

ABSTRACT

Title of Thesis: WILD TO WILDSCAPE: DESIGNING THE
URBAN WILD

Renee LaGue,
Master of Landscape Architecture, 2017

Thesis Directed By: Dr. Kelly Cook, Landscape Architecture

Urban wasteland, terrain vague, postindustrial site, urban wild and wildscape: these are but a few of the terms describing sites which have been disturbed by humans and contain novel or spontaneous vegetation. In this thesis, I investigate the literature for examples of how designers can act upon these sites such that they provide the social, environmental, and artistic benefits of being ‘designed’ without destroying existing vegetative wildness and historical traces. I organize 35 terms into three categories describing the spaces as either negative, empty, or by vegetation type. I find that most design suggestions lie along three axes: history, vegetation, and access/interactivity, along with a general principle of ‘minimal intervention.’ Finally, I synthesize the literature review and precedents and apply what I have found to a test design site, a portion of a former railroad right of way in Alexandria, Virginia.

WILD TO WILDSCAPE: DESIGNING THE URBAN WILD

by

Renee LaGue

Thesis submitted to the Faculty of the Graduate School of the
University of Maryland, College Park, in partial fulfillment
of the requirements for the degree of
Master of Landscape
Architecture
2017

Advisory Committee:
Dr. Kelly Cook, Chair
Dr. Lea Johnson
Dr. Madlen Simon

© Copyright by
Renee LaGue
2017

Preface & Acknowledgements: Down the Rabbit Hole

I found the thesis site while visiting a native plant nursery in Alexandria, Virginia with my friend Jorah. After we made our purchases and exited the nursery, I spotted a “weird ditch” through a gap in the fence. At first, I thought it might have been a former stream channel or buried stream, which interested me greatly, but as we followed the ditch, it gradually turned into a steep ridge. We were drawn on by the magic of the site– the juxtaposition of the blind industrial walls and shuttered loading docks with the backs of residential yards, the wild vegetation of a no-man’s-land carved through by a mostly straight and well-worn path, a rhythmic sequence of ‘rooms’ defined by former fencelines.

When we turned around past the hole where we had entered, we crossed a residential street, and disappointingly, the space flattened out and transformed into a mowed park of shade trees and lawn. The magic had diminished, remaining only in some scrubby fenceline black locust trees and the way the linear site cut diagonally through the neighborhood.

After returning home, I did some initial research on the site, a former railroad right-of-way. To my great disappointment, I found that a concept design for the wild half had already been completed as part of a new development. This concept replaced the wonderful wild features with a mowed lawn dotted with ornamental and shade trees in a Picturesque fashion. The only nod to site history or the existing scruffy juxtapositions was the re-insertion of two instances of the former railroad track. I set out with the goal of creating a design which would not ruin the magic I had found. This took me on an odyssey through the literature of urban wastelands and railways in landscape architecture, architecture, planning, and ecology.



Figure 1: Mt. Jefferson Park Concept Design. From Oakville Triangle & Route 1 Corridor Vision Plan and Urban Design Standards and Guidelines, City of Alexandria. Public document.

I am deeply thankful to my committee chair, Dr. Kelly Cook, and my committee, Dr. Lea Johnson and Dr. Madlen Simon, for their high expectations and for pushing me further in my thought and design with every meeting. It was not always easy to be alerted to conceptual gaps in the project, but it was always useful. In addition, I want to thank my classmates, particularly Jorah and Kaitlin for the pho and camaraderie, and Jorah for suggesting that first trip to the native plant nursery. I would also like to thank my parents for their support and my boyfriend Jay for his encouragement and helpful suggestions.

Table of Contents

Preface & Acknowledgements: Down the Rabbit Hole	ii
Table of Contents	iv
List of Tables and Figures	vi
Chapter 1: Introduction	1
Chapter 2: Literature Review	6
Locating Urban Wilds within the Theory of Four Natures	6
Types of Urban Wild	9
An Urban Wild by Any Other Name?	12
Negative Terms	14
Empty or Ambiguous Terms	15
Ecological or Nature-Based Terms	16
Naming the Designed Urban Wild	19
Social Value and Challenges of Urban Wilds	19
Ecological Value and Challenges of Urban Wilds	22
Ecological Value and Challenges of Railway Rights-of-Way	24
Chapter 3: Site Analysis	27
Context: The W&OD Railroad and Historic Transportation Networks	27
Site-Specific History	35
1900	35
1921	35
1959	36
2015	37
Future	37
Human Structures and Demographics	44
Figure Ground	44
Fences	44
Access and Circulation	44
Demographics	45
Abiotic Factors	54
Soils	54
Hydrology	54
Elevation and Slope	55
Biotic Factors	60
Green Space Connections and Nearby Habitat	60
Vegetation Distribution	61
Linear Parks: Design Strategies	68
Summary of Design Directives from Site Analysis	70
Chapter 4: Wild to Wildscape: Strategies for Designing Urban Wilds	72
Design through Erasure	73
Design through Mimicry	74
Design through Restoration	77
Design through Conservation	78
Design through Historic Preservation	79
Design through Hybridization	80
Design through Time and Process	81
Design through Hybridized Texts	84
Hybridization with Productive Nature	84

Hybridization with Cultural Nature	85
Summary of Design Directives from Theory	88
Chapter 5: Design Methods	90
Principles for Designing Urban Wilds	90
Application of Theory of “Smallest Possible Intervention” to Thesis Site	90
Reconciling Design Directions from Site Analysis and Theory	91
Additional Design Directives: Incorporating Existing Site Characteristics	92
Programming the Site	95
Concept Development	96
Chapter 6: Design	101
Description of Design Section by Section	105
Boxcar Meadows	105
Rolling Stock	106
De-Railing Zone	107
Fabrication Station	109
Trestle Heights	110
Chapter 7: Conclusion	112
Bibliography	114

List of Tables and Figures

Figure 1: Mt. Jefferson Park Concept Design	iii
Table 1: Natures Enumerated	7
Figure 2: Street Edges and Medians	9
Figure 3: Vacant Lots, Gaps, Railway Infrastructure, and Brownfields	10
Figure 4: Waterways, Structural Sites, Microsites, and Power Line Rights of Way	11
Figure 5: Concept Map Bubble Diagram	13
Figure 6: Detailed Concept Map of Terms	13
Figure 7: Guerilla art near abandoned Glen Echo trolley right of way	20
Figure 8: Potomac Yards, 1916.	28
Figure 9: The W&OD trestle with the St. Asaph waiting shed at Potomac Yards, 1957	28
Figure 10: Mail distribution at Bluemont Jct., 1937	29
Figure 11: Bulldozer pulling ties from Alexandria viaduct, 1969	30
Figure 12: Pile of ties removed from Alexandria viaduct, 1969	30
Figure 13: Tracks west of Rte. 1 being removed, 1969	30
Figure 14: Cutting Rails at Grove Ave., 1969	30
Figure 15: W&OD Context Entire Railway	32
Figure 16: W&OD Context Alexandria	33
Figure 17: Thesis Site	34
Figure 18: 189- Perspective of Northwest Alexandria with racetrack and railroad	35
Figure 19: 1922 aerial of Del Ray and Alexandria Jct. with former racetrack site in red.	36
Figure 20: St. Asaph Racetrack in Alexandria, VA, 1902	36
Figure 21: St. Asaph Racetrack, 1914	36
Figure 22: Mt. Jefferson Park Concept Design	38
Figure 23: 1900 Del Ray and St. Elmo	39
Figure 24: 1921 Potomac	40
Figure 25: 1959 Alexandria	41
Figure 26: 2015 Alexandria	42
Figure 27: Future Alexandria	43
Figure 28: Alexandria Population by Age and Sex in 1960 and 2010	45
Figure 29: Figure-Ground Analysis	48
Figure 30: Fences and Former Fence Locations	49
Figure 31: Site Access	50
Figure 32: Age by Block Group	51
Figure 33: Population Density	52
Figure 34: Ethnicity by Block Group	53
Figure 35: Concrete Vernal Pool	55
Figure 36: Drainage Structure	55
Figure 37: Drainage and Storm Sheds	57
Figure 38: Elevation	58
Figure 39: Slope Analysis	59
Figure 40: Tree Species Distribution	62
Figure 41: Native and Invasive Tree Distribution	63
Figure 42: Green Space Connectors	65
Figure 43: Tree Species, Relative Size, and Distribution	66
Figure 44: Invasive Tree Species, Relative Size, and Distribution	67
Figure 45: Thin Park Typologies by Karl Kullmann	68
Figure 46: Design through Erasure	73

Figure 47: Design through Mimicry	74
Figure 48: Design through Restoration	77
Figure 49: Design through Conservation	78
Figure 50: Design through Historic Preservation	79
Figure 51: Design through Hybridization	80
Figure 52: Images of Südgelände	83
Figure 53: Images of Duisburg-Nord	87
Figure 54: Existing site conditions.	93
Figure 55: Boxcar converted to an electric engine, 193-	93
Figure 56: Tracks at Purcellville, VA after abandonment, 1968	93
Figure 57: Concrete pipe & hedge threshold and manipulating vegetation through ‘fence mazes’	94
Figure 58: Catenary gate and sculptural chain-link threshold	94
Figure 59: Paving/de-paving studies and mound field	94
Figure 60: Drain fountains and design through subtraction on an existing wall	95
Figure 61: Breakthrough in visualizing the site as a whole	97
Figure 62: Exploring categories of addition and subtraction on the site	97
Figure 63: Developing concept of linear ‘stops’ on different ‘tracks’	98
Figure 64: Refining concept; development of aligned ‘stations’	98
Figure 65: Initial typology diagram: ‘Stops and Spontaneous Vegetation’	99
Figure 66: Sketch of more intensive design possibilities for a concrete wall at a ‘station’	100
Figure 67: Stops and stations aligned conceptually on thesis site	100
Figure 68: Initial rendered design presented at defense	101
Figure 69: Presentation graphic of a ‘station’ containing a beer garden and bouldering barn.	102
Figure 70: Diagram showing location of current fenceline/wall vegetation (green), vegetation along former fencelines (dashed green), and vegetation on embankments (yellow-green).	103
Figure 71: Sketchbook diagram of experience walking through the southeastern Park of site. Not to scale.	103
Figure 72: New typology diagram with fencerows of vegetation creating ‘rooms’ to hold stops, stations, and thickets.	103
Figure 73: Revised site plan-entire	104
Figure 74: Northwest segment of thesis site.	105
Figure 75: Section through northwest segment of site with boxcar and waiting shed.	105
Figure 76: Segment of site showing meadow, play boxcars and mounds, and waiting shed bathroom.	106
Figure 77: Section with mowed meadow path and fenceline vegetation.	106
Figure 78: Segment of site showing wetland, bridge, hammocks, and slides.	107
Figure 79: Section through site showing wetland and bridge.	107
Figure 80: Section showing meadow vegetation and hammocks and slides beyond.	108
Figure 81: Perspective of graffiti wall ‘station.’	108
Figure 82: Segment of site showing concrete pipe gates, reinstated rail paths, the maker shed/fabrication station, and the maker yard	109
Figure 83: Section through site showing fabrication station, yard, and new development.	110
Figure 84: Southeastern end of thesis site.	110
Figure 85: Section through Trestle Heights.	110
Figure 86: Section-perspective of park entry on southeast end. ADA entrance is to the right; viewing sculpture made from rail is atop the hill.	111

Chapter 1: Introduction

There are urban spaces throughout cities around the globe where humans have used and then abandoned sites which have then become home to a wide array of spontaneous plants and animal species and permit a wide array of human and nonhuman uses. These sites are on the margins of the normal order of the city and are often subject to efforts to control or tame them.

These “urban wastelands” are not often considered to be “natural” or desirable, and often their history and unique site characteristics are completely erased or reduced to tokens when they are designed by landscape architects. However, if this occurs, the community often loses an important link to its past, wild species lose their homes, and people lose a space where they can participate in a wide range of user-generated and spontaneous activities. This thesis investigates the question of how to design these spaces in order to retain their positive wild aspects while also reaping the environmental, social, and artistic benefits of design. To address this problem, I investigate the literature and precedents, distill important design directives, come up with an approach, apply the design to a test site, and reflect on the process.

An “urban wild” is an urban green space with a history of strong, intentional anthropogenic disturbance, altered soils, and which is covered at least partly with spontaneous communities of vegetation. These sites may contain remnants or scars of human use in the form of highly-altered substrates or built structures. Vegetation communities may be left entirely to their own devices or may be subject to occasional human intervention.

Not all green spaces within cities are urban wilds. For example, golf courses, lawns, home gardens, agricultural areas, and public parks are spaces with clear uses, rules, and programs that are actively maintained and controlled by humans. Remnant urban habitats (for example, wooded stream valleys) are also not considered to be urban wilds. While these communities may contain some spontaneous plants and may be degraded by urban processes around them, they have not been intentionally altered to the same extent. Remnant urban forests grow on substrates

and contain species compositions which are much closer to those found in undisturbed plant communities, and these spaces are commonly viewed as ‘natural,’ as opposed to the ‘unnatural nature’ of urban wilds.

In these urban wild sites, “normal forces of order, control, and management have been abandoned and do not shape how we view or occupy them”¹. These spaces are “between or on the margins of more programmed and controlled urban spaces,”² outside of our typical conceptualization of nature, and resist “notions of proper or appropriate use”.³ These wild spaces are not controlled by a single entity such as a parks department or friends group and thus allow multiple actors (human, animal, vegetative, or otherwise) to become shared authors of a site over time.

Urban planning as a field attempts to place rational, orderly regulations on the use of land and space; consequently, urban wilds—unregulated, abandoned, and/or forgotten—are particularly troubling to planners, who often conceptualize them as ‘empty’ or ‘vacant,’ when in fact they are anything but.⁴ These sites are today’s ‘wastelands’ often seen as valueless and in need of redevelopment.

While urban wilds already contain many positive qualities and may not need to be designed, it may also be politically, socially, or ecologically advantageous to design these spaces for a variety of reasons. Because of the mixed or negative aesthetic perception of urban wilds and this conceptualization as being empty, these spaces are in danger of being lost. Rupprecht and Byrne suggest that “ambiguity, informality, and malleability...leave informal urban green spaces vulnerable to being contested politically, legally, and aesthetically.”⁵ In fact, the disapproval of one group of residents (particularly politically powerful ones) may lead to the removal or

¹ Sheridan, “Disordering Public Space: Urban Wildscape Processes in Practice.”

² Jorgensen and Licka, “Anti-Planning, Anti-Design?”

³ Di Palma, *Wasteland*, 3.

⁴ Doron, “The Dead Zone and the Architecture of Transgression.”

⁵ Rupprecht and Byrne, “Informal Urban Green Space: A Typology and Trilingual Systematic Review of Its Role for Urban Residents and Trends in the Literature.”

‘improvement’ of urban wilds, which may deny other groups of residents valued opportunities.⁶ These spaces may not be accepted or deemed safe by the community unless some amount of ‘cues to care’ in the form of maintenance (mowing, trimming vegetation, removing litter) or design are shown.⁷

Additionally, these spaces may be simply inaccessible to some human users, particularly those with disabilities, or if the access points are covered in thick vegetation. Some restriction of human access may be desired in the case of sensitive habitats, but if human access is permitted, it is important to allow all users to have similar experiences. Design can assist in accessibility to urban wild sites.

These spaces may contain ecological challenges due to being heavily affected by humans, and these may need to be addressed. Invasive vegetation may be pushing out other species, causing ecological imbalance. Hydrology may be impacted by surrounding urban development and waterways may be impaired or severely eroded. The soil may be highly toxic or contaminated. All of these situations can be stabilized or brought into balance through the work of landscape architects.

As Chan suggests, it may also be economically impractical to suggest that sites, particularly those with extensive post-industrial ruins, remain as they are. She states, “Commodification of industrial ruins suits contemporary culture and economies. Communities want improvements beyond, not necessarily reminders of, toxic histories. ... In most cities, recreational opportunities are seen as a more immediate need than historical narratives.”⁸ Thus, design has a role to play on urban wild sites, and good design can retain essential wild elements while improving ecological aspects and creating greater public acceptance.

Urban wilds are found in cities around the globe, although few studies have focused on quantifying how much area they cover, and estimates vary along with the definitions used. For

⁶ Ibid.

⁷ Nassauer, “Messy Ecosystems, Orderly Frames.”

⁸ Chan, “What Roles For Ruins?”

example, Bowman and Pagano found in 1998 that US cities contained an average of 15.4% vacant land, but their definition included all unbuilt land such as wetlands, sloped lands, and undeveloped parcels and did not include “derelict land” or brownfields;⁹ thus this is not a good proxy for the percentage of urban wild land in cities. A study of US brownfields in 1998 estimated that between 5% and 10% of urban land was brownfield, with higher percentages in the Northeast and Midwest.¹⁰ However, not all urban wilds meet the strict definition of a brownfield, and not all brownfields are spontaneously vegetated; thus this number is also not a good estimate.

A 2014 study of urban unmaintained green space found that this type covered 6.3% of the area of Brisbane, Australia and 4.8% of Sapporo, Japan¹¹. In the United States, around 9.5% of the land in Somerville, Massachusetts has been calculated to be unmaintained and covered by spontaneous vegetation—a number that exceeds the land area occupied by maintained parks.¹² These numbers are better estimates of the percent cover of this type of urban wild land in cities, but additional studies would allow these numbers to be generalized and clarify regional trends or patterns. In the United States, such sites can be often linked to the process of deindustrialization, with the loss of factories and jobs leading to a decline in the number of residents and proliferation of vacant buildings and empty lots. For example, in postindustrial Detroit, approximately 40% of the land has been abandoned.¹³

The existence and quantity of vacant, spontaneously vegetated land in cities poses both a challenge and an opportunity for landscape architects, as these sites contain particular assets along with very real social, environmental, and economic problems which need to be addressed. In deindustrializing cities, these spaces will likely only become more prevalent in the urban fabric and must be dealt with in a manner that respects the realities of the surrounding community and a

⁹ Bowman and Pagano, *Terra Incognita: Vacant Land and Urban Strategies*.

¹⁰ Simons, “How Many Urban Brownfields Are Out There?”

¹¹ Rupprecht and Byrne, “Informal Urban Green Space: Comparison of Quantity and Characteristics in Brisbane, Australia and Sapporo, Japan.”

¹² Tredici, “The Flora of the Future.”

¹³ *Ibid.*, 2.

small maintenance budget. In growing cities, on the other hand, it may be important to preserve these spaces from development as an alternative to tightly controlled parks and the built realm.

A wide array of terms, each with a slightly different meaning, are currently used in the literature to refer to this type of site. Some of these terms contain important distinctions in meaning within fields of study, but the current proliferation is unnecessary and confusing for those working in and interacting with the topic, as it becomes very difficult to find and keep up with prior and related work. Short of an exhaustive search of terms, work in a variety of related fields goes unrecognized and unexamined. Landscape architects and others would do well to thoroughly examine and use existing terms for this type of site before coining catchy neologisms.

To address this problem, I collected terms for these sites and classified them into three major categories: terms which refer to these sites in a primarily negative manner, terms which refer to the empty or ambiguous nature of these sites, and terms which refer to the nature or ecosystem type which occupy these sites. In chapter two, I discuss these terms and, through a process of elimination, choose terms to use for designed and undesigned urban wilds. I also investigate the literature in terms of the social and ecological benefits and challenges of urban wild sites in general and railroad right of ways in particular.

Creating design solutions which retain and hybridize wild and historic aspects of these sites will allow them to reap the benefits of being designed while also providing more diverse habitats, a space where humans can interact with nonhuman processes, and continuity with site history. To realize this goal, in chapter four, I collect the critical literature on the topic, synthesize it, and use it to categorize a selection of landscape projects, which incorporate varying levels of history, vegetative wildness, and freedom of access and interactivity.

In chapter five, I create a list of design directions I will be taking from the research, go through a process of concept development, and show how I will apply the theory to a test case, a portion of a former railroad right of way. I discuss the design in chapter six and reflect on the process and product in chapter seven.

Chapter 2: Literature Review

Locating Urban Wilds within the Theory of Four Natures

Many attempts at defining nature within landscape architecture have been based on the theory of four natures. This idea has been a presence in landscape theory since Cicero described first and second nature in 45 BCE. In the 1500s, the Italian humanists Taegio and Bonfadio introduced the idea of third nature, according to landscape historian John Dixon Hunt.¹⁴ This theory has been persistent: Dixon Hunt describes how the “visual formulations of the ideas of three natures changed, sometimes radically” in its implementation in the landscape “but its conceptual basis survived intact” throughout the 1700s, 1800s, and early 1900s in garden design (42). Its usefulness as a theory survives to the present day.

In 1991, Ingo Kowarik coined the term “Natur der Vierten Art,” or “nature of the fourth kind”, adding to the typology. Kowarik, an urban ecologist from Berlin, has inherited a long tradition of research on wild urban sites. After WWII, German botanists studied bombed-out rubble sites in Berlin and other cities. While they did not consider themselves “urban ecologists,” they were the first to “systematically extend the practice of ecological fieldwork to the urban environment”.¹⁵ Thus, Kowarik was uniquely situated to combine the existing landscape theory of three natures with his awareness of a new kind of nature.

The theory of four natures, while not scientific, corresponds well with novel ecosystem theory in ecology. In 2009, Hobbs described ecosystems as being *historical*, *hybrid*, or *novel*.¹⁶ The historic state of an ecosystem corresponds with first nature. A novel ecosystem corresponds with fourth nature. Hobbs also includes another category with “hybrid” or “impacted” ecosystems which exist between first and fourth nature. Recently, several ecologists proposed an additional category of *designed* ecosystem to the typology, which corresponds with second and third

¹⁴ Hunt, *Greater Perfections*.

¹⁵ Lachmund, “Exploring the City of Rubble.”

¹⁶ Hobbs, Higgs, and Harris, “Novel Ecosystems.”

nature.¹⁷ While the debate in the field of ecology is ongoing and ecologists are attempting to more clearly define these categories, the recognition of a type of unique ‘fourth nature’ exists across disciplinary boundaries. This thesis will investigate one type of ‘fourth nature’ or urban wasteland, a disused railroad right of way.

Table 1: Natures Enumerated

First Nature	The “original” nature, which includes pristine ecosystems and remnants thereof. Some define first nature strictly as wilderness, and others argue that because of global human impacts, it no longer exists ¹⁸ .
Second Nature	The cultivated landscape of traditional or modern agriculture or forestry practices (meadows, pastures, crop fields, hedgerows, coppices, etc.). Some ecologists include green infrastructure such as rain gardens or bioretention. ¹⁹
Third Nature	The garden or park, containing an idealized version of first and second nature and maintained by humans. It includes street trees and other trees and vegetation planted to define and beautify spaces.
Fourth Nature	Wild first nature (ruderal or spontaneous plants) colonizing and re-inhabiting abandoned cultural landscapes including buildings. It occurs without horticultural planning, design, or maintenance by humans.

It is important to remember that while categorization can promote understanding, in reality there is a “sliding scale of cultural intervention in the natural world” (63)²⁰. The Swedish historian of technology Arne Kaijser responded to William Cronon’s ideas of first and second nature by suggesting that “the idea of ‘second nature’ may not go far enough... since human constructs of nature are multilayered and based on generations and generations of people interacting with nature.”²¹ Categorizations have both drawbacks and advantages, and it is important to remember that they are an imperfect representation of a complicated reality.

¹⁷ Morse et al., “Novel Ecosystems in the Anthropocene.”

¹⁸ Jorgensen and Tylecote, “Ambivalent Landscapes.”

¹⁹ Higgs, “Novel and Designed Ecosystems.”

²⁰ Hunt, *Greater Perfections*.

²¹ Williams, “Understanding the Place of Humans in Nature.”

Kowarik suggests that, while the theory of four natures is not scientific, this method of categorization is beneficial. He states that it “reduces the existing diversity of very different, culturally varying forms of nature that are found within the impact area of cities down to four types and thereby emphasizes their respective ‘characters.’” This allows the general public and local stakeholders, who are most likely not well-versed in science, to understand the concepts. Without this knowledge, the public may misunderstand these urban spaces, “not realize their “significant qualitative differences,” and make poor decisions based on preconceived notions.²²

In the United States, preconceived notions are likely to fall in line with a long tradition of dualistic thinking about nature and wilderness. Often, wilderness is glorified as “the natural, unfallen antithesis of an unnatural civilization that has lost its soul,”²³ and areas touched by humans (particularly urban areas) are not considered to be a part of nature. As William Cronon puts it, “Idealizing a distant wilderness too often means not idealizing the environment in which we actually live, the landscape that for better or worse we call home.” Our cultural training often leads us to overlook the value of urban landscapes.

Kowarik addresses this tension, “almost universally felt by anyone working in natural systems, regarding whether and how humans fit into our definitions of ‘natural’ areas.”²⁴ He makes a case for these types of sites, stating that a second goal with the four natures approach is to “convey, through a simple distinction, that a fundamental equivalence of values exists among the four different nature types.” Hunt concurs, emphasizing that the theory doesn’t privilege any one nature over the others (35).²⁵ This allows landscapes that may have not been previously valued to be recognized as valuable.²⁶ Urban wilds act as natural areas for large numbers of people and are home to many species. Can the value of the fourth nature on these sites be better communicated? If so, this might be an answer to Cronon’s question, “How can we take the

²² Kowarik, Ingo, “Wild Urban Woodlands: Towards a Conceptual Framework.”

²³ Cronon, “The Trouble with Wilderness; or, Getting Back to the Wrong Nature.”

²⁴ Riemann, “Ingo Kowarik and Stefan Körner (Eds), Wild Urban Woodlands.”

²⁵ Hunt, *Greater Perfections*.

²⁶ Kowarik, Ingo, “Wild Urban Woodlands: Towards a Conceptual Framework.”

positive values we associate with wilderness and bring them closer to home?” Through the design process, this thesis intends to bring the positive aspects of a smaller scale *wildness* to urban areas.

Types of Urban Wild

Urban wastelands or ‘fourth nature’ sites come in many shapes and sizes. Urban ecologists study the widest array of sites, including cracks, walls, gaps, and microsites. Within the fields of landscape architecture, planning, architecture, and geography, practitioners focus on urban wilds large enough to be experienced as spaces or places by humans, such as vacant lots or brownfields.

There have been several attempts to create a typology of liminal green spaces in cities. Peter Del Tredici, a botanist, discusses a list of ‘new infrastructural taxonomies’, or distinctive habitats of spontaneous vegetation in urban areas including the chain-link fence, vacant lots, median strips, stone walls, pavement cracks, specialized microclimates, and rail and river corridors²⁷. Rupprecht and Byrne generalize this list in their typology of “ambiguous, liminal vegetated spaces,”²⁸. Each of the following types has a characteristic size, shape, and substrate.



Street Edges and Medians: These are vegetated areas on the edges of roads and highways. They are maintained regularly to prevent high and dense vegetation growth aside from street trees, are small and linear in size, and have a substrate of soil, gravel, stone, concrete, or asphalt.

Figure 2: Street Edges and Medians.
Author.

²⁷ Tredici, “The Flora of the Future.”

²⁸ Rupprecht and Byrne, “Informal Urban Green-Space.”



Vacant Lots: These were formerly used for residential or commercial purposes and may contain derelict structures. Vegetation removal is irregular at medium to long intervals and they are small or medium in size with a substrate of soil, gravel, or bricks.



Gaps: These exist as vegetated areas between two walls or fences. Vegetation removal is irregular and variable and they are small and linear with a substrate of soil or gravel.



Railway Infrastructure: Includes tracks, vegetated edges, stations, and rail yards. Tracks are herbicided to prevent vegetation growth, but vegetation further from tracks is less frequently maintained. Substrates are soil, gravel, or stone.



Brownfields: Brownfields include landfills, abandoned factories, and closed industrial parks formerly used for industrial or commercial purposes but not currently in use. Vegetation removal is absent or infrequent and they are medium to large with a substrate of soil, gravel, concrete, or asphalt.

Figure 3: Vacant Lots, Gaps, Railway Infrastructure, and Brownfields. Author.



Waterways: These are vegetated areas adjacent to or within water infrastructures, either natural or channelized. Irregular vegetation removal improves flood protection or structures. They have a substrate of soil, stone, concrete, or bricks.



Structural Sites: Includes overgrown structures such as walls, fences, roofs, and buildings. Vegetation can be removed irregularly to maintain structural integrity or not at all. Substrates can be soil, stone, gravel, wood, concrete, or metal.



Microsites: This category includes vegetation in small cracks and holes, particularly on otherwise paved or impervious surfaces. Management varies. These sites are very small and substrates include soil, stone, and concrete.



Power Line Rights of Way: This category includes vegetated corridors running under power lines. Vegetation is managed regularly in a central corridor to prevent high growth while vegetation on the edges of the corridor is maintained rarely or not at all. Substrates are soil.

Figure 4: Waterways, Structural Sites, Microsites, and Power Line Rights of Way. Author.

An Urban Wild by Any Other Name?

There are a myriad of terms used to refer to liminal, spontaneously-vegetated urban sites within cities because the concepts are relatively new and span the fields of ecology, landscape architecture, planning, urban geography, and architecture. I discuss and untangle these terms, each of which has a slightly different connotation and history of use. As my thesis site, an abandoned railroad right-of-way, is one type of urban wild, this has allowed me to choose the best term to discuss its place in the urban matrix.

I generated the list in this section by first keeping notes on which terms I encountered and their sources in order to better search through the literature. Once I had discovered a significant number, I realized that it would be helpful to undertake a concerted effort to find as many as possible. I found additional terms by investigating citations and earlier sources, by searching the web, and through broad reading on the topic in books and articles. As I was assembling this list, I began to realize that all but two of the terms can be sorted into three categories.

These three categories include spaces defined by their emptiness or ambiguity, spaces defined negatively, and spaces defined by the occupying nature or ecosystem type. A subcategory of the latter is ‘natures enumerated’, which, unlike the other terms, are not a simple attempt to name these spaces but are part of a larger theoretical attempt to categorize nature within landscapes and will be discussed in greater detail later in this chapter. See the following concept maps for a categorization of terms and the fields in which they are commonly used.

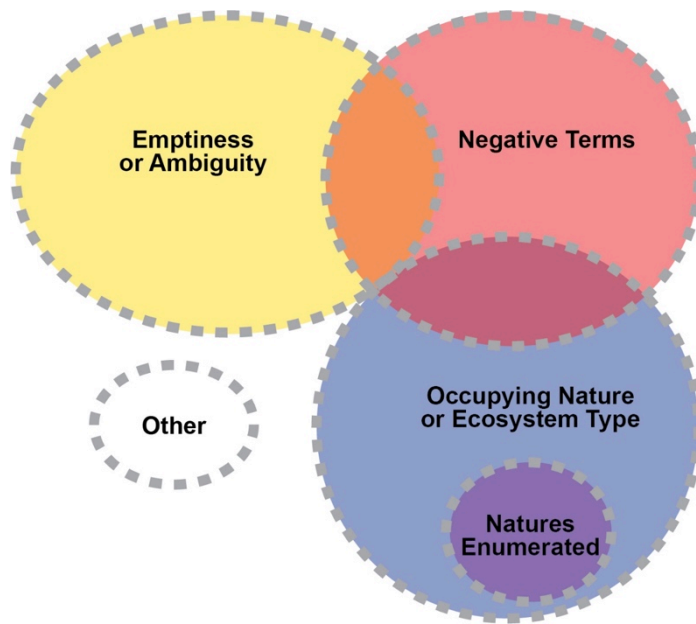


Figure 5: Concept Map Bubble Diagram



Figure 6: Detailed Concept Map of Terms

Negative Terms

Wasteland, a term which first originated in English in the thirteenth century, is the best known of the negative terms. While originally the term denoted a barren or unproductive natural landscape, such as a desert, it is now often applied to these types of urban sites that have been heavily affected by human activity. In both cases, according to Di Palma, “wasteland is a landscape that resists notions of appropriate use.”²⁹ Other negative terms include *dead space*,³⁰ *derelict landscapes*,³¹ *dead zones*,³² *superfluous landscapes*,³³ *disturbed space*, and *TOADS* (temporarily obsolete, abandoned, or derelict sites).³⁴ Terms that overlap the empty or ambiguous category include *lost space*³⁵ and *vacant land*.³⁶ These terms are typically older than those in the other two categories and were particularly used in the 1980s and 90s in the fields of architecture, planning, and urban geography to discuss the phenomenon of the “dying inner city” and corresponding ‘wasted’ space. Coleman wrote *Dead Space in the Dying Inner City* in 1982; *Derelict Landscapes: the Wasting of America’s Built Environment* was published in 1992; and Trancik’s 1989 problem of *lost space* addresses the question of how to regain a public realm in “our shattered cities.”³⁷ The most recent work coining a term in this category is Nielsen’s highly theoretical 2002 discussion of *superfluous landscapes*. In his 2015 thesis, Stuart Chan points out that these terms can be considered modernist as opposed to the terms in the next category, which are postmodern. The modernist approach claims a right and wrong way of intervening on a site, while postmodern terms “favor an iterative and inclusive process, which gathers a deep reading of the context” of a site, including historical, cultural, and political sentiments.³⁸

²⁹ Di Palma, *Wasteland*.

³⁰ Coleman, “Dead Space in the Dying Inner City.”

³¹ Jakle and Wilson, *Derelict Landscapes*.

³² Doron, “The Dead Zone and the Architecture of Transgression.”

³³ Nielsen, “The Return of the Excessive Superfluous Landscapes.”

³⁴ Bowman and Pagano, *Terra Incognita: Vacant Land and Urban Strategies*.

³⁵ Trancik, *Finding Lost Space*.

³⁶ Bowman and Pagano, *Terra Incognita: Vacant Land and Urban Strategies*.

³⁷ Trancik, *Finding Lost Space*.

³⁸ Chan, “Dilemmas and Delights of Designing with Terrain Vague and Postmodern Concepts,” 85–86.

Doron suggested that while these terms had been popular in planning and architecture discourse, “there has been little genuine examination of these places; the consequences of labeling these places with the terms above are usually concealed” and asks whether these terms adequately describe these places. I would argue that they do not. This category of terms emphasizes the “unproductive” and “useless” nature of these sites, but as we will see later, these sites are actually often quite productive in terms of plant biomass, animal habitats, ecosystem services, and serve diverse human social needs.

Empty or Ambiguous Terms

A second category of terms defines these spaces by their *in-betweenness*, what they lack, or by previous (but not current) uses. These terms include *edgeland*, *interim space* and *interstitial landscape*;³⁹ *urban void*;⁴⁰ *post-industrial*;⁴¹ *accidental landscape*;⁴² *loose space*;⁴³ *vague site*;⁴⁴ *no-analog community*;⁴⁵ and *indeterminate space*.⁴⁶ *Terrain vague* is the most well-known term in this group and was used by Ignasi de Solà-Morales in his formative 1995 essay of the same name.⁴⁷ Morales writes that, “It is impossible to capture in a single English word or phrase the meaning of *terrain vague*.” He states that *terrain* connotes a more urban quality than the English *land*, and that in French, *vague* has the triple meaning of “wave,” “vacant,” and “vague.” Because *terrain vague* contains within it a “multitude of possible connotations,” the argument goes that it is well suited “as a collective term for various types of leftover land.”⁴⁸ Be that as it may, it is unlikely that most English readers will pick up on the subtlety in the French meanings of the

³⁹ Gandy, “Marginalia.”

⁴⁰ Armstrong, “Time, Dereliction, and Beauty.”

⁴¹ Touraine, *The Post-Industrial Society*;

⁴² Millington, “From Urban Scar to ‘Park in the Sky.’”

⁴³ Franck and Stevens, *Loose Space*.

⁴⁴ Kullmann, “The Usefulness of Uselessness.”

⁴⁵ Williams and Jackson, “Novel Climates, No-Analog Communities, and Ecological Surprises.”

⁴⁶ Groth and Corijn, “Reclaiming Urbanity.”

⁴⁷ de Solà-Morales, “Terrain Vague.”

⁴⁸ Barron and Mariani, *Terrain Vague*, 6.

words and defining these spaces as vacant or vague again discounts the life and activity that they currently support.

These sites are real physical locations, actual landscapes to be seen, heard, smelled, and felt. Conceptualizing these spaces as empty and containing nothing of current value may in fact lead the way to their clearing and destruction. Additionally, there is evidence that their conceptualization as marginal or transitory spaces in urban planning discourse may be the source of their liminal quality. To both animal residents of these sites and human residents of nearby areas, these spaces are not empty and in fact contain qualities missing in managed, functional landscapes. It would be a mistake to define these spaces only as gaps in an otherwise complete urban fabric.

Ecological or Nature-Based Terms

A third category defines spaces by the occupying nature or ecosystem type. These terms derive mainly from the fields of ecology and landscape architecture and include *novel ecosystem*,⁴⁹ *ruderal site*,⁵⁰ *emerging ecosystem*,⁵¹ *urban wild*,⁵² *wildscape*,⁵³ *freakology*,⁵⁴ *degraded ecosystem*,⁵⁵ *informal urban green space*,⁵⁶ *fourth nature*,⁵⁷ *second nature*,⁵⁸ and *third landscape*.⁵⁹ *Degraded ecosystem* is a negative term and as such, can be removed from consideration. The author who coined the term *freakology* attempts to put a positive spin on the impaired Los Angeles river by pointing out that, “if freakish, the river is a living ecology... this is

⁴⁹ Hobbs, Higgs, and Harris, “Novel Ecosystems.”

⁵⁰ Lachmund, “Exploring the City of Rubble.”

⁵¹ Milton, “‘Emerging Ecosystems’ -- a Washing-Stone for Ecologists, Economists and Sociologists?”

⁵² “Urban Wilds Initiative | Boston.Gov.”

⁵³ Jorgensen and Keenan, *Urban Wildscapes*.

⁵⁴ Fletcher, “Flood Control Freakology: Los Angeles River Watershed.”

⁵⁵ Mascaro et al., “Origins of the Novel Ecosystems Concept.”

⁵⁶ Rupprecht and Byrne, “Informal Urban Green Space: Comparison of Quantity and Characteristics in Brisbane, Australia and Sapporo, Japan.”

⁵⁷ Kowarik, “Unkraut Oder Urwald?”

⁵⁸ Geuze, “Topos.”

⁵⁹ Clement, *“The Planetary Garden” and Other Writings*.

an infrastructural ecology, opportunistic and emergent, that lives off human excess”.⁶⁰ This attempt to put a positive spin on this new ecology while reclaiming the word *freak* is likely to be misunderstood by those simply reading the term, and as it is only used by one author in one essay, will be removed from consideration as well.

The most common term in this group, *novel ecosystem*,⁶¹ comes from ecology and refers to an ecosystem existing in a highly-altered state. To be called a novel ecosystem, a community of vegetation must meet specific and technical criteria which are currently being debated. The value and validity of the concept itself is also under debate. In any case, this definition is too technical and precise to be used as a general term for these spaces.

Ruderal site and *emerging ecosystem* are two more ecological terms that are used much less frequently and are not common outside of ecology. *Emerging ecosystem* was an early synonym for *novel ecosystem*; the latter term appears to have won out. *Ruderal site* comes from the Latin *rudus*, for rubble. A ruderal plant is one that is early to colonize disturbed lands, and a ruderal site is a disturbed site containing ruderal vegetation.

Fourth nature, *second nature*, and *third landscape* are also not poor terms, but they are not evocative by themselves of any type of landscape. Out of the context of the theory of natures enumerated, they immediately provoke the questions, ‘are there other numerical natures? What do they mean?’ Rupprecht and Byrne attempted to solve the nomenclature dilemma by coining the term “informal urban greenspace,” or IGS for short.⁶² While this suits their academic audience, it is an unwieldy term that requires the consistent use of an acronym and again, does not describe the spaces in a concise, evocative manner.

Urban wilds and *wildscapes* are two terms that are not negative, define the space by what is there, are evocative, are not technical, and are relatively clear upon first encounter. In addition,

⁶⁰ Fletcher, “Flood Control Freakology: Los Angeles River Watershed.”

⁶¹ Hobbs, Higgs, and Harris, “Novel Ecosystems.”

⁶² Rupprecht and Byrne, “Informal Urban Green Space: Comparison of Quantity and Characteristics in Brisbane, Australia and Sapporo, Japan.”

the use of the term *wild* makes it clear that these spaces are not under direct human control while sidestepping the American preoccupation with *wildernesses* that are “untouched by humans.” The term also addresses the issue wherein wildernesses are presumed to be large, as *wild* spaces can exist at almost any scale.

The term *urban wild* is in use in the United States, particularly in the city of Boston as an identifier of wild sites located within the urban matrix. The term originated in 1976 with a report titled *Boston's Urban Wilds: A Natural Area Conservation Program*; the program is now called the *Boston Urban Wilds Initiative*.⁶³ While the city website describes these sites as remnant habitats, in actuality they include former landfills, quarries, dumping grounds, and brownfields.⁶⁴ According to Jill Desimini, landscape architect at Harvard University, the definition of an urban wild has changed over time. She says, “‘Urban wilds are not parks or wilderness,’ but something in between. Urban wilds are ‘unorganized scraps of nature,’ celebrated for their ‘indigenous qualities,’” a “living story of urban ecology and abandonment.”⁶⁵

The term *Urban wildscapes* has much shorter history of use in Europe, particularly as the title of Jorgensen and Keenan’s 2011 collection of essays, *Urban Wildscapes*.⁶⁶ The term originated from a conference at Sheffield University in 2007.⁶⁷ In the United States, the term *wildscape* can be confused with a landscaping practice intended to benefit wildlife or a site containing this sort of landscaping. While neither *urban wild* or *urban wildscape* are perfect terms and both can be confused with other types of urban spaces or practices, I have chosen *urban wild* to use in this thesis for existing urban space with a history of human alteration, disturbed soils, and a cover of spontaneous vegetation.

⁶³ “Urban Wilds Initiative | Boston.Gov.”

⁶⁴ Ibid.

⁶⁵ Green, “Boston’s Evolving Urban Wilds.”

⁶⁶ Jorgensen and Keenan, *Urban Wildscapes*.

⁶⁷ Ibid.

Naming the Designed Urban Wild

To my knowledge, there has been little work on developing a nomenclature of designed urban wilds, perhaps not surprisingly due to the lack of consensus on a name for the phenomenon in general and a lack of research on how design acts on these sites. Jill Desimini has proposed two new additions to the theory of natures enumerated: fifth and sixth nature, which consist of fourth nature hybridized with different types of human use.⁶⁸ Heatherington explores intervention strategies on urban wilds in terms of narratives, with categories named “symbols: narrative,” “process as framework,” and “extended relationships: intertextuality.”⁶⁹ Two ecologists have suggested four “conservation actions of the Anthropocene,”⁷⁰ which reinforce Desimini’s additions, for example “Novel + designed + conservation.” I will discuss these concepts in detail in chapter four, but first I will choose a term to refer to the category of designed urban wilds as a whole.

While *designed urban wilds* is clear, is there a better term? The terms listed in the previous paragraph refer to individual categories of designed urban wilds, and they suffer from the same problems as the terms discussed previously— they are vague and not evocative of the physical sites. I propose the term *urban wildscape*, which clearly shares a root with *urban wild*, plus the addition of *scape*, with its connotation of human action. I define an urban wildscape as a landscape that was once an urban wild that has been intentionally altered by human design and retains essential historic and wild characteristics.

Social Value and Challenges of Urban Wilds

Urban wilds serve many important social functions. Unlike most other urban public space, urban wild spaces are non-prescriptive. People are free to do as they choose, and these

⁶⁸ Desimini, Jill, “Notions of Nature and a Model for Managed Urban Wilds.”

⁶⁹ Heatherington, “Buried Narratives.”

⁷⁰ Kueffer and Kaiser-Bunbury, “Reconciling Conflicting Perspectives for Biodiversity Conservation in the Anthropocene.”

spaces fill a multiplicity of roles for different people. Because there are few or no rules or social conventions about what is acceptable in these spaces, people become active contributors to the landscape and are engaged in ways that would not be possible in other types of landscapes.

Urban wilds provide recreational value, improve daily life by adding urban green space, and can also provide emotional and mental health benefits, as shown by many new studies on the value of green spaces in general. Because they are unregimented and contain wild aspects, these spaces may also be able to offer the possibility of a psychological transition, or a liminal experience that may be otherwise difficult to find in a highly-regimented urban space.⁷¹



Figure 7: Guerilla art near abandoned Glen Echo trolley right of way, Washington D.C. Author.

Urban wilds can be particularly important as play spaces for children, as they provide a chance for discovery and the challenge of ‘secret nature.’ Children have their own needs, seem to accept and use urban wilds willingly, and may perceive their environment differently from adults.⁷² Other under-represented groups are also mentioned as frequent users of these spaces, including minorities, migrants, and homeless people.⁷³ While many people use urban wilds, the fact that many frequent visitors have limited or no political power means that their voices will not be taken into account in designing or changing these spaces.

⁷¹ Jorgensen and Tylecote, “Ambivalent Landscapes,” 456.

⁷² Rupprecht and Byrne, “Informal Urban Green Space: A Typology and Trilingual Systematic Review of Its Role for Urban Residents and Trends in the Literature.”

⁷³ Ibid.

Aesthetic or romantic engagements with urban wastelands may universalize these spaces and “ignore the sorts of violence that they signify for communities often forced to live in their shadows”.⁷⁴ Millington suggests that, “by focusing on urban wastelands as sites of spontaneity and possibility, there is the potential to ignore the communities who lack the resources to find solace in the accidental landscapes that surround them”.⁷⁵ Context matters, as does class, culture, geography, and gender. There are deep cultural ties between fears of ecological unruliness and violent crime in urban parks, which need to be taken into account when studying these spaces. “Urban abandonment can be liberatory and subversive, but it can also be repressive, tangling together expressive weeds with violence, neglect, and declining safety”.⁷⁶ For working class people, these disused spaces may be seen in terms of their possible or previous economic productivity, daily reminders of livelihoods which may have disappeared.

The needs and fears of the surrounding community thus must be taken into account when designing an urban wild. As Renee de Wall and Arjen de Wit suggest,

[Urban wild space] is most valuable when it is a contrast to neater, safer, and more structured surroundings. Urban wild[s] are a relief in the dense network of civilization, which makes them— on a small scale— acceptable and exciting. On a regional scale, however, the case of Lusatia demonstrates that it is unacceptable for a regional landscape to be unsafe and without use or economic value.⁷⁷

A hard-hit community full of vacant lots may appreciate a highly-designed park with high maintenance levels signifying care, while a tightly regimented urban or suburban area may need more loose space in which residents can experience complexity and escape the “bland, sanitized landscapes that are now the mainstay of so much urban development”.⁷⁸ While the thesis site is located in a neighborhood which was formerly working-class, it is now gentrifying rapidly and is surrounded by a densely developed matrix of small homes and duplexes, and by new townhome development in the site of the former rail yard across Rt. 1. This site is one of the

⁷⁴ Millington, “From Urban Scar to ‘Park in the Sky.’”

⁷⁵ Ibid.

⁷⁶ Ibid.

⁷⁷ de Waal and de Wit, “Brown Coal, Blue Paradise.”

⁷⁸ Jorgensen and Tylecote, “Ambivalent Landscapes.”

few wild spaces remaining from the former industrial use of this area and is well-suited for a hybrid urban wild park.

People's relationship with urban wilds is complex and sometimes contradictory.

Spontaneous vegetation or overgrown infrastructure can be seen to be an empowering marker of a resilient ecology or it can be seen as ugly, a marker of decay and decline, and in need of 'cleaning up'. Additionally, the very freedom that allows some groups flexibility can prevent other groups from using an area because of fears of drugs and criminal activity.⁷⁹

Ecological Value and Challenges of Urban Wilds

Urban wilds are often considered to have negative economic and social value, but they provide many ecosystem services. For example, brownfield land in Great Britain is estimated to support 12-15% of nationally scarce and rare invertebrates.⁸⁰ A review paper found that research on this topic has focused on three main areas: conservation value, biodiversity, and non-native species.

In terms of conservation value, researchers reported high numbers of species, sometimes including rare species.⁸¹ Spontaneously vegetated sites showed higher levels of habitat provision as compared to lawn and remnant forests for plant species and invertebrate diversity. The volume of invertebrates caught at spontaneously vegetated sites in one study was higher than in remnant forest and lawns combined. Spontaneously vegetated sites also have the potential to provide equivalent microclimate regulation through reflection and evapotranspirative cooling as lawns and remnant forests.⁸²

A wide variety of factors were found to influence biodiversity. Spontaneously vegetated sites may support higher trophic organisms due to a diversity of plant species, lack of

⁷⁹ Ibid.

⁸⁰ Robinson and Lundholm, "Ecosystem Services Provided by Urban Spontaneous Vegetation."

⁸¹ Rupprecht et al., "Informal Urban Green Space: A Trilingual Systematic Review of Its Role for Biodiversity and Trends in the Literature."

⁸² Robinson and Lundholm, "Ecosystem Services Provided by Urban Spontaneous Vegetation."

maintenance, and greater light availability.⁸³ In particular, frequent maintenance (mowing or spraying) reduces vegetation structure and complexity, reducing the amount of food and shelter a site can provide.⁸⁴ However, some species, including rare species, depend on that management. Optimal disturbance return intervals of 3-7 years,⁸⁵ 10-15 years,⁸⁶ and 4-13 years⁸⁷ were suggested in order to maximize habitat and floristic diversity; however habitat diversity should not be used alone as a goal.

Many researchers reported high numbers of non-native species. Some reported that invasive species were dominant, while others found little evidence for competition. Naturalized species may increase urban biodiversity and provide ecosystem services, and may also be used to trace historical patterns of species introduction.⁸⁸ One study found that the cover of native species varied from 20% to 60% on spontaneously vegetated sites, compared to lawns at 20%. While most of the common plant species were not native and the value of spontaneous sites as habitat for plant conservation is uncertain, the authors suggest that they may still represent important habitat for these native species.⁸⁹

One strategy for creating a highly diverse site may be to seed native species into the site after disturbance (mowing/cutting). Native grasses have been successfully reintroduced into urban wilds by seeding with and without mycorrhizal inoculation. Addition of native species to sites can result in novel urban meadows where ruderal species and rare grassland species can coexist.⁹⁰

⁸³ Ibid.

⁸⁴ Rupprecht et al., "Informal Urban Green Space: A Trilingual Systematic Review of Its Role for Biodiversity and Trends in the Literature."

⁸⁵ Schadek et al., "Plant Species Richness, Vegetation Structure and Soil Resources of Urban Brownfield Sites Linked to Successional Age."

⁸⁶ Kattwinkel et al., "Modelling Multi-Species Response to Landscape Dynamics."

⁸⁷ Muratet et al., "The Role of Urban Structures in the Distribution of Wasteland Flora."

⁸⁸ Rupprecht et al., "Informal Urban Green Space: A Trilingual Systematic Review of Its Role for Biodiversity and Trends in the Literature."

⁸⁹ Robinson and Lundholm, "Ecosystem Services Provided by Urban Spontaneous Vegetation."

⁹⁰ Fischer et al., "Creating Novel Urban Grasslands by Reintroducing Native Species in Wasteland Vegetation."

Ecological Value and Challenges of Railway Rights-of-Way

The ecological value and challenges associated with rail rights-of-way are slightly different from those of urban wilds as a whole. Because of their narrow, linear nature, these spaces are entirely edge habitat, with no interior. They are subject to sunlight penetration throughout the site, drying winds from the side, and urban sites are subject to the urban heat island effect. Conditions on these sites are very challenging for many species.

Rail rights-of-way appear to act as ecological corridors and habitat conduits for many species including coyotes, foxes, and other mammals, reptiles, and amphibians, and non-native plant species⁹¹. However, due to the fact that the thesis site is disconnected from the rest of the right-of-way, it functions more as an isolated patch than a connecting corridor.

Cross sections of urban rail corridors provide heterogeneous habitats including outer fences, walls, or banks lined with woody plants, open flattish strips, ditches, sloped rail beds, and nutrient-poor top surfaces⁹². This varied topography can attract various species, for example, the open sun may be used for basking by reptiles, slopes may attract tunneling animals, and hedgerow wildlife may use the outer corridor. However, this heterogeneity may also act as a filter or barrier for urban wildlife attempting to cross the corridor.⁹³

On operating railway tracks, air turbulence, intensive use of herbicide, and mowing cause uniformity in the structure of the vegetation. Annual plants which quickly complete their life cycle when conditions are favorable (therophytes) and alien species dominate⁹⁴. Colonization of plants increases after abandonment of tracks, although only a limited number can successfully naturalize due to harsh conditions. This process of colonization depends on the accessibility of

⁹¹ Forman, *Urban Ecology*; Wilkomirski et al., "Railway Tracks - Habitat Conditions, Contamination, Floristic Settlement - A Review."

⁹² Forman, *Urban Ecology*.

⁹³ Ibid., 278.

⁹⁴ Galera et al., "Encroachment of Forest Species into Operating and Abandoned Railway Areas in North-Eastern Poland."

seeds or spores from the surrounding environment and on the shade factor on the tracks⁹⁵. On the thesis site, adjacent backyards provide a source for many species, including invasive species, to colonize the site. This source may prove to be an important maintenance challenge.

Soil acidity affects plant growth on railway tracks. Due to their construction, railway track basements initially have similar chemistry. Over time, pH remains relatively unchanged while other chemical features become more differentiated. In a study in Poland, railway tracks were found to be uniformly alkaline with a relatively small variation in pH (7.37 to 8.00). Surrounding areas contained soil with pH varying from 4.65 to 7.80.⁹⁶ These results were similar to those found in a study of inactive railway yards on the Island of Montreal, which found a mean soil pH of 7.2 to 8.3 for three rail yards. Another study on brownfields also found alkalescent conditions in old railyards⁹⁷. High pH values are a result of slag and ash fill in railway yards and can also be caused by concrete and mortar structures or rubble.⁹⁸

Railway sites are often contaminated with organic and inorganic contaminants. There are three main categories of pollutant: PAHs, heavy metals, and PCBs. PAHs are used in machine grease, fuel and transformer oils, and particularly in creosote. Creosote is a mixture of over 200 compounds used as a preservative on railway ties; it can contain over 30 different PAHs with a possible total PAH content of 85% by weight.⁹⁹ Creosote migrates from the railway ties into the soil. The chemical is persistent: elevated levels were found in the oil from olive trees growing near a pile of old ties, and PAH levels remained elevated in a study of ten railway tracks which had been abandoned for at least ten years.¹⁰⁰

⁹⁵ Wilkomirski et al., "Railway Tracks - Habitat Conditions, Contamination, Floristic Settlement - A Review."

⁹⁶ Galera et al., "Encroachment of Forest Species into Operating and Abandoned Railway Areas in North-Eastern Poland."

⁹⁷ Schadek et al., "Plant Species Richness, Vegetation Structure and Soil Resources of Urban Brownfield Sites Linked to Successional Age."

⁹⁸ Murray, Ge, and Hendershot, "Evaluating Three Trace Metal Contaminated Sites."

⁹⁹ Wilkomirski et al., "Railway Tracks - Habitat Conditions, Contamination, Floristic Settlement - A Review."

¹⁰⁰ Ibid.

Heavy metal pollution derives from “fuel combustion, construction material abrasion and cargo leakage, as well as from tracks, wheels, brakes, and the overhead traction lines”¹⁰¹. Several studies have investigated heavy metals associated with railroad tracks and have found enrichments in the soil closest to the tracks, with concentrations decreasing with distance. Contamination levels were higher at cleaning bays and sidings.

PCBs were widely used as “lubricants, fire-resistant dielectric fluids in transformers and capacitors, and heat-transfer fluids” until the mid-1970s.¹⁰² They bioaccumulate in living organisms and can be a serious threat to natural environments. If soil is polluted and contains high amounts of oil derivatives, PCBs are adsorbed (create a thin film on the surface.) If soil is unpolluted, PCBs can migrate into the soil.

¹⁰¹ Ibid.

¹⁰² Ibid.

Chapter 3: Site Analysis

Context: The W&OD Railroad and Historic Transportation Networks

The earliest descriptions and maps of the area surrounding the thesis site show it to be a nexus of transportation routes. The nearby town of Alexandria (incorporated 1779) was established as a tobacco trading post in its current location because of the depth of the Potomac River. The Washington Turnpike (now Rt. 1) bordering the site to the east was constructed in 1809; the Alexandria Canal just across the Washington Turnpike was completed in 1843; and the Washington, Alexandria, and Mt. Vernon electric trolley bordering the site to the northwest was completed in 1896.

The Washington and Old Dominion railroad was developed because northern Virginians wanted a share of the lucrative business that the rival port of Baltimore had acquired when the B&O railroad was extended into the Ohio River Valley. The original intention was to drill a tunnel almost three-quarters of a mile long west through the mountains at Bluemont, Virginia but due to a strategic acquisition by a competing line, this goal was never achieved.¹⁰³

Railroad construction began Feb 25, 1855 on the farm of Lewis Bailey, approximately five miles from the town of Alexandria, Virginia. The right-of-way was 100 feet wide. Ties were eight feet long, made of white oak, and numbered 2,700 to the mile. The section to link with the terminal in Alexandria was not yet funded, as filling, trestlework, and bridges were needed to span the Alexandria Canal, the Washington Turnpike (now Route 1), and swampland.¹⁰⁴ By 1858, grading was completed to Leesburg and the depot in Alexandria was completed. In the civil war (1861-65), Confederate soldiers tore up the rails, heated them, and wrapped them around trees to prevent the use of the railway by Union forces.¹⁰⁵

¹⁰³ Williams, "The Washington and Old Dominion Railroad."

¹⁰⁴ Ibid.

¹⁰⁵ Burns, "History of the Washington and Old Dominion."



Figure 8: Potomac Yards, 1916. Photo likely taken from the W&OD trestle. Rt. 1 on the left, looking north. Source: Library of Congress.



Figure 9: The W&OD trestle with the St. Asaph waiting shed at Potomac Yards, 1957. Rt. 1 to the left, looking north. Fairfax County Public Library.

The railroad changed names and ownership multiple times (From Alexandria and Harper's Ferry to Alexandria, Loudoun, and Hampshire in 1855; Washington and Ohio in 1870; Washington, Ohio, and Western in 1880; Washington and Old Dominion in 1912). The early history of the railroad, "like that of most of its contemporaries, is a monotonous series of financial crises" and funding schemes.¹⁰⁶



Figure 10: Mail distribution at Bluemont Jct., 1937. Fairfax County Public Library.

The W&OD had four stops in what is now Alexandria: a terminal, Potomac Yards, Alexandria Junction, and St. Elmo. The Alexandria Junction and St. Elmo stops were located on the thesis site and served the neighboring communities of Del Ray and St. Elmo. The St. Elmo stop allowed passengers on the W.A. & Mount Vernon Electric Trolley

line, which ran along what is now Commonwealth Ave, to transfer to the W&OD.

At its peak, the railway was 72 miles long and moved passengers, freight, milk, and mail. Tourists flocked to Carlin Springs, which had a dancing pavilion and an ice cream parlor, and the summer hotels and boardinghouses of Bluemont. Hunters and fishermen used the train to reach the rural areas of Loudoun County. While passenger revenue reached its peak in 1919 and subsequently declined each year, freight revenue generally increased. By 1939, the segment of track between Purcellville and Bluemont was abandoned, as passenger business had declined, apples were now transported by truck, and the flour mill at Round Hill had closed down. Passenger and mail service ended in 1951. The construction of Dulles Airport in 1957 provided an uptick in freight traffic and in 1959, operating revenues reached an all-time high.

¹⁰⁶ Williams, "The Washington and Old Dominion Railroad."

However, in 1962, the Interstate Commerce Commission and the Virginia Department of Highways forced the abandonment of the Rosslyn branch of the railroad in favor of Highway 66 and an urban renewal project. This reduced a large source of freight traffic. In 1965, the Virginia Department of Highways, backed by the Federal Bureau of Public Roads, entered into an agreement with the W&OD to purchase 30.5 miles of the right of way. After years of legal battles, the railroad ended operations in August of 1968.¹⁰⁷



Figure 11: Bulldozer pulling ties from Alexandria viaduct, 1969. Fairfax County Public Library.



Figure 12: Pile of ties removed from Alexandria viaduct, 1969. Fairfax County Public Library.



Figure 13: Tracks west of Rte. 1 being removed, 1969. Fairfax County Public Library.



Figure 14: Cutting rails at Grove Ave., 1969. Fairfax County Public Library.

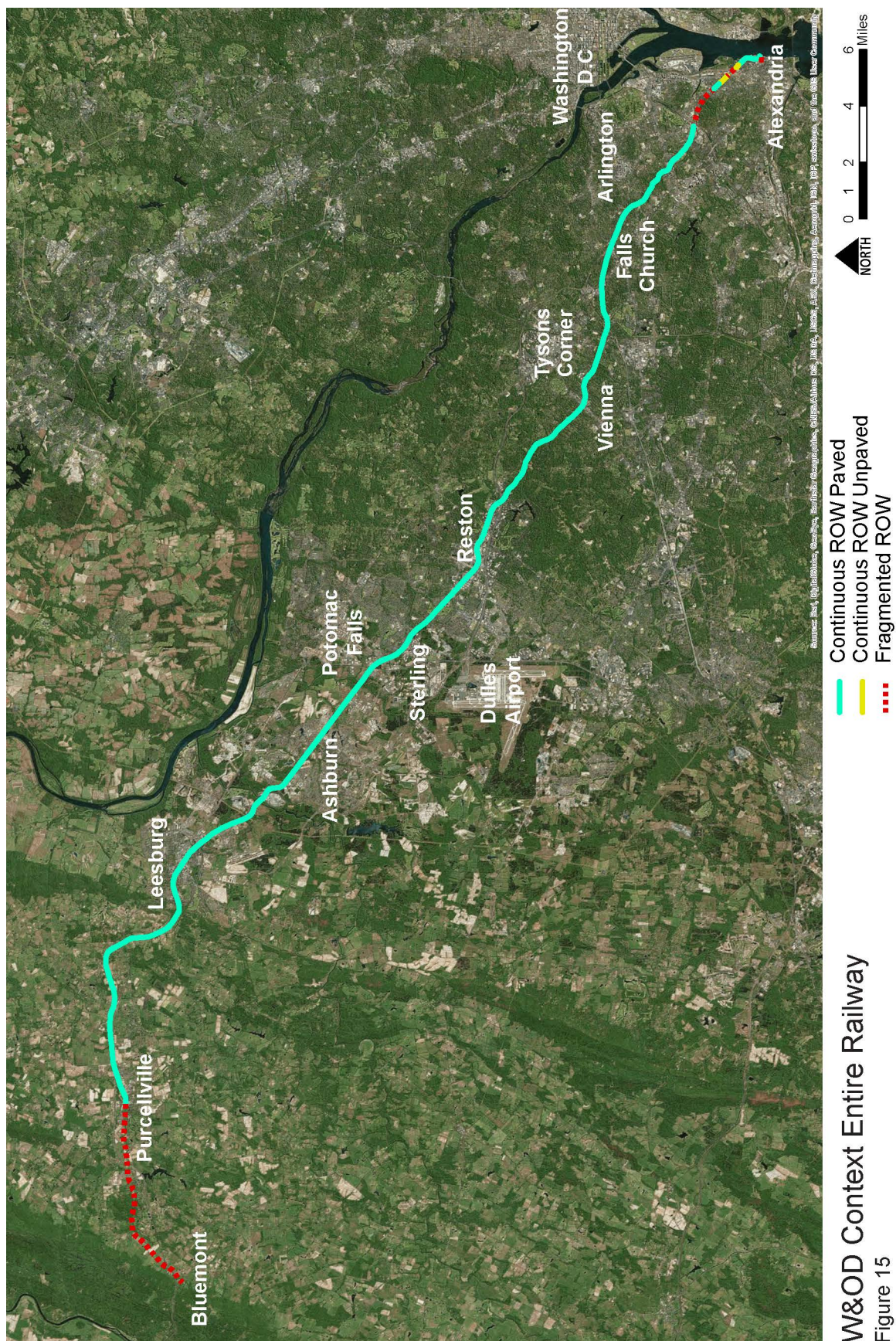
¹⁰⁷ Ibid.

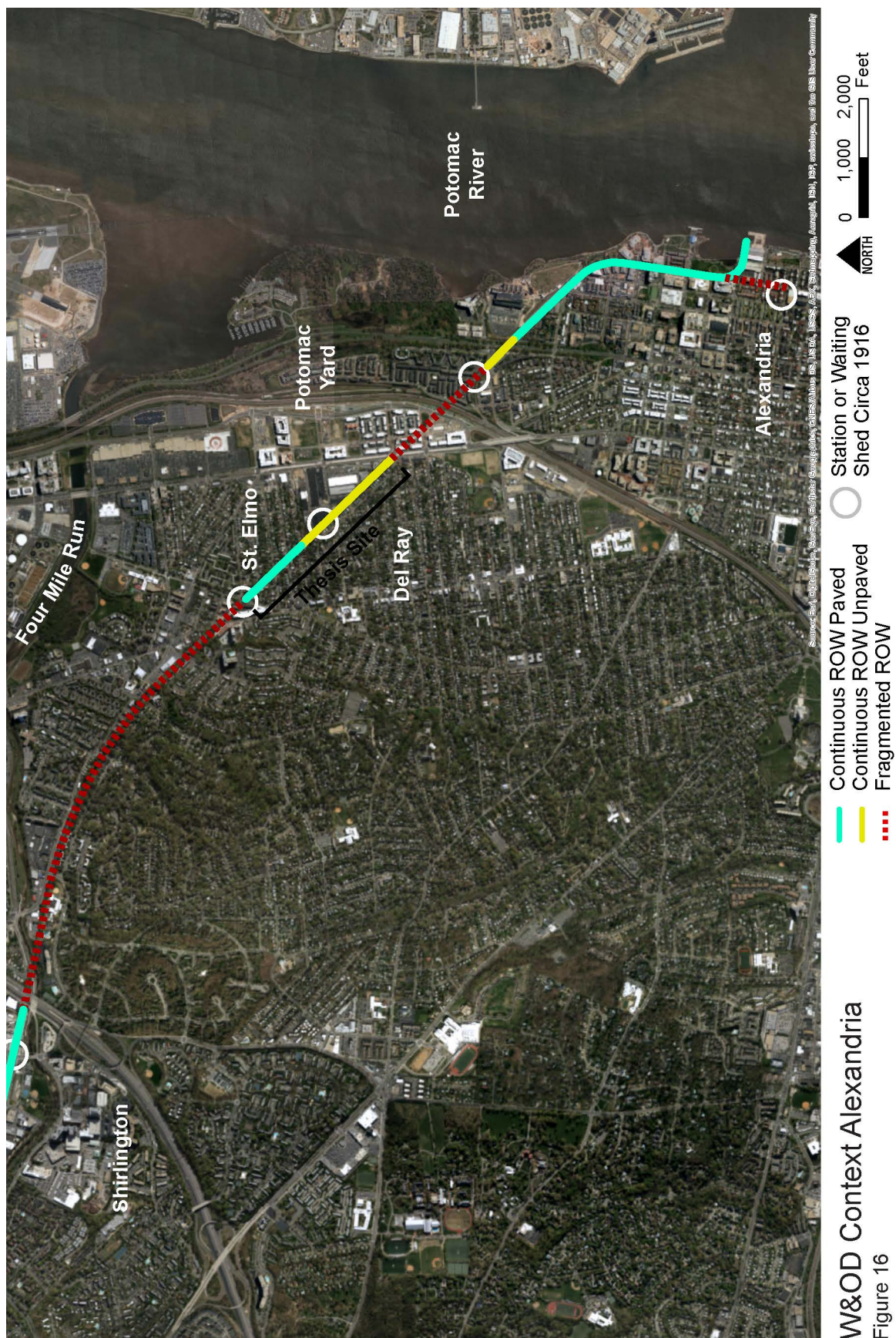
While proposals were floated for the use of the abandoned right of way, none came to fruition. A proposal to use the right of way as an arterial road can be seen on the City of Alexandria Major Thoroughfare Plan Map from Feb. 1962, but this road was never built.¹⁰⁸ A significant portion of the right of way remains intact to this day.

To the northwest of the project site, segments of the right of way were sold off and buildings have been constructed, separating the project site from the bulk of the right-of way, which remains intact except for the section between Purcellville and Bluemont. Southeast of the project site, the trestle over Potomac Yards no longer exists, and the yards themselves were decommissioned in 1989. Thus, the project site does not directly connect to the rest of the right-of-way on either end and stands as a self-contained segment.

All other historic transportation modes in this area except the road network have also been abandoned and removed. The Alexandria Canal was abandoned in 1886 as railroads became ascendant and was eventually filled in. The Washington, Alexandria, and Mt. Vernon electric trolley went into receivership in 1923 due to the spread of buses, and the last trolley ran in 1932. However, as of 2017, a new metro station is being built nearby at the former Potomac Yards to serve area commuters, and a bus rapid transit line, opened in 2014, now runs down Rt. 1.

¹⁰⁸ Ball, “Electric Railways of Arlington.”







Thesis Site
Figure 17

Site- Specific History

1900: By 1900, St. Elmo and Del Ray had been subdivided, the electric trolley line had been complete for four years, and Potomac Yards was six years away from opening. The area began to be settled by commuters taking the trolley into Washington and then by workers at the yards. By 1894 the St. Asaph racetrack was operating in the Del Ray neighborhood, as seen near the center of the 189- perspective below, which also shows the railroad running just beyond it.

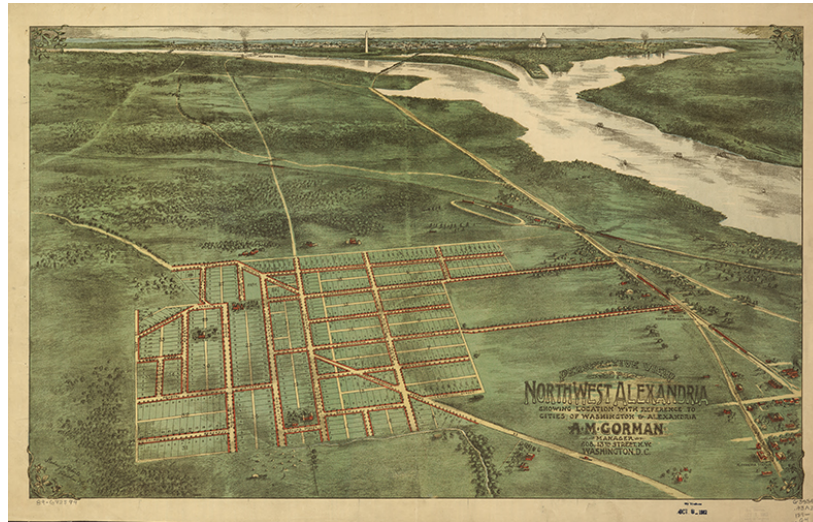


Figure 18: 189- Perspective of Northwest Alexandria with racetrack and railroad. Library of Congress.

1921: In 1908, St. Elmo and Del Ray were incorporated into the town of Potomac.¹⁰⁹ The St. Asaph racetrack became the center of a debate about gambling and was raided by an attorney in 1904, who smashed the gambling equipment and arrested the owners.¹¹⁰ The track was closed in 1905, and by the time of the 1914 photo below, homeless African-Americans were living in the grandstand. The building burned in 1916 and the land was used by the Army as a mobilization camp in 1917-18.¹¹¹ The development of the former racetrack site swiftly followed 1921, when a digital Sanborn map showed the site as empty. In 1922 the Abington subdivision was created on

¹⁰⁹ Leland, "The Town of Potomac Informational Sign."

¹¹⁰ Pope, "Hidden History of St. Asaph Racetrack."

¹¹¹ Leland, "St. Asaph Racetrack Informational Sign."

the land¹¹² and by 1927, the aerial photo below shows new roads and construction throughout the former racetrack site, outlined in red.

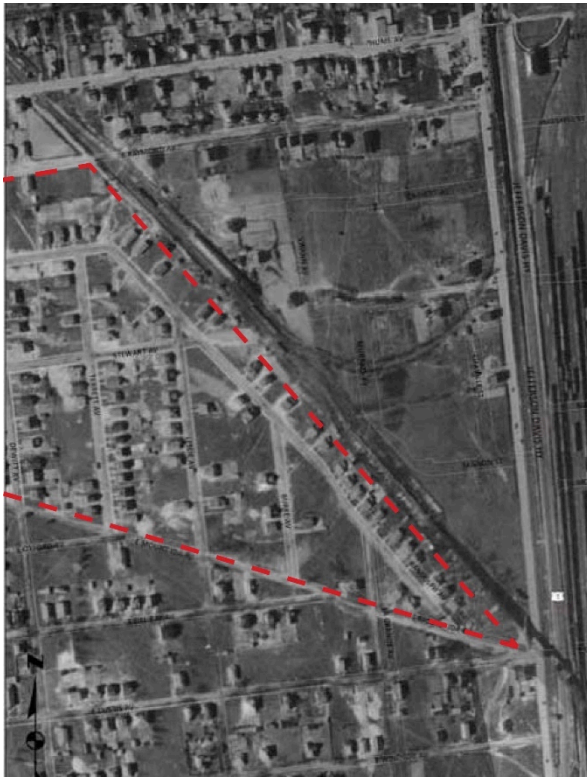


Figure 19: 1927 aerial of Del Ray and Alexandria Jct. with former racetrack site in red. National Archives, ID 305955



Figure 20: St. Asaph Racetrack in Alexandria, VA, 1902. Wikipedia



Figure 21: Asaph Racetrack 1914. Arlington County Historic Society.

1959: The town of Potomac was annexed by Alexandria in 1930. By 1959, there was a near complete infill of buildings on the site, mostly small single-family homes and duplexes, and there was a significant industrial development at the Alexandria Junction site, which was now called the Oakville Triangle. Potomac Yards grew larger. The stream seen on earlier maps disappeared but remains in property line patterns.

Railroad spurs led into the 24.3-acre Oakville Triangle industrial site. According to the 1941- July 1959 Sanborn map, this site contained warehouses including communications, aviation supplies, metal, metal stamping, commercial stage, biscuit and gro., beer, steel

¹¹² Leland, "The Town of Potomac Informational Sign."

equipment, steel and hardware, insulation material, paper bag, and bottle. Manufacturing included electronics, bottling works, film developing, ice cream, and meat packing.

2015: In 1989 Potomac Yards was decommissioned, leaving only two railroad tracks. A strip mall development with large chain stores was built immediately to the north of the context area. Plans for an infill Metrorail station are currently underway, and plans for the development of the entire site have been completed. The area is being redeveloped into a mixed-use urban community with office, residential, and retail spaces.¹¹³

In 2014, the Oakville Triangle site was occupied by firms including printing, metal fabrication, equipment and construction materials supply companies, and auto related businesses. This area continued to be fully leased in 2014, as there was a limited amount of industrial land in the city of Alexandria.¹¹⁴ Thirteen acres of Oakville Triangle were owned by the Blackstone Group in 2014, and those acres were the subject of a redevelopment plan created in 2015.

Future: The planning document for the new Oakville Triangle development touts a new transit-oriented development which will include a “diversity of residential, office, hotel, and regional and neighborhood-serving retail use, as well as an emerging “maker” economy.”¹¹⁵ The massing of the buildings and the road layout in Oakville Triangle and along Route One will be altered, and a road, “Park Road” will be added along the northeast side of the railway right-of-way between Fannon and Calvert Streets. The proposed maximum gross floor area (GFA) for the new development is as follows: 135,200 office, 145,300 hotel, 193,900 retail, 140,300 retail maker space, 1,791,500 multifamily unit and 270,100 townhomes.¹¹⁶

The plan includes a redesign of Mt. Jefferson park (the southeastern portion of the thesis site) by the firm Land Design. The redesign includes a proposed trail entrance at Swann Ave., a landscaped dog exercise area, improved drainage, mounds buffering the park from the new road,

¹¹³ City of Alexandria, “North Potomac Yard Small Area Plan.”

¹¹⁴ City of Alexandria, “Potomac West Small Area Plan.”

¹¹⁵ City of Alexandria, “Oakville Triangle & Route 1 Corridor Vision Plan and Urban Design Standards & Guidelines.”

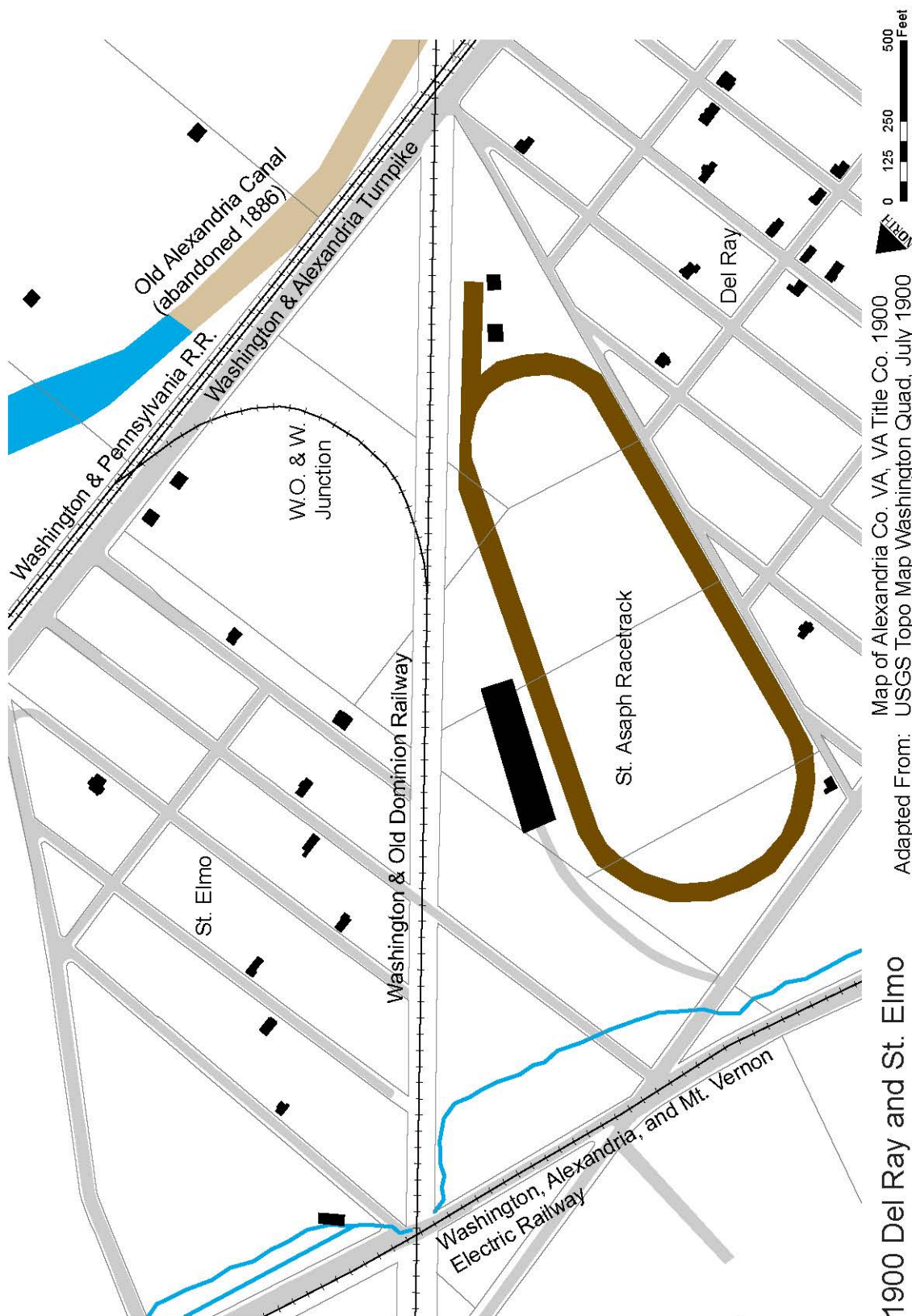
¹¹⁶ Ibid., 21.

the addition of ornamental trees and shrubs, removal of invasive species, trail resurfacing, removal of a building extending into the right of way, and the addition of a row of trees along the new Park Road. Despite this existing redesign, I have chosen to investigate this site because it offers a good opportunity to design a wildscape that is responsive to current and past conditions.



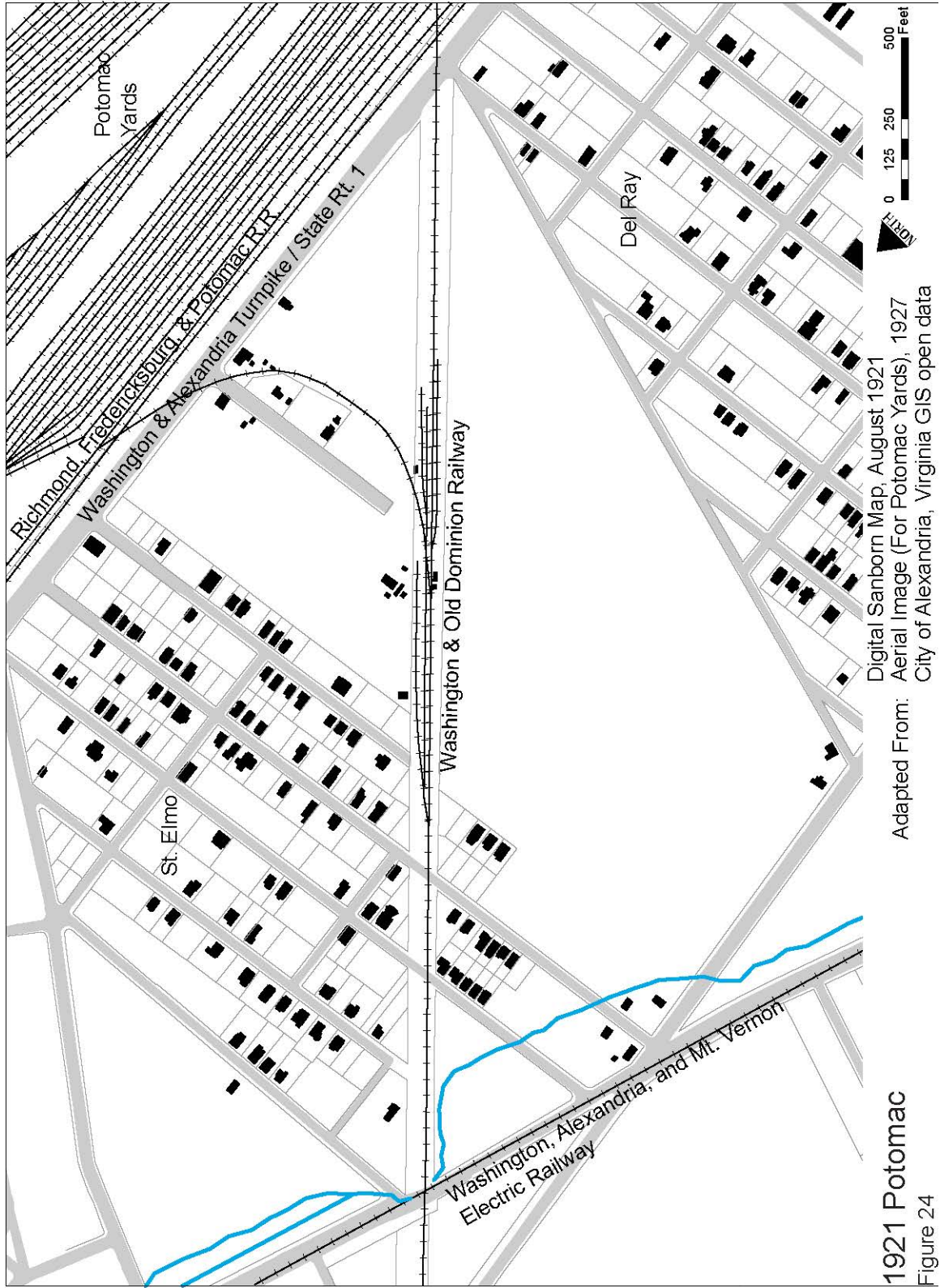
Figure 22: Mt. Jefferson Park Concept Design.¹¹⁷ Public document.

¹¹⁷ City of Alexandria, “Oakville Triangle & Route 1 Corridor Vision Plan and Urban Design Standards & Guidelines.”

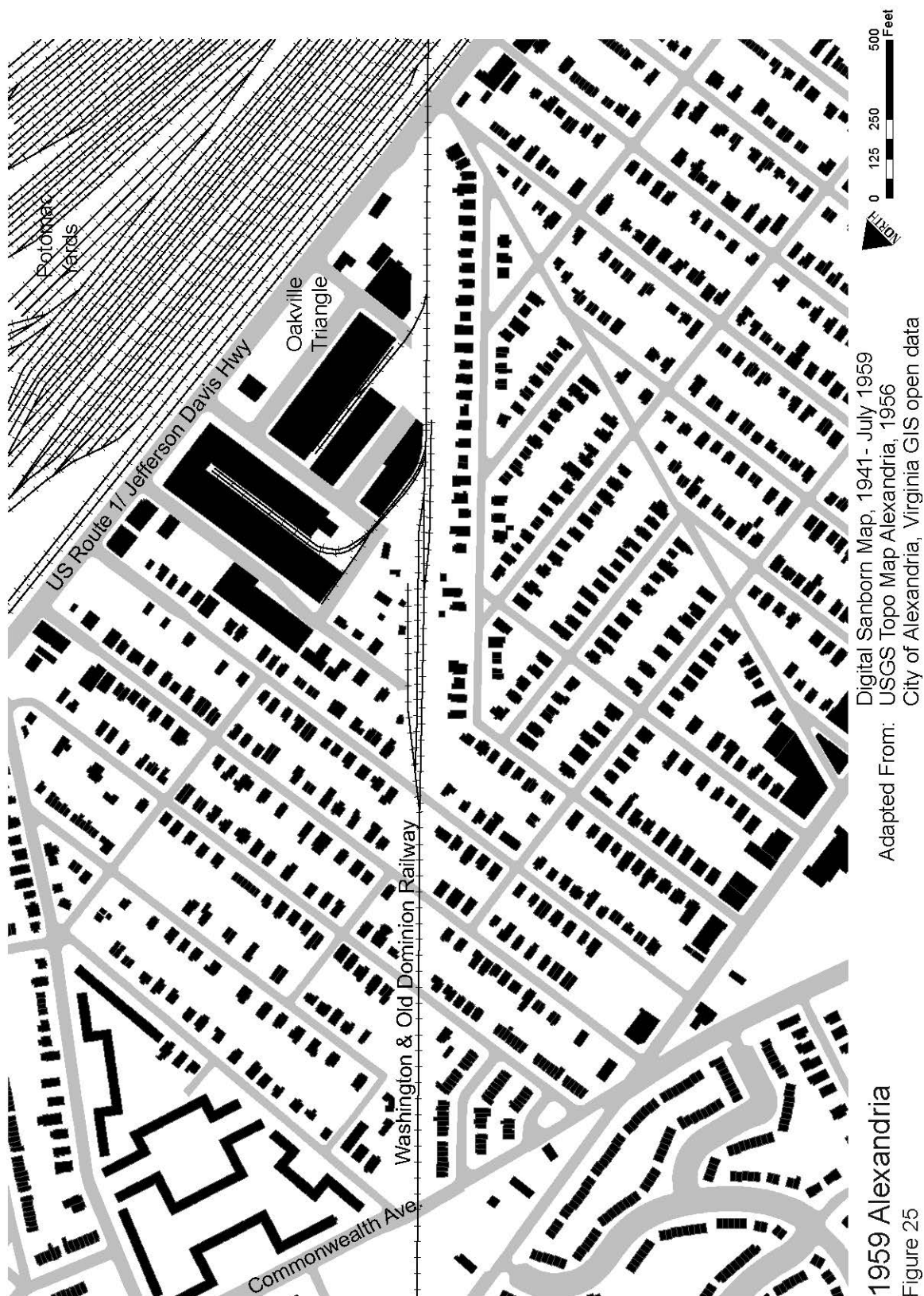


Map of Alexandria Co. VA, VA Title Co. 1900
 USGS Topo Map Washington Quad, July 1900
 City of Alexandria, Virginia GIS open data

1900 Del Ray and St. Elmo
 Figure 23



1921 Potomac
Figure 24



1959 Alexandria
 Figure 25



Adapted From: City of Alexandria, Virginia GIS open data

2015 Alexandria
Figure 26



Future Alexandria
Adapted From: Mt. Jefferson Park Plan, Land Design
City of Alexandria, Virginia GIS open data
Oakville Vision Plan Design Guidelines Document

Figure 27

Human Structures and Demographics

Figure Ground

In the context area, there are many houses on small lots and an industrial triangle containing much larger buildings which are long and narrow. There is a sharp distinction between the industrial and residential buildings in terms of scale. The rectangular street grid is cut diagonally by the railroad right of way, leading to triangular unbuilt spaces along the right of way, particularly on the northwestern half. The nearby Potomac Yard development is halfway constructed but will soon be uniformly dense.

The relationship between the residential and industrial areas has changed, as the neighborhood no longer houses industrial and rail workers. It will continue to change with new development that will alter the built structure of Oakville Triangle. There are few public open spaces in this neighborhood and few large open space areas.

Fences

The large majority of the residential lots are fenced on three sides, whereas the lots in Oakville Triangle are mostly unfenced except where they abut the railway right of way. Former fences existed across the right of way in three locations and contributed to existing tree lines and vegetation patterns. Fences in the neighborhood may make it difficult for large ground-based animals to move through the neighborhood, although other animals will not be affected. The fences along the thesis site contribute to a sense of linearity and restrict access. Fence locations will change with new development; see the access and circulation section below.

Access and Circulation

There are currently only four access points in the southeastern segment of the park, but the new Oakville development will open up the park considerably. Once the planned new Park road is built, around half of this segment will be accessible from all points on the northeastern edge. This is in sharp contrast to the existing park, where access occurs only at specific nodes. Currently, those wishing to cross the southeastern segment of the park have one entrance from

Randolph St. and must dogleg through the park to Calvert Ave. The current closed-in feel of this segment will change considerably with the new development, and it will be important to consider how much enclosure is desirable here.

Due to three road crossings, there are eight access points in the northwestern segment of the park. Because of all of these crossings and access points, the northwestern segment of the park is much less enclosed and does not feel like a unified space. It will be important to create unity throughout the northwestern segment. It may be useful to visually indicate that the park continues across the roads for safety and continuity reasons.

Demographics

The demographics for the neighborhoods surrounding the park were tabulated by census block group, as that was the most granular data I could find. Information was obtained from the 2010 Census. While the American Community Survey is taken every year and thus contains more recent data, it only polls a statistically small sample of the population and is less accurate, particularly for an area as small as this context area. Thus, the older Census data was used.

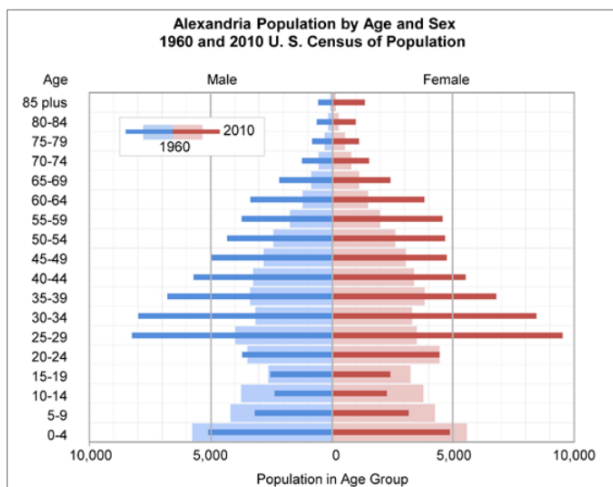


Figure 28 Alexandria Population by Age and Sex in 1960 and 2010. From the Alexandria 2010 Census Data Profile

Age: In Alexandria as a whole, by far the highest numbers of residents are in their 30s and their upper 20s, with the numbers tapering off evenly in the higher age categories. There is a sharp drop off among college-aged adults and younger children. Due to Alexandria's location, the city and the new Oakville Triangle development may primarily attract people

in their 20s and 30s and a park should provide activities that will interest these age groups.

The number of children from 0-9 is higher in every block in the context area than the number of children from age 10-19. It is projected that the Oakville Triangle development will add 67 new students to the Alexandria City Schools, and if 91 affordable housing units were included, 55 additional students would be generated.¹¹⁸ Park space adjacent to their homes could provide a place for these children to adventure and play.

Population Density: The dashed line outlines the census block containing the planned Oakville Triangle development. While all other blocks show existing population density, I calculated the projected population density for this block based on data provided by the City of Alexandria. At 48 people per acre, it will be the second-densest census block in the context area. The true density of Potomac Yards is not portrayed, as significant development has occurred since 2010. As development continues in the area, there will be even greater pressure for parks and open spaces and this site can address some of that pressure.

Race and Ethnicity: Most of the census tracts in the context area have a clear majority of white residents, with the exception of those near Four Mile Run, which identify both as white and as Hispanic and have a high percentage of other races. One tract near the south of the context area is majority black, with others near Old Town Alexandria having a larger percentage of black residents. More black residents live in St. Elmo than in Del Ray.

Alexandria has historically had a significant African-American population. In 1880, 40% of the population was black, which fell to 11% by the 1960 census. This change was partially due to the City's annexation of a large area of additional land which was predominantly white. Most African-Americans lived immediately to the west and the northwest of the original town site. By 1980, the black population more than doubled to 23,000, or 22.3% of the city's population. As of 2010, the black population has increased to 30,491 and makes up 21.8% of the population.¹¹⁹

¹¹⁸ Ibid., 139.

¹¹⁹ City of Alexandria, "Alexandria 2010 Census Data Profile."

The percent change in the black population in the St. Elmo and Del Ray neighborhoods between the 2000 and 2010 censuses were -38.7 and -46.6%, respectively, and other census blocks nearby had similar shifts, from -34.6% to -63.9%.¹²⁰ Gentrification and rising home prices in Alexandria have had the effect of pushing out many longtime black and working-class residents.¹²¹ If possible, the design of this site should provide space for both new and old residents without contributing further to gentrification, although this is a tricky issue and as a whole is outside the scope of this thesis.

¹²⁰ Ibid.

¹²¹ Cohn and Smith, "Census Finds More Whites In D.C., Close Va. Suburbs."

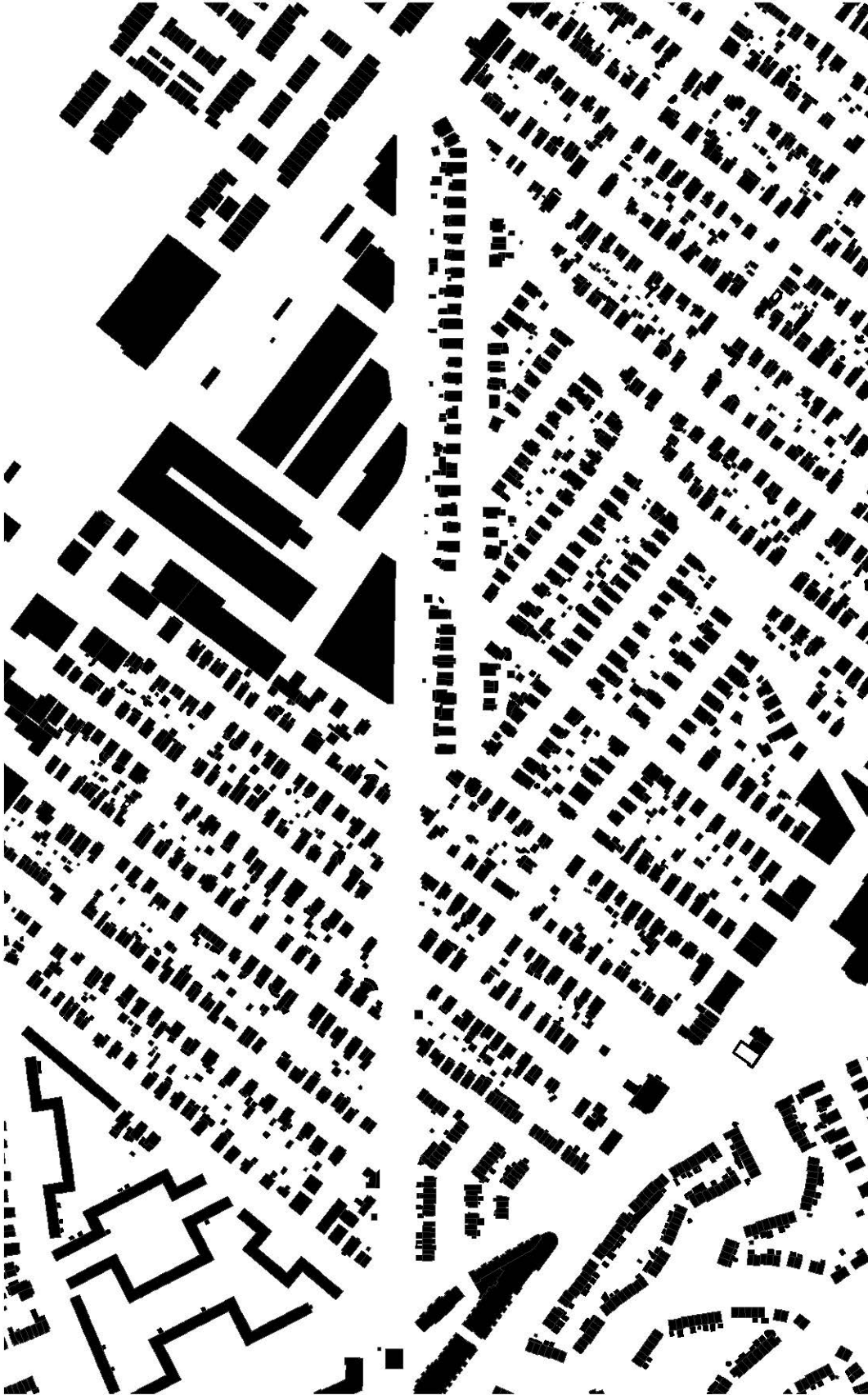
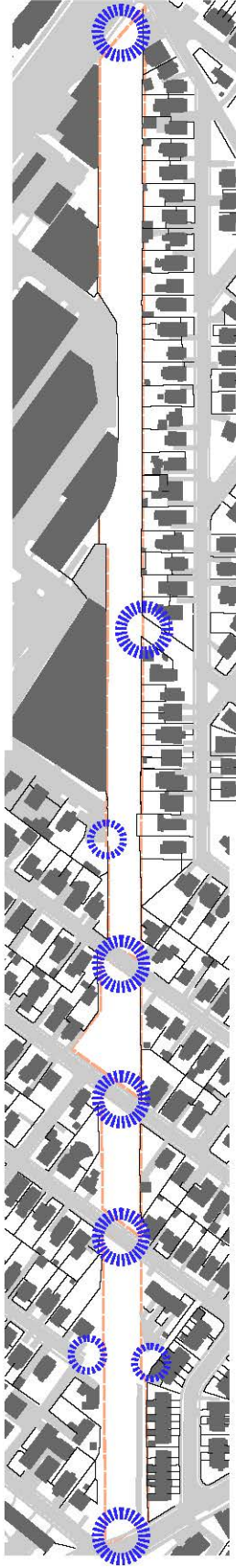


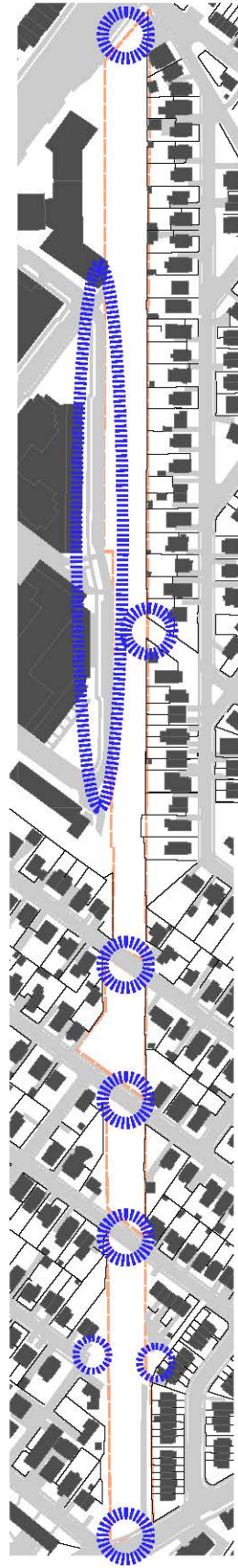
Figure-Ground Analysis

Figure 29



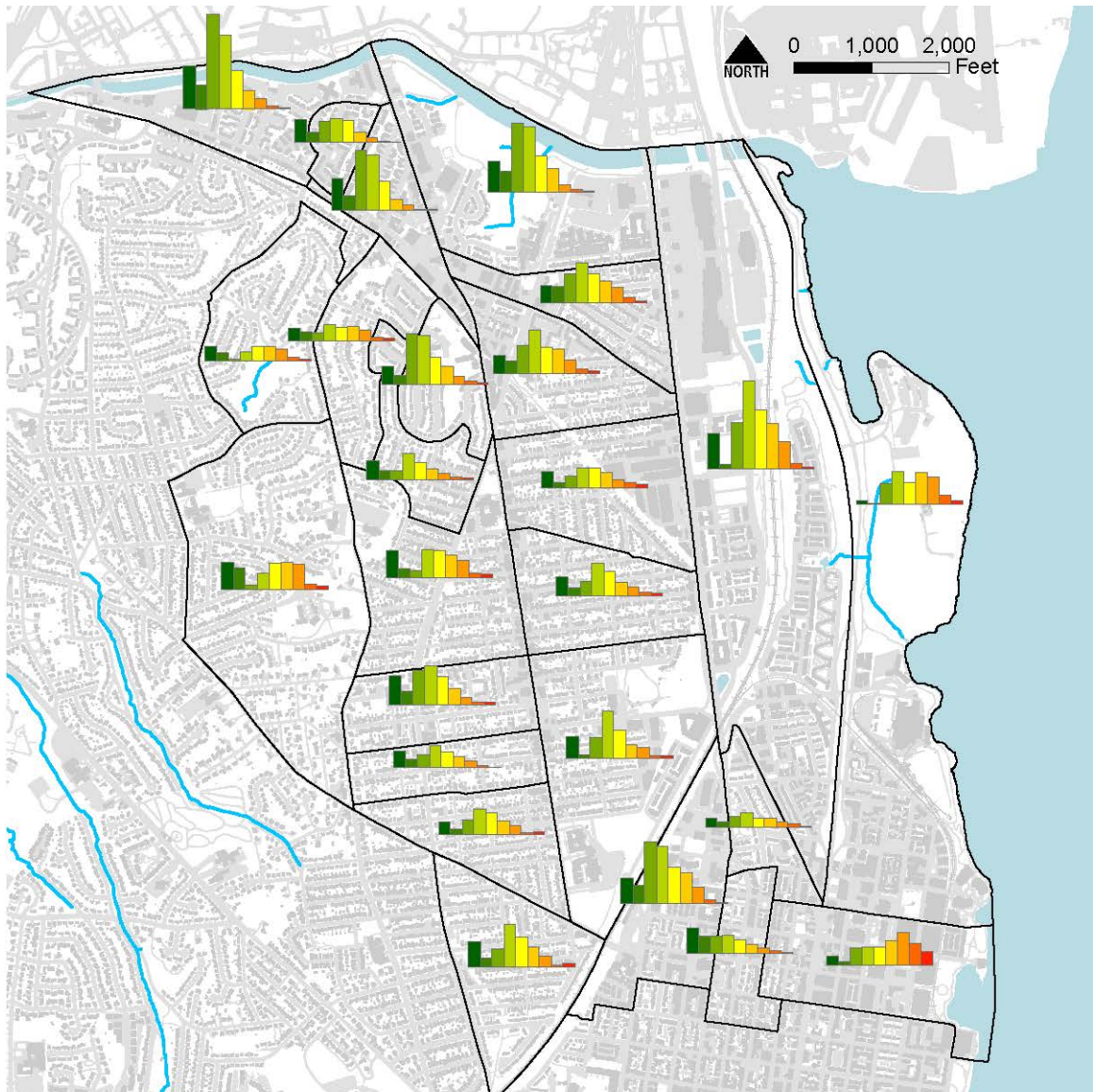


Existing

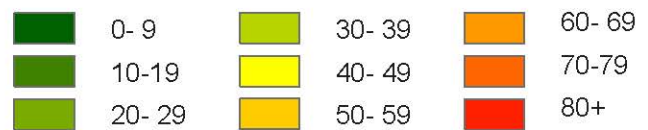


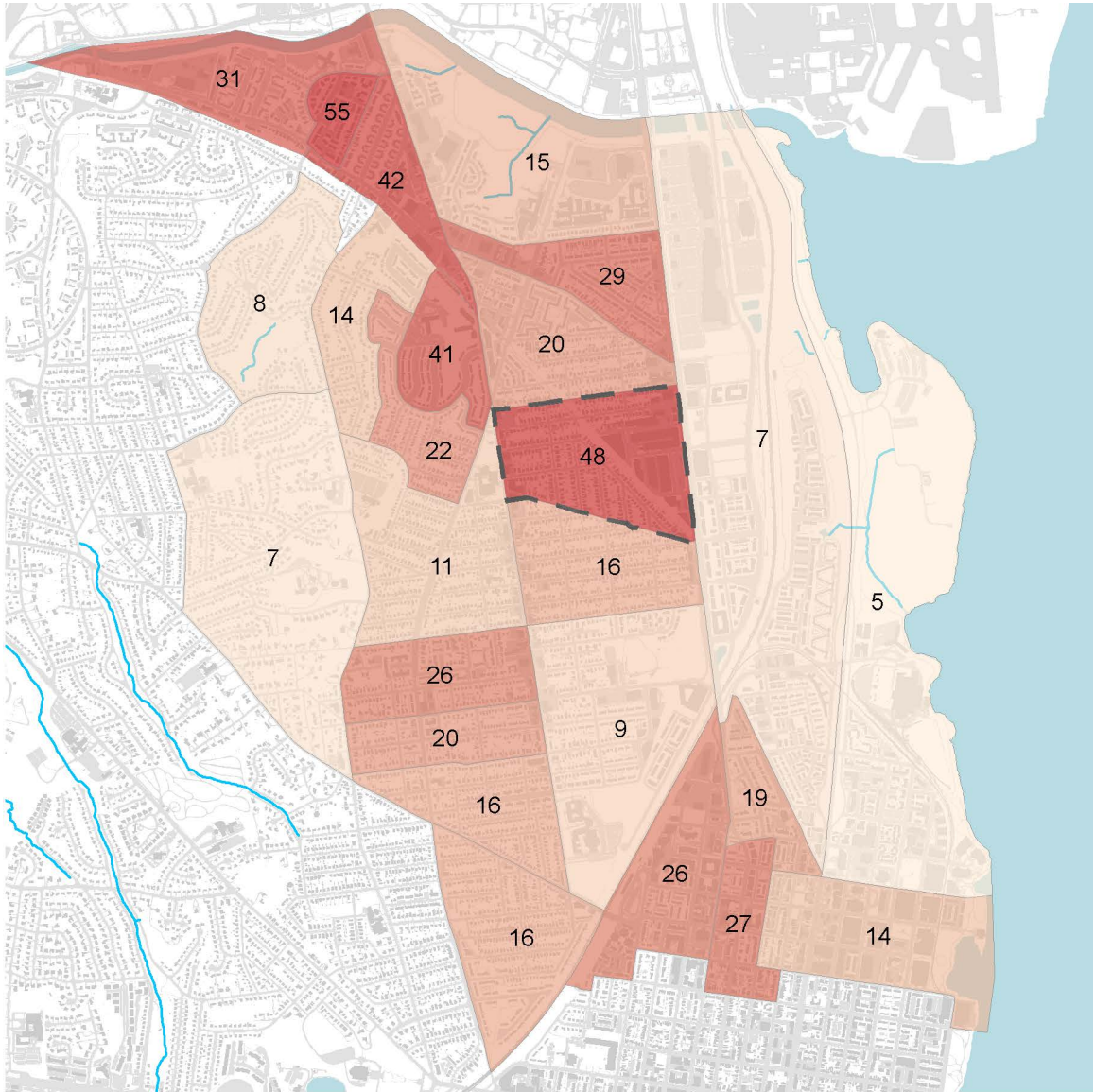
Proposed

Site Access
Figure 31



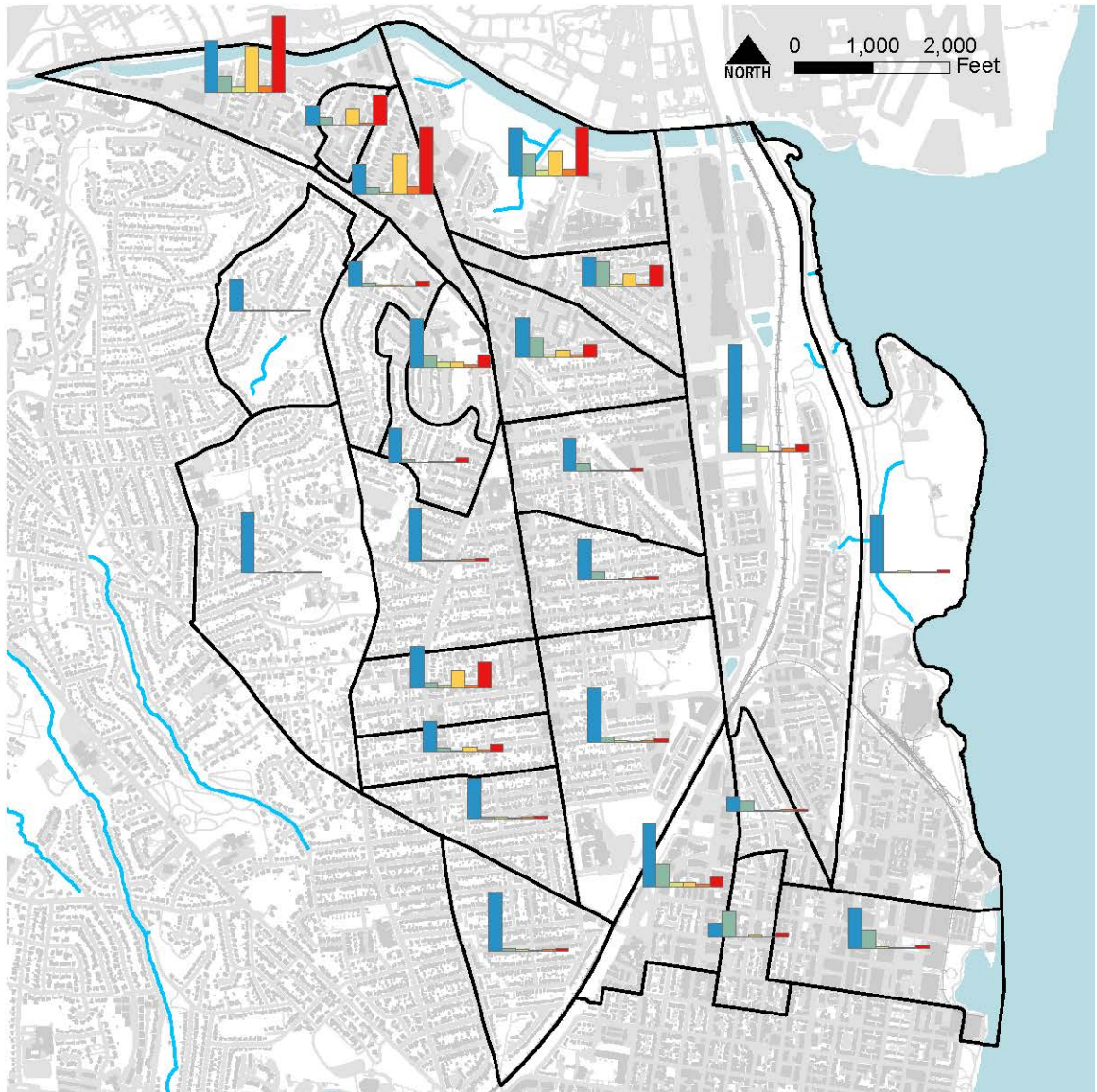
Age by Block Group
Figure 32





Population Density
Figure 33

Number of people per acre by block group
Source: 2010 Census



Ethnicity by Block Group

Figure 34

White	Asian	Two or More
Black	Other Race	Hispanic

Abiotic Factors

Soils

Soil information from the USDA's Web Soil Survey application was of limited use due to the history of disturbance on the site. The thesis site was both excavated and filled extensively in the 1850s from an unknown source, possibly the side cut to the northwest of the site or with fly ash or other waste material. As discussed in chapter two, soils in former railroad rights-of-way may have a high pH relative to surrounding soil and may be contaminated. Site soil testing would be required in order to determine specific chemical and physical properties, which is outside the scope of this thesis.

It is possible, however, that the current soil retains some of the properties of the original soil, which was Grist Mill sandy loam. This soil is a sandy loam from 0 to 6 inches and sandy clay loam below. It has a pH of 4.8, very strongly acidic, and is listed both as being well-drained and as hydrologic soil group C. The side cut to the northwest of the site contains Kingstowne sandy clay loam, with a sandy clay loam from 0 to 4 inches and a clay loam from 4 to 60 inches. The pH, drainage class, and hydrologic soil group are the same as the Grist Mill soil. Because the existing topography is an important historical site characteristic, the soil will not be extensively modified in most locations. Urban gardening or orchards will not be pursued on the site due to possible contamination issues.

Hydrology

There is a three-way watershed divide on the eastern segment of the site between the drainages of Four Mile Run, Hooff's Run, and the Potomac River. Due to the highly-developed nature of this watershed, most runoff flows through the storm drain system.

Ditches on the long edges of the site channel runoff toward the ends. On the southeastern portion of the site, water drains southeast in two channels parallel to the raised trackbed. The northernmost of these surfaces as an open channel after flowing from two inlets in an Oakville Triangle parking lot. The southern one consists of concrete channel liners and inlet structures,

which collect sediment and standing water and contribute to a mosquito problem. Drainage on the northeast part of the right of way is channeled into two grassed swales, which empty eventually into an inlet. The topography is less extreme in this segment and drainage or standing water does not appear to be a major problem.

There are two seasonally wet areas on the site. One is a large depression near Raymond Avenue where the soils are very compacted. Water infiltrates slowly here. The other is a sloping segment of concrete where runoff is prevented through topography. Frogs and birds have been observed using this seasonal pool. There is potential to work with both seasonal wetlands to increase plant species and animal habitat.

A stream, now underground, flowed through Del Ray and under the west end of the right-of-way segment at Commonwealth Ave. Park design or interpretation could include information about this channel. Overall, the design should improve the functioning of water on the site in terms of flow or infiltration, purification, and habitat value.



Figure 35: Concrete Vernal Pool. Author.

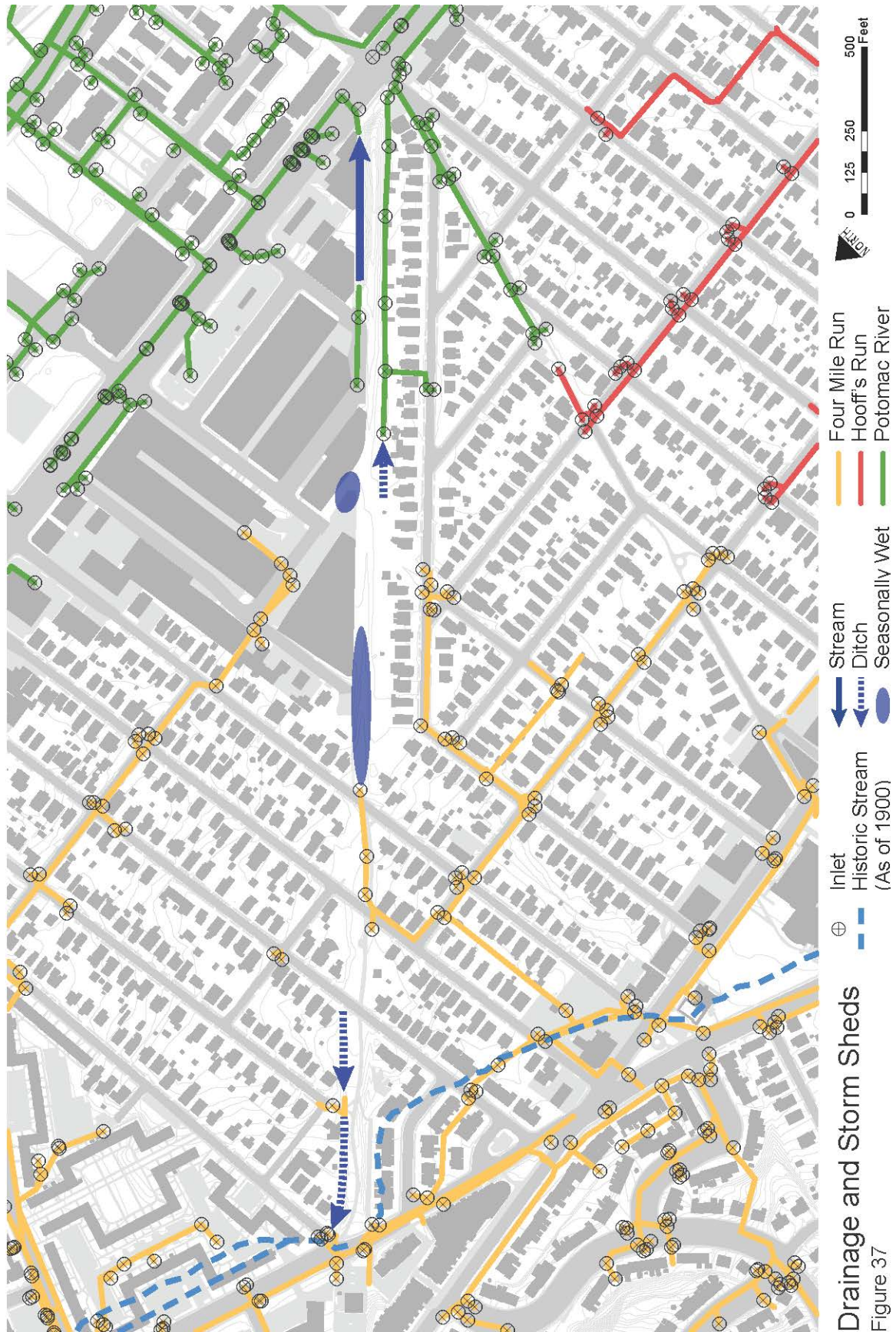


Figure 36: Drainage structure. Author.

Elevation and Slope

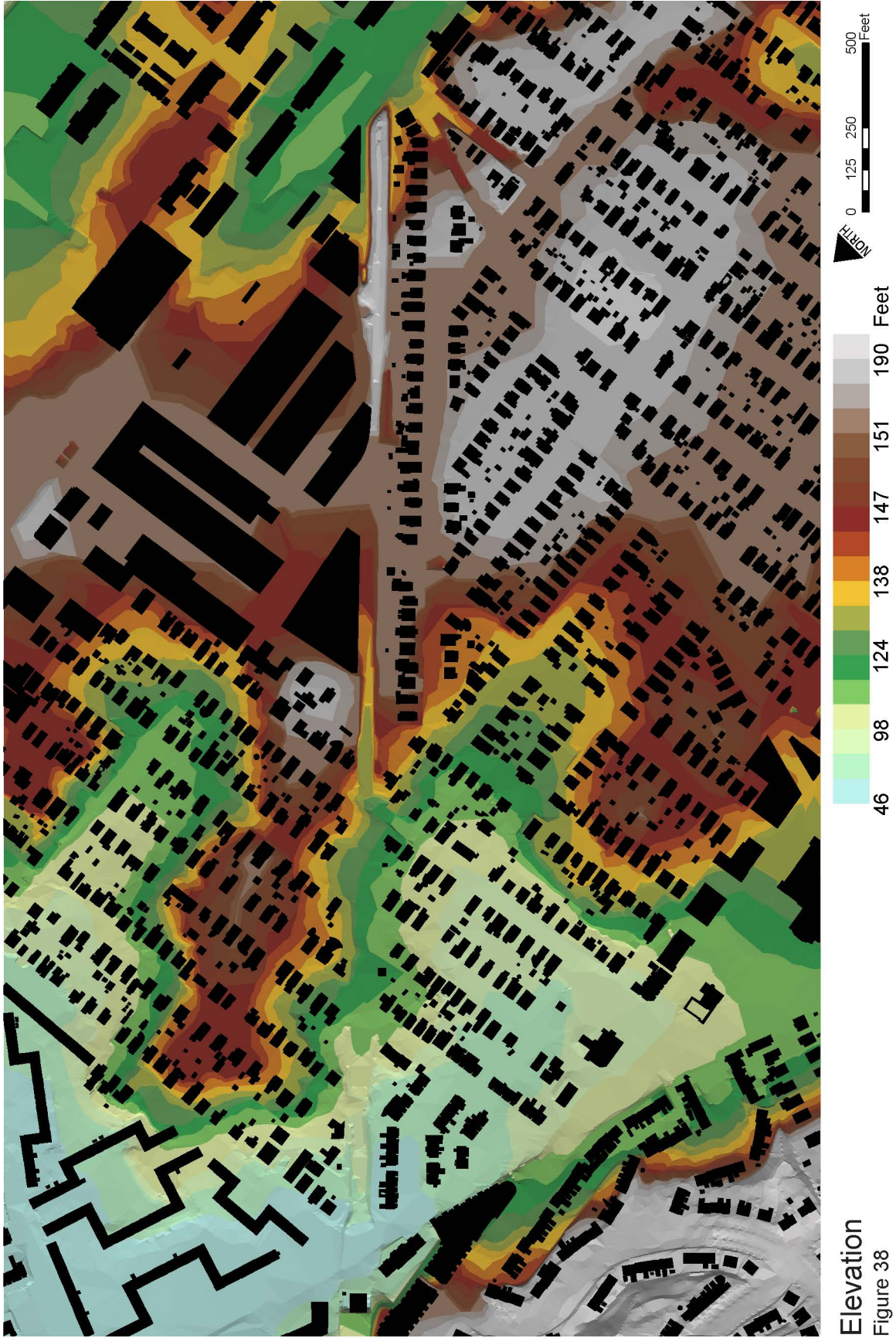
The site contains significant variation in elevation, from a height of 56 feet on the southeastern end to a height of 20.5 feet on the northwestern end. The southeastern end of the park has been built up around 16 feet from the surrounding neighborhood, an area in the middle of the park is recessed around 6 feet, and the northwestern end is built up 8 feet on one side and is

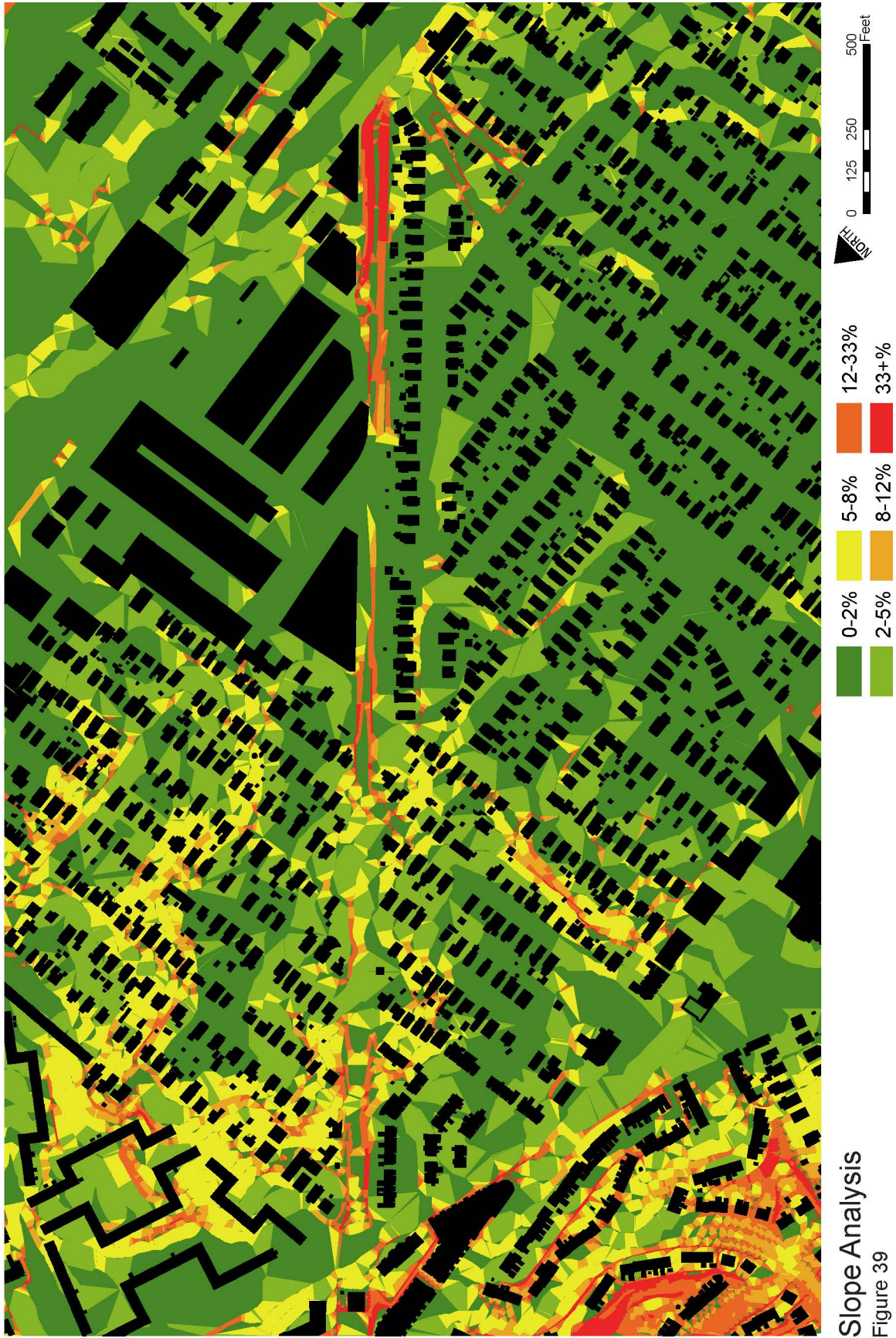
nearly level on the other. As the site is a former railroad bed, it has a minimal longitudinal slope (no greater than 8%) except at both ends where bridge crossings once existed above roads. The sides of the site are also steep in some places (greater than 33% in the southeastern portion), as material was cut or filled within the 100' wide right of way in order to obtain the correct grade. The topography may need to be altered in order to provide ADA access. Views may be possible from the southeastern portion of the park, as there is significant elevation gain in that location, although current views are of residential backyards and the top of an industrial building.



Drainage and Storm Sheds

Figure 37





Slope Analysis
Figure 39

Biotic Factors

Green Space Connections and Nearby Habitat

This analysis was performed with aerial orthoimagery from 2006, as the 2013 version contained a large number of high-resolution tiles which needed to be downloaded individually, some of which were missing. The 2006 and 2013 images are similar when viewed at this scale except for the former Potomac Yard site, which is now more developed and less barren. Due to the use of aerial imagery, it was difficult to determine understory vegetation existence or type in cases of dense tree cover.

The context area around the thesis site is extremely patchy, with several different types of development patterns apparent. The thesis site itself is a long, linear patch which is not directly connected on its ends but instead connects diffusely to residential back yards along its sides.

North and south of the site is a densely built grid of single-family homes and duplexes on small lots, each with small individual back yards that form linear green spaces which are interrupted by roads. These yards likely contain a mix of mowed grass, shade trees, and planting beds with a wide variety of species. Many of these apparently connected yards contain fences, which may act as a barrier to some species and not others. These yards are likely a significant source for plants which may spread onto the thesis site.

To the north, east and northeast of the site are industrial and shopping areas with extremely high percentages of impervious surface and very little green cover. These areas likely act as a barrier to many animals and provide very little habitat.

There are some large patches of forest vegetation on Daingerfield Island along the Potomac River and in Four Mile Run Park which likely contain a multilayered forest structure and possibly wetlands. A birding website, ebird.org, contains data on 179 species of birds which have been spotted at Daingerfield Island. While these are connected by water, neither patch is connected to similar habitat patches on land. A highway, railroad tracks, and fingers of

development cut off Daingerfield Island, while Four Mile Run Park is surrounded by multifamily developments with open lawn and shade trees.

To the west of the thesis site, there is more open space, as single-family residential house lots are much larger and impervious surface cover is less. Curvilinear roads and cul-de-sacs provide for longer connected green areas in some cases. As with the denser residential area directly adjacent to the thesis site, these lots are likely mostly mowed lawn, shade trees, and ornamental plantings. There is one 7-acre park in this area, Monticello Park, which contains multilayered forest vegetation and 150 reported bird species on ebird.org.

Aside from the three parks which contain understory vegetation and shrubs along with canopy trees, most of the green space in the context area consists of mowed lawn, shade trees, and planted ornamental vegetation. The thesis site thus provides an opportunity to increase the diversity of habitat types by including meadow and early-successional vegetation along with additional multilayered forest habitat linking residential back yards.

Vegetation Distribution

I collected tree location data with my phone and an app called Mapit-Mobile. Data collection was successful but the GPS on my phone was not very accurate. Accuracy was better on the northwestern portion of the site but where the topography became pronounced on the southeastern portion, data points became very inaccurate.

I also ran into difficulties in counting trees. In the beginning, I did not create a standard for the minimum size at which I would record a tree because most trees on the northwestern part of the site were large. This became a problem when I encountered many sapling trees in the southeastern portion of the site. In the future, I would set this standard at the beginning of data collection and also measure tree DBH in order to analyze tree size. The tree charts to follow should be considered estimates in terms of distribution. Despite these difficulties, I am impressed with the capabilities of my phone and a free app.

In the northwestern part of the site there are many fewer trees due to the fact that it is mowed regularly. There, trees are mostly growing along fence lines or streets, with some planted trees in the interior of the site. This section of the park contains a higher percentage of ornamental trees and fewer invasive species.

Maintenance was discontinued in the southeastern portion of the park. This has led to both greater diversity of trees and a greater percentage of invasive tree species. Mowing was discontinued at different times, leading to a variety of stand ages. In some locations fencelines or past uses or can be seen in the current distribution of trees, as in a rectangular-shaped ‘room’ near the center of the site, which was used to park cars. These existing visual maintenance histories may be used and adapted when designing the site.

There is a strong concentration species distributed by birds and wind on the site. Wind-distributed trees include catalpa, elms, maples, tree of heaven, pines, and cottonwood. Bird-distributed trees include mulberry, black cherry, callery pear, and eastern red cedar. Other trees on site were clearly planted by humans including lacebark elms, red and willow oaks (due to their location around a playground), blue spruces, and southern magnolias.

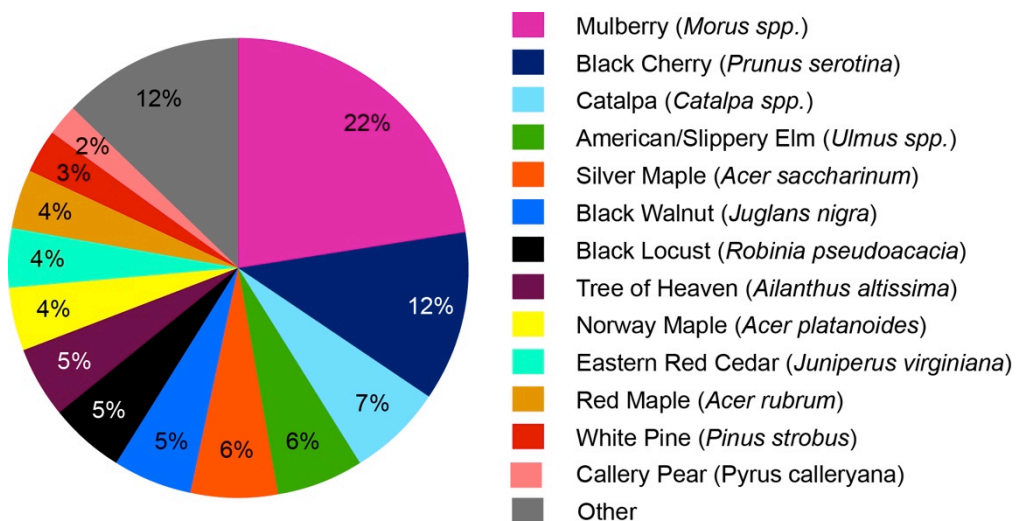


Figure 40: Tree Species Distribution

The chart above shows the

distribution of trees on the site. Trees with fewer than 10 occurrences were included in the ‘other’ category. Tree species with fewer than 10 occurrences included, in order from most frequent to least: mimosa (*Albizia julibrissin*), scarlet oak (*Quercus coccinea*), red oak (*Quercus rubra*), willow oak (*Quercus phellos*), rose of sharon (*Hibiscus syriacus*), Chinese holly (*Ilex cornuta*), white oak (*Quercus alba*), hackberry (*Celtis occidentalis*), blue spruce (*Picea pungens*), white ash (*Fraxinus americana*), redbud (*Cercis canadensis*), black gum (*Nyssa sylvatica*), lacebark elm (*Ulmus parvifolia*), box elder (*Acer negundo*), chokecherry (*Prunus virginiana*), crape myrtle (*Lagerstroemia sp.*), dogwood (*Cornus florida*), eastern cottonwood (*Populus deltoides*), American holly (*Ilex opaca*), southern magnolia (*Magnolia grandifolia*), chestnut oak (*Quercus montana*), peach (*Prunus persica*), princess tree (*Paulownia tomentosa*), sycamore (*Platanus occidentalis*), and tulip tree (*Liriodendron tulipifera*). Staghorn sumac (*Rhus typhina*) was observed but not recorded, as its stems were very small.

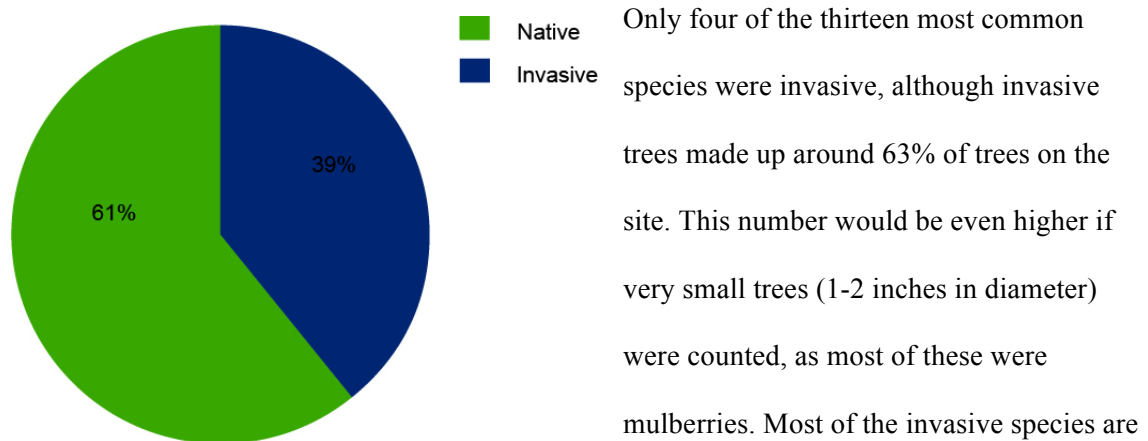


Figure 41: Native and Invasive Tree Distribution

Only four of the thirteen most common species were invasive, although invasive trees made up around 63% of trees on the site. This number would be even higher if very small trees (1-2 inches in diameter) were counted, as most of these were mulberries. Most of the invasive species are located on the southeastern half of the site.

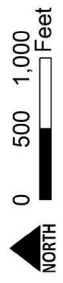
Mulberries make up at least 22% of trees, tree of heaven 5%, Norway maple 4%, and callery pear 2%. Only one princess tree was identified, although not all small trees were examined.

Most invasive species except mulberry are localized into a few regions, for example, Norway maples are clustered on the north side of the steep embankment. Routine monitoring should be undertaken to determine whether these species are spreading. Any invasive species that are removed should be replaced with species adapted to site conditions.

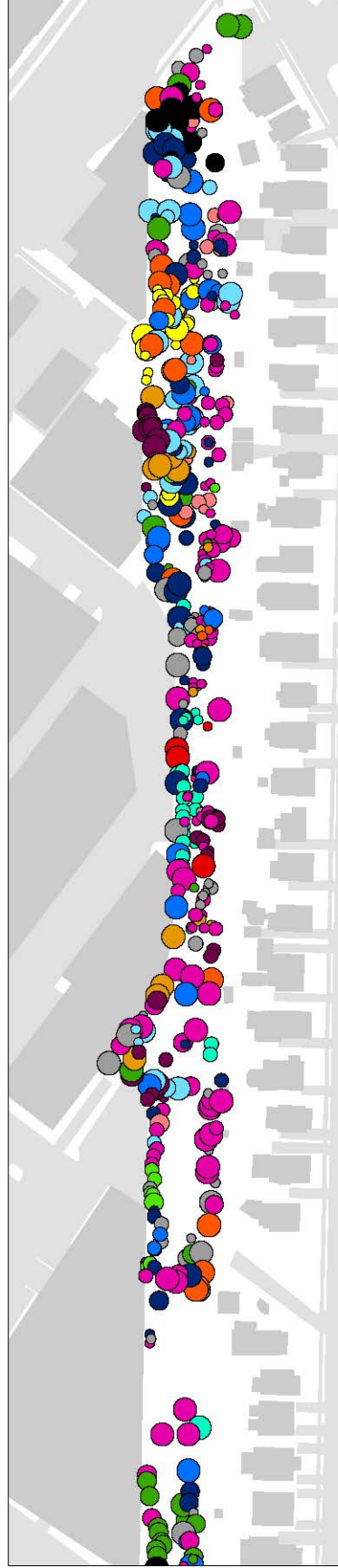
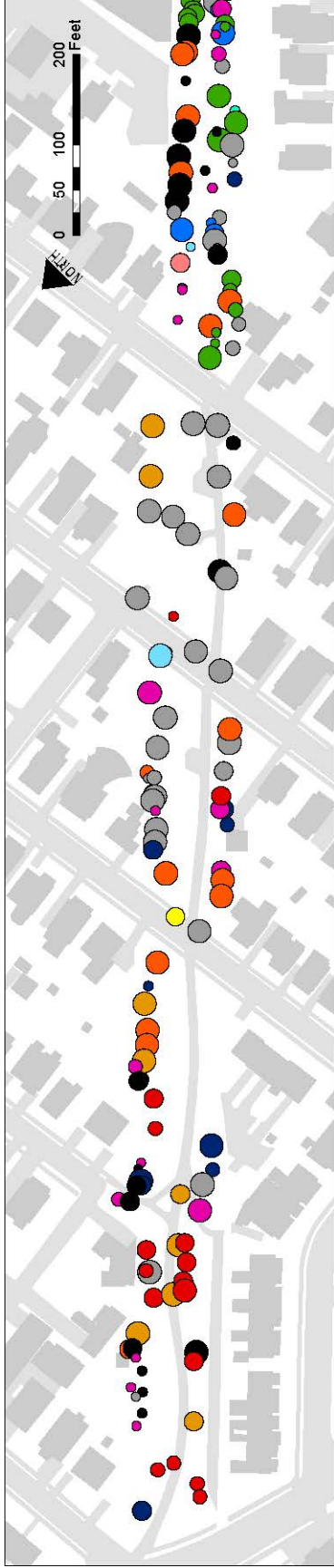
While I did not map or count vine species, I did create a list of species identified. The six native vines on the site include poison ivy (*Toxicodendron radicans*), Virginia creeper (*Parthenocissus quinquefolia*), maypop (*Passiflora incarnate*), honeyvine milkweed (*Cynanchum leave*), greenbrier (*Smilax rotundifolia*), and a species of grape (*Vitis sp.*). While poison ivy is beneficial for wildlife, it is noxious to humans and should be removed in areas where people will come into contact with it.

The five invasive vines on the site include Japanese clematis (*Clematis ternifolia*), Japanese Honeysuckle (*Lonicera japonica*), Chinese or Japanese wisteria (*Wisteria sinensis* or *floribunda*), English ivy (*Hedera helix*), and porcelain berry (*Ampelopsis brevipedunculata*).

Vines, both native and invasive, are climbing over other vegetation and smothering it in the wild half of the park. There is a significant potential for a vine removal and management program, possibly involving community members and volunteer days. If invasive species are removed, tough native plants with wildlife value should be planted or seeded to replace them.

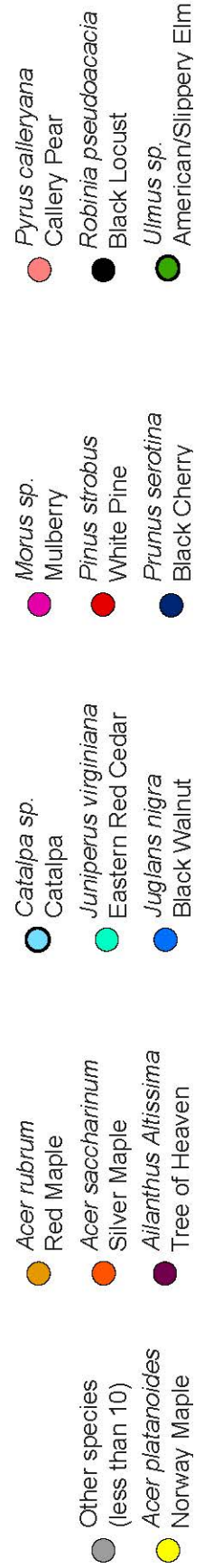


Green Space Connectors
Figure 42



Tree Species, Relative Size, and Distribution








Figure 43





Invasive Tree Species, Relative Size, and Distribution

Figure 44

- | | | | |
|---|--|--|---|
|  <i>Pyrus calleryana</i>
Callery Pear |  <i>Morus sp.</i>
Mulberry |  <i>Hibiscus syriacus</i>
Rose of Sharon |  <i>Paulownia tomentosa</i>
Princess Tree |
|  <i>Acer platanoides</i>
Norway Maple |  <i>Ailanthus altissima</i>
Tree of Heaven |  <i>Albizia julibrissin</i>
Mimosa | |

Linear Parks: Design Strategies

Karl Kullmann creates a typology of linear parks in his article “Thin parks/thick edges: towards a linear park typology for (post)infrastructural sites.”¹²² These types include filter, programme sink, conduit, suture, stage, pedestal, and thicket. In the following paragraphs, I will use this typology as a framework to discuss which strategies might be applicable in the design of the thesis site.

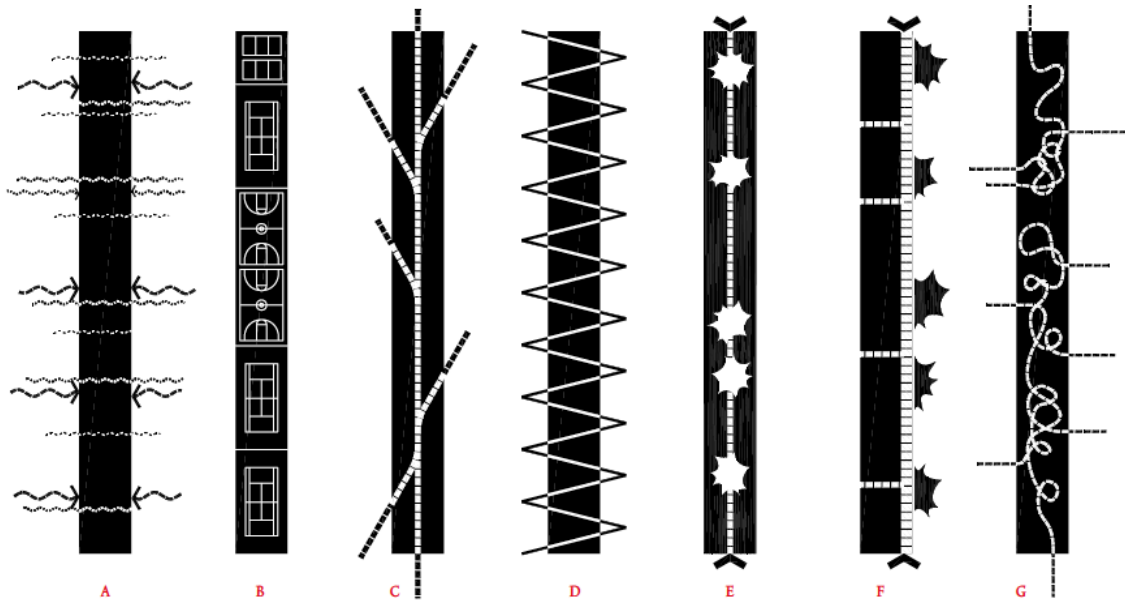


Figure 12 Thin park typologies, from left: A filter; B programme sink; C conduit; D suture; E stage; F pedestal; G thicket.

Figure 45: Thin park typologies. Reprinted from “Thin Parks / Thick Edges: Towards a Linear Park Typology for (Post)infrastructural Sites ” by Karl Kullmann, 2012, *Journal of Landscape Architecture* 12: 70–81. Reprinted with permission.

Filter selectively edits a through-flow of matter across a site, including vehicular traffic, cyclists, pedestrians, and sight lines. The Panhandle in San Francisco is one example. Kullmann states that these parks do not function well with “lower flow volumes and less concentrated usage.” I would argue that there is not enough traffic across the thesis site in enough locations for this type to work well. The new Oakville development might increase the amount of cross traffic, but access from the western side will still be limited to four locations.

¹²² Kullmann, “Thin Parks / Thick Edges.”

Programme Sink is a thin park filled with precisely defined functional uses, usually sports courts and fields or community gardens. Due to the varied topography on the site, this type would not be possible as an organizing type unless an extensive cut and fill program were undertaken, which would remove the remaining traces of site history.

Conduit acts as a conduit for rapid, non-vehicular movement. It is usually seen in rails-to-trails paths or along canal towpaths. The northwest portion of the thesis site could be characterized as a conduit, as it contains a paved path and little else, but it seems to be more used by dog-walkers than bicyclists due to its short length. It would be possible for the entire site to be designed as a conduit, but it is also fairly short and does not connect to the rest of the right of way or bicycle networks. Additionally, low-traffic neighborhood streets already serve as a safe connection for travel between Commonwealth Ave. and Route One.

Suture is used primarily to stitch up an urban rupture or wound. An example is the Rose Fitzgerald Kennedy Greenway, which covers a now-buried freeway. This type is not applicable, as the thesis site contains no rift formed by infrastructure.

Stage is a necklace of events or spectacles, with a combination of spaces scaled and oriented to host events, and with creative event programming. This type has a “central spine of sequential ‘landing sites’ that host both spontaneous and premeditated events,” such as Mauerpark. It is possible for the thesis site to be designed as a stage, or series of stages, although care should be taken to respect the residential neighbors of the park.

Pedestal is an elevated, linear setting for “externalized spectacles or panoramas.” These parks have a symbiotic relationship with their surroundings; views outward are very important. The High Line is the best-known example of this type. While the extreme southeastern part of the thesis site is significantly elevated and could function as a pedestal, most of the site is not, and views are currently of residential backyards and the back of a warehouse, not significant fodder for public spectacles or panoramas.

Thicket is not designed but is a type of urban wild. Kullmann states that, “Applied design has an ambiguous and even fraught relationship with the thicket,” and employs examples including un-engineered urban rivers and portions of the overgrown no-man's-land which slice through Kreuzberg, Berlin. He suggests that “rather than attempting to heal a linear rift with a suture, the thicket fills the thin park with dense matter” and this typology “literally ‘re-grows’ ingrained urban fissures as ‘thresholds’ rather than ‘ruptures.’” The southeast portion of the thesis site is clearly *already* a thicket of sorts, with user-made paths mostly following the rail bed, although the vegetation is not so dense as Kullmann describes, having been mowed and managed for many years.

Having investigated possible design typologies for this linear site, I will keep the types of “stage” and “thicket” in mind as design possibilities for the thesis site. While this categorization of the existing site as a “thicket” is useful, Kullmann does not provide suggestions about how one might design a thicket, nor any examples of designed thickets. For that, I will turn to the next chapter on strategies for designing urban wilds.

Summary of Design Directives from Site Analysis

Human Structures & Demographics

- Retain a sense of enclosure in the southeastern segment after new development goes in.
- Create unity in the segmented northwestern part of the site.
- Provide activities of interest to residents in their 20s and 30s and adults of all ages.
- Provide a space for children to adventure and play.
- Alter topography where necessary to provide ADA access through and across the site.

Ecology

- Improve the functioning of water on site in terms of flow, infiltration, and habitat value.
- Improve novel vernal pool habitat by experimenting with plant additions.

- Interpret the former stream which flowed across the northwest end of the site.
- Increase the diversity of habitat types in the context area by adding meadow, early-successional vegetation, and multilayered forest habitat.
- Provide linear connectivity of habitat types when possible.
- Address vine overgrowth through management and community volunteer days.
- Undertake monitoring on invasive species spread and effect of maintenance activities.
- Opportunity to seed spontaneous vegetation after a disturbance with tough native plants, particularly grasses, to create novel urban meadows.
- Any vegetation planted should be tolerant of high pH and contaminated/disturbed soil.

Design Strategies

- Combine linear park design typologies of ‘stage’ and ‘thicket’.

Chapter 4: Wild to Wildscape: Strategies for Designing Urban Wilds

The language of things and the way things are combined create information that is linguistic in character. If [landscapes] are to acquire this linguistic character, they need everything that language constitutes: they need a diversity of terms and a strong syntax.
–Peter Latz¹²³

Can we categorize the ways in which a design may act upon an urban wild? Which of these strategies are most successful at allowing wildscapes to retain their essential historic and wild character while also providing the benefits of design? In this section, I integrate a framework developed by Heatherington, who explores urban wilds through a textual lens, with Jill Desimini's extended typology of natures and my own analysis.

In the course of my research for the next section, I gathered and organized design suggestions on the topic. I discovered that, with a few exceptions, design suggestions fit into three categories: history/time, vegetation, and access/interactivity (and the overlapping categories between each). Time/history, vegetation, and access/interactivity exist on independent axes of intervention, from complete destruction, erasure, and control of the urban wild to lack of any intentional intervention.

Time/History: The difference between time and history is that while history contains stories of time that has passed, time is ongoing. Thus, this category contains past, current, and future time and the artefacts and cultural products thereof. A design may completely destroy traces of past history, may preserve past traces completely without new interventions, or preserve some traces while destroying or creating others.

Vegetation: This category includes any planted or spontaneous vegetative growth existing on an urban wild. A design may completely remove this vegetation and replace it with other plantings or a static simulacrum, vegetation may be left as it is without intervention, or design or management may act upon the vegetation, preserving some and altering some. Often, vegetation

¹²³ Weilacher, *Syntax of Landscape*, 87.

is perceived as a signal restricting or limiting access. Even grass can function in this way (“stay off the grass”) but more often groundcovers, shrubs, or herbaceous plants serve this function.¹²⁴

Access/Interactivity: This category includes whether the site is freely accessible, the number of rules and uses permitted on a site, the level of control or surveillance, and how interactive the space is. Is interaction limited to viewing or are many activities permitted? Is there one strict program which must be adhered to? Is access limited by park hours or fees? Some authors believe that the strict control or “over-programming” of a space may reduce the ability of users to create their own or collective user-generated programs. Armstrong suggests that the landscapes of our cities “are so pervasively programmed that there are few places where one can withdraw to linger and reflect”.¹²⁵

Design through Erasure

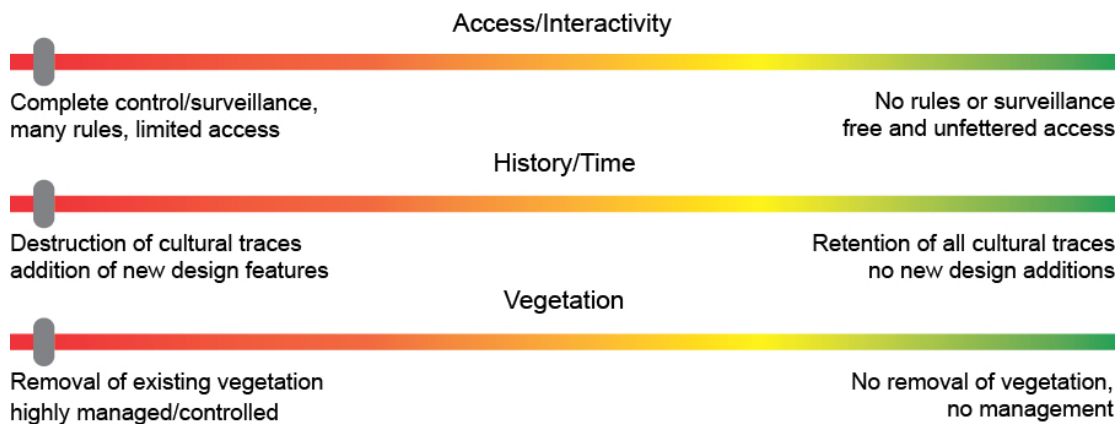


Figure 46: Design through Erasure. Author.

The traditional method of designing urban wilds is erasure and destruction of wild aspects and creation of a new, controlled space such as an urban development, infrastructure project, or park. This can happen at any time during the history of a space, and in fact can happen completely or partially at multiple times through history. Parc des Buttes-Chaumont in Paris, finished in 1867, is a well-known example of a conventional park designed from an urban wild. It

¹²⁴ Nevárez, “Central Park, the Aesthetics of Order and the Appearance of Looseness.”

¹²⁵ Armstrong, “Time, Dereliction, and Beauty.”

was built on a site that had previously been a refuse dump, a sewage repository, and a gypsum and limestone quarry. The land was shaped extensively during park development and transformed into a landscape of green lawns, ornamental shade trees, and a lake. It shares an aesthetics of order with many conventional parks of different origins, in which uses are limited explicitly through posted rules and implicitly through the use of plantings and landscaping to show areas where visitors are permitted to enter and move through the park.¹²⁶ Nevárez suggests that beauty, cleanliness, and surveillance, while difficult to argue against, reduce participation by users to that of a passive spectator and these effects should be seriously considered. Obviously, if design by erasure occurs on an urban wild, it no longer contains any of the characteristics of an urban wild and cannot be categorized as such. This type of design may be necessary, however, if a site is extremely toxic and a complete removal of existing vegetation and earth is required.

Design through Mimicry

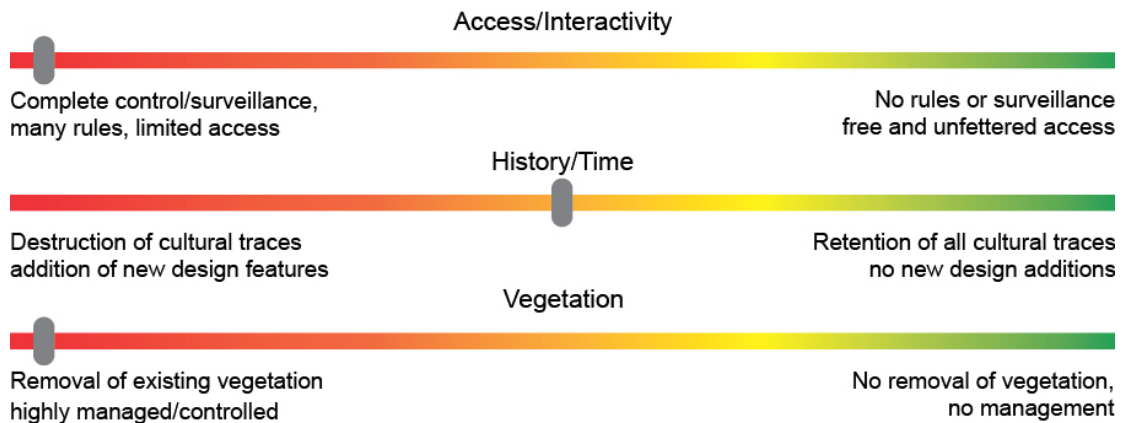


Figure 47: Design through Mimicry. Author.

Design through mimicry is the inclusion of visual cues and symbols which represent wildness in a space which is not actually allowed to be wild. This category contains parks that symbolically incorporate relics, materials, buildings, infrastructure, or vegetation communities

¹²⁶ Nevárez, "Central Park, the Aesthetics of Order and the Appearance of Looseness."

from an urban wild into a new landscape.¹²⁷ In these designs, as we will see, the relics run the risk of becoming static symbols and visitors may not connect with them. While these sites retain objects or visual elements from their wild urban past and sometimes *appear* wild to the untrained eye, they are in fact highly controlled spaces.

As recently as 1971, Richard Haag met with intense initial resistance to his plan for Gas Works Park in Seattle, which incorporated the structural remains of a gas generating plant into a public park. Haag's ideas were then seen as progressive, as "monument conservation was in its infancy and there were no industrial monuments at the time."¹²⁸ The park incorporates relics for their aesthetic impact and separates visitors from the remaining structures with a fence. The site's incredible toxicity and complicated history is hidden and erased by a layer of green lawn. "Today the Gas Works Park looks like a simply designed leisure park, with the industrial monuments resplendent...fascinating in its aesthetic appearance, but puzzling in terms of its significance".¹²⁹ The remaining ruins are symbols of a wildness the park no longer contains.

During the competition for Landschaftspark-Duisburg Nord in 1989, the chair of the jury expressed disappointment with all but two of the designs created by design teams, complaining that, "The park ideas that were developed were surprisingly conventional in the end... derived as they were from the classical ideas of the English or French park. They fitted in with the culture of forgetting and suppressing..." (107).¹³⁰ She criticized the fact "that the steelworks would survive everywhere inside [these designed paradises], as an alienated, incomprehensible object".¹³¹ A Gas Works-style park was not to succeed in this competition, as we will see shortly.

Designs that use ruins or traces as symbols to mimic a wild past are not simply relegated to past decades. Armstrong criticized designs shown in the 2005 MOMA exhibition

¹²⁷ Heatherington, "Buried Narratives."

¹²⁸ Weilacher, *Syntax of Landscape*.

¹²⁹ Ibid.

¹³⁰ Ibid., 107.

¹³¹ Weilacher, *Syntax of Landscape*.

“Groundswell,” which proposed new uses for derelict urban land, for portraying their industrial past as “frozen set pieces”.¹³²

The High Line, constructed from 2006 through 2014, is one of the best-known recent examples of this type of design in the United States. Extensive theoretical criticism has been leveled at the project. It was likely necessary, as the designers have argued, to remove the existing surface of the line in order to inspect and repair the substructure, but in the place of the previous wild nature, the designers imposed a static and highly-maintained planting design on the park. This design replaces “actual successional ecologies with artificial ones based on picturesque traditions”.¹³³ In the third “interim” section of the park, urban plants are currently being left to grow up on their own outside of the designed walkway, but that is intended as a temporary feature and a redesign will “complete” the park within 10-15 years.¹³⁴

The list of rules in the park is extensive; “behaviour is tightly controlled [and] appropriate behaviour [is] regularly enforced by other visitors and the ubiquitous presence of maintenance staff and park police”.¹³⁵ In fact, interaction with the park is limited to the experience of viewing and any activity that is not visual (aside from sitting on benches) is actively discouraged.

Chan points out that ruins, which are already allegories of “the imperfect way the past is remembered,” have meanings that are lost when they are “polished, painted, and planted”.¹³⁶ The High Line, subject to these forces, has become a symbol of an industrial past and a former urban wild but is no longer actually wild.

¹³² Armstrong, “Time, Dereliction, and Beauty.”

¹³³ Langhorst, “Re-Presenting Transgressive Ecologies,” 1110.

¹³⁴ Robarts, “Northernmost Section of New York’s High Line Opened.”

¹³⁵ Langhorst, “Re-Presenting Transgressive Ecologies,” 1123.

¹³⁶ Chan, “What Roles For Ruins?,” 28.

Design through Restoration

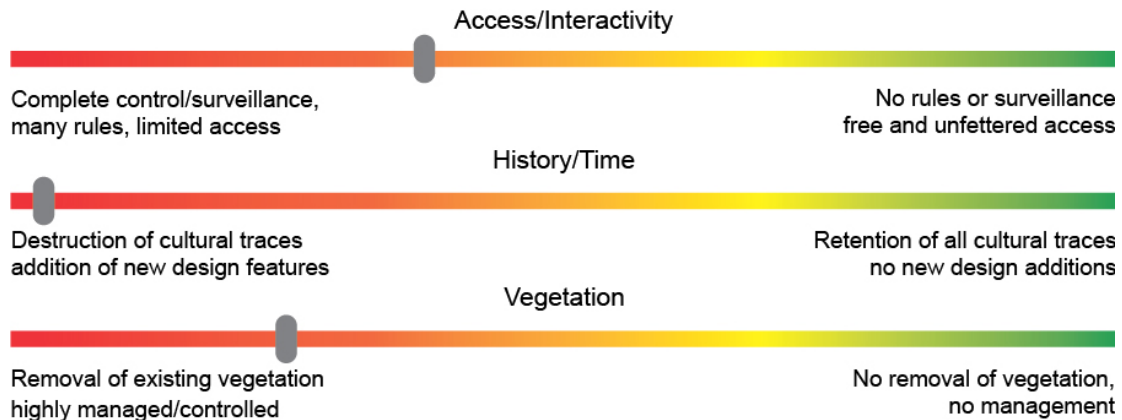


Figure 48: Design through Restoration. Author.

Restoration of an urban wild may be chosen as a strategy if restoring the ecological functioning and original species composition of a site is of paramount importance. In this case, existing spontaneous vegetation is removed and the site is managed intensely to prevent recolonization by spontaneous plants, although native plants are usually allowed to grow without intervention. Cultural traces or artifacts (particularly industrial traces) are usually removed, as they often post-date the period of restoration. Site access or interactivity is largely regulated to allow preferred species to grow without hindrance from human activity, although this is not usually heavily enforced.

The goal with this type of design is to intervene heavily on a site such that it can once more function (with continued maintenance) as a vegetatively wild space, but one with an “original” species composition and a successional trajectory favored by humans. There is debate about whether the action of restoration returns a site to first nature or whether it becomes another form of designed cultural or productive nature.

While restoration is a valuable technique, it should be used carefully on urban wilds, as layers of history will be compressed and simplified. Restoration elevates one “golden era” of history (before human intervention) above all others, and casts human action as an entirely negative force.

Design through Conservation

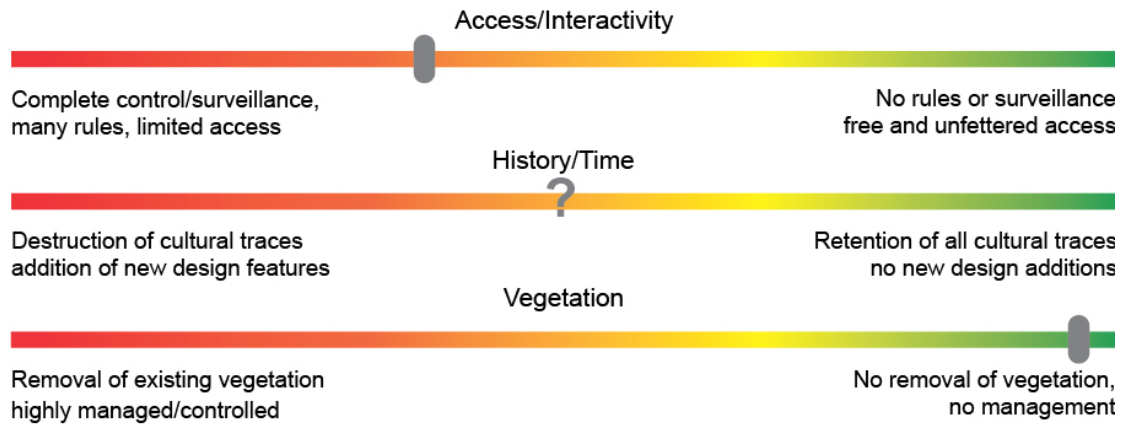


Figure 49: Design through Conservation. Author.

Design may create conservation areas from fourth nature, much like existing first nature conservation areas. This corresponds with Kueffer and Kaiser-Bunbury's new conservation category of "Novel + wild + conservation".¹³⁷ In many traditional conservation areas, vegetation is allowed to grow freely, but human access and use is proscribed and controlled by limiting foot traffic to walkways and prohibiting interactive uses that might damage vegetation. In fact, nature conservation has come to see itself "primarily as a restraint, a containment, as a repression of 'unchecked' human behavior, that only too obviously follows maxims [that describe humans as] separate from nature and enemies of nature".¹³⁸ As stated above, this is also true of restoration.

The role of cultural artefacts is unclear in this type of intervention. Vegetation may be managed to a certain extent, as it is in first nature conservation areas, although the point of a fourth nature conservation area versus a restoration would be the retention of existing vegetation communities. With this type of strategy, there may not be enough design or maintenance activity to protect the site from the negative perceptions and processes listed in the first section of this

¹³⁷ Kueffer and Kaiser-Bunbury, "Reconciling Conflicting Perspectives for Biodiversity Conservation in the Anthropocene."

¹³⁸ Körner, "Nature Conservation, Forestry, Landscape Architecture and Historic Preservation: Perspectives for a Conceptual Alliance," 193.

chapter. On the other hand, rare or threatened vegetation must be protected from human access in order to ensure its survival, and in this case it must be reinforced that specific areas are off-limits.

While there is likely a role for landscape architects to create access trails or informational signs in these new conservation areas, it would probably be limited and straightforward, much like those in existing conservation areas.

Design through Historic Preservation

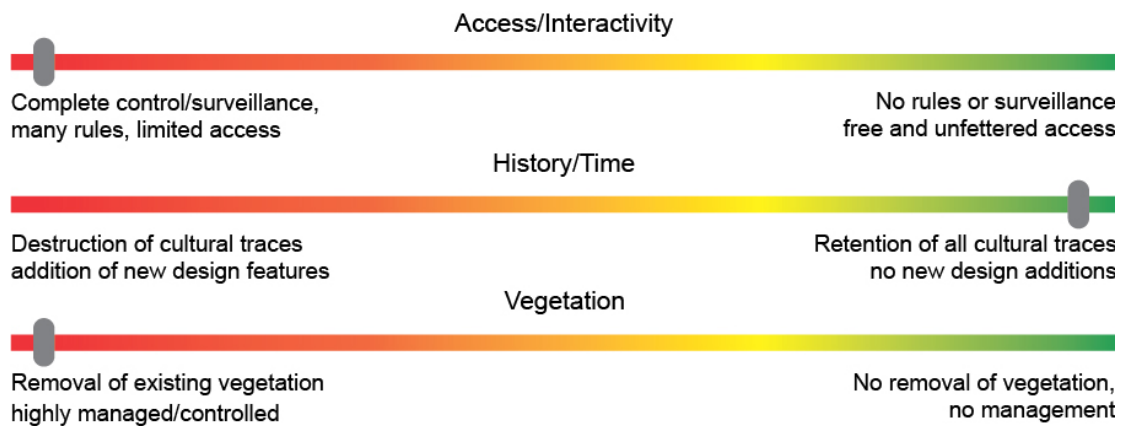


Figure 50: Design through Historic Preservation. Author.

Historic preservation of a cultural site is a possible design strategy which is particularly useful for very important sites or relics which should be preserved so that important parts of history are not lost or forgotten. In these types of designs, cultural traces are preserved as they are, in some cases with limited design interventions to allow for visitor access. Vegetation growing on these traces is removed in order to prevent degradation or destruction and to clearly present the cultural artefacts. Visitor access is limited and clearly directed in order to prevent degradation of the site, and visitors are rarely allowed to interact directly with the sites in new and creative ways.

Again, the focus is on preserving one aspect of the site to the detriment of all others and achieving a static, controllable state. Like the ecological restoration, this type of preservation values one period in history more than any other, causing a loss of historical complexity and

ongoing interaction with the site. This type of design is best used when the urban wild is of extreme historical importance.

Design through Hybridization

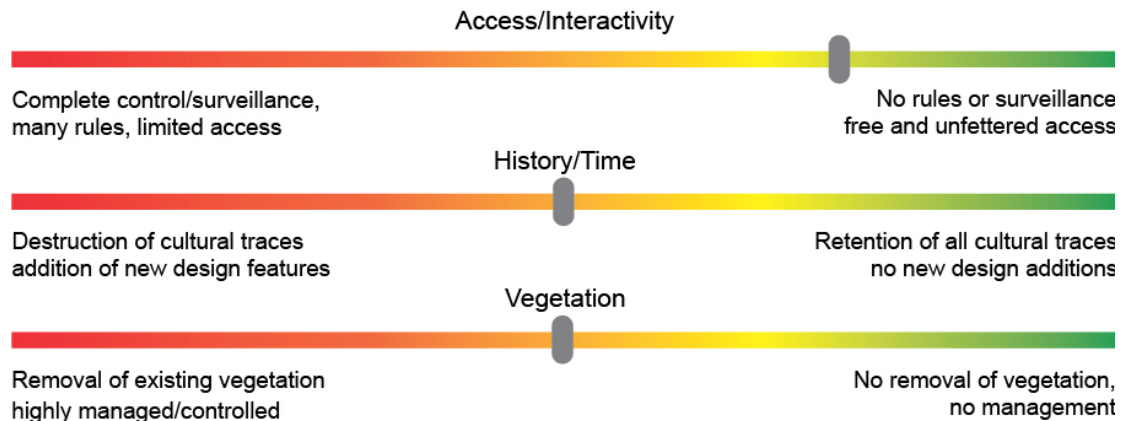


Figure 51: Design through Hybridization. Author.

When designs hybridize with urban wilds, all sliders stay to the middle or right of the scale, following the principle of the “smallest possible intervention.” This technique was used by Latz in his designs for Landschaftspark Duisburg-Nord and Saarbrücken, was initially favored by Michel Corajoud in his design for Jardins d’Éole, and was also suggested by Chan, Kuhn, Jorgenson, and Armstrong.¹³⁹ As we have seen earlier in this chapter, it is difficult for various reasons and not ideal in many situations to take a path of no intervention. Thus, this principle suggests that a designer enact the smallest possible intervention that will allow a site to reap the benefits of being designed or “improved.” The smallest “possible” (or practically feasible/advisable) intervention may vary from site to site depending on its context, history, and level of contamination. Heatherington identifies two design strategies which retain essential wild characteristics in all three categories. I discuss both in the following section.

¹³⁹ Weilacher, *Syntax of Landscape*, 115–16; Foster, “Spectral Denivelations,” 75; Chan, “What Roles For Ruins?,” 30; Kühn, “Intentions for the Unintentional,” 51; Jorgensen and Tylecote, “Ambivalent Landscapes,” 459; Armstrong, “Time, Dereliction, and Beauty.”

Design through Time and Process

Some designers retain elements of uncertainty or wildness in their designs by prioritizing “process over a finished product, creating landscapes which are always in flux”.¹⁴⁰ Because of this, there is the possibility for multiple “authors” and varied interpretations of the space. Design can be through ecological process, social process, and/or design process, allowing nature, users of a space, and designers to become authors of a shared work.

Examples include Michel Desvigne’s master plan for the riverbanks of Bordeaux in which a tight grid of trees is planted as industrial lots become vacant and Marti Franch’s work in Girona, in which the city’s green infrastructure is designed through management. Franch’s is a strategy of subtraction and “confetti,” or small, irregular site interventions (sculptures, furniture, stumps for climbing) to remind visitors that the site is designed.¹⁴¹

Natur-Park Schöneberger Südgelände (Südgelände for short) is the best-studied park that fits within this category. Südgelände was formerly home to one of Berlin’s busiest rail switchyards and a railway workshop. It was located in West Berlin after the war, yet was owned by the East German railway company and was completely shut down in 1952. The approximately 45-acre site lay unused and undeveloped for fifty years and developed unique vegetation communities. In 1980, Südgelände contained rare species and “about 334 species of ferns and flowering plants, about one-third of Berlin’s total,” including some plants of foreign origin. Foxes, falcons, a rare spider, and three new beetle species were discovered on the site.¹⁴²

This site was transformed into a park for several reasons, which included the need for urban recreation space, the fact that the site was ecologically special, and a campaign that renamed and re-framed Berlin’s wasteland sites in order to give them new identities.¹⁴³ Advocates created booklets and publications on site history and wrote descriptions in the form of itineraries

¹⁴⁰ Heatherington, “Buried Narratives.”

¹⁴¹ Waterman, “It’s About Time.”

¹⁴² Lachmund, *Greening Berlin*, 166.

¹⁴³ Ibid.

that took the reader on a virtual excursion. “By guiding visitors along a selected route, with stops at significant landmarks, and by means of verbal comments and clues, they helped draw the participants into a common aesthetic sensibility, which was at the same time visual, auditory, and corporeal”.¹⁴⁴

In 1991, parties were finally in agreement about the development of the site into a park and two landscape planning offices were commissioned to create plans for the site. However, conflicts occurred between opposing goals of conservation and recreation, design aesthetics and ecology, and wildness and biodiversity. Designs proposed in response to a 2006 competition were harshly criticized by activists and ecologists; the winning design emphasized the park’s role as a stimulus for new development instead of focusing on the “myth of nature” or railway history.

These conflicts were eventually worked out through the creation of a design/management framework “in which natural and social processes were partially controlled and partially left to their own dynamics. With this approach, different goals could be combined with one another”.¹⁴⁵ Within this framework, three types of spaces or “rooms” were created:

1. Wild woods: Uncontrolled development of new wilderness is allowed without human influence on species composition. The spread of wild woods into other spaces is prevented through maintenance. Ecologists may study succession in these spaces.
2. Clearings: Open landscapes are maintained and succession is controlled through mowing and grazing so that rare grassland species continue to flourish. Open areas allow the cultural remnants of railway uses to remain visible.
3. Groves: Forest stands are maintained which are light and open. Attractive trees and stands are preserved and provide an aesthetically pleasing experience.

These three types of rooms are linked through the addition of a new path system, which allows all visitors to experience the site. Free access is allowed over most of the site except the 8-

¹⁴⁴ Ibid., 171.

¹⁴⁵ Kowarik and Langer, “Natur-Park Südgelände,” 291.

acre nature reserve, where foot traffic is limited to raised metal walkways in order to preserve the rare species. The old cultural layer in the form of railway relics was preserved, and in some cases restored, and a new cultural layer of art works has been established on site, which “present[s] a creative tension with the developing wilderness as well as with the relics of the railway”.¹⁴⁶



Figure 52: Images of Südgelände. From the German-language Wikimedia commons, CC license. Photo credits clockwise from top left: Babewyn, Hanson59, Membeth, Assenmacher, Hanson59

Südgelände’s maintenance scheme was developed over time. Artists initially suggested that making decisions on which plants to remove was “a kind of fascism,” but ecologists

¹⁴⁶ Ibid., 297.

succeeded in convincing the public that maintenance was necessary. “It was throughout the practices of fixing and negotiating maintenance schemes that new boundaries between what was to be deemed as “natural” and “not natural” in these places were locally produced”.¹⁴⁷

The design and maintenance of wasteland parks was seen as an experiment and the beginning of maintenance activities occurred along with monitoring surveys, which were repeated regularly every year and sometimes led to adaptations or “calibrations” of maintenance schemes.¹⁴⁸ Thus, Südgelände is designed through time and with time by prioritizing process, treating interventions as ecological and social experiments, and allowing nature, the historical past, and artists to become shared authors of a collective space.

Design through Hybridized Texts

In this category, designers work with the existing ‘texts’ of site conditions such as vegetation and ruins, and interweave them with “texts” from elsewhere such as traditional garden design, art, and other forms of meaning. Visitors to the site participate in the unfolding of meaning and connect with the wider landscape. Desimini’s additions to the ‘natures enumerated’ theory fit into and subdivide this category.¹⁴⁹ Fifth and sixth natures are, effectively, the hybridization of wild aspects of a site with agricultural/productive and cultural/third nature ‘texts’, respectively.

Hybridization with Productive Nature

This category contains sites in which aspects of urban wilds are interwoven with aspects of productive second nature. Examples of this type include urban agriculture, agro-forestry, bioretention practices, and carbon sequestration coexisting with urban wilds. This corresponds with the new conservation type “Novel + designed + production,” with a goal of “coproduc[ing]

¹⁴⁷ Lachmund, *Greening Berlin*, 188.

¹⁴⁸ Lachmund, *Greening Berlin*.

¹⁴⁹ Desimini, Jill, “Notions of Nature and a Model for Managed Urban Wilds.”

biodiversity in cultural landscapes and on production land through biodiversity-friendly land use schemes”.¹⁵⁰

Fifth nature may be difficult to implement broadly on urban wilds and on this thesis site because of soil pollution or site contamination, although techniques may be available to address these challenges. However, some practices such as bioretention may play a part in the final design. Urban wild sites may be useful as phytoremediation plots (see *Phyto* by Kate Kennen and Niall Kirkwood for more information).

Hybridization with Cultural Nature

This category contains sites where aspects of urban wilds are interwoven with aspects of cultural nature. This nature is a “reinvention of the urban park or garden, a designed landscape that does not cede ecosystem value and respects the realities of maintenance in the present urban economy.”¹⁵¹

The best-known example of an urban wild that has been designed with a strategy of hybridization with cultural nature is Landschaftspark-Duisburg Nord. The park is located in the Ruhr region of Germany, which has been intensely affected over the last two decades by deindustrialization. As part of a plan for managing this industrial decline, the blast furnace plant (closed in 1985) in Duisburg was re-imagined as a recreation area. Around 568 acres of post-industrial site remained, “punctuated by large service areas, highly complex industrial plants, blast furnaces, turbines, cooling towers, ore bunkers, machine halls, foundries, gas tanks, storage areas, workshops, sewerage facilities, factory railways and roads”.¹⁵² The design competition for the park was discussed in a previous section. Latz’s competition entry, with its strategy of the “smallest possible intervention” was eventually chosen.

¹⁵⁰ Kueffer and Kaiser-Bunbury, “Reconciling Conflicting Perspectives for Biodiversity Conservation in the Anthropocene.”

¹⁵¹ Desimini, Jill, “Notions of Nature and a Model for Managed Urban Wilds,” 185.

¹⁵² Weilacher, *Syntax of Landscape*, 105.

Latz's goal was to understand intimately the "existing entanglement of function and information layers in general, in order to work out how the industrial landscape organism, formerly so alive, used to function".¹⁵³ Latz is a proponent of intense and deep site analysis which is never complete. In this project, this strategy did not lead to a complete overall plan. In fact, "Latz + Partner never wanted to draw an overall plan for Duisburg-Nord, to avoid creating an impression of a complete and objective entity. They were much more concerned about linking independent structural layers in a process-driven approach".¹⁵⁴

In Latz' design, industrial-technological elements are intermixed with traditional garden elements. "Typical elements of idyllic cultural landscapes and gardens were incorporated within heavy industry context. A kind of cottage garden with boxwood... and hydrangeas was laid out in a former ore bunker".¹⁵⁵ Traditional elements included groves planted on a grid, allees, and columnar black locust trees planted on a former waste dump. Rubble was enhanced by blue sage and anthericum, and thanks to the juxtaposition, both were endowed with the same status.¹⁵⁶

Spontaneous plants are also intermixed with traditional plantings in the park design. This creates a continuous process that blurs the line between systems authored by humans and non-humans and leads to a "complex mosaic of different conditions" or "new and hybrid socio-ecological assemblies".¹⁵⁷

The park is free and is open 365 days a year, 24 hours a day. A few structures are marked as off-limits and fences were designed for particularly dangerous areas, but otherwise visitors are allowed to roam through the space.¹⁵⁸ Graffiti is not removed, and small user-made structures and vegetable patches have popped up throughout the site. "Visitors and users become agents in the

¹⁵³ Ibid., 114.

¹⁵⁴ Ibid., 111.

¹⁵⁵ Körner, "Nature Conservation, Forestry, Landscape Architecture and Historic Preservation: Perspectives for a Conceptual Alliance," 208.

¹⁵⁶ Weilacher, *Syntax of Landscape*, 124.

¹⁵⁷ Langhorst, "Re-Presenting Transgressive Ecologies," 1117–19.

¹⁵⁸ Weilacher, *Syntax of Landscape*.

ongoing change of the site, and not relegated to the role of passive consumer” Flexible and imaginative uses are tolerated and the park “does not feel over-programmed”.¹⁵⁹

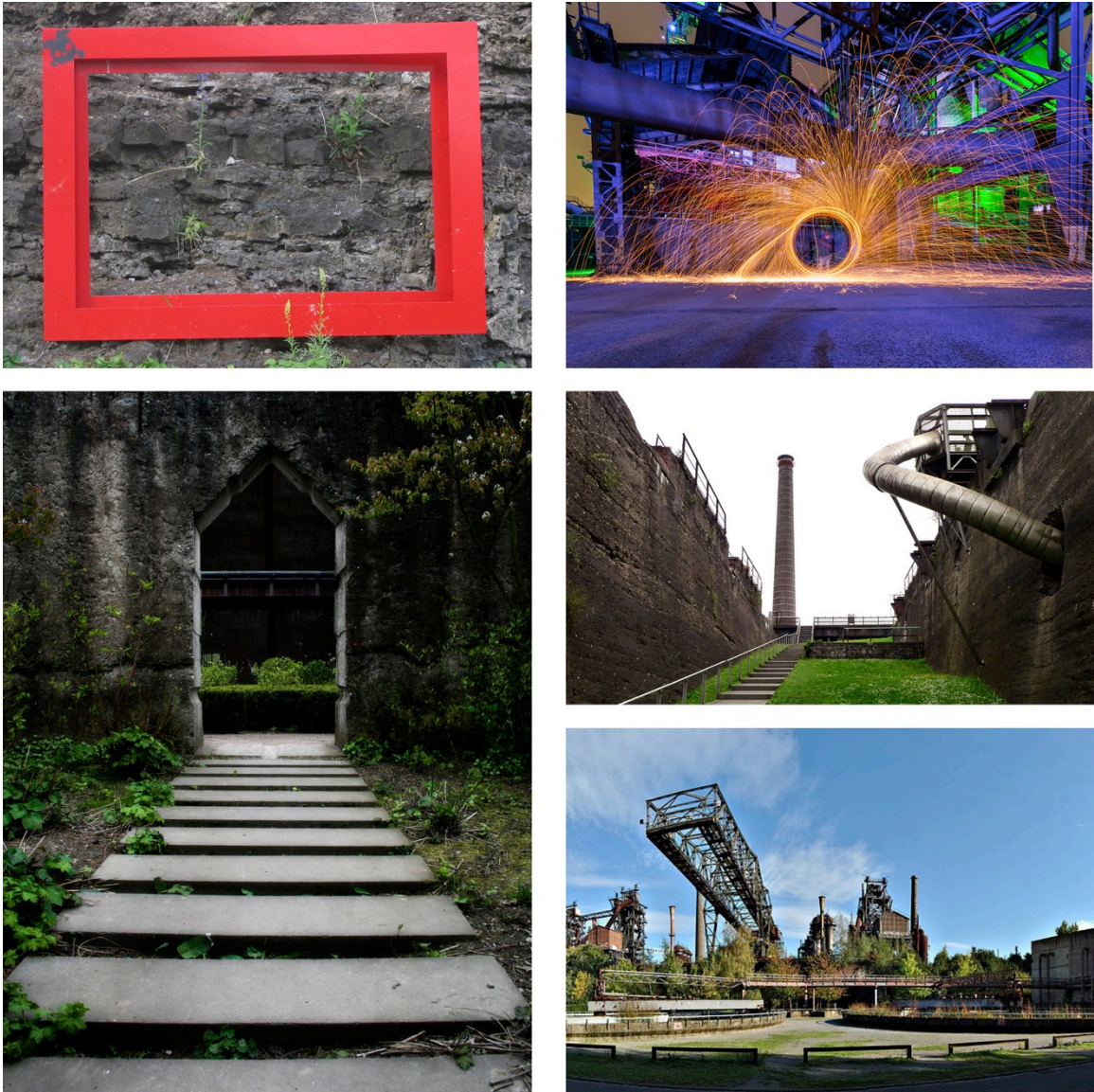


Figure 53: Images of Duisburg-Nord. From Flickr, CC licenses. Photo credits clockwise from top left: duimdog, FotografieDanielZiegler, zoetnet, Carschten, Alexander Kaiser

The park is not a cultural or ecological restoration. While many people pushed for the naturalistic restoration of the “alte Emscher,” a dead-straight open sewage canal, the Latz team refused to transform the canal back into a meandering river. This decision was made partially

¹⁵⁹ Langhorst, “Re-Presenting Transgressive Ecologies,” 1120.

because the soil was extremely contaminated and water flow is limited, but they also wanted “to build the phase in which rivers were straightened into the park as a cultural phase”.¹⁶⁰ This history of control or erasure is as important to Latz as all other histories that are commonly restored.

Summary of Design Directives from Theory

Principle of the ‘Smallest Possible Intervention’

- Designing emptiness or deciding where ‘nothing’ will go.¹⁶¹
- Allowing temporary, spontaneous, or flexible uses.¹⁶²
- Subtraction and editing of the existing site.¹⁶³
- Applying ‘confetti,’ or sprinkling in small, irregular site activities.¹⁶⁴

Time and History

- Treat ruins as historical evidence and only secondarily as aesthetic devices.¹⁶⁵
- Preserve ruins and historical evidence wherever possible.
- The removal of historic traces or straightening of natural features is a part of history and should not be forgotten.¹⁶⁶
- Cultural ‘recycling,’ in which some traces are left intact and others are invested with new meaning, can “stimulate new readings of historical material”.¹⁶⁷
- Consider using time as a central organizing feature of urban wildscapes.¹⁶⁸
 - Explore time and duration in “open and experimental ways”.¹⁶⁹

¹⁶⁰ Weilacher, *Syntax of Landscape*, 129.

¹⁶¹ Armstrong, “Time, Dereliction, and Beauty,” 124.

¹⁶² Ibid., 123; Kullmann, “The Usefulness of Uselessness.”

¹⁶³ Waterman, “It’s About Time.”

¹⁶⁴ Ibid.

¹⁶⁵ Chan, “What Roles For Ruins?,” 30.

¹⁶⁶ Weilacher, *Syntax of Landscape*, 129.

¹⁶⁷ Weilacher, *Syntax of Landscape*.

¹⁶⁸ Jorgensen and Tylecote, “Ambivalent Landscapes,” 459.

¹⁶⁹ Armstrong, “Time, Dereliction, and Beauty,” 121.

- Explore the idea of “slow time,” or watching landscapes gradually change.¹⁷⁰
- Use the discovery of layers of time as a central theme to program sites.¹⁷¹

Vegetation

- “Cues to care” on site may lead to greater acceptance of wild parts of the site.¹⁷²
- Incorporate spontaneous vegetation into designs as a clue to site history and the “specific cultures of nature [that] have emerged over time”¹⁷³
- Protect rare or threatened vegetation from human access in order to ensure its survival.

Access and Interactivity

- Emphasize “acoustic, tactile, or olfactory texture of space rather than fleeting visual encounters,” which allow sensory immersion in nature.¹⁷⁴
- Refrain from ‘over-programming,’ which may reduce user creativity.¹⁷⁵
- Allow visitors maximum possible access to the site and allow/promote new uses.

¹⁷⁰ Ibid., 122.

¹⁷¹ Ibid., 117; Chan, “What Roles For Ruins?”

¹⁷² Nassauer, “Messy Ecosystems, Orderly Frames”; Kühn, “Intentions for the Unintentional.”

¹⁷³ Gandy, “Marginalia.”

¹⁷⁴ Ibid., 1208.

¹⁷⁵ Armstrong, “Time, Dereliction, and Beauty”; Chan, “What Roles For Ruins?”

Chapter 5: Design Methods

Principles for Designing Urban Wilds

In the last two chapters, I generated bulleted lists of design directions originating from the site analysis process and from an analysis of precedents and the theory. In this chapter, I discuss whether the overarching principle derived from the theory, that of the ‘smallest possible intervention,’ is applicable to this site or requires modification. Then, I discuss how to reconcile design directions originating from the theory and the site analysis goals, describe existing site characteristics which I take cues from in the design process, and discuss how art and programming can be used to meet the design goals. Then, I describe my initial process of design/concept development and show the resulting concept, which details where interventions will be placed on the site.

Application of Theory of “Smallest Possible Intervention” to Thesis Site

Using the overarching theory suggested by critics would lead me in the overall direction of the “smallest possible intervention.” Is this design method appropriate on this site? The two precedent sites, Südgelände and Duisburg-Nord, contain physical remnants of industrial and rail use as well as spontaneous vegetation. At Südgelände, various relics remain: the train tracks, the iconic water towers, a 4,000 square foot former locomotive hall, a locomotive, and track maintenance equipment. Duisburg-Nord contains an even larger assortment of urban relics: ore storage bunkers, the casting house, a blast furnace, an old gasometer, a blower house complex, and a switching house.

These conditions vary significantly from the thesis site, where the only surviving relics are the topography and the industrial buildings in the Oakville Triangle. No tracks, ties, waiting sheds, trestles, poles, catenary wires, or other railway traces remain. The industrial buildings in

Oakville Triangle are threatened by development and may soon disappear, leaving only the topography intact.

A strategy of minimal intervention would have a very different effect on this site than on one with more intact historical remnants because there has already been significant intervention to remove historical traces on the thesis site. On such a site, this strategy of minimal intervention may lead to a loss of knowledge of site history and traces instead of their preservation. Scattered ‘confetti’ interventions may not have enough of an impact in order for the site to reap the benefits of being designed. Thus, this site requires a modified approach. While certain areas may be minimally designed, others will require more intervention.

Reconciling Design Directions from Site Analysis and Theory

In some cases, design directives from the site analysis and theory align. For example, the site analysis directive of retaining enclosure in the southeastern segment of the site post-development aligns with the theory directive suggesting the preservation of ruins and treating them as historical evidence. These can both be accomplished by retaining portions of the existing industrial building shells that sit on or adjacent to the site.

In some cases, the directives from the site analysis and theory appear to contradict each other and must be resolved. For example, the site analysis suggests that it is important to provide ADA access throughout the site, and the theory also suggests allowing maximum site access. However, the goals of minimal intervention and preservation of historic topographical traces suggest retaining the site as it is. In this case, it is possible for a bridge and cantilevered ramp to be built over portions of the site without major topographical disturbance. These directives, which seem to contradict each other, can be resolved through design.

In cases where interventions identified in the site analysis are necessary for safety, accessibility, or improved ecological functioning, they should override or be combined with

directives from the theory. For example, there are several hydrologic goals related to improving the function of the stream and urban vernal pools which require some intervention on the site but will provide a significant habitat and ecological benefit once complete.

Additional Design Directives: Incorporating Existing Site Characteristics

Early in the development of this thesis project, I began sketching out ideas for small and tactical interventions related to the materiality of the existing site. Since the park is mostly edge, I was particularly interested in semipermeable gateways/thresholds which would clearly demarcate the transition from one space to another while allowing sightlines and multiple exit routes for safety. I also became interested in the idea of removing or excising pieces of structures in order to add meaning through the process of subtraction. ‘De-paving’ was of interest; particularly artful methods for facilitating the decay of asphalt or transformation to a space which hosted spontaneous plants. I sketched vignettes which addressed ways to adapt and remix existing and past visual/ecological site characteristics, which included:

- The tendency of vegetation to grow along fencelines and mark the locations of ‘ghost’ fences long after they had been removed.
- The experience of moving through a sequence of site ‘rooms’ defined by ‘ghost’ fences.
- The discontinuation of mowing at different times, leading to varied vegetation stand ages.
- Spur and secondary paths winding through tall grasses and spontaneous vegetation.
- Mounds existing on an otherwise flat portion of the site.
- Remnants of site history in the form of I-beams and rail segments on site edges.
- “Banal” construction materials including chain-link, asphalt, concrete gutter and inlets.
- Historic materials which had been removed such as catenary poles, wires, and tracks.



Figure 54: Existing site conditions. Clockwise from top left: steel I-beams, vegetation along former fenceline defines a 'room', chain-link fence and asphalt lot with storm drains, remaining rail segments in a ditch, secondary path through tall grasses, gentle mound on otherwise flat portion of site. Author.



Figure 55: Boxcar converted to an electric engine, 193-. Courtesy of the Fairfax County Public Library.



Figure 56: Tracks at Purcellville, VA after abandonment, 1968. Courtesy of the Fairfax County Public Library.

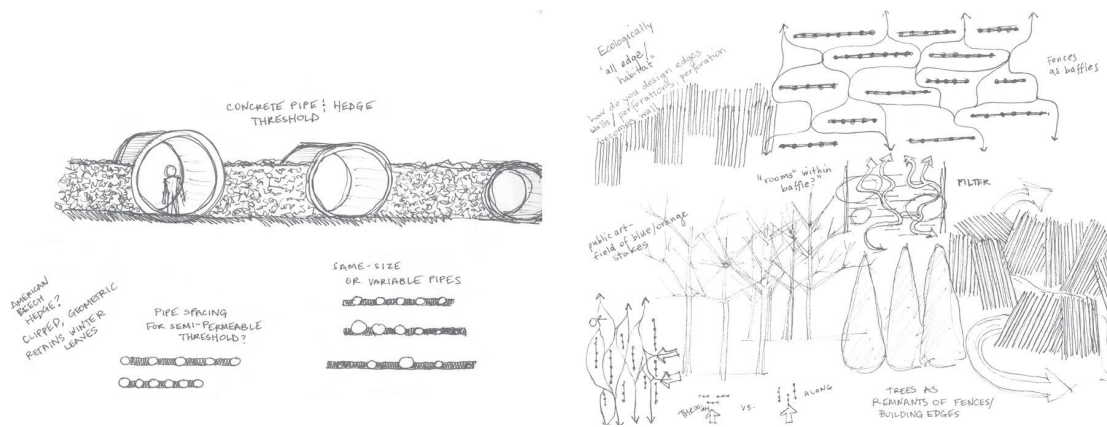


Figure 57: Concrete pipe & hedge threshold and manipulating vegetation through 'fence mazes'

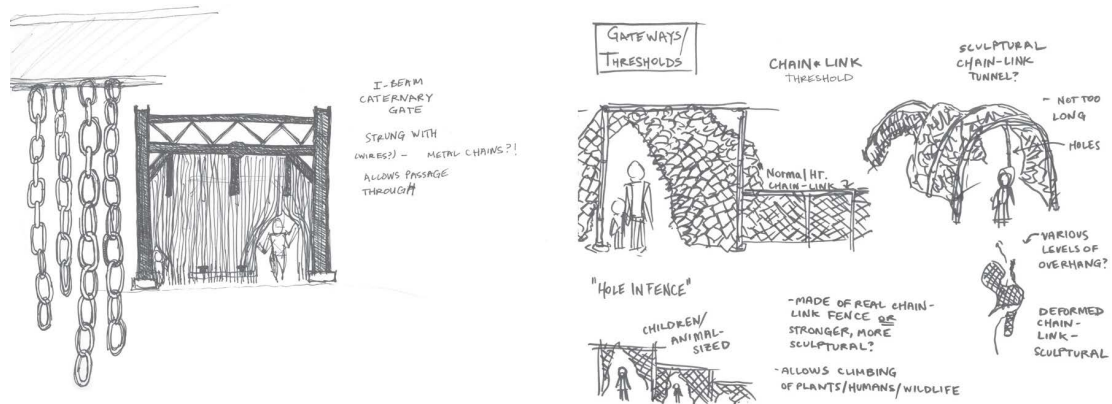


Figure 58: Catenary gate and sculptural chain-link threshold

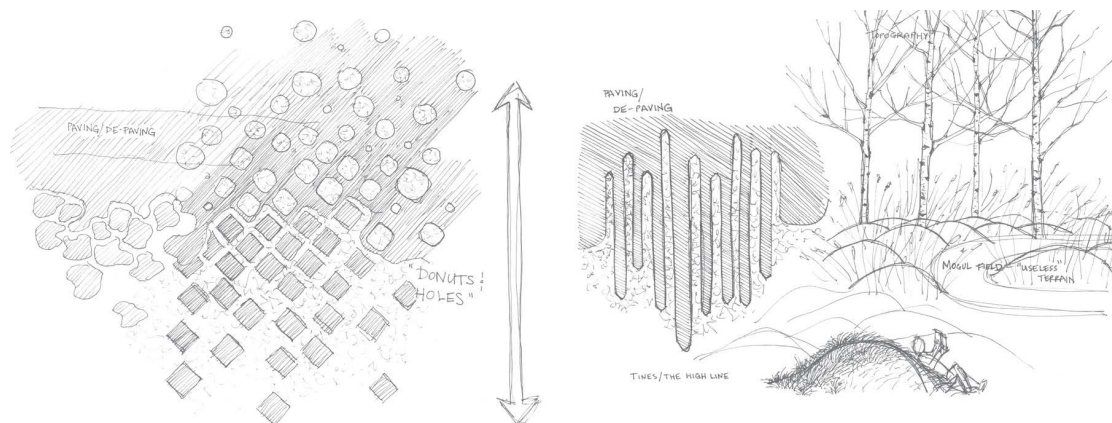


Figure 59: Paving/de-paving studies and mound field

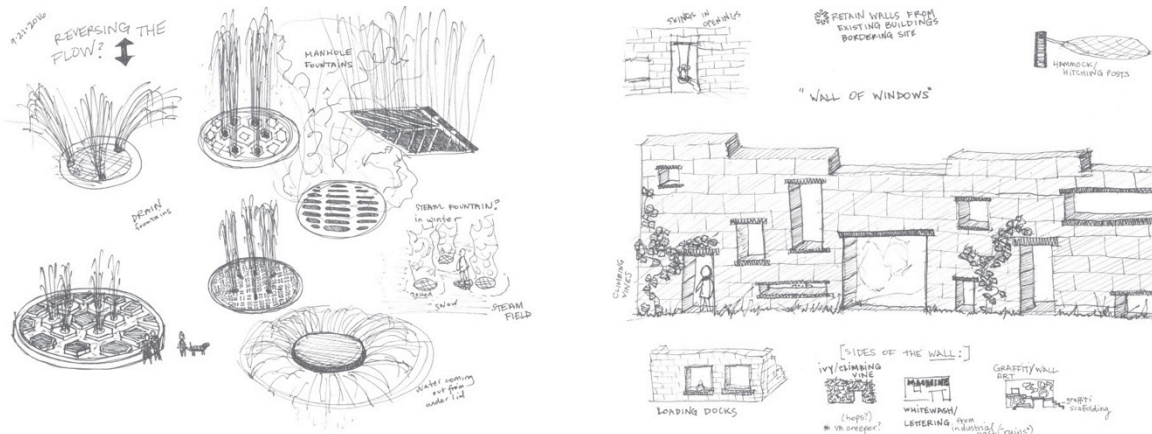


Figure 60: Drain fountains and design through subtraction on an existing wall

These sketches helped me visualize what was important about the existing site and how design could act on these spaces. I was interested in creating new experiences which recalled and expanded those existing on the site, added a new layer of meaning, or provoked unexpected reflections on the typical infrastructure of urban life.

Programming the Site

An overview of the best methods for programming and artistic additions on urban wild sites is missing from the literature I have reviewed, although some authors discussed tactics which were used on particular sites. It is possible that I simply did not come across this information in my search. Given a longer timeframe, I would be able to investigate this question more thoroughly, as it is an important aspect of design.

One author does suggest that designers refrain from “over-programming” an urban wild, which may reduce user creativity,¹⁷⁶ and another suggests emphasizing the “acoustic, tactile, or olfactory texture of space rather than fleeting visual encounters”,¹⁷⁷ however, the question remains of how to ‘jump-start’ creativity or show that it is allowed in a space where users may be hesitant to do activities out of the norm. At Südgelände, the design moved forward from deadlock

¹⁷⁶ Chan, “What Roles For Ruins?”

¹⁷⁷ Gandy, “Marginalia.”

only when a group of metal sculpture artists, who had their workshop in an old railway shed at the site, proposed a ‘walkable sculpture’ made from rusty steel.¹⁷⁸ This tactic of design generated by users of the space may prove useful. Sheridan suggests mobile, incremental and temporary strategies which are reversible and allow “structures, uses, and interventions to occur outside the more stringent regulatory requirements of permanent architecture”.¹⁷⁹

It seems possible that workshop-based or tactical programming could introduce visitors to alternative site uses and support the creation of art forms which could then be located on the site. Interventions such as a community maker space in the former industrial building could facilitate this process of user generation, as could the addition of boxcar artist studios. Workshops or classes could teach found or nature art, sculpture, and more.

Temporary or pop-up uses and activities might also include a hammock grove where users can bring their own hammocks and slacklines, a bouldering wall installed on part of the existing concrete walls, slides on a steep slope, and free-form dirt ‘play mounds.’ Unconventional interpretive signs could ‘frame’ parts of the site and ask open-ended questions which may provoke visitors to conceptualize the ecology and history of the site in new ways.

Workshops and meetups could also include those focused on the nature of the site, including ecological processes, animal and plant observation and identification (birding, plant ID, sketching), and harvesting and processing of mulberries or other plants (after determined to be safe for consumption). A community maintenance and vegetation monitoring project could be initiated from the community maker space, with regular vine-pulling days scheduled.

Concept Development

The theory almost exclusively discusses the design of urban wilds which contain intact traces. Because I needed to add reconstructed traces and more ‘designed’ spaces, I needed to

¹⁷⁸ Lachmund, *Greening Berlin*, 185.

¹⁷⁹ Sheridan, “Disordering Public Space: Urban Wildscape Processes in Practice,” 206.

come up with a strategy or concept to locate these on the site. I began by taking note of the design directions suggested by the theory and investigating the idea of time and history, including linear time, circular time, “railroad time” and the standardization of time. Analog clock faces resemble roundhouses, and circles can denote nodes, as in Kullmann’s ‘stage’ typology. I struggled with an organizing strategy for this time-based investigation, considering and then discarding the idea of creating a “trip through history” for the northwestern part of the site. I considered whether the levels of intervention in terms of vegetation, history, hydrology, sculpture, and interactivity should remain constant or change along the site.

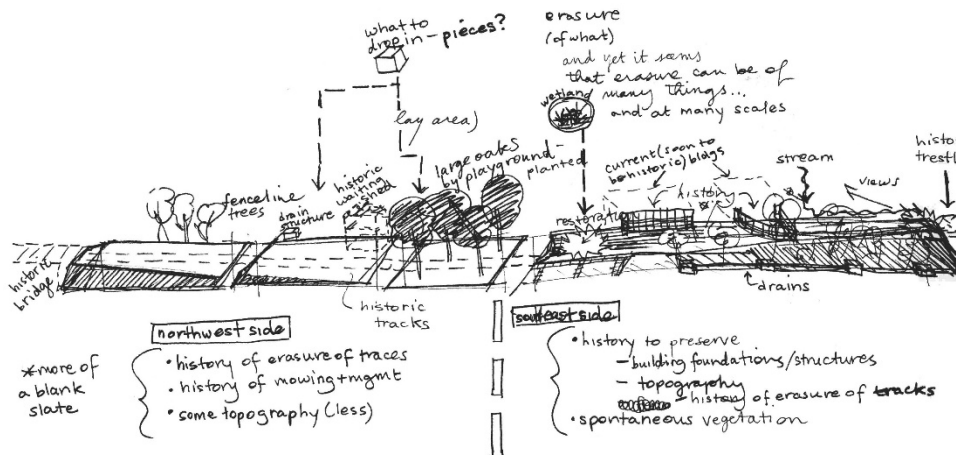


Figure 61: Breakthrough in visualizing the site as a whole

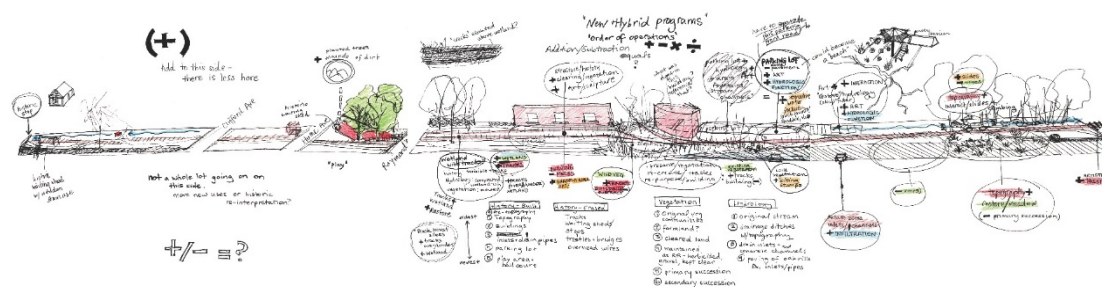


Figure 62: Exploring categories of addition and subtraction on the site

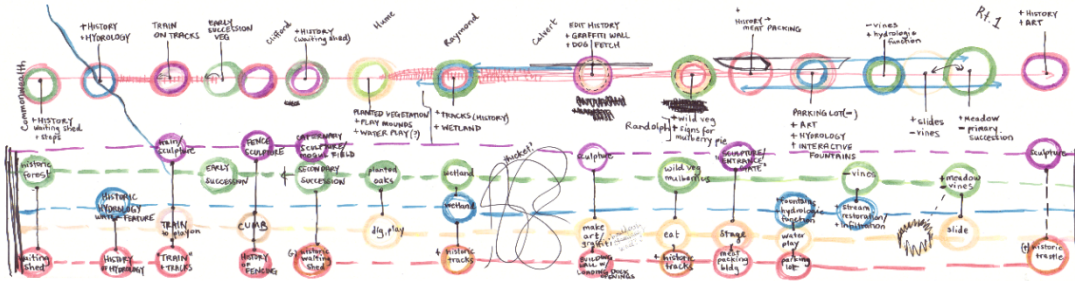


Figure 63: Developing concept of linear 'stops' on different 'tracks'

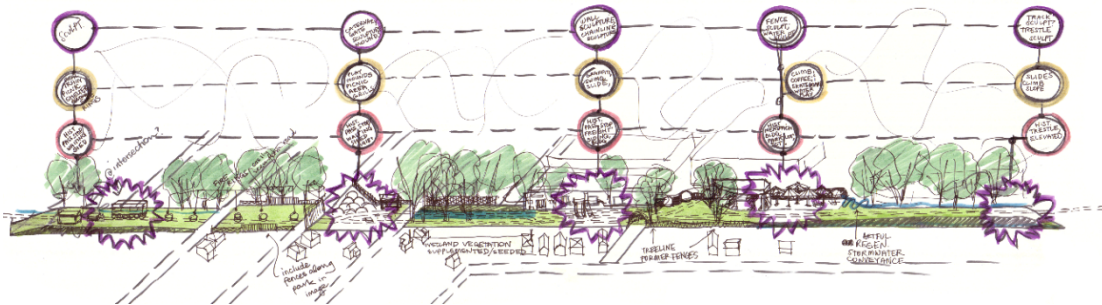


Figure 64: Refining concept; development of aligned 'stations'

After many concept iterations, some of which are shown above, I developed the idea of a linear site with programmatic 'stops,' which echo the stops on a railway line and also the stopped time of a watch. At a train stop, the landscape, which is blurred and only accessible visually while en route, becomes a place to arrive, depart, and interact with.

In this strategy, there are five categories of programmatic stops, or 'tracks': history, activity, vegetation, sculpture, and hydrology. For example, on the history track, there are stops at reproduction waiting sheds and the industrial buildings. Sculptural and artistic elements throughout the park consist of stops on the sculptural track. A seasonal activity such as mulberry harvesting might consist of a simultaneous stop on both the activity and vegetation tracks. These stops are small, confetti interventions throughout the park, in line with the principle of minimal intervention. Each track is independent of the others, and visitors may choose their own itinerary by following a single track of interest or switching from one line to another.

Initially, all stops on the site were equally sized, with similar amounts of intervention at each. However, I received the feedback that there was too much going on in a relatively small

space and I needed to pare down the design. After some thought, I came up with the distinction between stops, which are small pauses or points of interest along a single track, and ‘stations,’ which are nodes where three or more stops align. Stations provide larger gathering spaces, novel uses, and artful re-interpretations of site history. This station typology corresponds with Kullman’s ‘stage’ typology, or a “central spine of sequential ‘landing sites’ that host both spontaneous and premeditated events”.¹⁸⁰

The ‘tracks’ shown on the concept diagrams are conceptual linkages between activity types. On the ground, both stops and stations are enveloped by a matrix of spontaneous vegetation and linked by a network of paths. This vegetation, the ‘thicket’ of Kullmann’s typology, will be managed to provide the maximum possible plant and habitat diversity.

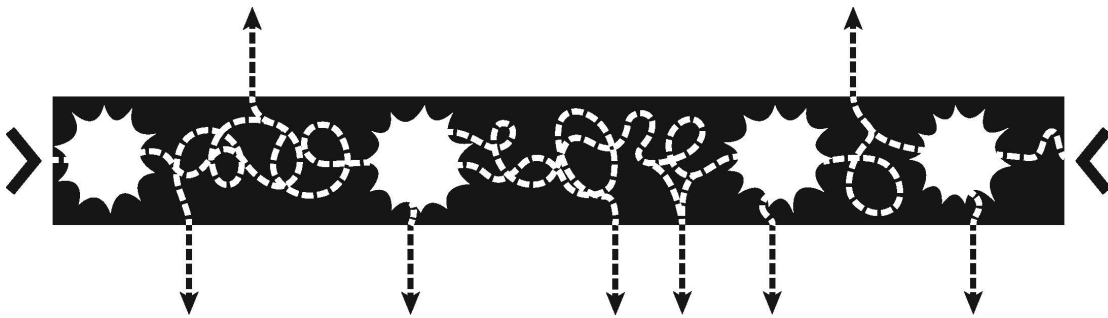


Figure 65: Initial typology diagram: ‘Stops and Spontaneous Vegetation’

¹⁸⁰ Kullmann, “Thin Parks / Thick Edges.”

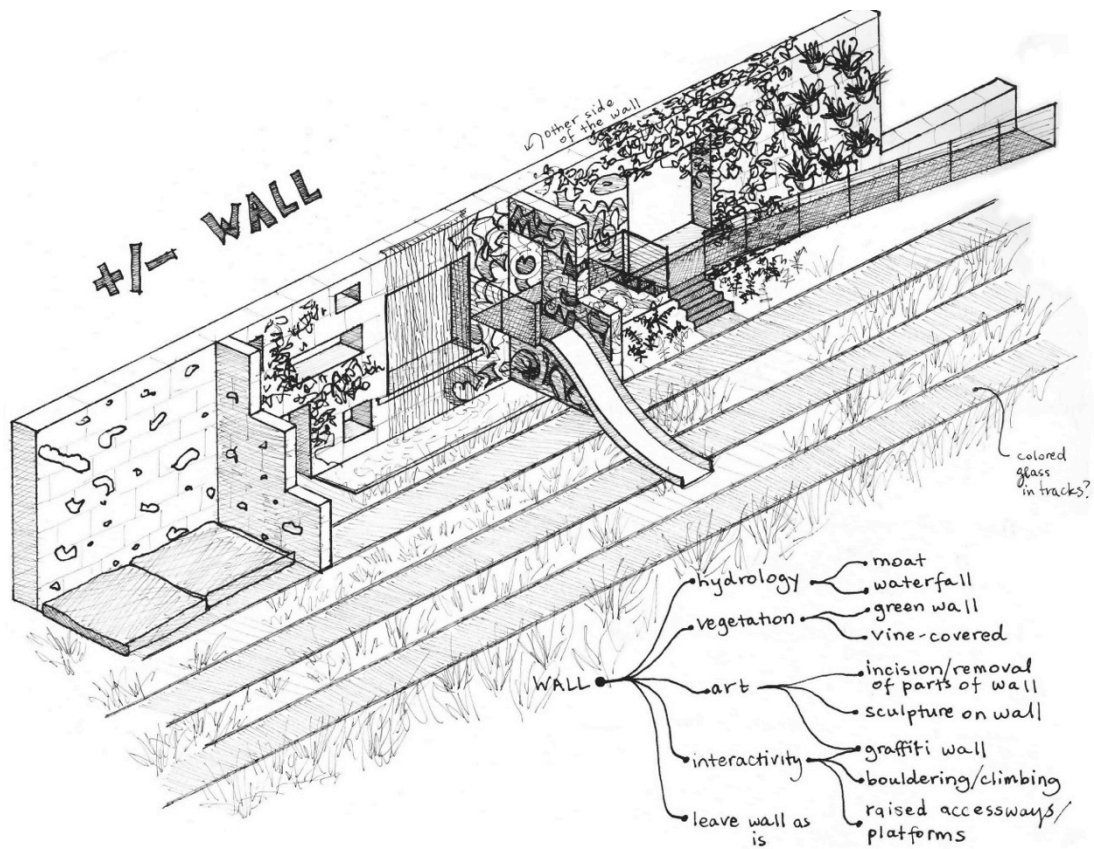


Figure 66: Sketch of more intensive design possibilities for a concrete wall at a 'station'

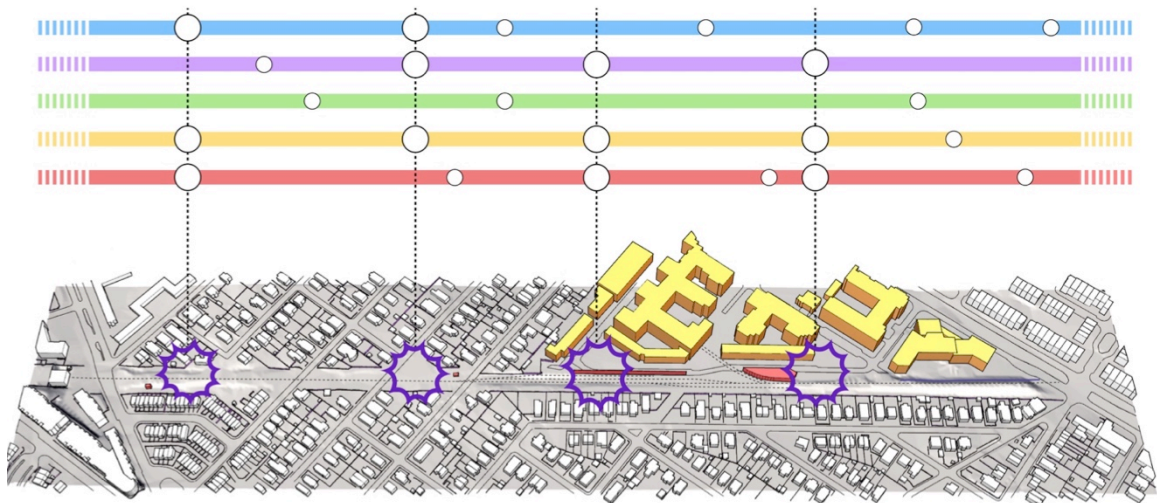


Figure 67: Stops and stations aligned conceptually on thesis site

Chapter 6: Design

The initial design was completed very quickly and rendered in time for my thesis defense. After the defense, my committee rightly noted that the design seemed like it had been thrown together. They asked me to clarify and justify the ways in which the design stemmed from the site analysis, the literature review, and the concept development. I was also asked to re-examine other aspects of the design, including the size of the ‘stations,’ the types of interventions and activities proposed, and the ecological connectivity and patch size.



Figure 67: Initial rendered design presented at defense.

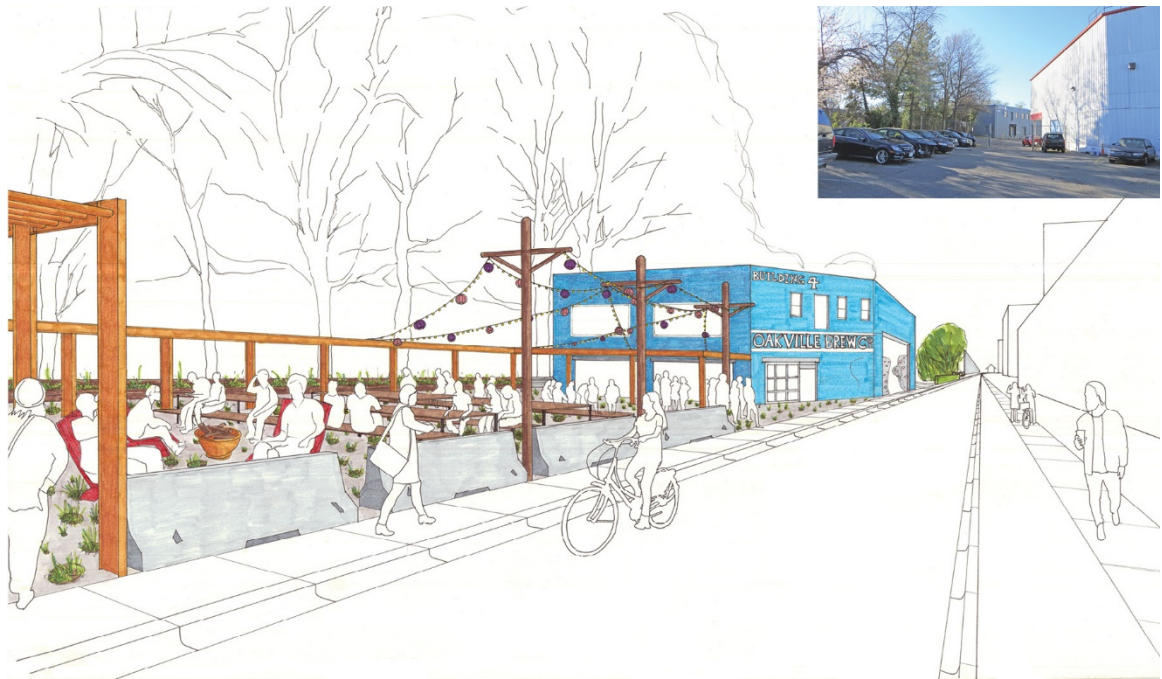


Figure 69: Presentation graphic of a 'station' containing a beer garden and bouldering barn. My committee suggested I reconsider these uses, as they did not seem to stem from the existing site or from site history and instead seemed to cater to the new development across the street.

The committee suggested that my design was too segmented, but as I revisited the directives from the site analysis, the literature review, and the existing site conditions, I realized that the existing segmentation of the site into ‘rooms’ was important in creating the character of the site. Currently, the site is segmented by lines of vegetation. These lines interact with travel along the site in three ways: *perpendicular* at former fencelines, *parallel* along current fencelines or building edges, and *parallel* on steep banks adjacent to the rail bed. The experience of moving through the site is similarly broken up: after moving through an impenetrable thicket, you may then come upon a field or meadow where space opens up considerably. I began to wonder if my initial design was not too segmented, but segmented without a guiding purpose or reason.



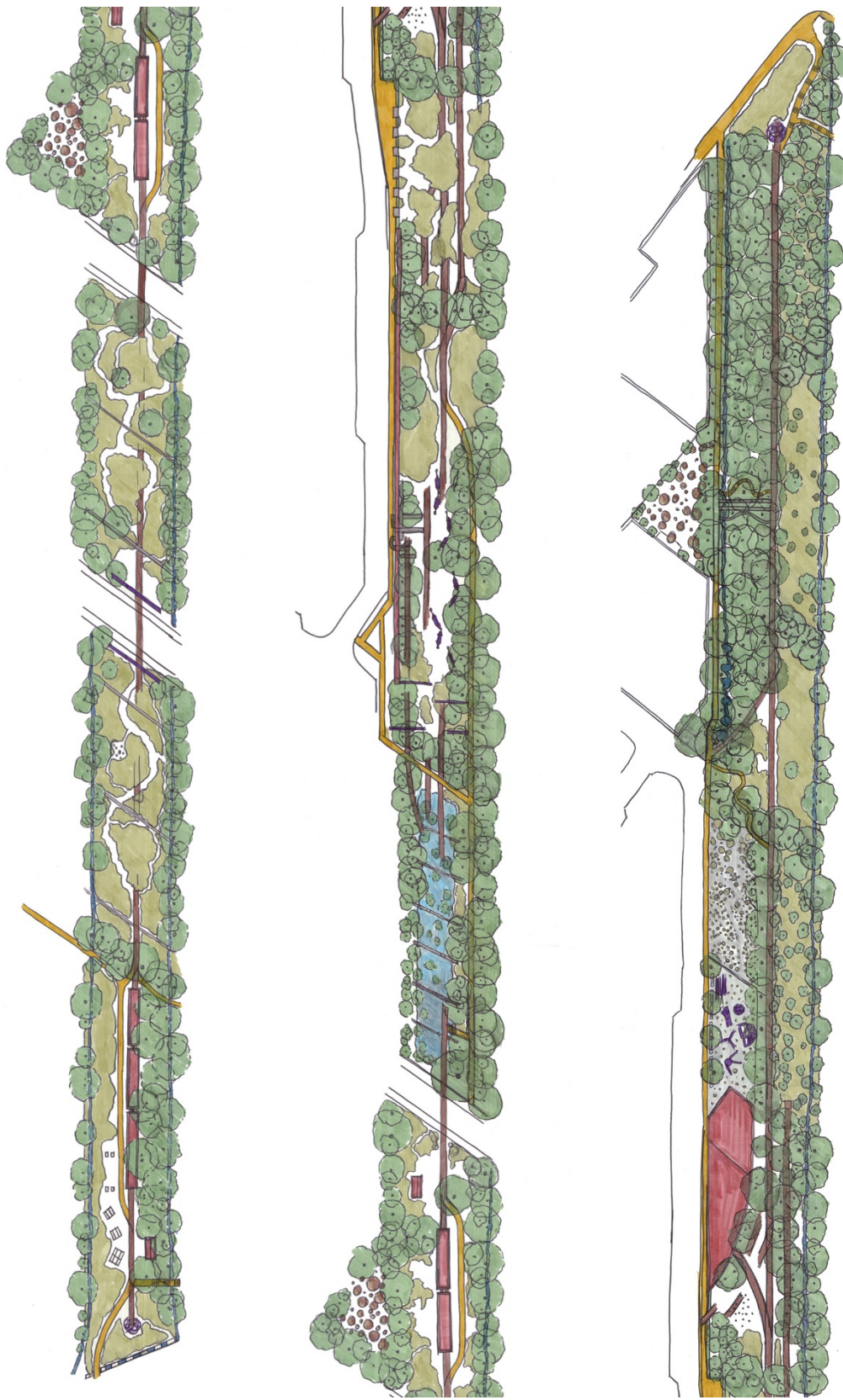


Figure 73: Revised site plan- entire

Description of Design Section by Section

Boxcar Meadows:

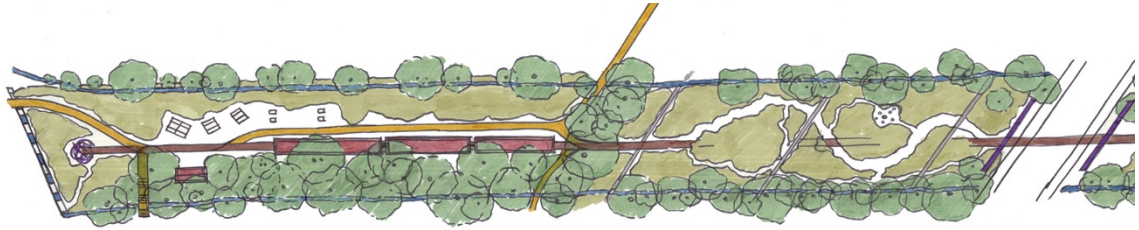


Figure 74: Northwest segment of thesis site.



Figure 75: Section through northwest segment of thesis site with boxcar and waiting shed.

The northwestern-most park section contains a ‘station’ with a real train consisting of boxcars turned into artist studios, reinstated track, a picnic shelter reconstructed based on historic photos of a former waiting shed, and a picnic area. A ‘viewing cage’ sculpture formed from bent rails located where the tracks used to extend over Commonwealth Avenue on a bridge allows visitors to stop and imagine the past and future views from the site. Along Commonwealth Ave, a sculpture of blue crushed glass and concrete pipes along with interpretive signage reminds visitors of the stream which used to run through Del Ray but has now been piped underground.

A new line of trees splits this section of the site in two. Additional trees along the existing fencelines are recruited by the cessation of mowing on the steep slope southwest of the train cars and within five feet of site boundaries. Hydrology has been improved in this section through the addition of a bioretention swale on the southeastern side. The northeastern swale and a significant portion of this area has been seeded and allowed to grow into a novel urban meadow, which is

mowed once a year for maintenance and contributes greatly to the biodiversity in the surrounding area, as there are very few meadows. Paths and sitting areas are cut into this meadow, which symbolically breaks up the train tracks to show the passage of time and removal of traces.

Rolling Stock:

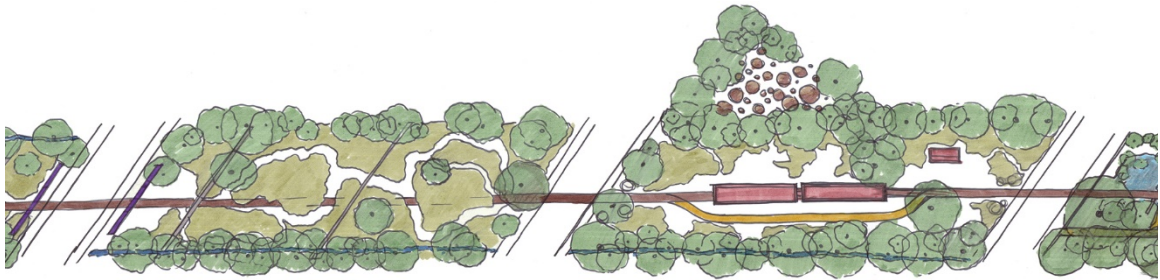


Figure 76: Segment of site showing meadow, play boxcars and mounds, and waiting shed bathroom.

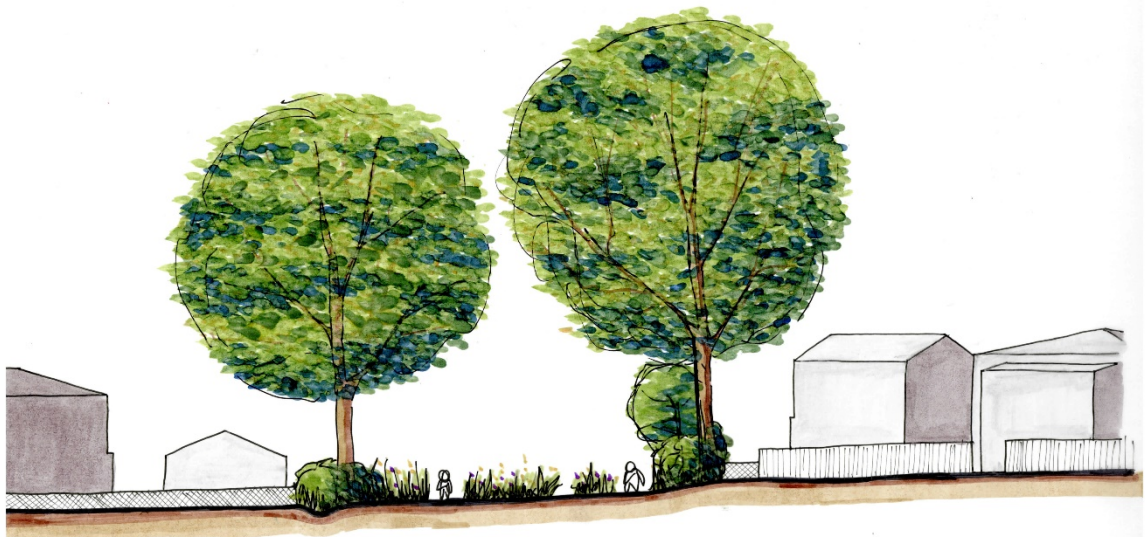


Figure 77: Section with mowed meadow path and fenceline vegetation.

The northwestern (left-most) of these two sections continues the meadow with winding paths seen in the previous section. Where these two sections exit onto the street, ‘catenary gates’ are sited. This meadow can also host rotating sculptures made by the artists in the ‘maker barn’ to the southeast. The southeastern (right-most) of these two sections contains a ‘play station’ with two more boxcars used as play structures as part of a ‘deconstructed playground’ located here in place of the existing prefabricated play structure. Swings attached to tree branches are also dotted

through this area, and the additional lot has been used for dirt play mounds with a water source where children can dig and construct landscapes. Another former waiting shed is reconstructed here, although this one is used for park bathrooms. Runoff is better-managed on these two sections through the addition of two new bioinfiltration swales on the southeastern edge of the park.

De-Railing Zone:

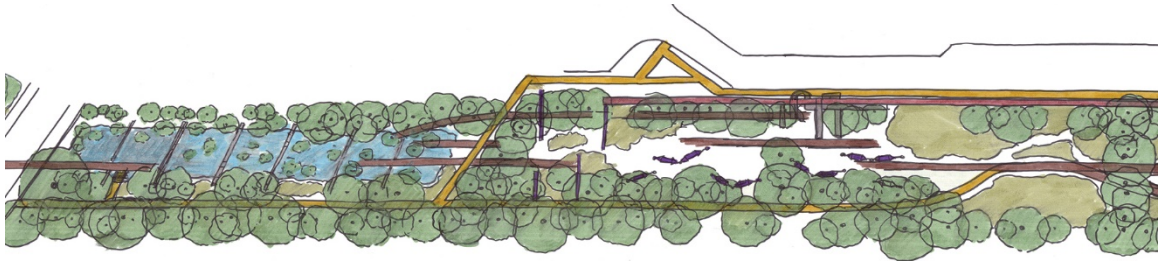


Figure 78: Segment of site showing wetland, bridge, hammocks, and slides.

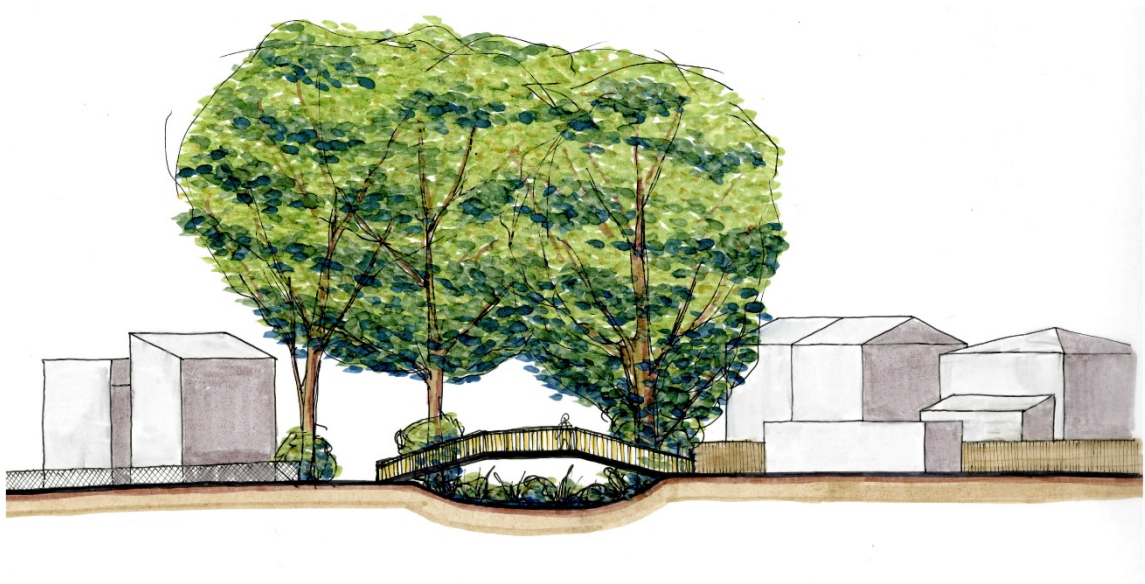


Figure 79: Section through site showing wetland and bridge.

Across Raymond Ave., the existing seasonal wetland is improved through plant additions. The path here moves off of the former trackbed and up onto the higher bank to avoid being flooded in rainy weather. A bridge across this depression leads to Calvert St. and the new development, with a new line of trees following the bridge. On the other side of the bridge is

another 'station,' with hammocks, art fences made from rails, and a graffiti wall on the concrete wall retained from the former industrial building. Slides also run through this wall. Where the topography levels out, the path rejoins with a former track in a meadow.



Figure 80: Section showing meadow vegetation and hammocks and slides beyond.



Figure 81: Figure 85: Perspective of graffiti wall 'station.'

Fabrication Station:

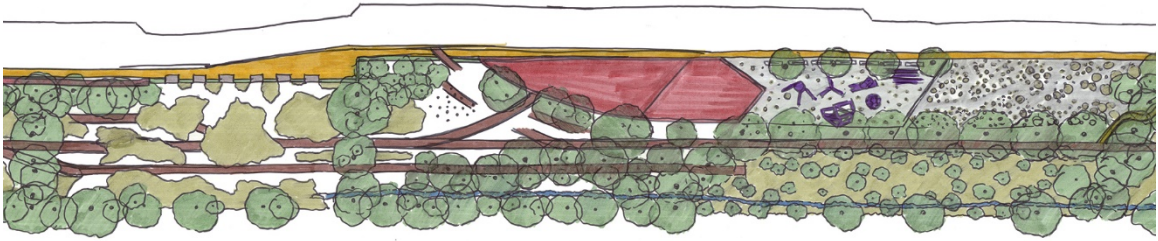


Figure 82: Segment of site showing concrete pipe gates, reinstated rail paths, the maker shed/fabrication station, and the maker yard.

On the other side of an existing fenceline, paths weave around meadow plantings, which obscure and then reveal the rails. In this section, a concrete pipe gate filters the view from those in the plaza across the street and creates a unique entry experience.

Past another existing fenceline, reconstructed tracks run toward the existing industrial building, which will be used as a maker barn and host art, sculpture, and how-to classes. In this area, a bioretention swale replaces the existing concrete channel liner on the southeastern edge of the park. Past the maker barn, a sculpture yard in the current parking lot allows the creation of large outdoor sculptures, and holes cut into the pavement allow for a maze of grasses to grow up.

On the southeastern side is the first of four experimental management sections which allow park visitors to experience the change of vegetation over time. Every five years, the oldest of these sections is cut, meaning that vegetation in each section has time to grow for 20 years

before it is cut. Interpretive signage will explain this rotating experience to park visitors.



Figure 83: Section through site showing fabrication station, yard, and new development.

Trestle Heights:

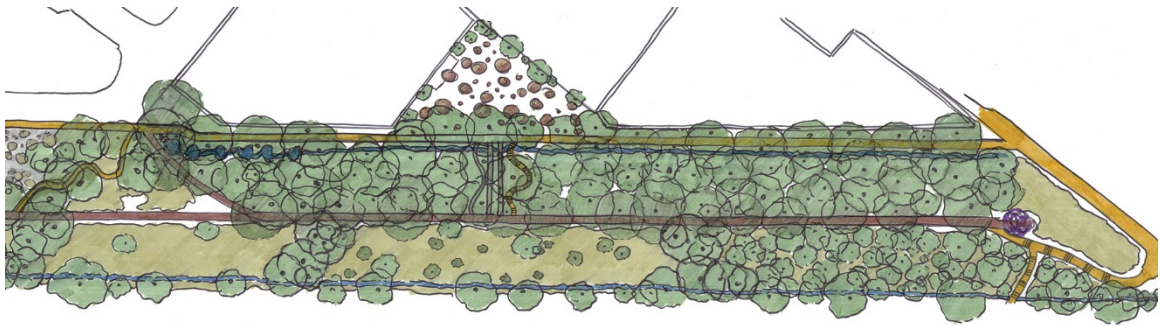


Figure 84: Southeastern end of thesis site.

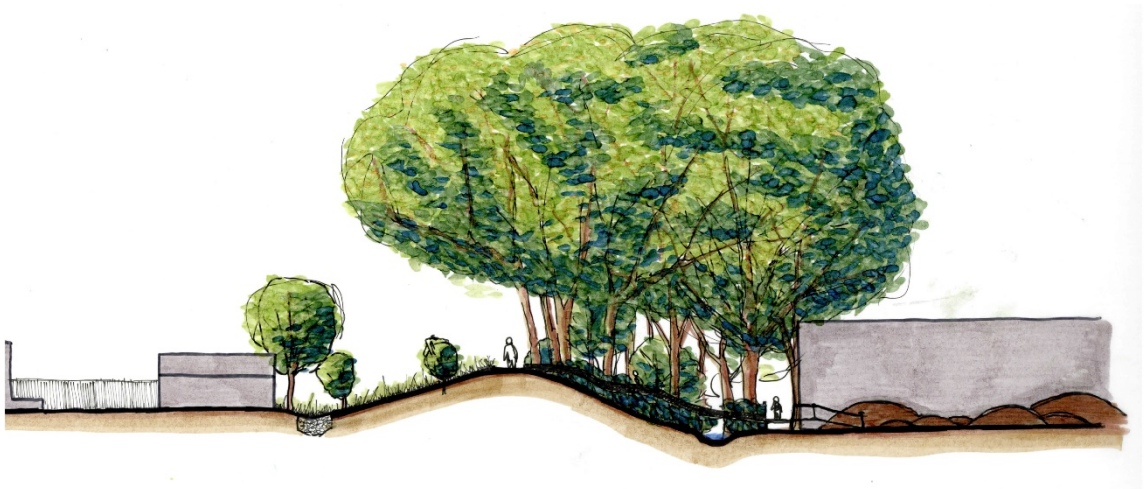


Figure 85: Section through Trestle Heights.

On the far southeastern part of the park, the topography becomes very prominent. Two paths connect the new development to the ridge path, one of which follows the line of a former rail spur. A regenerative stormwater conveyance will handle the runoff from the existing pipe, slow it, and improve water quality. The existing forest remains on the northeastern slope in this area, but an ADA access path runs on an elevated walk under this canopy and along the stream. The existing triangle of unused space between two industrial buildings is turned into another art/play yard and is connected to the ridge path through stairs and a slide. This section of the park also terminates in an overlook made from rails bent into a viewing cage and interpretive signage of the historic view over Potomac Yards.

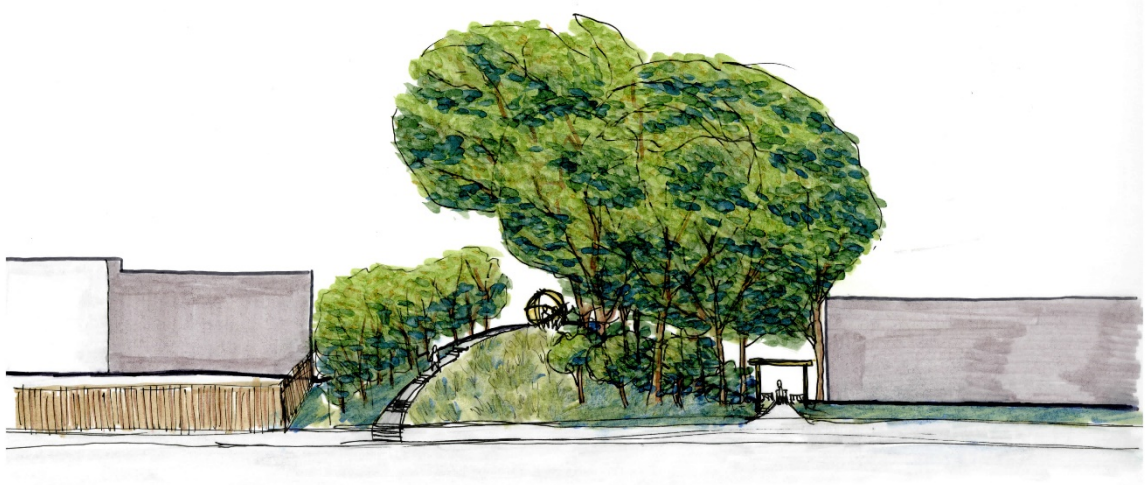


Figure 86: Section-perspective of park entry on southeast end. ADA entrance is to the right; viewing sculpture made from rail is atop the hill.

Chapter 7: Conclusion

This thesis investigated urban wilds in relation to other urban natures and explored typologies of urban wild sites within cities. I collected the terms I encountered for these sites, classified them, explored their meanings, and chose one to use in this thesis. While some terms do have meaningful distinctions, such a proliferation of terms is unnecessary and detrimental to the accumulation of knowledge within the field. Positive and negative social and ecological implications of these sites were then discussed.

I investigated the literature in order to answer the research question of how designers can act upon these sites in order to provide the social, environmental, and artistic benefits of being ‘designed’ without destroying existing vegetative wildness and historical traces. Most design suggestions lie along three axes: history, vegetation, and access/interactivity, along with a general principle of ‘minimal intervention.’ Designs can be classified by their level of intervention in each category, leading to types including *erasure*, *mimicry*, *restoration*, *conservation*, *historic preservation*, and *hybridization*. Each of these strategies may be appropriate on portions of sites given certain existing conditions, but an overall strategy of hybridization is likely to be the most successful in achieving the research goal.

After a lengthy site analysis process, I discussed how best to combine design directives from the research with those from the site analysis, finding that sometimes directives which seemed to be at odds with each other could be resolved through design. In other cases, safety or environmental goals took precedence over theoretical goals. I attempted to apply what I had learned in designing the thesis site, however, time limitations meant that the design investigation was not as thorough as I had initially intended.

As a thesis project, there is necessarily more research and design activity which might be pursued on this topic. I hope to continue exploring the design and programming of urban wilds in my future work. There are some unanswered questions which I unearthed in the process of

completing this thesis. A comparison of how other designers have programmed hybridized sites would be valuable, as would an investigation of the portrayal of ruderal or spontaneous vegetation within landscape architecture. I was steered away from an investigation of the public perception of urban wilds due to the time constraints inherent in the thesis project, but one of my initial research questions was about how to shift public perception of these sites. I am aware that there is a significant amount of research on this topic, and I intend to investigate it in the future.

Bibliography

- Armstrong, Helen. "Time, Dereliction, and Beauty: An Argument for 'Landscapes of Contempt.'" *Http://Www.Aila.Org.Au/LApapers/Conferences/2006-01.Htm*, January 1, 2006. <https://library.saylor.org/handle/1/3666>.
- Ball, Frank L. "Electric Railways of Arlington." *Arlington Historical Magazine*, October 1966.
- Barron, Patrick, and Manuela Mariani. *Terrain Vague: Interstices at the Edge of the Pale*. Routledge, 2013.
- Bowman, Ann, and Michael Pagano. *Terra Incognita: Vacant Land and Urban Strategies*. Washington, D.C: Georgetown University Press, 2004.
- Burns, John F. "History of the Washington and Old Dominion." *Arlington Historical Magazine*, October 1957.
- Chan, Elizabeth. "What Roles for Ruins? Meanings and Narratives in Parks Containing Industrial Ruins." *Journal of Landscape Architecture* 4, no. 2 (2009): 20–31.
- Chan, Stuart. "Dilemmas and Delights of Designing with Terrain Vague and Postmodern Concepts." Master of Landscape Architecture, University of Guelph, 2015.
- City of Alexandria. "Alexandria 2010 Census Data Profile," February 2012. <https://www.alexandriava.gov/uploadedFiles/planning/info/StatisticsDemographics/Alex2010DataProfileWeb.pdf>.
- . "North Potomac Yard Small Area Plan," June 12, 2010. <https://www.alexandriava.gov/uploadedFiles/planning/info/masterplan/NorthPotomacYardJune2015.pdf>.
- . "Oakville Triangle & Route 1 Corridor Vision Plan and Urban Design Standards & Guidelines," November 14, 2015. <https://www.alexandriava.gov/uploadedFiles/planning/info/masterplan/OakvilleTrianglePlan10202016.pdf>.
- . "Potomac West Small Area Plan Project Background Packet," April 2014. https://www.alexandriava.gov/uploadedFiles/planning/info/Oakville_Triangle/4-23-2014%20Background%20Packet_Part%202.pdf.
- Clement, Gilles. *"The Planetary Garden" and Other Writings*. Translated by Sandra Morris. University of Pennsylvania Press, 2015.
- Cohn, D'Vera, and Leef Smith. "Census Finds More Whites In D.C., Close Va. Suburbs." *The Washington Post*, August 11, 2005, sec. Metro. <http://www.washingtonpost.com/wp-dyn/content/article/2005/08/10/AR2005081002032.html>.
- Coleman, Alice. "Dead Space in the Dying Inner City." *International Journal of Environmental Studies* 19, no. 2 (July 1, 1982): 103–7. doi:10.1080/00207238208709976.

- Cronon, William. "The Trouble with Wilderness; or, Getting Back to the Wrong Nature." In *Uncommon Ground: Rethinking the Human Place in Nature*, 69–90. W. W. Norton & Company, 1995.
- Desimini, Jill. "Notions of Nature and a Model for Managed Urban Wilds." In *Terrain Vague: Interstices at the Edge of the Pale*, edited by PATRICK BARRON and Manuela Mariani, 173–86. Routledge, 2013.
- Di Palma, Vittoria. *Wasteland: A History*. New Haven and London: Yale University Press, 2014.
- Doron, Gil M. "The Dead Zone and the Architecture of Transgression." *City* 4, no. 2 (July 1, 2000): 247–63. doi:10.1080/13604810050147857.
- Fischer, Leonie K., Moritz von der Lippe, Matthias C. Rillig, and Ingo Kowarik. "Creating Novel Urban Grasslands by Reintroducing Native Species in Wasteland Vegetation." *Biological Conservation* 159 (March 2013): 119–26. doi:10.1016/j.biocon.2012.11.028.
- Fletcher, David. "Flood Control Freakology: Los Angeles River Watershed." In *The Infrastructural City: Networked Ecologies in Los Angeles*. Actar, 2008.
- Forman, Richard T. T. *Urban Ecology: Science of Cities*. Cambridge University Press, 2014.
- Foster, Jeremy. "Spectral Denivelations: La Mémoire Du Rail and Topographical Excess at the Jardins d'Éole." *Journal of Landscape Architecture* 7, no. 1 (2012): 68–83.
- Franck, Karen, and Quentin Stevens. *Loose Space: Possibility and Diversity in Urban Life*. Routledge, 2013.
- Galera, H., B. Sudnik-Wójcikowska, M. Wierzbicka, and B. Wilkomirski. "Encroachment of Forest Species into Operating and Abandoned Railway Areas in North-Eastern Poland." *Plant Biosystems - An International Journal Dealing with All Aspects of Plant Biology* 145, no. 1 (March 1, 2011): 23–36. doi:10.1080/11263504.2010.522803.
- Gandy, Matthew. "Marginalia: Aesthetics, Ecology, and Urban Wastelands." *Annals of the Association of American Geographers* 103, no. 6 (November 1, 2013): 1301–16. doi:10.1080/00045608.2013.832105.
- Geuze, Adriaan. "Second Nature: New Territories of Wilderness for Unknown Future Colonization." *Topos: European Landscape Magazine* 71 (2010): 40–42.
- Green, Jared. "Boston's Evolving Urban Wilds." *The Dirt*, December 4, 2013. <https://dirt.asla.org/2013/12/04/bostons-evolving-urban-wilds/>.
- Groth, Jacqueline, and Eric Corijn. "Reclaiming Urbanity: Indeterminate Spaces, Informal Actors and Urban Agenda Setting." *Urban Studies* 42, no. 3 (March 1, 2005): 503–26. doi:10.1080/00420980500035436.
- Heatherington, Catherine. "Buried Narratives." In *Urban Wildscapes*. Routledge, 2012.
- Higgs, Eric. "Novel and Designed Ecosystems." *Restoration Ecology*, July 1, 2016, n/a-n/a. doi:10.1111/rec.12410.

- Hobbs, Richard J., Eric Higgs, and James A. Harris. "Novel Ecosystems: Implications for Conservation and Restoration." *Trends in Ecology & Evolution* 24, no. 11 (November 2009): 599–605. doi:10.1016/j.tree.2009.05.012.
- Hunt, John Dixon. *Greater Perfections: The Practice of Garden Theory*. Thames & Hudson, 2000.
- Jakle, John A., and David Wilson. *Derelict Landscapes: The Wasting of America's Built Environment*. Savage, MD: Rowman & Littlefield, 1992.
- Jorgensen, Anna, and Richard Keenan. *Urban Wildscapes*. Routledge, 2012.
- Jorgensen, Anna, and Lilli Licka. "Anti-Planning, Anti-Design? Exploring Alternative Ways of Making Future Urban Landscapes." In *Urban Wildscapes*, edited by Anna Jorgensen and Richard Keenan, 221–35. Routledge, 2012.
- Jorgensen, Anna, and Marian Tylecote. "Ambivalent Landscapes—Wilderness in the Urban Interstices." *Landscape Research* 32, no. 4 (August 1, 2007): 443–62. doi:10.1080/01426390701449802.
- Kattwinkel, Mira, Barbara Strauss, Robert Biedermann, and Michael Kleyer. "Modelling Multi-Species Response to Landscape Dynamics: Mosaic Cycles Support Urban Biodiversity." *Landscape Ecology* 24, no. 7 (August 1, 2009): 929–41. doi:10.1007/s10980-009-9371-7.
- Körner, Stefan. "Nature Conservation, Forestry, Landscape Architecture and Historic Preservation: Perspectives for a Conceptual Alliance." In *Wild Urban Woodlands*, 193–220. Springer, 2005.
- Kowarik, Ingo. "Unkraut Oder Urwald? Natur Der Vierten Art Auf Dem Gleisdreieck." *ResearchGate*, January 1, 1991, 45–55.
- Kowarik, Ingo. "Wild Urban Woodlands: Towards a Conceptual Framework." In *Wild Urban Woodlands*, edited by Ingo Kowarik and Stefan Körner. Berlin/Heidelberg: Springer-Verlag, 2005.
- Kowarik, Ingo, and Andreas Langer. "Natur-Park Südgelände: Linking Conservation and Recreation in an Abandoned Railyard in Berlin." In *Wild Urban Woodlands*, edited by Professor Dr Ingo Kowarik and Dr Stefan Körner, 287–99. Springer Berlin Heidelberg, 2005. doi:10.1007/3-540-26859-6_1.
- Kueffer, Christoph, and Christopher N Kaiser-Bunbury. "Reconciling Conflicting Perspectives for Biodiversity Conservation in the Anthropocene." *Frontiers in Ecology and the Environment* 12, no. 2 (March 1, 2014): 131–37. doi:10.1890/120201.
- Kühn, Norbert. "Intentions for the Unintentional: Spontaneous Vegetation as the Basis for Innovative Planting Design in Urban Areas." *Journal of Landscape Architecture*, no. Autumn (2006): 46–53.
- Kullmann, Karl. "The Usefulness of Uselessness: Towards a Landscape Framework for Un-Activated Urban Public Space." *Architectural Theory Review* 19, no. 2 (May 4, 2014): 154–73. doi:10.1080/13264826.2014.967330.

- . “Thin Parks / Thick Edges: Towards a Linear Park Typology for (Post)Infrastructural Sites.” *Journal of Landscape Architecture* 6, no. 2 (September 1, 2011): 70–81. doi:10.1080/18626033.2011.9723456.
- Lachmund, Jens. “Exploring the City of Rubble: Botanical Fieldwork in Bombed Cities in Germany after World War II.” *Osiris* 18 (2003): 234–54.
- Lachmund, Jens. *Greening Berlin: The Co-Production of Science, Politics, and Urban Nature*. 1 online resource. vols. Inside Technology. Cambridge, Mass.: MIT Press, 2013. Ebook Library <http://public.eblib.com/choice/publicfullrecord.aspx?p=3339559>.
- Langhorst, Joern. “Re-Presenting Transgressive Ecologies: Post-Industrial Sites as Contested Terrains.” *Local Environment* 19, no. 10 (November 26, 2014): 1110–33. doi:10.1080/13549839.2014.928813.
- Leland, Ness. “St. Asaph Racetrack Informational Sign.” City of Alexandria, 2008. <https://www.alexandriava.gov/uploadedFiles/oha/info/TrailSignDelRayRacetrack.pdf>.
- . “The Town of Potomac Informational Sign.” City of Alexandria, 2008. <https://www.alexandriava.gov/uploadedFiles/oha/info/TrailSignDelRayTownofPotomac.pdf>.
- Mascaro, Joseph, James A. Harris, Lori Lach, Allen Thompson, Michael P. Perring, David M. Richardson, and Erle C. Ellis. “Origins of the Novel Ecosystems Concept.” In *Novel Ecosystems*, edited by Richard J. Hobbs, Eric S. Higgs, and Carol M. Hall, 45–57. John Wiley & Sons, Ltd, 2013. <http://onlinelibrary.wiley.com/doi/10.1002/9781118354186.ch5/summary>.
- Millington, Nate. “From Urban Scar to ‘Park in the Sky’: Terrain Vague, Urban Design, and the Remaking of New York City’s High Line Park.” *Environment and Planning A* 47, no. 11 (November 1, 2015): 2324–38. doi:10.1177/0308518X15599294.
- Milton, S.j. “‘Emerging Ecosystems’ -- a Washing-Stone for Ecologists, Economists and Sociologists?” *South African Journal of Science* 99, no. 9/10 (October 9, 2003): 404–6.
- Morse, Nathaniel B., Paul A. Pellissier, Elisabeth N. Cianciola, Richard L. Brereton, Marleigh M. Sullivan, Nicholas K. Shonka, Tessa B. Wheeler, and William H. McDowell. “Novel Ecosystems in the Anthropocene: A Revision of the Novel Ecosystem Concept for Pragmatic Applications.” *Ecology and Society* 19, no. 2 (2014). doi:10.5751/ES-06192-190212.
- Muratet, Audrey, Nathalie Machon, Frédéric Jiguet, Jacques Moret, and Emmanuelle Porcher. “The Role of Urban Structures in the Distribution of Wasteland Flora in the Greater Paris Area, France.” *Ecosystems* 10, no. 4 (June 1, 2007): 661. doi:10.1007/s10021-007-9047-6.
- Murray, P, Y Ge, and W. H Hendershot. “Evaluating Three Trace Metal Contaminated Sites: A Field and Laboratory Investigation.” *Environmental Pollution* 107, no. 1 (January 2000): 127–35. doi:10.1016/S0269-7491(99)00120-7.

- Nassauer, Joan Iverson. "Messy Ecosystems, Orderly Frames." *Landscape Journal* 14, no. 2 (September 21, 1995): 161–70. doi:10.3368/lj.14.2.161.
- Nevárez, Julia. "Central Park, the Aesthetics of Order and the Appearance of Looseness." In *Loose Space: Possibility and Diversity in Urban Life*, edited by Karen Franck and Quentin Stevens, 154–69. Routledge, 2013.
- Nielsen, Tom. "The Return of the Excessive Superfluous Landscapes." *Space and Culture* 5, no. 1 (February 1, 2002): 53–62. doi:10.1177/1206331202005001006.
- Pope, Michael Lee. "Hidden History of St. Asaph Racetrack." *Alexandria Gazette*, August 23, 2012. <http://www.connectionnewspapers.com/news/2012/aug/23/hidden-history-st-asaph-racetrack/>.
- Riemann, Rachel. Review of *Wild Urban Woodlands: New Perspectives for Urban Forestry*, by Kowarik, Ingo and Stefan Körner. *Landscape Ecology* 22, no. 8 (October 1, 2007): 1267–68.
- Robarts, Stu. "Northernmost Section of New York's High Line Opened." *New Atlas*, September 23, 2014. <http://newatlas.com/high-line-new-york-rail-yards/33933/>.
- Robinson, Sarah L., and Jeremy T. Lundholm. "Ecosystem Services Provided by Urban Spontaneous Vegetation." *Urban Ecosystems* 15, no. 3 (September 1, 2012): 545–57. doi:10.1007/s11252-012-0225-8.
- Rupprecht, Christoph D. D., and Jason A. Byrne. "Informal Urban Green Space: A Typology and Trilingual Systematic Review of Its Role for Urban Residents and Trends in the Literature." *Urban Forestry & Urban Greening* 13, no. 4 (2014): 597–611. doi:10.1016/j.ufug.2014.09.002.
- . "Informal Urban Green Space: Comparison of Quantity and Characteristics in Brisbane, Australia and Sapporo, Japan." *PLoS ONE* 9, no. 6 (June 18, 2014). doi:10.1371/journal.pone.0099784.
- Rupprecht, Christoph D. D., Jason A. Byrne, Jenni G. Garden, and Jean-Marc Hero. "Informal Urban Green Space: A Trilingual Systematic Review of Its Role for Biodiversity and Trends in the Literature." *Urban Forestry & Urban Greening* 14, no. 4 (2015): 883–908. doi:10.1016/j.ufug.2015.08.009.
- Schadek, Ute, Barbara Strauss, Robert Biedermann, and Michael Kleyer. "Plant Species Richness, Vegetation Structure and Soil Resources of Urban Brownfield Sites Linked to Successional Age." *Urban Ecosystems* 12, no. 2 (June 1, 2009): 115–26. doi:10.1007/s11252-008-0072-9.
- Sheridan, Dougal. "Disordering Public Space: Urban Wildscape Processes in Practice." In *Urban Wildscapes*, edited by Anna Jorgensen and Richard Keenan, 201–20. Routledge, 2012.
- Simons, Robert A. "How Many Urban Brownfields Are Out There?: An Economic Base Contraction Analysis of 31 U.S. Cities." *Public Works Management & Policy* 2, no. 3 (January 1, 1998): 267–73. doi:10.1177/1087724X9800200310.

- Solá-Morales, Ignasi de. "Terrain Vague." In *Terrain Vague: Interstices at the Edge of the Pale*, edited by Patrick Barron and Manuela Mariani, 24–30. Routledge, 2013.
- Touraine, Alain. *The Post-Industrial Society;: Tomorrow's Social History: Classes, Conflicts and Culture in the Programmed Society*. [1st American ed.] edition. New York: Random House, 1971.
- Trancik, Roger. *Finding Lost Space: Theories of Urban Design*. 1 edition. New York etc.: Wiley, 1986.
- Tredici, Peter Del. "The Flora of the Future." In *Projective Ecologies*, 378. Cambridge, Massachusetts: Harvard University Graduate School of Design :, 2014.
- "Urban Wilds Initiative | Boston.Gov." Accessed October 12, 2016.
<https://www.boston.gov/environment-and-energy/urban-wilds-initiative>.
- Waal, Renee de, and Arjen de Wit. "Brown Coal, Blue Paradise: The Restoration of Opencast Coal Mines in Lusatia, Germany." In *Urban Wildscapes*, 99–109. Routledge, 2012.
- Waterman, Tim. "It's About Time: The Genius Temporum of Martí Franch's Girona Landscapes." *Landscape Architecture*, January 2017.
- Weilacher, Udo. *Syntax of Landscape: The Landscape Architecture of Peter Latz and Partners*. Basel Boston Berlin: Birkhäuser, 2008.
- Wilkomirski, Boguslaw, Halina Galera, Barbara Sudnik-Wojcikowska, Tomasz Staszewski, and Malgorzata Malawska. "Railway Tracks - Habitat Conditions, Contamination, Floristic Settlement - A Review." *Environment and Natural Resources Research* 2, no. 1 (February 26, 2012): 86. doi:10.5539/enrr.v2n1p86.
- Williams, Ames W. "The Washington and Old Dominion Railroad." *Records of the Columbia Historical Society, Washington, D.C.* 66/68 (1966): 231–76.
- Williams, James C. "Understanding the Place of Humans in Nature." In *The Illusory Boundary: Environment and Technology in History*, edited by Martin Reuss and Stephen H. Cutcliffe, 9–25. University of Virginia Press, 2010.
- Williams, John W., and Stephen T. Jackson. "Novel Climates, No-Analog Communities, and Ecological Surprises." *Frontiers in Ecology and the Environment* 5, no. 9 (November 1, 2007): 475–82. doi:10.1890/070037.