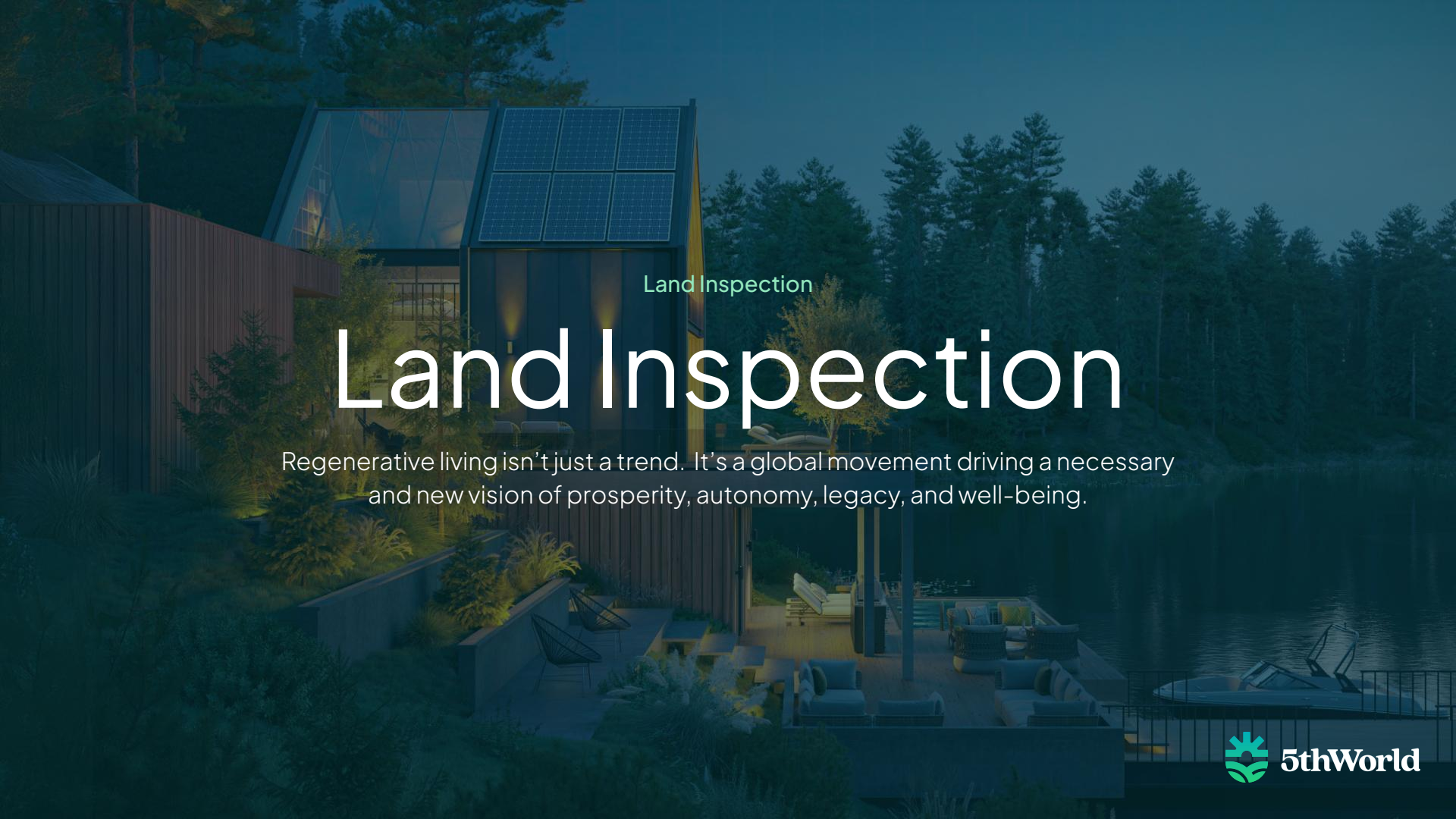




Land Inspection

Land Inspection

Regenerative living isn't just a trend. It's a global movement driving a necessary and new vision of prosperity, autonomy, legacy, and well-being.



5thWorld

Land Inspection

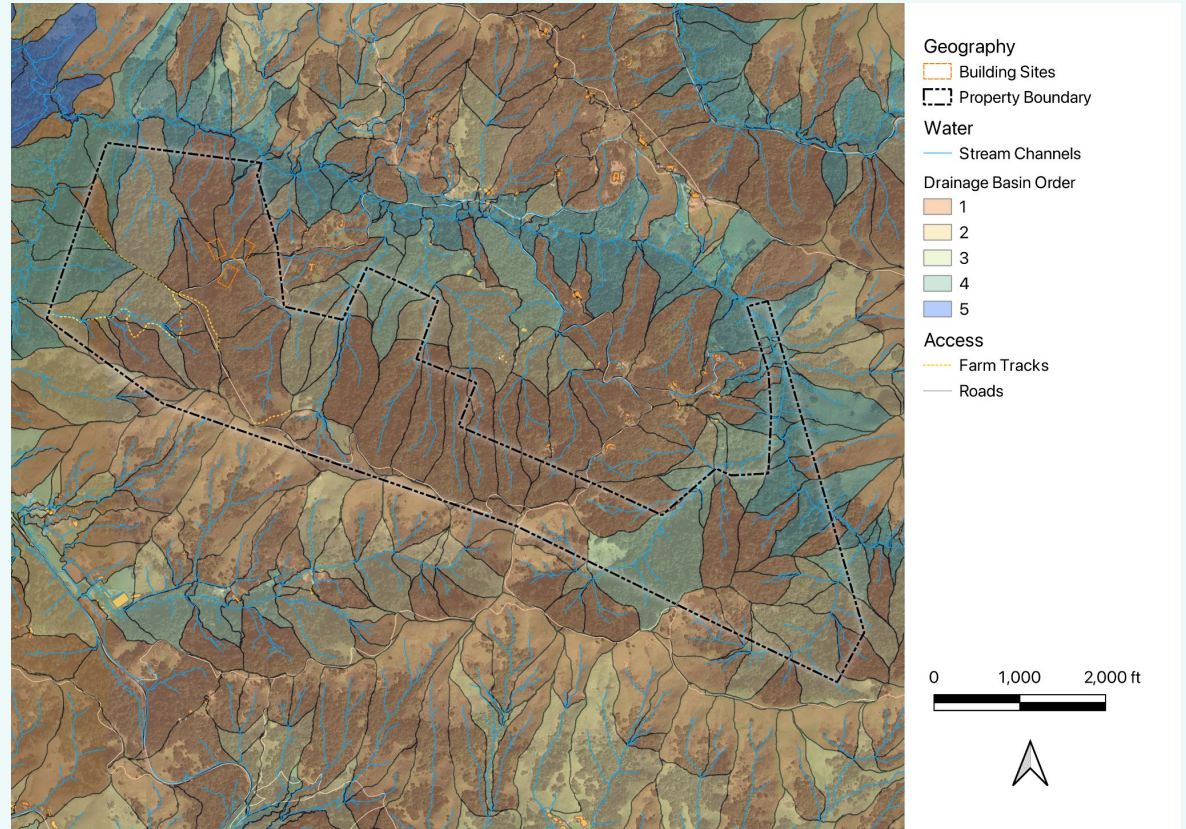
Site Background



5thWorld

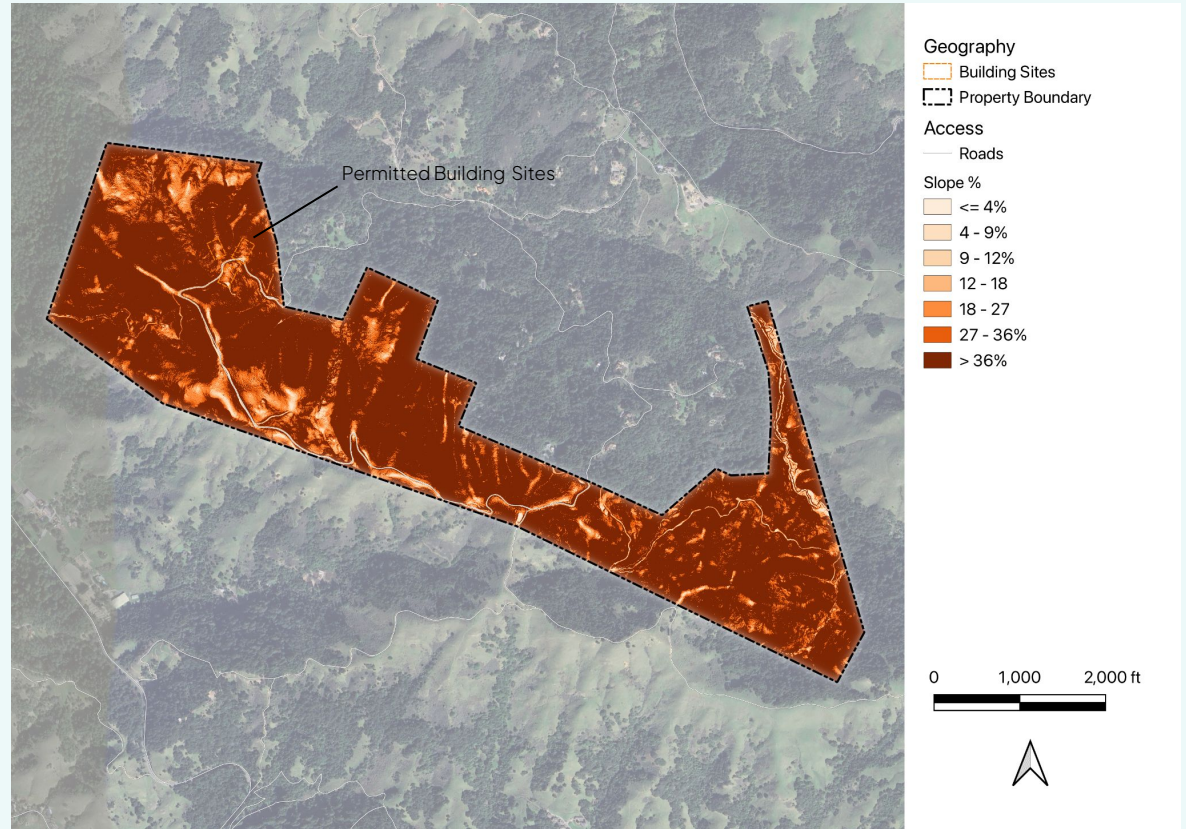
Watershed & Drainage

- Since this property is situated along a ridge, there are no significant watersheds flowing onto the property, except on the extreme eastern edge of the property.



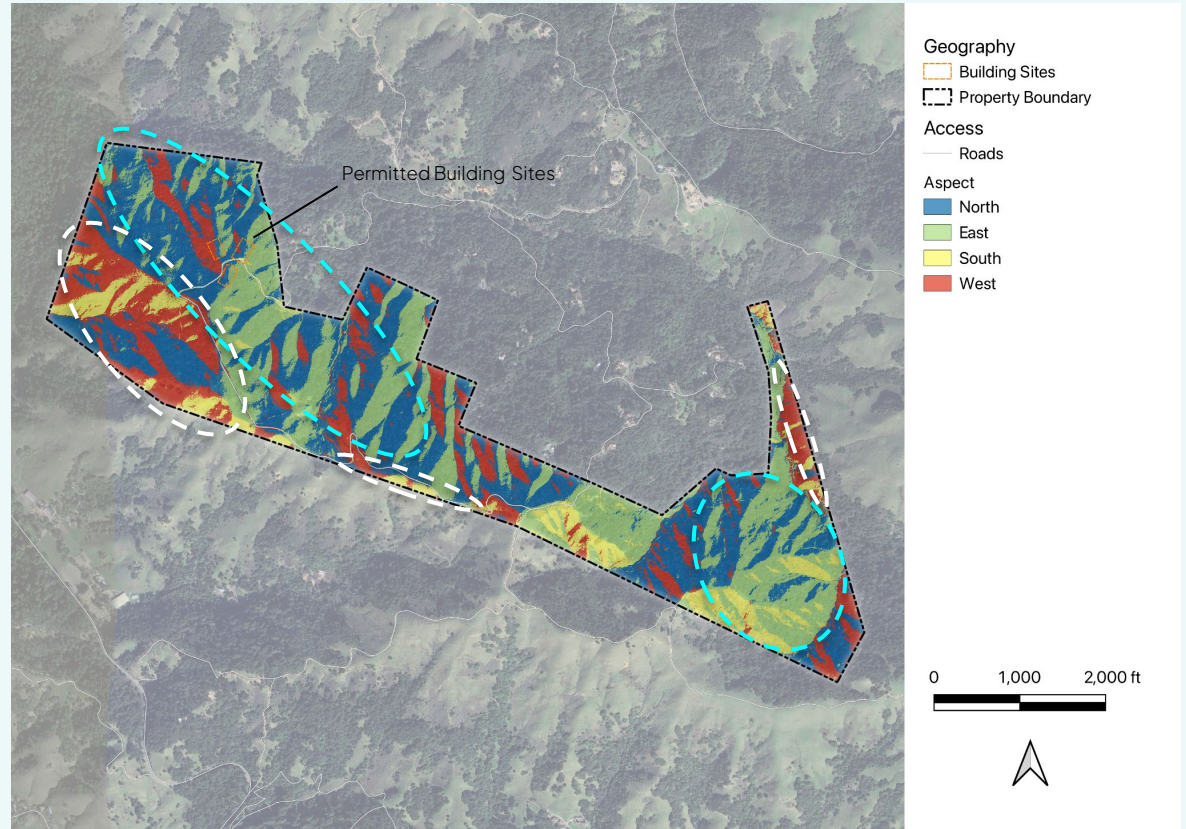
Slope

- The majority of this property is very steep, with slopes over 36%.
- Most of the property is at or over 25% slope, which is considered the threshold for site development. While it is still possible to develop, more energy and expense is required to build on sites beyond this threshold.
- Some areas of milder slope exist throughout the site
- The site has existing roads, which appear to be less than 15%



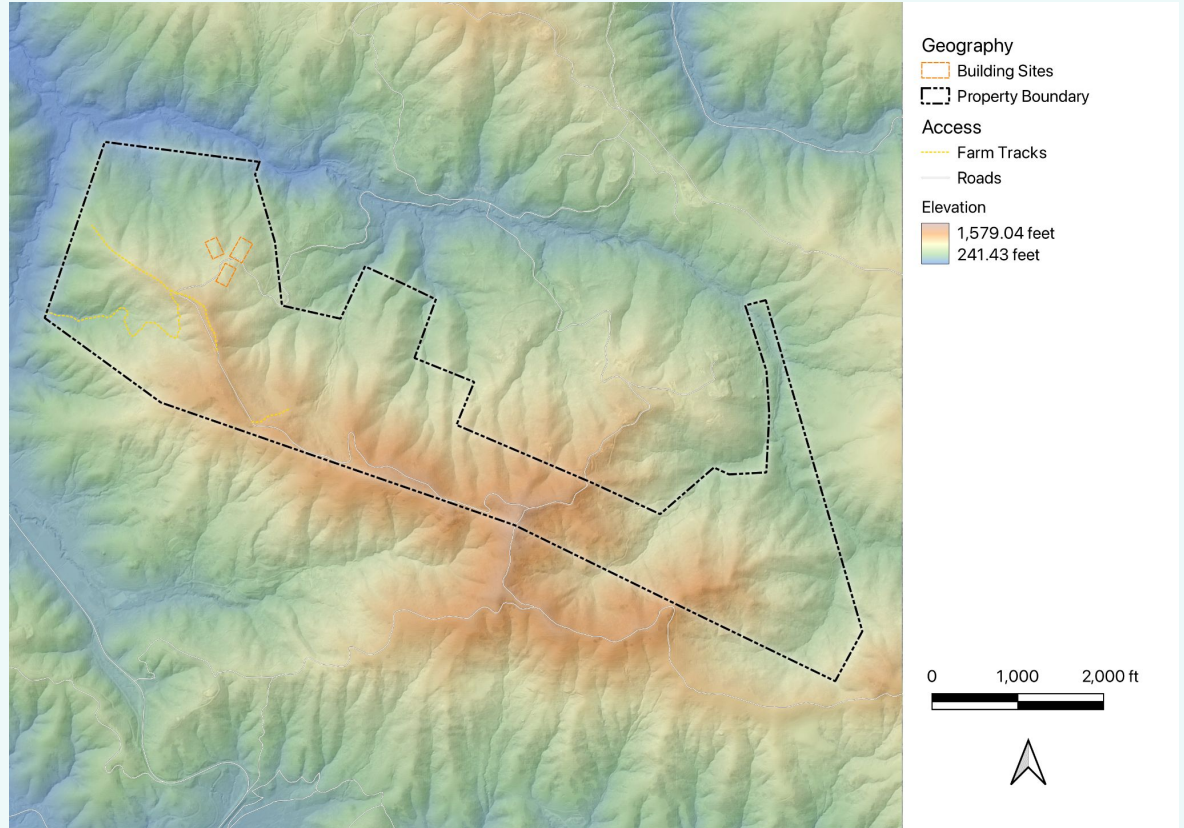
Topographical Aspect

- The dominant slope aspect of this property is to the north, northeast, and east.
- Areas outlined in white denote expected hotter & drier microclimates
- Areas denoted in blue denote expected cooler & moist microclimates



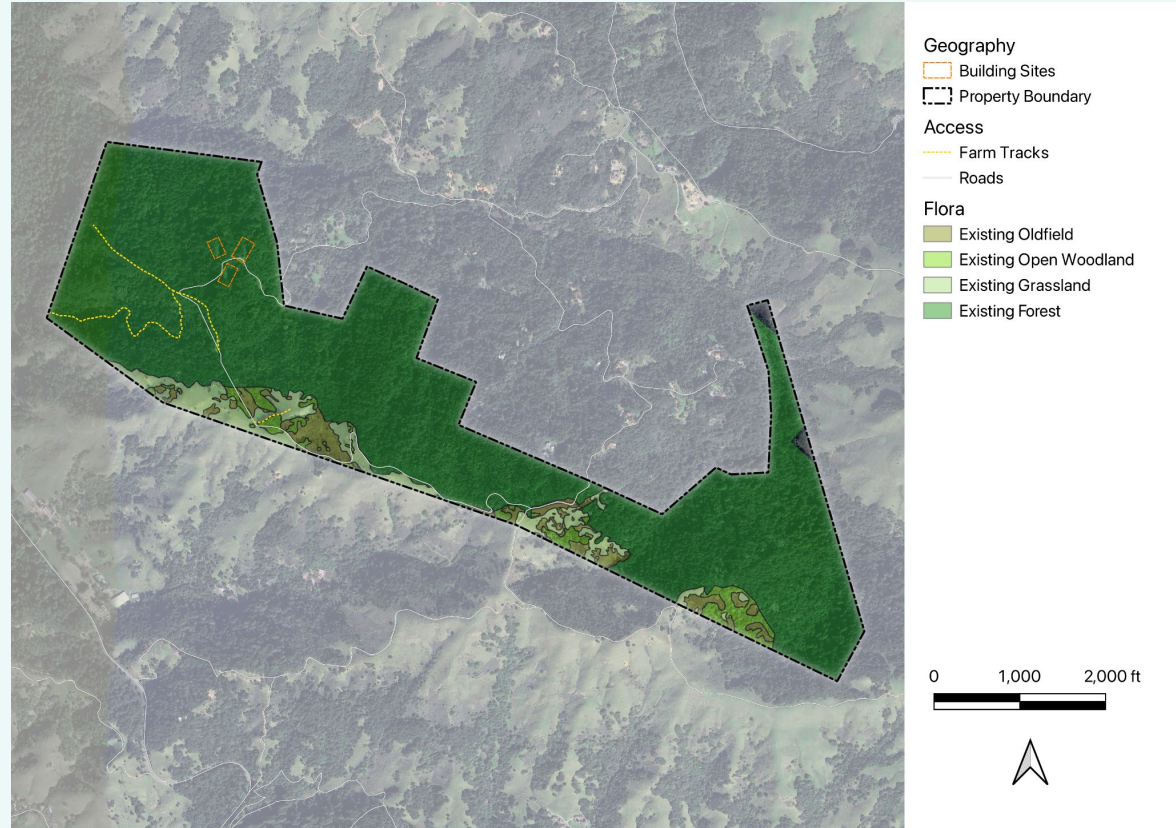
Elevation Relief

- There's approximately 1016 feet of elevation difference across the site.
- The key landform of this site is that it is a ridge in an east-west orientation.



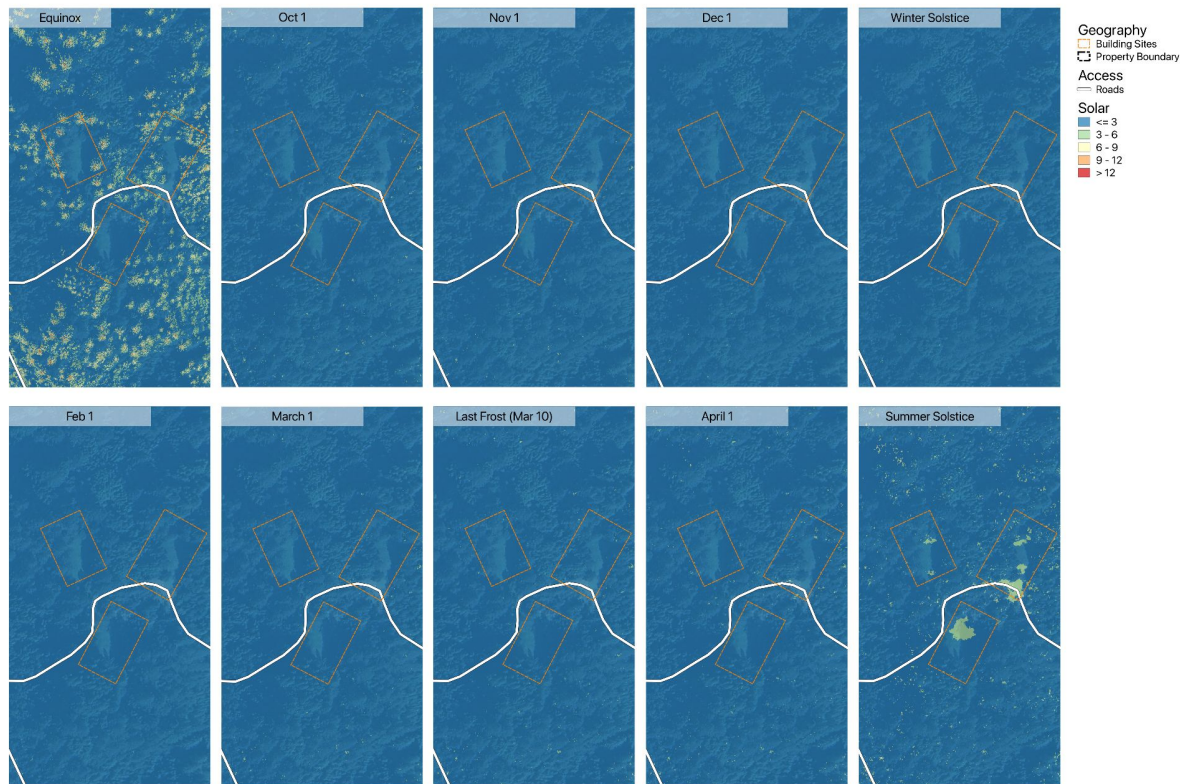
Vegetation Types

- This property is nearly entirely forest.
- At the ridge and its south side, other vegetation types including shrublands and grasslands are occurring.



Solar Exposure

- We based this study on the area containing the three permitted building sites.
- All three sites are in shadow for the day, each receiving at or less than 3 hours of direct sunlight per day, except in Midsummer, where some of the building sites receive between 3 and 6 hours of direct sunlight.



Land Inspection

Regenerative Living Solutions



Energy



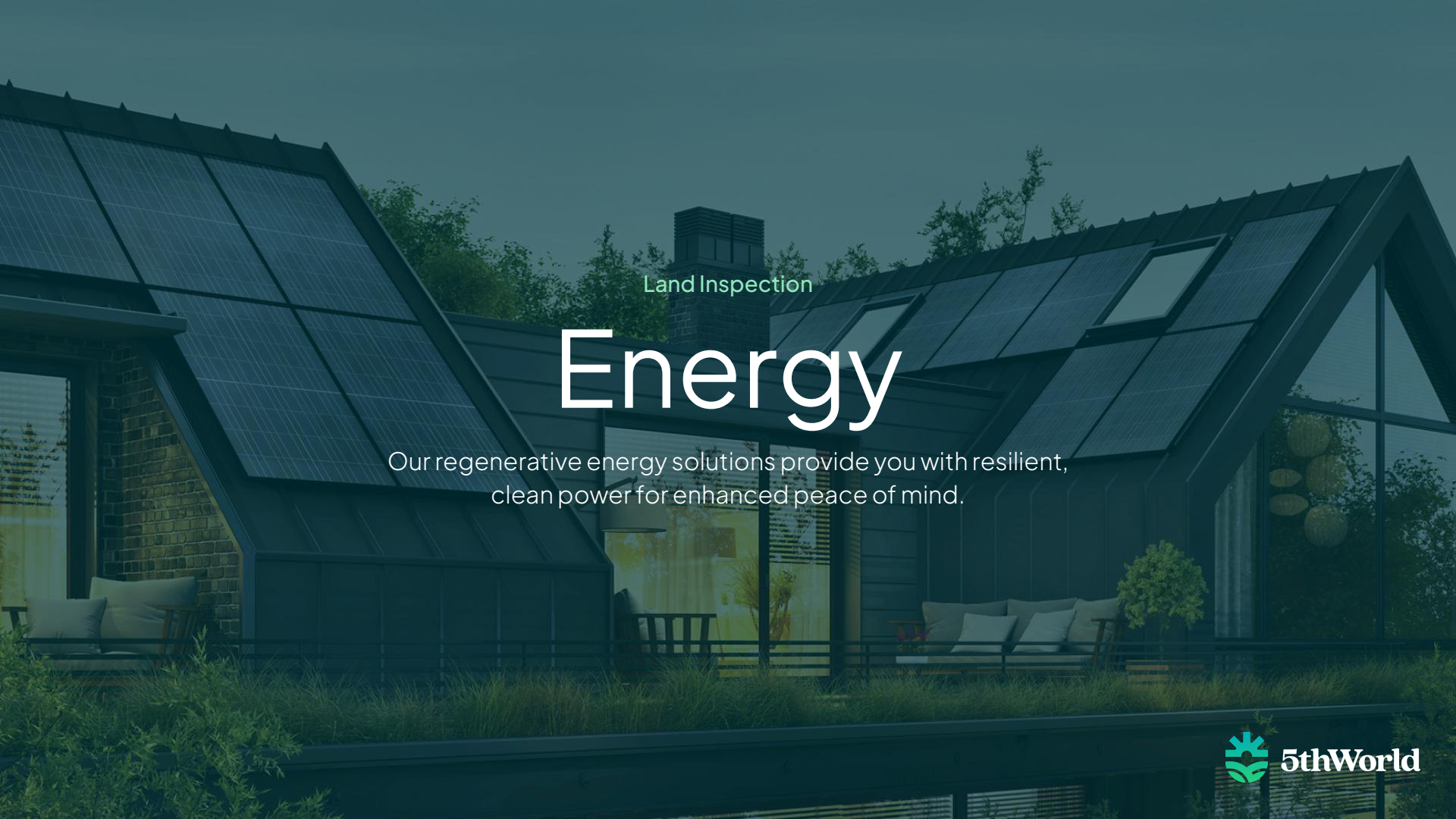
Water



Food



Land

A modern, dark-colored house with a steep, gabled roof covered in solar panels. The house features large windows and a chimney. In the foreground, there is a green roof with various plants and two outdoor seating areas with cushions. The background shows trees and a clear sky.

Land Inspection

Energy

Our regenerative energy solutions provide you with resilient, clean power for enhanced peace of mind.



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Energy: Opportunities

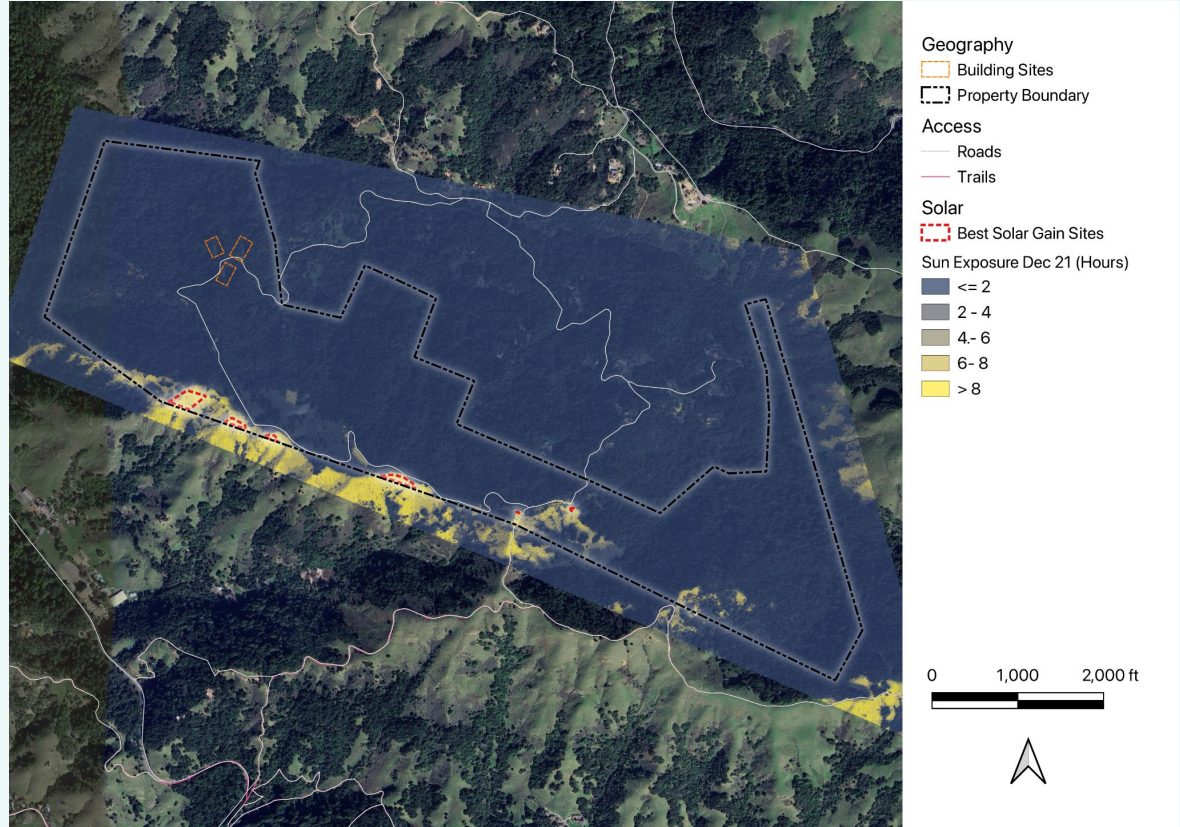
- This property is located in a fairly sun-rich area, although winters have more cloud cover.
- Nearly the entire south portion of the property has excellent solar gain throughout the year.

Energy: Constraints

- Winters in this region have more cloud cover, particularly between October and March. Fog is also frequent in this area during the summer months.
- This property is primarily forested with very tall coniferous trees. The three permitted dwelling sites are completely shaded.

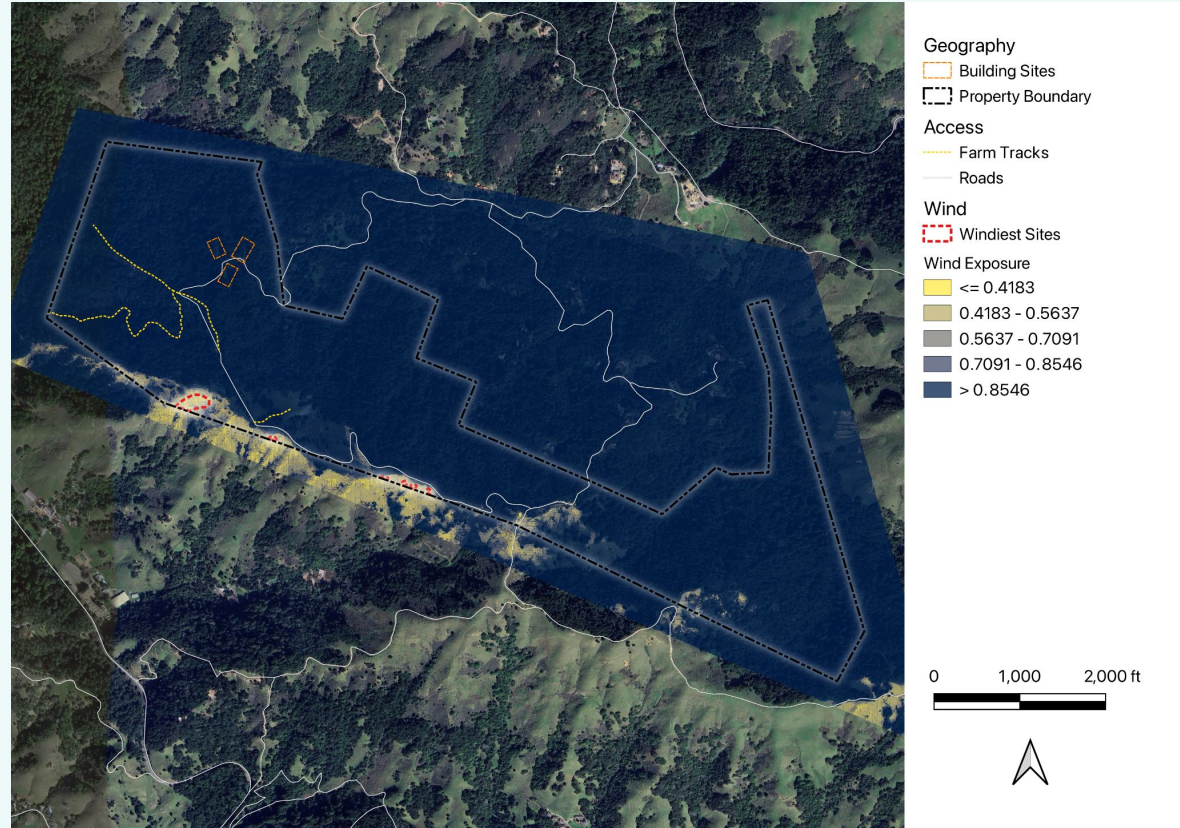
Solar Energy

- Relative to the entire property, there are minimal sites for solar accumulation for PV and for passive solar building sites, although this could be expanded through the clearing of trees.
- However, there are naturally ideal sites along the south property boundary as shown in red.
- If a passive solar home is desired, these sites represent the most ideal locations.



Wind Energy

- There are relatively small areas on the site as shown that are able to receive winds.
- This property is generally not well suited for wind power generation, due to the fact that this site receives only approximately 4% of days where wind is of sufficient strength for wind power generation.



Land Inspection

Water

Regenerative water solutions gift you an abundance
of the cleanest water on Earth.

Water: Opportunities

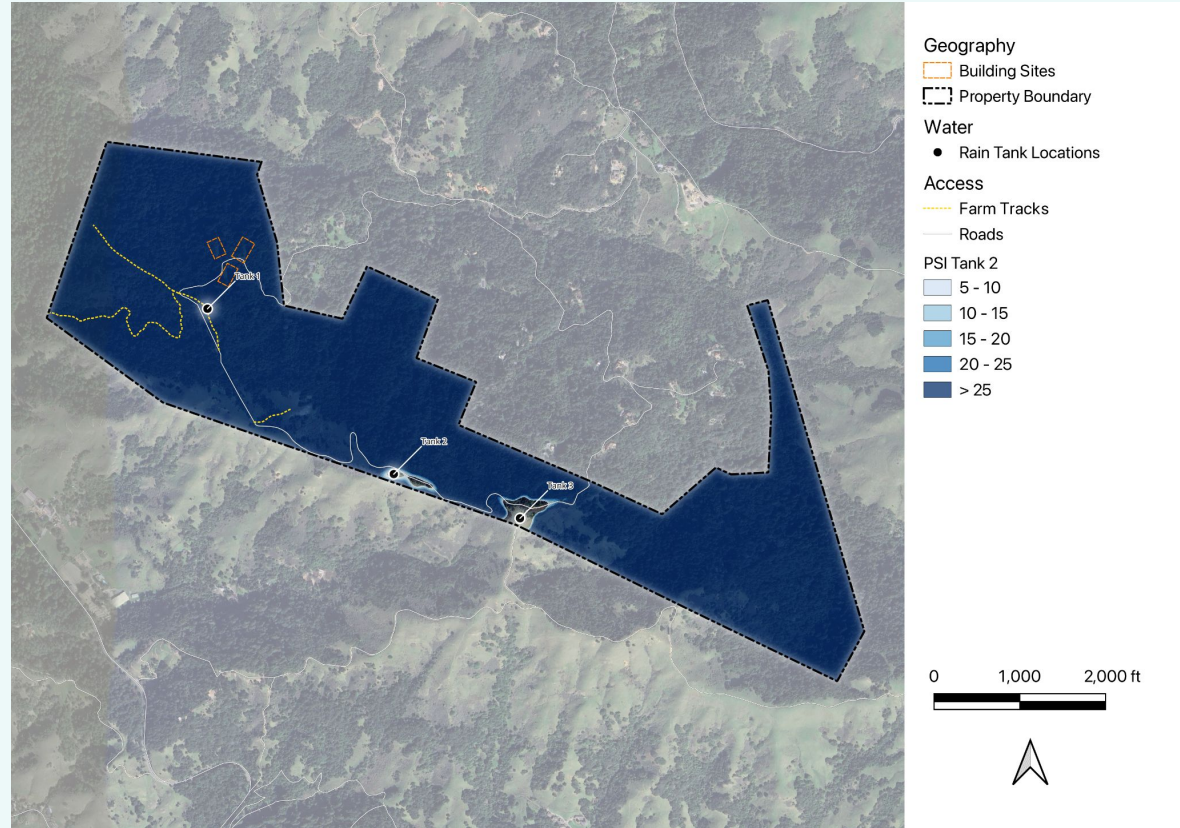
- Because the top of the watershed is contained in this site, it will be possible to store water in large tanks up high, and use that water throughout the site, transported by gravity.
- Tanks could additionally be filled by taking water from an ephemeral stream that is on site.
- With enough tank storage, a potable water supply could be created, as well as reserve water for firefighting.
- Due to the large amount of tall & mature Redwood and Douglas Fir trees, this property has an active water cycle. While rainfall is low during the summer here, a measurable amount of water falls to the site as *fog drip*, when moisture laden air touches large coniferous trees

Water: Constraints

- There are no wells on the site
- This area is relatively close to regions that are reporting an increase in groundwater wells that are drying out. See <https://storymaps.arcgis.com/stories/f2b252d15a0d4e49887ba94ac17cc4bb> for more information.
- Due to the well- and extremely-well drained nature of the soils, as well as the significant steepness of the site, there is no good opportunity for storing water in ponds on site.
- Gravelly soil layers will demand additional soil building and irrigation for most annual vegetable crops.
- In general, there is little opportunity for larger scale water storage on this property higher in the landscape. This site is also not well suited for ponds due to the topography, as well as the lack of clay. This means that installing ponds will require higher expense and energy.

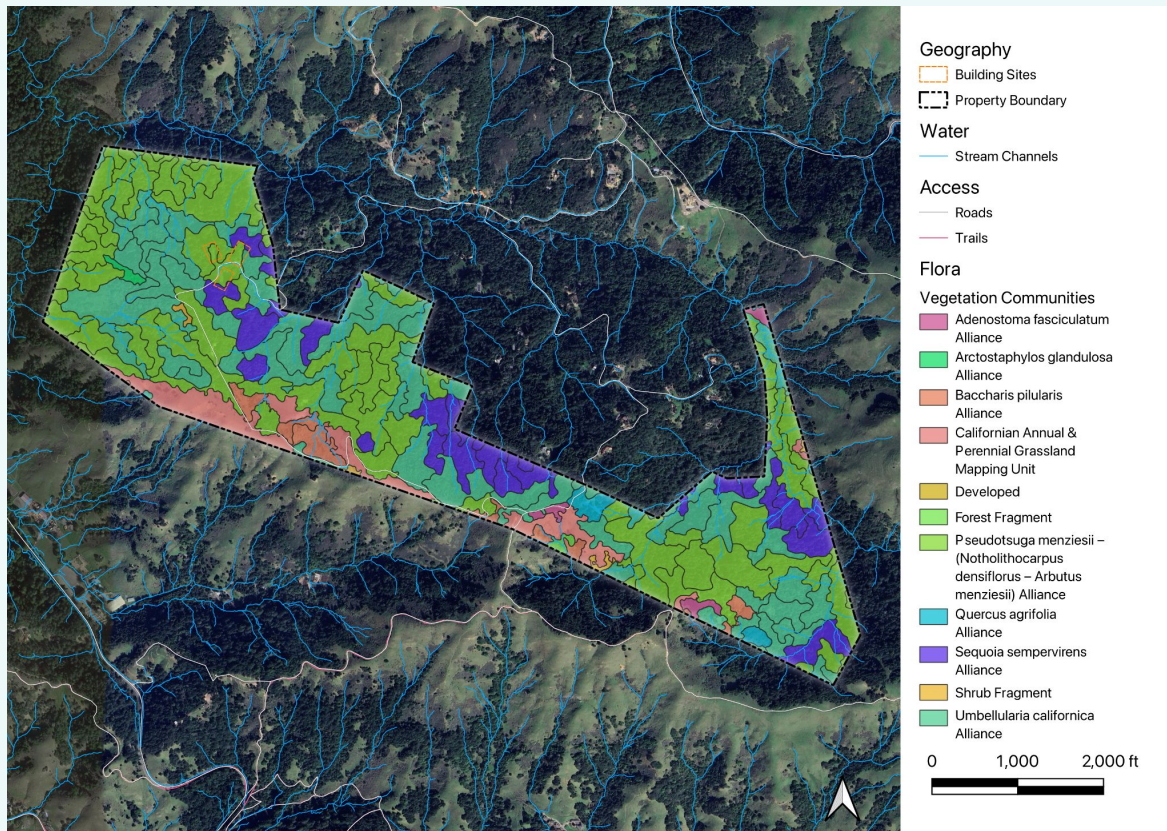
Water Availability

- This map shows the location of water tanks that serve as potable water storage as well as for firefighting.
- This map also shows the 'reach' that stored water can be moved throughout the property without needing energy; through gravity.
- The majority of the property is within the reach, representing an opportunity for water use and fire mitigation.



Ecosite

- The majority of this property is occupied by forested ecosites that are north to northeast facing.
- Along the south edge of the property, ecosites exist where high heat and low water availability restrict the growth of trees, promoting deeper-rooted species.
- The forested ecosites are capable of harvesting fog drip.



Land Inspection

Food

Regenerative food solutions grow a bounty of
delicious, nutrient-dense food right on your property
for your convenience.



5thWorld

Food: Opportunities

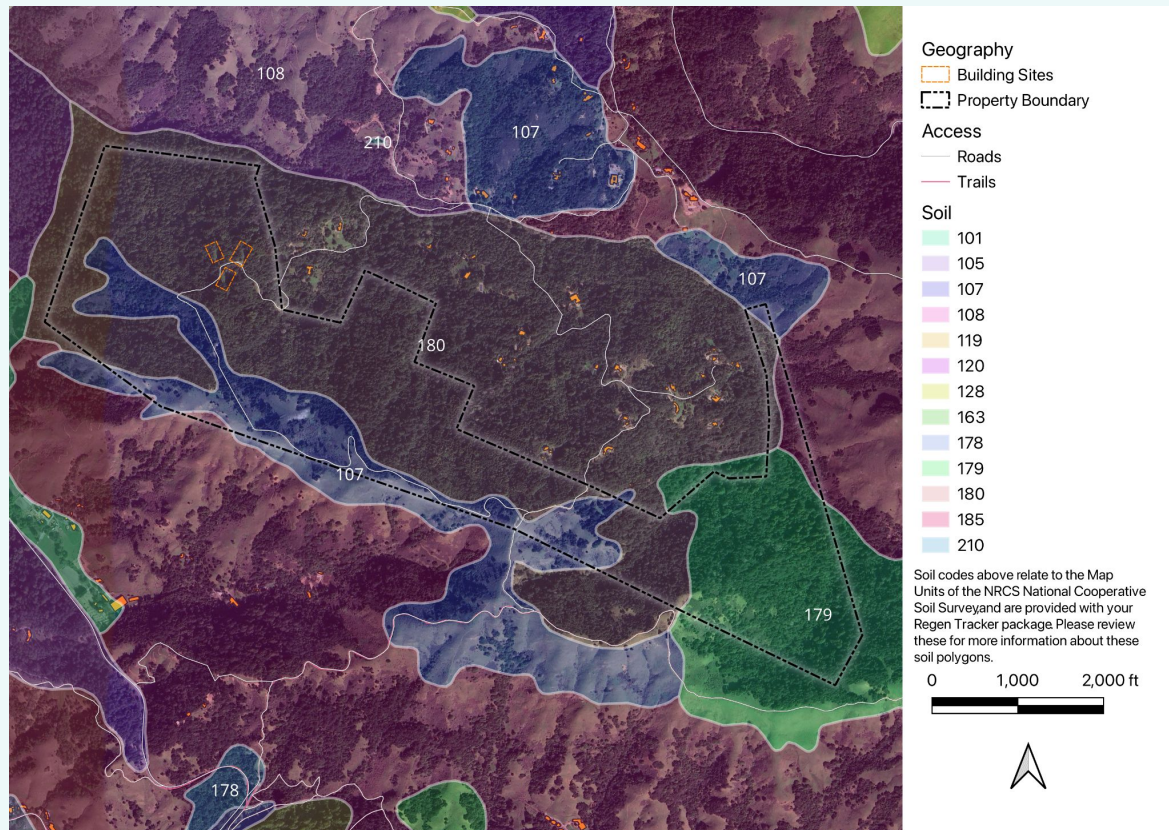
- Because this property contains old forest, there is an opportunity for forest farming and fungi production, as well as extensive wildcrafting.
- This property contains habitat for the Columbian black-tailed deer, which can be hunted.

Food: Constraints

- An important constraint for food production on this site is to do with soil available water, as the upper soil layers are gravelly and well drained. Soil water holding capacity and irrigation ability will be a main constraint.
- Another important constraint will be the soil nutrient availability. The soils on site are heavily influenced and bear the characteristics of its origin, which is schist and bedrock, and high degree of tannins from the coniferous-dominated environment
- Most of the property does not have good access to sunlight (<3 hours is dominant)
- This site is within ungulate wildlife habitat, therefore appropriate wildlife fencing will be required.

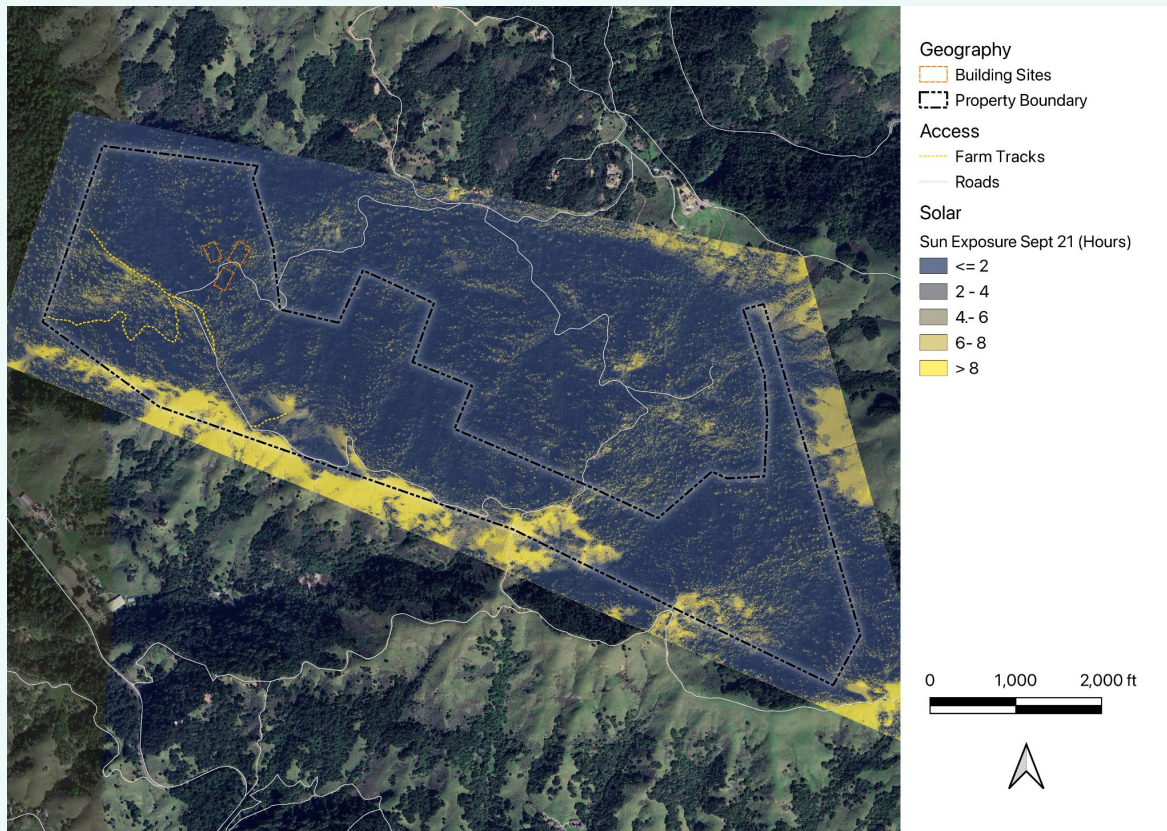
Soil

- We anticipate that the soil nutrient availability on this site is mostly in the Medium range, putting an extra emphasis to utilize holistic soil building methods, such as composting, mulching, and micro-livestock to improve soil nutrient-holding ability.
- While the soils are classified as loams, they are also gravelly with high drainage, meaning that water is not held in the soil very well.
- This map shows the dominant soil types. The majority of this site is gravelly loam. Dominant soils within the property include:
 - 107 → Bonnydoon gravelly loam
 - 179 → Tocaloma-McMullin complex, 30 to 50 percent slopes
 - 180 → Tocaloma-McMullin complex, 50 to 75 percent slopes



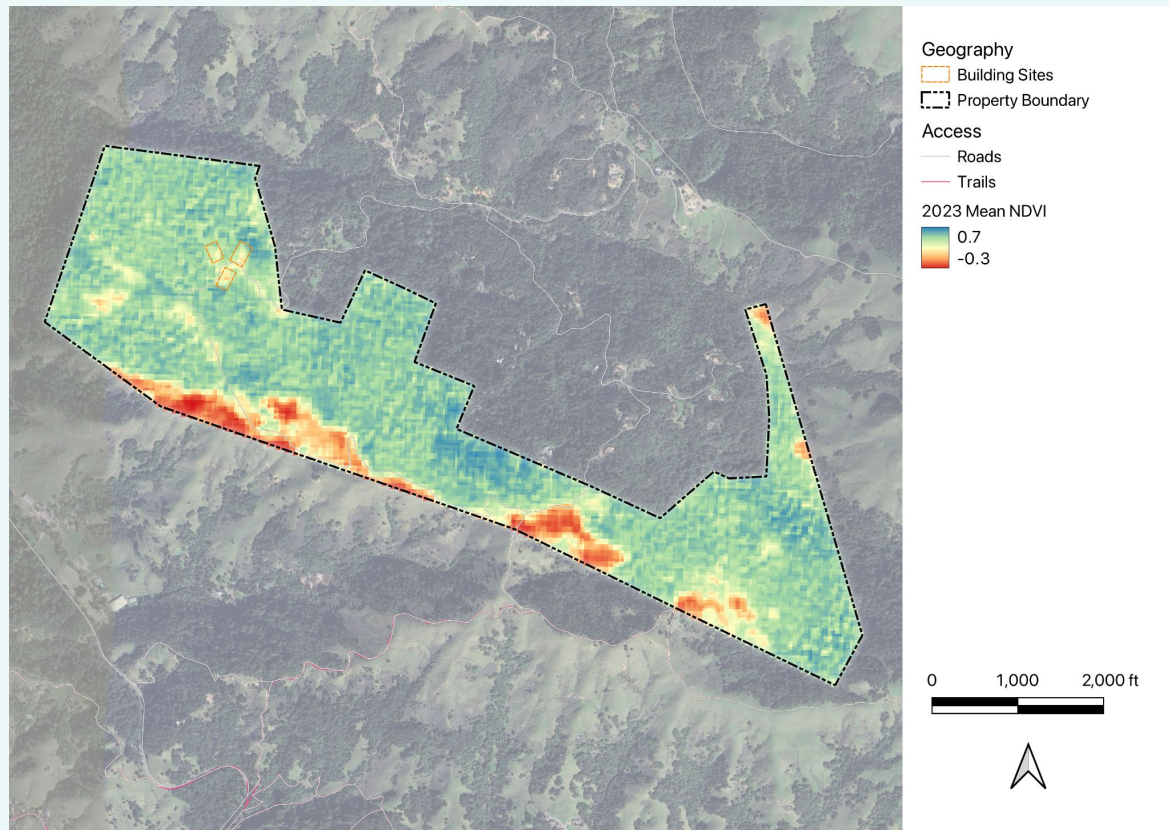
Sun Exposure

- This map shows the time the site receives direct sunlight for growing most crops. The equinox is chosen to conservatively constrain the opportune areas.
- While this site is significantly forested, there are significant areas receiving 8 or more hours of sunlight, typically along the south property border.



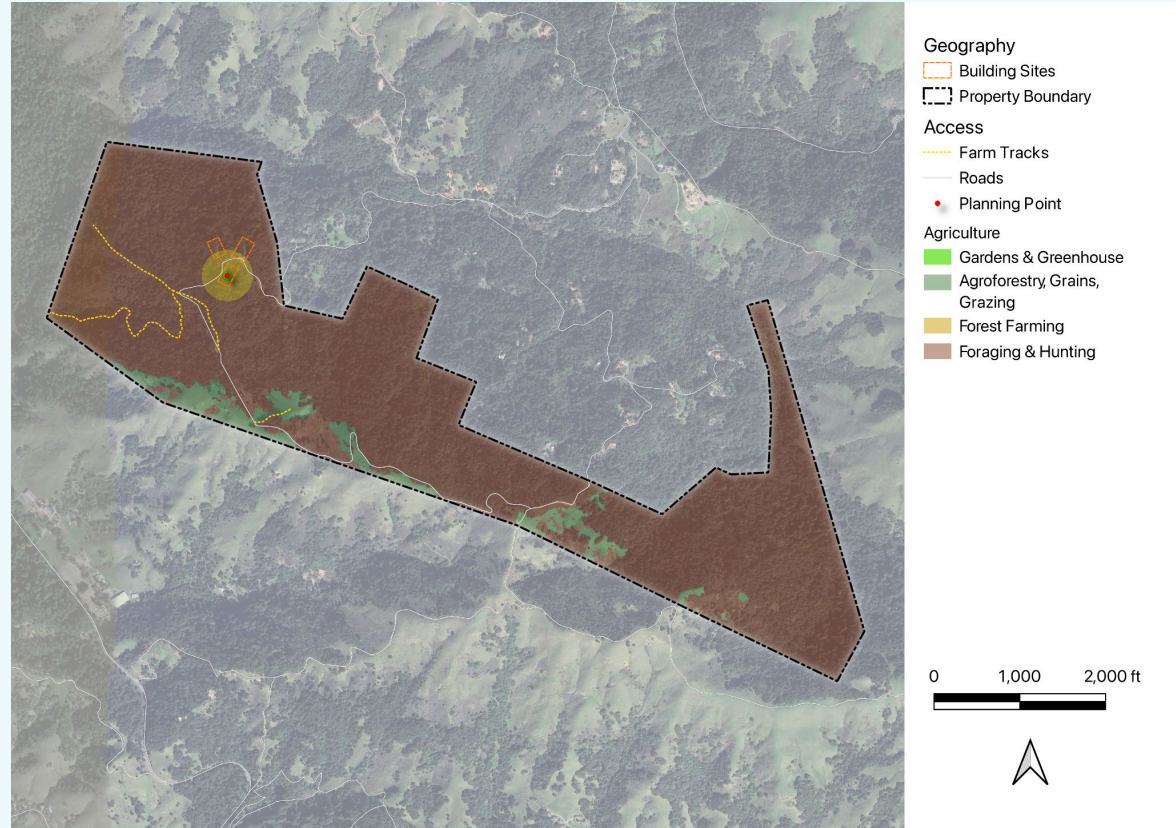
Vegetation Vigor

- The average vigor reported throughout 2023 is moderate to high. This suggests that the environmental conditions for supporting vegetative growth are moderately good.
- However, more information needs to be collected from a site visit. Coniferous tree species have a tendency to show higher NDVI values, which are heavily present on this site.
- The lower NDVI values on the southern grassland portion of the property likely indicate the growth pattern of the herbaceous plant species there, where their strategy is to only grow when water is available seasonally, and assume dormancy otherwise.



Agriculture Types

- Shown in this map are opportunities for how the land could be used to produce food.
- These designations are based on how many trips would be required from the house to reduce time and energy.
- The designations are also based on the nature of the site, how energy influences the site, and the existing vegetation and land use types on the site.
- Due to the type of vegetation, soils, sunlight availability, and scale of the site, the main opportunity for this site is foraging and hunting.



Land Inspection

Land

Regenerative land solutions leverage data insights to plan, track, and improve your property's ability to generate resources and grow value.

Land: Opportunities

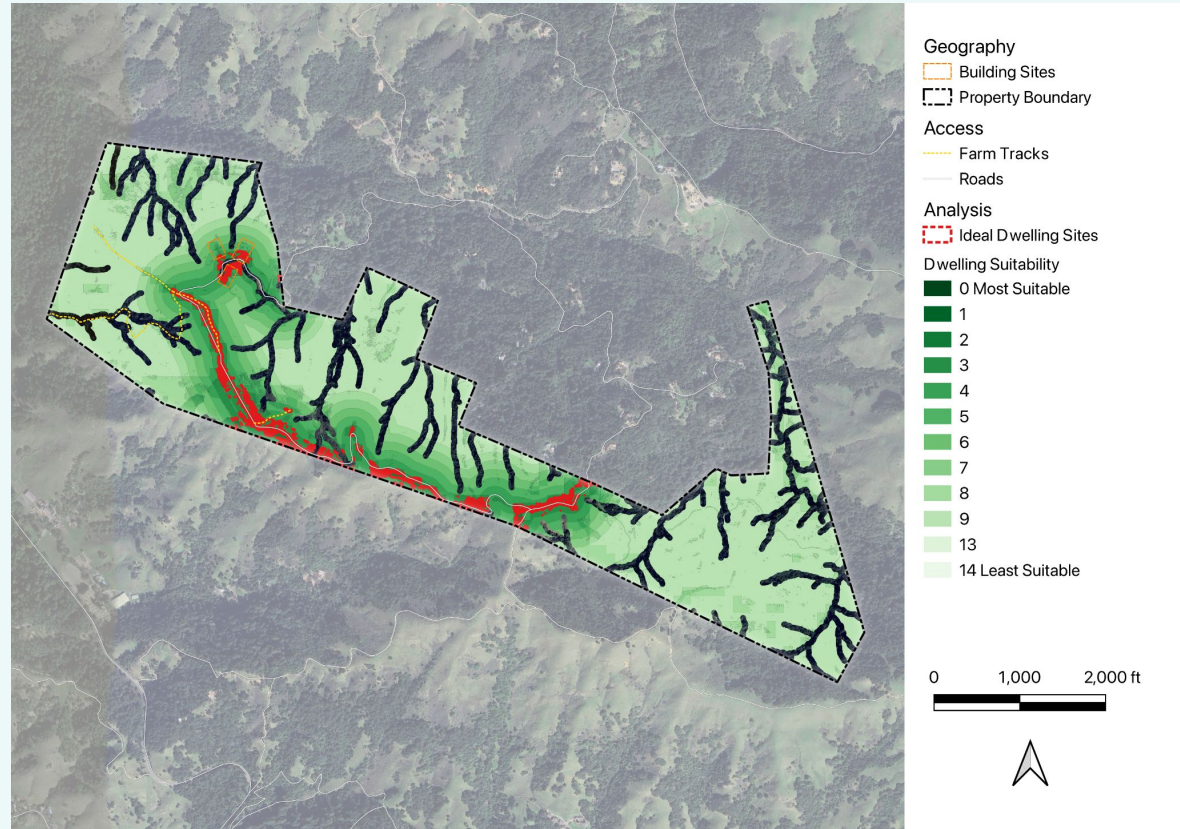
- This is beautiful land!
- The land contains rich old growth forest
- There is an existing road that lies through the property, and provides two accesses

Land: Constraints

- Wildlife fencing is going to be required to support most gardening types and plants selections from herbivory.
- Other than roadways, this property contains little in the way of existing infrastructure, however a site visit will reveal the true extent of valuable infrastructure.
- This property is located in a very fire-prone area; fire mitigation strategies will be essential.

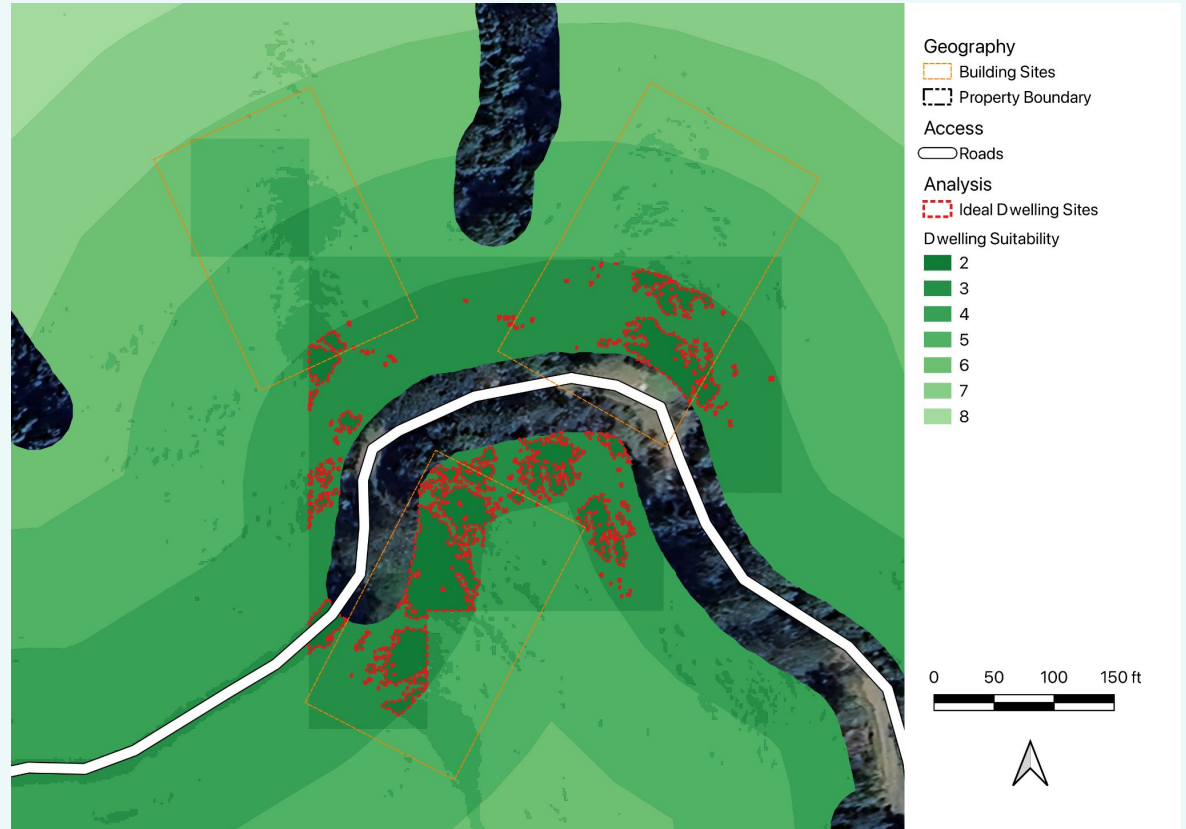
Ideal Dwelling Sites

- Based on the regulatory framework, three sites are permitted for building, labelled on the map.
- However, only one of them contains a significant amount of ideal dwelling sites (outlined in red). The permitted building site to the south is the most suitable of the three sites.
- The most ideal sites are located along mid south property edge. The fire susceptibility of the site has been the key driver for this, as these locations have the least fuel, and also contain the most gentle slopes.
- The most ideal sites along the south property edge also have the highest solar gain potential.



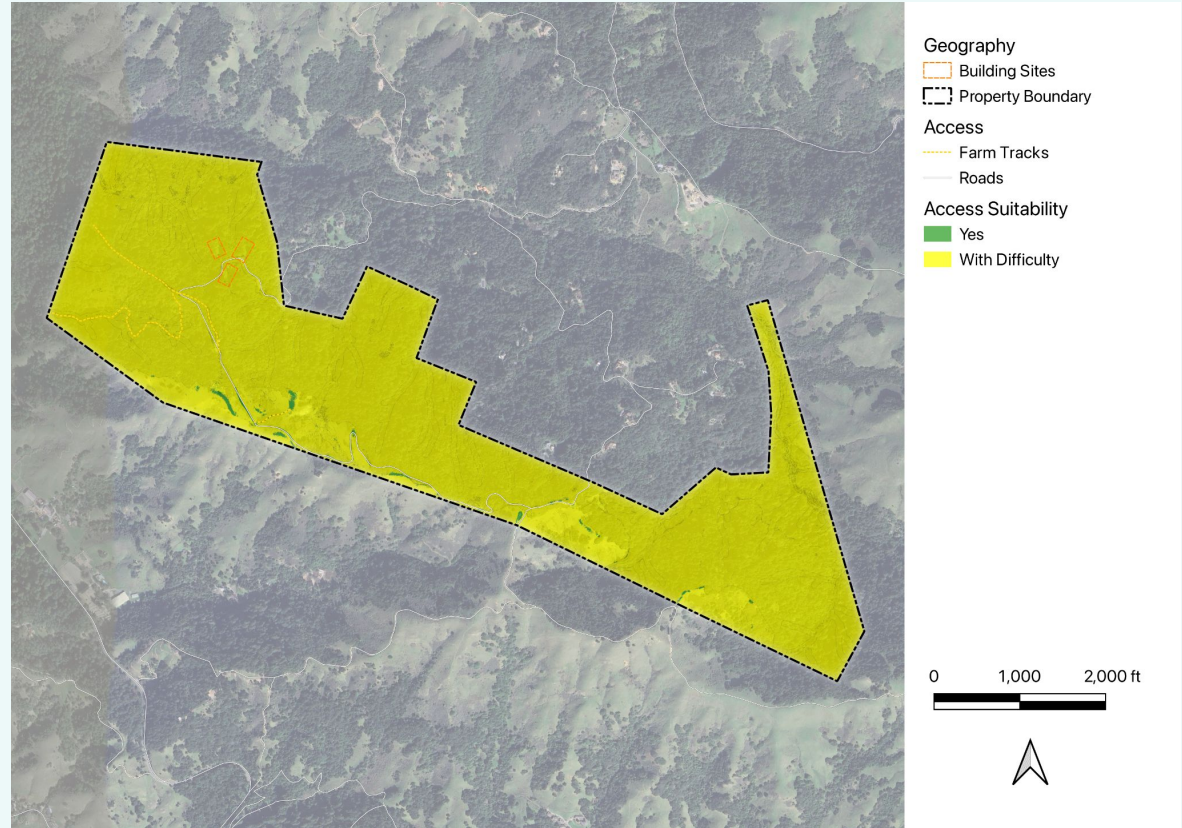
Ideal Dwelling Sites

- This map is focused on the three permitted building sites, where the south site has the highest degree of suitability for building
- Note, all three of these sites are in high fuel areas for fire; fuel reduction strategies will need to occur within at least 100' from the chosen dwelling site



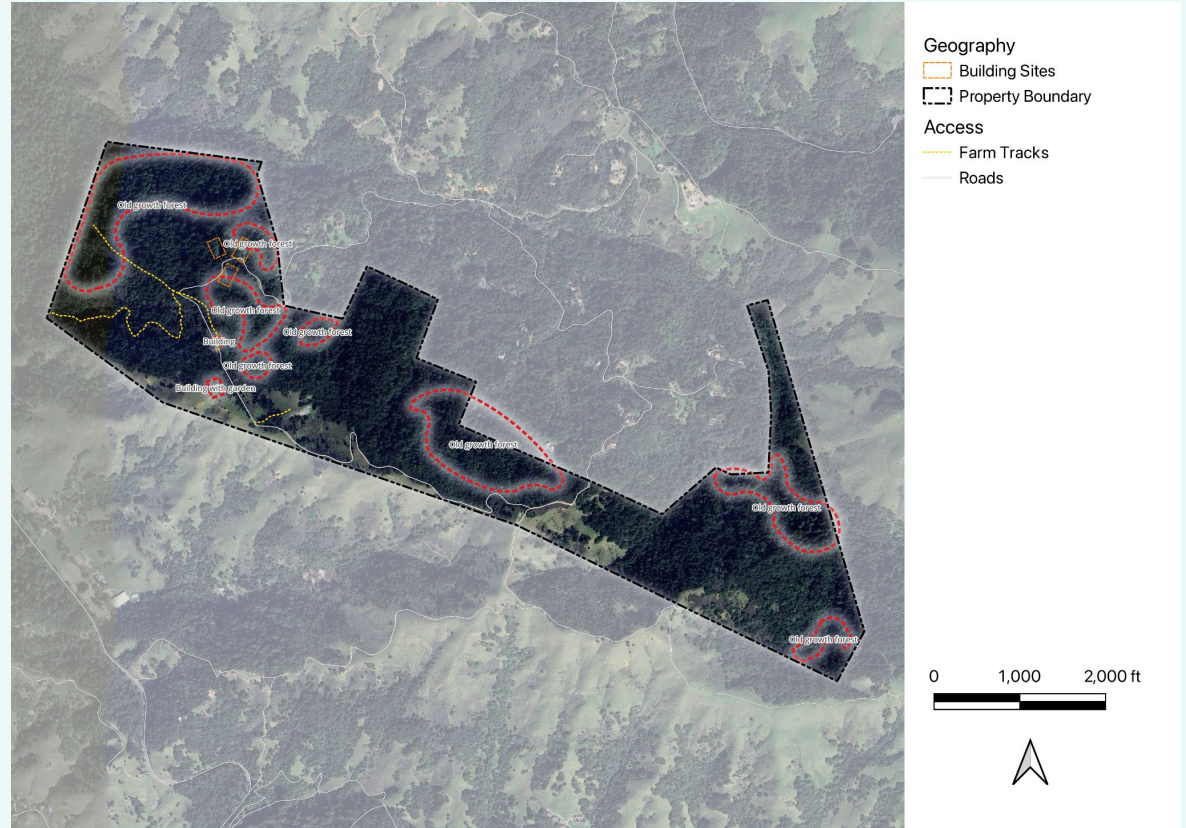
Access Suitability

- The majority of the site will allow for new access routes where needed, however there will be difficulty and extra expense needed.
- This is due to the steeper slopes throughout the property, combined with large and mature woody vegetation throughout.



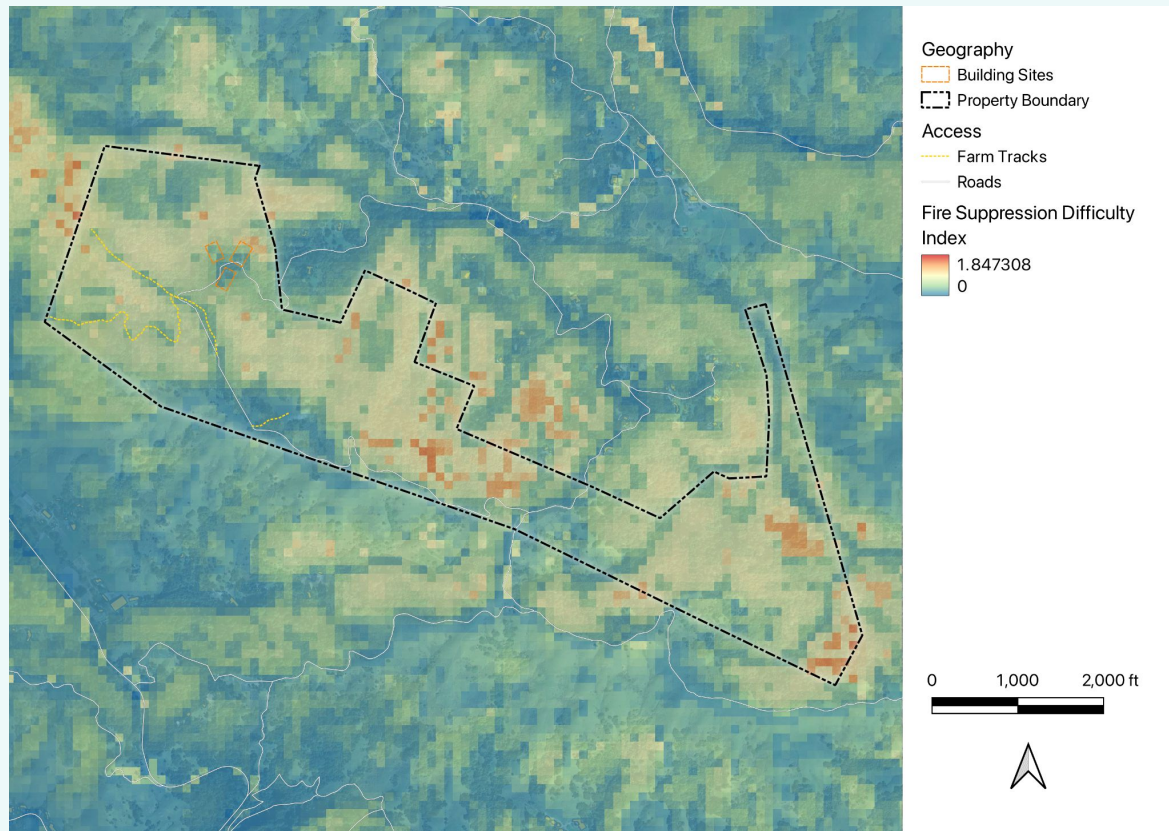
Existing Assets

- This property has a well-graded road that passes through, and provides two access points on the land
- There are two buildings on site, but condition needs to be assessed.
- There are intact old growth forests on the property.
- This site has no water wells.
- There is no existing septic system on this property.



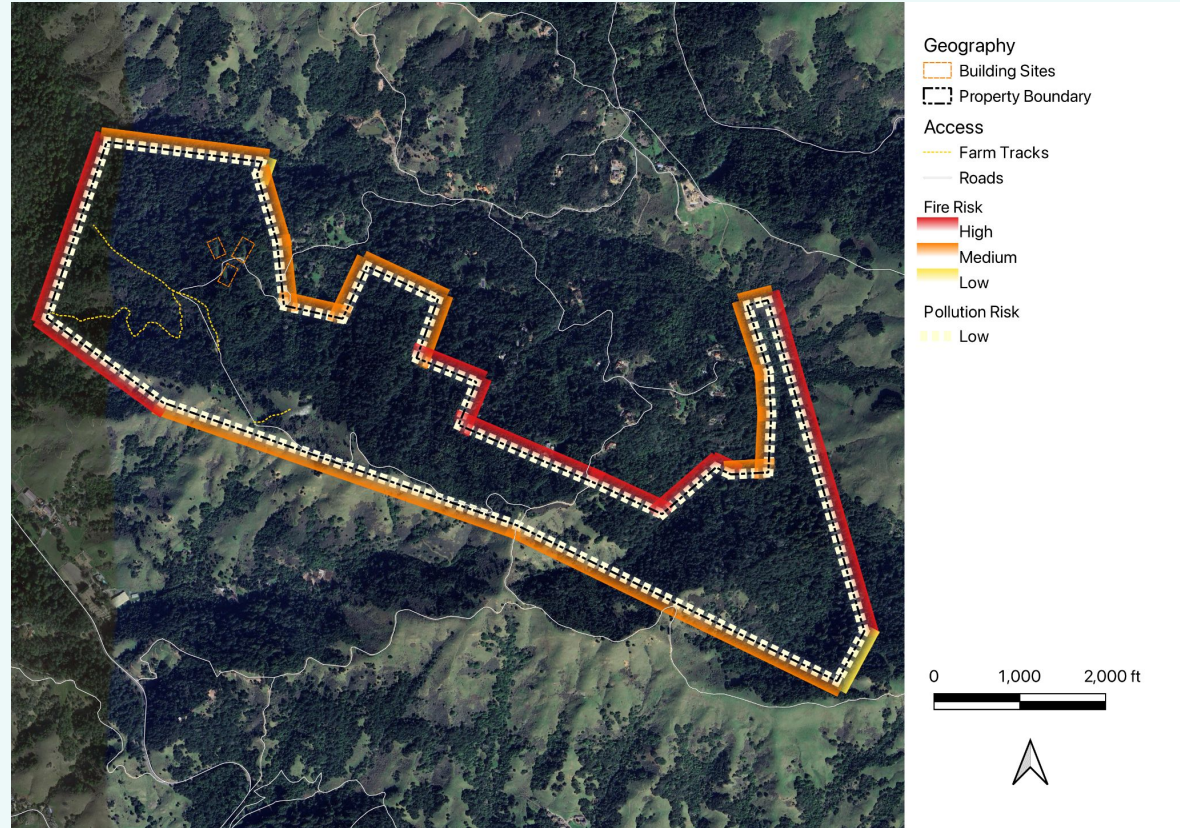
Fire

- This map shows the degree of difficulty for extinguishing a wildfire, should it occur.
- Values closer to 2 indicate high difficulty, and therefore represent areas of significant danger.
- Much of this property is moderately significant in terms of the difficulty index, which generally follows the forested parts of the property.
- The grasslands to the south are notably lower on the index.
- More information/ Source: <https://vegmap.marincounty.org/pages/fuel-models>



Influential/Hazardous Sectors

- There is a notable fire risk from the west and east, due to sloped coniferous forest, however the risk is lower to the south and north due to the lesser amounts of fuel. However, this property lies in significant fire ecology, and is an inherent risk.
- No significant point sources of pollution have been noted.



Land Inspection

Landscape Health

Strengths, weaknesses, and opportunities in the
ecological potential of the land



5thWorld

Land Inspection

Climate

Frost Period



SPRING & AUTUMN FROST FREQUENCY ANALYSIS (01/1992 - 05/2023)

These data were obtained from the NASA Langley Research Center (LaRC) POWER Project, funded through the NASA Earth Science/Applied Science Program.



The Frost Analysis Visualization captures the patterns of spring and autumn frosts over the last 30 years. It employs heatmaps to represent the frequency of the last spring frost and the first autumn frost by week, providing insights into when you should be putting things into the ground, or taking them out!

The visualization is split into two heatmaps:

- Last Spring Frost: indicates the last time a frost occurred in the spring for each year over the past 30 years, by week of the year.
- First Autumn Frost: indicates the first time a frost occurred in the autumn for each year over the past 30 years, by week of the year.

The number contained within the Frost Frame, with the associated intensity of the colour blue, represents the number of last spring/first autumn frosts that occurred in that particular week of the year (as indicated on the x-axis).



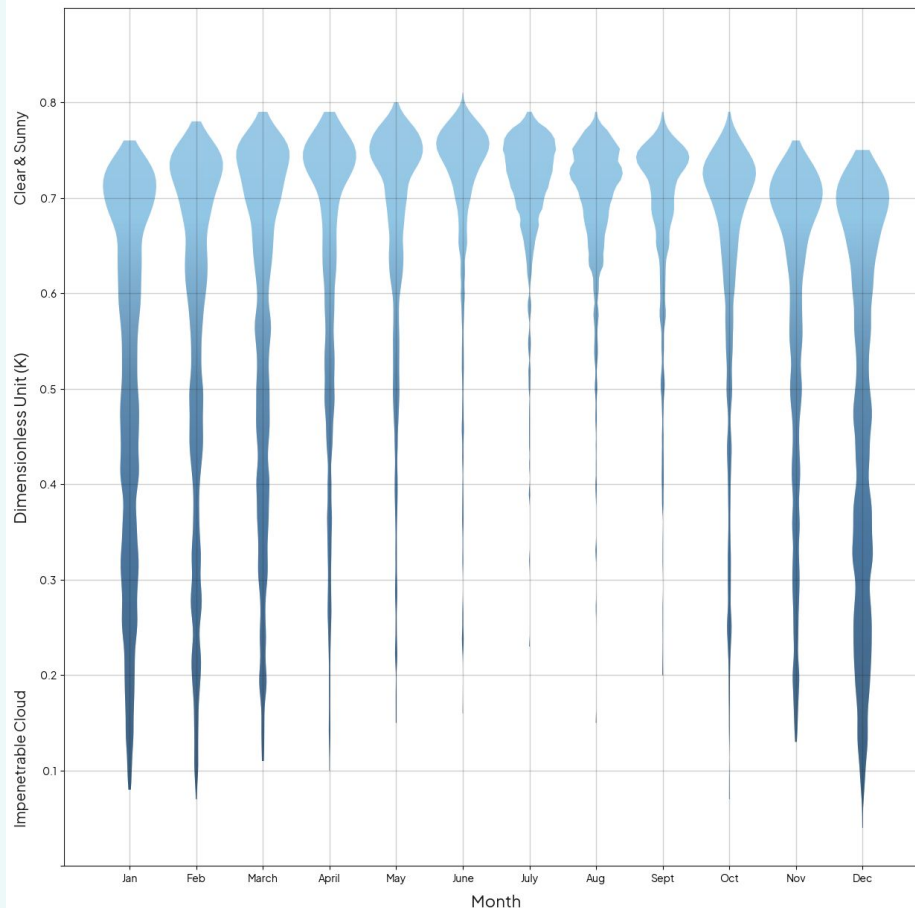
Solar Insolation

The Insolation visualization provides a detailed representation of the Mean Clear Sky Insolation Index over a span of 30 years. Insolation refers to the amount of solar radiation received in a given area. This visualization employs violin plots for each month, allowing users to understand the distribution of insolation values.

Here are some guidelines on how to read this plot:

- The shape of the violin plot captures the distribution of insolation values, with the widest parts indicating the most frequent values and the narrowest parts highlighting less common insolation amounts. In this sense, you can see which months a site receives plenty of sunshine, and months where a site is cloudy, or in between.
- The width of the violin plot at any given value indicates the frequency of days that received that amount of insolation. A wider section signifies a higher number of days with that insolation value.
- The colour gradient within each violin plot transitions from darker at the bottom to lighter at the top. This gradient is mapped to a custom colour scale, ranging from "Impenetrable Cloud" (very low insolation values) to "Clear & Sunny" (very high insolation values).

These data were obtained from the NASA Langley Research Center (LaRC) POWER Project, funded through the NASA Earth Science/Applied Science Program.



Precipitation

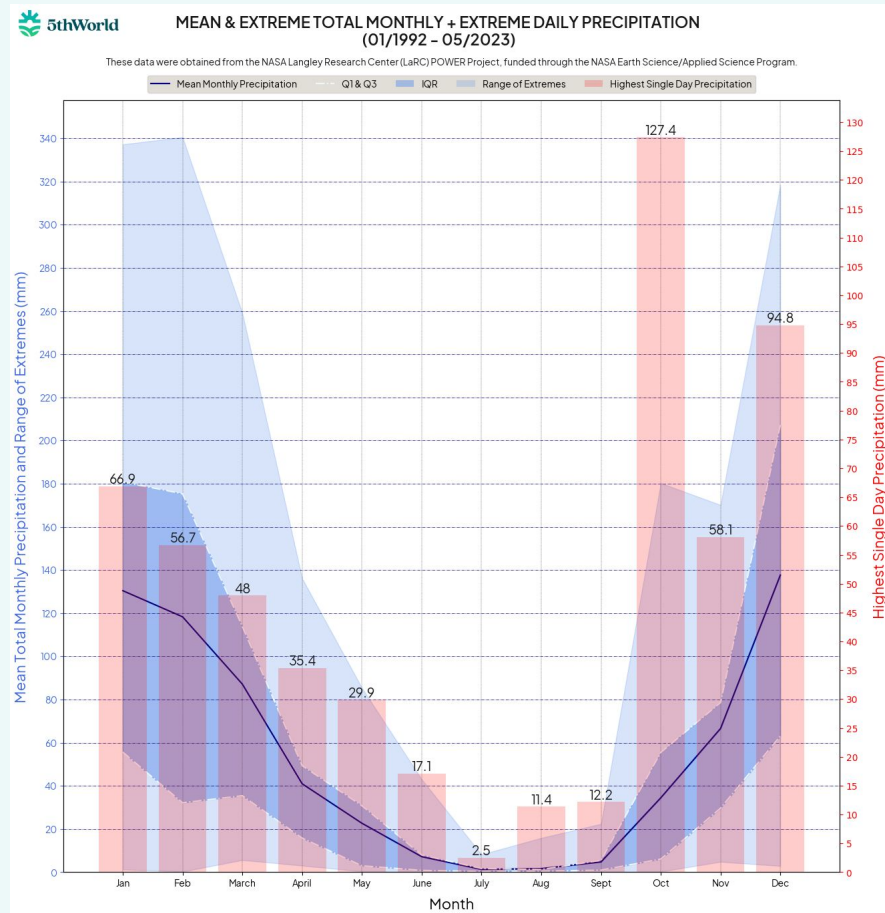
The Precipitation visualization offers a dual perspective on 30 years of monthly precipitation data. On one hand, it showcases the monthly qualities of precipitation statistics, including mean total monthly precipitation, the interquartile range (IQR), and the range of extremes. On the other hand, it presents the highest single-day precipitation for each month, allowing the viewer to gauge both average and extreme rainfall patterns. Here's a more comprehensive breakdown:

Monthly Qualities of Precipitation:

- At its core, this perspective centres around the mean monthly precipitation, represented by the navy blue line. This line offers a continuous view, month by month, of the average rainfall experienced.
- Surrounding this mean line are shaded regions that depict the variability and spread of the data. The interquartile range (IQR), shown in a darker shade of blue, represents the middle 50% of the precipitation data. It captures where most of the monthly totals lie, offering insights into the typical range of precipitation for each month.
- Extending beyond the IQR is the range of extremes, illustrated in a lighter shade of blue. This range spans from the minimum to the maximum monthly totals, providing a comprehensive view of the extremes in cumulative precipitation your area of interest has experienced in a given month over the past 30 years.

Highest Single-Day Precipitation:

- This perspective shifts focus from monthly averages and distributions to pinpoint the most intense rainfall events. For each month, a red bar rises to indicate the maximum amount of rainfall recorded in just a single day.
- These bars are crucial for understanding potential extreme weather events or anomalies. In regions where sudden, heavy downpours can lead to issues like flash floods, this perspective becomes especially vital.



Temperature

The Temperature visualization provides a comprehensive view of 30 years of daily temperature data. By segregating the data into mean, maximum, and minimum temperatures, this visualization enables you to discern patterns, extremes, and general temperature trends for each month of the year.

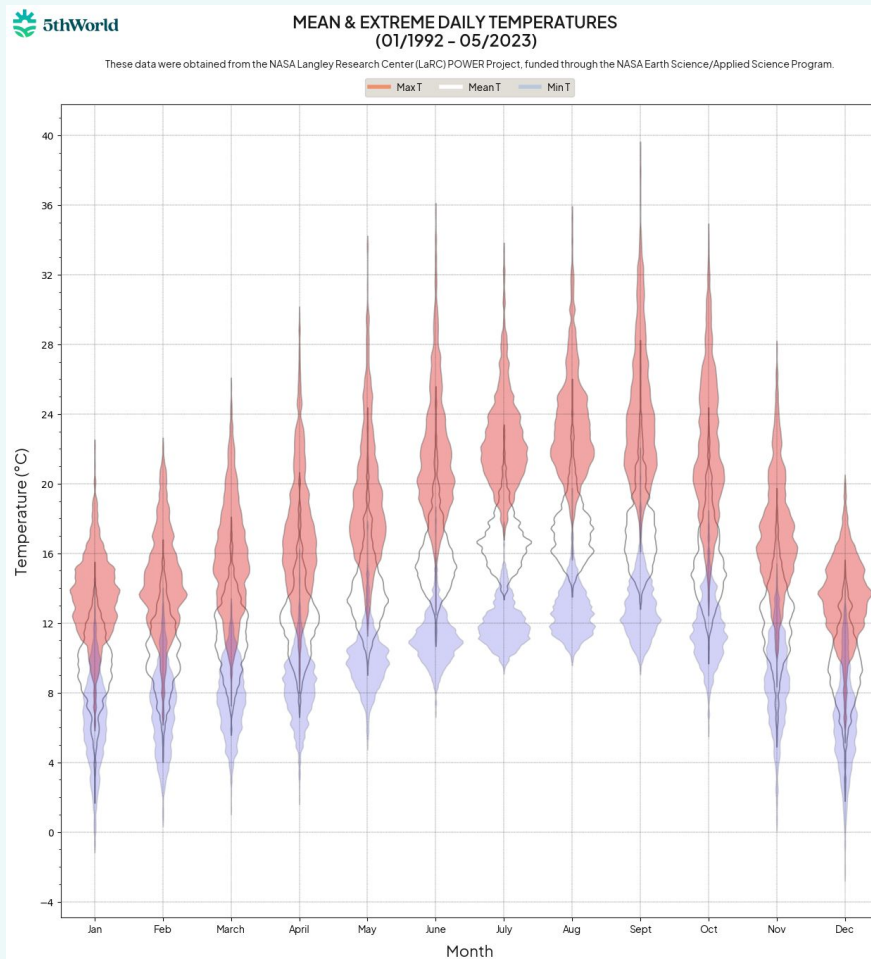
How to read the temperature plot:

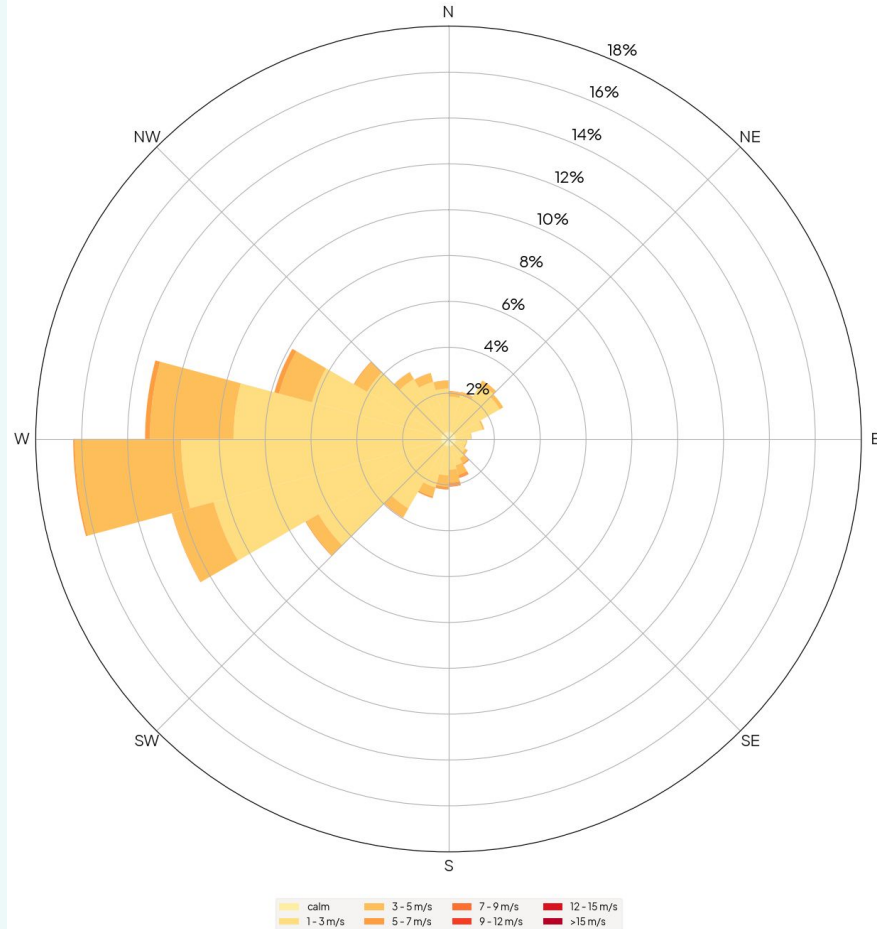
- X-axis: Represents each month of the year.
- Y-axis: Denotes the temperature in Celsius (°C).

You will notice three distinct types of 'shapes' or 'distributions' on the plot, each corresponding to a temperature type:

- White Violin Plot: Represents the mean daily temperature for each month.
- Red Violin Plot: Shows the maximum daily temperature for each month.
- Blue Violin Plot: Depicts the minimum daily temperature for each month.

The wider a section of a violin plot, the more days in that month had temperatures around that particular value. This gives a sense of how consistent or variable the temperatures were during a particular month over the last 30 years. On the flip side, the ends of each violin plot depict the range of observed temperatures for that category (either mean, max, or min). The top end of the violin indicates the highest observed temperature, while the bottom end indicates the lowest. This range provides an understanding of the extremes a month can experience. If the ends of the violin plot are far apart, it suggests a larger variation in temperatures for that month, while closer ends indicate a more consistent temperature range.





Wind Combined

The wind rose offers essential insights into the prevailing wind patterns of a location, which has various applications:

- **Windbreaks and Shelterbelts**

If a predominant segment points towards the North, it indicates that strong winter winds come from this direction. Establishing windbreaks or shelterbelts on this edge can protect crops, reduce soil erosion, and create beneficial microclimates. Understanding the prevailing summer winds can help in positioning elements to capitalize on cooling summer breezes while mitigating the effects of harsher, drying winds.

- **Microclimate Creation**

Recognizing the direction and intensity of prevailing winds allows for the creation of microclimates. For instance, strategic placement of dense vegetation in the wind's path can protect vulnerable areas or generate warmer zones in their lee.

- **Structural and Zone Placement**

Structures like greenhouses can be sited to be shielded from strong, cold winds while still benefiting from milder breezes for ventilation. Wind patterns can also guide the placement of composting toilets, livestock housing, or other elements that might produce odors to ensure they're carried away from primary living or activity areas.

- **Pollination and Pest Control**

Wind patterns can be useful in deciding where to plant crops that rely on wind for pollination. Conversely, understanding these patterns can help place barriers or redirect winds that might introduce unwanted pests or diseases.

- **Fire Safety**

In areas at risk of wildfires, understanding prevailing wind directions is crucial for designing zones or barriers that can act as firebreaks.

Wind by Season

A seasonal breakdown of the wind rose provides a more detailed view of how wind patterns vary throughout the year. This granularity is beneficial for multiple applications:

- **Seasonal Windbreaks and Shelterbelts**
Wind patterns can vary significantly from one season to the next. Knowing the primary wind direction for each season can guide the placement of deciduous and evergreen windbreaks to offer protection when it's most needed.
- **Microclimate Optimization**
Some areas might benefit from warmer winter winds or cooling summer breezes. By understanding seasonal variations, it's possible to create specific microclimates that capitalize on or mitigate seasonal winds.
- **Water Management Across Seasons**
Seasonal wind variations might influence the effectiveness of evaporation ponds, snow fencing, rainwater harvesting systems, or other water infrastructure. Adjustments can be made to optimize their utility year-round.



Temperature Trends

This visualization presents a 30-year analysis of temperature trends, highlighting seasonal variations in minimum and maximum temperatures. By plotting historical data for each season, it provides insight into long-term temperature changes and potential climate shifts at the site.

How to Read the Chart:

- X-Axis: Represents the last 30 years.
- Y-Axis: Denotes temperature in Celsius (°C).
- Left charts (Blue): Displays trends in minimum temperatures. Right charts (Red): Displays trends in maximum temperatures.

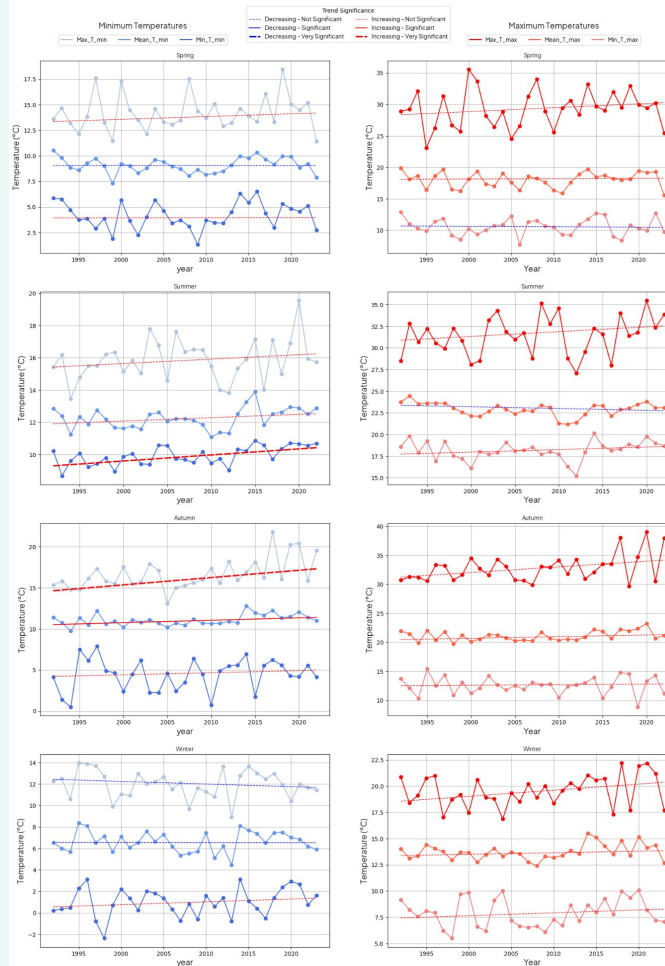
Each season has three plotted temperature series:

- Lightest Line: Highest recorded temperature for that category (e.g., max of daily minima).
- Middle Line: Mean temperature for that category.
- Darkest Line: Lowest recorded temperature for that category (e.g., min of daily minima).

Trend Indicators:

Dashed lines represent trend significance:

- Red dashed lines indicate an increasing temperature trend.
- Blue dashed lines indicate a decreasing trend.
- The intensity of the color shows the significance level, stronger hues represent more statistically significant trends.



A person wearing a plaid shirt is standing in a lush green field, holding a tablet. The background shows a line of trees and distant hills under a clear sky. The text "Thank You" is overlaid in the center.

Thank You

Q & A