Marcellus by Design
Eco-Tourism Exploration
Mayer // Lyons
Fall 2013

Marcellus X Design

The Sullivan County Design Charette
The Pennsylvania State University
Landscape Architecture
2013

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"Travel makes one modest. You see what a tiny place you occupy in the world" – Gustave Flaubert

I n t r o

P r o b l e m   S t a t e m e n t :

Without reinvestment, the economy in Sullivan County will return to its pre-Marcellus stagnation.

P r o j e c t   D e s c r i p t i o n :

"This project proposes the development of an eco-tourism destination funded through natural gas development. Through investigation of sustainable strategies and low-impact development, exploitation of the needs of the gas industry and recreational potential of Sullivan County, the resort will serve as an educational vehicle and catalyst for future tourism development."

B e n e f i t s / G o a l s   o f   P r o j e c t :

- Revitalize the local economy
- Provide service jobs
- Catalyst for future designs
- Provide for new recreational and tourism opportunities
- Put the beautiful landscape of Sullivan County on display

Economics + Tourism Industry

Gas development has been a huge source of capital in Sullivan County, producing over 3 billion dollars, as well as over a quarter of a billion dollar in royalties to landowners. The current unemployment rate combined with the success of the nearby Poconos tourism destination, we think that funding eco-tourism resorts through money that comes from gas development will not only bring in economic benefits to the surrounding communities, but will also serve as a precedent for further design.

Gas Development

- **3 billion dollar** industry in Sullivan County
- **375 million dollars** in lifetime **royalties** of current permitted wells

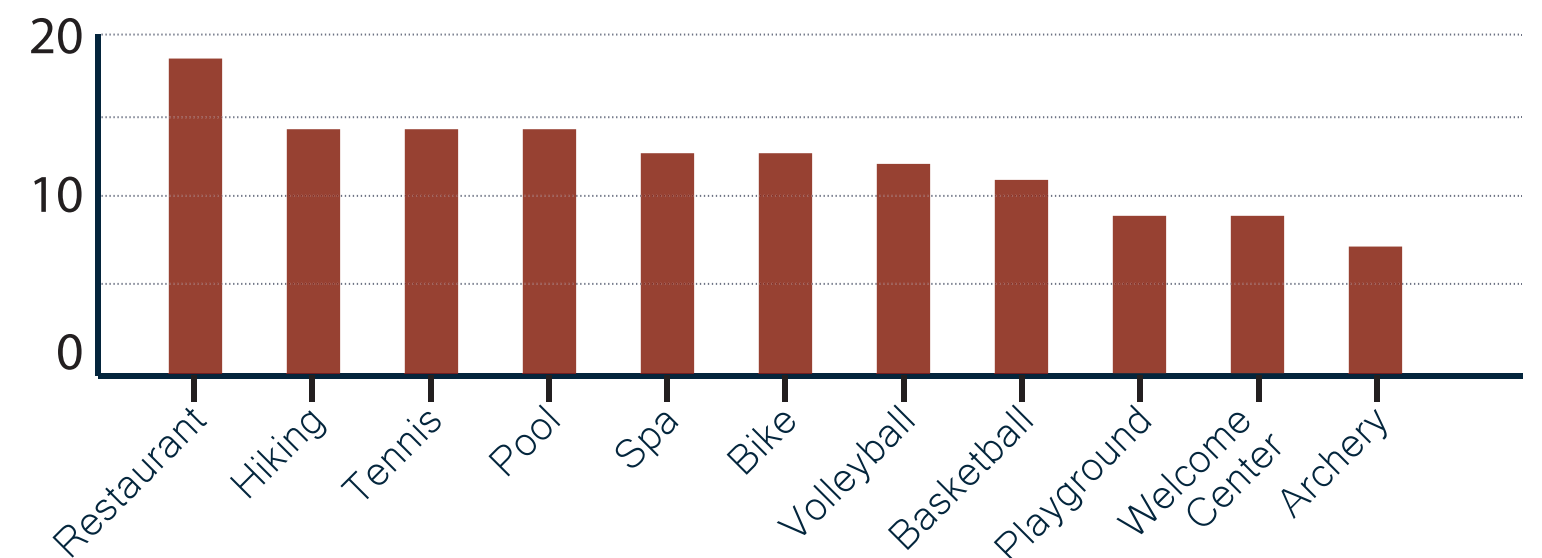### Current Job Stats (SullCo)

- Unemployment rate: **7.7%**

Tourism in the Poconos

- **26,000 jobs** in tourism industry
- **2.1 billion dollar** industry
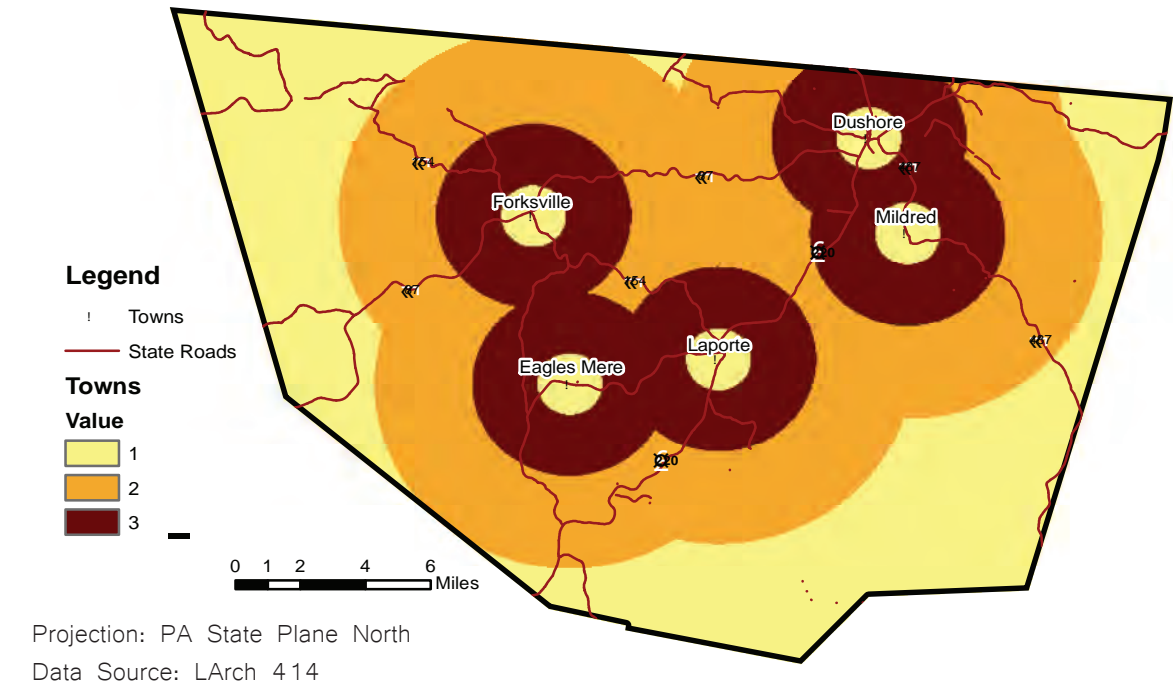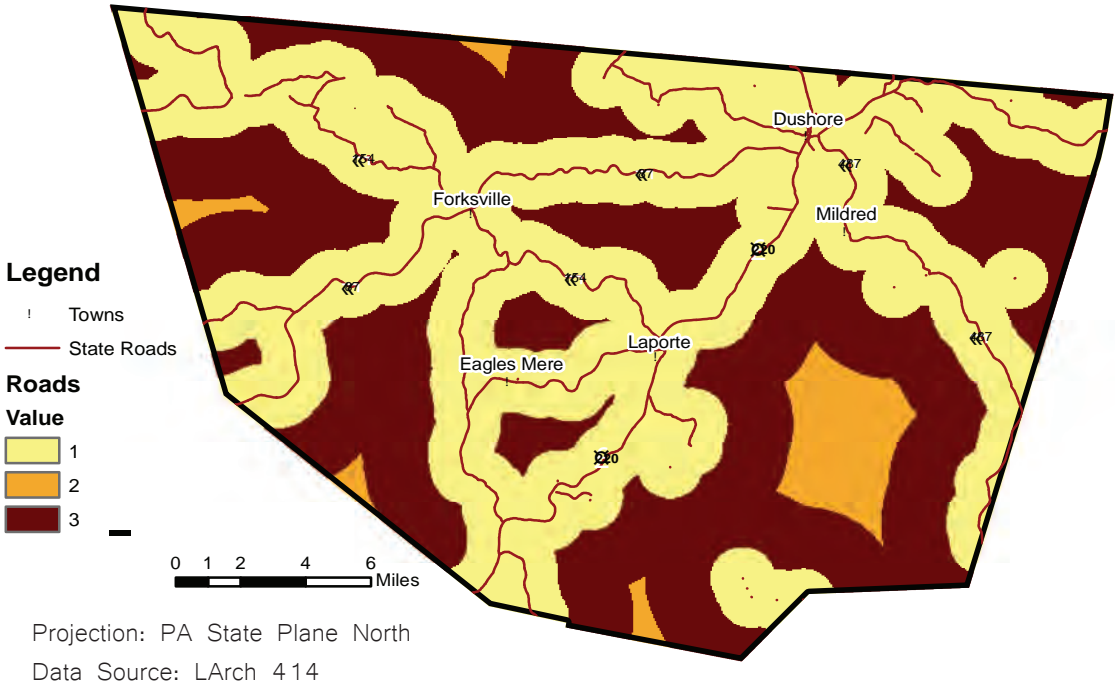- **24 million visitors** per year

Amenities in the Poconos

S u i t a b i l i t y   A n a l y s i s
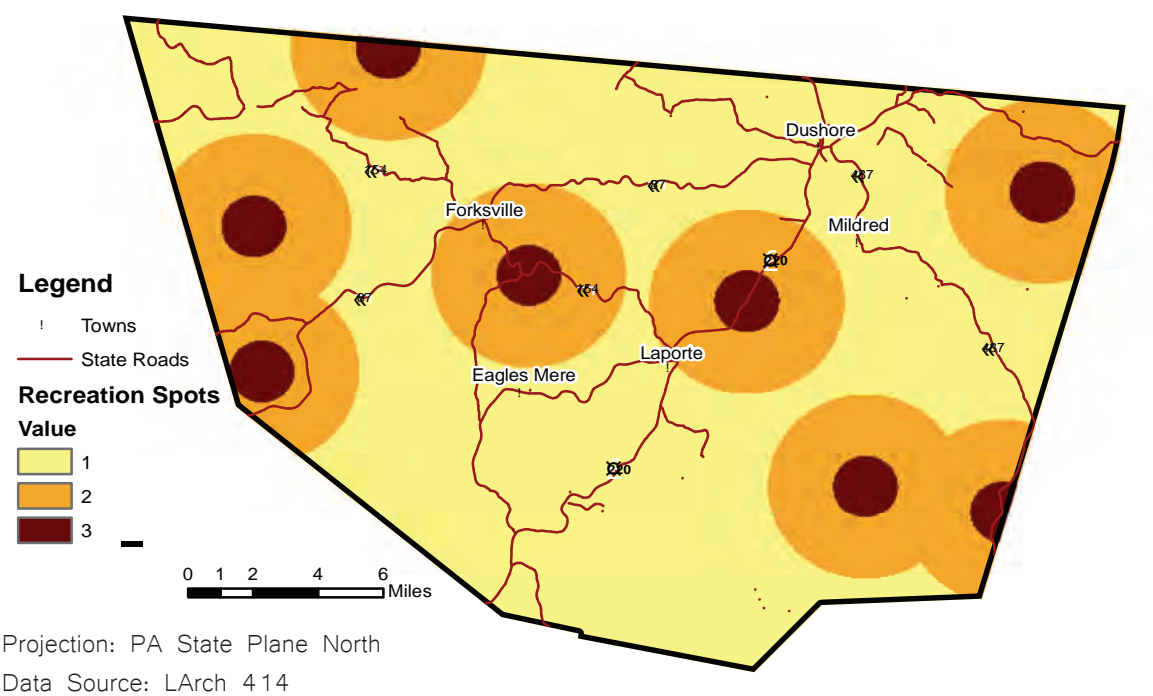
R o a d s

Access is important for a sight like this, therefore goals were to put the design in the vicinity of major roads in the county. In order to keep privacy and lessen the noise impact, land within one mile of the major roads was given the least score. Lands between 1 and 3 miles scored the highest for ease of access and maximum seclusion. Land outside of 3 miles scored in the middle as it was very secluded, but further from road access.

T o w n s

Locations to towns is of great priority for visitors to be able to access shops and eateries. Being located close to a town can also be a concern for a recreational destination. Land within a 1 mile radius of town scored the lowest value, along with land located outside of 6 miles. Land between 1 mile and 3 miles scored the highest for ease of access and valued seclusion. Lands between 3 and 6 miles receive an average score based on proximity and seclusion.

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Suitability Analysis

Legend
- ! Towns
- —— State Roads

Recreation Spots
Value
- 1
- 2
- 3

0 1 2 4 6 Miles

Projection: PA State Plane North
Data Source: LArch 414

Legend
- ! Towns
- —— State Roads

Streams
Value
- 1
- 2
- 3

0 1 2 4 6 Miles

Projection: PA State Plane North
Data Source: LArch 414

Recreation Spots

The importance of connecting this site to other recreational opportunities in Sullivan County was valued high. A scoring system based on proximity was used to value land closer to these recreational spots throughout the county. The highest value land was located within 1 mile of these sites, the average value was between 1 and 3 miles, and the least valuable land was outside of 3 miles of each recreational destination.
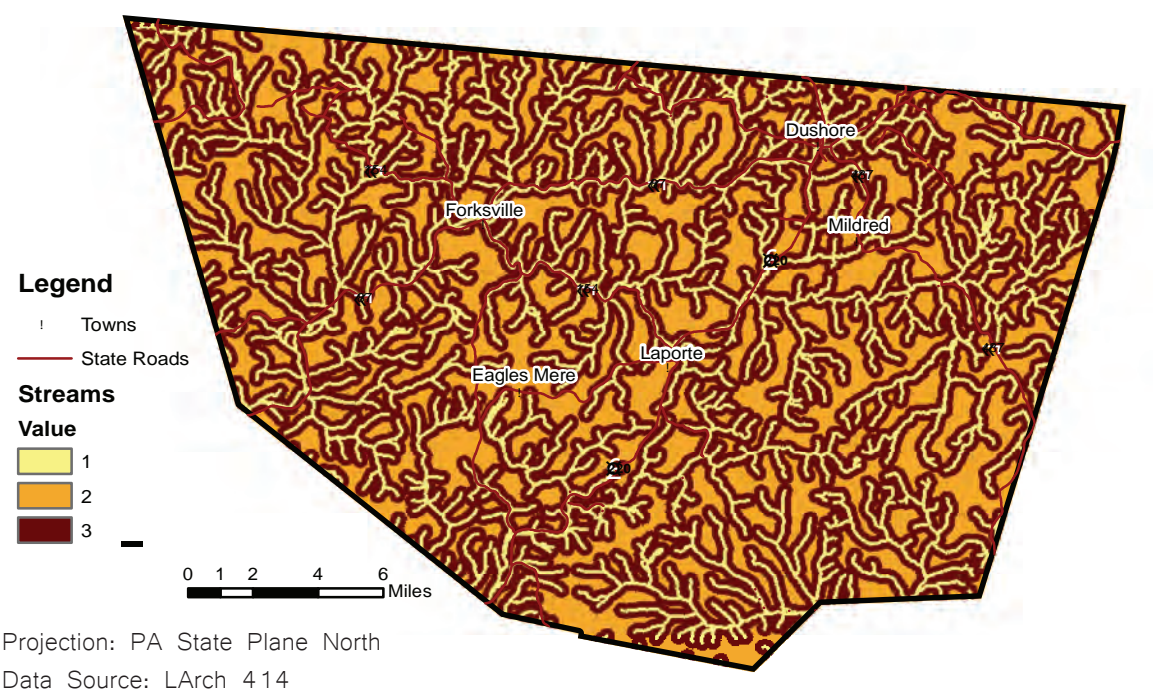
Streams

Location within a 300 foot buffer of the stream was deemed least suitable. The highest rating was given to the area between 300 and 1000 feet from the stream. Anything outside of the 1000 feet was scored a 2. Locating the site close to a stream, but not within an environmentally important corridor was the top priority for visitor access.

Suitability Analysis

Projection: PA State Plane North
Data Source: LArch 414

Lakes

Locating the sight near water recreation sites such as lakes was another top priority. Lands within 1 mile scored the highest, land between 1 and 3 miles score average, and land outside of 3 miles scored the lowest.
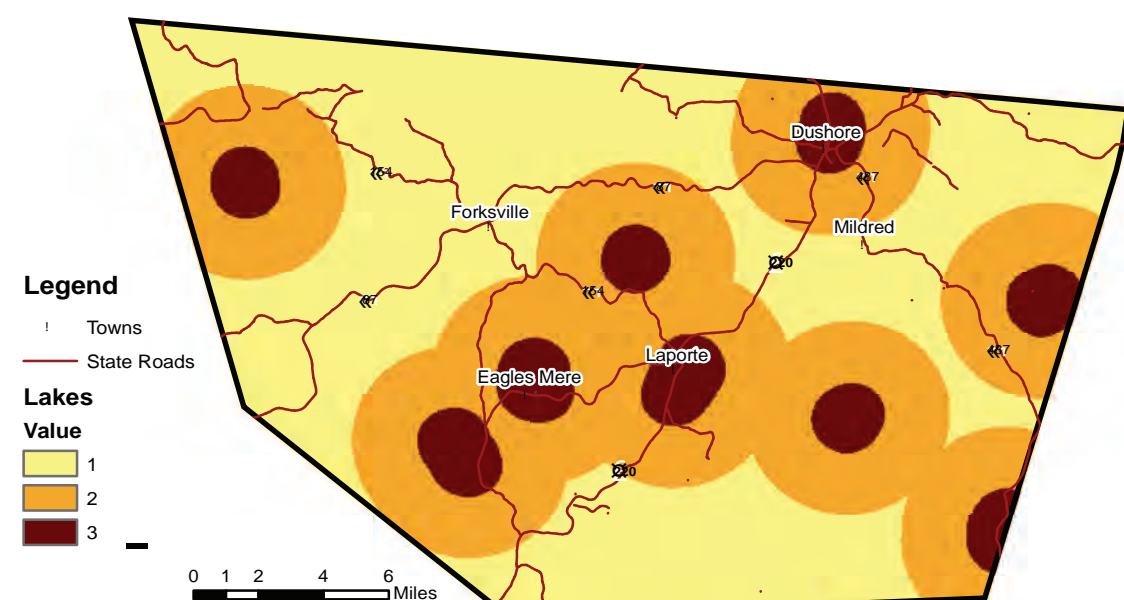
Deteriorated Land

Through the goals of the design, utilizing abandoned or deteriorated lands would be an ideal situation. The lands identified as such were given the highest of the score, while lands outside of this were given the lowest score.
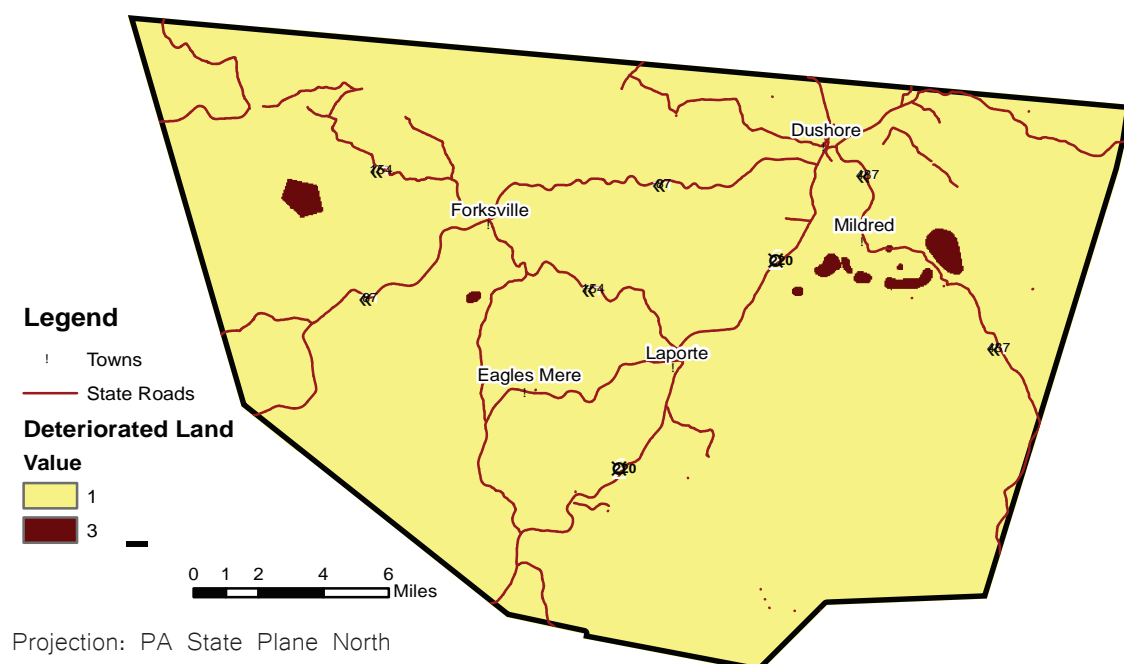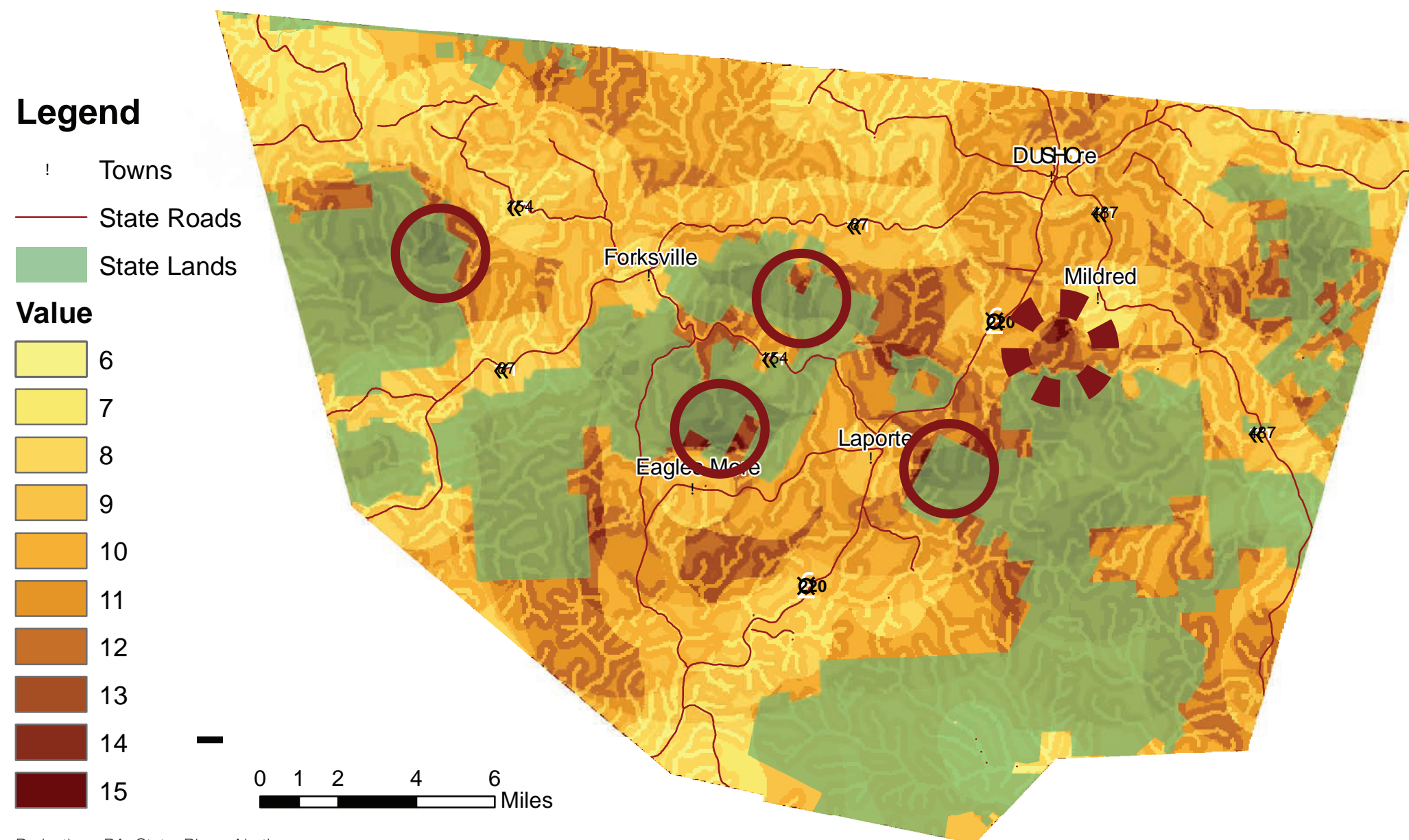

Projection: PA State Plane North
Data Source: LArch 414

S u i t a b i l i t y   A n a l y s i s

Legend

	Towns
⎯⎯	State Roads
▇	State Lands

Value

	6
	7
	8
	9
	10
	11
	12
	13
	14
	15

0 1 2 4 6 Miles

Projection: PA State Plane North
Data Source: LArch 414

The image on the left is a **suitability analysis map** that done for the entire county to help guide us to **the best location** for our site. In this, we took into account things such as **proximity to towns, roads, water sources, and deteriorated landscapes** to lead us to potential site locations. The darker the color, the more suitable that location is for our site. As you can see, there are **five** potential areas that would be great, but four out of those five locations are within **public lands**, so that leaves us to one location, which is roughly **1000 acres of abandoned mine land, just south of Mildred.**
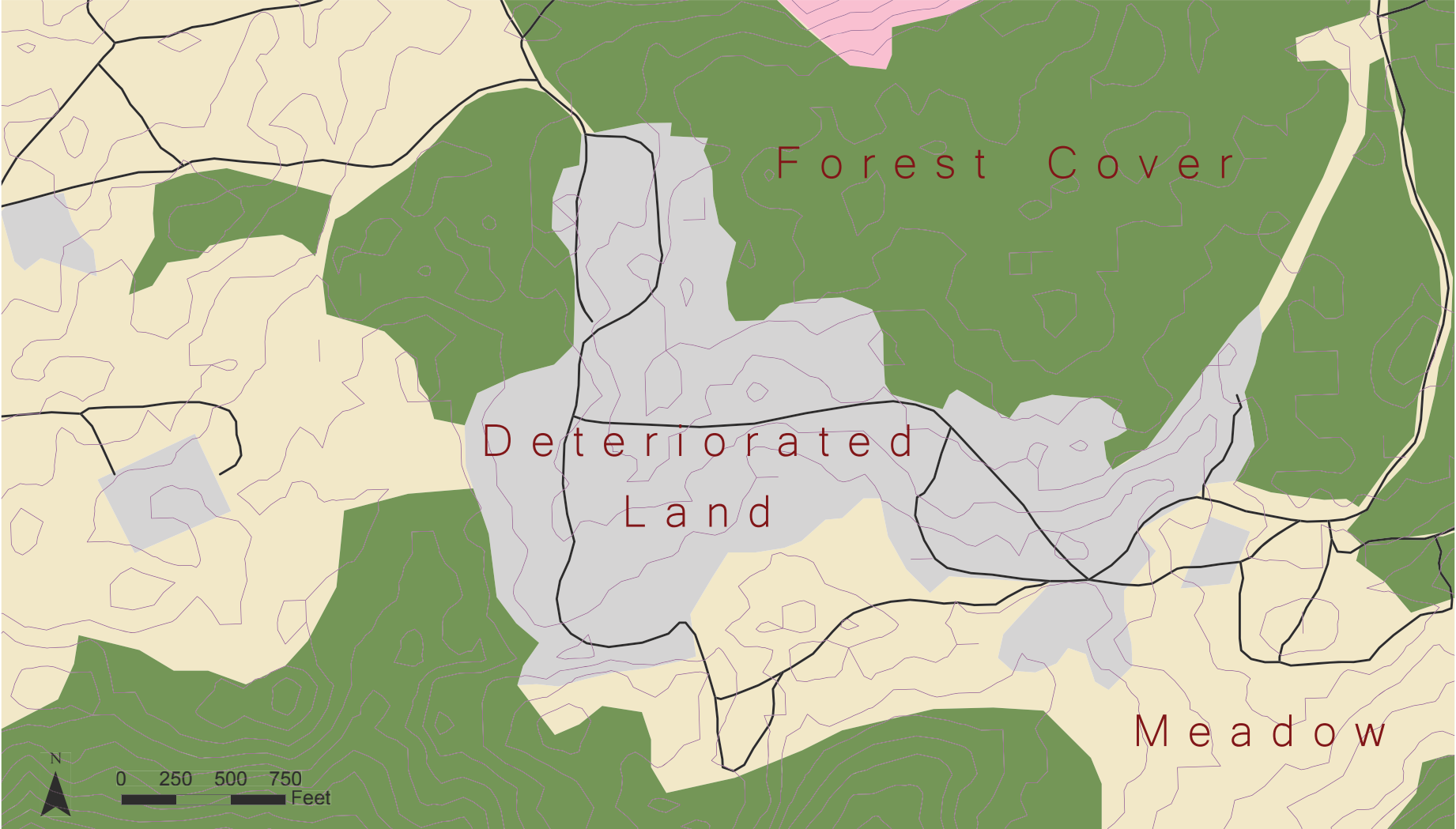
Site Analysis

Site Visit Photos

After identifying the location, this site visit showed promise that an eco-tourism destination would be suitable on this landscape, lending itself to a low impact design.

Site Land Cover Map

Forest Cover

Deteriorated Land

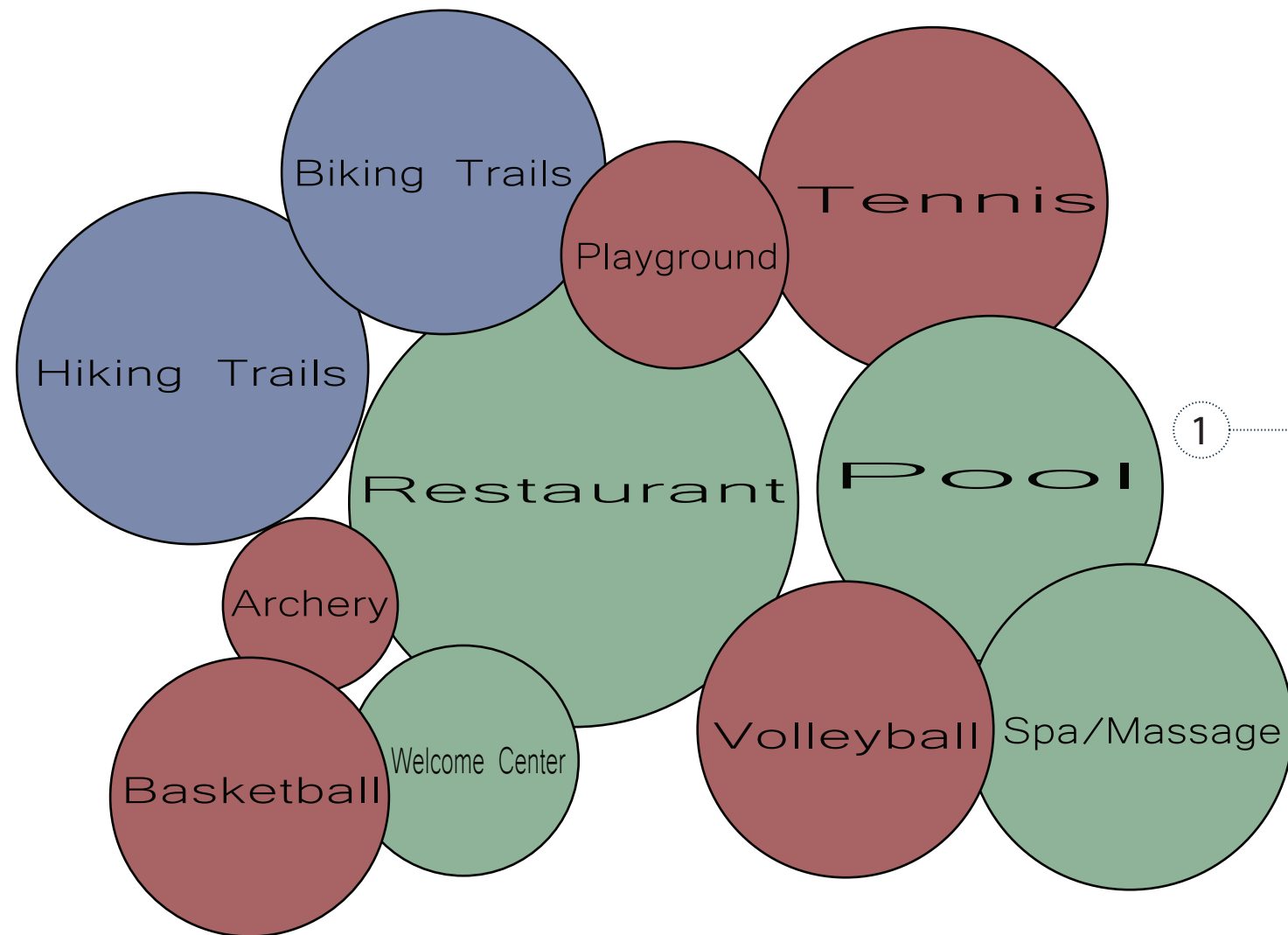Meadow

N

0 250 500 750
Feet

Further site analysis identified land covers, existing roads, and elevation change. It is important to utilized the deteriorated land cover as the core space for design, because that will minimize impacts on the current state of the landscape.

Amenity Analysis

Amenity Demand

Amenity Inter-Relationship
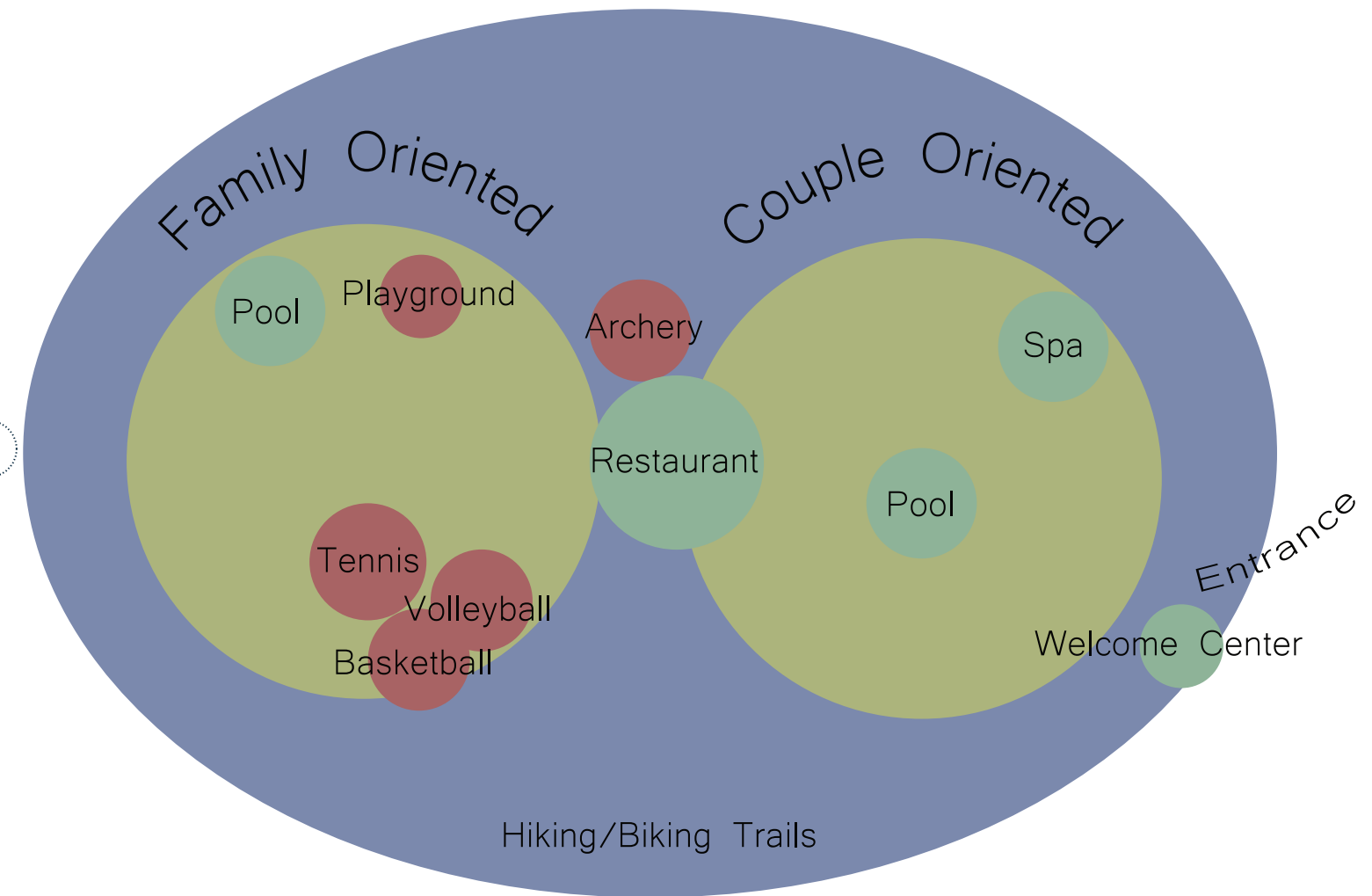
Amenity analysis was a **crucial** part of creating an effective design. On the left is an **amenity demand diagram**, which helps us to determine what **people are interested** in having in a site like this. Here, the **larger bubbles** are amenities that are in more demand than others. On the right is an **amenity inter-relationship diagram**. This helps determine how the site lends each program on site to one another.

Program Relationships

Site Layout Map

Legend

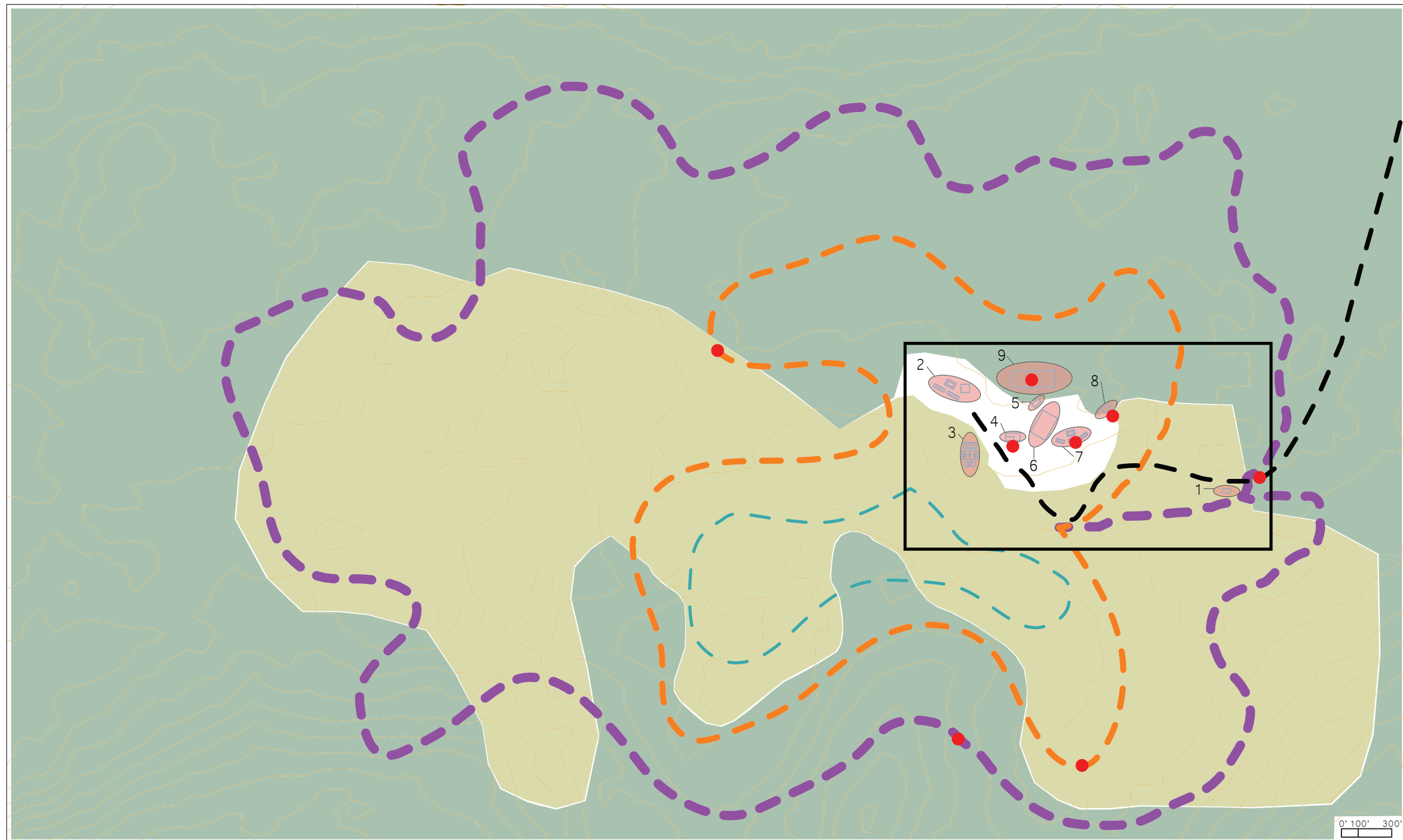1. Welcome Center
2. Family Retreat
3. Athletic Facility
4. Restaurant & Bar
5. Service Building
6. Parking Area
7. Couples Retreat
8. Spa
9. Archery Course

Hiking Trail Loop
Bike Trail Loop
Entry Road
Childrens Trail Loop
Forest Cover
Meadow Cover
Detailed Plan
View Points

0' 100' 300'

9

Program Relationships

Trail Routing Model
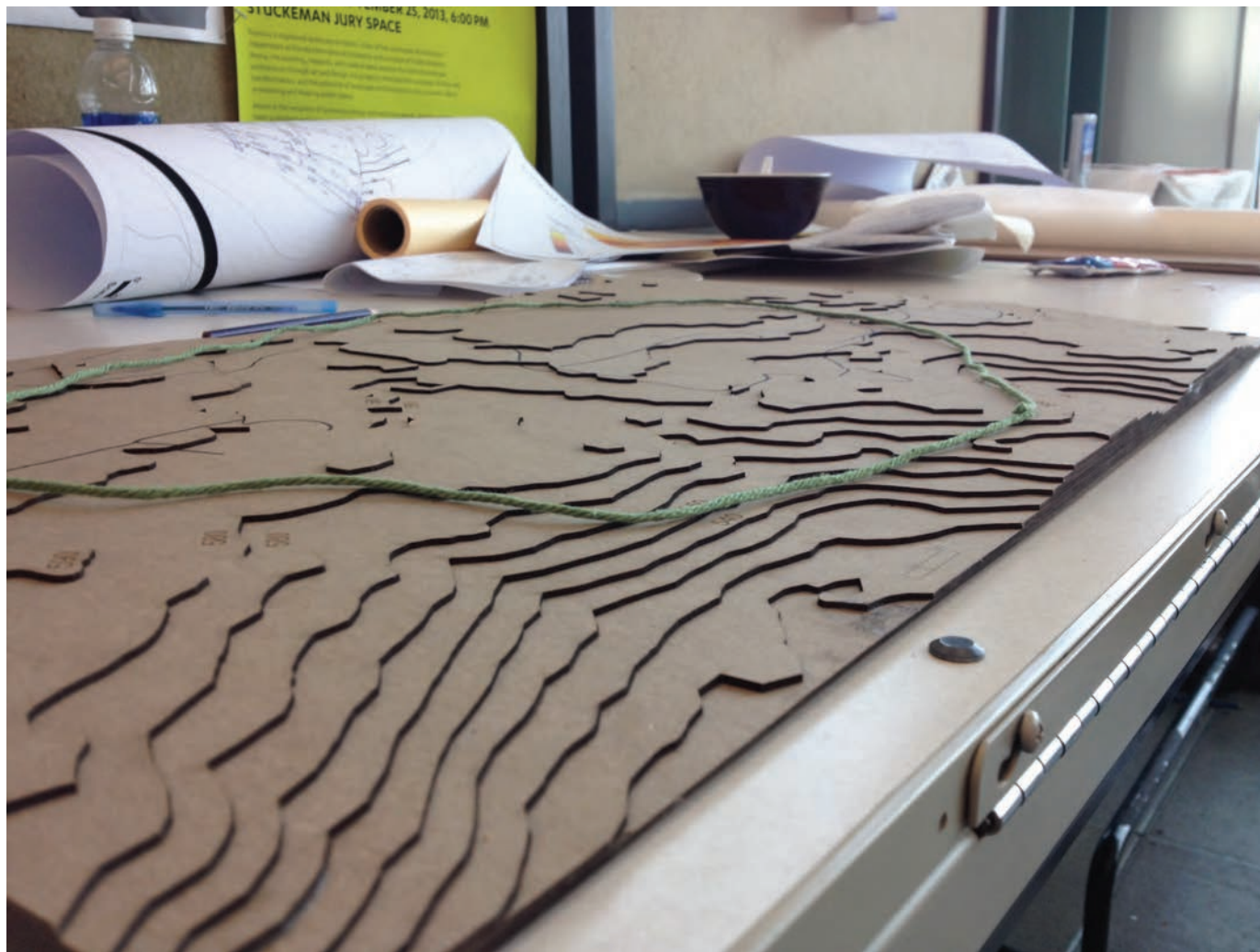
To further understand the site, we constructed a **physical model** showing contours on site, which helped to determine the **best routes** for trails. Attempting to comply with our **low impact** theme, the **site was used to guide** where the trails would be, rather than placing trails wherever we pleased.

Final Site Master Plan

Archery Course

Family Oriented

Couple Oriented

Structured Recreation

Welcome Center

Wetland

0' 50' 100' 300'
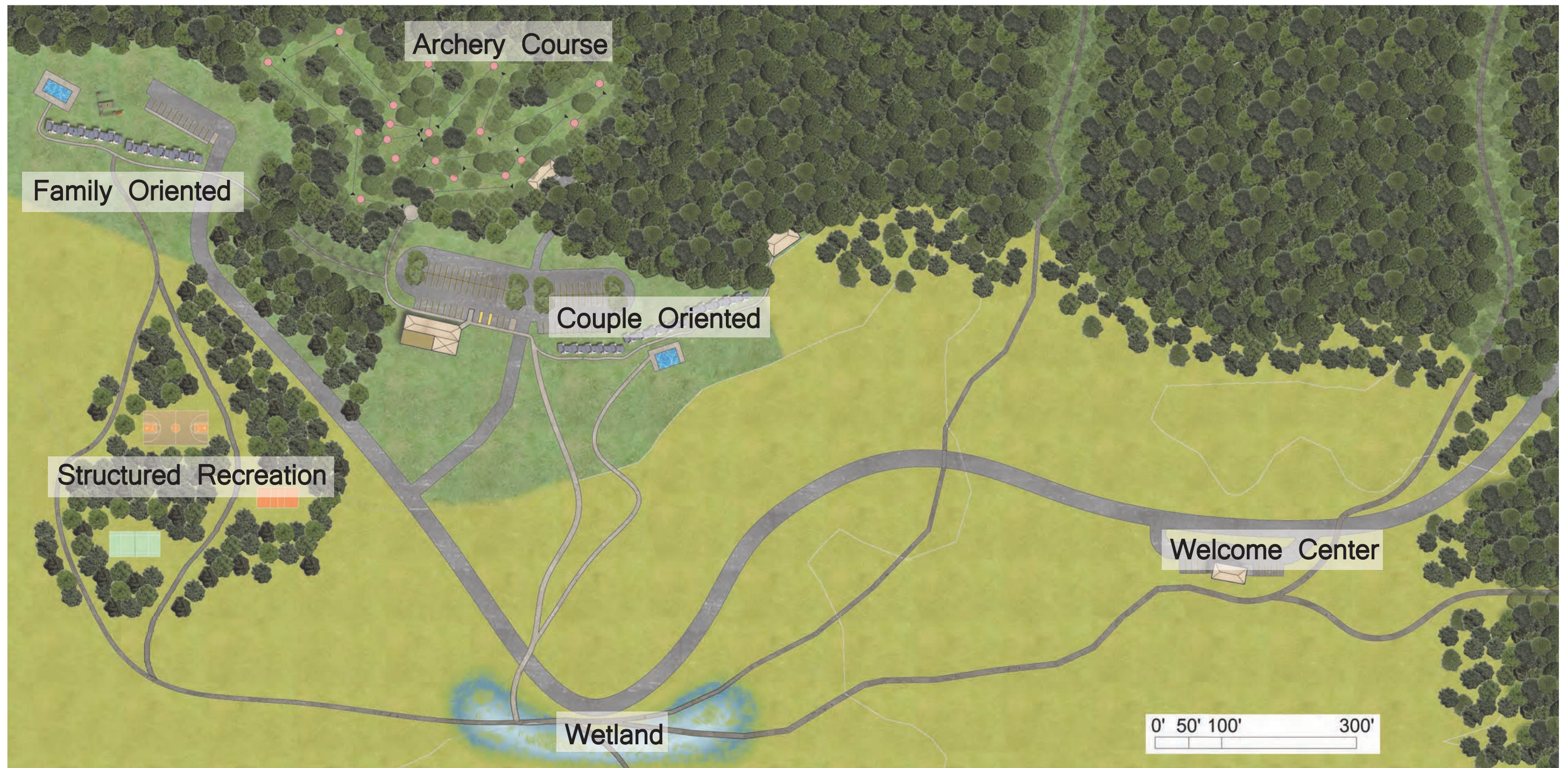
Green Agenda

Solar

70 People

40 kWh Per Day

226 Operating Days

Estimated Usage Per Year : **632,800 kWh**

	Solar Panel Production	Roof Coverage	Alternative Production Requirement	Totals
Number Of Panels	1	81	280	361
Acres	.0038	.31	1.06	**1.37 Acres**
kWh	1752	141,912	490,888	632,800

Total Solar Percentage of Site : 0.14%
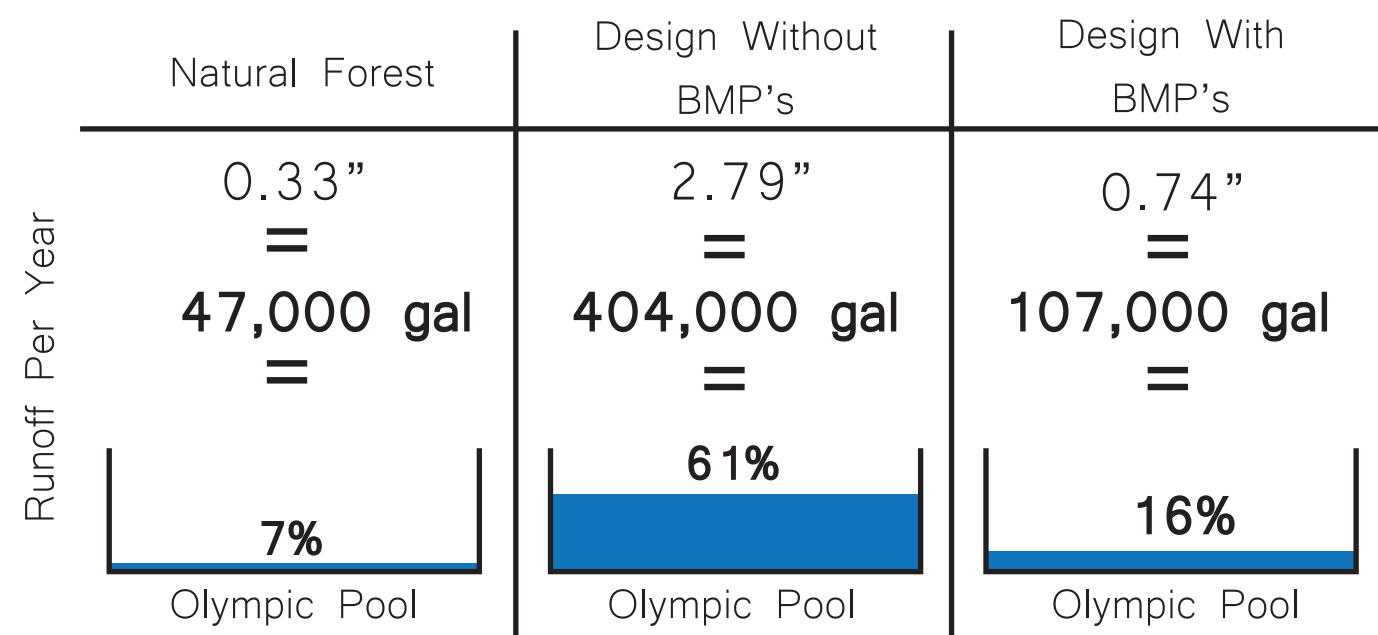
Food

– 70 People

– **2 acres** required per person per year

– Annual occupancy rate is 62.7%

– Requires **86 acres** of site for food production

– **8.6%** of total land on site will be devoted to food production

This slide showcases the **sustainable design benefits** implemented throughout this resort. The first chart covers **stormwater**. Without doing any stormwater best management practices (BMP), stormwater that runs off site annually would reach over **400 thousand gallons**, which is **60%** of an Olympic sized swimming pool. With the use of BMP's, which include **green roofs** and a **retention wetland**, we can lower that number by **75%** to about **100 thousand gallons**. Additional BMP's could lower that number to **0%** runoff. By utilizing space on site for agriculture, we can **feed all occupants** for the duration of their stay by devoting less than **10%** of the total site for **food production**. For our **energy needs**, through the exploration of **solar panel technology**, we can take the site entirely **off the grid**, making it **self-sustaining** with only using **1.37** acres of land.

Stormwater

	Natural Forest	Design Without BMP's	Design With BMP's
Runoff Per Year	0.33" = 47,000 gal = 7% Olympic Pool	2.79" = 404,000 gal = 61% Olympic Pool	0.74" = 107,000 gal = 16% Olympic Pool

Storyboard: Arrival

Entering the site will be like entering an entirely **different world**. Immediately, guests will be **immersed** within the landscape. The **rolling hills, lush forest cover, and interaction with wildlife** will come full circle into one **holistic experience** with nature unlike any other.

Storyboard: Lodging

While visiting, guests can enjoy many wonderful **views** from either our **couples** retreat, or our **family** retreat. From the front porch, guest can enjoy their morning coffee while being **surrounded** by a vast **panoramic view** of the beautiful Sullivan County Landscape.

Storyboard: Relaxation

Relaxation time can be spent at our couples spa, or here at the **infinity** pool. The effect that is created here is that the water appear **never-ending** and looks as if it is **flowing** straight into the **landscape**.

Storyboard: Structured Recreation

While visiting, guests can also enjoy the **3D archery course** that will be on site. It provides a **unique recreational experience**, and really helps to **relate to the surrounding communities**, seeing that the vast majority of residents in Sullivan County are avid hunters.

Storyboard: Hiking Trails

Another form of recreation on site will include a **hiking trail** that is just over **3 miles** long. Along this trail, there are many opportunities to take in **180-degree views** of the landscape, which will be fantastic chances to **snap a photo** or do some **bird watching.**

Storyboard: Biking Trails

In addition to the hiking trail, there will be a **biking trail** that will be roughly **5 miles** long. This trail will include stretches through the **forest**, as well as through **meadows**, which can act as an experience where the landscape will be **revealed** through the **forest clearing.** Also, there will be **flat stretches**, as well as some **hills** for the more **intense mountain bikers.**

D e s i g n   I m p l i c a t i o n s

Final impacts from this design include **various service jobs** created and over **1.5 million dollars** in annual sales. This design can also attract more people to **local businesses** throughout the area, as it will bring in approximately **16,000** visitors per year. Finally, the design can serve as a **precedent** for **sustainable practices** and **alternative economic growth** in Sullivan County.

Sources

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