Renegotiating the Edge: Creating an Inspired Reality in the Potomac River Watershed

Carlin Renee Tacey

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Laurel McSherry
Paul Kelsch
Nathan Heavers

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ABSTRACT

Water edge communities are portals to terra firma. Their role as negotiators between land and water is more important now than ever before due to increasing fluctuations in water height from storm surges and sea level rise. To understand the future of these edge conditions, my research looks to the past at a 1967 report entitled; The Potomac: A Report on Its Imperiled Future and a Guide for Its Orderly Development, authored by pioneers Stewart Udall, Ian McHarg and others. The report approached the ecology and culture of the Potomac River basin through the lens of the 1960s, a time of unprecedented growth. Emerging at the semi-centennial of the original report, my thesis is both an homage and critique, challenging its concepts of order and development, and redefining four of the original eleven principles in the report’s concept of the ideal region. The thesis investigation also works within a more actionable scale of intervention, a tributary to the Potomac River. The project develops a transferable approach for other tributaries, exploring Quantico Creek and the town of Dumfries, Virginia, a historic seaport in Prince William County, as a case study for design intervention, and analyzes the historic and ecological conditions that led to the marginalization of the community in the wake of siltation and urban sprawl. The resulting proposal reconnects the community with the creek, and fulfills an intention of the original Potomac Report: to spark inspired realities along the river’s 400-mile course.
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GENERAL AUDIENCE ABSTRACT

Water edge communities hold much of the nation’s history and are heavily impacted by climate change phenomena. To better understand how to plan and design for these communities, my research re-examines a 1967 report entitled; The Potomac: A Report on Its Imperiled Future and a Guide for Its Orderly Development, authored by some of the most influential designers, planners and conservationists of their era. The report approached the ecology and culture of the Potomac River basin through the lens of the 1960s, a time of large scale development and suburban growth. Fifty years later, my thesis recognizes the aspects of the report that are applicable to planning and design today and recommends changes in the approaches and methodologies of the report for continued use in other communities. The thesis design proposal is at the scale of a small tributary called Quantico Creek in Prince William County, Virginia. The project proposal reconnects the community of Dumfries, VA with Quantico Creek by making it an accessible, public waterfront, and fulfills an intention of the original Potomac Report: to spark inspired realities along the Potomac River’s 400-mile course.
DEDICATION

This project is dedicated to my dad, Robert Tacey, who always took the time to help me understand the landscapes around me and who has always encouraged me to draw.
I would like to thank my committee members Laurel McSherry, Paul Kelsch and Nathan Heavers. Your guidance and encouragement were invaluable to the research and design proposal of this thesis project. I am so grateful for the opportunity I had to learn from each of you over the course of my education in landscape architecture. I also would like to acknowledge the late Lee Lansing whose research on Dumfries and Quantico Creek provided my foundational understanding of the ecological history of the town and tributary.
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I. Introduction

A. Thesis Question

In 1965, President Lyndon B. Johnson called for a “model study” to be made of the Potomac River. Two years later in 1967 the report, *The Potomac: A Report on Its Imperiled Future and a Guide for Its Orderly Development*, referred to throughout this research as “the Potomac Report,” provided a foundational overview of the ecological disposition of the basin and a framework for its development. The report approached the environmental condition and future of the Potomac through the lens of the 1960s, a time of simultaneous promise and crisis.

Emerging at the semi-centennial of the original report, this seminal work is the foundation for my contemporary research. Utilizing the report’s methodologies and findings, my project challenges the report’s concepts of order and development along the Potomac and its tributaries. I analyze the original eleven principles provided in the Potomac Task Force’s “Concept of the Ideal Region,” and re-write four of the eleven principles to develop a new design and planning strategy for the next fifty years.

I use these redefined principles to renegotiate the relationship between a town and its creek, a more actionable scale of design intervention. The local research and site-specific design proposal emerge as a case study for applying the revised Potomac Report’s methodology to a community’s unique ecological, cultural and historic context. The thesis research demonstrates how a unique community can become emblematic for other contemporary design interventions in the river basin. Ultimately, this thesis seeks to be an inspired reality fifty years in the making along the Potomac River, one that is rooted in the original intention of the report, but is informed by contemporary research and site-specific analysis.

B. Relevance to Contemporary Professional and Academic Discourse

The Landscape Architecture Foundation (LAF) summit in 2016 produced *The New Landscape Declaration*, a reconsideration and affirmation of the important role landscape architects play in the stewardship of the natural environment. The original 1966 declaration entitled, *A Declaration of Concern*, authored by Ian McHarg and a number of other prominent landscape architects assembled by LAF sought to “bridge the gap between knowledge and practice” and encourage more landscape architects to address the environmental crisis at hand (LAF). Framed by this precedent reflection on the historic declaration and in light of the approaching semi-centennial of Ian McHarg’s *Design with Nature* (2019), I believe revisiting the Potomac Report is a vital component in this effort to resituate the profession of landscape architecture into the next century.

The Potomac Report is particularly valuable in understanding how our approaches to planning, site analysis and design have changed over the past 50 years because it is a place-specific report. Unlike the ubiquitous language of the declaration, the Potomac Report spoke to specific conditions and goals that we can compare to present day circumstances. The authors of the Potomac Report hoped that the Potomac River basin would continue to be a place of research and investigation, a “testing place;” they hoped the basin would become a symbol of future-thinking planning and design. Although many areas of the urban Potomac have seen significant investment in the last 20 years in Washington DC, the peri-urban Potomac has suffered greatly from unchecked urban sprawl. Many of the urban issues the Potomac report suggested were relevant only to the urban Potomac are now pertinent to development along the entire length of the river, especially in the suburbs of Washington, DC. Revisiting the report and changing the scale of intervention to the tributary helps to adapt the original principles and methodologies to an urban sprawl environment.
In the peri-urban context, site specific research becomes increasingly relevant because the edge condition of the water body has greater variance in use and history. The following research pulls in contemporary discourse regarding waterfront revitalization, cultural placemaking, main street revitalization, storm water management, and climate change phenomena. The case study design project addresses the peri-urban context of Dumfries, Virginia and Quantico Creek. It takes the Potomac Task Force findings and builds upon them resurfacing conversations that continue to pervade the profession in its quest to act as stewards to the environment and facilitate the public’s experience of the natural environment.

C. Methodology and Application

By re-examining the Potomac Report’s findings and scale, I am fulfilling the intentions of the report to “convert the insights of this report into inspired realities.” The project uses the original report’s general findings about the Potomac watershed to investigate an area of particular interest in Prince William County, Virginia. One of the fastest growing peri-urban counties in the watershed with five tributaries to the Potomac River. Prince William County’s population grew by 43% between 2000 and 2010 and continues to grow (PWC).
To develop the inspired reality, I applied the planning principles of an ideal region to the lower watershed of Quantico Creek in Prince William County. With a better understanding of the historic, ecological and cultural conditions of the site, I determined the locations of greatest environmental and social impact for design intervention. I then used a two-fold strategy of design and pedestrian accessibility to rebalance the ecological and cultural conditions at these locations. The design seeks to cultivate a sense of place and vitality within the alluvial plain of the silted landscape and former harbor. It is designed to accommodate increasing fluctuations in water levels throughout the larger site plan so that as the ecologies of the creek change the designs adapt to new uses. The design connects the contextual communities with their creek, reinvesting in existing townscapes and infrastructure, providing ample recreational opportunities and educating the public through the larger vistas about how this town and this creek fit within a larger framework of planning and development along the Potomac River.

II. The Potomac Report Revisited

A. 1960s Potomac River Basin Overview

During my preliminary research of the Potomac River and its tributaries, the Potomac Report became a vital and informative resource on the history of the river and precedent for how professionals approached comprehensive waterfront development and planning in the past. The report was commissioned by President Johnson who, “urged a ‘New Conservation’ to restore and protect our heritage of national resources and to introduce new techniques that will enhance man’s opportunity to enjoy an attractive environment.” Johnson’s concept of a new conservation is placed within the larger history of American conservation in a later section. The report goes on to recommend four main outcomes of this effort:

- an ecological inventory of the basin (which has been generally realized)
- a zoning strategy (which was realized in certain jurisdictions)
- new towns along the edge of the river (development occurred but not as recommended)
- A Potomac Development Foundation to be created in order to effectively execute development according to the report’s findings (this was never realized)

The report provides an overview of where the Potomac River basin sits within the eastern seaboard of the United States. It describes the “unique character” of the Potomac and its role in the establishment of the Federal City. In more depth, the authors divulge the key water quality issues the river is facing, its increasing volume of sewage and its need for increasing amounts of clean water for consumption and industrial use. The articulation of their concerns gravitate to aesthetics, or the visual consumption of landscape forms, and utility or measurable profit of landscapes.
The recommendations and examples where often abstracted, such as providing an illustration of how a bridge can be more effective in framing a landscape view.

And suggesting where a new town should sit in relationship to its waterbody:

The examples are also abstracted at a much larger scale of research providing recommendations for land use based on the geologic disposition of the land from the Allegheny Plateau to the Coastal Plain.
In these examples site specific context is not considered. Many of the issues and environmental pressures the Potomac River was facing in 1967 continue today, but the considerations for landscape intervention and planning have multiplied in time. Designers can no longer propose land uses without considering contextual history, policy and precedent. Much of the Potomac that was rural and abstract-able is now heavily inhabited and often polluted, complicating the idea of re-allocating uses and increasing accessibility for the public. The Potomac Report provided 11 principles for the concept of the ideal region. It is those principles that my research specifically revisits, rewrites and reapplies to the Quantico Creek tributary. The re-visitation of these principles helps to reveal these nuanced considerations that practitioners today must apply when suggesting a design intervention along the Potomac River.

B. Principles for the “Concept of the Ideal Region”

The Potomac Task Force 11 principles are:

1. Provide cities, industries, farms and recreation areas with water
2. Control disposal of sewage, industrial wastes and sediment so as to maintain clean water
3. Diminish the hazards of floods and the consequences of drought
4. Maintain farmland and forests to assure continuing productivity and landscape protection
5. Identify and preserve for future use sites for new towns, dams, recreational areas and transportation arteries
6. Protect and conserve wildlife and its habitats
7. Preserve all important physical manifestations of the nation’s historical heritage
8. Promote land use compatible with the opportunities and constraints inherent in the landscape
9. Provide adequate open space within walking distance for all urban and suburban residents
10. Promote and demand efficient industrial enterprises compatible with a healthful and pleasant environment
11. Insure planned vistas throughout the region unmarred by eyesores and with new structures designed in a harmonious relation to landscape
Of these original 11 principles, I have rewritten four, numbers 3, 5, 9 and 11 in order to better address post-urban sprawl conditions and contemporary planning and design discourse;

**ORIGINAL**

3. Diminish the hazards of floods and the consequences of drought

**REWRITE**

3. Provide room for a fluctuation in water height and create landscapes capable of sustaining life

Rational: In the 1960s hard infrastructure, embankments and floodwalls were the primary mechanisms for flood mitigation. They allowed for little fluctuation and acted as barriers to ecosystems that straddle aquatic and riparian landscapes. Furthermore, current sea-level rise predictions anticipate an approximate 6-foot increase in overall water height in the next century (NASA).

**ORIGINAL**

5. Identify and preserve for future use sites for new towns, dams, recreational areas and transportation arteries

**REWRITE**

5. Retain and reconstruct the character of existing townscapes, concentrating future development around existing resources

Rational: The majority of the land along the Potomac River is privately owned. Investing in new recreational areas requires a reconsideration of existing land uses. In the case of my design proposal, the project re-invests in the existing town main street and reclaims public right of way on the paper streets. It also suggests former industrial and waste sites as future recreation areas.

**ORIGINAL**

9. Provide adequate open space within walking distance for all urban and suburban residents

**REWRITE**

9. Provide adequate recreational opportunities within walking distance for all urban and suburban residents

Rational: The concept of open space is inadequate for peri-urban communities such as Dumfries. The alluvial flats are technically open space, but they are inaccessible to the public. Similarly, the entire bay is “open space” on Prince William County planning maps, but what use is that to the general public if there is no public boat launch or recreational opportunity on the edge?

**ORIGINAL**

11. Insure planned vistas throughout the region unmarred by eyesores and with new structures designed in a harmonious relation to landscape

**REWRITE**

11. Ensure vistas educate the public on the cultural and ecological history and future of the landscape.

Rational: The Potomac Report’s emphasis on landscape aesthetics is antiquated. Recent past projects such as Richard Haag’s Gasworks Park have transformed industrial landscapes into beloved public landscapes. Similarly, the natural history of landscapes is increasingly important to understand the past and plan for the future in land use. What was once eyesore is now an opportunity.
These four re-written principles begin to incorporate climate change phenomena and sea-level rise projections, mixed density existing development patterns in the peri-urban context, productive and engaging landscapes that are not just observed but are an active part in the experience and identity of the community.

The task then becomes applying these concepts to a new actionable scale of intervention.
C. Reconsidering the Scale of Intervention: From Basin to Creek

Bringing the study and design down to the scale of the tributary helps to concentrate the research effort and apply these principles to a contextual community. I was able to identify a microcosm of the ecological changes the Potomac Report described between the Allegheny Plateau and the Coastal Plain. Dumfries sits on the edge between the Piedmont and the Coastal Plain, the site specific location helped me understand the phenomena of the siltation process (See Image 17) that the area has experienced over time as nutrients made their way down to the tidal Potomac.
Although the scale of intervention is more reasonable than that of the entire Potomac River basin to develop a contextualized design proposal, the bay at Dumfries is the size of New York City’s Central Park and requires a comprehensive and multifaceted strategy for design intervention. The scale of the case study design proposal seeks to incorporate the surrounding recreational and cultural areas of interest, the industrial sites that define much of the surrounding landscape and the historic narratives that are currently un-interpreted on the site. Furthermore, it seeks to benefit the low-income, largely rental communities in the area of the former harbor that are experiencing increasing concern over flood hazards, providing additional recreation space for these communities and increasing their mobility to town resources.

D. Quantico Creek Tributary and Dumfries, Virginia Historic Narrative

The following historical account is based on extensive research at the local history library, RELIC, at Bull Run Regional Library in PWC and the Historic Society of Dumfries located at the Weems-Botts Museum in the historic district of Dumfries, VA. The current historian of Dumfries verbally provided affirmation or original information regarding the history of Dumfries and its harbor on visits to the museum. Similarly, the former historian of Dumfries, Lee Lansing, provided in his self-published series much of the information on the ecological history and current conditions of the town of Dumfries and Quantico Creek up until the early 2000s and serves as the main resource for the following information.
Tobacco was the cash crop that drove the economy and Dumfries’ prosperity when it was informally established in the late 1600s by Scottish tobacco traders and officially chartered in May of 1749 along with the city of Alexandria to the north. Due to agricultural exploitation, Prince William County’s tributaries silted. Dumfries, once a rival of New York City in export, collapsed as ships could no longer harbor and dredging ventures failed (Karnes, 1998). Dumfries became a ruin, further fragmented by the increasing size of the roadways servicing the larger metro area and later industrial investment with subsequent pollution. Many of the planned roads on the historic plot were never realized, they remain paper roads, and the silted land was used as informal landfills or otherwise infilled with soil and debris.

Historic Dumfries had a very intimate relationship with the surrounding watershed. The town had five subsidiary tributaries leading to the harbor. The harbor, of course, was a natural low point in the larger watershed. Tobacco barrels were often rolled toward the harbor by way of the existing creeks from surrounding plantations. Rolling roads were also established or traders used existing American Indian paths such as the Potomac Path, now Route 1, to bring the tobacco casks to the harbor for shipment overseas.

The town dock was built from locally sourced cypress wood, the remnants of the ancient grove were discovered by historian Lee Lansing and archeologists on the far side of the bay in land now owned by the Marine Corps. Here, a large mound of oyster shells were also discovered near an American Indian seasonal campsite.

Today, pieces of the original cypress dock can be found along the site of the former harbor near Garrison park. As access to the harbor became challenging for seafaring ships, the people of Dumfries formed the Quantico Creek Transportation Co. in the 1790s to dig a canal to the harbor. The project was abandoned in 1819 due to an accident and the cost of maintenance. Since it was a natural low point, the Town of Dumfries has always suffered from floods and Quantico Creek was dredged to try to mitigate the hazard as late as 1977. When Lee Lansing was the engineer of Dumfries, Quantico Creek was experiencing clogging issues and needed to be rerouted. Upon investigation, he observed that the old canal path had become an informal landfill full of debris and large trash such as couches. Due to the cost of restoration and debris removal, he sought to have the creek rerouted through the opposite side of the alluvial plain, where it remains today.
III. Original Project Inquiry and Contemporary Research

A. The Potomac River

The Potomac River was declared the most endangered River in America in 2012 (Potomac, 2012). The watershed is highly urbanized by the D.C. metro area, and the ecological effects are present. The river’s ecology has long been affected by development disrupting and often destroying its inland tributaries (Lookingbill, 2009). The main river itself is tidal up until the fall line just West of Washington, D.C., and becomes a wide estuary as it reaches the Chesapeake Bay (USGS). Quantico Creek bridges that fall line, but the lower portion, as it passes Dumfries, is a part of this tidal lower Potomac landscape. Like many East Coast Rivers, the Potomac was the main thoroughfare of commerce through the 19th century, and many port towns developed along the length of its shores to become hubs of transport and related industries.

Due to its wide mouth and proximity to early settlements in Jamestown and elsewhere in the Mid-Atlantic, the Potomac River was a vital connection between the Atlantic Ocean and the industries west via the Chesapeake and Ohio (C&O) Canal, which was chartered in 1825 (Chesapeake). Due to this historic disposition and present day convenience the Potomac River is now a vital recreation corridor for the Washington D.C. metro area and other communities along its course.

B. Prince William County’s Waterfront

The largest remaining former port towns along the Potomac are Georgetown, where the C&O Canal connected the Potomac with Maryland, and Alexandria, VA (Preisser 1981). Both of these port cities have flourished as major urban areas. However, other towns served as vital nodes of transportation and commerce to get goods to and from these more urbanized communities throughout history.

Historic, small towns along the Potomac and its tributaries have become nearly extinct as commerce moved inland. The remaining downtowns and riverfronts offer an opportunity to examine how historic small towns have re-negotiated their relationship with the water over time. This thesis investigation began by considering how two historic small towns in the Potomac River basin were established, and how they were able to adapt and preserve their relationship with the water while also maintaining their townscape. The original case study towns were Occoquan and Quantico, two comparatively sized towns with intact main streets in Prince William County, Virginia. The towns’ main streets have different orientations to their waterbody. This spatial difference sparked my initial interest in how relationships between towns and their water bodies differ.

Image 15 - Initial Inquiry of Occoquan, Quantico, and the spatial relationship between the Main Street and waterbody
Quantico is very close in proximity to Dumfries but survived the siltation of the late 1700s because of its location on the Potomac, where ships could continue to access the docks. It has been encompassed by Quantico Marine Corps Base since the 1920s which has helped preserve the town. The original comparison showed how different historical uses influenced and reinforced the spatial relationships between town and creek.

This thesis research considers waterfronts as public spaces, where accessing or engaging the river in some way is a part of the community's collective identity. It is this principle—that waterfronts should be accessible to the public—that made Dumfries such an interesting case study in the peri-urban region of Washington, DC. Dumfries was once the only public dock in the area and was a hub for democracy, culture, and recreation. Today, despite being the oldest town in Prince William County, it has the most estranged relationship with its waterfront of all the historic towns along the Prince William County Potomac and arguably Virginia. The case studies at Occoquan and Quantico ultimately showed that human engagement of the water is heavily influenced by waterfront uses and as uses become disassociated with the river's resources, the river becomes less accessible and less valued. Dumfries and Quantico Creek embody this correlation and became the tributary and town of particular interest for a design intervention because of the immense possibilities in re-engaging the creek.

C. Main Street and Waterfront Revitalization

My preliminary investigations at Quantico and Occoquan provided a regional comparison of historic uses and present day conditions along the edge of the Potomac River, and its tributary, the Occoquan River. Although these towns have witnessed extensive changes to the surrounding landscapes, the urban element that Quantico and Occoquan managed to maintain is a main street. Although this spatial relationship seems trivial, it is important because many historic main streets in Northern Virginia have been redeveloped or removed for highway expansion. As Pendola states in his article, “Does Main Street Promote a Sense of Community?” “Main streets—commercial corridors that tend to serve as neighborhood centers—are often designed to provide the sort of pedestrian-oriented experience thought to encourage the quantity and quality of social interaction necessary for a sense of community to emerge” (Pendola 2008).

The revitalization of main streets has been in vogue over the last two decades in planning and design because a healthy main street includes small businesses and helps to establish a more viable and sustainable economy for the community (Mehta 2011). The visual desirability of main streets has also been studied, creating rating systems to better quantify an otherwise qualitative sense of main street design preferences (Ewing, 2005). These resources and others share a common theme: reinvestment and establishment of main streets is a worthwhile endeavor to provide attractive urban spaces for the pedestrian. Litvin makes an interesting point that historical main streets, once production oriented, have now turned to tourism as their main economic driver (Litvin, 2005). The main streets of Quantico and Occoquan generally fit that economic model. However, Dumfries’s Main Street did not fare so well. Dumfries has a main street revitalization plan, which has been in the works for over a decade (Town of Dumfries, 2007). It is pending the completion of the Route 1 widening and consolidation project with the Virginia Department of Transportation (VDOT) (NVTA, 2017).
My thesis exploration stops short of redefining or directly addressing many of the planning and design terms and considerations not covered in the Potomac Report or addressed in the rewrites of the principles for the ideal region such as “community,” “engagement,” or “place.” However, the idea of promoting and engaging the community, evoking stronger ties between the community and its creek, and establishing a sense of place through design is foundational to my project. Literature has accumulated suggesting the importance of “third places” in urban design, places that are not home or work, but foster identity for the community (Mehta 2011). Main Streets and waterfronts provide the spaces for these touchstone environments, they are also pedestrian oriented with various traffic calming design features and public areas (Pendola 2008). Authors Orvell and Meikle (2009) describe the main street as “both a nostalgic symbol and a pragmatic response to development, and it contains elements of both freedom and repression, technology and the pastoral.”

The historic Northern Virginia main street is rare, and the importance of the main street in this research is amplified by its dialogue with the adjacent waterbody. In an early work on waterfront revitalization, Donald Wood explains that pollution is “a common deficiency along urban waterfronts and it limits enjoyment of the water,” a point that begins to connect the human experience with the urban waterfront (Wood 1965). He goes on to explain additional causes of blight for the riverfront including storm surges, loss of industry, and perhaps most interestingly the orientation of the main street. Here, he suggests that the parallel main street can act as a barrier to the waterfront, but also a barrier to the spread of blight inland (Wood 1965). A more contemporary and ecological perspective that builds on the importance of the area between the urban edge and river edge is provided by May who states, “rivers and riverbanks are connecting elements (or landscape corridors) between patches... riverbanks and floodplains are also ecotones between the river itself and the land habitats that surround it...” (May, 2006). The author goes on to make connections between the river and cultural concepts, stating “riverfronts connect urban dwellers to the natural processes that are generally hidden in the built environment, to the history of their cities, and to each other across class lines and other divisions.” May goes on to say that many of the revered riverfronts of the past and present are highly engineered and poor models for the ecological health of the river (May, 2006).

The Potomac Task Force approached conservation as an extension of investment. The recommendations of the report focused on high population centers. They prescribed an international aesthetic suggesting that “much of the urban river’s shore should be embanked, paved, built up, surrounded with buildings and the waterfront designed in the manner of Hamburg, Amsterdam, Leningrad, Venice and other great water-oriented cities.” This is the approach to design that May critiques. Recognition was not given to the local histories of place, for the type of people the designs would serve or the environmental nuances of site. The Potomac Report left places like Dumfries without a roadmap for development. My intention is to fulfill many of the goals May suggested, to reveal the environmental and social processes that mediate between the built and natural worlds and between land and water ecologies.
The seminal 1977 book, *A Pattern Language: Towns, Buildings, Construction*, by Christopher Alexander et al is often referenced in the teaching and practice of landscape design today. One of the concepts discussed in the book is the idea of site repair, or choosing the site most in need of repair for design intervention. In the case of the Potomac River townscape, the urban Potomac around Washington DC has experienced much of the recommended attention and investment for recreation, public access and stringent planning policy. Similarly, in the case of the Prince William County’s Potomac shore, the Quantico and Occoquan main streets have remained largely intact and have retained their historic character through the last half century. On the contrary, Dumfries lost its sense of a main street and has no relationship with its waterbody. It has the greatest need for design intervention.

This shift in design thinking, to use design as a tool to repair a landscape, began in the 1970s and impacted the design process but also the discourse of adjacent disciplines such as geography and preservation. The term, cultural landscape was first coined by Carl Sauer in his 1925 essay, “The Morphology of Landscape,” where he explained that culture is the agent and the natural area is the medium (Longstreth 2008, 24). From this point of departure, scholars Peirce Lewis, J.B. Jackson, Denis Cosgrove, and others continued to reinterpret and investigate what the human relationship to landscapes mean and how to define such a fluid and changing concept (Longstreth 2008, 24-27). Author Julie Riesenweber explains, that in the last twenty years, professionals and scholars have critiqued the historic treatment of cultural landscapes as “things,” rather they now define landscape as both noun and verb, arguing that it is, “as much image, symbol, signifier, and materialization of ideology or discourse as a material thing” (Longstreth 2008, 28). Using landscape as verb is foundational to my reinterpretation of the Potomac Report’s principles and to contemporary design education and execution.

The Potomac Task Force used nouns: the river, the riverside and the setting as the “ways and means” for the development program. However, these are passive concepts. Implementing a design intervention requires land reclamation and other action-oriented efforts to re-establish public spaces in landscapes of sprawl and private ownership. Learning from the report and other research findings, the design case study incorporates action-oriented methodology. Not only is the approach action oriented, but the landscape itself performs: like the living entity it is. It grows where specific plantings generate new layers of terra firma in the alluvial plains. It connects the town to its water resources in the bay and unique ecologies along the silted landscape. It restores water quality from industrial point source pollution and the town’s non-point source pollution. It facilitates learning about the social, ecological and political conditions of the surrounding community.
E. Situating the Potomac Report’s “New Conservation” in History

President Johnson’s use of the term “New Conservation” in the opening of the Potomac Report must be situated within a brief overview of conservation in America. The term has changed significantly from the 1960s to 2017. Conservation in America began at the turn of the 19th century as pioneers settled the western states with fervor after the Louisiana purchase of 1803. Naturalists became interested in how the land shaped the settlers and how settlers shaped the land (Judd 2009, 226-7). It was during this century that naturalists began to explore the correlations between how humans use the land and the scientific effects their use has on the environment. For example, studies were performed to determine that land cleared of trees is hotter in temperature than forested land (Judd, 234). Romanticism also played a role in early concepts of conservation (Judd, 247). Ralph Waldo Emerson writings helped transcend the idea of nature from an economic commodity to a place of spirituality (Judd, 248).

It was out of this culture of scientific discovery and romanticism that in 1872 President Grant made Yellowstone a National Park (Newton 1971). Conservationism in America has henceforth been intimately tied to public lands, a relationship that was reinforced by Theodore Roosevelt a legend champion of conservation (Wellock 2007, 13). More generally, America’s conservationism is unique because it is a large part of national identity (Wellock, 17). Individuals like Gifford Pinchot and John Muir helped to preserve public lands in the early 1900s. Later in the 1930s-40s, conservationism expanded to include more social and urban considerations such as clean drinking water and public health (Wellock, 30 - 113). At the end of World War II two ideologies of conservation diverged; the traditional approach, or “quantitative conservationism” that prioritized utility and the new “qualitative” lifestyle conservation that prioritized recreational preservation (Wellock, 129).

The Potomac Report was a mark in the sand on this debate. It promoted a “New Conservation” but the authors were unable to fully embrace a new conservation ideology, their conservation as presented in the report is, as author Wellock explains of all 1960s and 1970s environmentalism, a “hybrid of old and new” (129). In much more recent history, the term “new conservation” has resurfaced promoting an evolved version of the of what the term suggested in the 1960s. Whereas in the 1960s the conservation movement was transitioning from an economic approach rooted in the New Deal to a recreational more human-centric approach in the post war years; the contemporary movement seeks to make conservation a humanitarian effort again post the more recent environmentalism movements promoting preservation. A scholar describes the contemporary divergence as “a still-evolving dispute in which conservation scientists and advocates defending a strong protected-areas approach (“nature protectionists”) have become pitted against more development-oriented conservationists “social conservationists,”” (Miller 2011). The thesis design proposal does not seek to be a part of the contemporary debate on conservation, rather a site-specific approach to design and planning. If anything, the project takes the stance that the right approach to conservation is doubtfully a universal approach.
IV. Site Analysis

A. The Process of Siltation and Infill

The following transect series tracks the siltation of Quantico Bay overtime, highlighting important eras of significant change.

Image 16 - Transects of Dumfries’s harbor over time
The siltation of the harbor was a phenomenal occurrence. The sediments from over cultivation inland found their way to the bay. Meanwhile, the Quantico slate rock formation that edged the original harbor acted as a wall to the water. As tidal storm surges met Quantico creek’s outlet, an eddy formed depositing silt in the middle of the bay.

Today this area is essentially a No-Mans-Land, where there appears to be some informal camping and disposal of waste. People who do venture into the landscape have placed wooden pallets over gutters and water pipes crisscross the ditches.
B. On-Going Projects in the Community: Framing the Design

The Potomac Landfill: Established in the 1980s is slated to close by 2032. It will pay a host fee to the town in order to rise an additional 100 feet in the air, towering over the small town. The Potomac Landfill and its ultimate conversion into a town park, serves as the area of prospect for the larger landscape in the design proposal.

Dominion Power Plant Coal Ash Pond Closure: Dominion Power is seeking to cap in place its coal ash pond on site. There is an ongoing political battle involving allegations of poisoning wells nearby and violations of EPA standards. This project hopes that Dominion will invest in the environment surrounding its polluted waste and make more of the landscape accessible to the public. The design can incorporate fly ash concrete produced onsite. The Dominion Power Plant land is the suggested area for a new public boat launch; here water is deeper and closer to the Potomac River.
Parkside Development: Town Council has approved a new multi-use development by Community Housing Partners (CHP) for the parcel directly behind Garrison Park, across Quantico Creek. CHP provides affordable housing options for disadvantaged members of the community. The design proposal lacked consideration for the landscape and its unplanned recreational space is included in my thesis design proposal.

Image 21 - Parkside Multi-use Development, Plan provided by Town of Dumfries representative
C. Planning Strategies and Consideration in the Design Proposal

Although the town had a historic slump in population, the population began to rise seemly exponentially between the 1960s and the 2000s. (Town of Dumfries 2014)

In more recent history, the town has become increasingly diverse.

Statistics show Dumfries as a working class community with lower home prices and lower annual salaries than that of Prince William County’s overall average and the larger Northern Virginia area. The town is also young, in the sense that its population is largely children and young families, whereas Prince William has a larger percentage of middle-aged individuals. This demographic analysis places an emphasis on walkability, education, and play opportunities in the landscape.

Another planning strategy that was considered in more depth for this project was transportation; bus routes and stops were incorporated in the location of paths and connections to the canal walk and Garrison Park landscape. Of course, by using the existing town park and expanding it into the areas currently designated as “open space” in the town’s comprehensive plan, the design also considered parks and recreational resources. Finally, this project, though it does not directly suggest any source of funding, is proposed in concert with planned investments for the town described above and included in the site plan. These investments include the sum the Potomac Landfill will pay the town to the amount of $3 – 4 million dollars as a host fee over the next 20 years of operation (Kiser 2015). There is also the money already slated for the Route. 1 expansion, and the sum Dominion Power must invest in its coal ash remediation. There is also the Transportation Investment Generating Economic Recovery (TIGER) grant program from the Department of Transportation as well as wetland, Chesapeake Bay, targeted watershed and many more grants through the federal government (EPA).
D. Determining Areas of Design Intervention

Due to the importance of engaging Main Street, the heart of the design is Garrison Park. Located directly behind Town Hall, it was the site of the former town dock. Much of the current parking for the park is on Market Street, one of the paper streets. It is from this central location, in conjunction with the opposite creek edge property that the rest of the design evolves. By using much of the footprint of the former town canal for the levee walk, the design is largely based on precedent. Historically, this was an accessible part of the creekscape, so it can be again. More importantly, getting people out to the bay brings them through the full range of ecologies on the site, from Piedmont forest in the adjacent properties near Garrison Park down to the yellow pond lilies of the marshes. I have chosen to use the bald cypress in honor of the ancient grove once used to build the town dock as my species of particular interest for this design proposal. A combination of vegetative, architectural and planning efforts bring people, walkers, cyclists, motorists down toward Possum Point engaging the entire bay. My larger pedestrian network suggests connecting through Quantico Marine Corps Base and other adjacent civilian communities to make an approximately 9-mile recreational loop.
E. Architectural Precedents

In such an alluvial and flat landscape, architectural structures became an important tool to both act as landmarks and facilitate program along this expansive landscape. The architectural precedents that influenced this project were vernacular in their design languages. I wanted any built elements in the landscape to correspond with planted elements in the landscape in a gentle juxtaposition.

Two existing architectural forms at the site helped inform this approach, the historic structure Williams Ordinary on Main Street and the duck blinds and deer stands of the surrounding community. This amphibious in the water and out of the water design language became a paramount concept in the placement and design of the pavilions along the edge of the creek in light of increasing water levels. All designed moments adapt to a 6-foot rise in water levels to accommodate changes over the next century.

Architectural projects such as the “Grooming Retreat” by Gartnerfuglen + Mariana de Delás, and Anton Pramstrahler and Alex Niederkofler’s “Lookout Tower” helped to provide structural and aesthetic precedents. International vernacular examples were also studied.
V. Design Proposal

A. Becoming an Inspired Reality

The Town of Dumfries illustrates the potential of the Potomac Report’s inspired realities. It is a product of place specific research and context. The study’s resulting design proposals focus on an existing public park and extend into the alluvial flats of the silted harbor and canal landscape. Collectively, the proposals educate, provide recreation, remediate informal landfills, mitigate flood hazards, provide food and material resources, build terra firma, direct pedestrian access, and mark ecosystems through built structures and vegetative strategies. The study’s design embraces the layers of the former embayment; it incorporates fluctuations in water height and flexibility in program to re-engage the waterfront and reconnect the town of Dumfries, to the Potomac River landscape. The study reestablishes the historic relationship between tributary and river and exposes the correlation between the ecological health of the tributary and the cultural health of the community.

Site Plan (See Next Page)

Description: The Site Plan shows the contextual features in the landscape including: Quantico Marine Corps Base, The Potomac Land Fill, Dominion Power Plant, and Prince William Forest Park (the largest example of Piedmont forest in the state of Virginia). The plan shows how the design sits within this framework and suggests the connection to the larger recreational loop and the canal walk an approximately 1.5-mile pedestrian waterfront. It also shows how the design leads to the proposed public boat dock at Possum Point.

Site Plan Key:

**Contemporary Areas of Interest**

1. Prince William Forest Park
   National Park, largest protected natural area in the Washington, D.C. metropolitan region, largest Piedmont ecosystem in Virginia

2. Potomac Landfill
   (began operation in 1985, planning to close in 2032, will give 3 million dollars to Dumfries, documented violations of leachate overflow)

3. Coal Ash Ponds
   Drainage point into Quantico Creek

4. Dominion Possum Point Power Plant
   Began operation in 1948, ongoing contention over coal ash disposal, plans to close three of five ponds

5. The Town of Quantico
   Independent Municipality encompassed by The Marine Corps Base, historic Main Street, fishing village established informally in 1654 incorporated in 1927

6. Quantico Marine Corps Base
   established 1918
   harbor to first landing

**Historic Areas of Interest**

A. Site of the Former Town Dock
   now Garrison Park

B. Footprint of Canal and tow path
   that the 1790’s group called the Quantico Creek Transportation Co. initiated to reconnect the harbor to first landing

C. First Landing
   another docking area and turning point for seafaring vessels

D. Site of Ancient Cypress Grove
   fed by natural springs; cypress trees used to build Dumfries Dock

E. Site of former ferry
Description: The perspectives show contextual moments where the pedestrian path extends to connect with other destinations such as Prince William Forest Park via Mine Road and the I-95 underpass and the Dominion Power Plant on Possum Point Road. In both cases, I have extended the vegetative strategy of using pines and bald cypress plantings to indicate viewsheds and points of interest.
The Detailed Site Plan of Garrison Park shows the connection to the urban fabric of Dumfries. It re-interprets the concept of "dock" extending the streetscape adjacent to Town Hall and through to the park. Market Street becomes an inverse road with an 18" drop providing a spillway for urban water run-off. Market Street also becomes an area for spectators, picnic-ers, and lunch break-ers to experience the edge of the waterfront landscape. It also provides exploration paths marked by crushed oyster shells along the water edge and mulched paths through the adjacent forested lots.

B. Garrison Park

Image 31 - Detail Plan of Garrison Park

Quantico Creek
Description: The detailed Site Plan and section of Garrison Park show the connection to the urban fabric of Dumfries. The design re-interprets the concept of “dock” extending the streetscape adjacent to Town Hall and through to the park. Market Street becomes an inverse road with an 18” drop providing a spillway for urban water run-off. Market Street also becomes an area for spectators, picnic-ers, and lunch break-ers to experience the edge of the waterfront landscape. It also provides exploration paths marked by crushed oyster shells along the water edge and mulched paths through the adjacent forested lots. The water’s edge becomes an increasingly accessible destination for the town. The edge is pulled back a variable 10 – 40 feet, removing infill and allowing more room for kayaking from the boat launch and water rise in storm events.
Image 33 - Structural series of Lookout

- Safety railing
- Stairs to the top
- Viewing platforms
- Cross bracing branches
- Vertical elements
- Overlapping footprints
Description: The “Lookout” becomes a new landmark, a vertical dock, visible from the Potomac Landfill, Main Street, and Route 1; the tower re-orients and centralizes the pedestrian threshold into the formerly inaccessible riparian creek edge. A portal into the alluvial plain. The Lookout stands in juxtaposition to the bald cypress on the far bank. As water levels rise, these peninsulas become more pronounced increasing the duality and accessibility to the water.
Description: A place to gather, engage, and remediate, the urban edge of the waterfront on Market Street invites the town into the park. The picnic platforms utilize coal ash concrete from the coal ash remediation effort connecting the most urban edge of the landscape to the most industrial edge; the power plant at the far side of the bay. The spillway also brings wildlife into the urban area of the waterfront. An opportunity for more intentional plantings of native wetland flowers.
C. The Canal Levee Walk

Canal Levee Walk Detail Plan

Description: Extending the waterfront experience into the silted harbor, the Canal Levee Walk brings cyclists, joggers, walkers, and others into the ecological diversity of the flood plain. The series of pavilions begin with a bike wash after the Lookout and highlight particular opportunities to further engage the surrounding landscape. The levee walk is a permeable flood barrier, which can be adapted with temporary dams and other measures to accommodate larger storm events. The topographical strategy uses 6 feet above current water height (also the approximate depth of the former canal) to ensure access to these changing landscapes into the next century. The walk follows existing topography lines and builds up additional landscape forms as it moves toward the bay. As waters rise, the Canal Levee Walk experience changes. The carved out gully of the walk provides approximately 60% of the infill needed to construct the path; it also becomes a subsidiary creek bed as waters rise, creating an island in the center of the bay. The levee was designed using FEMAs design standards as a guide.

(see next page)
Image 37, 38 - Chipboard model of remediated Canal Path and Levee Walk
Description: The vegetative strategy for the alluvial area is to plant bald cypress on the edges and other pine species in rows to generate future pathways through the marshes and swamps. In areas of terra firma, these corridors are opportunities for walking on the soft pine paths, play, mountain biking, perhaps even silvopasture. In areas of increasing saturation, kayaking and canoeing opportunities can extend from the Garrison park boat launch. The simple planting strategy helps to hold the edge of the interior ecologies, and provide visual corridors and landmarks for pedestrians.
D. Designed Pavilions: Accessible Ecologies

Description: The pavilions, or the “blinds,” provide opportunities to engage the landscape. The structures are made from simple wooden materials and adapt to rising waters. Each blind is different and responds to its unique place and opportunity to provide an experience along the waterfront, but they share a similar design language.

1. The Lookout – The beginning of the series and largest structure acts as portal and playground to the creek and trail system
2. Bike Wash – Re-entering the urban realm, this station captures rainwater to clean mud off bike tires and shoes before crossing into the Piedmont ecosystem
3. Learning pavilion – the entry to the trail system from the Williamstown neighborhood provides a larger pavilion for learning and wildlife observation
4. Deer Stand – A raised stand that could be used for seasonal hunting, but also a place of reflection and observation over the more forested plains
5. Wetland Plunge – At the deepest point of the new creek bed, the plunge is an inverse blind, getting people into the water and rising when waters rise like a typical floating dock
6. Duck Blind – Although it is not in the water today, this reading room, or birdwatching nest will one day be in the water and accessible by boat
7. Sundeck – A social blind facing south for sun bathing and congregation
8. Landing Stand – A moment of solitude at the entry of the historic canal, this stand serves as a small reinterpreted seamark on the far shore
9. Fishing Overlook – A small pier cantilevered out over the creek’s edge for fishing
10. Shellfish Nursery – situated in a small cove, this blind is intended to be a community learning lab for freshwater shellfish revitalization efforts
11. Fishing pier – The pier is nestled into the woods requiring effort to reach it; a single car parking bay and picnic area mark its location off Possum Point Road
12. Boathouse – The boathouse is intended to be a new point of public access to launch boats and buy bait
bike wash
learning pavilion
deer stand
wetland plunge
duck blind
sundeck
landing stand
fishing overlook
shellfish nursery
fishing pier picnic
boathouse
Image 41, 42, 43, 44, 45 - Structure models of blinds
Image 46 - Program diagram of blinds along the new Quantico Creek waterfront
Description: The wetland plunge blind facilitates access into the water and marsh area of the carved out canal bed. The illustration shows how this type of feature can have the effect of a folly, providing a visual engagement, but it can also be a ladder and observation window into the more intricate discoveries living below the levee. This landscape was once very productive; investing in its ecological health will help bolster native bird, and aquatic species such as the freshwater crayfish. Bolstered populations can support more hunting and learning opportunities for the surrounding community.
Description (image on next page): Perhaps the most exciting aspect of this landscape is the diversity in flora and fauna between the oak-hickory forest of the riparian creek to the bald cypress and aquatic grass species in the alluvial marsh. The concentrated design in Garrison park acts as a fulcrum to these worlds, allowing a gentle hand in design for the larger landscape, calling attention to its changing beauty and ushering an experience to the larger Potomac.
Image 48 – Ecological section diagram from Piedmont forest to tidal marsh
VI. Summary

The Potomac Task Force approached conservation as an extension of investment. The recommendations of the report focused on high population centers. They prescribed an international aesthetic suggesting that “much of the urban river’s shore should be embanked, paved, built up, surrounded with buildings and the water front designed in the manner of Hamburg, Amsterdam, Leningrad, Venice and other great water-oriented cities.” Recognition was not given to the local histories of place, for the type of people the designs would serve or the environmental nuances of site. It left places like Dumfries without a roadmap for development. The Potomac Report was written at a scale of influence, but it was inapplicable to peri-urban communities, whose designs the Task Force left to more informal approaches, what they described as “small scale and neighborly.” Nevertheless, the bay at Dumfries is the size of Central Park, and small scale and neighborly interventions, today seem inadequate in contrast with the large-scale industrial landmarks surrounding Dumfries.

Ian McHarg used the Potomac Report as the basis for much of his 1969 book Design with Nature, where he explained that it was his intention to “interpret this [the Potomac] as a value system and to designate appropriate land uses” (McHarg 127). He goes on to explain that what he is providing is not a plan with social goals; rather it is a revelation of nature as a “working storehouse.” Ian McHarg’s work remains a foundational approach to site analysis. However, the question remains, how does a designer best manifest these facts into a subjective, place specific, representative landscape?

The case study design repositions Dumfries as a gateway community, taking a new ecological and social conservation approach that is responsive in design and expansive in environmental and social impact. However, even this investigation falls short of addressing all of the concerns of the growing region in the next century, and representing the full historic narrative of the landscape. For example, although the landscape design reveals the ecological history of the site, it does not directly address the narrative of slavery in the southern port. The design also assumes the jurisdictions and private entities involved are willing to cooperate to provide a new waterfront for the people of Prince William County, an assumption that has led to the failed realization of many designs in the past. Indeed, the formation of the Potomac Foundation was so important to the original Potomac Task Force because of the debilitating lack of cooperation between governmental and private entities in the 1960s.

Just as the Potomac Report served as a case study for river basins, Dumfries is now a case study for other inspired realities along the Potomac’s tributaries. This approach, to reinterpret the foundational methodology of the Potomac Report is transferrable to other tributaries where urban sprawl has obscured or obstructed pedestrian access and engagement with waterbodies that feed the Potomac River. The Potomac Report was a progressive step in planning and design in 1967, however these inspired realities, and what could become a suite of case studies along its course have the capacity to push the design and development of the Potomac River basin into the 22nd century and become emblematic for tributaries worldwide.
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All pictures, unless otherwise noted were taken by the author.
APPENDIX A

Printmaking as Visualization Tool

While in the preliminary research phase of my thesis work, I used printmaking as a tool to better understand the components of the landscape I was working with and how they could be presented in later visualizations both combined and separated. I ended up with a series of prints that represented the five major visual components on the site at Dumfries: Light, Vegetation, Water, Earth, and Shadow. I used these prints as the base for my renderings. They were created by site study and descriptive contemplation exercises. I used descriptions, pictures, and research to help inspire the colors and combinations of the pallet.
LIGHT
VEGETATION
WATER
EARTH
SHADOW
COMBINATION 1
COMBINATION 2
APPENDIX B

Charcoal Studies of Site and Preliminary Design

Garrison Park
Canal Levee Walk
APPENDIX C

Transect Series

- Garrison Park acts as portal to alluvial landscape
- Creek forks to accommodate greater volume of water
- Built up earth from intentional pine plantings act as land bridges between ecosystems
- Canal levee walk protects and provides access

Designed Condition 21st Century
Traces of Canal
Main Street, Route 1 South
Harbor Fully filled, sub-divided
Creek re-routed due to flooding and build up of debris

Present Day Condition, 2017
Canal Condition Turn of the 18th Century

Quantico Transportation Co. Canal

Historic Dumfries

Harbor begins to silt

The King’s Highway, Rolling Road

Canal Condition Turn of the 18th Century
Indigenous Settlement Condition Prior to 17th Century

Rocks of Quantico

20 - 30 foot deep creek

The Potomac Path, Native American Foot Path