THE UNIVERSITY OF TENNESSEE KNOXVILLE

SCHOOL OF LANDSCAPE ARCHITECTURE

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Landscape Architecture Foundation
2016 Landscape Performance Education Grant

Instructor Reflection for LAR 525 - Operative Landscapes, Fall 2016
Offered by the University of Tennessee, Knoxville, School of Landscape Architecture
Course Instructor: Assistant Professor Brad Collett, ASLA, PLA, LEED AP

Course Background

The past decades have witnessed a transformation of the profession landscape architecture. Evolving from its early-and mid-twentieth century focuses in horticulture, aesthetics, and decorative arts at the scale of discrete greenfield sites, the contemporary practice recognizes its capacity to address urgent, emergent social, economic and ecological grand challenges. The profession is leveraging its unique capacity for multi-scalar, synthetic design thinking to meet these challenges through innovative design and planning practices. No longer is the living landscape viewed as the antithetical other to or pastoral escape from the urban condition of the city, but it is increasingly viewed and harnessed as integral infrastructures and performative, productive territories for the communities they support through planning and design. This transition is changing the fundamentals of contemporary professional practice, mandating careful reconsideration and recalibration of landscape architecture education. It is in this context that the curriculum of the University of Tennessee's School of Landscape Architecture continues to evolve, and from which the need to introduce the fundamentals of the performative capacities of landscape emerged. LAR 525 - Operative Landscapes was designed to fulfill that need.

Operative Landscapes was initially developed and taught in the spring of 2016 at the University of Ljubljana, Slovenia's Department of Landscape Architecture while I served as a visiting Fulbright Scholar. It was offered for the first time at the UT School of Landscape Architecture during the fall 2016 semester. Now a required course in our professional MLA curriculum, Operative Landscapes assumes a critical position as the first offering in our Living Systems curriculum sequence. Given its foundational nature and lack of pre-requisite coursework, it is actively promoted as an elective to students in allied departments across the University, including architecture, plant sciences, biosystems engineering, forestry, civil engineering, and sustainability studies. Such strategic deployment will expose non-majors to the performative potential of the designed landscape and help transform their perception of the profession of landscape architecture, one that is handicapped by preconceptions of aesthetic, representational and decorative competencies. It is also our motivation to identify prospective students from these allied departments through this course.

The class composition of this initial offering demonstrated success across these intentions, attracting two students majoring in Environmental Studies, one majoring in Architecture, one in Plant Sciences, and one international exchange student in general university studies. The balance of the courses' 13 enrolles was made up of students in the second and third years of their professional MLA degree. The course met MW 905-1100.

Learning Outcomes

The following learning outcomes for Operative Landscapes are shaped by my aspiration for young professionals to be prepared to successfully advocate for high-performance landscape practices, to collaborate effectively with allied professionals to implement the same, and to be prepared for a career of landscape performance application and innovation:

1. To understand the arc of design practice and theory as it relates to concepts of nature, mankind's relationship with nature, and the role of natural systems in contemporary urbanism
2. To understand the implications of operative landscapes, landscape performance for the contemporary practice of landscape architecture
3. To be aware of exemplary, contemporary projects and design practices (offices, practitioners) demonstrating operative landscape principles, territories of application, proficiencies, and setting trajectories for the future of the profession
4. To understand biological, botanical and ecological processes and principles fundamental to operative landscapes
5. To demonstrate proficiency in developing landscape performance assessment strategies, researching eco-technology processes, and communicating landscape operations in visual formats
6. To be prepared to advocate for sustainable planning and design strategies, operative landscapes in academic and professional work using quantitative metrics and the lexicon of living systems

Course Organization
In order to achieve these learning outcomes, the course is organized into three complimentary units that are summarized below. The additional supporting materials submitted with this reflection provide detail as to how these units were constructed and deployed in the classroom.

Unit One: Landscape Performance Theory (+/- 5 class meetings) – This unit traces the arc of landscape design history and landscape architectural theory relative to concepts of nature, anthropogenic relationships with the landscape, and the evolution of the meaning and motivation driving landscape design. Class discussions and lectures reinforce concepts first introduced through required readings included in the attached reading list.

Unit Two: Implications for Professional Practice (+/- 4 class meetings) – Once a theoretical understanding of the discipline's transition from horticultural and aesthetic traditions towards high-performance public works practice has been established, major themes for how such a shift is impacting the professional practice of landscape architecture are identified and discussed. These implications include novel territories for practice, the science of landscapes and landscape architecture as science, contemporary criteria for plants in design, maintenance as design, the performance of appearance, visualization strategies, and the emergence of performance metrics. These themes serve as lenses through which project case studies are presented in the following unit.

Unit Three: Performance Themes (+/- 21 class meetings) – The balance of the class is dedicated to exploring landscape performance themes across economic, social and environmental agendas. Performance themes include RE (restore, regenerate, reclaim, remediate), economic stimulation, social catalyst, public health, and water resource stewardship. Given water resource stewardship as my focused area of expertise within landscape performance, there is a emphasis in this unit on operative landscapes that avoid, minimize and manage stormwater, and contemporary flooding management approaches. This unit concludes with an exploration of the synthetic, comprehensive deployment of operative landscapes for community (re)building.

Reflection
Organized the aforementioned learning outcomes, I offer the following reflection and critique of the course as offered during the fall 2016 semester.

Outcome 1: To understand the arc of design practice and theory as it relates to concepts of nature, mankind's relationship with nature, and the role of natural systems in contemporary urbanism

This element of the course was one of the most value-added for me as an instructor and for the enrolled students. I believe it essential that students not only understand the 'how,' but also understand the 'why' behind landscape performance; the theory and history of landscape architecture that has shaped contemporary planning and design practice. The exercise of identifying the readings that would efficiently achieve this goal has been formative in my own teaching in and outside of this course. Unit One's readings gave students a theoretical and historical context within which the balance of the course would reside, and were used to stimulate discussions amongst the students. According to one student's course evaluation, "I thought the reading materials followed by open class room discussions were the times that I learned the most."

Students participating in the course who were not pursuing landscape architecture studies found this outcome especially valuable given their lack of prior exposure to landscape history and theory. Students in landscape architecture studies also found the readings and discussions to be beneficial given that most had not yet been exposed to these seminal readings elsewhere in the curriculum.

The project connected to this outcome titled "Urban Wildness: Ideas of Nature" was designed as an exploration of how nature can be conceptualized through different lenses as it relates to the urban condition. Fundamentally, the course explores this relationship as it has evolved in history and in landscape architecture practice. Feedback suggests that the project was successful to the end of challenging their own preconceptions of this relationship. In the future I plan to revisit their initial musings on this subject as an in-class reflection on the individuals' growth over the course of the semester.

Outcome 2: To understand the implications of operative landscapes, landscape performance for the contemporary practice of landscape architecture

Though relatively brief in its duration, Unit Two was essential to construct a framework through which we would understand forthcoming performative themes and the lenses through which we would view the project precedents used to demonstrate their application. It is through Unit Two that a case is explicitly made for how performative practice has shaped 1) Territories of Practice: the characteristics and contexts of the physical landscapes in which contemporary projects are implemented, 2) Landscape as Science: the increased importance for designers

to understand the fundamental science of the living landscape and to engage in practice as a mode of critical inquiry and research, 3) Plants in Design: the evolution of the demands we place on living materials in the operative landscape and subsequent new criteria driving plant selection, 4) Maintenance: new territories of practice, temporal characteristics of designs, and performative motivations require new understandings and technical competencies with regards to landscape maintenance strategies, 5) Appearance: the enduring value and performance of a landscape's aesthetic quality to gain social acceptance of new landscape paradigms and to motivate users towards behavior change, 6) Visualization: the evolution of design communication methods best suited to illustrating the perfomative dynamics of landscape systems, and 7) Performance Metrics: the role of quantifiable landscape benefits in the advocacy for high performance practices.

Introducing these concepts before exploring performance themes and precedent projects, as opposed to situating the unit to the end of the course as a synthesis of preceding content, proved to be a valuable way to build a shared language amongst the course's enrollees and a common ground from which our project-specific studies could be organized.

Project 2 - "Drosscape," originating from the idea that performative practices is engaging landscape fragments in amongst existing urbanized areas as productive practice territories, opened the eyes of our students of the many underutilized landscape types in the Knoxville area, and by extension any community. Though the graphic quality of the student outcomes varied, all demonstrated an understanding of the inevitability of dross, causes of its formation, and its future potential in the built environment.

Outcome 3: To be aware of exemplary, contemporary projects and design practices (offices, practitioners) demonstrating operative landscape principles, territories of application, proficiencies, and setting trajectories for the future of the profession

Operative Landscapes was designed to expand students' awareness of exemplary design and planning projects and innovative professional practices through the organizational framework of landscape performance themes. Such investigations are often left to the individual student as precedent support for studio projects. Curating a survey of contemporary landscape architecture projects in the context of this course has proven helpful to demonstrate course concepts and to inculcate habits amongst the students to seek, follow, and pursue innovative offices and practitioners.

The projects featured in Unit Three lectures were selected based on their demonstration of the characteristics discussed under Outcome 2 above, the availability of information about project intentions and outcomes, quality imagery, and to the extent possible their inclusion in the LAF Landscape Performance Series CSI program. A full list of the projects referenced during the course has been provided to LAF for reference purposes. This list will continue to be revisited year over year as new research and documentation of existing projects become available and as new projects are proposed.

Occasionally students would volunteer additional precedents that demonstrate course concepts. In the future, asking students to research and suggest additional exemplary projects that reinforce operative themes would further the intentions of this outcome. Additional feedback received from students suggests that engaging practitioners via web conferences to discuss featured projects would add value to the experience and provide additional depth of understanding of a project's performance objectives, constraints, and design process. Such engagements will be included in future course offerings.

Outcome 4: To understand biological, botanical and ecological processes and principles fundamental to operative landscapes

In order for student to effectively apply current landscape performance strategies, to communicate and advocate for the same to collaborators and clients, and to advance landscape performance through innovation, they must understand the fundamental science that powers the performance. This will prevent a designer from compromising the function of these processes as a result of their supporting design intentions and competing project agendas.

Examples of such science explored in the course at a fundamental level include the role of soil microbiology in phytoremediation processes and biological stormwater treatment, the basic physics of evaporative cooling, and plant metabolic processes. During the course's initial offering, these fundamentals were taught by me using available reference materials. Outside experts were not engaged as guest lectures purposefully so as to first gain an understanding of what content was necessary to include in the course and to maintain an explicit connection between design application and the fundamental science in question.

Having taught the course twice, I am comfortable enough with the material and my own intentions that I now feel comfortable approaching experts in these fields as guest lecturers and offering them adequate direction. These may include plant and soil scientists, ecologists, and economists in the University and in practice. Additionally, the science of living landscape systems fundamental to this course's content is informing the development of a new prerequisite course that will be co-taught by faculty members in Landscape Architecture and the University's Department of Earth and Planetary Sciences.

Outcome 5: To demonstrate proficiency in developing landscape performance assessment strategies, researching eco-technology processes, and communicating landscape operations in visual formats

Students are introduced to landscapeperformance.org throughout Operative Landscapes, including a live WebEx conference with LAF Program directors, during project precedent presentations, and most robustly through research for their final project. This project is conceptually based on LAF's CSI case study method. At the project's outset, students discuss and develop a list of projects in our own community that they feel are multifunctional, high performance landscapes. The list is reduced to three local landscapes based on a number of criteria, including accessibility of the project's leadership, availability of existing research/information about the project's history and impact, and their collective representation of a range of landscape types, scales and contexts.

The project statement included with this reflection offers details regarding the project's requirements and time line. Essentially, three groups of students are charged to develop a performance-driven narrative for a local landscape by identifying probable performance economic, social, and environmental benefits and communicating them in compelling visual formats. This project synthesizes the theories and practice implications discussed earlier in the course, and challenges them to exercise the visualization methods and their understanding of fundamental science that power their performative characteristics.

To assist in the development and application of these understandings, Meg Studer of siteations.com was hired to conduct a workshop for our course, brining to campus her extensive experience in quantitative research and the visualization of dynamic landscape systems, their temporal characteristics, and multi-scalar logistics. This two-day workshop exposed students to in-depth explanations of theoretical underpinnings of contemporary visualization methods, a lexicon of graphic diagraming techniques, and time to charette their own visualization approaches to communicate the narrative they had already begun researching. This hands-on experience and web-enabled critiques of their progress over the balance of the project timeline proved to be invaluable accelerators for their research and graphic communication methods, brining levels of graphic and organizational clarity in their final products that otherwise may not have been achieved.

Though it may not be practical to host a visiting scholar each term to facilitate the workshop, a similar means to introduce graphic theory, methods, and catalyze student progress through focused working sessions will be explored. The timing of the workshop was the subject of much discussion following the conclusion of the project. Many students advocated for it to occur earlier in the project timeline. In fall of 2016, the workshop was offered four weeks into the nine-week project so as to give students suitable time to begin researching their projects and to identify probable performance benefits, giving them the benefit of this information during the workshop.

Student outcomes for project three demonstrate a solid understanding of the story of each project as is supported by their quantifiable performance benefits, an explicit focus of the exercise. Early in the research process, many groups gravitated towards measuring project performance characteristics that could be readily quantified, but that were not necessarily fundamental to the emerging project narrative. Adequate time should be allowed in the course to regularly visit with students to discuss their progress and critique their work. The class' two-hour meeting time generally allowed for an adequate level of engagement to this end. Generally speaking, lecture content was offered for the first hour of the class, allowing the second hour for critiques and group meetings.

Outcome 6: To be prepared to advocate for sustainable planning and design strategies, operative landscapes in academic and professional work using quantitative metrics and the lexicon of living systems

It is not possible to measure the preparedness of students to these ends during the time span of a single course. It will be an acute interest of mine to track how the course's concepts may or may not manifest in the students' future academic and professional work. Anecdotal evidence from Slovenian enrollees suggests that the course has already fundamentally changed the way they approach their studio and competition work. UT students who took the course and participated in externships over the holiday break have suggested that their new-found understandings are already being put to work, specifically using landscapeperformance.org as a research and advocacy tool.

Conclusion

Informal and formal feedback collected from students enrolled in Operative Landscapes suggests that the course's organization, content, and format were effective in achieving the intended learning outcomes for the course. While keeping these high-level aspects of the course largely intact, Operative Landscapes will continue to evolve in ways outlined herein, based on new feedback from future cohorts, as well as in response to the ongoing maturation of professional practice. Operative Landscapes has proven to be an effective model to introduce and build conceptual understandings of contemporary sustainable design methods through the theoretical and practical lenses of landscape performance. It will continue to inform other areas of our living systems sequence and the broader MLA curriculum, including the recalibration of our 'Plants in Design' course to more explicitly exercise the application of operative landscape tactics.

I would like to thank the Landscape Architecture Foundation for its support of this course through the 2016 Landscape Performance Education Grant program and for its broader advocacy on behalf of the profession of landscape architecture through research, scholarship, and leadership.

Respectfully Submitted,

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University of Tennessee
School of Landscape Architecture
LAR 525: Operative Landscapes
Fall Semester 2016

Meeting Time and Location
Monday + Wednesday, 905-1100
Art + Architecture Building, Room 325

Instructor
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Assistant Professor
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Course Description
Contemporary challenges posed by urbanization, climate dynamics, evolving economies and social paradigms have changed the demands we place on the designed landscape. Landscape architects in North America and around the world have risen to this challenge, revealing new possibilities for the economic, social and environmental performance of landscapes in public, private and infrastructural territories. This course examines the historical contexts and emergent theory driving this shift in the practice of landscape architecture, and uses contemporary projects as a basis for understanding multi-scalar design approaches, technical details and maintenance regimes. An emphasis will be placed on built landscapes and living systems as integral parts of site stormwater management approaches and regional water resource infrastructure.

Intended Learning Outcomes
- To understand the arc of design practice and theory as it relates to concepts of nature, mankind's relationship with nature, and the role of natural systems in contemporary urbanism
- To understand the implications of operative landscapes, landscape performance for the contemporary practice of landscape architecture
- To be aware of exemplary, contemporary projects and design practices (offices, practitioners) demonstrating operative landscape principles, territories of application, proficiencies, and setting trajectories for the future of the profession
- To understand biological, botanical and ecological processes and principles fundamental to operative landscapes
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Course Organization
In order to achieve these learning outcomes, the course is organized into three complimentary units:

Unit 1: Landscape Performance Theory – This unit traces the arc of landscape design history and landscape architectural theory relative to concepts of nature, anthropogenic relationships with the landscape, and the evolution of the meaning and motivation driving landscape design. Class discussions and lectures reinforce concepts first introduced through required readings.

Unit 2: Implications for Professional Practice – Once a theoretical understanding of the discipline's transition from horticultural and aesthetic traditions towards high-performance public works practice has been established, major themes for how such a shift is impacting the professional practice of landscape architecture are identified and discussed. These implications include novel territories for practice, the science of landscapes and landscape architecture as science, contemporary criteria for plants in design, maintenance as design, the performance of appearance, visualization strategies, and the emergence of performance metrics. These themes serve as lenses through which project case studies are presented in the following unit.

Unit 3: Performance Themes – The balance of the class is dedicated to exploring landscape performance themes across economic, social and environmental agendas. Performance themes include RE (restore, regenerate, reclaim, remediate), economic stimulation, social catalyst, public health, and water resource stewardship. There is an emphasis in this unit on operative landscapes that avoid, minimize and manage stormwater, and contemporary flooding management approaches. This unit concludes with an exploration of the synthetic, comprehensive deployment of operative landscapes for community (re)building.

Fundamental concepts, language and living systems science pertinent to each theme are also introduced, and seminal projects that demonstrate the application of these themes are presented for discussion. Though projects are selected for their alignment with a primary performance theme, their complimentary economic, social, and/or environmental benefits are also discussed.

Site visits, lecturers by guests with expertise in knowledge areas related to performance themes, and in-person or remote conversations with practitioners may also be integrated into Unit 3.

Required Reading
Required readings will be assigned by the instructor each class as determined appropriate. Readings will be shared by way of a course DropBox. The course reading list includes, but will not be limited to:

- Amidon, J., (2009). Big Nature. In L. Tilder & B. Blostein (Eds.), *Design Ecologies: Essays on the Nature of Design*, New York: Princeton Architectural Press.
- Carlisle, S. Pevzner, N.,"The Performative Ground: Rediscovering the Deep Section." Scenario Journal: Scenario 02, 2012
- Meyer, E., "Sustaining Aesthetics: The Performance of Appearance. A Manifesto in Three Parts," Journal of Landscape Architecture (JoLA), Spring 2008

Select chapters from the following will also be assigned.

- Margolis, L., Living Systems, Birkhauser, Basel, 2007
- Thoren, R., Landscapes of Change: Innovative Designs for Reinvented Sites, Timber Press, Portland, 2014
- Kirkwood, N., Kennen, K., Phyto: Principles and Resources for Site Remediation and Landscape Design, Rutledge, Abingdon, 2015
- Waldheim, C. (Ed.), *The Landscape Urbanism Reader,* Princeton Architectural Press, 2006. Print.
- Cornor, J. (Ed.), *Recovering Landscape: Essays in Contemporary Landscape Architecture*, Princeton Architectural Press, 1999. Print.

Assessment + Grading
Assessment of a student's individual performance will be based evaluation of the following:

- **Attendance:** students are expected to attend every class period. Students may have one absence from class without penalty. Following the first absence, each subsequent absence will affect a student's final grade. Students are encouraged to contact the instructor prior to or immediately after the missed class and are responsible for the missed lecture content. Individuals with an observed pattern of regular tardiness or absence will meet with the instructor to determine whether they should continue in the course.
- **Participation:** Active participation during in-class discussions, demonstrating completion and comprehension of assigned readings. If it is determined by the instructor that a pattern of not completing required readings persists, pop quizzes or exams may be incorporated into the course's evaluation approach.
- **Discussion Reflections (blog posts):** Required reflection prompts will be tendered by the instructor periodically. Students will post written 200-300 word reflections to a personal blog, the address for which will be shared with the instructor at the beginning of the semester
- **Projects:** Three graded projects will be assigned over the course of the semester
    - Two individual projects, submitted
    - One group project, presented/juried

'**A' - Outstanding:** This student displays a mastery of the subject matter. All required work is complete and demonstrates a superior understanding of the issues and skills involved in the project and applies them appropriately. The individual consistently demonstrates initiative and inquiry and goes above and beyond instructor expectations. Assignment materials are superior in content and craftsmanship and communicates information clearly. The individual consistently participates and is actively engaged in the class.

'B' - Good*:* The quality of the student's work and participation is above average, but lacks the thorough rigor of excellent work.

'C' - Average: The quality of the study's work and participation work does not exceed expectations. The work is satisfactory, but does not display a mastery of the subject matter.

'D' - Poor: The basic expectations of each student have not been met. The work has obvious shortcomings. There is little effort put forth in the class, and no mastery of subject matter.

'F' - Failing: Almost no effort has been put forth by the student demonstrated by both process and product.

LAR 525 – Operative Landscapes
Fall 2016 Course Schedule

The following schedule is subject to change at the discretion of the instructor. Lectures and assigned readings will be incorporated as determined appropriate:

Week 1:	W, August 17: Introductions, Course Overview and Infrastructures
Week 2:	M, August 22: Ideas of Nature, Wilderness (Project 1 Assigned)
	W, August 24: Meanings of the Designed Landscape
Week 3:	M, August 29: Towards Landscape Urbanism: Grand Challenges and a Call for Operative Landscapes
	W, August 31: Operative Landscapes and Infrastructure Practice
Week 4:	M, September 5: *LABOR DAY – No Class*
	W, September 7: Operations & Professional Practice I (Project 1 Due, Project 2 Assigned)
Week 5:	M, September 12: Operations & Professional Practice II
	W, September 14: Remediate, Regenerate, Restore I
Week 6:	M, September 19: Remediate, Regenerate, Restore II
	W, September 21: Remediate, Regenerate, Restore III
Week 7:	M, September 26: Regenerate, Restore IV (Project 2 Due, Project 3 Assigned)
	W, September 28: Stimulate – Economic Activity
Week 8:	M, October 3: Social Vibrancy
	W, October 5: Design for Health
Week 9:	M, October 10: Water Resources Introduction
	W, October 12: Green Infrastructure Fundamentals
Week 10:	M, October 17: Runoff Volume Reduction I
	W, October 19: Runoff Volume Reduction II
Week 11:	M, October 24: *ASLA NATIONAL MEETING – No Class*
	W, October 26: Runoff Volume Reduction III
	R, October 27: *RESEARCH REPRESENTATION WORKSHOP (Afternoon)*
	F, October 28: *RESEARCH REPRESENTATION WORKSHOP (All day)*
Week 12:	M, October 31: Runoff Volume Reduction IV
	W, November 2: Biological Stormwater Treatment I
Week 13:	M, November 7: Biological Stormwater Treatment II
	W, November 9: Biological Stormwater Treatment III
Week 14:	M, November 14: Biological Stormwater Treatment IV
	W, November 16: Flood Management I
Week 15:	M, November 21: Flood Management II
	W, November 23: Flood Management III
Week 16:	M, November 28: Synthesis: Building Communities through Operative Landscapes
	W, December 1: Synthesis: Building Communities through Operative Landscapes
Exam Week:	800-1000AM, M, December 5 or W, December 7 – Project 3 Presentation

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University of Tennessee School of Landscape Architecture
Required Readings and Lecture Bibliography

Required Readings

Hunt, J., "The Idea of a Garden and the Three Natures." *Greater Perfections.* Philadelphia: University of Pennsylvania Press, 2000. 32-75. Print.

Francis, M. and Randolph T. Hester, Jr., eds., (1992) "The Garden as Idea, Place and Action." *The Meaning of Gardens*. Cambridge and London: MIT Press, 1992. 2-19. Print.

Waldheim, C., "Landscape as Urbanism." In C. Waldheim (Ed.), *The Landscape Urbanism Reader,* New York: Princeton Architectural Press, 2006. Print.

Reed, C., "Public Works Practice." In C. Waldheim (Ed.), *The Landscape Urbanism Reader,* New York: Princeton Architectural Press, 2006. Print.

Amidon, J., (2009). "Big Nature." In L. Tilder & B. Blostein (Eds.), *Design Ecologies: Essays on the Nature of Design*, New York: Princeton Architectural Press, 2009. Print.

Berger, A., "Drosscape." In C. Waldheim (Ed.), *The Landscape Urbanism Reader,* New York: Princeton Architectural Press, 2006. Print.

Davis, B. and Thomas Oles,"From Architecture to Landscape: The Case for a New Landscape Science." Accessed 10/14/2014 at https://placesjournal.org/article/from-architecture-to-landscape/

Riano, I., "Just a Bunch of Weeds: An Interview with Peter Del Tredici." Accessed 3/20/2016 at http://scenariojournal.com/article/peter-del-tredici/

Robinson, Alexander, and Liat Margolis. "Introduction" and "Grooming." *Living Systems: Innovative Materials and Technologies for Landscape Architecture*. Basel: Birkhauser GmbH, 2010. 14-15, 76-99. Print.

Carlisle, S. and Nick Pevzner,"The Performative Ground: Rediscovering the Deep Section." Scenario Journal: Scenario 02, 2012

Thompson, W., "Land Matters." *Landscape Architecture Magazine.* April 2006. 11. Print.

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"SER International Primer on Ecological Restoration." The Society for Ecological Restoration. 2004. Accessed 03/31/2016 at http://www.ser.org/resources/resources-detail-view/ser-international-primer-on-ecological-restoration

"Brownfields to Greenfields: A Field Guide to Phytoremediation." Published by youarethecity. 2001. Accessed 3/31/2016 at http://www.youarethecity.com/pdf/fieldguide_youarethecity.pdf

Landsacpe Performance Series. The Landscape Architecture Foundation. 2014. Web. 04/07/2016

Whyte, William H. *The Social Life of Small Urban Spaces*. Santa Monica, CA: Direct Cinema Ltd, 2005.

Armour, T., Chris Luebkeman and Josepf Hargrave, eds., “Social Benefits: Rethinking Urban Communities” and “Economic Benefits: Urban Resource Streams.” *Cities Alive.* ARUP. 2014. 29-56 and 83-104. Online.

Operative Landscapes Course Bibliography

Austin, Gary. *Green Infrastructure for Landscape Planning: Integrating Human and Natural Systems*. London and New York: Routledge, 2014. Print.

Berrizbeitia, Anita, ed. *Michael Van Valkenburgh Associates: Reconstructing Urban Landscapes.* New Haven and London: Yale University Press, 2009. Print.

Bhatia, Neeraj and Lola Sheppard, eds. *[Goes Soft]. Bracket-Almanac 2.* Barcelona and New York: Actar, 2012. Print.

Cantrell, Bradley, and Justine Holzman. *Responsive Landscapes: Strategies for Responsive Technologies in Landscape Architecture.* New York: Routledge, 2016. Print.

Casbon, Becca ed. *Coupling/ Strategies for Infrastructural Opportunism. Pamphlet Architecture 30.* New York: Princeton Architectural Press, 2011. Print

Collett, Brad, Valerie Friedmann and Wyn Miller. *Low Impact Development: Opportunities for the PlanET Region.* Knoxville: Self-Published, 2013. Print.

Cornor, J. (Ed.), *Recovering Landscape: Essays in Contemporary Landscape Architecture*, Princeton Architectural Press, 1999. Print.

Culvahouse, Tim, ed. *The Tennessee Valley Authority: Design and Persuasion.* New York: Princeton Architectural Press, 2007. Print.

Detroit Future City. *Detroit Future City: 2012 Detroit Strategic Framework Plan*. Detroit: Inland Press, 2012. Print.

Dunnett, Nigel and Andy Clayden, *Rain Gardens: Managing Water Sustainably in the Garden and Designed Landscape*. Portland: Timber Press, 2007. Print.

Hopkins, John, and Peter Neal. *The Making of Queen Elizabeth Olympic Park*. West Sussex: John Wiley & Sons, 2013. Print

Kirkwood, Niall, and Kate Kennen. *PHYTO: Principles and Resources for Site Remediation and Landscape Design.* New York: Routledge, 2015. Print.

Knechtel, John. *Water: Alphabet City no. 14.* Cambridge and London: The MIT Press, 2009. Print.

Mathur, Anuradha, and Dilip Da Cunha, eds. *Design in the Terrain of Water.* Philadelphia: Applied Research + Design Publishing, 2014. Print.

Nijhuis, Steffen, Daniel Jauslin and Frank Van Der Hoeven, eds. *Flowscapes: Designing Infrastructure as Landscape*. Delft: TU Delft, 2015. Print.

North, Alissa. *Operative Landscapes: Building Communities through Public Space.* Basel: Birkhauser GmbH, 2013. Print.

Roberts, Rebecca, ed. *Rising Currents: Projects for New York’s Waterfront*. New York: The Museum of Modern Art, 2011. Print.

Pennypacker, Eliza and Stuart Echols, *Artful Rainwater Design: Creative Ways to Manage Stormwater*. Washington, DC: Island Press, 2015. Print.

Robinson, Alexander, and Liat Margolis. *Living Systems: Innovative Materials and Technologies for Landscape Architecture*. Basel: Birkhauser GmbH, 2010. Print.

Sinkovec, I., ed., *VODA WATER: Exhibition Guide*. Museum and Galleries of Ljubljana. Accessed 04/01/2016 at http://www.mgml.si/media/voda_water_vodnik.po.razstavi.pdf

Thoren, Roxi. *Landscapes of Change: Innovative Designs and Reinvented Sites.* Portland and London: Timber Press, 2014. Print.

University of Arkansas Community Design Center. *Low Impact Development: A Design Manual for Urban Areas*. Fayetteville: University of Arkansas Press, 2010. Print.

Waldheim, C. (Ed.), *The Landscape Urbanism Reader,* Princeton Architectural Press, 2006. Print.

West, Claudia, and Thomas Rainer. *Planting in a Post-Wild World: Designing Plant Communities for Resilient Landscapes*. Portland: Timber Press, 2015. Print.

LAR 525 – Operative Landscapes
University of Tennessee School of Landscape Architecture
Precedent Project List

The following is a list of contemporary precedents presented as demonstrations of their respective operative themes. While most projects operate across multiple performance categories, their operative characteristics within a single theme were highlighted during each lecture. Project images, diagrams, videos, and other resources were used to illustrate fundamental science powering the performance characteristic, as well as underlying design concepts and drivers. When available, the primary designer or project source is also provided.

Restore, Regenerate

The following projects were presented as demonstrations of a progression from landscape restoration (restoring both ecosystem structure and function) to landscape regeneration (focus on function with novel structure and context)

Nine Mile Run Restoration
Pittsburgh, PA
Andropogon Associates, Primary Landscape Architect

Menomonee River Restoration
Milwaukee, WI
Wenk and Associates, Primary Landscape Architect

Fresh Kills Landfill
New York, NY
Field Operations, Primary Landscape Architect

Park Schinkeleilanden
Amsterdam, Netherlands
Buro Sant en Co, Primary Landscape Architect

Oystertecture
New York, NY
SCAPE, Primary Landscape Architect

Remediate

US Coast Guard Facility
Elizabeth City, NC
Source: PHYTO

Ford Factory
Genk, Belgium
Source: PHYTO

Woodburn Wastewater Treatment Facility
Woodburn, OR
Source: PHYTO

Travis Air Force Base
Fairfield, CA
Source: PHYTO

Queen Elizabeth Olympic Park
London, England
Hargraeves Associates, Primary Landscape Architect

Alumnae Valley
Wellesy College, MA
MVVA, Primary Landscape Architect

Renaissance Park
Chattanooga, TN
Hargraeves Associates, Primary Landscape Architect

Stimulate: Economic

Subset: Programmable Space, Temporal Investment
Queen Elizabeth Olympic Park
London, England
Hargraeves Associates, Primary Landscape Architect

Erie Street Plaza
Milwaukee, WI
Stoss Landscape Urbanism, Primary Landscape Architect

Evergreen Brick Works
Toronto, Canada
Claude Comier and Associates, Primary Landscape Architect

Subset: Fixed Investment
Landscaftspark Duisburg Nord
Duisburg, Germany
Latz and Partner, Primary Landscape Architect

Southworks Chicago
Chicago, IL
SOM, Primary Urban Design

Subset: Generator of New Economic Ecosystems
Detroit Future City
Detroit, MI
Stoss Landscape Urbanism, Primary Landscape Architect

Subset: Economic Activity in Contextual Sphere
Renaissance Park
Chattanooga, TN
Hargraeves Associates, Primary Landscape Architect

Atlanta Beltline
Atlanta, GA
Perkins + Will, Primary Urban Design

Knoxville's Urban Wilderness
Knoxville, TN
Legacy Parks Foundation, Organizing Non Profit

Subset: Cost Effectiveness, Cost Avoidance
Renaissance Park
Chattanooga, TN
Hargraeves Associates, Primary Landscape Architect

Green City Clean Water
Philadelphia, PA
WRT, Primary Planners

Stimulate: Social

Through Jobs Creation, Industry and Commerce as Social Fabric
Detroit TechTown
Detroit, MI
Sasaki Associates, Primary Landscape Architect

Menomonee Valley Restoration
Milwaukee, WI
Wenk and Associates, Primary Landscape Architect

Public Health, Walkability + Sense of Community
Knoxville's Urban Wilderness
Knoxville, TN
Legacy Parks Foundation, Organizing Non Profit

Atlanta Beltline
Atlanta, GA
Perkins + Will, Primary Urban Design

Healthy Environment, Atmosphere and Microclimate
Klyde Warren Park
Dallas, TX
Office of James Burnett, Primary Landscape Architect

U.S. Coast Guard Headquarters
Washington, DC
Andropogon Associates, Primary Landscape Architect

Cambridge Civic Center
Ontario, Canada
Nedlaw Living Walls, Living Wall System Designer

Healthy Food, Food Access
Gary Comer Youth Center
Chicago, IL
Hoerr Schaudt, Primary Landscape Architect

Fayetteville 2030: Food City
Fayetteville, AR
University of Arkansas Community Design Center

Water Resources: Runoff Avoidance and Minimization

Slovenia and Natura2000
Slovenia, EU
Slovenian Ministry of the Environment

Barking Riverside Green Roof Research
Source: TURAS, University of East London

Captitol Canopy
Sacramento, CA
AtlasLAB, Landscape Architecture

Southwest EcoDistrict
Washington, DC
National Capitol Planning Commission

Serenbe Community
Serenbe, GA
Chattahoochee Hill Country Community Plan

Ford's River Rouge Plant
Deerbourne, MI

U.S. Coast Guard Headquarters
Washington, DC
Andropogon Associates, Primary Landscape Architect

Brooklyn Botanic Garden Visitor's Center
Brooklyn, NY
MVVA, Primary Landscape Architect

Allianz Arena
Munich, Germany

Klyde Warren Park
Dallas, TX
Office of James Burnett, Primary Landscape Architect

Seattle Sculpture Park
Seattle, WA
Weiss Manfredi, Primary Urban Design

Millennium Park, Lurie Garden and Maggie Daley Park
Chicago, IL
SOM, Gustafson Guthrie and Nichol, MVVA, respectively

Green City Clean Water
Philadelphia, PA
WRT, Primary Planners

Southwest EcoDistrict
Washington, DC
National Capitol Planning Commission

Dockside Green
Victoria, British Columbia
Perkins + Will, Primary Urban Design

A New Norris House
Norris, TN
University of Tennessee College of Architecture and Design

Water Resources: Stormwater Management and Biological Treatment
Tianjin Qiaoyuan Wetland Park
Tianjin, China
TURENSCAPE, Primary Landscape Architect

Templehoff Wasserpark
Student Project by Johanna F. Barthmaier
PennDesign

Croton Water Filtration Plant
Brooklyn, NY
Ken Smith Landscape Architects, Primary Landscape Architect

Houtan Park
Shanghai, China
TURENSCAPE, Primary Landscape Architect

Uptown Normal Circle
Normal, IL
Hoerr Schaudt, Primary Landscape Architect

Baltimore Harbor Floating Wetlands
Baltimore, MD
Biohabitats, Primary Ecological Design

AMD+ART Park
Vintondale, PA
Dirt Studio, Primary Landscape Architect

George W. Bush Presidential Library
Dallas, TX
MVVA, Primary Landscape Architect

Shoemakers Green
Philadelphia, PA
Andropogon Associates, Primary Landscape Architect

Water Resources: Flood
Cedar Rapids River Corridor Redevelopment Plan
Cedar Rapids, IA
Sasaki Associates, Primary Planners

Mill Race Park
Columbus, IN
MVVA, Primary Landscape Architect

Yanweizhou Park
Jinhua City, China
TURENSCAPE, Primary Landscape Architect

Buffalo Bayou Promenade
Houston, TX
SWA Associates, Primary Landscape Architect

Town Branch Commons
Lexington, KY
SCAPE, Primary Landscape Architect

Sea Change Boston
Boston, MA
Sasaki Associates, Primary Planners

Subset: Rebuild by Design Competition Entries
Living Breakwaters
New York, NY
SCAPE, Primary Landscape Architect

Deeper than the Beach
New Jersey Shore
Sasaki Associates, Primary Planners

Resist, Delay, Store, Discharge
New York, NY
OMA, Primary Designers

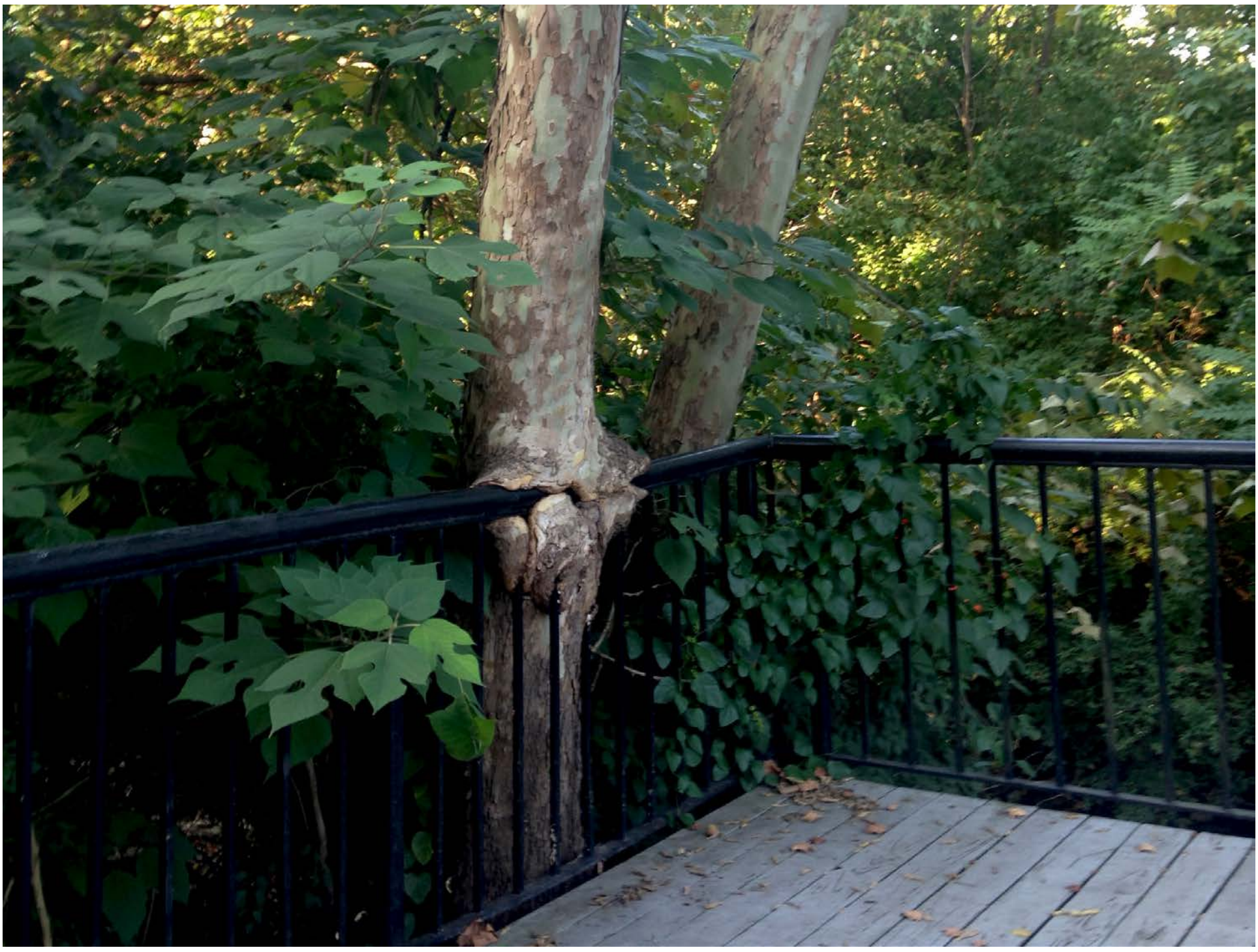
Community (re)Building
Project shared due to a comprehensive and holistic approach toward use of operative landscapes for community building and rebuilding.

Detroit Future City
Detroit, MI
Stoss Landscape Urbanism, Primary Landscape Architect

Green City Clean Water
Philadelphia, PA
WRT, Primary Planners

Menomonee Valley Restoration
Milwaukee, WI
Wenk and Associates, Primary Landscape Architect

Queen Elizabeth Olympic Park
London, England
Hargraeves and Associates, Primary Landscape Architect



City in Nature
Sarah Newton
09.05.2016
Second Creek Greenway

The city can be defined as any human construction or impact. On the Second Creek Greenway in Knoxville, Tennessee, the city exists in the form of a boardwalk and railing that guides people under the road to safely maintain continuous access along this bicycle and pedestrian-friendly route. This construct is specifically intended to be within nature, to provide a mode of access to natural habitats within Knoxville while traveling through the city safely. Public interest in Knoxville fuels this type of intervention and is comparable to that which Jane Amidon discusses in Big Nature, that it is “increasingly geared toward a fusion of economic/ social/ environmental vitalization.” Emblematic of this integration of culture and nature, the tree growing over the metal rail is evidence of stasis of these systems over time.

Nature in City

Sarah Newton
09.05.2016
Suttree Landing Park Site

Nature is the birds chirping in the meadow, the leaves of trees rustling in the forest, and the crisp air of the mountains, but it is also the novel ecosystems such as this example at the future Suttree Landing Park in South Knoxville. Given the proper conditions of light, water, and nutrients, grasses like those shown in the image above can thrive and serve as pioneers for a future ecosystem should it go uninhibited. Similarly, nonnative species of plants and animals can thrive where they have no predators. While they may not have the most important ecological functions or provide a desirable aesthetic, they are nature nonetheless. These instances of spontaneous nature are suggestive of a fifth nature proposed by Jane Amidon: a post-industrial landscape of reclamation. However, in these examples, reclamation is not occurring by human influence, but by nature itself.

City as Nature

Sarah Newton
09.03.2016
Island Home Park

Nature provides certain functions that humans often cannot replicate due to scale, cost, or other impracticalities. Sometimes referred to as ecosystem services, these are increasingly valued for the infrastructural support they provide within urban, suburban, and rural contexts. In this image a 3D mat of plastic mesh serves as a bank revetment on the Tennessee River. Made of very thin threads of plastic, interwoven to create a waffle-like structure, this mat still allows water to reach the soil and prevents seed or burgeoning plant material from washing away, providing structural support for root establishment. This then allows the eventual revegetation of a bank. It is an example of the city, or humans, identifying and mimicking the function of root stabilization in the soil of natural river bank systems to reduce soil erosion for healthier aquatic habitats. As Charles Waldheim describes landscape urbanism, it is "landscape as a remediating practice" and an "integration…between (natural) environmental and (engineered) infrastructural systems."

Project 1 – Due September 7

Urban Wildness

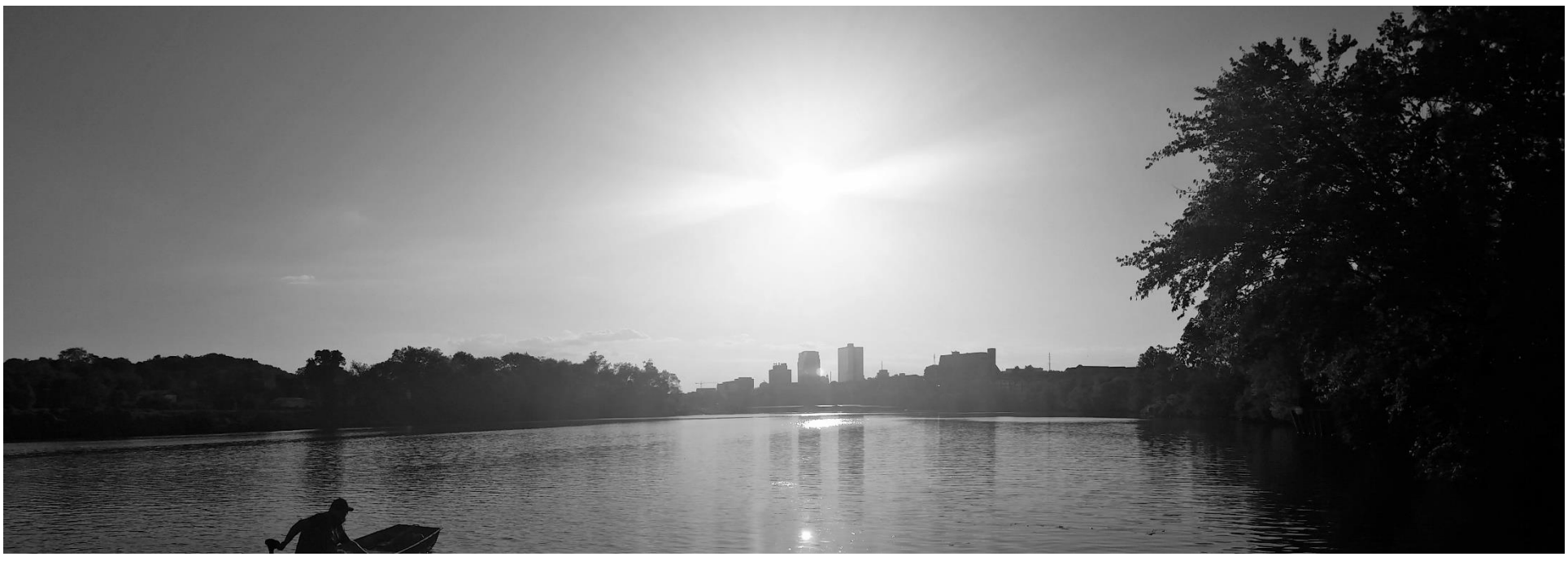
Submit three photographs (150dpi, min) that in your opinion capture three different conceptualizations of the relationship between the city and nature: 1) The City in Nature, 2) Nature in the City, and 3) The City as Nature. The photographs should be of your own making, not from another source, and should be artistically composed so as to communicate your interpretation of the city. Consider a strategic selection of scale composition to convey your ideas: **macro** (overhead, wide/panoramic view), **body** (scale of space relatable to the human body), and **micro** (close-up).

Each photograph should have a title, location, date taken and a 100-200 word explanation of your interpretation of urban wildness for each respective images.

Deliverables

Each of your three photographs and respective titles, date, location and narrative are to be artistically composed on an 11x17 page similar to the spread provided above. The class should work collaboratively to establish a digital template that will standardize margins, font + format, text placement, etc. for both landscape and portrait orientations. Photo editing is allowed for cropping, straightening on or conversion to B+W. Color corrections, effects, filters are not permitted.

Your project shall be submitted in two formats. 1) As a high resolution, print quality PDF file uploaded to drop box and 2) As a blog post of your photos and your accompanying information, narratives



Nature's Makers

Mia Taylor Wavrek
6 September 2016
Riverside Landing Park, Knoxville, TN

Considering natural forms, one notices something about the way nature makes. Nature's shapes curve and flow, yet sometimes they seem "messy" and disorganized. In this way, nature is full of curiosities, waiting to be explored. But it is also incredibly complex and sometimes uninviting. Relying solely on nature is not easy. Nature doesn't make boats to cross its rivers. After a long walk in the woods, the forest doesn't provide a grocery store, or a microwave to heat up food. If you stumbled across these, it would be obvious that they had a maker. With right angles and crisp, clean corners, these forms provide something that nature cannot and thus, are arguably as fascinating. As nature's makers, humans invite the built environment. Settlements and cities beckon exploration, foster human interaction, efficiency, and culture. Ultimately, humans rely on nature for the resources to create our urban spaces. As the products of people, they are the welcoming curiosity of the city in nature.

Petunias sans Café

Mia Taylor Wavrek
6 September 2016
Old City Java, Knoxville, TN

Coffee: an essential part of my morning routine. For most, the coffee shop is an urban social hub, a place to meet up and chat with friends or plug in a laptop and work among students and professionals alike. In a rush, I stop by a local favorite to grab a quick coffee. Competing with the graffitied alleyway, bold, pink petunias greet me as I walk by. Not yet fully open, the flowers are still too sleepy to welcome any insects in search for pollen. Having not yet had my coffee, I can relate. In the early morning, the Old City harbors a quiet, quaint feel. But despite it being only one city block, energy swells throughout the day. As people move busily to and from their destinations, nature longs to capture their attention. It flies overhead, peaks through cracks in the sidewalk, and is tucked away between buildings. Nature in the city waits patiently to be noticed.

Transmission

Mia Taylor Wavrek
5 September 2016
Greensboro Arboretum, Greensboro, NC

The arboretum, with its wide variety of well-placed, labeled plants, represents a manicured “city-nature.” People visit the arboretum to stroll and wander rather than to rush and reach a destination. It is a place that invokes a natural setting rather than an urban one, yet contains familiar built structures: defined pathways, bridges, arches, and sculptures. A reminder of city and settlement emerges like tall trees from either side of a paved path. The transmission lines hybridize the pastoral and structured greenery with the infrastructure that powers our cities. One can imagine the once-vacant swath of landscape that surrounded the tall, lonely towers before it was transformed into an attraction, a place to explore. Much like the transmission of energy through lines from power plant to urban center, the arboretum is a place to pass through on foot, transmitting information, curiosity, and aesthetic. It is the city as nature.

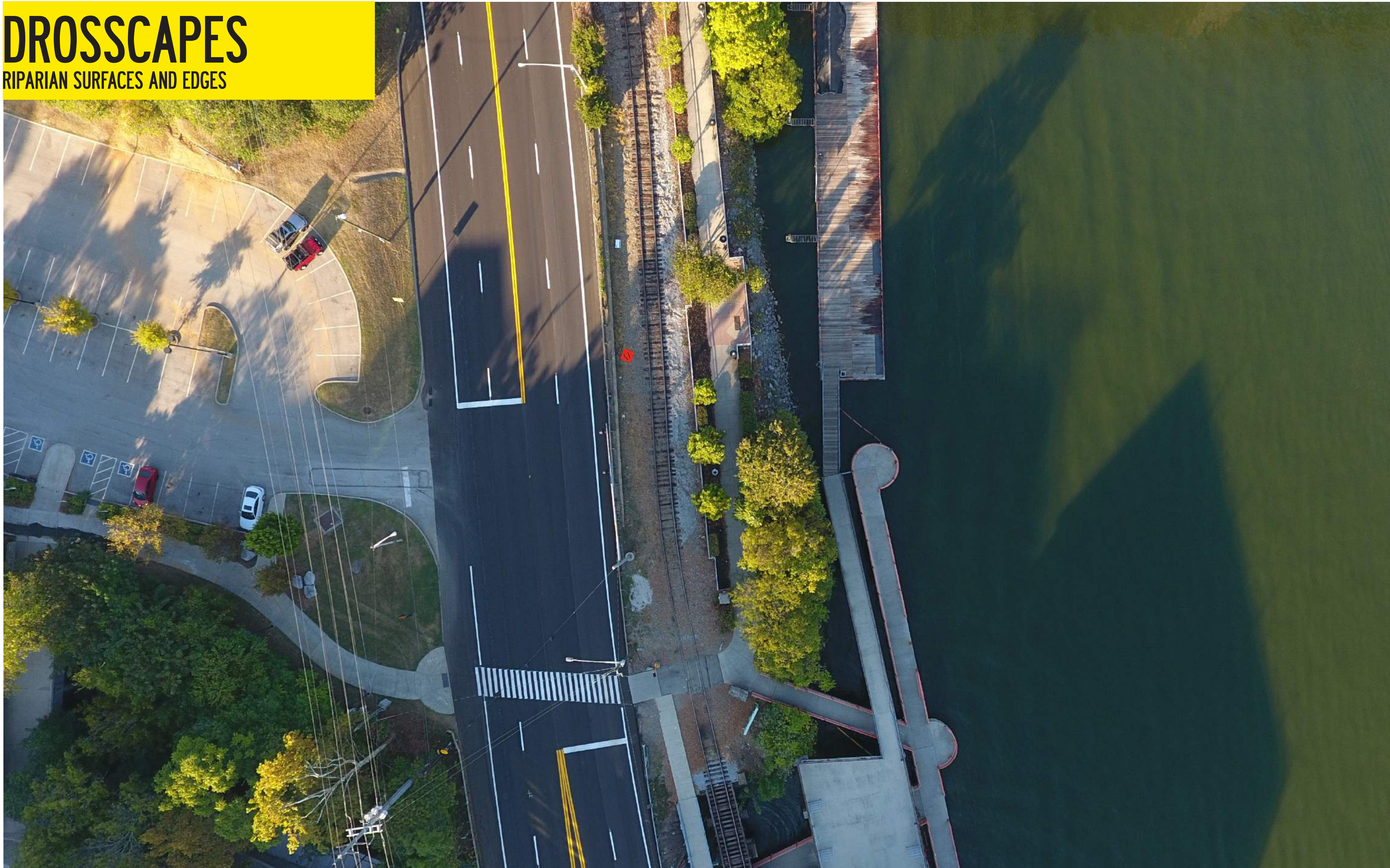
Project 2 - Due Wednesday, Sept 28

Drosscape

The class is to collectively identify typologies of "dross" persistent in the City of Knoxville. From this list, each individual student its to select one typology for further study. On a standard 11x17 template (layout, organization, font, font size) developed by the class, each student is to use a series of maps, diagrams, drawings, photographs and narrative to document the following relative to their selected Dross typology:

1. Causes for the generation of this type of Dross
2. What purpose it serves in its normative condition
3. Where does this type of Dross exist in the City of Knoxville
4. Cite precedents that show how contemporary designers are repurposing this type of Dross

DROSSCAPES
RIPARIAN SURFACES AND EDGES



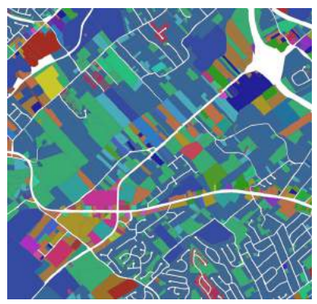
Drosscape

Drosscape as a term and idea was first presented by Alan Berger in his book entitled Drosscape: Wasting Land in Urban America, written in 2006. Drosscape is a term used to define waste landscapes or spaces that are wasted within our urban environment. This projects seeks, as a subset of a larger list of identified dross typologies, to analyze riparian surfaces and buffers as a type of drosscape within the city of Knoxville,TN. Among this type of dross, other types of dross being explored as class are: vacant and abandoned properties, auto transportation, rights of way, buffers and periphery, building surfaces, and exhausted dross.

Riparian Buffer

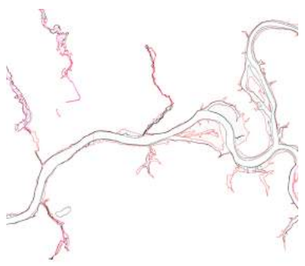
A riparian buffer is a vegetated area next to water resources that protect water resources from non-point sources of pollution and provide bank stabilization and aquatic wildlife habitat. The formal definition of riparian buffer is diverse and depends on the group or individual defining the term.

DEFINING KNOXVILLE'S RIPARIAN EDGE



Property and Land use Data

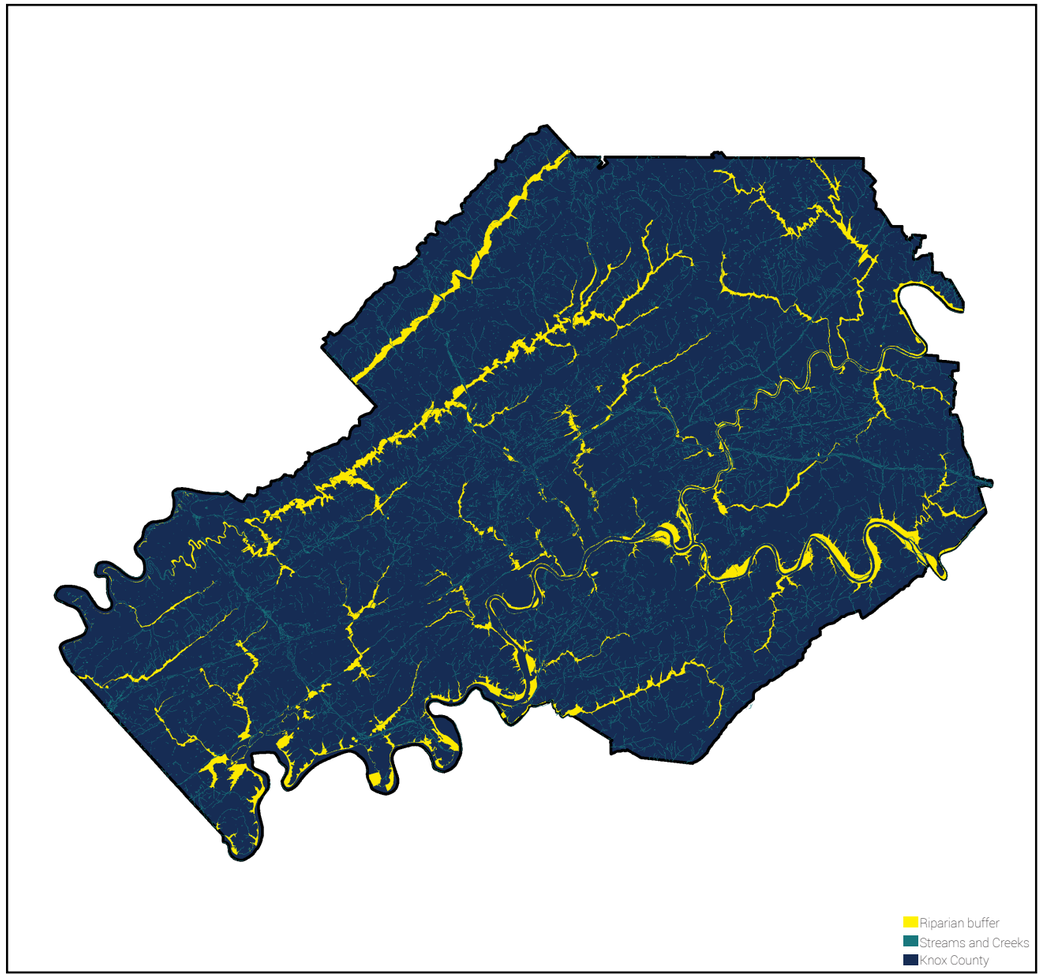
+



Floodplain

=

Riparian Zone



21% OF KNOX COUNTY LAND IS RIPARIAN BUFFER

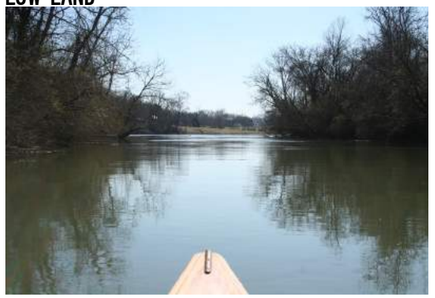
EDGE CONDITION

MATERIAL • CHANNELIZED _ RIP-RAP _ BARE
PHYSIOGRAPHY • BLUFFS _ LOW LAND _ ISLANDS

BLUFF

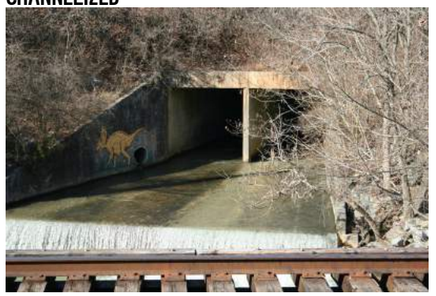
ISLAND

LOW LAND



BARE,EROSION

CHANNELIZED



RIP-RAP

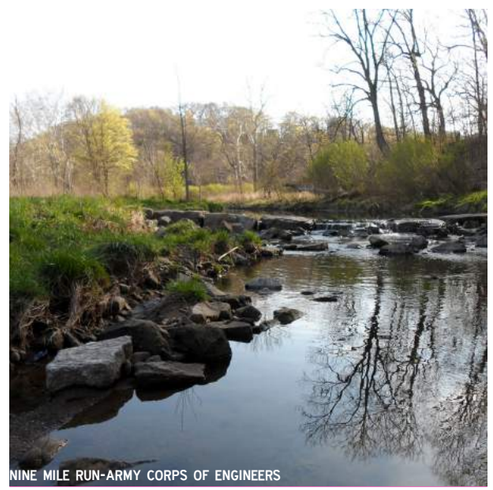
CAUSES + PURPOSES

As water flows through river and creek basins, it alters and defines both the land and materiality in a natural condition. Materiality and physiography both serve as a lens through which dross or wasted along the riparian edge can be classified. Rip-rap rock,eroded riparian zones with bare to minimal vegetation, channelized creeks, high bluffs, low territories, and islands can all be types of dross along the water's edge. Rip-rap was and is used as an erosion control measure along the Tennessee River and concrete channelization of the urban creeks served to reduce flash flooding and obstacles to development in urban areas. Erosion is a result of flooding, hydrologic cycles, and deforestation of the riparian buffer zone. Rip-rap, channelized streams, and bare eroded soil can all be a result of development and urbanization. High bluffs, low territories, and islands are all products of the physiography and landscape of East Tennessee. Bluffs, although mostly inhabitable were used during times of conflict as a monitoring and safety ground. Due to the steep topography, risk of flooding in low lands, and inaccessibility of islands on the river, these three forms of edge physiography are prone to dross.

LOCATIONS

The edge condition exists as a boundary between land and water. For this study, the edge was defined by the FEMA floodplain data. Every portion of land falling within the floodplain boundary is considered riparian edge.

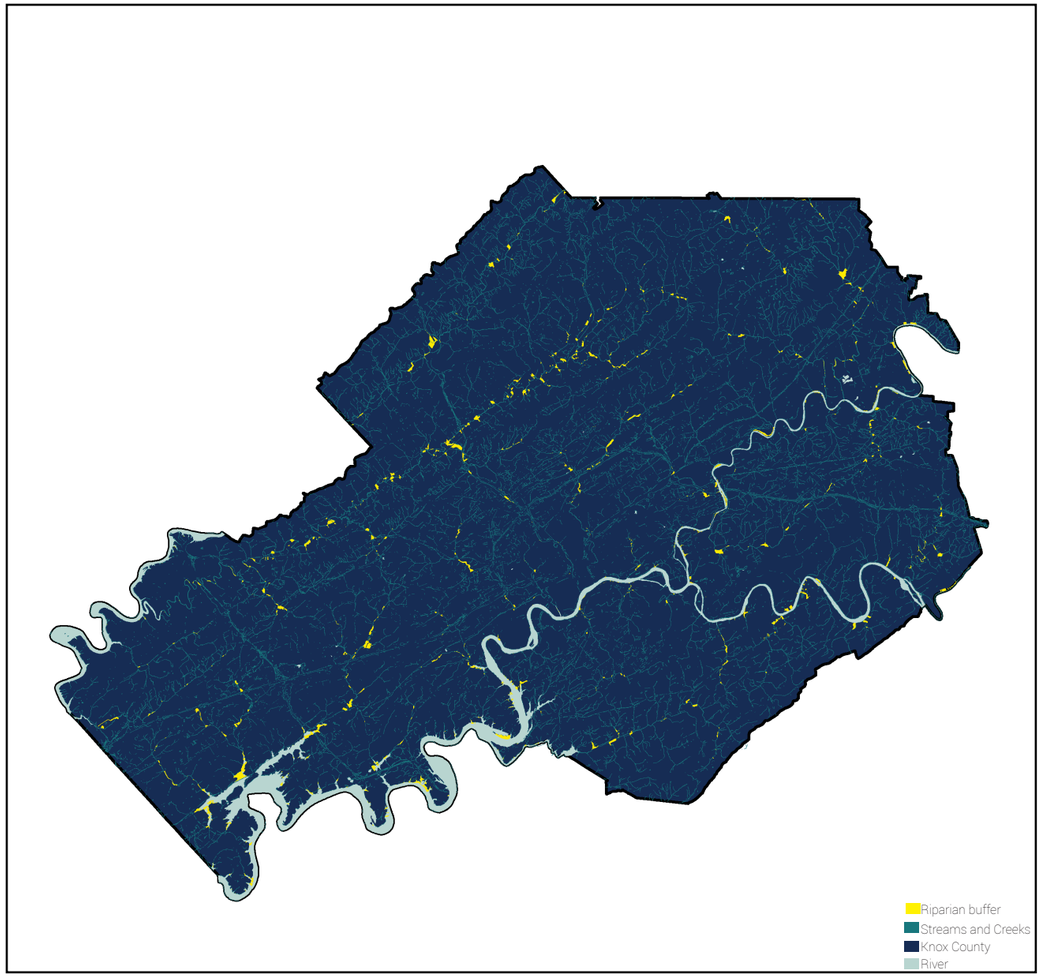
RIVER AIRE GEORGE DESCOMBES



NINE MILE RUN-ARMY CORPS OF ENGINEERS

PRECEDENTS

Two precedent projects that show, in an exceptional way, how riparian zones can be designed to perform in a natural and environmentally productive way are George Descombe's Aire River Project (Geneva), and the Army Corps of Engineer and Nine Mile Run Watershed Association's project (Pittsburgh USA). Both projects aim to restore natural stream behavior through re-establishment of prior norms in the landscape in innovate ways. They imagine, for example, returning a channelized stream to its "natural" state.



LAND USE

UNUSED RIPARIAN LAND

10% OF RIPARIAN BUFFER
IS CLASSIFIED AS UNUSED LAND

CONSTRUCTION

FEDERAL

RESIDENTIAL

INDUSTRIAL

CAUSES + PURPOSES

Along the riparian corridor there are many uses of the landscape, and a majority of the land is currently in some form of productive use. However, there are parcels of land within the buffer that are classified as unused. A majority of these sites are a result of complex societal patterns and shifts in addition to land use policy, strategy, and allocation by the city and county governments. After further analysis, unused land was observed most predominantly in the form of construction sites along the river; vacant, abandoned, or otherwise undeveloped residential or commercial land; abandoned or unused industrial parcels; and unused federal land (such as islands owned by the Tennessee Valley Authority). Currently there are no purposes for this land and it is largely, unproductive and wasted space at the rivers edge.

LOCATIONS

Locations of unused and/or vacant lots within the riparian buffer in Knox County are shown in the map above. The sites appear to be dispersed throughout the city and county.


RENAISSANCE PARK-HARGREAVES


LIVING BREAKWATERS-SCAPE

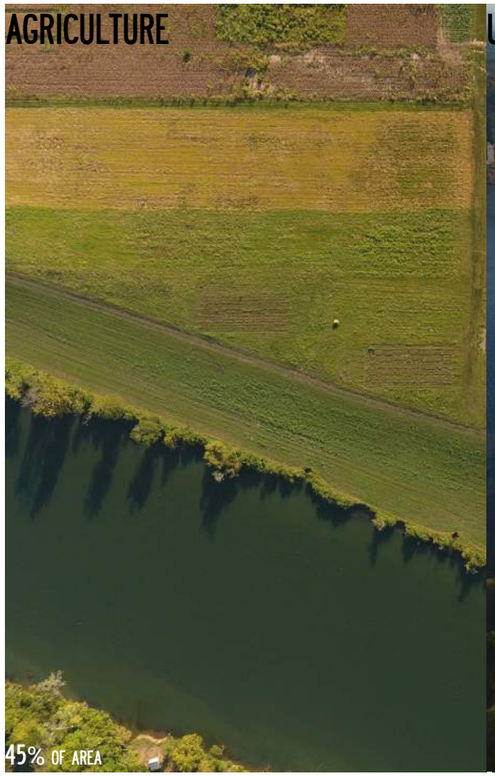
PRECEDENTS

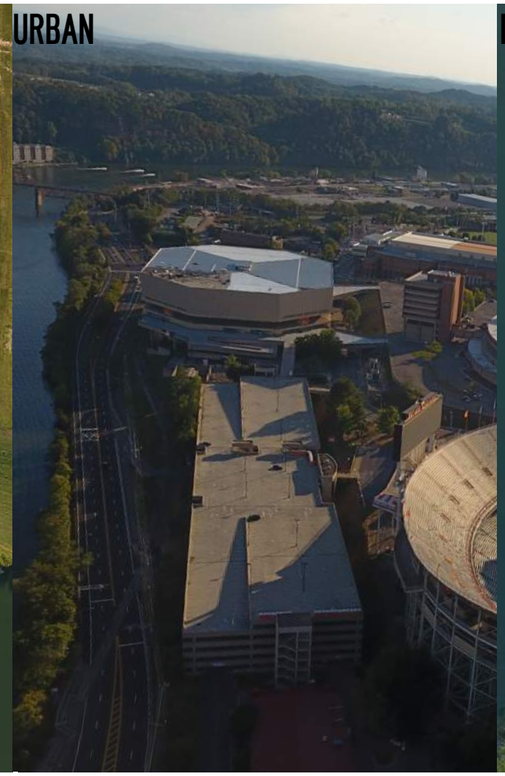
Renaissance Park in Chattanooga, TN by Hargreaves Associates and Living Breakwaters by SCAPE studio both show how unused land at the edge of a water body can be used to heal environmental and social problems while tackling complex twenty-first century issues such as brownfields and climate change/sea level rise. Both precedents are an exemplary case study about how to engage water edge and dross in a meaningful and highly performative way.

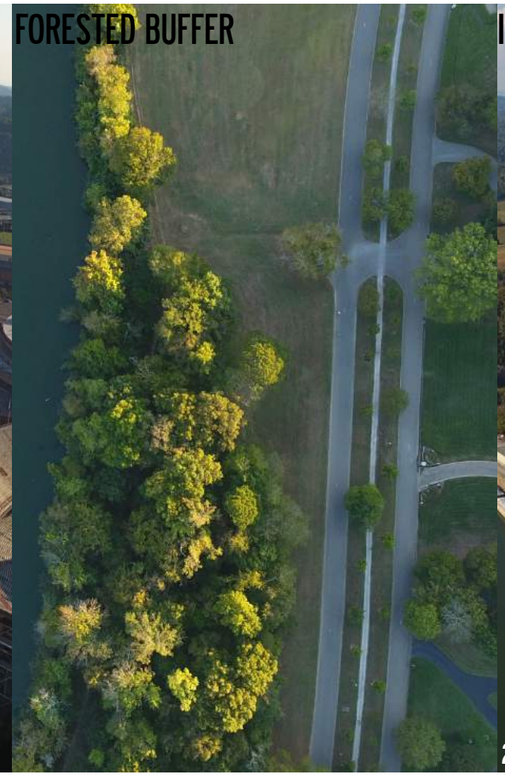
NORMATIVE CONDITION

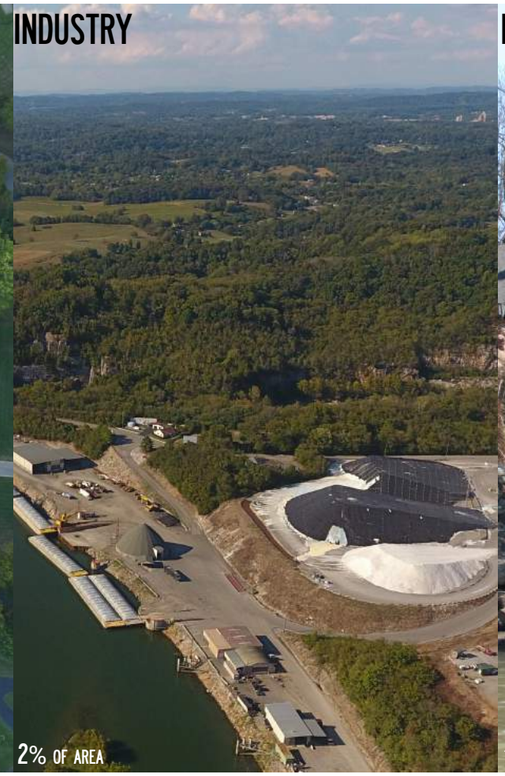
FORESTED BUFFER

AGRICULTURE _URBAN _INDUSTRY _RESIDENTIAL









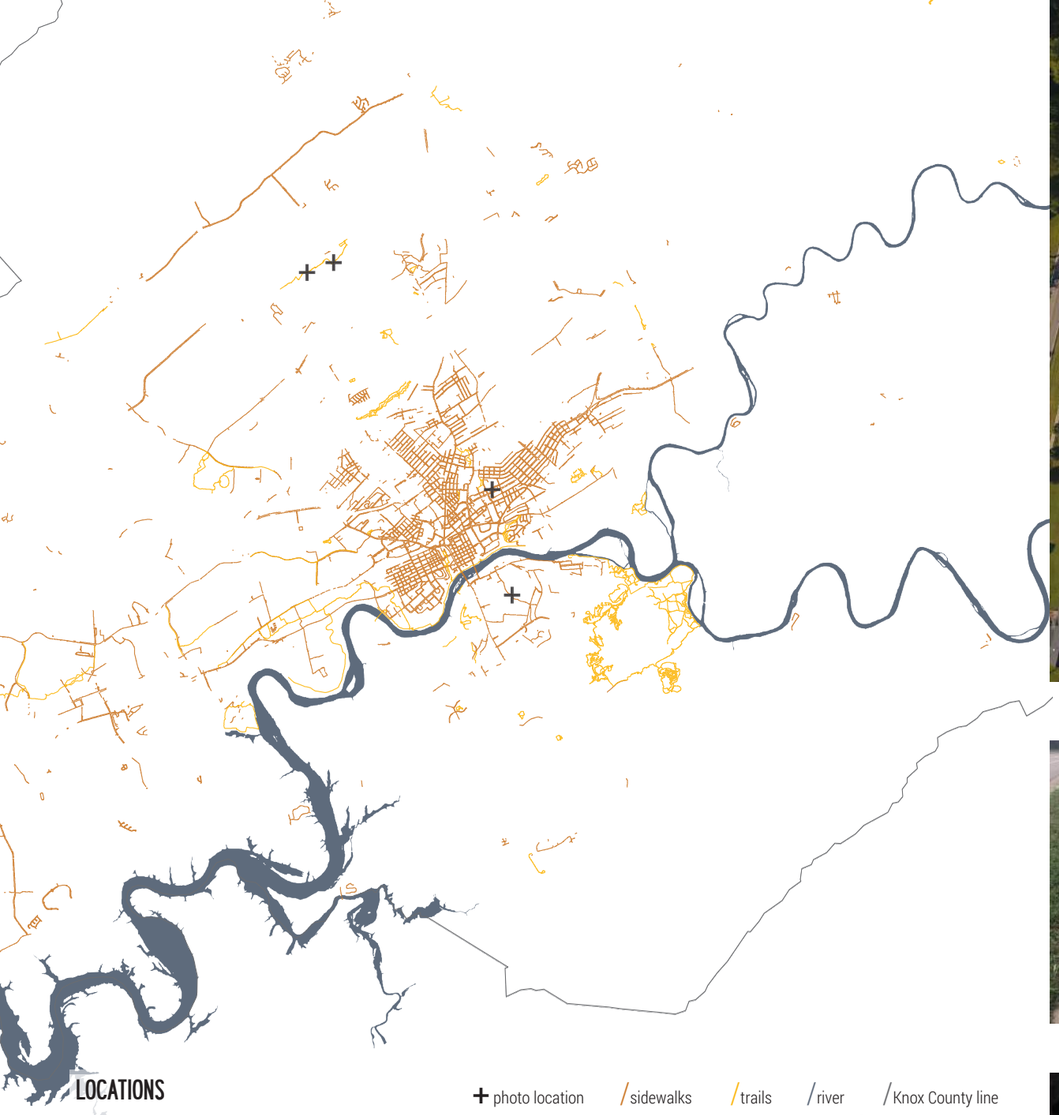
NATURAL STATE OF THE RIPARIAN BUFFER

It is a staggering statistic, only 2% of the country's riparian zone still has vegetation. Vegetation along rivers and creeks is so important because it filters out pollutants in runoff, shades the stream and river to provide habitat for aquatic and terrestrial species, and stabilizes the land to prevent erosion, land-loss, and sedimentation. Water quality depends on vegetated buffers. The pristine, or completely untouched landscape within the riparian buffer zone is naturally vegetated. In the early 1800s, a wave of population growth and industry defined a new normal within the riparian zone. Lands were stripped of trees and vegetation to make way for industrial plants, agriculture, residential areas and urban areas. Today we still see a mixture of these normative conditions along the river bank in a mostly productive state. However, with the loss of the natural buffer zone, dross is more easily created when a man-made use no longer takes place within this zone (Ex: unused lands).

DROSSCAPES

RIGHTS-OF-WAY

BRIDGETTE FRITZ + SARAH NEWTON



PEDESTRIAN/BICYCLE

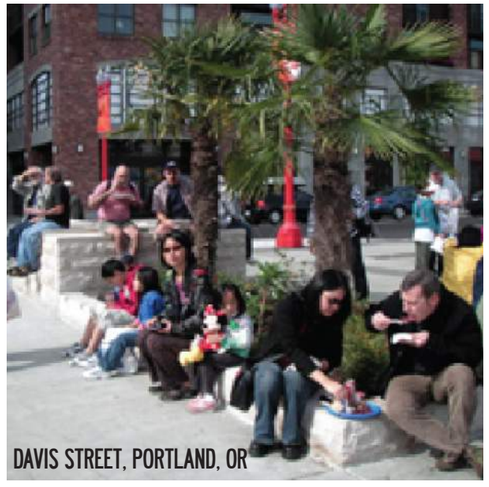
LOCATIONS

+ photo location / sidewalks / trails / river / Knox County line

Sidewalks are concentrated in the downtown area and are less dense moving outward from the city center. Greenway trails connect to these pedestrian opportunities, and the urban wilderness provides bicycle and pedestrian access away from the urban condition.

CAUSES + PURPOSES

While the modern city is primarily developed around the motorized vehicle as a means for transportation, infrastructure for bicycle and pedestrian travel is a growing demand. The traditional sidewalk is one means of meeting this need, however many cities are beginning to rethink this design in the light of urban ecology and urban revitalization with concepts and techniques such as shared spaces, bike lanes, permeable pavement and sidewalk swales. The right of way zone and easement areas are getting long overdue attention. In many places, including Knoxville's urban wilderness abandoned lands and private land easements have come together in boosting local economies and community health.



DAVIS STREET, PORTLAND, OR

CERMAK ROAD, CHICAGO, IL

PRECEDENTS

Davis Street in Portland, Oregon is a nice example of how designers are blurring the distinct line of the right of way. In its daily use, this shared street performs as any other urban thoroughfare, however the lack of curbs maximizes functionality allowing all 60 feet to become pedestrian space during special events as well as increasing everyday walk/bike ability.[1]

By thoughtful design in the right of way zones, Cermak Road diverts up to 80% of annual rainfall from Chicago's combined sewer through a combination of the bioswales, rain gardens, permeable pavements, and storm-water features. In addition, this project improved pedestrian access and safety, and increased permeable paved bike lanes and sidewalks.[2]

RAILWAYS

LOCATIONS

+ photo location / railways / river / Knox County line

Railroads throughout Knox County closely follow most major interstates and highways as well as the Tennessee River, a prior form of navigation.

CAUSES + PURPOSES

Construction on railroads in Knoxville began in the 1820s and connections continued through the late 1800s. In Knoxville, much of the rail supported the local marble mining industry, creating a local rail system that fed into the greater regional system, which connected to cities such as Chattanooga, Nashville, and Bristol. Passenger cars were also common at the time and despite the Great Depression of the 1920s and 30s, adding amenities for comfort. The Civil War of the late 1800s had a devastating effect on the railroads but they were eventually rebuilt. With World War I came the implementation of federal regulation and control on the rail systems. During WWII profits increased due to increased traffic. Throughout the years, modifications to the fuel type used, types of trains traveling through, and faster speeds with more streamlined construction.[1] Today these rail lines are used primarily for freight.

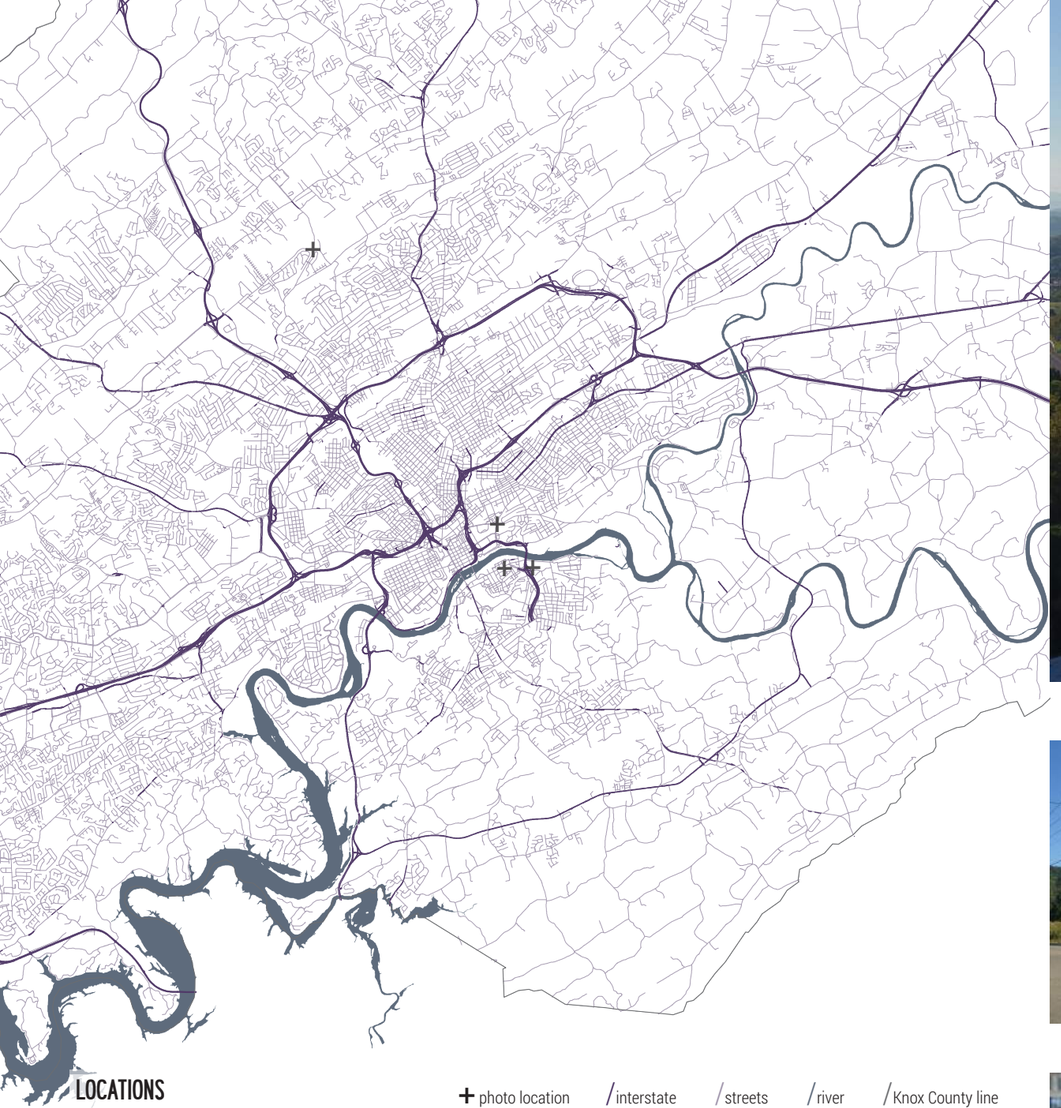
RAIL WITH TRAIL[2]

MARYLAND LIGHT RAIL

PRECEDENTS

Rail with trail is a common use for abandoned, non-functioning, or lightly used rail lines throughout the country. In Knoxville, the G&O Railway (only used periodically for railcars) will undergo preparations to become a trail system that provides a new, safe route for commuting and recreation in South Knoxville, while increasing use of the space.[3]

Maryland Light Rail planted its railroad beds with sedum and turf, a practice held by many rail systems in Europe. This vegetation not only mitigates stormwater and stabilizes soils, it reduces heat island effect and helps to dampen the din of passing trains.[4]



ROADS

LOCATIONS

+ photo location / interstate / streets / river / Knox County line

Interstate 40 travels east to west, while Interstate 75 travels north and south. Connectors and by-passes include Interstates 640, 275, and 140. Several major highways stem from these thoroughfares and smaller streets concentrate near them, becoming more dispersed into the county.

CAUSES + PURPOSES

Urban right of way zones exist to ensure the safety of travel and prevent harm from errant vehicles. For the most part, urban right of ways are intended to exist as an unobstructed, relatively flat area beyond the edge of the traveled way that allows a driver to stop safely or regain control of a vehicle that leaves the traveled way. The desired minimum width is variable depending upon traffic volumes and speeds and on the roadside geometry . With inner-city open spaces and environmental design becoming increasingly coveted, people are beginning to see this area on the periphery of interstates and streets as well as beneath urban overpasses as an untapped resource.[1]

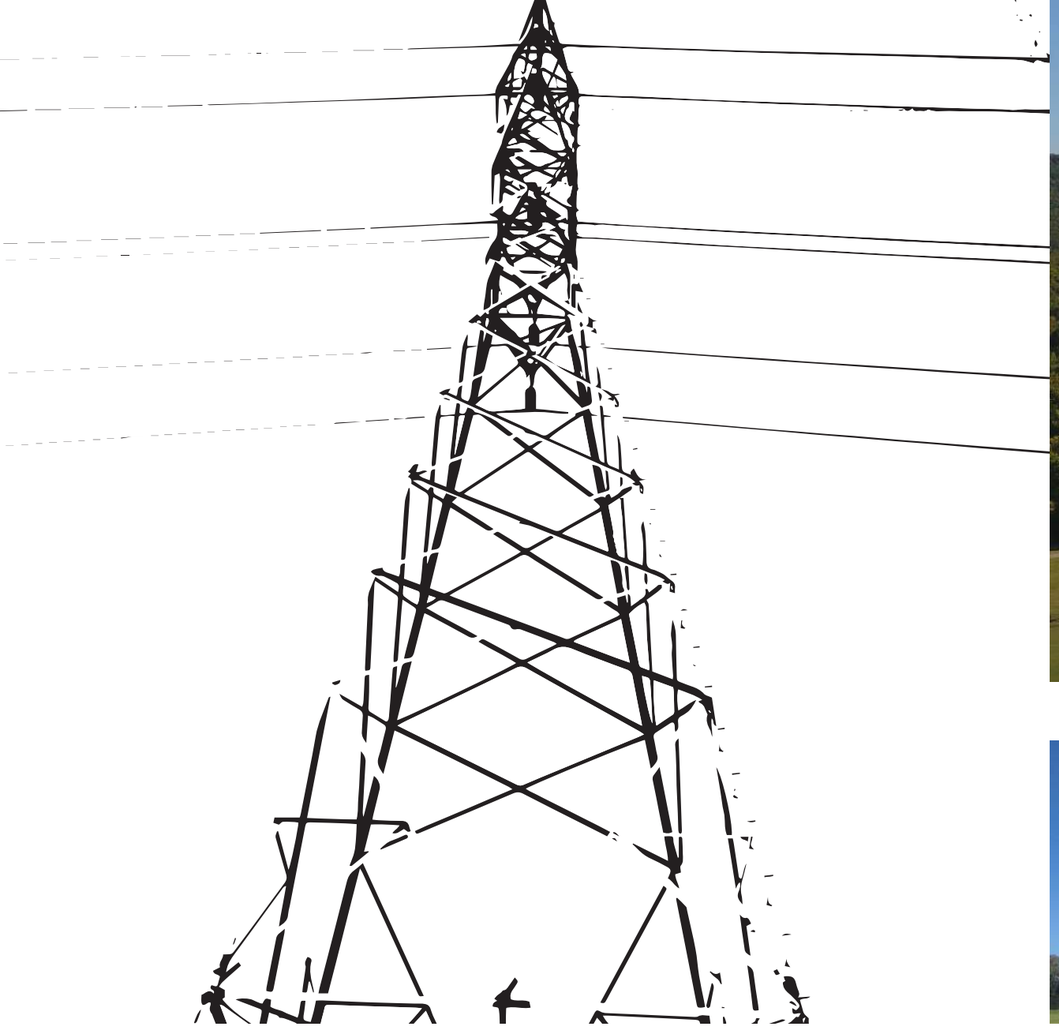
SANDY BOULEVARD, PORTLAND, OR

MINNESOTA DEPT OF AGRICULTURE

PRECEDENTS

In the Sandy Boulevard Streetscape designers in Portland, Oregon have incorporated five rain gardens within the urban right of way zones to aid in the efficient flow of traffic, improve safety for bicyclist and pedestrians and reduce storm-water runoff and combined sewer overflows.[2]

With the increasing fear of declining honeybee populations, highway ROW create pollinator habitats. The Minnesota Dept. of Ag has published a guide of BMPs to improve existing habitat, and create new habitat within the highway rights of way.[2] This management style for highway right of ways decreases the need for intense maintenance regimes, increases storm water infiltration and provides viable habitat within previously undesirable tracts of land.[3]



UTILITIES

LOCATIONS

Utility lines are located throughout Knox County, and GIS data is no longer available for transmission lines due to copyright issues. These lines perforate the landscape via swaths of cleared land, in road rights-of-way, and in other easements on private property.

CAUSES + PURPOSES

Electric transmission lines are required to have rights of way that prevent excessive height of vegetation so as to avoid blackouts of electricity. The tall structure and long draping wires require a significant height and width of clearance.[1] Originating from a power plant, electric lines scour the land in wide, denuded strips to distribute electricity to urban, suburban, and rural communities. Other utility lines such as natural gas and water can be located within the same easements or rights-of-way as power lines. On their own, because they are much smaller infrastructures, they may blend into the ground or surrounding conditions better. All moving from a central hub, these lines are designed to power our homes locally and beyond, meaning that these rights of way will be carving out stripes through the landscape for as long as we depend on these types of resources.

POWERLINE TRAIL[2]

INTEGRATED VEGETATION MANAGEMENT[4]

PRECEDENTS

In the previously underutilized right of way zone of PECO Energy in Horsham Township, Pennsylvania, a 5.24-mile trail was developed connecting inner-city schools, neighborhoods and several community parks. The trail has since been nicknamed "Powerline Trail."[3]

The EPA has established a program of Integrated Vegetation Management for the ecological improvement of electrical transmission line rights of way. With 9 million acres of this landscape in the U.S., revegetating attracts wildlife and reduces the cost of vegetation management, which is required to prevent electricity blackouts. As continuous swaths of land, this zone can provide a valuable conduit for wildlife travel or simply foster insect and pollinator habitat.[5]

CITATIONS

PEDESTRIAN + BIKING

1. "Where the Sidewalk Doesn't End: What Shared Space Has to Share." Project for Public Spaces. Accessed September 27, 2016. http://www.pps.org/reference/shared-space/.
2. Taylor, Donna. "America's "Greenest" Road." A Blueprint for Sustainable Development. http://newatlas.com/chicago-cermak-road-greenest-street-america/25661/.

RAIL

1. Johnson, Edward A. "Railroads." January 1, 2010. The Tennessee Encyclopedia of History and Culture. http://tennesseeencyclopedia.net/entry.php?rec=1104
2. Breiding, Mike. "From 30 to 62: Senior Citizenry." June 2012. Mike Breiding's Epic Road Trips. http://epicroadtrips.us/2012/30to62/
3. Legacy Parks Foundation. "G&O Rail-with-Trail." http://www.legacyparks.org/new-go-trail-announced/
4. Grundahl, Nancy. "Green Tracks for Maryland's Light Rail." December 29, 2011. EPA. https://blog.epa.gov/blog/2011/12/green-tracks-for-marylands-light-rail/

ROAD

1. Mening, Bob. "What Is the Nature of a Right of Way?" January 24, 2014. http://mrsc.org/Home/Stay-Informed/MRSC-Insight/January-2014/What-is-the-Nature-of-a-Public-Right-of-Way.aspx
2. "The City of Portland, Oregon." Completed Projects RSS. Accessed September 27, 2016. https://www.portlandoregon.gov/bes/article/490684.
3. King, Aaron. "Highways Can Help Pollinators Return to Health." The Dirt. Last modified July 12, . https://dirt.asla.org/2016/07/13/highways-can-help-pollinators-return-to-health/.
4. Welcome to the Minnesota Department of Agriculture. Accessed September 27, 2016. https://www.mda.state.mn.us/protecting/bmps/~/media/Files/protecting/bmps/pollinators/pollinatorbmpsroad.pdf.

UTILITY

1. Duke Energy. "What is a Right of Way?" https://www.duke-energy.com/safety/right-of-way-management/what-is-row.asp
2. "Power Line Trail." September 16, 2015. http://www.laellis.com/2015/09/
3. MyRec.com. "Powerline Trail." Horsham Dept. of Library & Recreation Services:. March 22, 2014. Accessed September 28, 2016. https://www.horshamrec.com/info/gallery/.
4. Conniff, Richard. "How Dangerous Power Lines Could Save Wildlife." December 4, 2015. http://www.takepart.com/article/2015/12/04/how-dangerous-power-lines-could-save-wildlife
5. EPA. "Integrated Vegetation Management (IVM) Practices around Utility Rights-of-Way." August 5, 2016. https://www.epa.gov/pesp/integrated-vegetation-management-ivm-practices-around-utility-rights-way

LAR 525 - Operative Landscapes

Final Project | Case Study Research

Project Overview

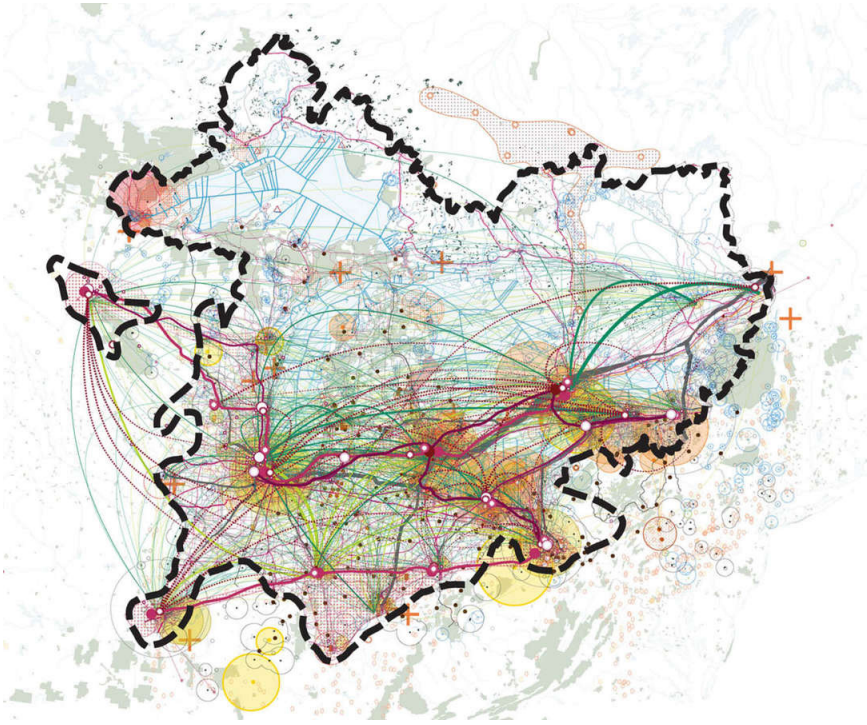
Over the course of the semester we have developed an understanding of how natural, cultural and designed landscapes are an integral part of the city - not external to it - operating as part of the metabolism of communities while contributing to their economic, social and environmental vitality. Through this research project, we will develop and communicate an understanding operative nature of three landscapes that support the City of Knoxville:

1) The Urban Wilderness
2) Abbey Fields Urban Farm
3) Lakeshore Park

Though distinct in their scale, origins, and purposes, all three landscapes share a common attributes of providing economic, social and environmental benefits and performing networked functions that are fundamental to Knoxville's health, sense of place and community, and sustainability.

"Landscape urbanism aspires to build an understanding of urbanism in which the ecological forces and flows that support urbanism are considered as part of the city as opposed to external to it. This offers a response to and critique of older models of urbanism in which the city is distinct from the countryside or the continent."

- Charles Waldheim



Infra Eco Logi Urbanism
RVTR

Team Approach

The class will be divided in to three teams - one team of four and two teams of three - to complete this research project. The composition of each team will be discussed strategically in class. Teams shall be strategically constructed so as to evenly distribute talents and knowledge bases required for the project. Time management, work flow planning, thinking strategically about personnel strengths when assigning individual responsibilities and communication will be required to successfully complete this project. Individuals who are observed to not be fulfilling their responsibilities to the group will receive a lower grade than the balance of the group. Individuals who routinely do not fulfill their responsibilities to the group in spite of verbal notices from the instructor will be required to work independently for the balance of the project.

Required Research Elements

Narrative Summary - A succinct 200-300 word explanation of the essence of the project and its operative benefits .

Performance Metrics - Students are to identify quantifiable economic, social and environmental benefits of each landscape that are relevant and fundamental to the landscape's performance. In some cases, existing research may have already quantify these metrics, in which case the research methods should be understood and the metrics may be reported.

For benefits where existing research does not include the desired performance metric, and for all metrics that would require interaction with human subjects (i.e. surveys, interviews of landscape users), students are to list the performance benefit they understand as factual (but not quantified) or have determined to be probable, and recommend a research method thorough which the benefit may be quantified if it were to be investigated through future research. In cases where a survey is identified as an appropriate research method, students are required to draft survey questions, identify target audience, and propose a method(s) for administering the survey.

A total of eight metrics should be identified with a minimum of two in each category: economic, social and environmental. Keep in mind that through the performance metrics, we are seeking to communicate what the landscape *does*, not what the landscape *is*.

Sustainable Features - A list of (preferably quantified) landscape characteristics, features and/or program elements that contribute to the project's operative purpose or processes. For example, total hectares under urban agricultural production, kilometers of trails, number of monitoring points.

Social Seduction - landscape moments, features, programs considered to be 'socially seductive' in nature

Origins - The history of a landscape relative to the origins of its operative nature

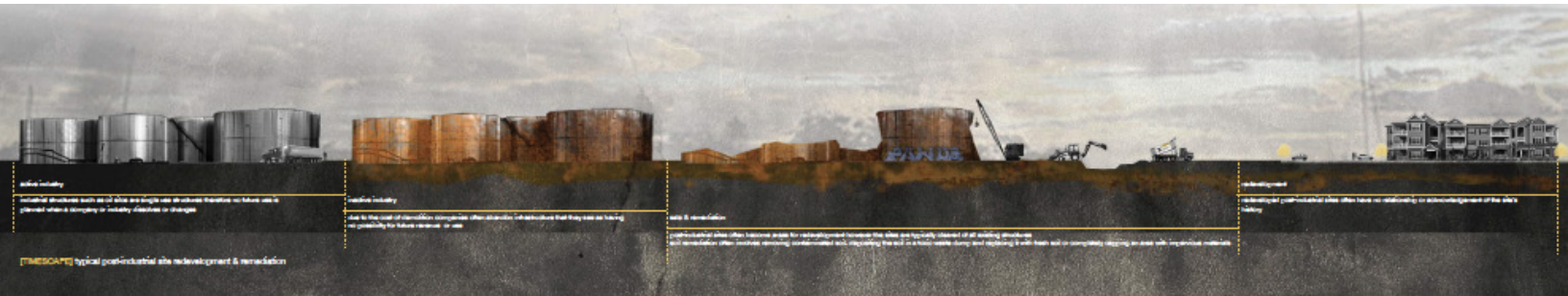
Networks - The systems, cycles, stakeholders and other contextual influences that affect the operation of the landscape

Logistics - Over dimensions of both geography and time, the places, processes, sequences of a landscape's metabolism: inputs, transformation, outputs, distribution, consumption, waste

Living Systems - The role of the living landscape, the ecological function of biotic material (macro and micro - ecosystems, plants and micro-organisms), as part of the landscape's operation

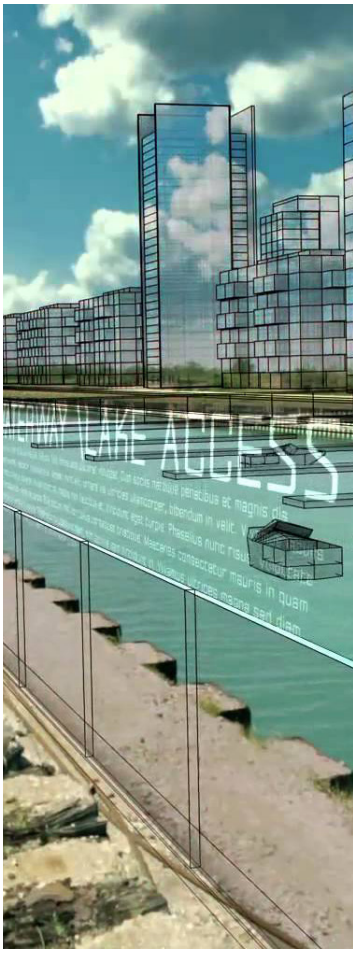
Maintenance - Practices that are employed to sustain the operative functions of the landscape. These may include, but not be limited to physical interventions and policy/regulations

Threats - Challenges posed to the sustainability of the landscape



Project Deliverables:

Students will be responsible to present their research findings in two formats: as a series of digital slides, and as a single, graphically-oriented 30”x42” presentation board. Though both will be used simultaneously during the final review, both should stand-alone as complete and comprehensive presentations of the required research information. Digital slides should be a careful deconstruction and sequencing of drawings/elements from the project board, not a clumsy reorganization screen captures



Narrative (text) will be an important element of your final product. With few exceptions as determined appropriate by the project team, text should be incorporated only as a compliment to or integral part of the graphics that are developed to communicate research findings.

Students are encouraged to employ a range of drawing types to effectively communicate their research findings across the scales at which the benefits and functions are operating. These include datascapes, timescapes, diagrams, aerial obliques, section/perspectives, and other contemporary visualization approaches we have studied in class to illustrate landscape process, operations and performance across spatial dimensions and time. Student are encouraged develop visualization strategies that enable them to efficiently and effectively communicate multiple project dimensions/research requirements in a single drawing.

The project board must employ graphic concepts such as color and hierarchy, and be thoughtfully designed as an integrated composition of drawings - not a digital pin board for a series of separate graphics.

During the exam period, a date and a two-hour time slot will be collectively agreed upon for project presentations. Students will prepare a 15-20 minute oral presentation to a panel of department faculty. This presentation will be followed by 10-15 minutes of questions and discussion.

Suggested Resources:

LANDSCAPE PERFORMANCE SERIES by the Landscape Architecture Foundation

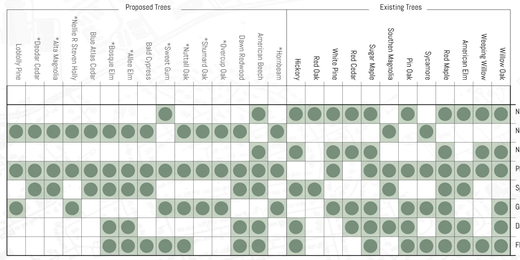
landscapeperformance.org - As the project is roughly based upon the Landscape Architecture Foundation’s Case Study Method, students are encouraged to visit this website as a resource to brainstorm potential performance metrics, develop proposed research methods. Students may also wish to research additional information relative to the project’s development such as project team, role of the landscape architect (if applicable), consultation approach and influences, and other ‘quick facts.’

Interviews - Students are encouraged to professionally communicate with project team members, agency staff, and faculty/researchers who may be able to fill research gaps or provide useful contextual information based on their own prior research or professional involvement.

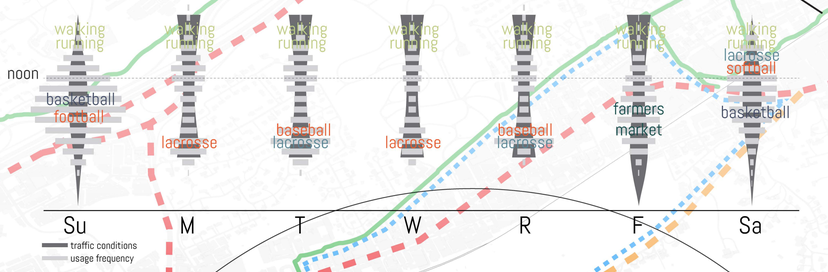
Lectures - Students are encouraged to reference visualization strategies and drawing types that have been shared through course lectures as inspiration for their communication of research findings. Additional examples will be shared in the course dropbox.

Workshop - it is pertinent that a significant research effort is made between today and October 27 when we will be engaging with Meg Struder of siteations.com for a graphic design workshop. The workshop will include a visualization charrette and technical skills building designed to help conceptualize and make substantial progress towards your graphic approach and board layout for this assignment.

ECOLOGICAL SPECIFICATIONS

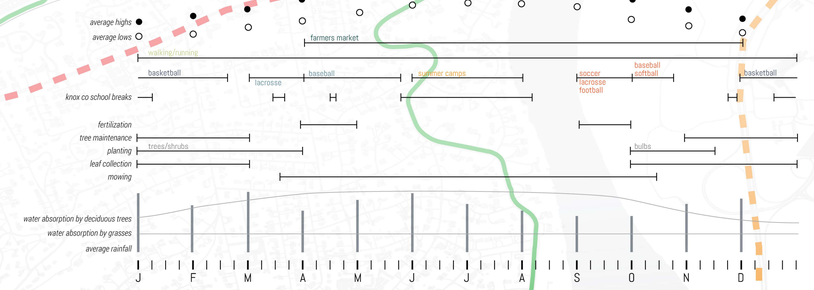


WEEKLY ACTIVITY



Connect Greenway System

CLIMATE



Sequoyah Hills

Traffic Density

WOODLAND

RECREATION

LAWN

RIPARIAN BUFFER

LANDSCAPE

Existing Green Ways

Auto Centric Arrival

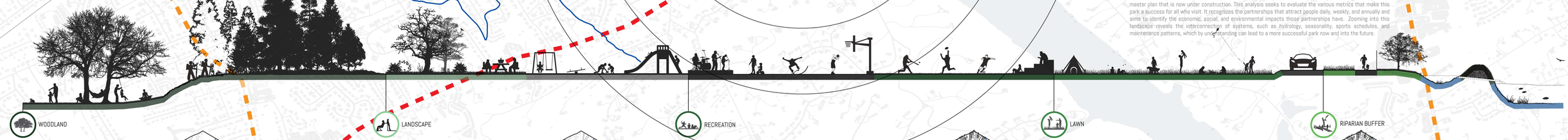
[No Connection to existing greenway System or Bike trails]

30 min walk | 1 hr walk | 1 hr 30 min walk

LAKESHORE PARK

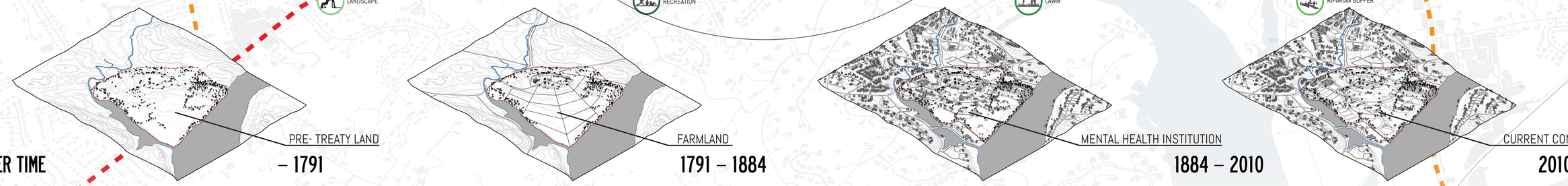
The first land designated for Lakeshore Park was leased to the City of Knoxville by the State of Tennessee in 1993. But the history of this land is full of health and human habitation. Earliest records of this land are with the Cherokees and the eventual exchange of land to Captain William Lyon through the Treaty of Holston. Most commonly this park is known for being the prior site of the Lakeshore Mental Health Institute. This state run mental health facility was established in 1886 as the East Tennessee Hospital for the Insane, and through the decades, experienced many changes from the treatment of patients to the perception of mental health. The mental health facility closed gradually, throughout the first nearly twenty years of the park, officially removing all patients by 2012 except for one cottage, which still houses patients unfit to be moved. Today, the park is managed by a partnership between Knoxville City Parks and Recreation and Lakeshore Park, Inc. who believe in the legacy of mental health at this site and seek to promote healthy lifestyles in Knoxville and beyond through the extensive master plan that is now under construction. This analysis seeks to evaluate the various metrics that make this park a success for all who visit. It recognizes the partnerships that attract people daily, weekly, and annually and aims to identify the economic, social, and environmental impacts those partnerships have. Zooming into this landscape reveals the interconnection of systems, such as hydrology, seasonality, sports schedules, and maintenance patterns, which by understanding can lead to a more successful park now and into the future.

SITE SECTIONS



WOODLAND | LANDSCAPE | RECREATION | LAWN | RIPARIAN BUFFER

CHANGE OVER TIME

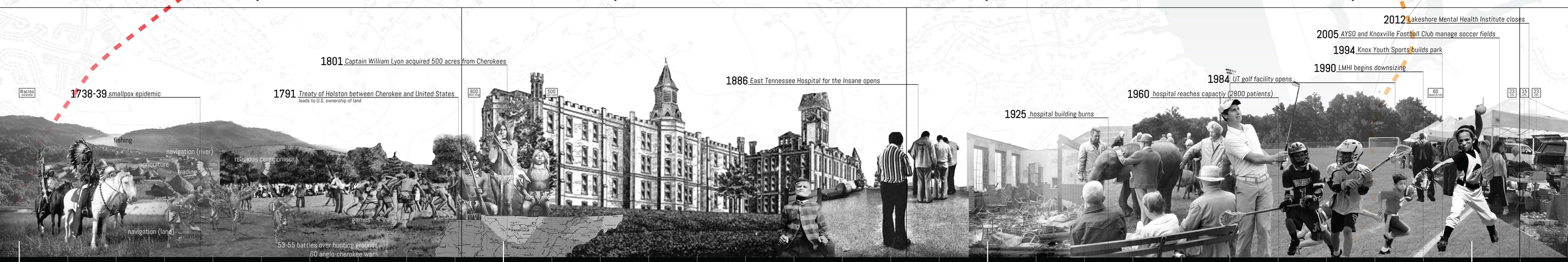


PRE- TREATY LAND — – 1791

FARMLAND — 1791 – 1884

MENTAL HEALTH INSTITUTION — 1884 – 2010

CURRENT CONDITION — 2010 –



The Urban Wilderness

1,000 Forested acres

10 Parks

51 Million future national economic benefit

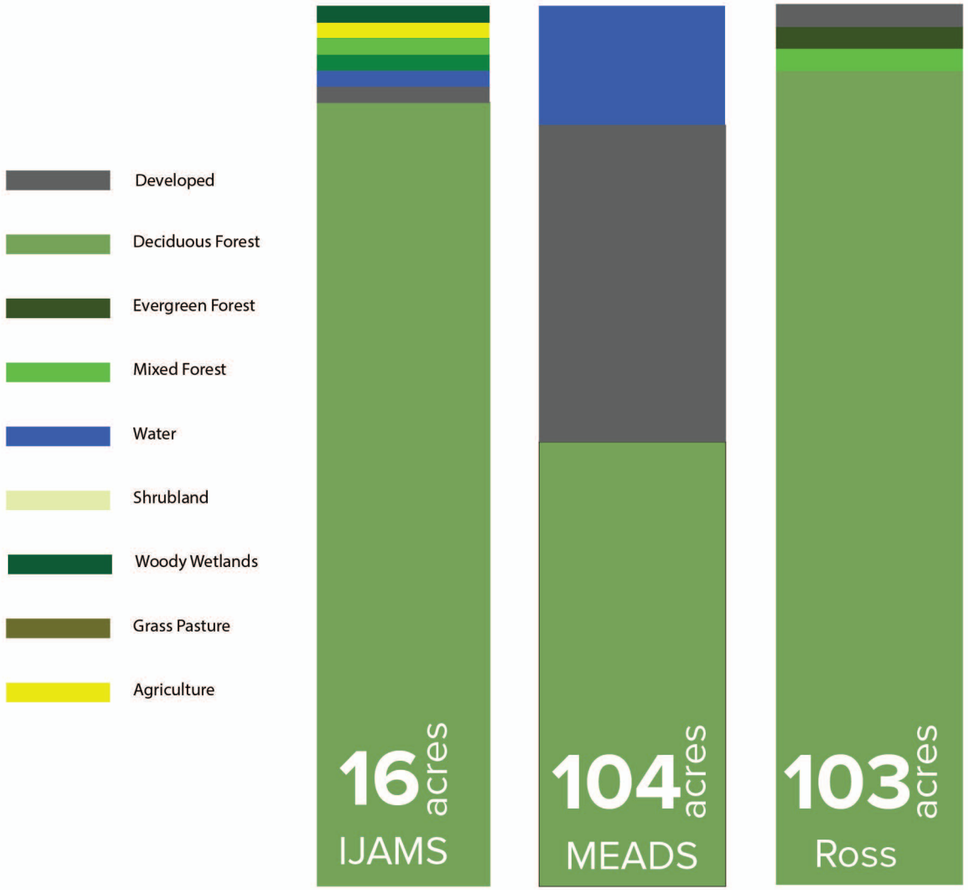
50 Miles of multi-use trails

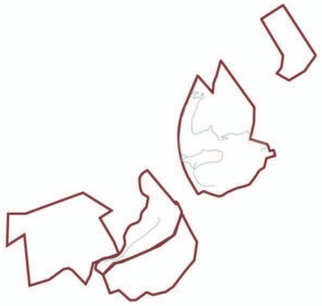
4 Civil wars sites

386 Plant species

1. River Bluff Wildlife Area
2. The Log Haven Conservation Area
3. Highground Park
4. Fort Dickerson
5. Fort Stanley Ridge
6. Baker Creek Preserve
7. William Hasties Natural Area
8. Marie Myers Park
9. Ross Marble Quarry
10. Mead's Quarry
11. Ijams Nature Center
12. Forks of the River
13. Anderson School Trail

Ijams Nature Center



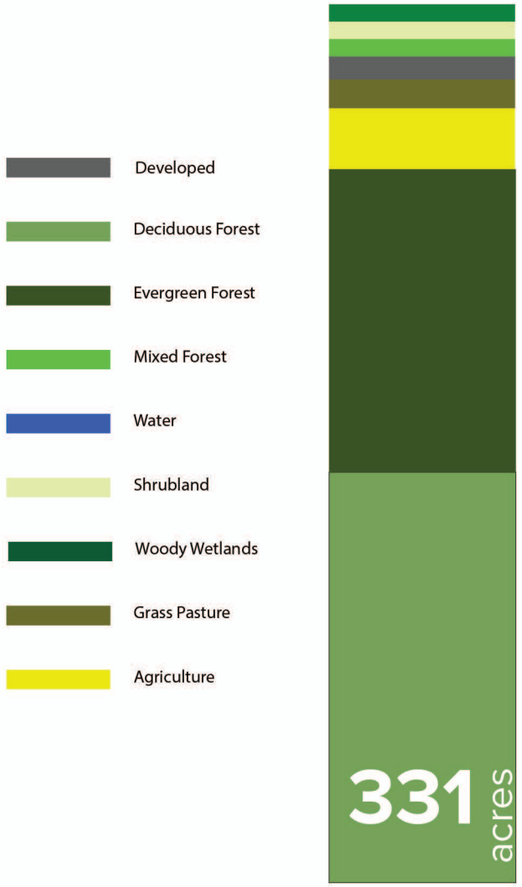


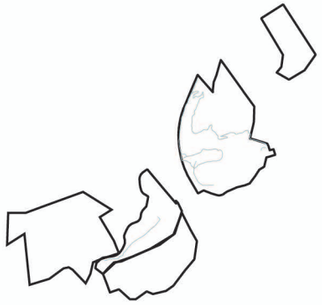
IJAMS NATURE CENTER

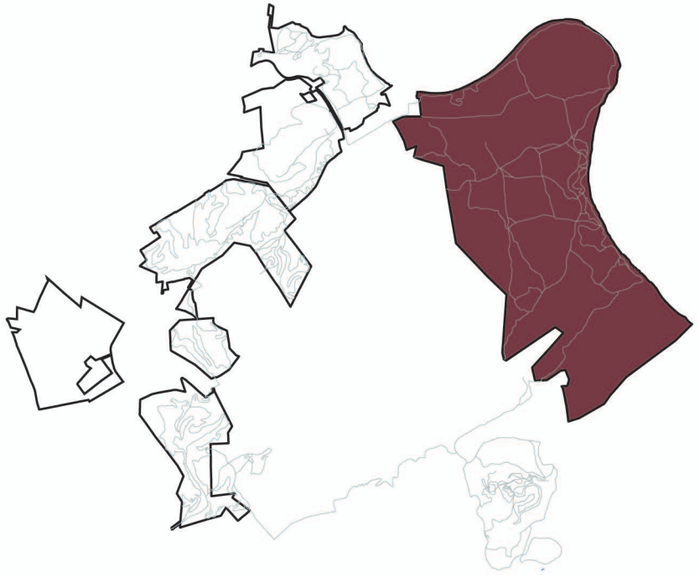
MEADS QUARRY ADDED TO IJAMS

ROSS QUARRY ADDED TO IJAMS

Forks of the River



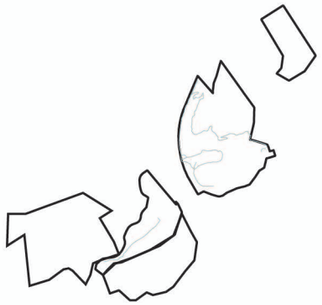


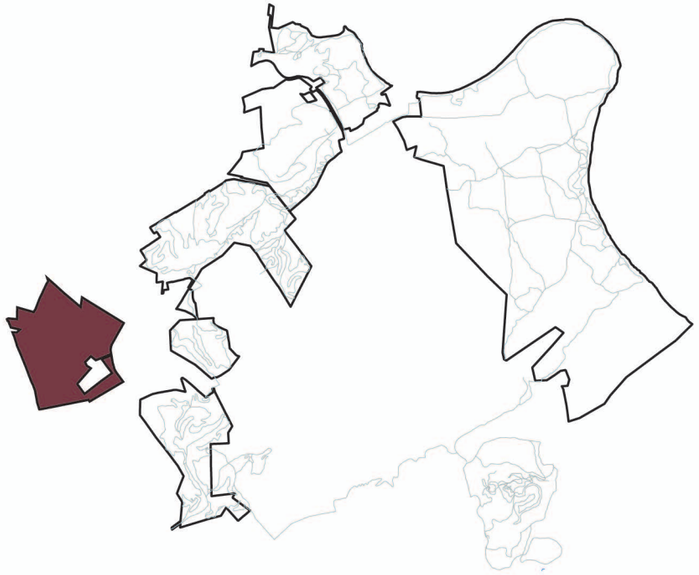


FORKS OF THE RIVER

Baker Creek Preserve

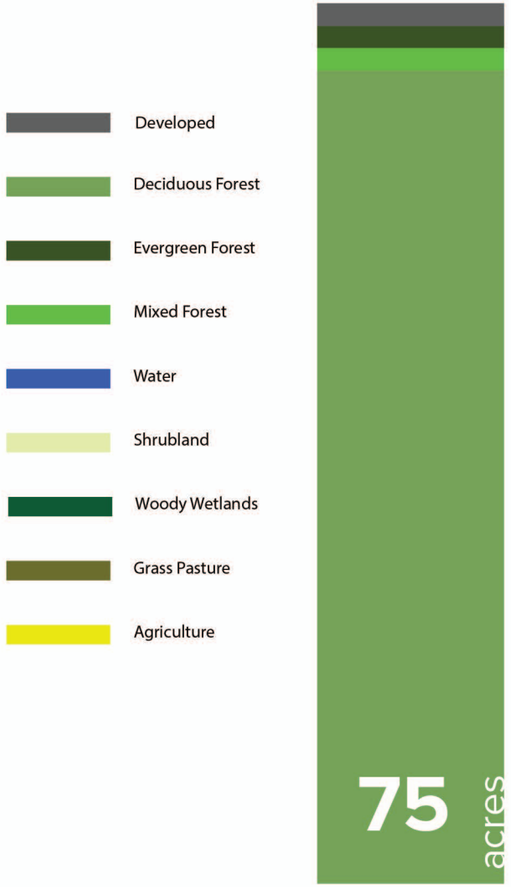
- Developed
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Water
- Shrubland
- Woody Wetlands
- Grass Pasture
- Agriculture

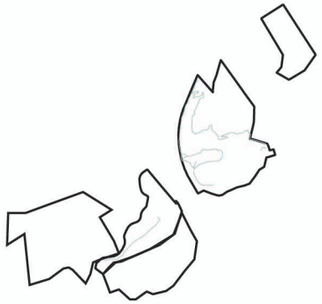




BAKER CREEK
PRESERVE

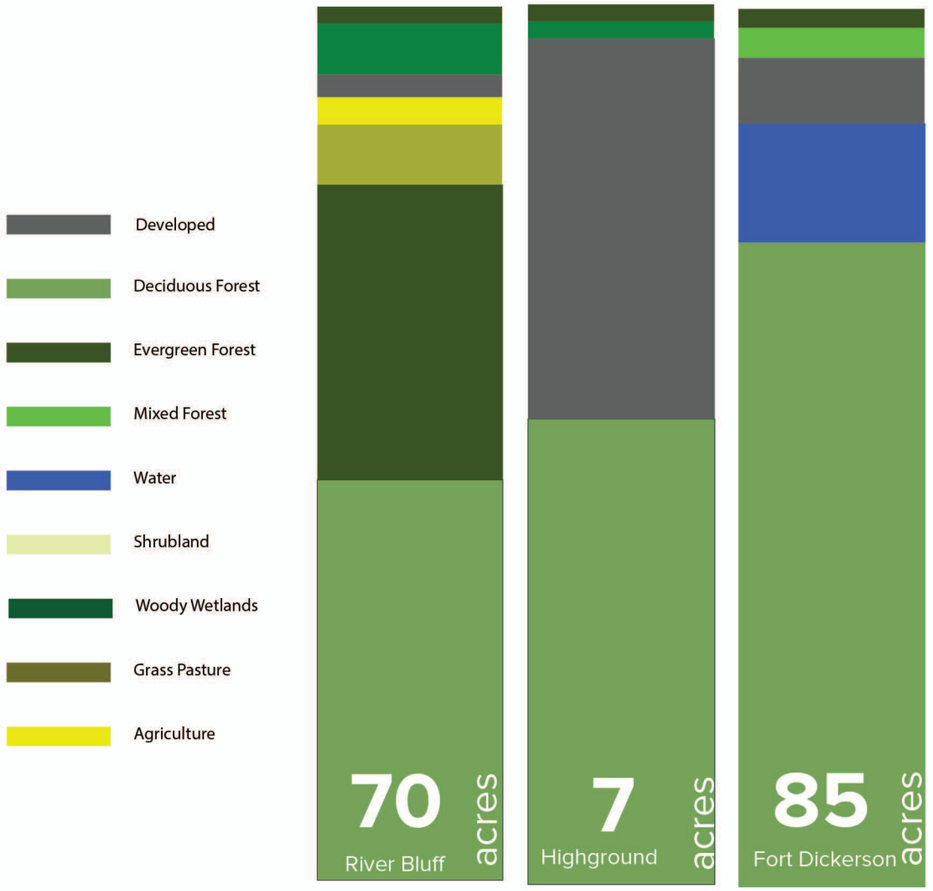
William Hastie | Marie Myers | Anderson School Trials

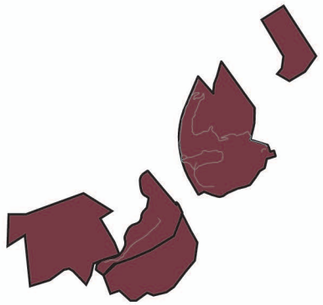




WILLIAM HASTIE
AND MARIE MYERS

Battlefield Loop





RIVER BLUFF WILDLIFE AREA

FORT DICKERSON PARK

HIGH GROUND PARK

LOG HAVEN PARK

FORT STANLEY

Urban Wilderness Survey

User information:
Age:
Gender:
Occupation:
Zip Code:

1. Which parks in the Urban Wilderness have you visited? **Place a star by the one that you visit most frequently.**
   [ ] River Bluff Wildlife Area
   [ ] Log Haven Conservation Area
   [ ] High Ground Park
   [ ] Fort Dickerson
   [ ] Fort Stanley
   [ ] Baker Creek Preserve
   [ ] William Hastie Natural Area
   [ ] Marie Myers Park
   [ ] Ross Marble Quarry
   [ ] Mead's Quarry
   [ ] Ijams Nature Center
   [ ] Forks of the River
   [ ] Anderson School Trails

2. How many years have you been coming to these parks?
[ ] < 1 year
[ ] 1-2 years
[ ] 3-5 years
[ ] 5-10 years

3. What kind of activities bring you to the Urban Wilderness? **Please check all that apply.**
   [ ] Hiking
   [ ] Mountain Biking
   [ ] Ziplining
   [ ] Education
   [ ] Family outings
   [ ] Picnicking
   [ ] Swimming
   [ ] Dog walking
   [ ] Wildlife viewing
   [ ] Civil War Reenactments/History
   [ ] Rock Climbing
   [ ] Birding
   [ ] Hunting
   [ ] Fishing
   [ ] other: _____

4. What mode of transportation did you use to get to the park?

[ ] Personal Car
[ ] Walk
[ ] Bike
[ ] Public Transit

5. How frequently do you use one or more of the parks in the Urban Wilderness?

[ ] Daily
[ ] Weekly
[ ] Monthly
[ ] Quarterly
[ ] Yearly
[ ] Rarely or Never

6. What businesses or activities would you like to see in close proximity to the Urban Wilderness? **1 being the highest priority, 6 being the lowest.**

[ ] restaurants / bars / coffee shops
[ ] sporting goods stores
[ ] outdoor gear rentals
[ ] lodging
[ ] river access areas

7. When you come to the Urban Wilderness do you visit surrounding businesses immediately before or after visiting the parks?

[ ] yes
[ ] no

8. What times and days do you visit the park's most often?

Please check all that apply:

[ ] Weekends
[ ] Week days

[ ] am
[ ] mid day
[ ] pm