis of Time

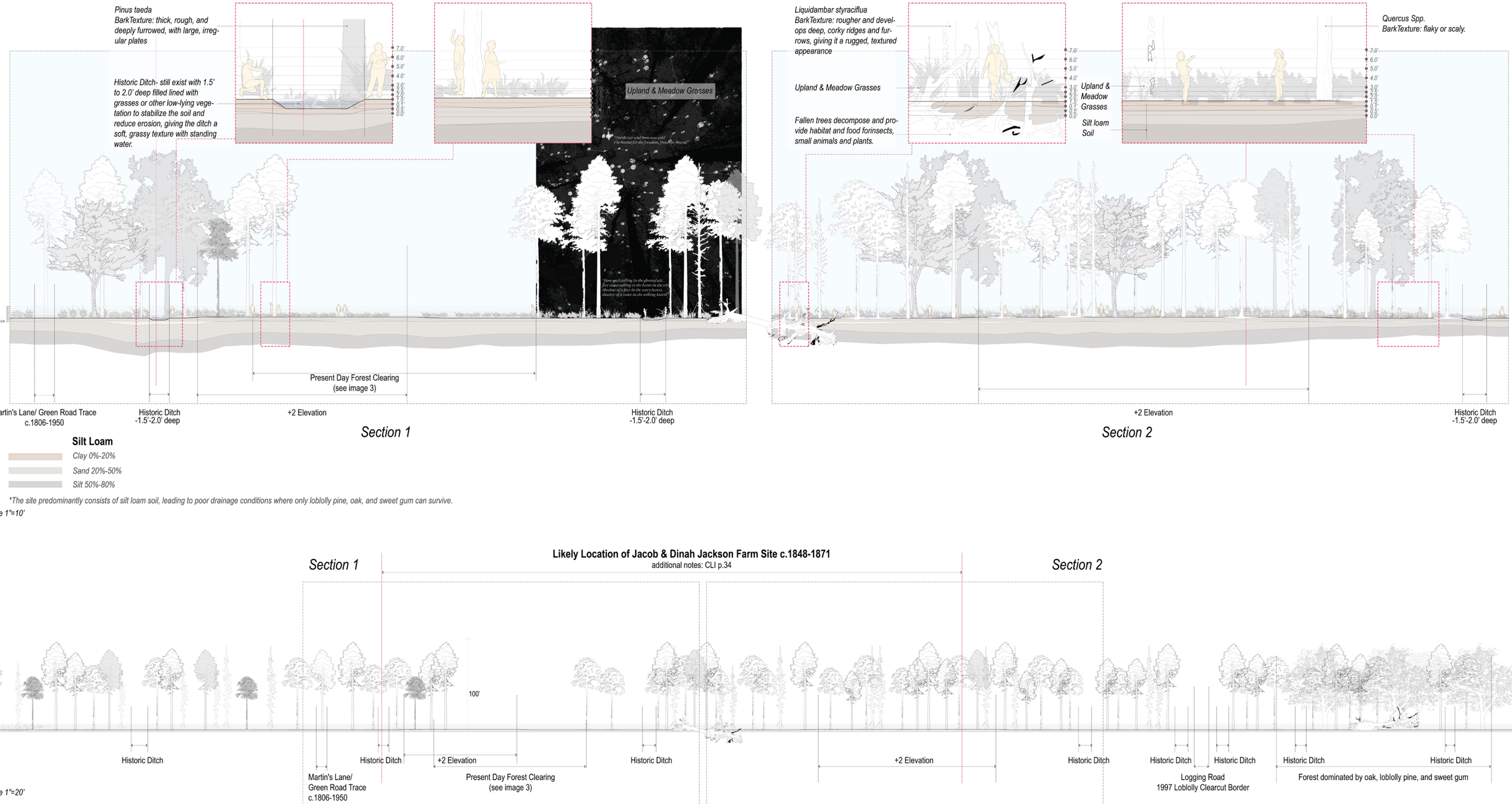


Figure 28. Sections cut along the home site, illustrating vegetation communities and likely soil profiles

3.2 An Oasis of Time: Outlooks

Outlooks

Our design approach to attend to this Oasis of Time includes developing an interpretive trail system with three outlooks to provide access to the Jacob Jackson Home Site for descendants and visitors. The following design concepts are the result of research and suggest possibilities; they are not specific proposals or plans, which would require additional coordination with stakeholders and partners.

The outlooks would highlight key moments in the landscape that speak to both the site's rich history and its continuity with the future. Much of the cultural history in the home site is so subtle that it is almost illegible. Outlooks 1 and 3 call attention to traces of the past by honoring the probable site of Jacob and Dinah Jackson's home, and by framing a hardwood stand which helps to show what the forest might have looked like during Tubman's time. The parking lot and outlook 2 were designed to ground visitors with a sense of place. Outlook 2 gives visitors a long view down one of the many ditches carving through the woods, showcasing marsh migration as the environment continues to change. We have sited the parking lot along a service road that has visitors drive slowly through the forest rather than speed down Taylor's Island Road, to envelop them in the textures and sounds of the woods. Lastly, we propose the creation of forest glades that will echo the openness and forest density of the nineteenth-century. Discussions with the park indicate that initial visitation would occur through guided tours led by park staff, or during special events.



Figure 29. Map of Jacob Jackson Home Site; outlooks highlighted along logging road in pink

3.2 An Oasis of Time: Outlooks

Outlook 1

The first outlook takes visitors onto the Jackson homesite, where we propose a seating area. Benches wrap around trees to provide places to rest, and to bring visitors closer to the forest. The benches are arranged around a clearing which could function as a smaller gathering place for events and tours. We have also proposed a path system made of stone dust or mulch to take visitors through the homesite and to see the changes in the vegetative profile to help them get a sense of the difference between a timbered and a historically domestic landscape. The open, grassy, clearings are evocative of the history embedded in this place, of the lives of the Jacksons and those who came before them.

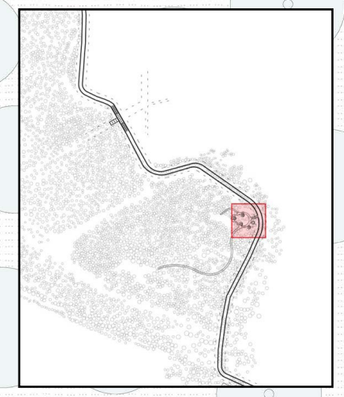


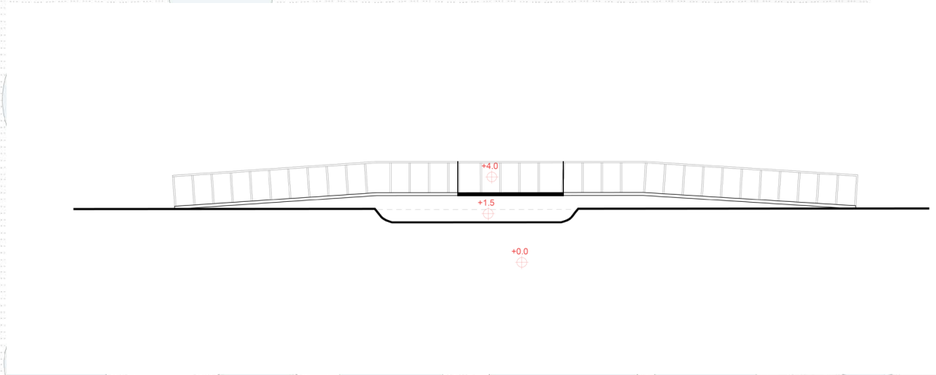
Figure 30. Plan view of Outlook 1



Figure 31: A rendering of Outlook 1

3.2 An Oasis of Time: Outlooks

Outlook 2



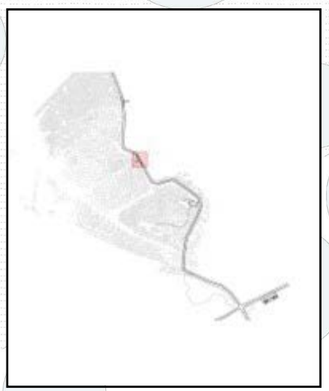


Figure 32. Plan view of Outlook 2

Outlook 2

The second outlook features views of marsh migration. The outlook consists of a bridge over our proposed hydrological breach through the logging road, and a platform that aligns with a channel that will serve as a primary path for marsh migration through the site. The long view down the channel will illustrate environmental change over time and will serve as a kind of window into how the whole landscape will continue to change as the years pass.

Trees
Viewing Platform
Path

N

0 1 5 10 20 ft

1/4" - 1'0", Page size 24"x36"

3.2 An Oasis of Time: Outlooks

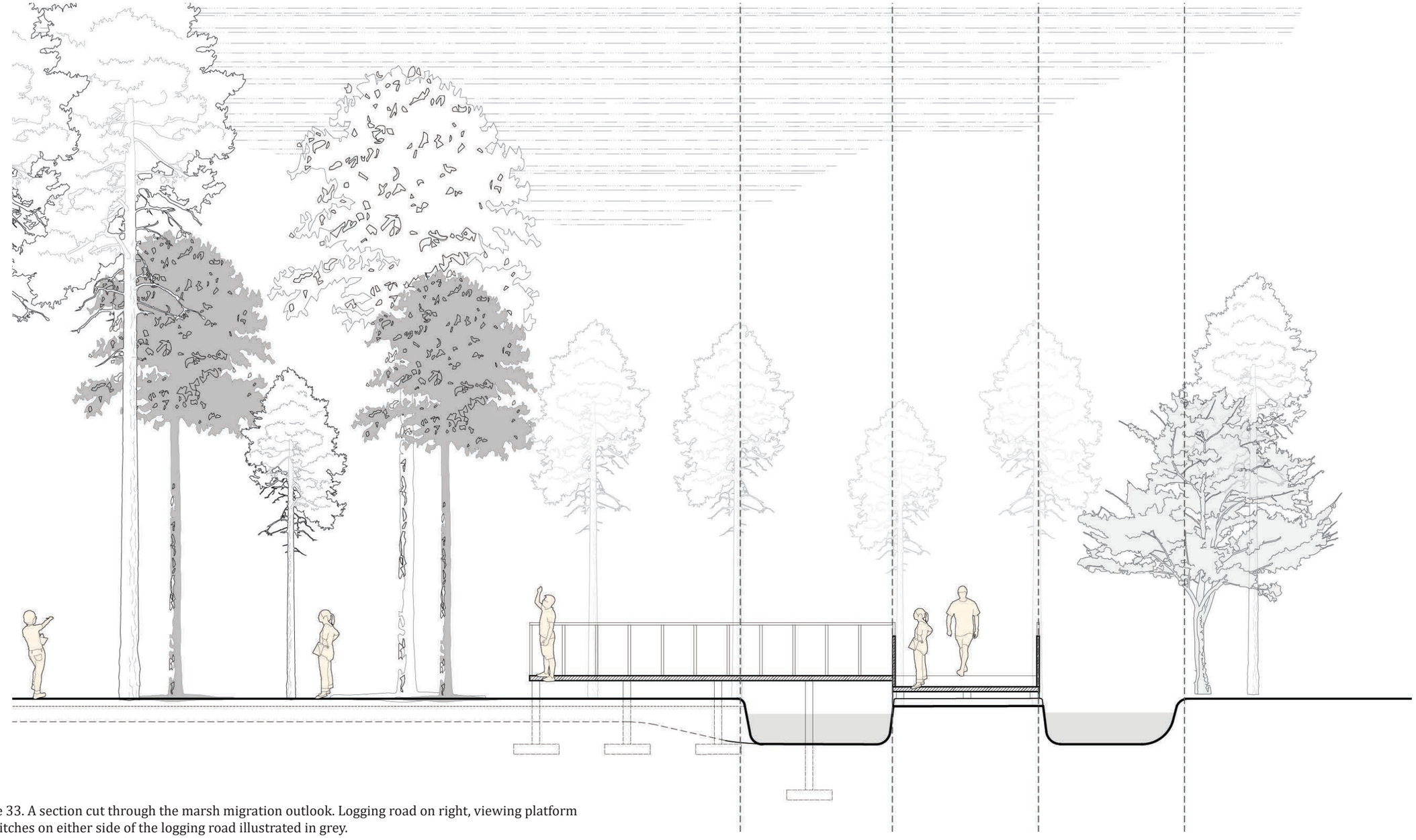


Figure 33. A section cut through the marsh migration outlook. Logging road on right, viewing platform left. Ditches on either side of the logging road illustrated in grey.

3.2 An Oasis of Time: Outlooks



Figure 34. Longer section through the marsh migration outlook, illustrating the landscape zones the marsh migration pathway cuts through.

3.2 An Oasis of Time: Outlooks

Outlook 3

The third outlook pulls off toward one of the last hardwood stands on the site. It opens up to frame a section of forest that is more representative of what Tubman saw working in the woods two hundred years ago. The land was logged and pines have become dominant today, but there were once large stands of oak and maple. This outlook gives visitors a sense of what it might have looked and felt like in the forests of Harriet Tubman's time.

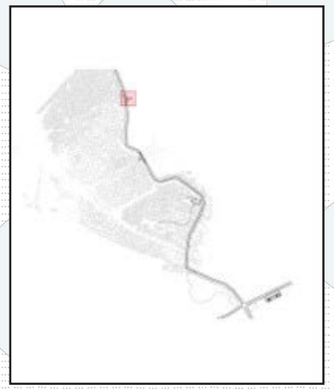
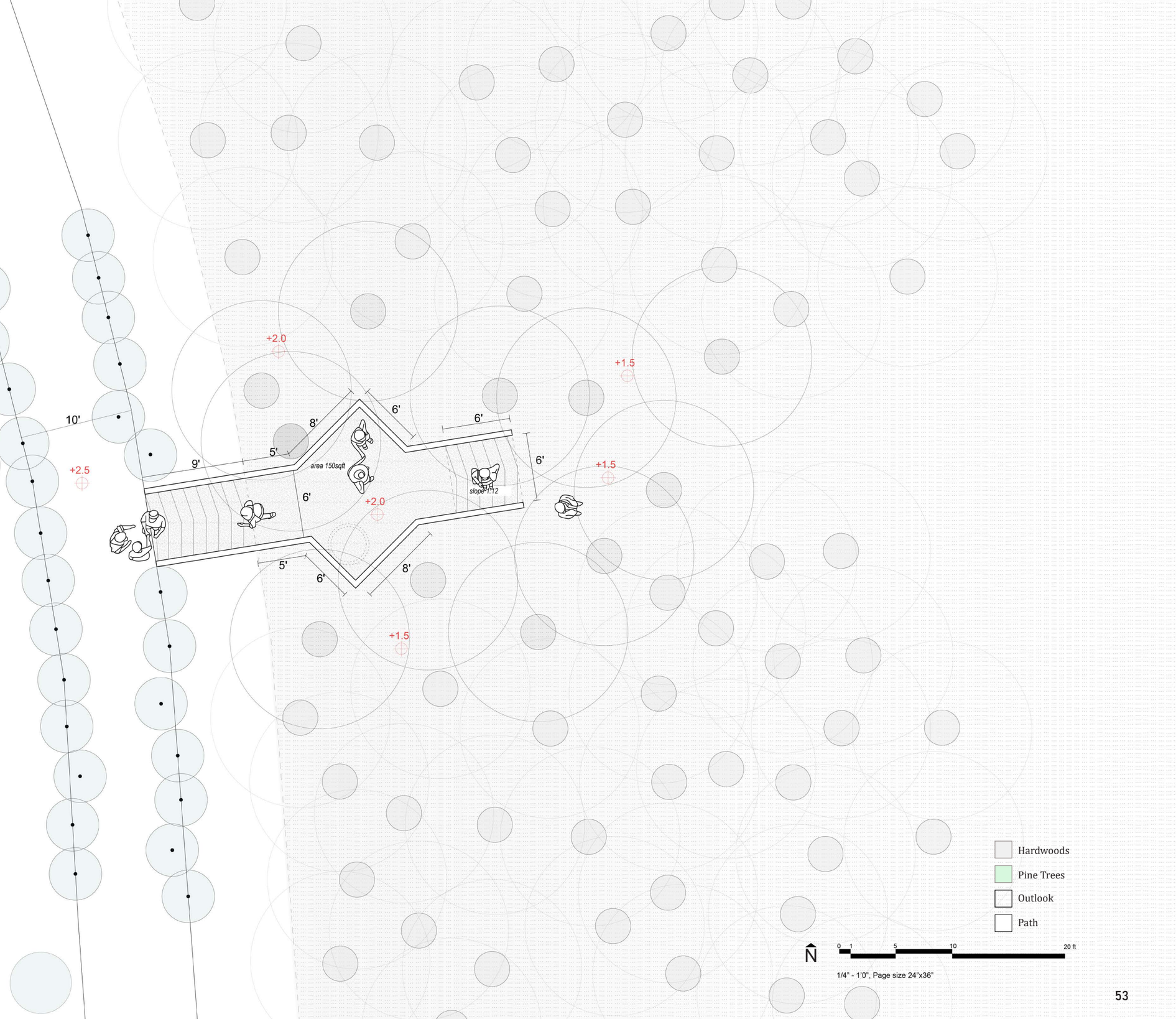


Figure 35. Plan view of Outlook 3



3.2 An Oasis of Time: Glades

Glades

Within the landscape of the Jacob Jackson homesite, an existing clearing evokes the figure of a hush harbor. Hush harbors hearken back to a landscape form that was found widely throughout the South by enslaved individuals who sought places to worship and exercise their religious practices. These glades were sites of spiritual gatherings and could often be found deep in the woods surrounding plantations, tucked away out of sight and earshot of the main house. The particular forms are highly variable, depending on the landscape at hand. Some depictions of these sites show clearings that are guarded by thick underbrush or curtained with cloth to obscure the congregations (Figures 36, 37). Others show creeks running through the area, perhaps for water rituals or for increased sound dampening. A famous example of a hush harbor can be found in Toni Morrison's novel, Beloved:

"When warm weather came, Baby Suggs, holy, followed by every black man, woman and child who could make it through, took her great heart to the Clearing - a wide-open place cut deep in the woods nobody knew for what at the end of a path known only to deer and whoever cleared the land in the first place. In the heat of every Saturday afternoon, she sat in the clearing while the people waited among the trees." (102) [37]

This description evokes both the anonymity of labor, perhaps done by Indigenous peoples, which led to the clearing of unknown origins, as well as the theatricality and sanctuary of this stage for congregations. In her book Night Flyer, historian Tiya Miles argues that the "wisdom of Baby Suggs…captures the essence of Tubman's Way – a path of spiritual belief, political conviction, and philosophical thought expressed through word and action, within and together with nature" [38].





Figure 36. An 1872 depiction of a hush harbor (L) traced to understand its dimensions (R)
Source of hush harbor image: https://www.loc.gov/pictures/item/99614209/

We interpret the existing clearings at the Jacob Jackson Home Site property, on the likely sit of the Jackson home, as intentional spaces to spend time in nature, and as a way that the landscape can remind us that this place has a history of dwelling and use. Unlike other areas of the loblolly forest, grasses grow and the canopy opens up; hearkening back to earlier human marking of the landscape from Tubman's time. We propose to strengthen these existing forest clearings of the Jacob Jackson Homesite by clearing trees and planting the edges with grasses and shrubs like bayberries and hollies. The proposed sizes of these glades are around 30-40', referencing the approximated dimensions of hush harbors (Figure 37) and accommodating gathering space for 20-30 people, potentially for the biannual Underground Railroad gathering that takes place in September. A designed and managed clearing could be a location for meeting during this event, or for scheduled tours.

Construction Considerations

Throughout the construction process of both the outlooks and the glades, there is the possibility of finding historical artifacts or human remains. If any human remains are found, the Nause Waiwash Band of Indians should be consulted. The Nause-Waiwash are based in Dorchester County, Maryland, and are the remnants of what Europeans called the Nanticoke and Choptank tribes. There is no formal MOU for remains yet but conversations are ongoing. Discussions with Chief Donna Wolf Mother Abbott of the Nause Waiwash Band of Indians indicate that the ultimate goal for human remains is to rebury them in a proximal location, keeping them close to their home.

The grass and shrub planting we suggest for the glades should be carried out in keeping with the common archaeological practice of backfilling, the goal of which is to preserve the original depositional environment as closely as possible. This would mean using soil from any



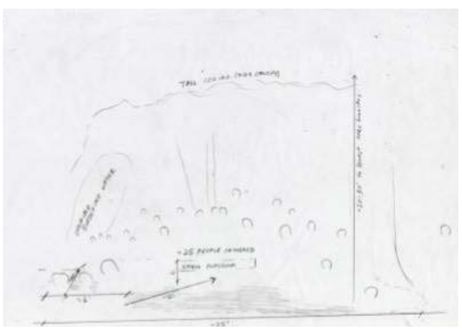


Figure 37. An 1860 depiction of a hush harbor (L) traced to understand its dimensions (R)
Source of hush harbor image: John Antrobus, A Plantation Burial

2.1 An Oasis of Time: Glades

site excavation that occurs during construction for the suggested planting, rather than bringing new materials in. The objective of backfilling and reburial is to protect any potential remains from exposure (Figures 38 and 39), and to preserve them for future study for scientists who may have more resources, more advanced tools, or new methods [39]. Backfilling is especially useful for waterlogged sites like this one will be in over the next twenty years, where preservation is especially enhanced by keeping any potential discoveries from periodic exposure to the elements.



Figure 38. Landscape plan showing glades in green

2.1 An Oasis of Time: Glades

Figure 39. Glade plan



Figure 39. Glade plan

New Grass and Shrub planting
Existing Grasses
People
Existing trees

0 1 5 10 20 ft.

1/4" = 1' Page size 24" x 36"

2.2 Tides of Transition: Flooding, Migration, and Conversion

In the context of this area's long history of transitions between wet and dry lands, our approach to managing marsh flooding and migration (Figure 40) on this site is to assist the forest-to-marsh conversion by accepting water into the landscape slowly enough for plant and animal life to be able to keep up with environmental change. Our suggested approach entails altering site hydrology to encourage tidal exchange and drain excess water, and managing the forest through mechanical thinning and prescribed burns. The ultimate goal is to maintain healthy and abundant ecosystems into the future, even as landscape types inevitably shift.



Figure 40. Stagnant water trapped in the forest due to inadequate drainage

Key

- Jacob Jackson Home Site
- National Underground Railroad Network to Freedom Partners
- 1' increase in water level
- Blackwater National Wildlife Refuge

Jacob and Dinah Jackson Homesite

Harriet Tubman Conference (location changes)

Dorchester County Courthouse

Research Center- African American Collection

Long Wharf at Cambridge

Harriet Tubman Byway

Todd

Experience Harriet Tubman by Land

Cambridge

Malone's Methodist Episcopal Church (Malone's Chapel)

Parson's Creek: Keene Family Escape Route

Harriet Tubman UGRR Visitor Center

Experience Harriet Tubman by Sea II

Adventures of Harriet Tubman

Experience Harriet Tubman by Sea

Staplefort Farm: Bob Manokey Escape Site

Blackwater

Buttons Creek:Jane Kane Escape Site

Jefferson Patterson Park and Museum

Figure 41. Wider context of the Jacob Jackson Home Site.

2.1 Tides of Transition

Tubman's "woods and waterways, the ones she sheltered by and waded through," are preserved in pockets of the landscape at the Jacob Jackson Home Site [40]. There is debate in scholarly, popular, and NPS literature about the extent to which this is true [41]. It may appear that the debate may not have much ground to stand on in less than a century on this site, as thousands of acres of the Eastern Shore have already been lost to rising water levels [42]. But living with wetness is integral to the longer arc of human experience of this place.

The Jacob Jackson Home Site is located on a transitional landscape, at the threshold of saltmarsh and lowland woods. Dorchester County sits low in Maryland's Chesapeake Bay counties. The land mass is a depositional landscape formed from the recession of sea level and from the transport of sediments from the ancestral Delaware and Susquehanna Rivers. Like many coastal landscapes, Dorchester County is one that is constantly in formation and it has required its inhabitants to become attuned to its ebbs and flows. This attunement connects experiences like the marsh flooding of the Jacob Jackson Home Site to the sinking of Taylor's Island and the Nause-Waiwash ancestral practice of seasonal movement between the water's edge and inland; all of which highlight the ways which land management is at the heart of preserving this land and the cultures developed alongside its constant change.

Throughout the nineteenth century, the dense forests of the region encountered a vast project of timbering and deforestation. In her recent book on Harriet Tubman's faith, dreams and ecological knowledge, Night Flyer, Tiya Miles writes about how "[Harriet's] discovery and enactment of what she understood to be God's will depended on intact ecosystems. These environments were changing slowly due to organic processes while being drastically altered by human economic development even then" [43]. Capturing the character of a landscape that has been shaped by environmental changes and exploitation is to enter into a dialogue with the long history of landscape change that marks this place as a cultural landscape.



Figure 42. Dark stagnant water around the likely location of Jacob and Dinah Jackson's home



Figure 43. Looking towards the home site from Taylor's Island road - excess water is killing pines at the fringe of the forest.

These landscape changes are occuring quickly now, as marsh drowning and migration accelerate. In 2018, Schieder et al [44] documented an average forest dieback rate of 0.5 m/yr for the entire Chesapeake Bay shoreline over the past 100+ years. In contrast, the dieback rate for two sites near Blackwater National Wildlife Refuge on the Chesapeake Bay coast has been documented by Hussein to have average rates at over 3 m/yr and 6 m/yr. [45, 46]. This means that local landscape change is occuring more than 5x faster than the surrounding landscape. This has profound consequences for the forests on our site, as forest to marsh conversion will occur no matter how we conceive of natural infrastructures here.

This interpretation is supported by other contemporary research. In a loblolly pine-dominated coastal forest in 2007, Kirwan et al. documented forest loss despite desirable open canopy conditions and abundant seedlings, concluding that the pines cannot survive in the saturated conditions in low-lying areas [47]. This underlines the fact that on the Jacob Jackson Home Site site, there will be significant forest loss. In this context, our design research was motivated by the question: how can historical interpretation aid processes of healthy marsh migration and landscape conversion?

2.1 Tides of Transition

Design approach

Our team has used the projection of 1ft higher mean water level by 2040 (NOAA 2019) to anticipate where we might expect areas to be regularly inundated. This includes much of the Jacob Jackson Home Site as well as vast areas of the Harriet Tubman Underground Railroad National Historical Park (see Hydrology section for map). Because the agricultural ditches on site have been abandoned and are no longer maintained, these features which were created originally to drain fields are now contributing to their regular inundation during high tide and flood events. Another issue is the logging road as a hydrological obstacle. Because it is a much higher elevation than its surroundings, 1) water will get trapped behind the road and inundate the home site and 2) marshes will not be able to migrate past the high-elevation obstacle.

As lower-elevation regions transition into marsh, their vegetation must also adapt to the shifts in salinity and more hydric soils (Figure 44). This means that without intervention, these ecotones run the risk of becoming overtaken by invasive species such as Phragmites which can outcompete native grasses and have devastating impacts on wildlife that depend on these wetland patches.

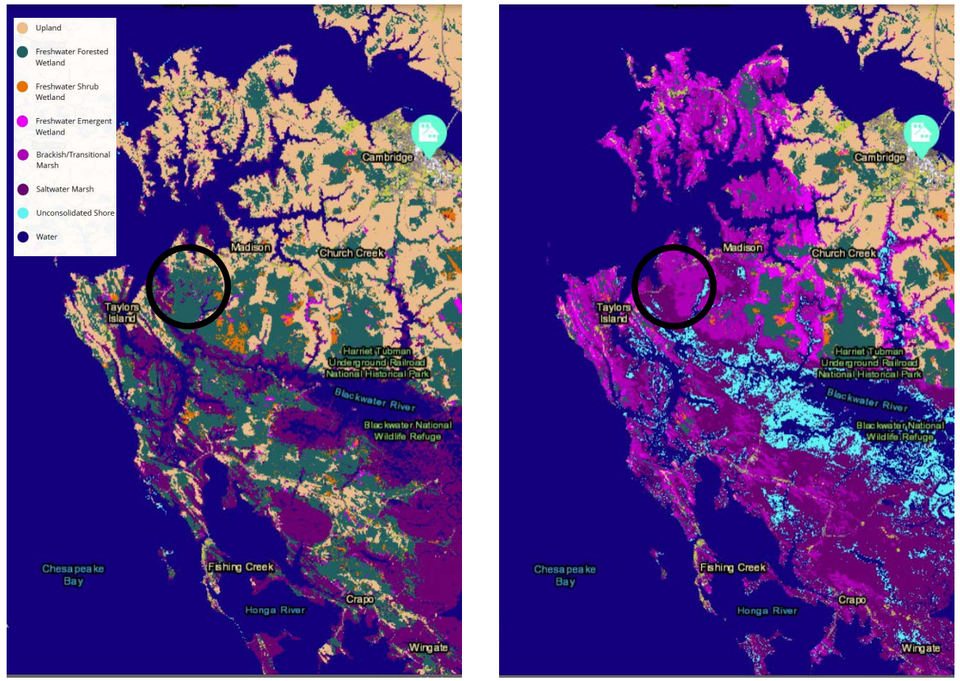


Figure 44. NOAA Marsh Migration Tool, Current Mean High Water (Left) vs. 2040 projection - Intermediate (1.05 ft). JJHS circled in black. Pinks indicate emergent, brackish, and saltwater marsh becoming dominant in twenty years.

In the context of this area's long history of transitions between wet and dry lands (Figure 45), our approach to managing changing environmental conditions on this site is to assist the forest-to-marsh conversion by 1) accepting water into the landscape slowly enough for plant and animal life to be able to keep up with environmental change and 2) managing existing forest to prepare it for wetter, more saline conditions. The ultimate goal is to maintain healthy and abundant ecosystems into the future, even as landscape types shift. Our suggested approach entails hydrological alteration, mechanical thinning of the existing forest, and periodic prescribed burns. We recommend testing these methods on two small pilot plots adjacent to the Jacob Jackson Home Site before applying them at a broader scale. The management concepts we suggest are listed on the next page, keyed to a plan of the site (Figure 46).



Figure 45. Inundated forest in the interior of the Jacob Jackson Home Site parcel

Management Concepts

Hydrology

• creating a hydrological breach across the logging road (p 74)

• deepening Green Road into a tidal channel (p 75)

• forming runnels out of smaller ditches (p 77)

Forest Management

• strategically thinning the existing forest (p 82)

• returning controlled burns to the landscape (p 86)



Figure 46. Management plan

2.1 Tides of Transition

Hydrology

The Jacob Jackson Home Site will experience major hydrological changes over the next few decades [48], which will lead to marsh migration, flooding, and forest conversion. Because the area is so low and flat, salt water will overtake land much faster than ecosystems are able to transition [49] (Figure 47). This means that there is a high risk of ghost forests 1) converting to low quality Phragmites stands that displace native plants and animals, and then 2) simply becoming open water. Some of this is happening already.

The aerial in Figure 48 looks at the site from Taylor's Island Road. In this image, we can observe marsh drowning around abandoned ditches, which will eventually become mudflats and open water. We want to avoid this kind of inundation on the area of focus around the home site by adjusting the way that water flows along the historic Green Road and existing ditches. Currently, the road and ditches are bringing water onto the site and waterlogging the soils so fast that when the trees die, only Phragmites is fast-growing enough to establish. Once it is established, Phragmites forms impenetrable monospecific stands that may exclude native vegetation and not provide ideal shelter or food for wildlife. As Phragmites spreads rapidly and fills in wetlands, water flow is reduced and the flood retention of the wetland is decreased[50].

While marsh migration and conversion certainly means that this land will change and forests will be displaced, it does not necessarily mean that water flow, or biodiversity, or beauty must decrease. The design concepts discussed here are intended to change the home site's hydrology in a way that will encourage a transition from the current forest to healthy, high-quality marsh.

Framing the property as a site of marsh transition builds off of the larger Blackwater 2100 plan, which identifies specific marsh migration corridors to help "ensure the marsh has room to move and re-establish as the tide rises" [52]. The Jacob Jackson Home Site is at the gateway of what the report has designated to be a primary migration corridor along Coursey Creek, one of the corridors that has the potential to "support the largest new marsh blocks in the future; plus they are adjacent to conservation lands, allowing for consistent management of continuous large blocks of tidal marsh" [53]. The Coursey Creek migration corridor in particular includes 500 acres of tidal marsh now, but the Blackwater 2100 model indicates that it will support ~4,000 acres of priority marsh habitat before 2100 (see Figure 49).

As a part of the strategy to improve the hydrology of the site for the future, we are suggesting minor earthwork to assist marsh migration, increase tidal exchange, and assist with healthy marsh drainage. These activities should not create any conflicts with the existing wetland designation, as they do not involve increasing the elevation outside of the very slim envelope of elevations on site [54]. We believe that working carefully with microtopography in this kind of landscape can make a meaningful



Figure 47. Water elevation map (showing increases of 1ft and 2 ft). 1 foot of higher water inundates half of the Jacob Jackson Home Site property.



Figure 48. Aerial looking down Green Road from Taylor's Island Road.

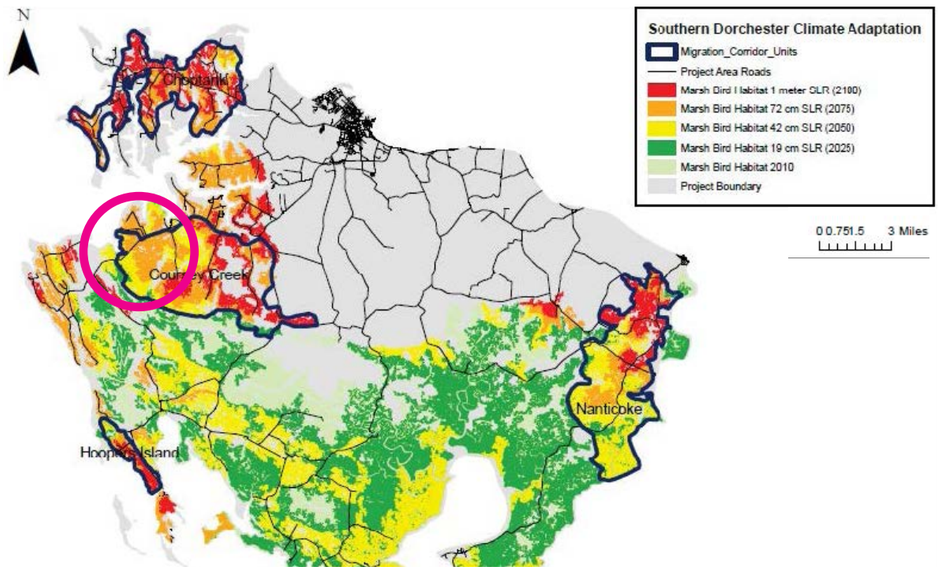


Figure 49. Blackwater 2100 climate adaptation and marsh migration corridor map with Jacob Jackson Home Site circled in pink, in the Coursey Creek primary migration corridor.

difference over the next twenty to fifty years, which is supported by recent research and experimentation regarding marsh resilience, as well as current land management practices employed in close proximity to the Jacob Jackson Home Site.

Breach

The logging road is around 3 ft higher than the rest of the site (elevation 3.5 ft NAVD88). Over the next few decades, it will become a hydrological barrier to marsh migration. Without intervention, it will lead to inundation on the western half of the site. Because the obstruction that the logging road represents will lead to early, dramatic, and untimely marsh submersion, we propose a breach. The breach will serve as an outlet for rising water and marsh expansion. Figure 50 shows marsh migrating down Green Road (derived from historical satellite imagery beginning in 1998 - see Figure 14), and open water spreading across the site. Marsh will likely continue to migrate down Green Road, south of the Jacob Jackson Home Site. We do not propose any changes to that southward trajectory. But water and marsh will also move across the site, from West to East, and we aim to choreograph how that happens with the breach discussed here and the tidal channel discussed next. Our main goals with the breach are 1) to move water through the site before it disturbs

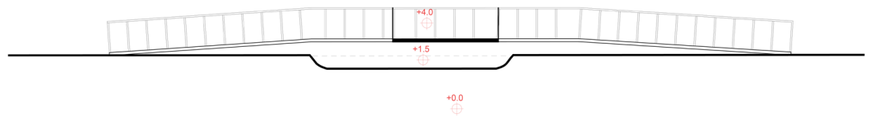


Figure 49. Section of the bridge over the hydrological breach (at Outlook 2).

the home site, buying some more time for visitors to experience this historic place and for marsh and native wildlife to get accustomed to the rapid water level changes that will occur; and 2) to create a direction for marsh to migrate. The breach will not disturb circulation along the logging road for visitors to the park. We celebrate this site of landscape transition, as discussed in the Outlook section: Outlook 2 is a bridge over the suggested breach that looks out along the proposed marsh migration corridor.

Tidal channel

We propose to deepen Green Road, converting it into a tidal channel that can begin a healthy exchange of water between Parson's Creek and the home site as it converts to marsh. A prominent form of marsh loss is due to interior conversion to open water, or ponding. Persistent inundation "drowns vegetation and contributes to open water conversion" [55]. This process of interior conversion and marsh drowning is well illustrated in Figure 48. A healthy marsh allows water to come in at high tide and drains itself

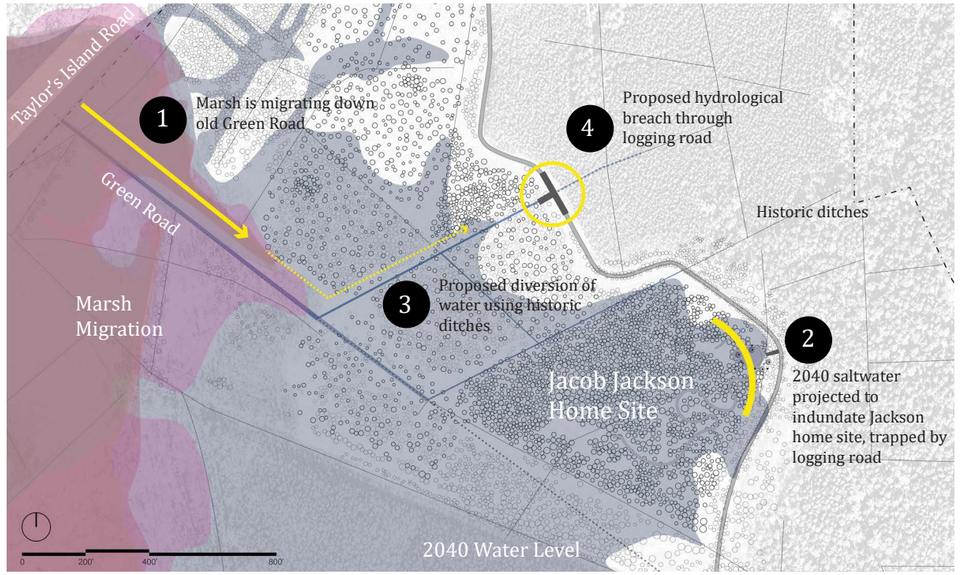


Figure 50. Diagram illustrating hydrological factors leading to proposed breach through logging road.

at low tide without retaining interior standing water. Without conduits for hydrological exchange, the marsh at the edge of the Jacob Jackson Home Site will receive water during large storms, then hold onto the water long beyond root systems are able to withstand it, creating a situation where the marsh drowns.

This periodic shock of salt water during larger storm events, coupled with the longer term effects of standing water, is detrimental to the establishment of native marsh vegetation and favors fast-growing Phragmites that is much more resilient to disturbance. By converting the existing, wet, Green Road into a more functional tidal channel, we believe that we can accustom this agricultural landscape to a gradual conversion to healthy marsh (Figure 51). By deepening the road, the channel will introduce a more regular exchange of salt water that is tied to tidal ebbs and flows rather than random, traumatic flood events. It is important to pair the tidal channel with the runnels described in the next section, because simply introducing water without providing pathways for it to leave could lead to further subsidence and marsh drowning. But with effective drainage, this more intentional introduction of saltwater into the landscape will help native marsh vegetation take hold (Figure 52).

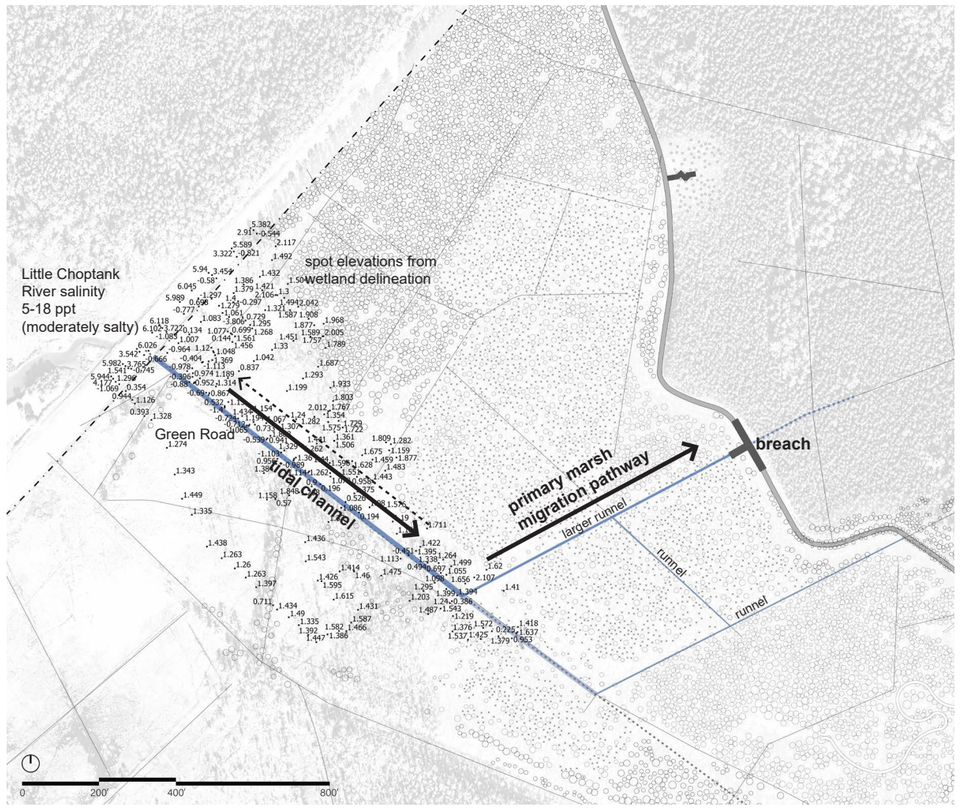


Figure 51. Pilot area detail of proposed tidal channel and runnels

Coupling established native marsh grasses and higher salinities with the prescribed burn management regime described in the next section could prove to be an effective Phragmites control solution for the Jacob Jackson Home Site that avoids the use of herbicide. This is because Phragmites has a lower salt-tolerance than marsh species like *Spartina patens* [56] or *Distichlis spicata*. Given a high enough salinity, these native marsh grasses are able to outcompete Phragmites.

With a salinity of 5-18ppt in the Little Choptank and Parson's Creek [57], introducing saltwater would not have a significant effect on mature Phragmites, but would be able to inhibit new growth, as juvenile Phragmites has trouble growing in >=10ppt [58]. Prescribed burns would be used to manage mature Phragmites, and salinity could manage the establishment of new Phragmites in the periods between burns, while native *S patens* and *D spicata* establish.

Runnels

We propose to convert some of the old agricultural ditches into runnels (see diagram Figure 51), to assist with drainage and avoid interior drowning. A runnel is a small channel (generally around 1 foot wide and deep) that drains standing water on the marsh surface [59]. Runnels are a fairly new tool for marsh adaptation in the United States, but there are dozens

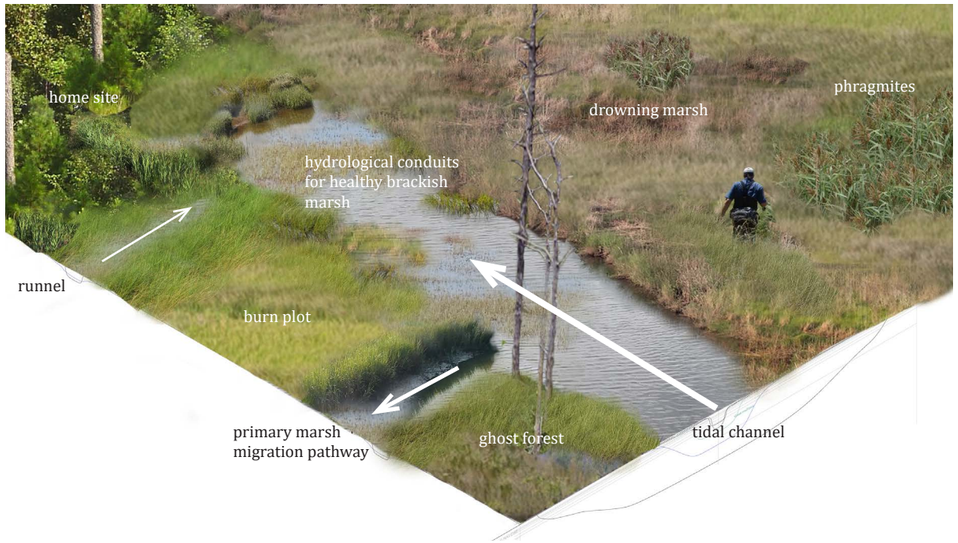


Figure 52. Rendering illustrating tidal channel scale and landscape zones

of examples of their use in the last ten years, as well as very promising case studies showcasing their success [60] (Figure 53). A 2022 workshop on the efficacy of runnels, which included 70 experts and stakeholders in coastal resource management, concluded that although “runnel construction is unlikely to improve long-term marsh resilience alone, as it cannot address underlying causes of open water conversion, ... runnels may ‘buy time’ for salt marshes to respond to management action” or adapt to environmental disturbance [61].

The Jacob Jackson Home Site marsh is stressed by both human alteration and rising water levels. The legacy impacts from agriculture [62] and the accelerating rate of environmental change [63, 64] continue to alter hydrology and stress vegetation [65], contributing to higher rates of open water conversion. Converting existing ditches that accumulate water at the JJHS into shallower drainage channels encourages marsh vegetation colonization and future migration by repurposing existing cultural landscape forms and processes (Figure 54). There is precedent for holistic restoration planning on historically agricultural land which includes understanding tide sheds, identifying ditch hierarchy and drainage patterns, and introducing runnels [66].

In cases like these, runnels are hand-dug or constructed with low-ground pressure excavators or ditchers to “follow topographical low areas, and only drain water within the rooting zone” [67]. Though practitioner experience described in much of the existing literature suggests that runnels are most effective in higher-elevation areas, we believe that effective drainage can increase the health and longevity of the marshes here. This is not a long-term prevention of marsh conversion to open water, as runnels are unable to reverse conditions like low sediment supply or high relative sea level. That being said, a drowned marsh will not migrate successfully. Runnels at the home site are meant to be a tool for the transitional forest->marsh->open water period (the next twenty years) that can help maintain ecological health and cultural memory as long as possible.



Figure 53. A precedent runnel in South Dartmouth, MA (Credit: NECASC) https://necasc.umass.edu/news/buying-time-runnels-ne-casc-fellow-helps-advance-salt-marsh-restoration

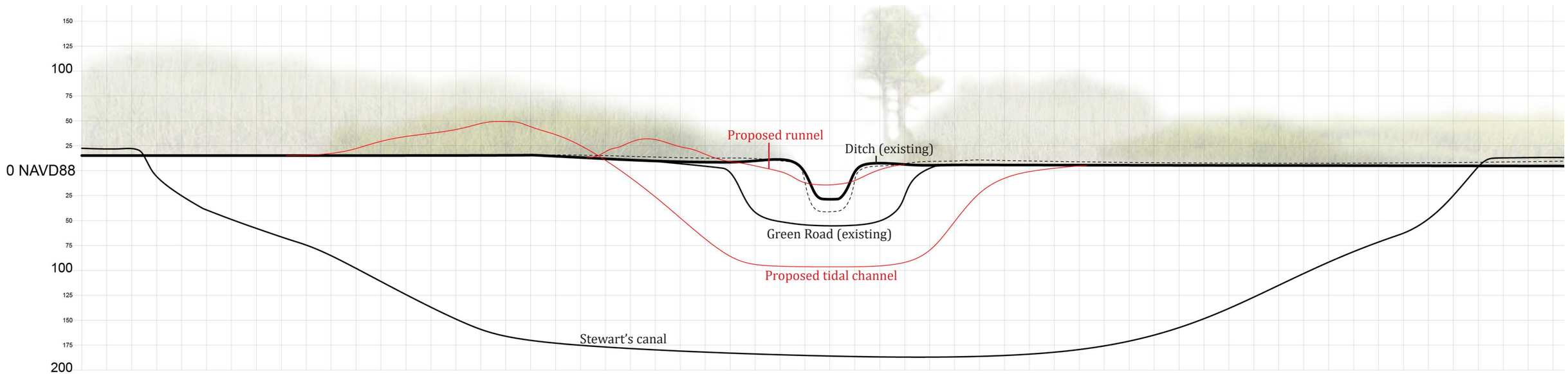


Figure 54. A section diagram comparing existing with proposed hydrological features. Each grid square measures 25 x 25cm.

2.1 Tides of Transition

Forest Management

We suggest introducing three forest management typologies – upland, woodland, and savannah – to the existing loblolly pine monoculture. These correspond to three distinctive densities and management regimes. These zones are distributed in coordination with both site elevation and our proposed hydrological changes to encourage healthy marsh migration: first through savannah, then through woodland, and finally through the zones designated as upland. We recommend that the forest is both 1) mechanically thinned to a healthy density for the existing trees and 2) periodically maintained with controlled burns, in keeping with both historical land management and current best practices (see Figures 55, 56). Our proposal suggests starting with two pilot plots, which total 3.2 and 3.4 acres, to assess capacity and, consequently, the sustainability of these practices for the park.

Zoning

The management zones are delimited by existing ditches on site, which carve the 98-acre piece of the Jacob Jackson Home Site into 3-4 acre areas. The water elevation projections overlaid onto the site plan to the right illustrates elevations now, in 20 years, and in 50 years. Generally, the Savannah zones are those which will be hit first, and hardest, by marsh conversion. Woodland zones are a little higher elevation than the Savannah zones, and Upland zones are higher still. The exception to the zoning by elevation is U1, or the likely location of the historic Jackson home. This is designated as Upland because we suggest keeping the site intact for as long as possible. The hydrological management suggestions in the previous section should help to divert some of the projected wetness.

Hydrologically, we conceived of the suggested channel-ditch-runnel network similar to the way a natural stream hierarchy, or stream order, is developed





Figures 55 and 56. Pine stand burned yearly vs. long unburned pine stand, in Georgia. Photos by Holly Campbell. https://bugwoodcloud.org/bugwood/productivity/pdfs/20-97AFire%20Restoration-ClaboCampbell.pdf

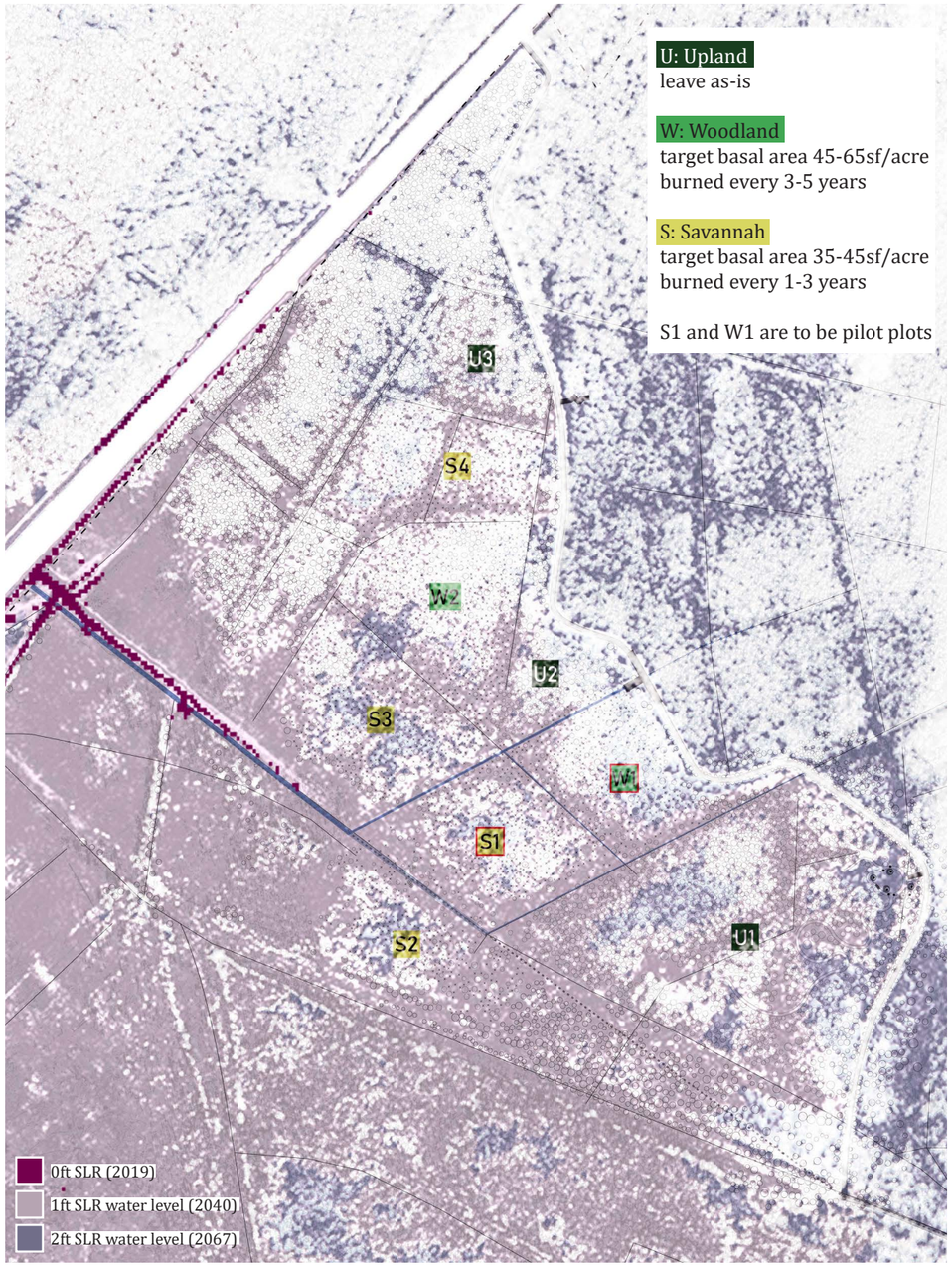


Figure 57. Management plan with SLR projections overlaid, with ditch intervention and forest management plot annotation. Wetness projection data from NOAA (2019).

(see Appendix item 2). A stream order classifies streams in a network based on their size and position. This technique can be used for outlining future zones and/or continuing to make hydrological interventions as marsh migrates. Zones with higher-order hydrological perimeters, signifying more water movement, should be designated as Savannah or Woodland; while zones with lower-order perimeters should be designated as Woodland or Upland.

Another goal for the zoning, beyond responding to elevation and hydrology, was to create a patchwork pattern of the forest, which provides a diverse array of habitat types that is good for local wildlife [68] (see Figure 58 below).



Figure 58. Diagram of the mosaic of diverse habitats created by the suggested landscape stewardship zones

Thinning

We propose thinning the existing forest to prioritize the health of the existing tree stock, improve habitat and visitor experience of the landscape, and to prepare the site for future marsh conversion. The existing basal area starts around 70 sf/acre in the thinner zones already starting to get wetter. For now, the upland zones should remain as they are, and the target basal area for woodland zones is 45-65 sf/acre and the target basal area for savannah zones is 30-45 sf/acre. As water rises and savannah areas become marsh, the areas should rezone: woodland should be managed as savannah, upland should be managed as woodland, and new upland zones should be designated. These target basal areas are modelled after a number of current management protocols for both loblolly lumber health and pine forest and savannah health, including a grassland management regime for a shortleaf pine forest developed at the University of Tennessee [69]. Initially, thinning the pilot plots will likely involve paying a company to log the site, as the area is too small for logging to be profitable [70].

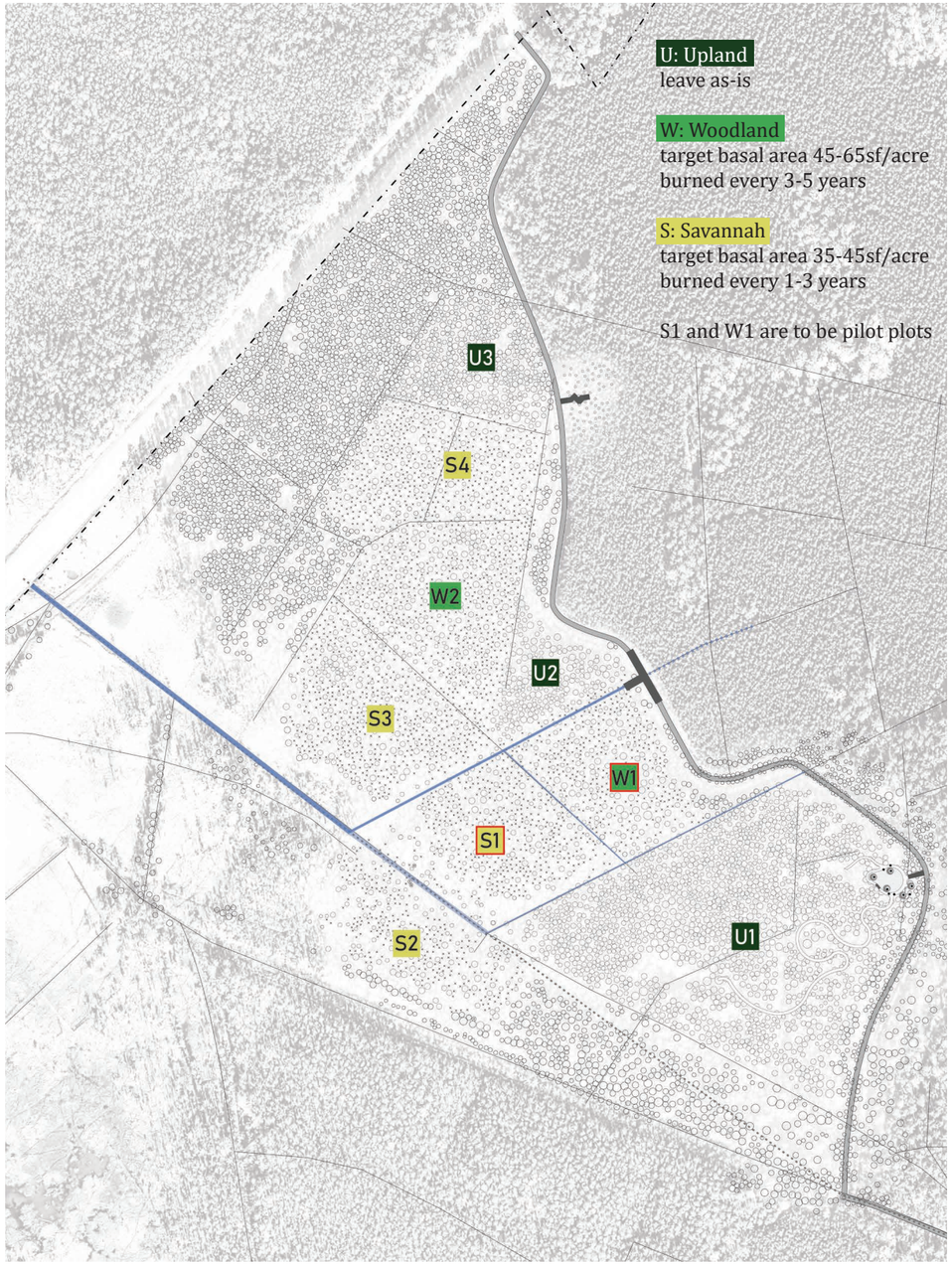


Figure 59. Management plan with ditch intervention and forest management plots highlighted

2.1 Tides of Transition

W2

U2

S2

Tidal channel created along Green Road

Primary marsh migration pathway

Breach logging road

W1

S1

S3

U1

Jacob and Dinah Jackson home site

Fill from tidal channel excavation creates low linear berms

Same width as tidal channel, but much shallower. This zone would be marshy but not the primary migration pathway

Trees removed from zone perimeters (grey) to establish firebreak zone, and for marshmaster perimeter operation during burns

basal area = dbh^2 x 0.005454 x numtrees

S1
3.4 acres, 303 trees existing
89 trees/acre
basal area s1 = 12”(dbh estimate)^2 x 0.005454 x 303
237sf/ 3.4 acres = 69sf/acre
proposed tree count: 150
new basal area: 35sf/acre

W1
3.2 acres, 256 trees existing
80 trees/acre
basal area w1 = 12”(dbh estimate)^2 x 0.005454 x 256
201sf/ 3.2 acres = 62sf/acre
proposed tree count: 180
new basal area: 56sf/ acre

Savannah
Target basal area: 35-45sf/acre
Burned every 1-3 yrs



Panorama image of longleaf pine at Green Swamp Preserve, North Carolina. © Andrew Kornylak

Woodland
Target basal area: 45-65sf/acre
Burned every 3-5 yrs



Loblolly pine forest © GeorgiaBeforePeople

Figure 58. Proposed plan for piloting high -variability thinning and fire management for S1 and W1

Prescribed burns

We propose prescribed burning as a maintenance practice for the Jacob Jackson homesite, beginning with the two small pilot plots (see figure 58) but eventually spanning the 98-acre parcel (see figure 46) to improve existing forest and marsh health, create conditions for healthy future marshes, strengthen habitat for migrating birds and other animals, and create more accessible, beautiful, and historical experiences of the landscape for visitors.

Controlled burns are an increasingly common maintenance practice used to improve marsh and forest health by using fire to change the assemblage of vegetation and improve soil quality. Burning is also a deep part of the pre-colonial and colonial history of this region's land and Tribal Nations [71]. Over time, burns increased the recycle rate of forest nutrients, increasing biodiversity and creating ecosystems of plants that were conducive to human use, whether via medicinal plants or through gatherable foods such as berries [72]. It is likely that Harriet Tubman, as a seasoned outdoorswoman, would have been familiar with these plants and would have utilized this botanical knowledge to help survive as she moved through the marshes and woodlands. Controlled burns are now regularly practiced by the neighboring Blackwater National Wildlife Refuge (BNWR). There is evidence that controlled burning can help cycle nutrients through soil, maintain the thresholds between marsh and woodlands, and remove invasive species such as Phragmites and the harmful rodent, nutria [73]. Where Phragmites is burned each year on Blackwater National Wildlife Refuge land, Chief Donna Abbot of the Nause-Waiwash Band of Indians describes being able to walk across the land "like it's yard". She further explains that "some of the private land where I trap doesn't get managed in the same way. [There is] very little land left to trap because root systems are gone, so there's no bottom, and so you have to be very careful where you step. So the land management is so important" [74].

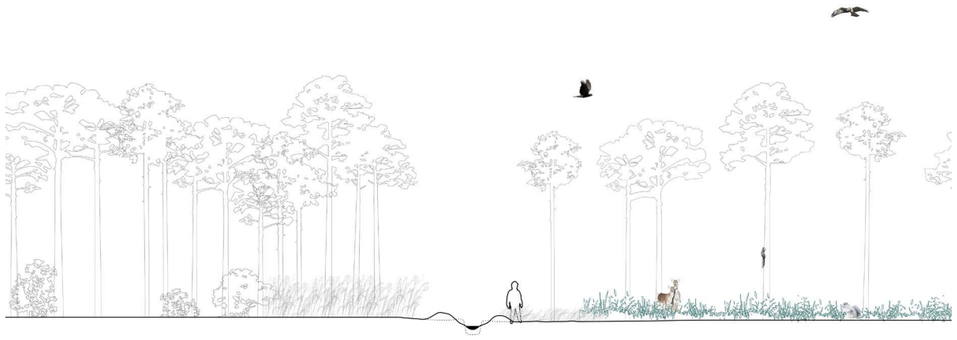


Figure 59. Burn section, depicting before and after mechanical thinning and 10 years of burning (burning every 3-5 yrs)

Key points

- Controlled burns can be a safe, effective maintenance practice (Figure 60)
- Burning leads to healthier and more resilient landscapes
- People have been conducting burns for hundreds of years here
- Managing the understory and ground cover through controlled burns will improve visual and physical access
- Controlled burns will help create a visitor experience of the land and forest closer to that of Tubman's time.

At HATU, controlled burns would connect this land to its history as a working landscape (Figure 59). Burning would also aid marsh migration, control Phragmites, and increase biological diversity. Because BNWR regularly conducts burns, we anticipate any potential controlled burns at HATU to be done in conjunction with BNWR and their burn partners.

Prescribed burns involve careful consideration and timing of environmental conditions such as wind speed and direction, humidity, and soil moisture. The preparation for a burn involves creating boundaries to contain the fire to an intended area. This can be achieved through limbing trees and creating a "wet line" (see Figure 61). Assuming the success of the thinning and burning on the designated pilot plots, and depending on the rate of return of Phragmites, we recommend conducting burns every 1-5 years, depending on the site (see Figure 57). BNWR does yearly burning at sites proximal to the Jacob Jackson Home Site, so this proposed burn frequency is aligned with both current management decisions and historical precedent: physical chemistry maps indicate that precolonial burning occurred every 4-10 years in this region [75].



Figure 60. Photo by Sarah Baker. BNWR supervising burn at Jeff Kirwan's property. (Credit: https://e360.yale.edu/features/bringing-back-fire-how-burning-can-help-restore-eastern-lands)

2.1 Tides of Transition

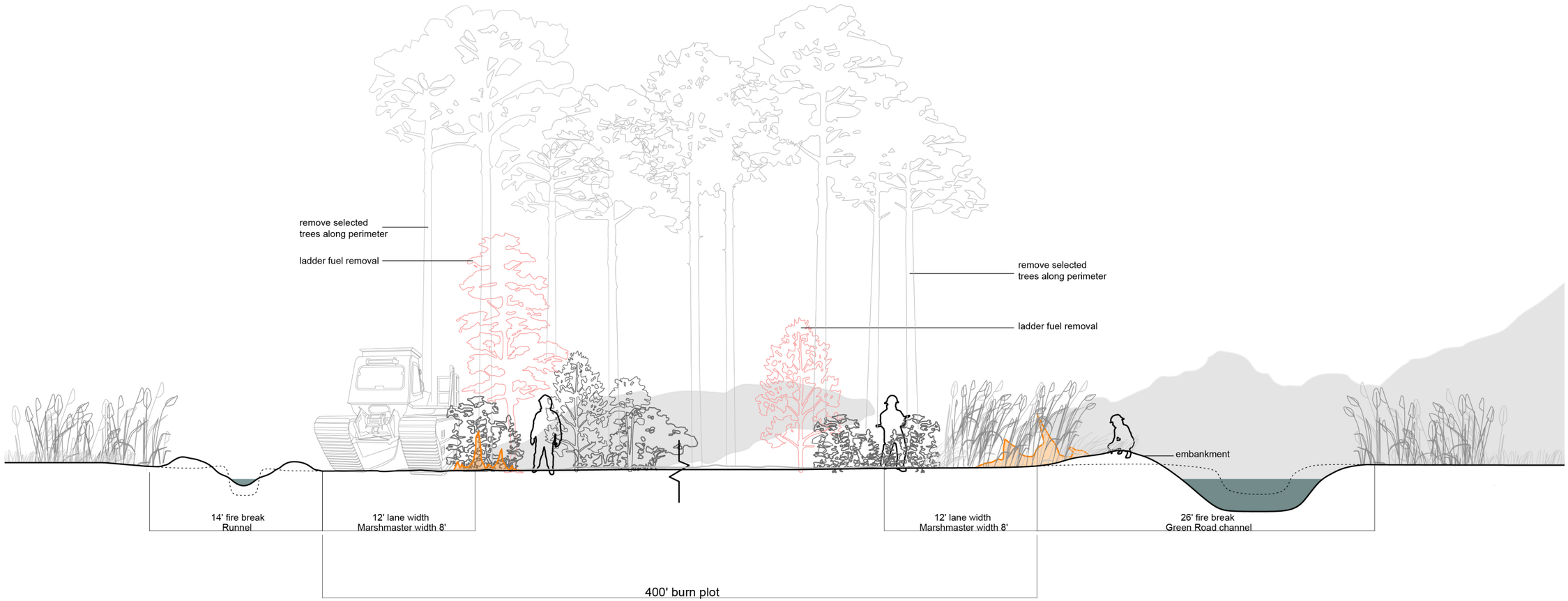


Figure 61. Detail section of S1 burn operation

Conclusion

SANCTUARY

"Prior to 1900 and dating back centuries... an older sense of the term [wilderness] took a more hopeful cast, emphasizing the physical wilderness as a special space of religious experience described by enslaved people in songs and stories. This earlier understanding of wilderness experience likely traces back to the need for enslaved people to practice their religion secretly, on the edges and in the woods of plantations, lest they be surveilled and punished. Wilderness for them - dense vegetation and tree cover - was an actual site of spiritual refuge."

Tiya Miles, "Night Flyer" (83) [76]

For Harriet Tubman and the thousands of other enslaved individuals who lived and labored in Dorchester County, the experience of nature was fraught with contradictions. The landscape was both a site of exploitation as well as a place of refuge and community. It is also a site of ongoing change and the place where we collectively tell our stories and work out our values. Though our work was narrowly focused on nature-based solutions for the Jacob and Dinah Jackson homesite, we have sought to honor this history and these many meanings in the work. Our approach to nature-based solutions for Harriet Tubman Underground Railroad National Historical Park sees the site as a sanctuary. The concepts presented here aim to embrace the redemptive and self-empowering aspects of this coastal environment. They lean into a history of connective experiences with the landscape as sites of spiritual and real refuge for Americans who have faced persecution, enslavement, oppression, and fought for freedom. The design research presented here aims to both embrace the history present on the Jacob Jackson Home Site and prepare it for the changes to come in a way that extends the cultural landscape into the future by emphasizing the continuity between past and present and the values of the community.

Over the course of this study, several advisory committee members suggested that losing places like the Jackson Homesite to flooding and marsh migration will hinder our ability to tell more complete stories about the African American and Indigenous experiences in Dorchester County. These concerns were often underpinned by the fact that our knowledge of these histories is already fractured by the fact of these

communities having to live under oppression. In a situation where the law and official history are unreliable narrators, the landscape itself takes on an outsized importance in connecting to our past; it becomes a thin place, where the boundary between past and present is blurred. Committee members spoke specifically about the limited time available to access archaeological sites, both those known and yet to be discovered, and the need to manage the Jackson property in ways that ensure that these historical resources can be documented or recovered before they become inaccessible. Others talked in more general terms about lost opportunities for future generations to directly engage with, experience, learn from, and be inspired by these places and their connections to Harriet Tubman's legacy.

There were also shared concerns about impacts to habitat and ecosystem services that underpin the broader socio-ecological health of this landscape. The loss of coastal forests was of particular concern given their historical-cultural significance and habitat value for wildlife. The loss of marsh was also of noted concern, particularly in the context of species like the Saltmarsh Sparrow, which have become endangered due to degraded high marsh habitats. Several members of the advisory committee stressed the importance of land management strategies that are pragmatic and effective to help facilitate healthy habitat transitions that prolong the social and ecological benefits of the Jackson property.

The concepts we have developed are simple. Cutting down the right trees and burning understory; subtle manipulations of the earth surface; small structures that enable the safe and quiet arrival of individual and group visitors; maintaining the dark of the night sky; facilitating healthy marsh transition. Around the Jackson homesite, we have suggested the planting of salt-tolerant shrubs in a pattern that will be legible to visitors and make the space feel more intimate. The plants will be mark of domesticity and an invitation to visit, and will enrich the future high marsh habitat, without disturbing the artifacts that my lie in the ground beneath. These moves are simple, grounded in sustainable management actions and visitor interpretation more than capital construction and conventional restoration. Nature and its complexity in this place are honored as we define our relationship to the landscape of Harriet Tubman's youth, at least for a time.



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