

A New Arrival to Farm & Wilderness

Creating an Inviting Landscape Design for Farm & Wilderness Summer Camps in Plymouth, Vermont

The Conway School | Spring 2022

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Land Statement

Abenaki People of the Dawn / Wabanaki (Dawnland Confederacy) N'dakinna



This map, developed by Native Land Digital (a not-for-profit organization in Canada), shows an estimation of the territories that Indigenous people of colonized New England inhabited. Farm and Wilderness is located on the ancestral homelands of the Abenaki People of the Dawn and Wabanaki (Dawnland Confederacy).

The following pages explore opportunities and visions for creating a more welcoming and inviting landscape for Farm & Wilderness summer camps. A question inherent to this exploration is to whom the organization, and the land it occupies, is welcoming and accessible. The power and privilege to inform and make decisions related to the landscape comes with the obligation to acknowledge the history of settler colonization and the forced removal and erasure of indigenous people from the land.

Farm & Wilderness is located on land that was stolen from the Abenaki People of the Dawn by European colonists. This land is known to the Abenaki people as N'dakinna, or "homeland." The Abenaki People of the Dawn have continually inhabited and stewarded this land for over 12,000 years.

Abenaki and other indigenous peoples continue to call Vermont home today. There are four contemporary Vermont Abenaki communities including Missisquoi, Nulhegan, Koas, and Elnu. In addition, there are organizations and groups, such as the Vermont Indigenous Heritage Center, working to advocate for Abenaki people and educate the broader public about their culture and history. The designs and plans outlined in this document have not been reviewed nor endorsed by any local tribal nation including the Vermont Abenaki communities.

Index

- Land Statement..... 1**
- Introduction & Goals..... 2**
- Existing Conditions..... 3**
- Community..... 4**
- Pedestrian & Vehicle Circulation..... 5**
- Snapshots of Circulation 6**
- Arrival Sequence & Views..... 7**
- Slopes 8**
- Drainage, Stormwater, & Soils..... 9**
- Zoning, Regulations, & Utilities.....10**
- Direct & Passive Solar11**
- Summary Analysis: Woodward Arrival.....12**
- Hall Lots: Existing Conditions & Access.....13**
- Hall Lots: Landscape Analysis14**
- Hall Lots: Summary & Building Suitability15**
- Design Alternatives.....16**
- Final Design: Overview.....17**
- Final Design18**
- Final Design (spread)19**
- Welcome Center20**
- Natural Play Area.....21**
- Main Parking Lot.....22**
- Housing.....23**
- Universal Access Trail.....24**
- Maintenance Area & Staff Parking25**
- Grading & Stormwater Plan26**
- Planting Palettes27**
- Planting Palettes (cont.).....28**
- Construction Details, Precedents, & Cost Estimate29**



Introduction

Farm & Wilderness (F&W) is a summer camp organization that provides immersive outdoor experiences for youth among the forests, hills, and lakes of south-central Vermont. Many of its summer camps are located on a 620-acre parcel on the eastern side of Woodward Reservoir in Plymouth, Vermont. The property rests on a forested, east-facing hillside that slopes down to the reservoir. The camps are lower down in the valley near the reservoir, while much of the hillside is conserved for habitat and outdoor recreation as forest legacy land.

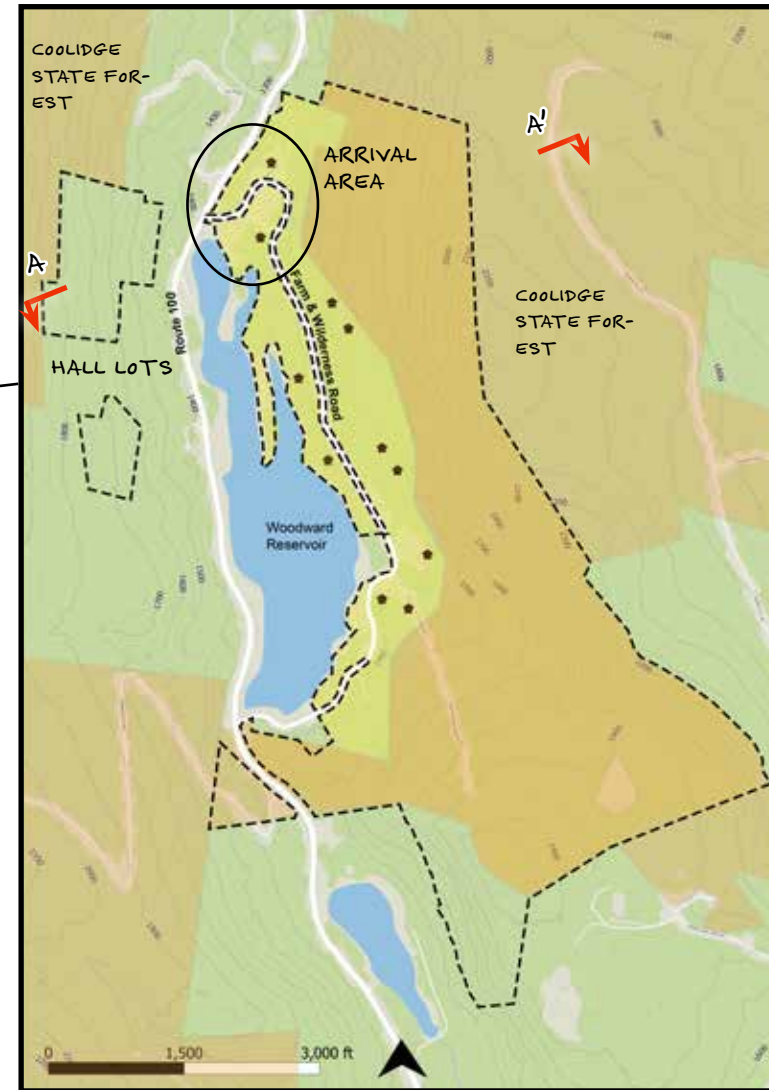
F&W is hoping to reimagine the arrival area to this property, which is situated on the northern tip of Woodward Reservoir. This space provides the first impression to visitors and campers upon arrival. Many within the organization feel this space is confusing, uninviting, and inaccessible to many of its visitors. Instead, Farm & Wilderness envisions an arrival experience that is beautiful and engaging, provides clearer wayfinding, and generates the joy and excitement that campers feel on the rest of the property.

As part of this vision, F&W is considering how the space might accommodate future uses and invitations to the public. This includes the siting of a welcome center and a public and universal access trail. In addition, Farm & Wilderness is considering what it would take to expand its programming beyond just the summer months. Doing so would require more winterized housing for staff. Farm & Wilderness would like to explore options for siting housing both in the arrival area and on the Hall Lots, which are four other parcels that it owns on the other side of Route 100.

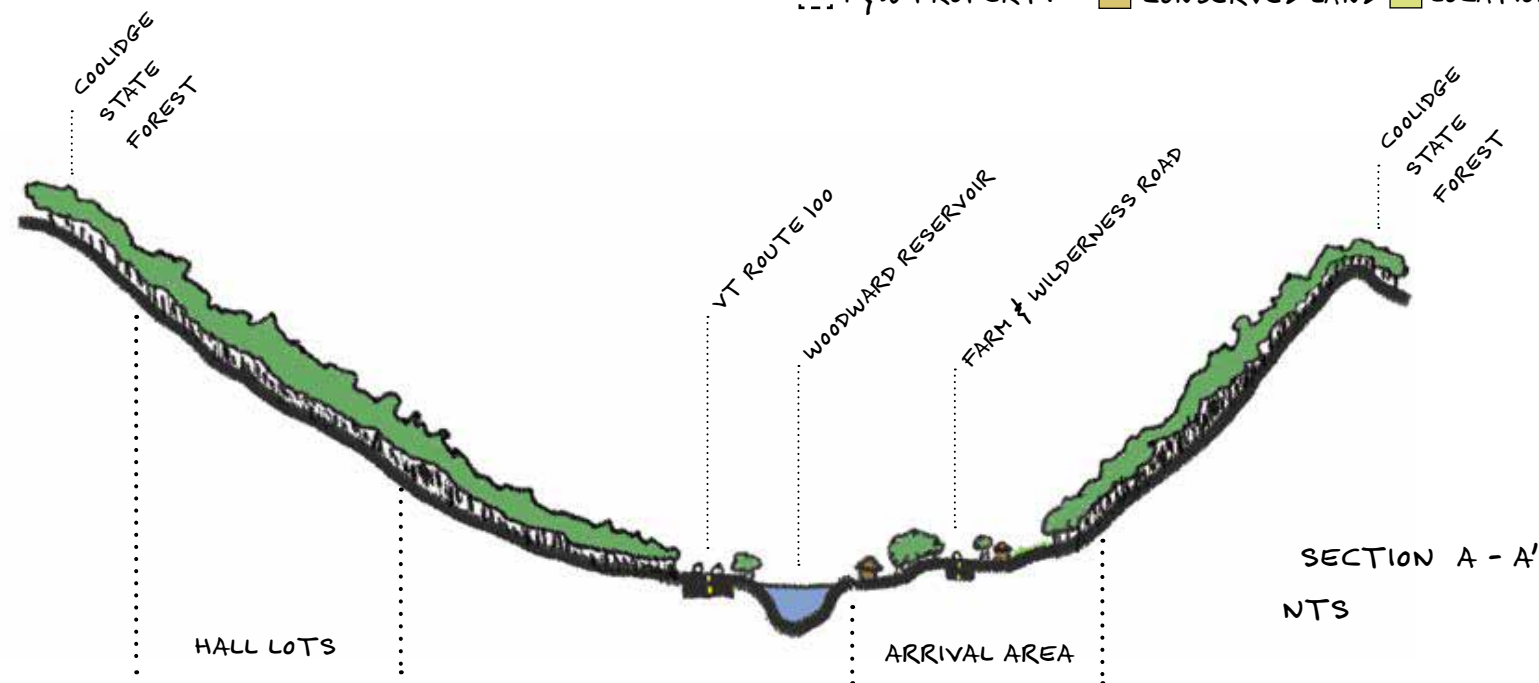


Above: F&W is located in the hills and forest of south central Vermont.

Right: F&W owns a 620-acre parcel east of Route 100 in Plymouth VT, as well as 4 parcels west of Route 100.



F&W PROPERTY
 CONSERVED LAND
 LOCATION OF CAMPS



Client Goals



An inviting arrival experience

Farm & Wilderness wants its landscape to provide a welcoming experience to both new and returning visitors by incorporating clear and intuitive wayfinding and accessibility to all, while reflecting the organization's values.

A new welcome center

F&W is in the process of designing a new, multi-use Welcome Center that will provide its staff, campers, and greater community with space to gather, relax, and learn. The organization wants to explore appropriate locations for this Welcome Center and envision the landscape around a predetermined building footprint.



Year-round housing for staff

F&W would like to explore suitable locations and configurations for year-round housing for 50 people. The sites they would like to consider include the Woodward Arrival Area, as well as the Hall Lots west of Route 100.



Better accessibility in the arrival area and a public accessible trail

F&W wants to explore ways to improve accessibility to all people in the Woodward Arrival Area by connecting zones of use with accessible pathways and finding a suitable location to build an accessible trail.



Existing Conditions

The arrival area to Farm & Wilderness is situated on the northern tip of Woodward Reservoir where town-owned Farm & Wilderness Road extends off Route 100. The road first travels over the dam that holds in the reservoir, which then loops north in a 'U' shape. From there it travels south to the location of the overnight camps. The arrival area shown in the map to the right is roughly 30 acres in size. It has very undulating topography that slopes down to the reservoir and Reservoir Brook, which flows to the north off Farm & Wilderness property.

Northern hardwood forest covers much of the hillside that rises up to the east, which is contiguous with Farm & Wilderness' forest legacy land and the Coolidge State Forest. There is little space below the hillside that is not heavily used by Farm & Wilderness for their operations and

programming. Open fields located below the hillside are often used for play, livestock grazing, large gatherings, and in some locations, for spreading the compost from the many composting toilets on the property.

There are three larger buildings including an office, day camp, and maintenance building as well as several smaller structures like outhouses and open-air cabins tucked in the woods. The amount of activities and needs of the arrival area has given it a somewhat utilitarian appearance in certain locations. Immediate upon arrival is a view of large gravel parking lots and the maintenance building. Although both are critical for the camp's operations, they contribute to a confusing and somewhat uninviting experience for visitors.



1 Maintenance Building | Hosts some staff offices, garage stalls, and space for supporting projects and storing equipment.



2 Staff Offices | Located on a small hill above Farm and Wilderness Rd, the staff offices are held in an old farmhouse. According to F&W, its location makes it difficult to find for first-time visitors.



3 Barn Day Camp | Located along F&W Road and welcomes 80 to 100 campers ages 4 to 7 per session through the summer months.



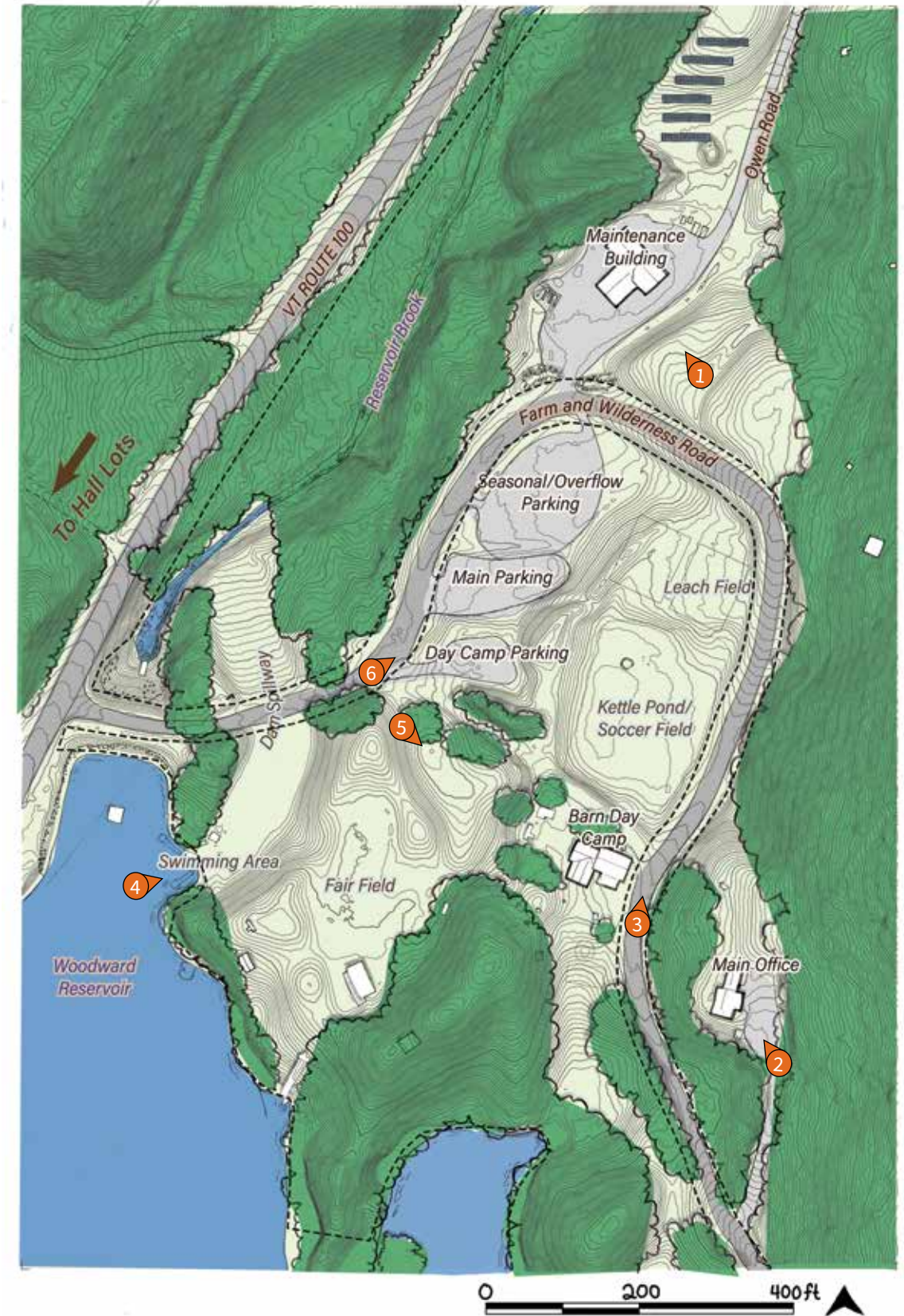
4 Woodward Reservoir Beach | A sandy and gently sloping beach provides an excellent place to swim. The beach is used daily in the summer by campers and occasionally by Barn Day Camp parents. Farm & Wilderness is required to staff a lifeguard when anyone is swimming here.



5 Fair Fields | Another highly used area is the fair fields which host a large event at the end of the summer when parents reunite with their kids and celebrate the joys of camp!



6 Parking Lots | A series of parking lots are used for day camp pick-up and drop-off, as well as parking for seasonal staff vehicles. The parking lots receive some public use during the offseason for folks who enjoy walking along F&W Rd.



Community

Mission

Meaningful work, joyful play, and rugged outdoor living.

Farm & Wilderness currently runs seven camp programs per summer for ages 4 to 17. The camps provide immersive, outdoor experiences that focus on simple living, organic farming, and wilderness training. The organization aims to uphold its mission and values in an environment that is inclusive and accessible to children regardless of economic or social background.

F&W has a long history of pursuing equity and inclusion. It was one of the first racially integrated summer camps in the United States. Throughout its nearly 80 years of operation, the organization has also adapted to changing social values and new research about human needs. Today, there is careful effort put towards honoring the identity of each member of the community, particularly in the area of its gender-inclusive camp structures.

F&W employs 16 year-round staff members, 9 camp directors, and approximately 200 seasonal staff. Camp directors and seasonal staff live on-site during the summer months; 10 to 15 year-round staff live off-site and commute in; and a handful of year-round staff live on-site all months of the year.

“At Farm & Wilderness summer camps in Vermont, we believe that a diverse community makes us stronger and more resilient. Our Quaker heritage lays out the concept of the ‘Light of the Spirit’ in each person and we work each year to live up to this ideal. Our goal is to provide an open and affirming space for children, young people and staff, where they feel welcomed for who they are, not feel pressured to be something else.”

– From the F&W Inclusivity and Equity Statement

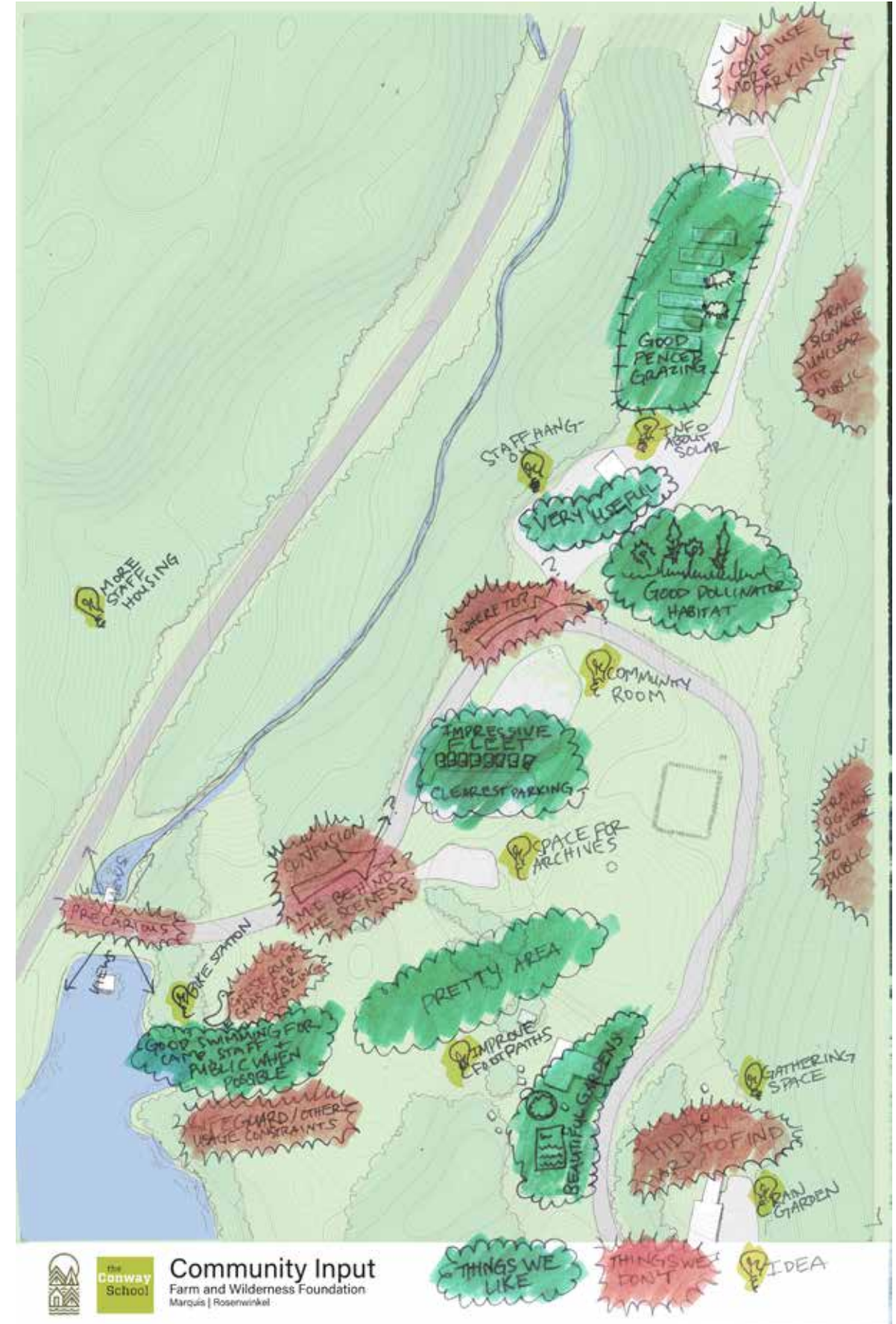
Staff Input on Arrival Space

This map illustrates areas that a group of camp staff stakeholders, including administrative staff and camp directors, feel are assets, constraints, or areas to change in the Woodward arrival area. The staff and camp directors present at the community meeting on May 6, 2022 expressed appreciation for the lovely views over the reservoir and rolling fields; the amenities useful to daily operations, like the maintenance facility; and places of high ecological and agricultural value, like pollinator habitats and lawns to pasture their animals. The stakeholders’ concerns about the space included unwelcoming views, parts of the road that feel unsafe, and difficult or counterintuitive wayfinding. Ideas for how the space could be improved included incorporating more gathering spaces, more gardens, and more opportunity for public education about F&W’s resources.

Other potential stakeholders to this project, who have not yet been directly involved, include parents/guardians of Barn Day Camp campers, the campers themselves, and members of the public whom the Welcome Center and Accessible Trail are meant to serve. Keeping these stakeholders engaged through the review process will help ensure that the project serves the community.



F&W Staff offer their input on the arrival space at the May 6th community meeting.



Where the F&W community meets the greater community...

Farm & Wilderness began the process of designing a Welcome Center over 10 years ago. Employees identified the need for a space that would serve many different purposes; i.e. provide amenities for seasonal staff, offer a space to display the abundant archive, incorporate a large meeting room that could be used by F&W or be available to rent, and serve as a place where Farm & Wilderness could better interact with the public. The design of this building has gone through many iterations, and while Farm and Wilderness will be ultimately responsible for determining the programming of the building and how it will fit the community, the goal of this project is to imagine how that building could fit the landscape.

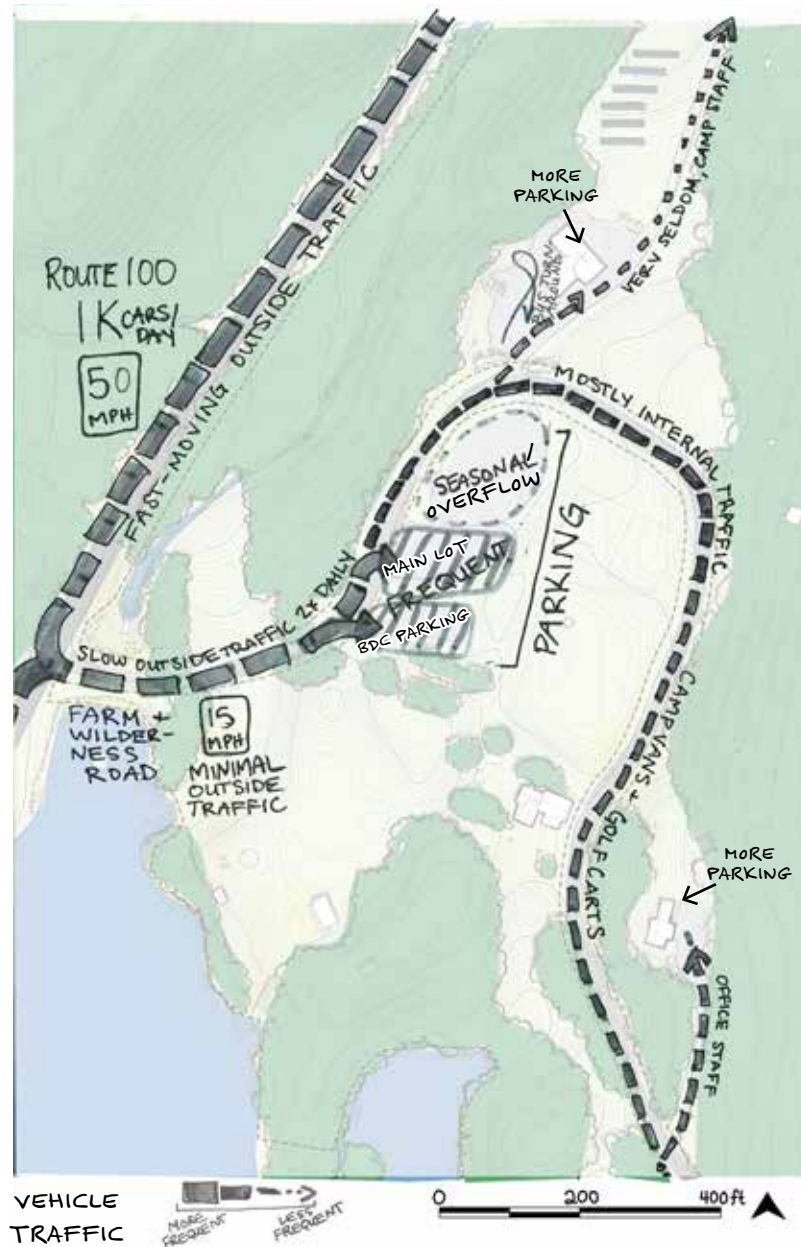


Pedestrian & Vehicle Circulation

Vehicle Circulation

The junction of Farm and Wilderness Road and Route 100 at the north entrance of Woodward Reservoir serves as the main arrival to the summer camps. External vehicular traffic (i.e., vehicles that are not staff or camp vehicles) typically circulates between the intersection of Route 100 and the parking lots. Larger trucks, i.e., delivery trucks and trash/recycling trucks, enter off Route 100 and travel to the maintenance facility, using the open space to turn around. Other large vehicles like shuttle buses also use the maintenance facility space to turn around.

Along Farm & Wilderness Road past the maintenance facility and current parking lots, vehicular traffic is mostly limited to internal camp vehicles. Camp employees run trash and recycling to the maintenance facility once daily, and camp vans come and go when bringing campers on excursions. Farm & Wilderness has made efforts to reduce its use of gas-powered vehicles in recent years, shifting to electric vehicles and staying on-site when possible.



Roads

- Route 100: State-owned, 50mph, 1,000 cars daily; “Summer Camp Area” signs at either end of Farm and Wilderness Road on Route 100
- Farm and Wilderness Road: Town-owned, 15mph, minimal outside traffic daily, leads to camps along Woodward then exits south

Parking

- Barn Day Camp parking lot: 5K square feet, requires spaces for 70 vehicles
- Main Lot: 10k square feet
- Summer Staff/Overflow Parking: 25K square feet
- Extra spaces by Maintenance Facility and Main Office

Design Implications

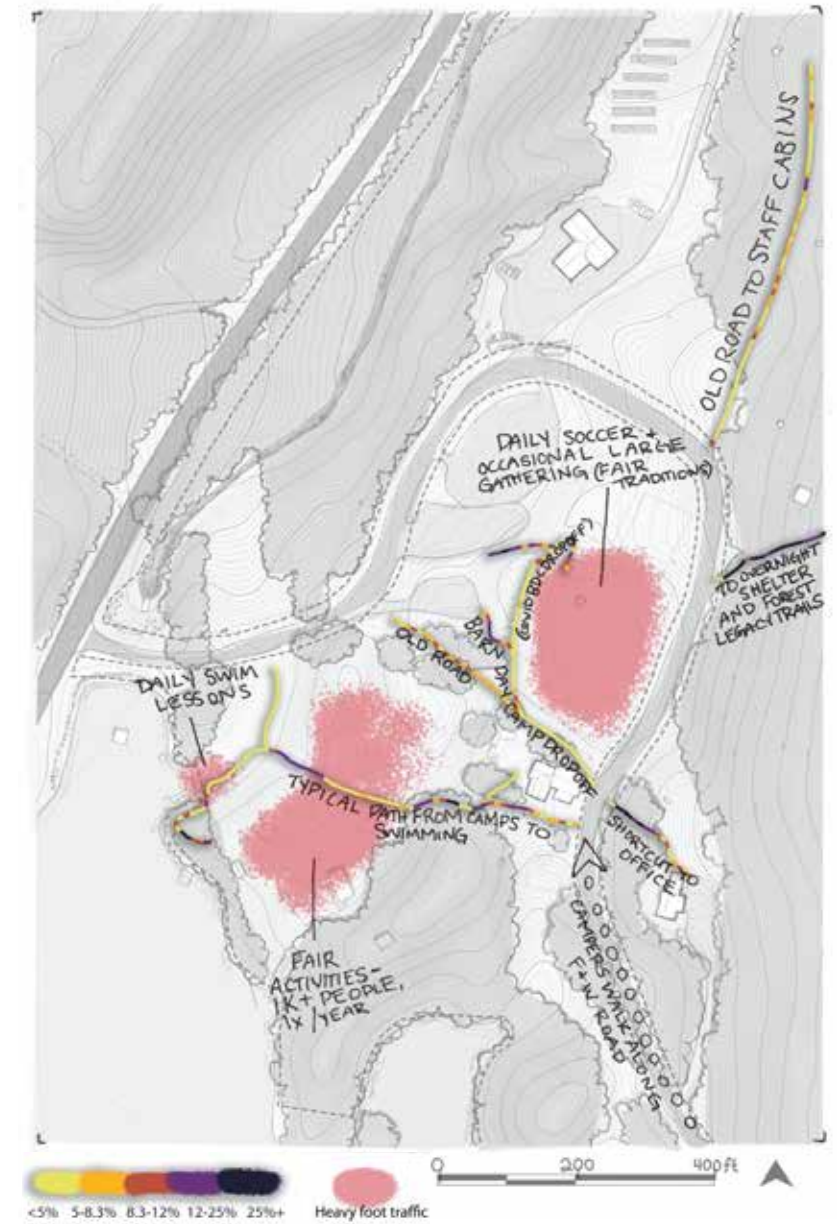
The roads near and bisecting the focus area are under state and town jurisdiction, so any changes to these roads may require permitting, extended review processes. Adding buildings and parking lots to the arrival space could change patterns of pedestrian and vehicular circulation. Parking is a heavy demand on the spatial requirements of this site. The space that is currently allocated to Barn Day Camp parking does not adequately accommodate the demand. If there are opportunities to relieve this pressure through offsite or non-spatial means, like encouraging use of a shuttle or carpooling, it will offer space for other uses in the arrival area.

Pedestrian Circulation

The often steep and undulating topography in this area creates challenges for pedestrian circulation. Shown on the map are commonly taken routes between zones of use (specifically the parking lot, main office, soccer field, fair fields, swimming area, and shelters) in the arrival area. These informal paths are worn down to mineral soil in places from heavy foot traffic, and some are showing signs of entrenchment, compaction, and erosion. See sheet 6 (Snapshots of Circulation) for a detailed analysis of different patterns of circulation at different times throughout the season. All of these routes contain slopes greater than 12%, and many of them have a narrow and uneven treadway, so there are no universally accessible paths between zones of use at the arrival area. Highlighted in red are broad areas that receive heavy foot traffic—the kettle pond is used as a soccer field; the fair fields hold over a thousand people on fair day; and each of their camps runs daily swimming lessons by the reservoir.

Design Implications

The steep slopes in this arrival area present the greatest constraint to accessibility. In order for paths that connect zones of use to meet accessibility standards, longer routes and significant grading may be necessary.

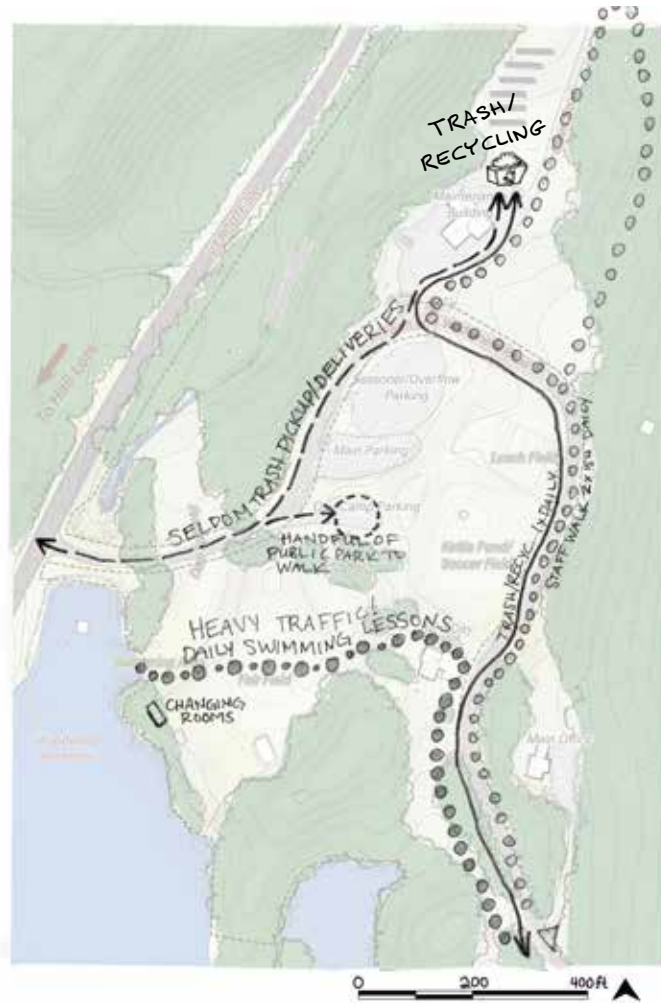


Architectural Barriers Act Trail Accessibility Standards

Maximum Running Slope and Segment Length		
Running Slope of Segment		Maximum Length
Steeper than	But not steeper than	
1:20 (5%)	1:12 (8.3%)	200 Feet
1:12 (8.3%)	1:10 (10%)	30 Feet
1:10 (10%)	1:8 (12%)	10 Feet
1:8 (12%) or greater		Does not meet accessibility standards

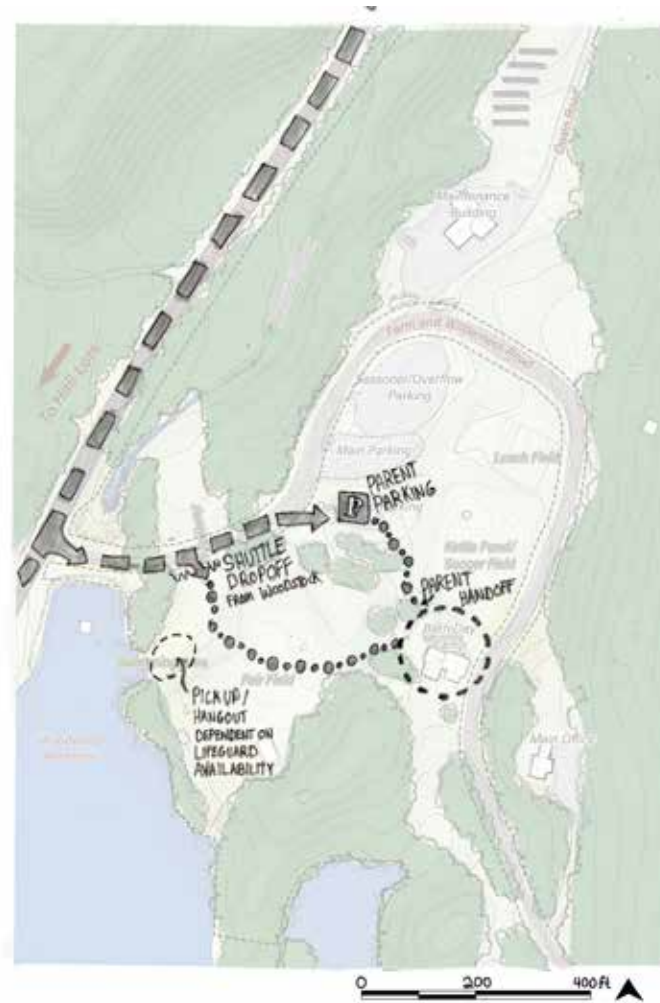
Snapshots of Circulation

The Woodward arrival area is a multi-use space with complex operations that change at different times of the year. The maps below describe vehicular and pedestrian circulation on different days of the Farm & Wilderness season, which require different logistical patterns. Each logistical operation is broken down into spatial requirements that the final design should aim to accommodate. Some of these spatial requirements are currently met by the existing conditions of the site. Some conditions need improvements to achieve the client goals, particularly around accessibility.



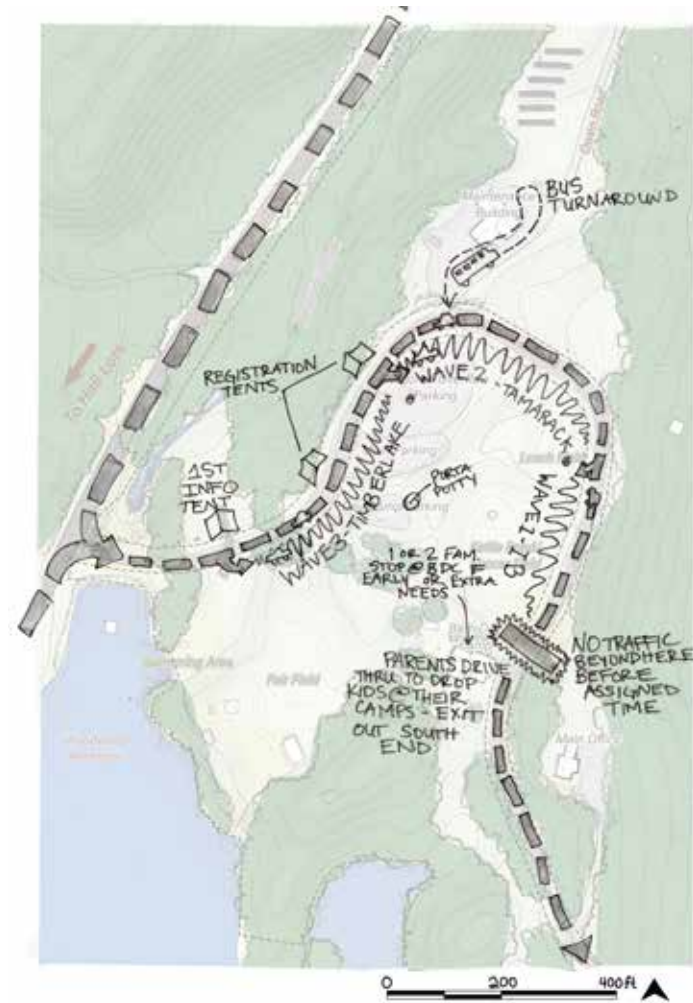
Daily Summer Operations

- ✓ Access from camps to trash and recycling bins for daily deposits
- ✓ Access for trucks to pick up trash and recycling and turn around
- ✓ Parking for administrative staff (up to 10)
- ✓ Parking for seasonal staff (40?)
- ✗ Accessible and sustainably built route from camps to swimming area for daily swimming lessons
- ✗ Accessible and sustainably built footpaths between staff housing and work areas (main offices, camps)



Barn Day Camp Pickup and Dropoff

- ✓ Camper hand-off area for parents and campers to gather, separate from Barn Day Camp main area (visual separation ideal for smooth child transition)
- ✓ Woodstock shuttle dropoff, accessible to camper hand-off area and space for bus turnaround
- ✗ Parent hangout area to accommodate desires of parents to linger and converse (visually separate from campers)
- ✗ Parent parking for 70 cars with accessible pedestrian route to camper hand-off area



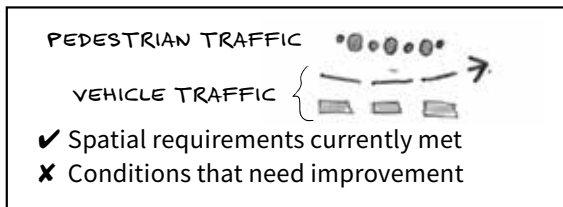
Summer Dropoff

- ✓ Space to process camper intake paperwork, currently tents set up along Farm and Wilderness Road
- ✓ Shoulder space for cars to pull off and form queue
- ✓ Safe bus drop-off and turnaround
- ✓ Additional bathroom (portapotty)
- ✓ Entertainment, or space for children struggling with transition to feel comfortable and excited about arriving at camp
- ✓ Exit at south end—one way traffic



Fair Day

- ✓ Safe bus dropoff and turnaround
- ✓ Pedestrian access from camps to Fair Grounds
- ✓ Open space for ~1000 people to gather
- ✓ Separate space (traditionally soccer field/kettle pond), same capacity, for fire and other festivities
- ✗ Accessible pedestrian path from Fair Grounds to soccer field for fire and other festivities
- ✗ Accessible pedestrian path from bus dropoff to Fair Grounds



Arrival Sequence & Views

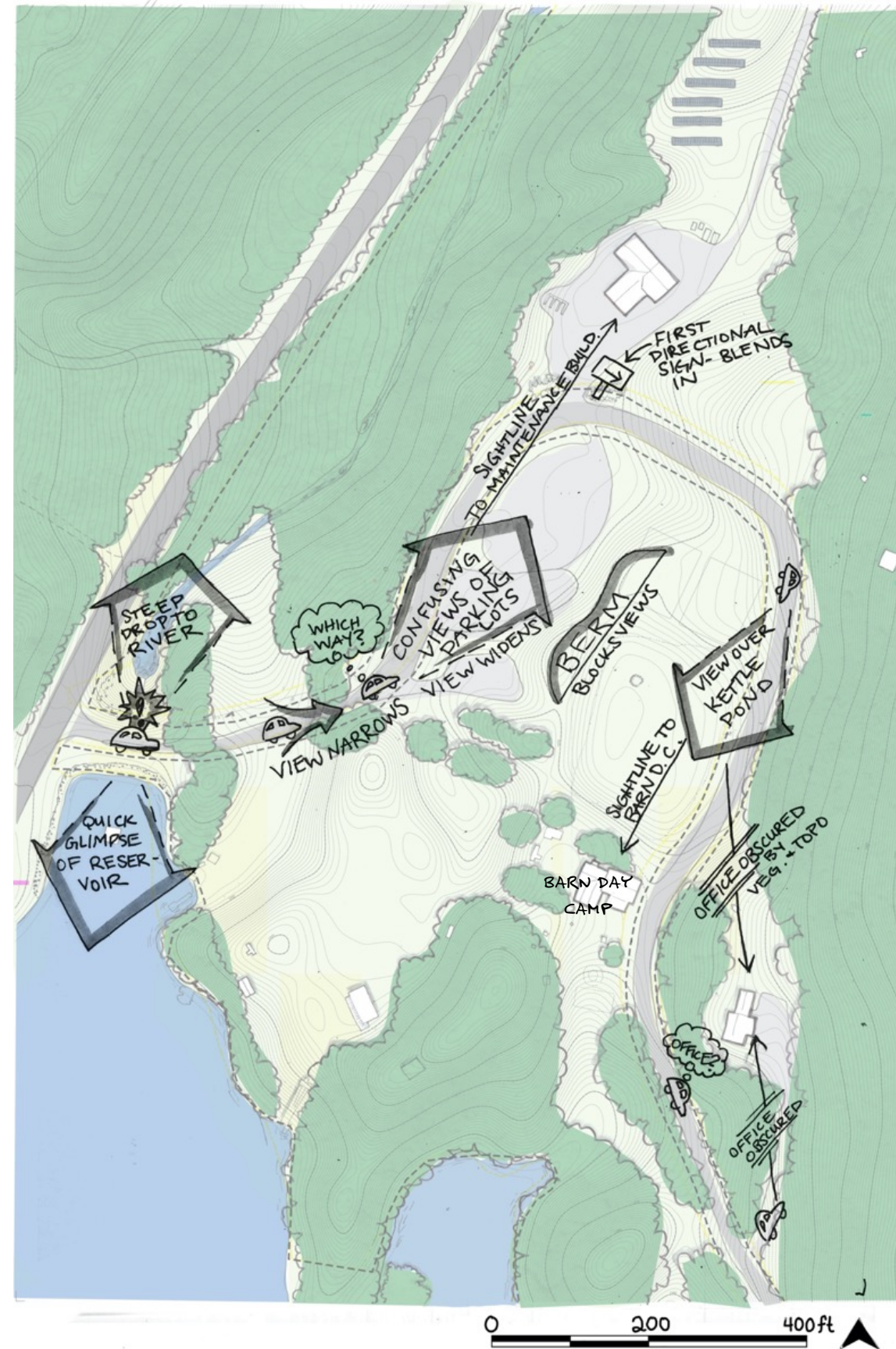
Farm & Wilderness feels that the current arrival sequence at the main entrance to the property does not inspire a feeling of joy, community, and comfort. Upon entering from Route 100, visitors are greeted by a quick and somewhat obstructed view of the Woodward Reservoir to the right and Reservoir Brook to the left. Staff report that the steep drop to the river feels precarious, especially in high vehicles like the 12-passenger camp vans. The view then narrows through mature white pines on both sides as the road curves left, then opens again to long views of the existing parking lots and maintenance building. New visitors report feeling confused about where to go at this point and often head towards the maintenance facility, thinking that it's the main office. The main office is an additional 1,300 feet farther on Farm and Wilderness Road, across from the Barn Day Camp building. Parking for these facilities requires walking several hundred feet over steeply sloped terrain without formal paths.

Arrival Sequence

- Turn from Route 100 at North Entrance
- Glimpse of Woodward Reservoir
- View narrows through mature pines
- View opens to parking lots
- Long sightline to maintenance facility
- Long drive around loop to get to Main Office

Design Implications

Views are the main contributing factor to the unwelcoming arrival sequence. After the brief view of the reservoir when first entering the property, the dominating views do not convey the joyful play, meaningful work, and rugged outdoor living that Farm and Wilderness cultivates on the rest of their property. Breaking up views to private spaces and creating clearer sightlines to desired spaces may help new visitors understand wayfinding naturally without additional signage. Existing sightlines to the maintenance facility should be altered to create more wayfinding clarity and a sense of “public vs private” space. The undulating topography and dynamic changes in elevation may present an opportunity to hide views of undesired features and create visual hierarchy to aid in wayfinding. To convey the “magic” that is present in the rest of the camps, placing features that communicate the organization’s mission towards the entrance may help create a sense of welcome.



The first view of the property looks south over Woodward Reservoir at the turn off Route 100.



The view then narrows between berms and mature white pines after entering.



After emerging from the berms and white pines, the view opens to a long view of the maintenance building and parking lots. The road also appears to fork to the right due to the topography change blocking the view of the Barn Day Camp parking lot.

Slopes

The arrival area sits at the bottom of a valley, with a steep hillside rising up directly to the east of the site and to the west of Route 100. The slopes on these hillsides often exceed 33%, shown in the darkest shade of blue on the map to the right. This is the angle at which most soils will begin to slough off, or erode, without support from vegetation, boulders, and rocks.

Flatter areas within the arrival area are less than 15% in slope and are often heavily trafficked areas. They include the roads, parking lots, maintenance area, soccer fields, fair fields, and dam spillway (shown by white, and lighter shades of blue). There is little flat space on the site that is not developed or utilized by the camp for their programming and operations.

Most of the flat spaces are also not continuous, but instead separated by sinuous and steep mounds and berms. Many of these mounds have been designed and shaped by humans over the years. The berms along the dam spillway and which the fair fields rest atop are the result of the reconstruction of the Woodward dam in the 1980s. It's also possible that some of the mounds are the result of past glaciation. Eskers are gravel and sand deposits formed by retreating glaciers at the end of the last ice age. The hills that form extended peninsulas out into Woodward Reservoir beginning at the southern extent of the map may be naturally occurring eskers. Both constructed berms and natural eskers separate spaces by blocking views from below and making movement between areas more difficult. However, the vantage points from the top reveal expansive views.

Design Implications

Siting Buildings | The steep slopes that cover much of the arrival area pose a challenge to siting buildings including the welcome center and staff housing. Constructing on slopes that are greater than 15% can be more expensive and disruptive to soil health, hydrology, and vegetation. Steep slopes hinder development on the hillside to the east of the site, the sides of eskers, and the land adjacent to Reservoir Brook and Woodward reservoir. In order to incorporate new buildings, the arrangement and uses of areas with less than 15% slope may need to be changed or reorganized.

Accessible Paths and Trails | Steep slopes across the site also constrain the layout of accessible paths and trails. Paths that are ADA accessible must not exceed 8.3% in slope. Paths that are ABA accessible must not exceed 12% slope for any distance greater than 10 feet. In order to provide equitable freedom of movement across the site, it may be necessary for paths to run parallel with contour or be regraded.

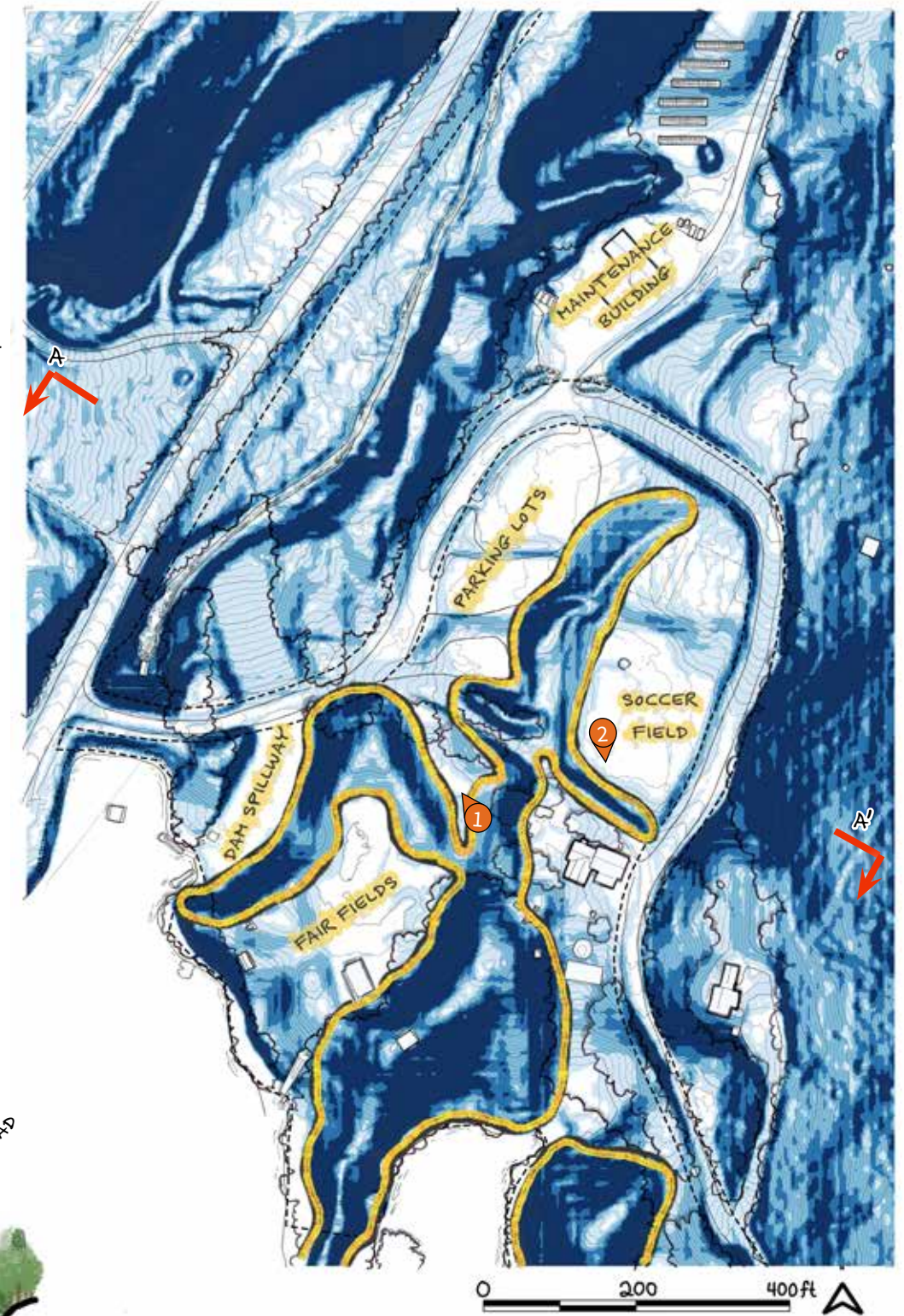
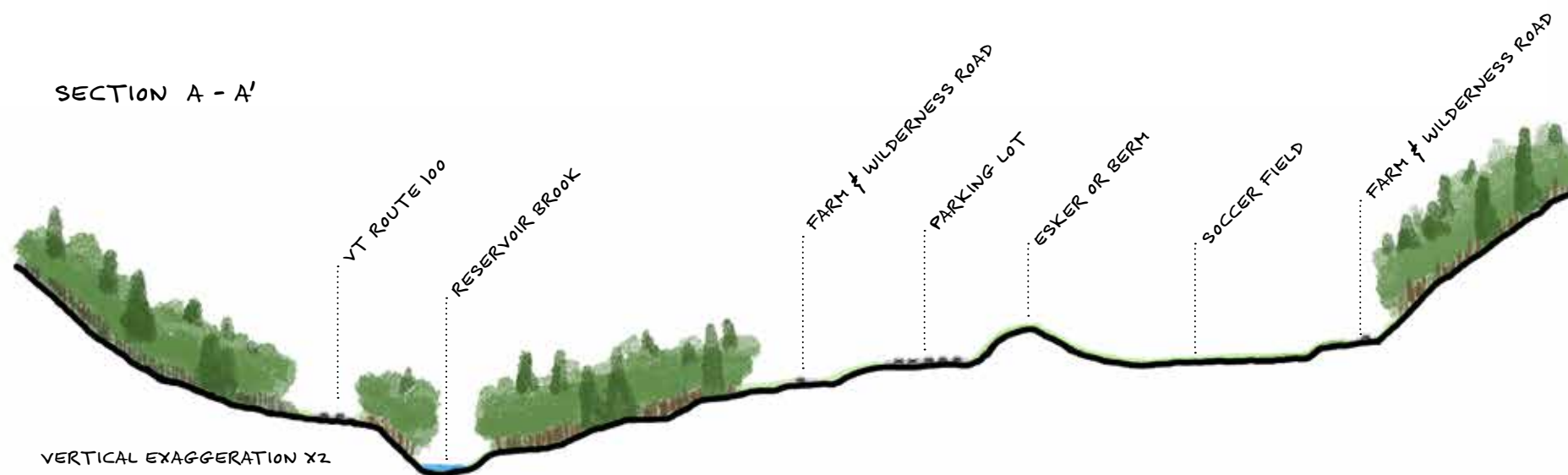
Topography as an Asset | The undulating topography creates interesting and unique views and places for play. Many of the eskers and built mounds are also used to host larger gatherings, acting as a natural amphitheater. They also offer opportunities to separate spaces, making some parts of the landscape private from others. Highlighting these landforms and making accessible paths to high points could help create unique experiences and preserve a connection to the geologic past.



Left: The rolling hills surrounding the fair field create unique places for play and offer unique views.



Right: Steep slopes separate areas of high use, creating steep paths to destinations such as Barn Day Camp.



Slope

- 0 - 5%
- 5 - 8.3%
- 8.3 - 15%

- 15 - 25%
- >30%

ESKER OR BERM



Drainage, Stormwater, & Soils

Drainage & Stormwater

Surface water generally flows east to west across the arrival area towards Reservoir Brook and Woodward Reservoir. There are a series of swales and culverts which channel runoff around and off developed spaces and into retention basins. For example, water that flows down the east hillside catches on a swale that runs along Farm & Wilderness Road and flows under the road through a culvert into a retention basin, which also serves as the soccer field.

These basins slow stormwater and allow pollutants and sediment to settle out before entering the brook and reservoir. Overflows still drain into these bodies of water and can contribute to downstream flooding, erosion, and pollution. There are a few areas where the stormwater system is not functioning well. Some swales and culverts are becoming blocked by gravel which is pushed off the road from a snow plow. In addition, there is a portion of Farm & Wilderness Road that washes out because of poor grading that allows water to run down the length of the steep road.

Soils


Most soils in the arrival area are an excessively drained loamy sand that helps to infiltrate water quickly on site. These soils, represented by the yellow on the map at right, are also well suited for on-site septic systems according to data from NRCS. The steeper hillsides are composed of a well drained glacial till but are not suited for septic due to the steep slopes. These areas are shaded purple.

Design Implications

Retaining and Slowing Stormwater | In order to protect local and regional water resources, any new impervious surfaces, including buildings, roads, and parking lots, will need to be supported by stormwater systems that help to slow increased runoff from those surfaces. Doing so is important to protect the water quality of Woodward Reservoir and the Ottauquechee River. It will also help reduce peak flows in rivers during storms and therefore assist the region to adapt to more severe and frequent flooding events.


Siting Buildings | Both the housing and welcome center will require on-site septic systems. Soils that are suited for septic systems exist across most of the arrival area but exclude the hillside to the east of Farm and Wilderness Road.

SOILS

 EXCESSIVELY DRAINED AND WELL TO MODERATELY WELL SUITED FOR SEPTIC

 WELL DRAINED AND NOT SUITED FOR SEPTIC


DRAINAGE & STORMWATER

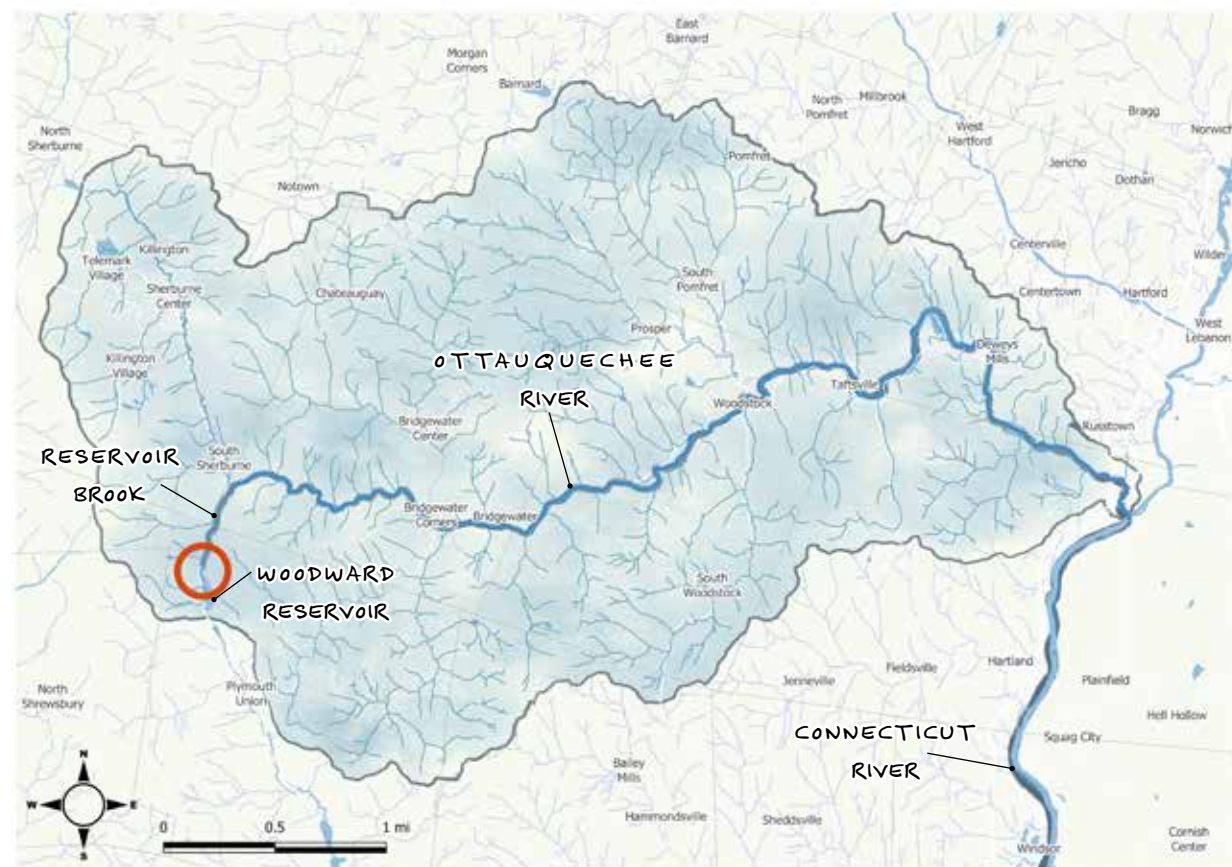
 EROSION

 CULVERT

 SURFACE FLOW

 CHANNEL FLOW

 DETENTION BASIN

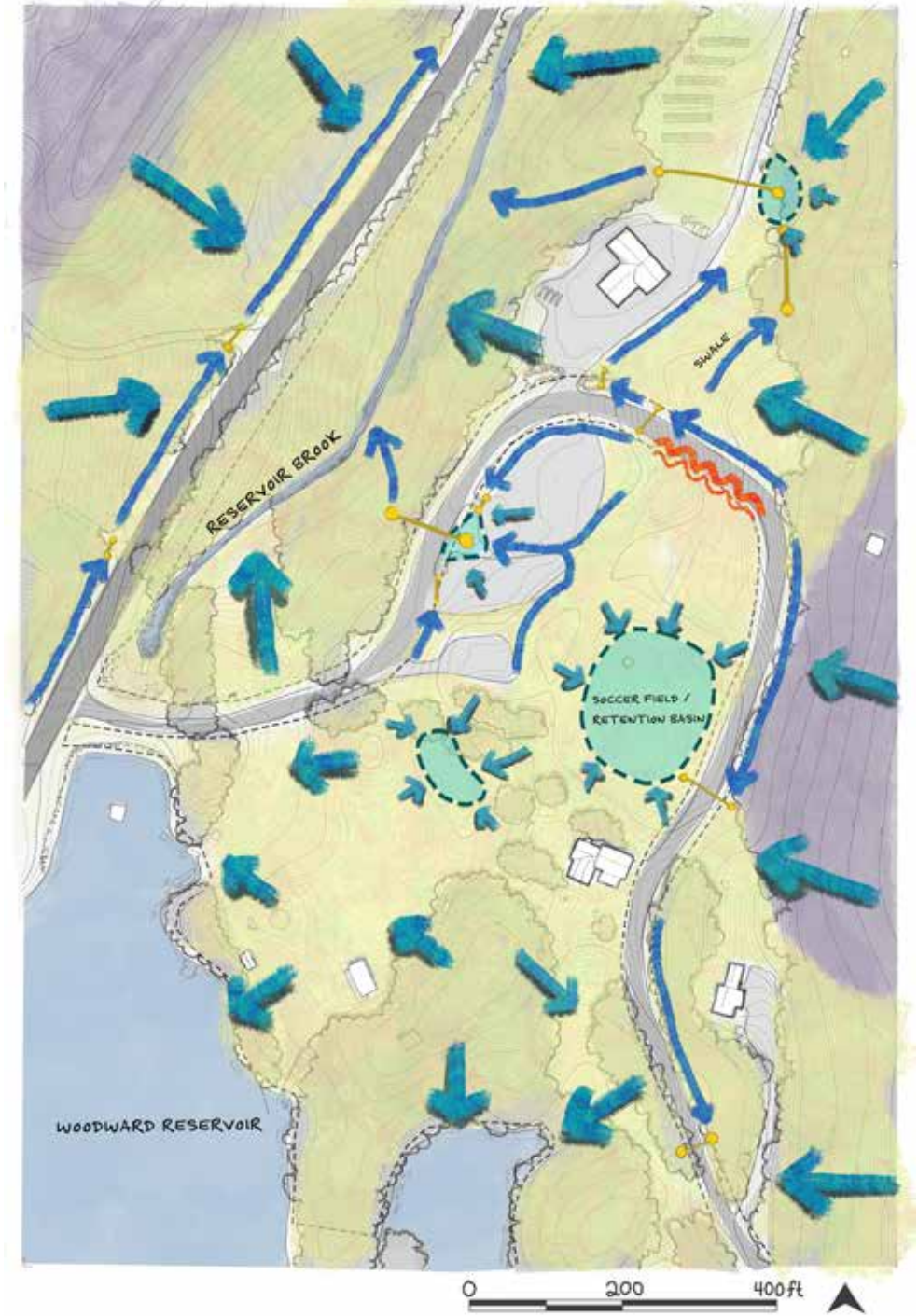


Watershed Context

Woodward Reservoir is located at the top of the Ottauquechee River Watershed which drains east into the Connecticut River. Upland streams near the top of watersheds contribute the most significant amounts of organic and inorganic matter to the watershed, providing the “basic building blocks for the food web of the stream system” (Nature Conservancy, 2008). Upland streams also have significant influence on river morphology downstream.

Sites at the top of watersheds are thus particularly influential on water quality of downstream waters and flood resiliency. Climate change will further stress these systems as large precipitation events increase in frequency and severity, similar to what happened during Tropical Storm Irene in 2011. Building a climate resilient future will require that landowners at the top of the watershed, such as F&W, carefully plan development and stormwater systems to minimize stormwater runoff.

Smith, M., Schiff, R., Olivero, A., & Macbroom, J. (2008, April). The Active River Area - A Conservation Framework for Protecting Rivers and Streams. The Nature Conservancy.



Impacts in the Ottauquechee River Watershed from Tropical Storm Irene in 2011.



Zoning, Regulations, & Utilities

Zoning & Other Regulations

According to the Town of Plymouth's zoning map, the arrival area is zoned as Rural Residential 2. This zoning district requires that any lot be at least 2 acres in size, and have a 50-foot frontage and 50-foot setback from public roads. In addition, the zoning bylaws state that building heights be restricted to 35 feet and a maximum building footprint of 5,000 square feet. Multiple dwelling units are conditionally permitted in this zoning district. Adding new buildings to the site will likely require further subdivision of the lot or a zoning variance since there are already so many other buildings on the property.

The town bylaws also show that the arrival area is within a shoreland overlay district. The shoreland overlay district requires any new structure be set back 75 feet from Woodward Reservoir. The state of Vermont also regulates activities within 250 feet of the shoreline via the Shoreland Protection Act. Permits are required from the state in order to build or expand structures and other impervious surfaces, or clear vegetation within this zone.

There is also a flood hazard protection overlay district designated in Plymouth's town bylaws along Reservoir Brook. The extent of the overlay is determined by the river corridor area that is defined by the Vermont Agency of Natural Resources. This overlay restricts development that would diminish water quality, impair floodplain services, or increase vulnerability to the hazards of floods.

Design Implications

A design may best avoid legal constraints by siting buildings and impervious surfaces outside the zoning setback, protected shoreland area, and river corridor area. Areas that avoid the zoning setback and adhere to environmental regulations include the east hillside, space around the staff office building, the solar fields and open space east of the maintenance building, the east half of the parking lots, soccer field, and the space just west of Barn Day Camp.

Zoning variances and environmental permits will likely be needed in order to construct additional buildings and increase additional impervious surface even if outside the regulated areas. A design that incorporates stormwater collection systems will be less likely to run into obstacles while going through the environmental permitting process.

Utilities

Both the welcome center and year-round housing will require access to electricity, water, and on-site septic systems.

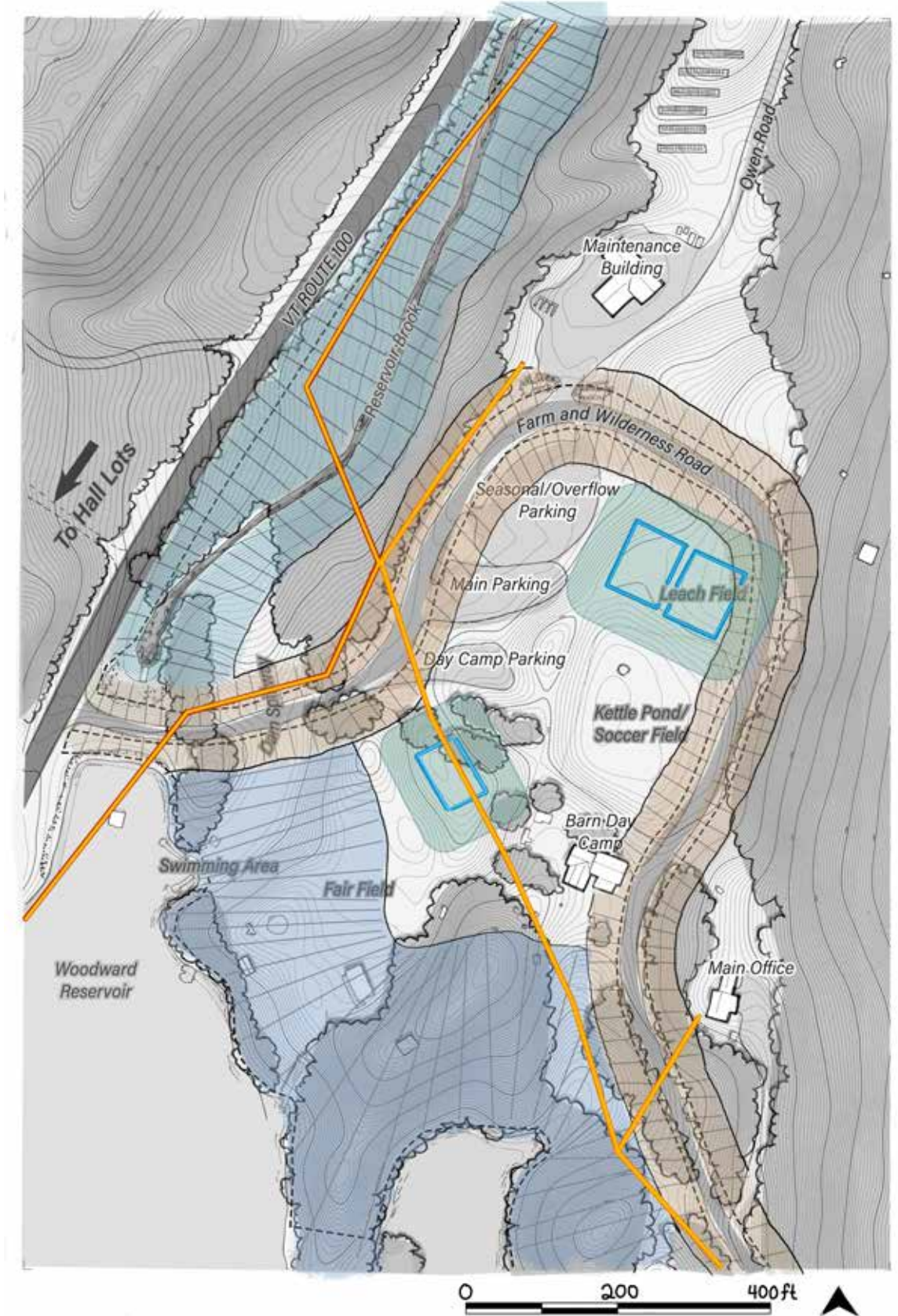
Electricity | Several above-ground power lines cross the site. Three-phase power lines span the reservoir and extend north along Reservoir Brook, providing the capacity for the solar array north of the maintenance building. Single-phase power lines extend from the three-phase line off towards the maintenance building, barn day camp, and staff offices. Connecting new buildings to the grid would require extending single-phase lines to the buildings. Above-ground lines may impact views while burying lines may cost more. However, burying lines could have the added benefit of creating greater resilience to power outages during storms.

Wells and Septic | Wells and septic systems will be needed for any new year-round buildings in the arrival area. If capacity allows, it may be easiest and least expensive for new buildings to share wells and septic systems with already existing buildings. There are currently two leach fields north of the soccer field that serve Timberlake summer camp to the south of the site. In addition, there is a planned leach field for Barn Day Camp that is to be sited in the low point below the fair fields.

If there is a need to drill new wells, their location will need to comply with Vermont regulations. According to Vermont's Chapter 21 Water Supply Rules, wells must be sited 25 feet from roads and parking lots, 50 feet from subsurface wastewater piping and related tanks, and 10 feet from buildings. The distance a well can be from a leach field is determined by a calculation that incorporates the daily demand of the well and the size of the leach field. The EPA, however, recommends 50 feet of separation between wells and leach fields. The 50-foot buffer around the existing leach fields shown in the map should be considered a minimum, as the excessively drained sandy soil on the site may require that the distance between wells and septic system be greater.

Design Implications

Because of the spatial constraints of siting new wells and septic systems, it should be thoroughly explored if new buildings can tie into existing utilities from other buildings. Sharing wells and/or septic systems would also allow greater flexibility for where animals can graze, and for where gardens and trees can be planted. It would additionally reduce excavation and construction needed to install a new leach field. Existing power lines make it easy for new buildings to tie into the new grid. Three-phase power lines allow the capacity for larger scale solar panels if it is desired.



REGULATED AREAS

- 50' zoning setback
- 250' shoreland protection
- River Corridor Area

UTILITIES

- 3-phase power lines
- Single-phase power lines
- Existing & Planned Leach Fields
- 50' leach field buffer

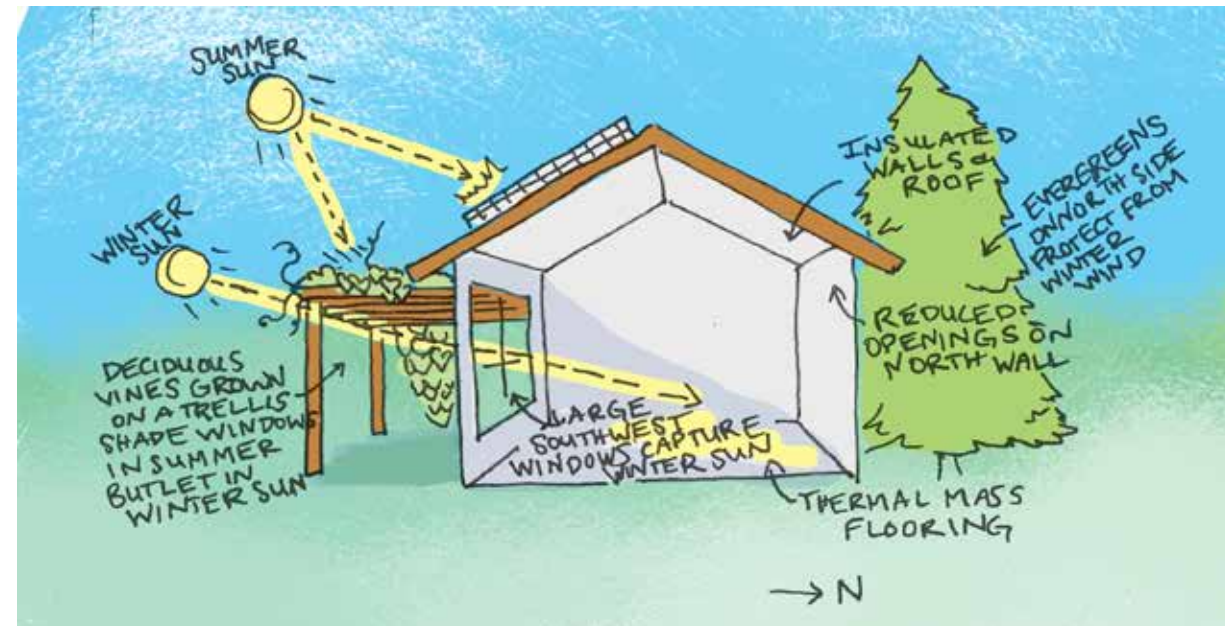
Direct & Passive Solar

Farm and Wilderness currently harvests renewable energy. The current solar array, located towards the northern edge of the clearing in the Woodward arrival area, produces 80,000 kilowatt hours (kwh) per year on average. The roof-mounted panels at Tamarack Farm produce 18,000 kwh per year. F&W's yearly electric usage is currently around 100,000 kwh. As F&W has made progress towards reducing its use of fossil fuels, its electricity usage has risen to fulfill those demands, and it is in the process of implementing plans to further reduce its use of fossil fuels. The organization's yearly net CO2 emissions have been trending downwards over the last ten years.

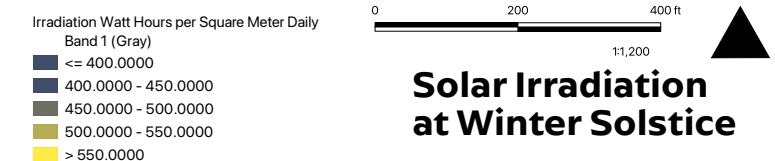
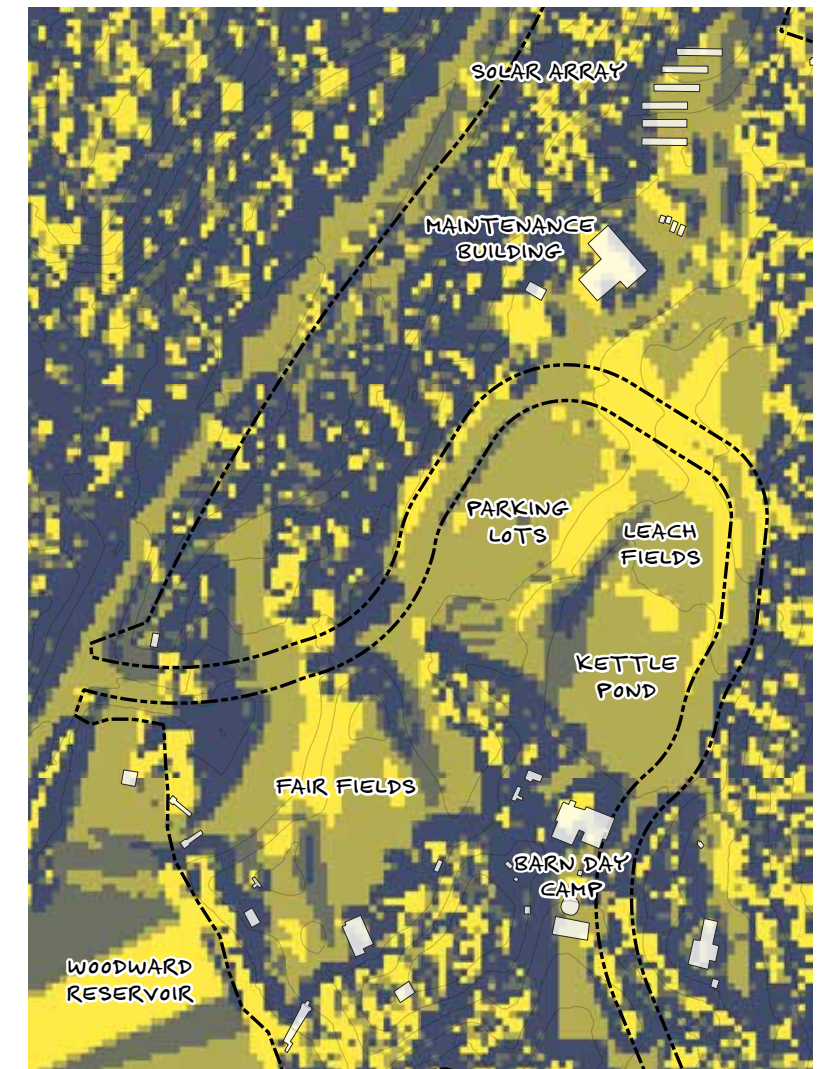
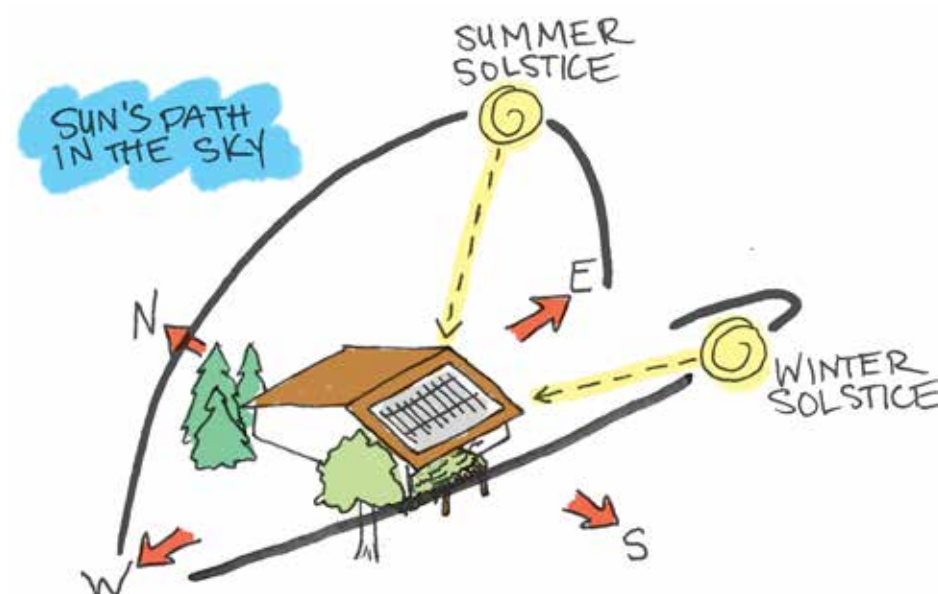
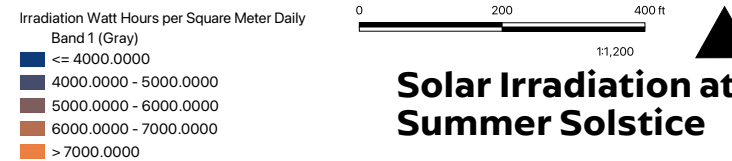
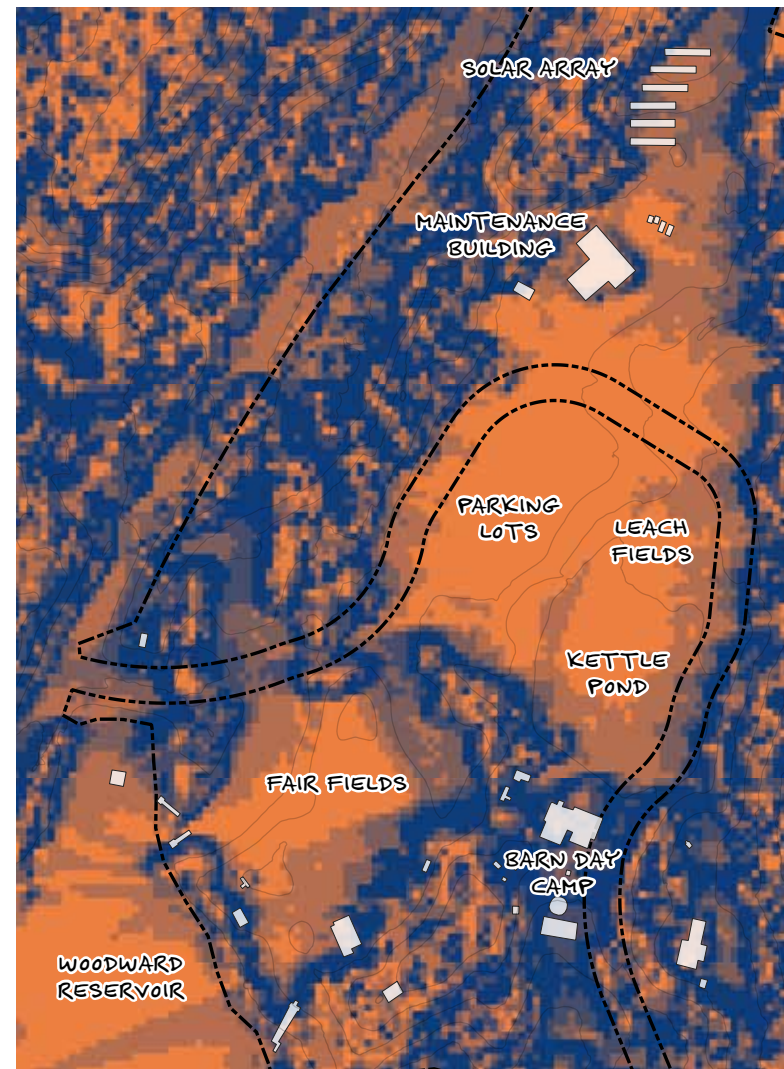
The solar irradiation analysis maps at right show the amount of irradiation within the Woodward arrival area at the Winter Solstice and Summer Solstice, which provide an estimate of the minimum and maximum daily averages throughout the year. Maximum irradiation differs greatly between the Winter and Summer Solstice, reaching about 550 watt hours per square meter in the winter and over 7,000 in the summer. Locations in the Woodward Arrival area that receive the most irradiation are in cleared areas, such as the fair fields, parking lots, kettle pond, leach field, and raised landform by the maintenance building. On the Winter Solstice, when the sun overall is weakest, irradiation tends to be strongest on south- and west-facing slopes. The raised landform near the maintenance building appears to have the best solar potential at all times of the year.

Design Implications

The addition of structures, especially those that would be open year-round, will require more power to operate. Siting and designing future buildings, especially those that will be used for winter housing, should be sited for optimal direct solar gain and passive heating and cooling to help keep F&W's CO2 emissions on a downward trend. F&W does have some existing structures that may be converted to year-round housing, which is a good way to fulfill its housing needs while reducing disturbance from new construction; however, these buildings may be poorly insulated and less efficient to heat and may not be oriented for solar gain, so additional measures may need to be taken to keep the need for fossil fuel and combustion low.



Following best practices for passive solar gain when siting and designing buildings will help reduce energy demands related to summer cooling and winter heating. A south- or southwest-facing roof is also most suitable for mounting PV panels.



Roof-mounted solar at Tamarack Farm.



View of the solar array north of the maintenance building from Barn Day Camp.

Summary Analysis: Woodward Arrival

The table below illustrates the implications of major observations across the Woodward Arrival site for each goal.



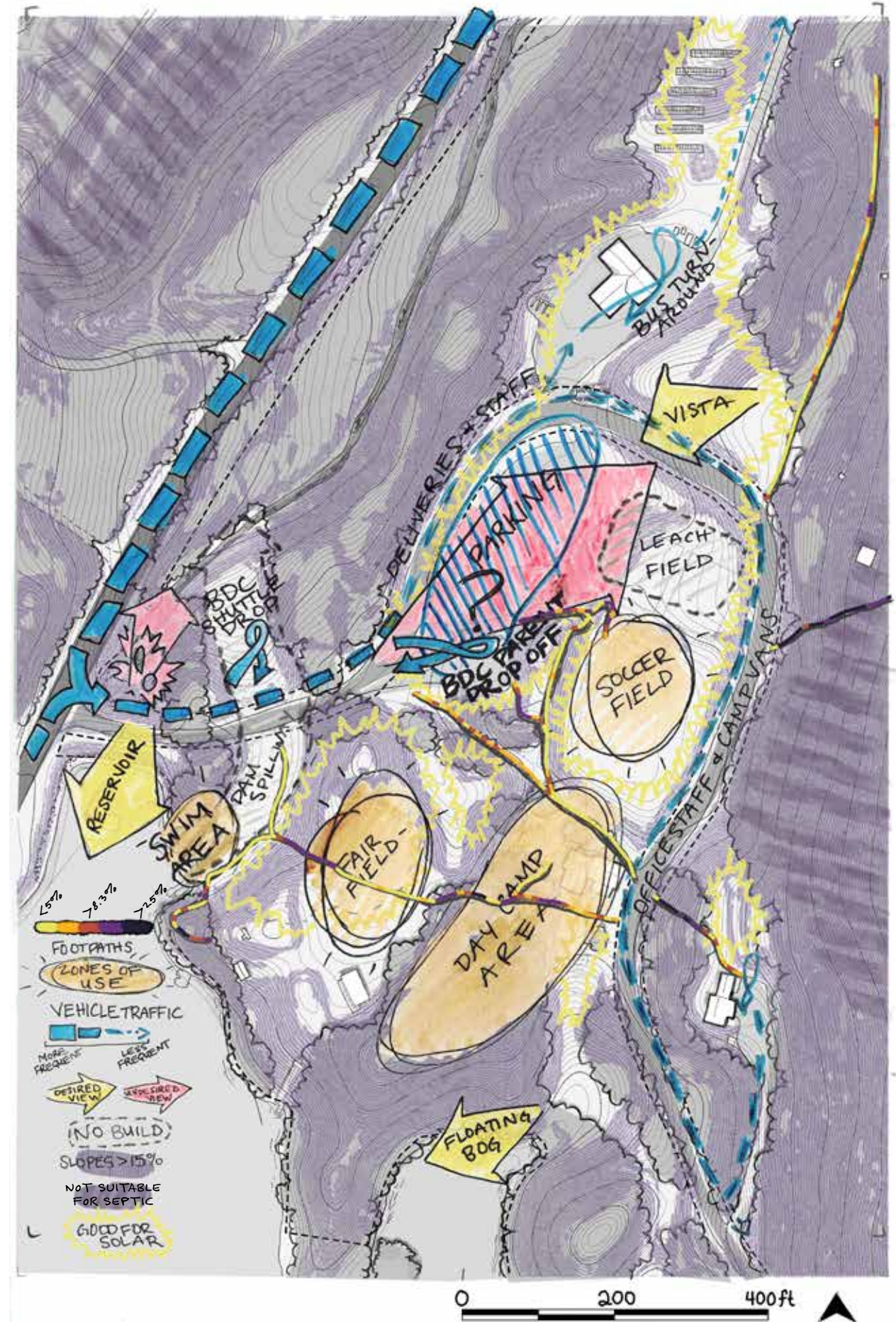
Observation	Arrival Experience	Welcome Center	Housing	Trail & Accessibility
Topography undulates and some slopes are steep.	Topographic changes define the space and give it a unique character.	Steep slopes constrain areas for construction, but also create views.	Steep slopes constrain areas for construction, but also create views.	Steep slopes constrain alignment of a <12% grade, but offer range of trail experience.
Topography creates site dynamics of prospect (scenic views out) and refuge (sense of enclosure and protection).	Views over reservoir brook are scenic, but also feel precarious.	Some suitable building sites have scenic views of the surrounding hills and reservoir.	Some suitable building sites have scenic views of the surrounding hills and reservoir.	Rolling slopes offer opportunities for rest after climbs and scenic views.
The alignment of F&W Road includes long sightlines to the maintenance building upon first arrival and a complicated path to the main office.	The road orientation and views along it create a confusing wayfinding experience for new visitors, as guests are inclined to approach the maintenance building instead of the main office.	Neutral	Neutral	Neutral
Parking lots are some of the first things a visitor sees when entering the Farm and Wilderness property.	While it is easy to find the parking lots, it can then be difficult to find where to go, and the utilitarian views feel unwelcoming.	The parking lot location is central and easy for new visitors to find.	Neutral	Neutral
Soils are sandy and well draining.	Neutral	Most soils within the Woodward area can infiltrate runoff from new impervious surface like parking and roofs, and soils are suitable for septic.	Most soils within the Woodward area can infiltrate runoff from new impervious surface like parking and roofs, and soils are suitable for septic.	Soils will help drain water and help prevent low or flat spots from becoming saturated.
The area has existing features and disturbed areas such as an old graded building footprint and gravel parking lots.	The utilitarian needs of the space impact its aesthetic value.	Siting buildings within areas that have already been disturbed may help reduce the need for disturbance in other areas.	Siting buildings within areas that have already been disturbed may help reduce the need for disturbance in other areas.	Siting a trail near a utilitarian feature may not feel like a pleasant experience, but those utilitarian features may need to be close by to provide better accessibility.
The area is largely cleared of mature vegetation in a large swath towards the center of the site, making the area sunny.	Cleared vegetation creates the bucolic, pastoral aesthetic that the client enjoys, but it also gives way to undesirable views of parking lots and maintenance building.	Most suitable building locations within the arrival area present opportunities for roof-mounted solar.	Most suitable building locations within the arrival area present opportunities for roof-mounted solar.	Sunny paths can be pleasant when weather is crisp, but can be uncomfortable in the heat of summer.
Steep slopes divide zones of use.	Berms can help break up undesired views and keep pedestrian and vehicle traffic separate, but it becomes more challenging to move between zones of use once parked.	Areas that may be suitable for building may actually be less suitable if they are difficult to access from other zones of use.	Areas that may be suitable for building may actually be less suitable if they are difficult to access from other zones of use.	Longer paths and more significant grading may be required to provide accessible pedestrian access between the housing and other zones of use.

Siting Welcome Center and Housing

The new buildings may be best suited for areas already cleared, with good solar access, less than 15% slope, and soils well suited for on-site septic. Locations with these specifications include the parking lots, soccer fields, the hill east of the maintenance building, and the open space northeast of the office building. The dam spillway, maintenance area, fair fields, and leach field also meet these specifications but their current use may restrict their suitability for siting buildings.

Improving the Human Experience

Many of the more utilitarian structures and needs of the arrival area, including parking lots and the maintenance building, are very visible upon arrival. Meanwhile, destinations, such as the offices and day camp are hidden from any arrival views. This lends to an uninviting and confusing experience for first-time visitors. In addition, footpaths connect areas of high use but often run perpendicular to contour and therefore are quite steep and inaccessible to those with limited mobility. The experience and wayfinding of the arrival area may be improved by removing or screening the parking lots and maintenance building, and creating more accessible paths between the parking and some of the areas of high use.



Hall Lots: Existing Conditions & Access

Farm & Wilderness recently acquired four lots that are part of an undeveloped subdivision known as the Hall Lots. The four parcels, across Route 100 from its summer camps, sit on a heavily wooded hillside that rises up from the west side of Woodward Reservoir. Farm & Wilderness would like to explore whether the Hall Lots are well suited for siting year-round staff housing.

There are two other parcels that make up the Hall Lots which Farm & Wilderness does not own, as well as a 120-acre commons. According to the deed for the lots, Farm & Wilderness may have some jurisdiction over the commons depending on the status of the organization which originally oversaw the care for this land. While there remains ambiguity within the language of the deed surrounding this, the commons will be included in analysis of the Hall Lots for staff housing in the case that Farm & Wilderness could legally develop on this land.

Access & Circulation to the Hall Lots

Access to the Hall Lots is provided by a private gravel drive which comes off Route 100 approximately 850 feet south of Farm & Wilderness Road. A slight bend in Route 100 to the south of the gravel drive makes it difficult to see oncoming traffic from the intersection. The gravel drive quickly ascends the hill and winds its way through each Hall Lot parcel but just barely enters the southernmost parcel which Farm & Wilderness owns. The only structure on the lots is a recently constructed wilderness shelter at the end of the gravel drive on F&W second most northern parcel.

The drive is currently not usable by vehicle as thirteen culverts along its path have been washed out. During a site visit in March of 2022, small intermittent streams crossed the road in some of these locations, resulting in an eroded surface.

Design Implications

While using the existing road would reduce the amount of disturbance that would be required to access the Hall Lots, its poor condition means it would take a significant amount of work to repair and possibly maintain for vehicle access. However, one staff member of Farm & Wilderness noted that this road was carefully designed by an engineer and that the culvert washouts were likely due to lack of maintenance. Further study may help to assess how susceptible the road is to future washouts, especially taking into account climate forecasts.

Siting staff housing on the Hall Lots would create an increase in pedestrian and vehicle traffic moving along and across Route 100 for staff to access the rest of Farm & Wilderness property. Route 100 has speed limits of 50 mph and approximately 1,000 vehicles driving on it per day (Vtrans). If staff wished to move back and forth from the Hall Lots to the main property it could require walking across this traffic which could potentially be dangerous. Or, if it is necessary to drive, it would increase vehicle and fossil fuel use.



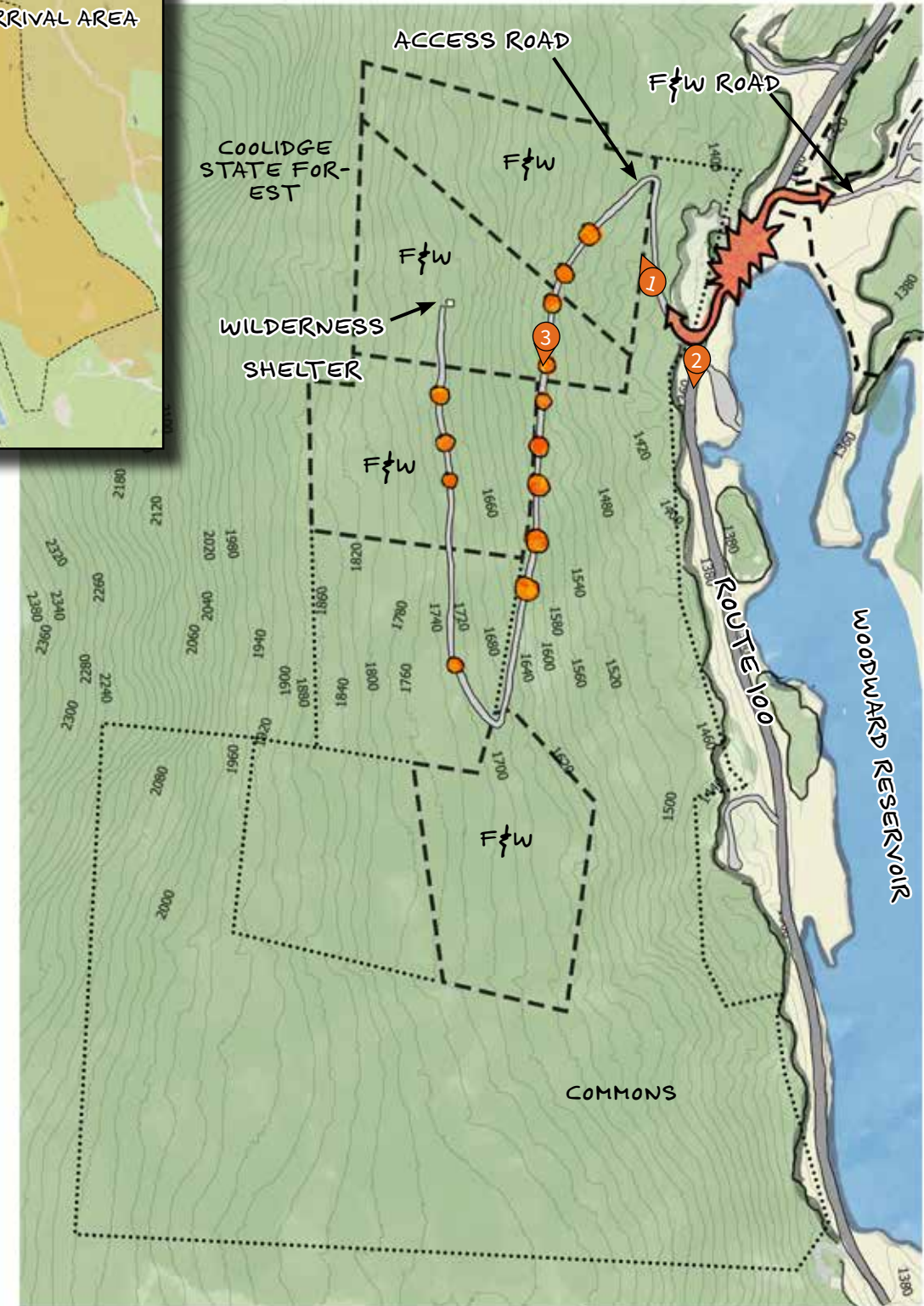
1 A gravel road ascends the hillside giving access to the Hall Lots.



2 This image shows the view south from the intersection of the access road and Route 100. The slight bend in Route 100 makes it difficult to see oncoming traffic.



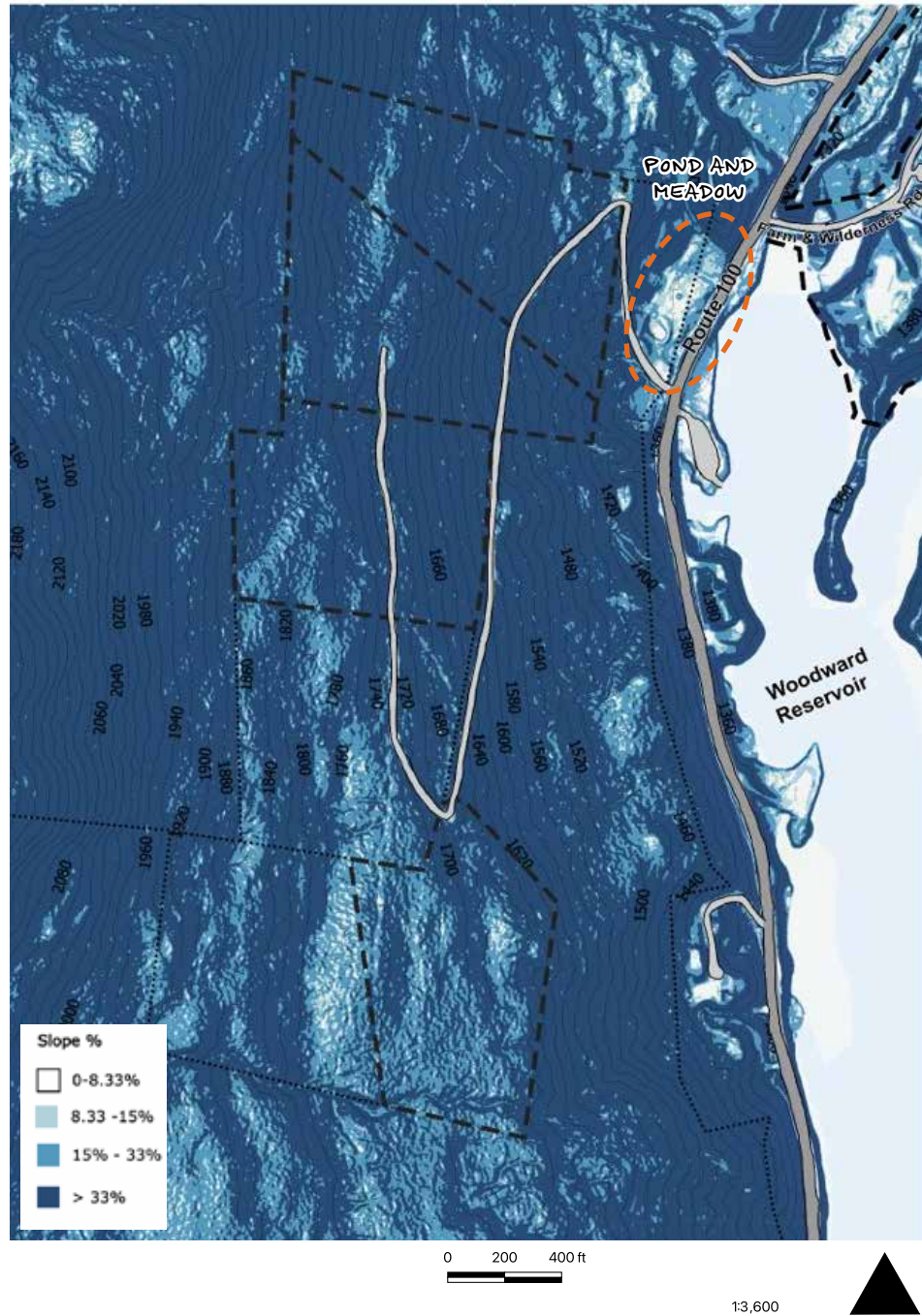
3 There are 13 culvert washouts on the access road.



CULVERT WASHOUT

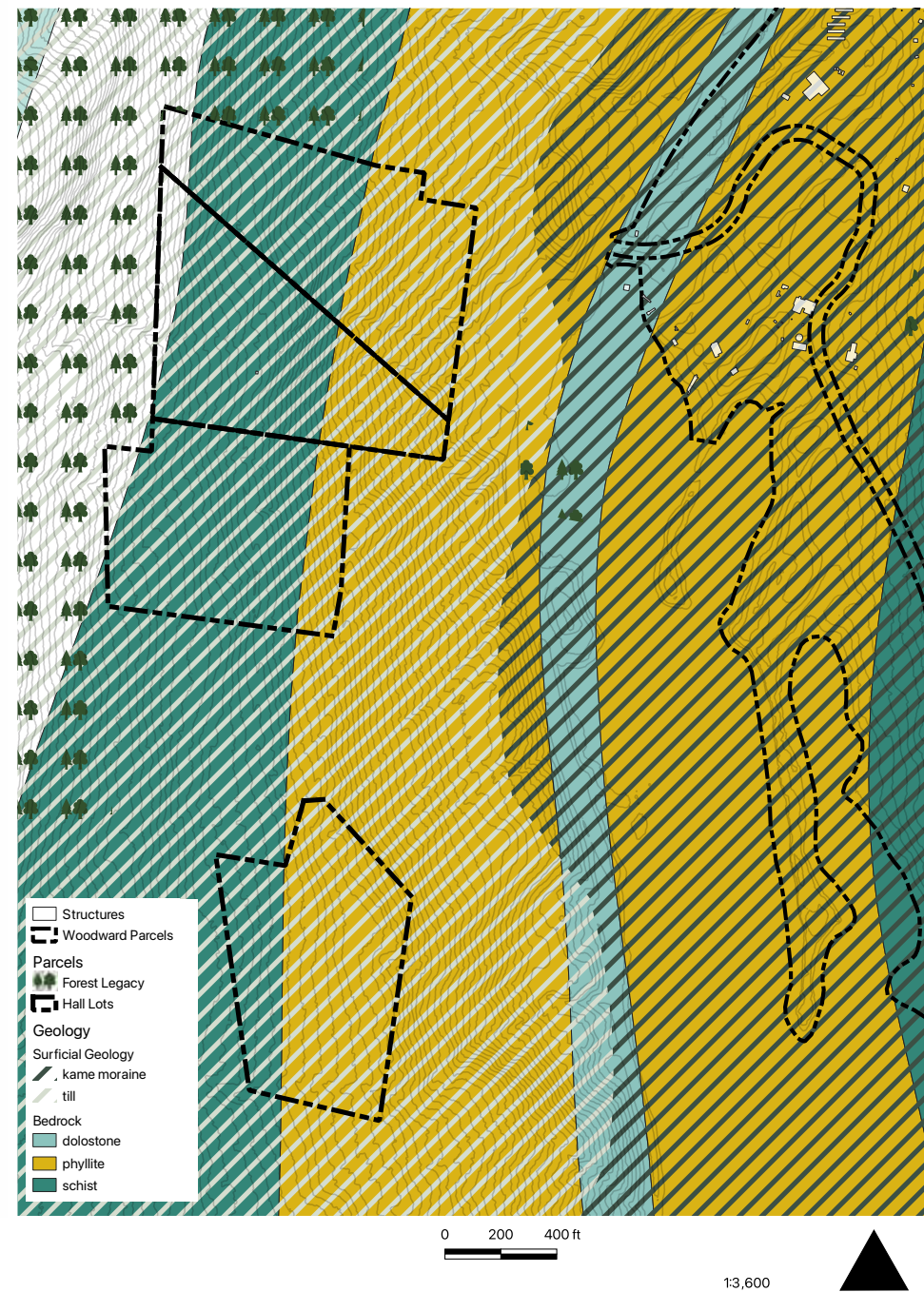
ROUTE 100 CROSSING

Hall Lots: Landscape Analysis



Slopes

There are extremely steep slopes across the Hall Lots, often above 33%. Slopes greater than 33% are most subject to erosion if disturbed. Areas to the south are less steep and disturbance from construction may pose less of a risk of erosion, but access by road is more difficult. There are, however, a few isolated locations near the road where slopes are less than 33%. These areas may be most suitable for building, as the cost and disturbance would be lowest where slopes are gentle, and flatter areas are more suitable for septic. Siting buildings on slopes less than 8.3% would make it easiest to achieve universal accessibility around the buildings. Above 8.3%, more significant grading or longer paths parallel to contour would be required to achieve accessible path slopes.



Bedrock & Surficial Geology

The parcels lay across two bands of bedrock; the west side of the parcels is underlain by schist, and the east side falls on a band of dolomitic phyllite. A band of dolostone bedrock runs along Woodward Reservoir farther east. Phyllite and dolostone are both dolomitic bedrock types, which typically create rich, alkaline soils. Dolomitic bedrock is regionally uncommon and can give rise to ecologically significant plant communities and habitat, especially where bedrock is close to the surface and is oriented on a north-facing slope. According to the 1970 Surficial Geologic Map of Vermont, surficial geology on these parcels is characterized by glacial till, which “[reflects] the topography of the underlying bedrock surface,” and is “thicker in the valleys and thinner in the uplands.”

Vegetation

Most of the Hall Lot area is covered by forest that has been managed in the recent past for timber, with a small engineered pond and open meadow (at right) close to Route 100. The plant communities here have not been inventoried, but a baseline documentation report completed by Redstart Forestry for the Forest Legacy Land on the eastern and southern portions of the Woodward property could provide



insight into what plant communities may be found here. Ecologists identified several ecologically significant areas and rare plants on nearby Farm and Wilderness property that share many characteristics with the Hall Lots. The design team did observe a diverse understory of herbaceous spring ephemerals on an early spring site visit, which included populations of early blue cohosh (*Caulophyllum thalictroides*), wild leek (*Allium tricoccum*), both shown at left, as well as trout lily (*Erythronium americanum*) and dutchman's breeches (*Dicentra cucullaria*).

Rare and uncommon plants observed nearby:

- Green spleenwort (*Asplenium veride*): Restricted to dolomite ledge, found on both sides of Route 100 at south end of Woodward Reservoir
- Summer sedge (*Carex aestivalis*)
- Stout goldenrod (*Solidago squarrosa*)
- Back's sedge (*Carex backii*)
- American ginseng (*Panax quinquefolis*)
- Wood millet (*Milium effusum*)

Rare and/or ecologically significant plant communities observed nearby:

- Rich Northern Hardwood Forest
- Red Oak-Northern Hardwood Forest
- Dwarf Shrub Bog

Design Implications

A full ecological assessment including rare plant inventory should be completed before moving forward in the development process. Conceptual designs and suitable building locations proposed in this plan were based on the level of assessment the design team was able to complete during the analysis period, which included analysis of slopes, access, and observed level of disturbance. However, if a full assessment by a forester or ecologist reveals the presence of rare species, this should preclude building in any of the proposed locations. Areas where species that may be threatened by over-collection grow, such as American ginseng and wild leek, should remain less accessible to the public to protect the future of these populations.

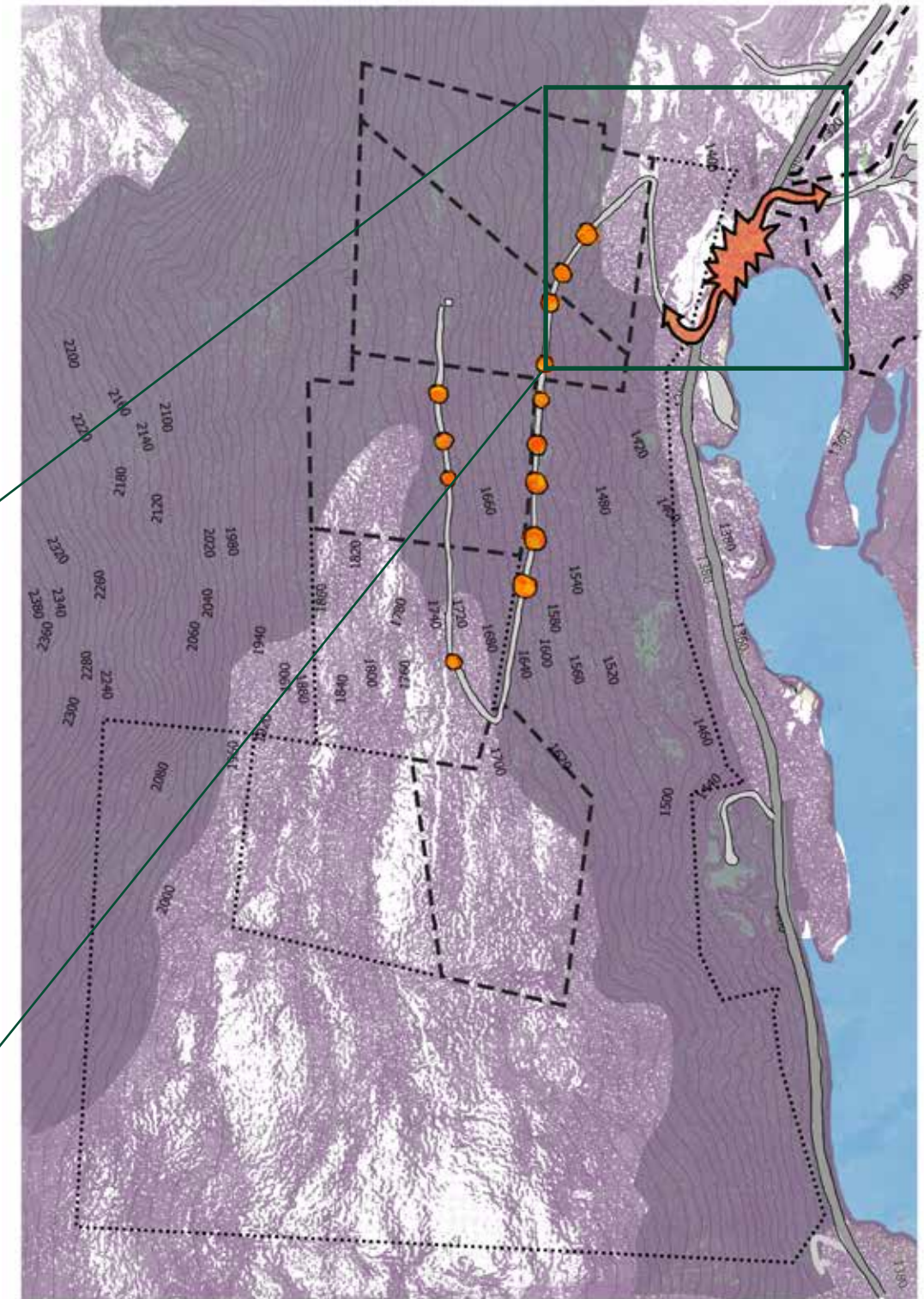
The Hall Lots appear to be ecologically significant, and they could offer Farm and Wilderness an important opportunity to extend their conservation efforts. Development may be possible but should be considered with great care, and low-impact building techniques should be employed wherever possible.

Hall Lots: Summary & Building Suitability

The Hall Lots provide Farm & Wilderness with an opportunity to site staff housing away from its main property. This could alleviate current or future spatial constraints to siting new buildings found on other parts of its properties. Even though it's in need of repair, the access road provides the existing infrastructure needed to access the lots. In addition, the forested hillside offers a nature-immersed space, away from the summer camps, that could provide room for solitude and rest for staff.

However, initial analysis of the Hall Lots revealed several obstacles to siting housing on the Farm & Wilderness owned parcels. The lack of space with slopes less than 15% and with soil that is suitable for on-site septic systems

greatly constrains where housing could be built. In addition, if vehicle access to the lots is desired, the access road would require repair due to several culvert washouts. Maintaining the road may also be difficult as climate forecasts predict stronger storms that would make future washouts more likely. In addition, the underlying bedrock and adjacency to larger expanses of conserved land suggest that it may be important to protect the Hall Lots from development for habitat purposes. Lastly, siting housing across Route 100 from Farm & Wilderness' main property could create a dangerous pedestrian crossing.



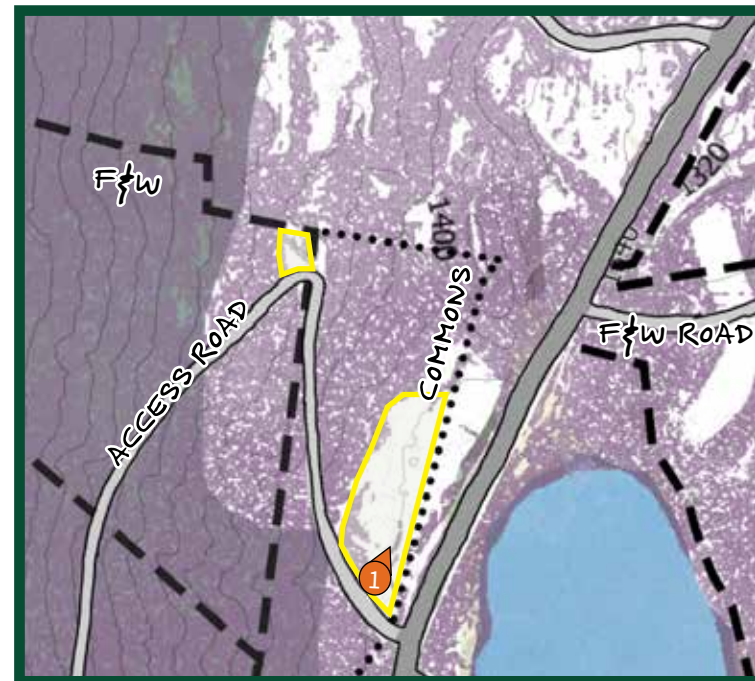
Building Suitability

The many constraints to building on the Hall Lots left only a few places that seemed well suited for housing. An overlay of the analyses revealed two locations that could potentially serve as building locations if Farm & Wilderness decides to further explore this option in the future. Both locations are on land with less than 15% slope and with soils moderately to well suited for on-site septic. They also are located near where the access road joins Route 100 in order that less of the road would need to be repaired, maintained, or extended in order to access the housing by vehicle.

The first site is located off the first turn of the access road on the most northern Hall Lot parcel owned by Farm & Wilderness. It is a wooded site on a part of the hillside that levels off for an approximately 3,500-square-foot area. It is adjacent to the access road prior to any of the culvert washouts. Vehicle access would require repairing a small section of road that has not experienced any severe washouts.

The second site is located on the Commons lot that Farm & Wilderness does not own, but could potentially have legal jurisdiction over in the future. The site is located on the north part of the Commons where the access road meets Route 100. This area is flat and already cleared. According to the property deed, its original use was intended to be a plant nursery. It is closer to Farm & Wilderness Road, making access to the rest of the property easier; however, the potential danger in pedestrians crossing Route 100 would still need to be considered.

Further assessment of these locations is needed before determining their suitability for housing development. A baseline ecological assessment would help determine what unique habitat and rare species are found on the Hall Lots and how development could impact them. In addition, a greater legal understanding of the language within the Hall Lot deed would help to determine if Farm & Wilderness could ever site housing on the Commons, which the analysis in this report determined may be better suited for development than the F&W owned Hall Lot parcels.



View looking north of the meadow and engineered pond near Route 100, part of the Hall Lot Commons.

Design Alternatives



A Familiar Arrival

This design makes the most of existing conditions and infrastructure to minimize disturbance in other areas. The Welcome Center is sited on an existing graded pad near the entrance so it is immediately visible upon arrival. A main lot accommodates parking for the Welcome Center and Barn Day Camp Dropoff, and additional parking is sited near the solar array. Bunkhouses and cabins accommodate at least 50 additional people in the Woodward Arrival area. An accessible trail traverses across the fair fields, through the woods near Barn Day Camp, to a viewing platform along the reservoir.



A Green Arrival

In this design, parking is relocated from the first leg of the loop road to the kettle pond, removing it from the arrival sequence. The lot accommodates up to 100 vehicles and harvests the strong solar irradiation with PV shades. The Welcome Center rises over a long view of green landscape features like a vegetated bioretention basin and a relocated soccer field around the first leg of the loop. Housing is minimal in this design, so more capacity may be needed in other places on the property, like at the Hall Lots. An accessible trail loops through wildflower meadows that frame the fairgrounds and leads to the reservoir swimming area.



A Playful Arrival

This concept makes use of the interesting topography and natural features of the site to create a playscape that greets visitors on their first arrival. In this alternative, the Welcome Center is sited on the highpoint at the north of the site, which has beautiful views out over the reservoir. A reinforced turf, permeable parking lot provides parking for Barn Day Camp dropoff as well as the Welcome Center, with several spaces tucked into the slope on the other side of Farm and Wilderness Road to provide direct access to the Welcome Center. This concept supports about half of the housing needs in the Woodward Area in a bunkhouse and cabins, so housing for 20 to 30 would be needed elsewhere on the property. There are also gardens and a “natural” playscape that could be available to the public when appropriate, in addition to the accessible trail, which switchbacks up the west-facing slope to provide access to the Forest Legacy Land.

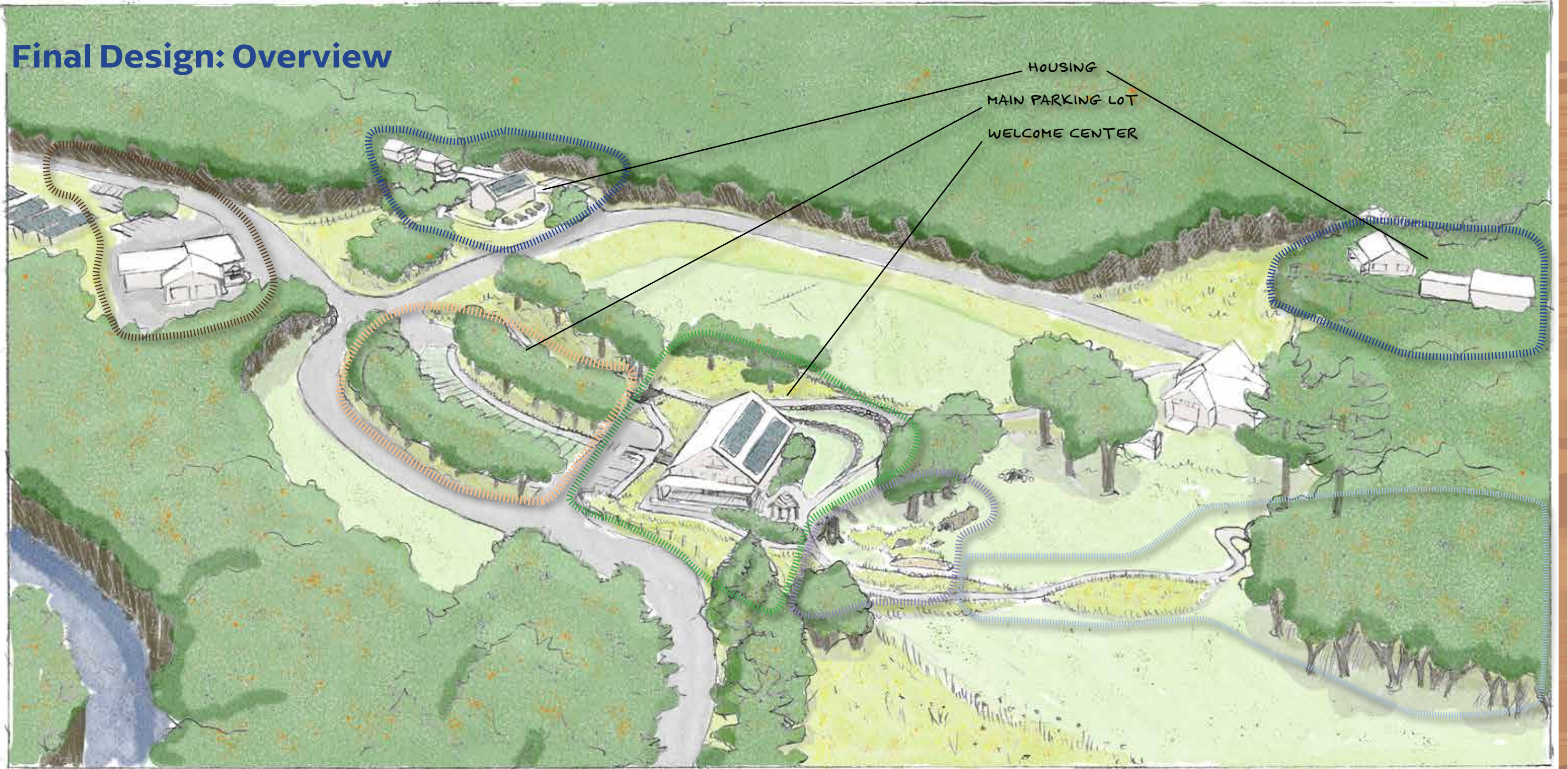


A Clear Arrival

In this concept, Farm and Wilderness road is rerouted to approach the Welcome Center more directly, which is sited on the flat, cleared area east of the maintenance building. Parking in this design is split between the right and left sides of the road, with a lot specifically intended for Barn Day Camp dropoff and a 40 to 50-person lot northwest of Farm and Wilderness Road for the Welcome Center. This design also incorporates a reinforced turf lawn for overflow parking. Elements from the other alternatives could be incorporated into this design to meet housing and access goals.



Final Design: Overview



The final design welcomes visitors to Farm & Wilderness with an experience that is engaging, inviting, and reflective of the values of the Farm & Wilderness community. The Welcome Center greets visitors at the first turn on F&W Road, framed by stands of trees and gardens. The parking lot, while located in a similar position to its current location, is lined by trees and planted stormwater swales, therefore helping to naturalize it within the landscape. Four new buildings for year round staff housing are sited on flatter locations north and east of F&W Road and provide staff with privacy and a place to connect with one another.

ADA accessible paths connect the parking lot, Welcome Center, and Barn Day Camp. An ABA accessible path extends from the Welcome Center, through gardens, meadows, and woods, to a viewing platform over Woodward Reservoir. Patios, decks, interactive gardens, and play spaces connect buildings and parking to the landscape, providing opportunities to engage with the natural beauty of Farm & Wilderness.

Final Design	18 - 19
Welcome Center	20
Natural Play Area	21
Main Parking Lot	22
Housing	23
Universal Access Trail	24
Maintenance Building & Staff Parking	25



Final Design

1 Welcome Center

The Welcome Center greets visitors at the first turn of Farm & Wilderness Road. It is immediately visible upon turning onto the road, making it a clear destination. Trees and gardens planted around the building help to blend it with the landscape. Constructing the building on an existing gravel pad minimizes the need to clear land for construction, though some regrading is necessary. The building is oriented with the roof facing south for solar gain.

2 Year-Round Housing

Year-round housing for fifty staff is incorporated into multiple buildings that run northeast to southeast of Farm & Wilderness Road. Clusters of staff housing with communal outdoor spaces creates a village feel. Since office space is moved to the Welcome Center, the current office building to the southeast is converted to housing for six to eight people. A dormitory style building with capacity for 16 people is sited adjacent to this converted building. A path runs to the north from these buildings to another group of staff housing structures. A similarly sized dormitory building with capacity for sixteen people is sited on a raised, flat and cleared area east of the maintenance building. Two smaller cabins are built in the woods on the hillside from the logging road which leads to the Buehl House. The dormitory-style buildings can accommodate larger groups while the smaller cabins can be used for staff that require more privacy or can be rented to small groups as needed.

3 83-Vehicle Parking Lot

An 83-vehicle capacity parking lot is designed to maximize efficiency, manage stormwater, and provide easy and safe access to the rest of Farm & Wilderness. Although still very visible upon arrival, the parking lot is buffered from the road by a vegetated swale lined with trees. Paths span the length of the parking lot, helping to minimize vehicle and pedestrian conflict. The parking lot lanes are paved while the stalls are semi-pervious reinforced turf blocks. It is sited on existing gravel lots that are already cleared and compacted, thus lessening the impact on other areas that do not yet have compacted soils.

4 Playscape & Interactive Gardens

A garden interspersed with rustic play features extends south from the Welcome Center, inviting visitors out into this part of the landscape. The gardens include native vegetation beneficial for pollinators, birds, and other wildlife in addition to edible plants that can be gathered by office staff, visitors, and Barn Day Camp campers. Play features are built into slopes, inspiring creative movement across the rolling topography. The gardens and playscape are sheltered from the parking lots, but adjacent to the Welcome Center and the ABA trailhead, making it highly accessible and visible for visitors. At the same time, it is screened from Barn Day Camp and at a lower elevation, thus allowing separation and privacy

5 25-Vehicle Permeable Parking Lot

A 25-vehicle capacity parking lot for seasonal staff vehicles is sited north of the maintenance building, below the solar field, in an area that is already cleared and relatively flat. The parking lot allows most seasonal staff vehicles to be out of sight of visitors. Since this lot is adjacent to a steep slope that runs down to Reservoir Brook, it is important that some or all of it is built with a permeable surface.

6 Adjusted Entrance to Maintenance Building

A berm fully screens the current long sightline to the maintenance building from the first turn of Farm & Wilderness Road. Vehicles approaching from the main entrance must take a 90 degree turn to enter the driveway. This aims to improve intuitive wayfinding by making the entrance to the maintenance facility feel less prominent to new visitors.

7 Accessible Trail

A berm fully screens the current long sightline to the maintenance building from the first turn of Farm & Wilderness Road. Vehicles approaching from the main entrance must take a 90 degree turn to enter the driveway. This aims to improve intuitive wayfinding by making the entrance to the maintenance facility feel less prominent to new visitors.

8 Wildflower Meadows

Pollinator-friendly meadows frame the fair fields, creating greater habitat value than the currently mown lawn, and insulating campers from the road. The densely vegetated meadows also discourage geese from the area and therefore provide greater opportunity for grazing livestock.



Final Design

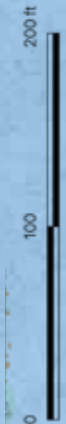


25-VEHICLE CAPACITY LOT
STAFF GATHERING SPACE
63-VEHICLE CAPACITY LOT
REINFORCED TURF STALLS

1-4 PERSON CABINS
16-PERSON BUNKHOUSE
STAFF GARDEN BEDS

WELCOME CENTER
PERGOLA AND PATIO
GARDEN PLAY AREA
TERRACES
— MEADOW
ACCESSIBLE TRAIL
OBSERVATION DECK

16-PERSON BUNKHOUSE
RENOVATED FARMHOUSE
GATHERING SPACE



Welcome Center

1 Welcome Center

The Welcome Center is visible soon after turning onto Farm and Wilderness Road from Route 100, making it a clear destination and focal point on the landscape. The building is close to the parking lot to the north and sidewalks help to separate pedestrians from vehicles. Accessible paths connect the Welcome Center to Barn Day Camp and a longer out-and-back trail that leads to an overlook of Woodward Reservoir. Constructing the Welcome Center on an existing gravel pad minimizes clearing that would be required for construction in undisturbed areas.

2 Gathering Space

An arbor frames the transition from the Welcome Center porch to an outdoor gravel patio that could be used as an outdoor classroom or lounge. A pergola built from rough-cut wood harvested from F&W's property provides shelter over a circle of cut log seats for planned gatherings, and additional tables and seating allow employees and visitors to enjoy a break outdoors. This area is shaded from the south by the existing sugar maples that once flanked the approach to F&W.

3 Garden Play Area

The corner gathering space transitions south into a nature-inspired play area with play structures made from materials found on site, like boulders and logs from trees removed during construction. The design prioritizes loose parts and adventure play with varying levels of challenge for different age groups.

4 Terraces

The berm to the north side of the old entrance road is removed to create seat-height terraces that define the space to the southeast of the Welcome Center, creating an amphitheater-like effect for larger gatherings.

5 Esker Orchard

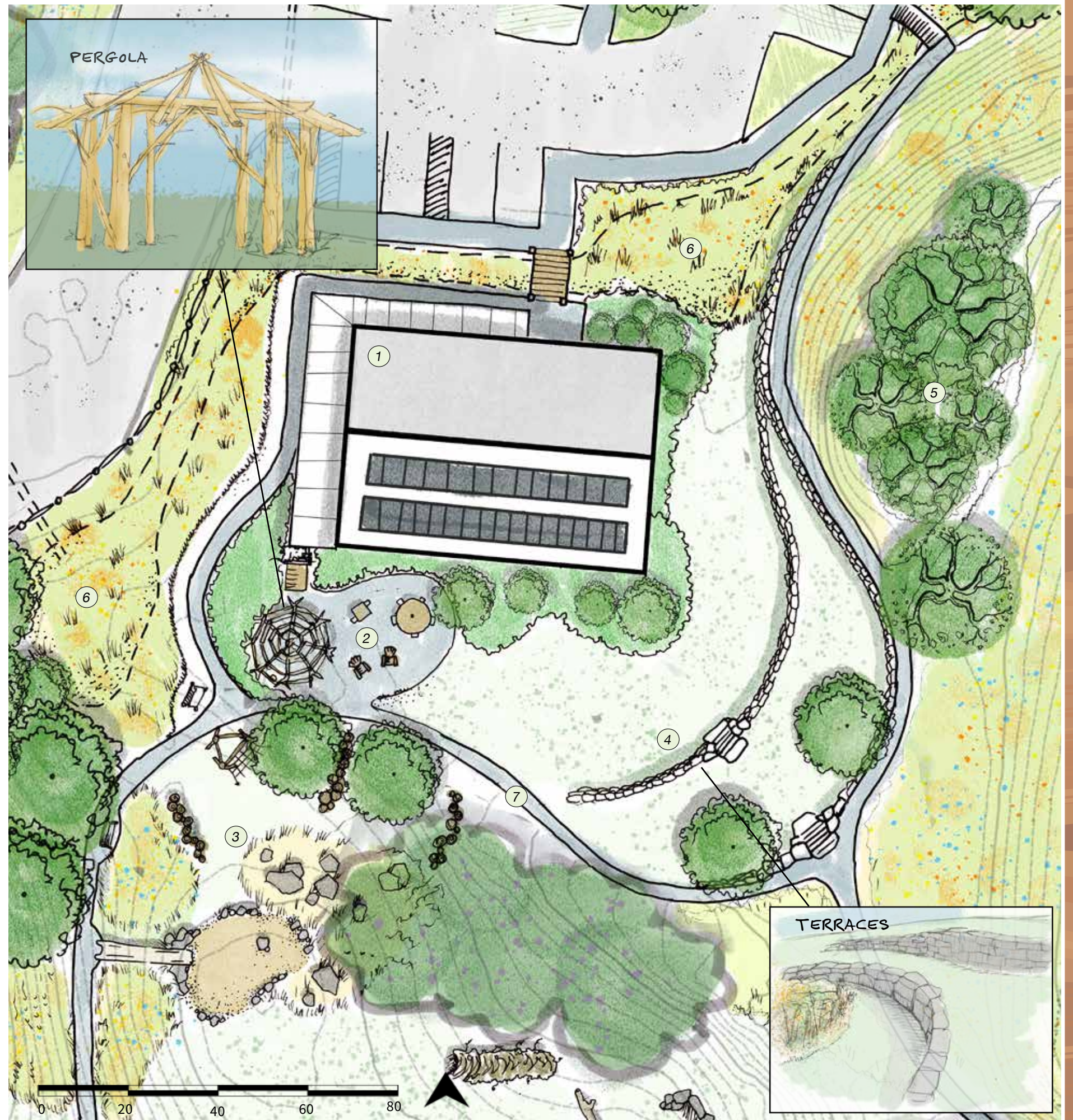
A grove of mixed fruit trees is perched on top of the berm to the east of the Welcome Center, offering edibles and providing dappled shade to grazing animals or humans watching soccer games in the kettle pond.

6 Bioretention Basins

Bioretention basins collect and filter stormwater runoff from the parking lots and Welcome Center roof, also adding visual interest and habitat for birds and pollinators. Overflow drains help to prevent flooding during extreme weather events.

7 Trails and Footpaths

Trails and footpaths connect zones of use and provide an accessible network of pedestrian circulation that does not exceed 8.3% grade.



Natural Play Area

1 Maple Climber

The aging maple trees located on top of the berm on the north side of the old road have been removed, as their age and declining health mean they pose a safety hazard. In this design they are given new life by transforming the limbs into a climbing structure. Inspired by a structure at the Missouri Botanical Garden.

2 Stump Steps

Tree trunks removed during construction are bucked and set into the hillside at uneven heights to create challenging stairs.

3 Secret Cavern

At the top of the steep hillside to the east of the play area, a small area is excavated, reinforced with stone, and covered with a turf roof to create a kid-sized play cave. This cave should be engineered with safety in mind.

4 Sand Pit

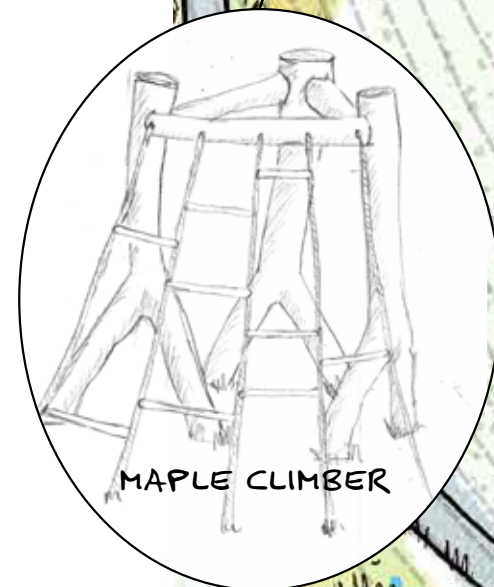
The natural low point in the topography is filled with sand--a geologically appropriate feature that offers a chance for kids of all ages to dig, fling, construct, and destroy.

5 Woven Tunnel

Campers can help construct a tunnel woven from live twigs and watch their creation grow year after year, even as they outgrow it.

6 Hill-slide

The hill-slide is the fastest way from the top of the hillside to the bottom of the sand pit.



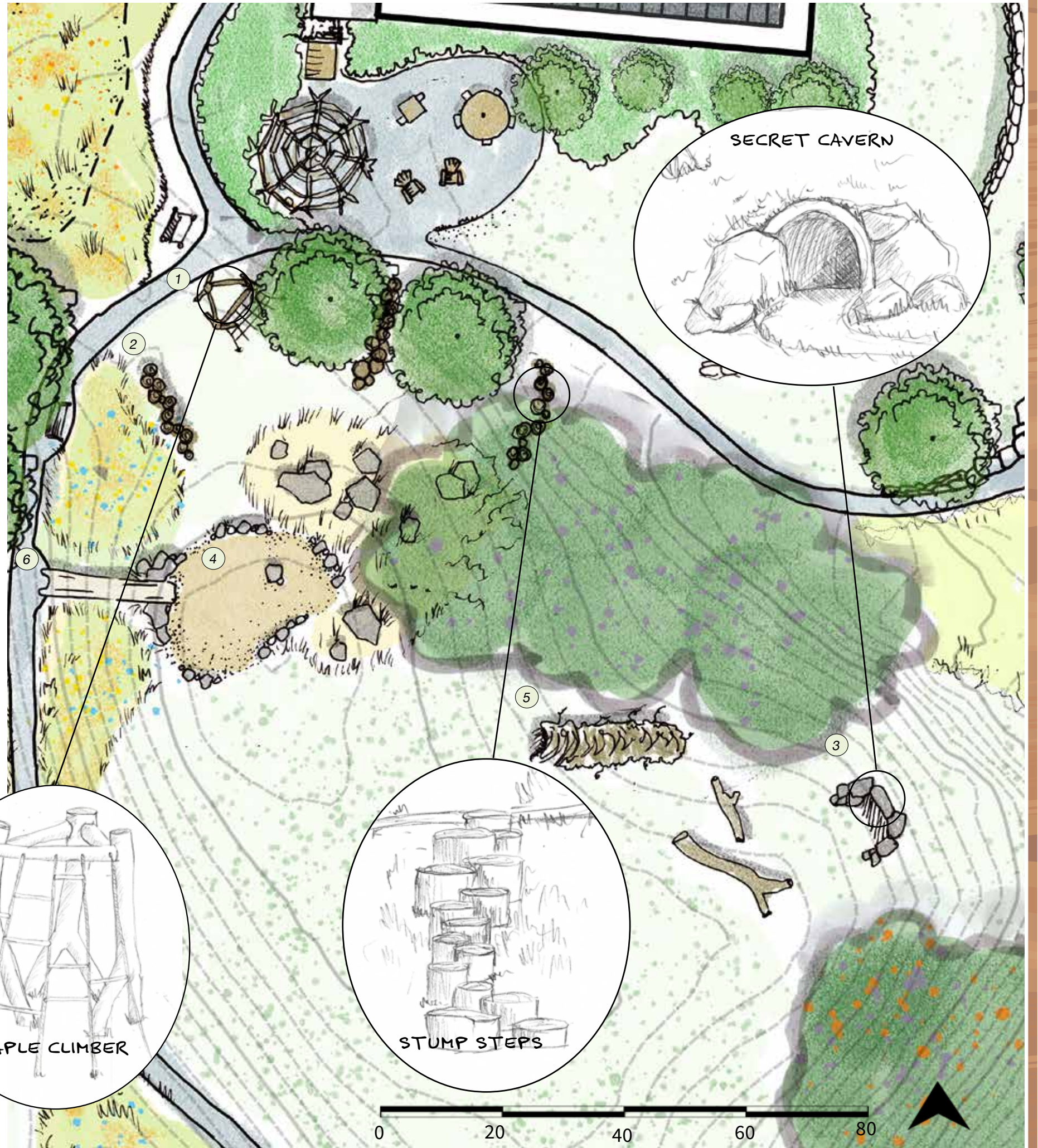
MAPLE CLIMBER



STUMP STEPS



SECRET CAVERN



Main Parking Lot

1 Bioretention Swales

Two bioretention swales run the length of the parking lot, intercepting and cleaning stormwater runoff from the parking lot and esker to the east. The swales are planted with a combination of understory plant species and small trees which are all drought and flood tolerant. The trees provide shade for cars and buffer the parking lot from initial arrival views. The swales move water south to a detention basin southeast of the Welcome Center, which overflows to a second detention basin on the other side of Farm & Wilderness Road.

2 Accessible Paths with Minimal Traffic Crossings

ADA paths run alongside the easternmost vegetated swale and the middle line of gardens and trees. They also run alongside the adjacent parking stalls, making them easily accessible. Their adjacency to the swales and trees provides visitors with shaded and green walkways as they make their way south to the Welcome Center or Day Camp. The easternmost walkway requires zero traffic crossings and western walkway requires one traffic crossing in front of the Welcome Center.

3 Paved Two-Way Traffic Lanes

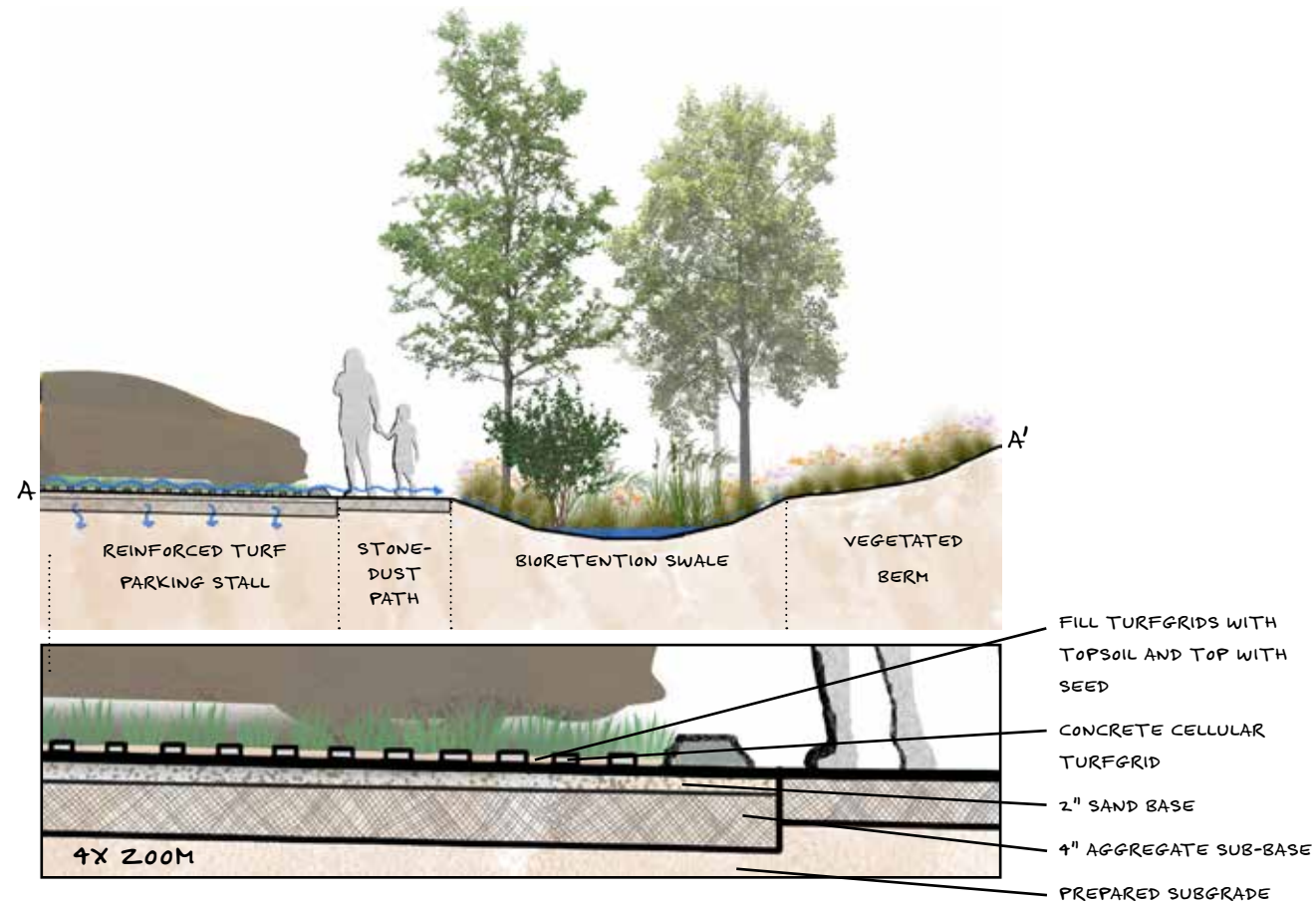
Each parking aisle is 26 feet wide and allows for two-way traffic. Access to the parking lot from Farm & Wilderness Road is allowed at the most southern and northern points of the parking lot creating easy and clear movement through the parking lot.

4 83 Reinforced Turf Parking Stalls

83 parking stalls nine feet wide by eighteen feet long are aligned in three curving rows east to west. Reinforced turf allows stormwater to permeate and gives the parking lot a greener appearance. 83 spaces provide enough parking for office staff, Barn Day Camp parents, and a few visitors.

5 4 Accessible Parking Stalls

4 additional parking stalls provide accessible parking close to the Welcome Center without requiring any traffic crossings. Three of the four spaces are wider and are adjacent to an access aisle, making them van accessible.



Housing

The Woodward Arrival Area could support housing for the goal of 50 people through a combination of new buildings and conversion of existing structures. Development density helps reduce disturbance and creates the feel of a village. The North Housing node accommodates up to 24, and the South Housing node accommodates up to 26.

North Housing

1 Bunkhouse and Cabins

A bunkhouse looks out over the mountains and reservoir from the high point at the northeast corner of the arrival area can accommodate up to 16 people. Two smaller cabins located north of this duplex along the forest road can accommodate up to 4 people each, but would be comfortable for a single person or couple if a more private accommodation is desired.

2 Gathering Space

A fire pit and patio offer space for staff to unwind and connect after work and on weekends.

3 Staff Garden Beds

A cleared, south-facing slope is a good location for growing veggies, herbs, or cut flowers chosen and maintained by staff. The site's history of being fertilized with humanure means that the soil is incredibly rich. It is safe to consume produce grown here, though it does not meet current organic certification requirements that F&W adhere to with the produce they offer to the public.

4 Driveway, Paths, and Parking

The forest road is expanded and surfaced with gravel to create a driveway and parking for five vehicles close to the bunkhouse. The forest road continues to provide access to the private cabins, as well as the proposed Buehl triplex that is currently in development.

South Housing

5 Renovated Farmhouse and New Bunkhouse

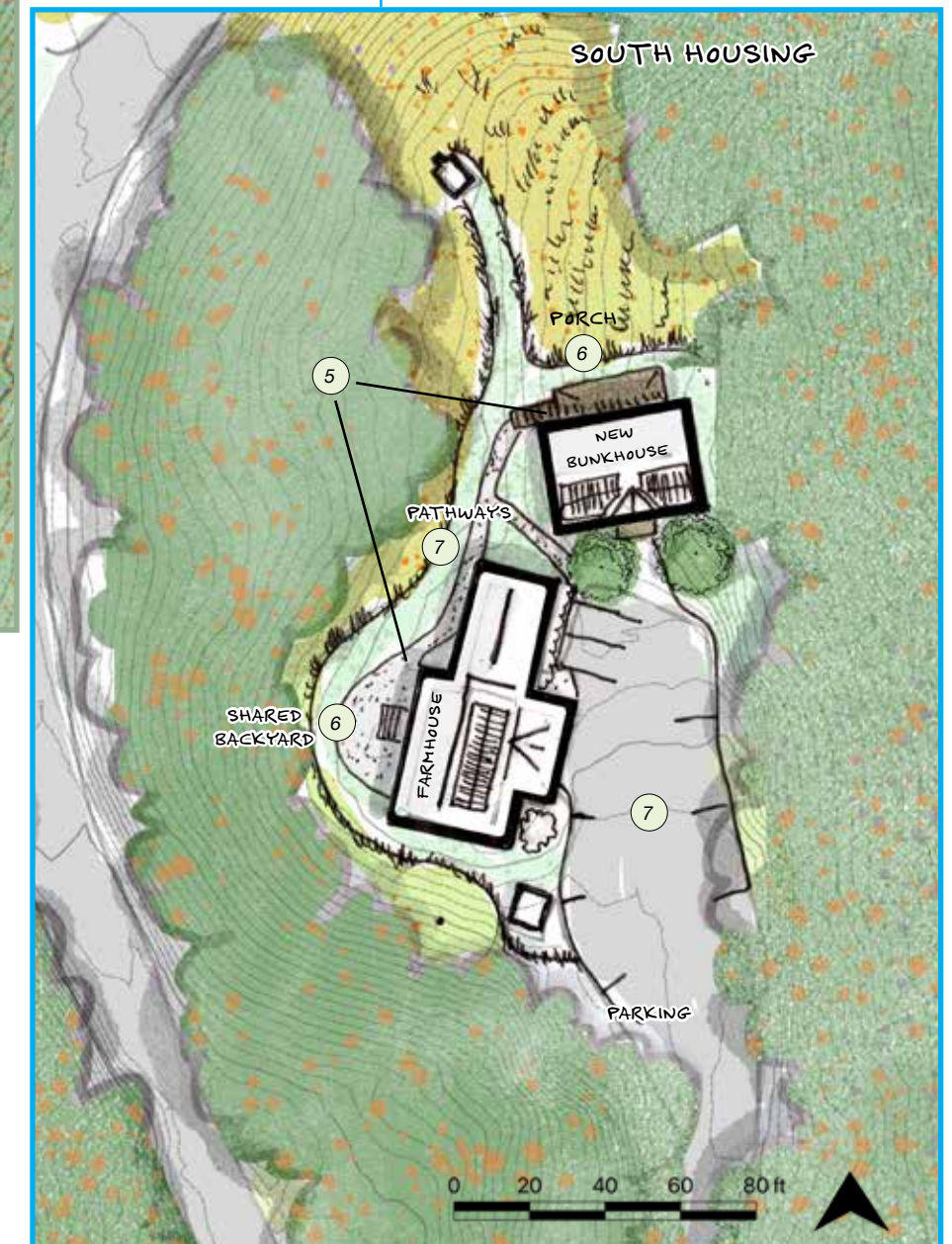
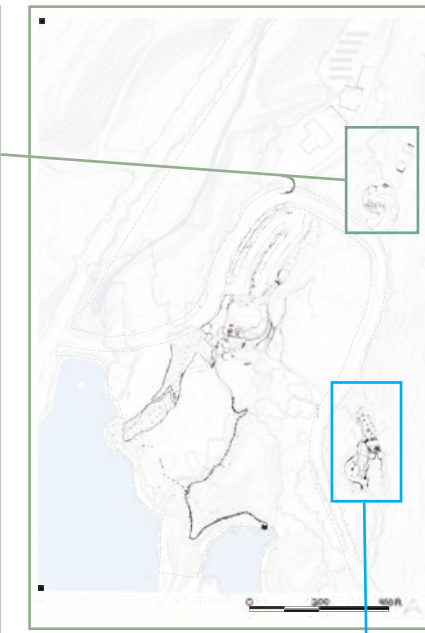
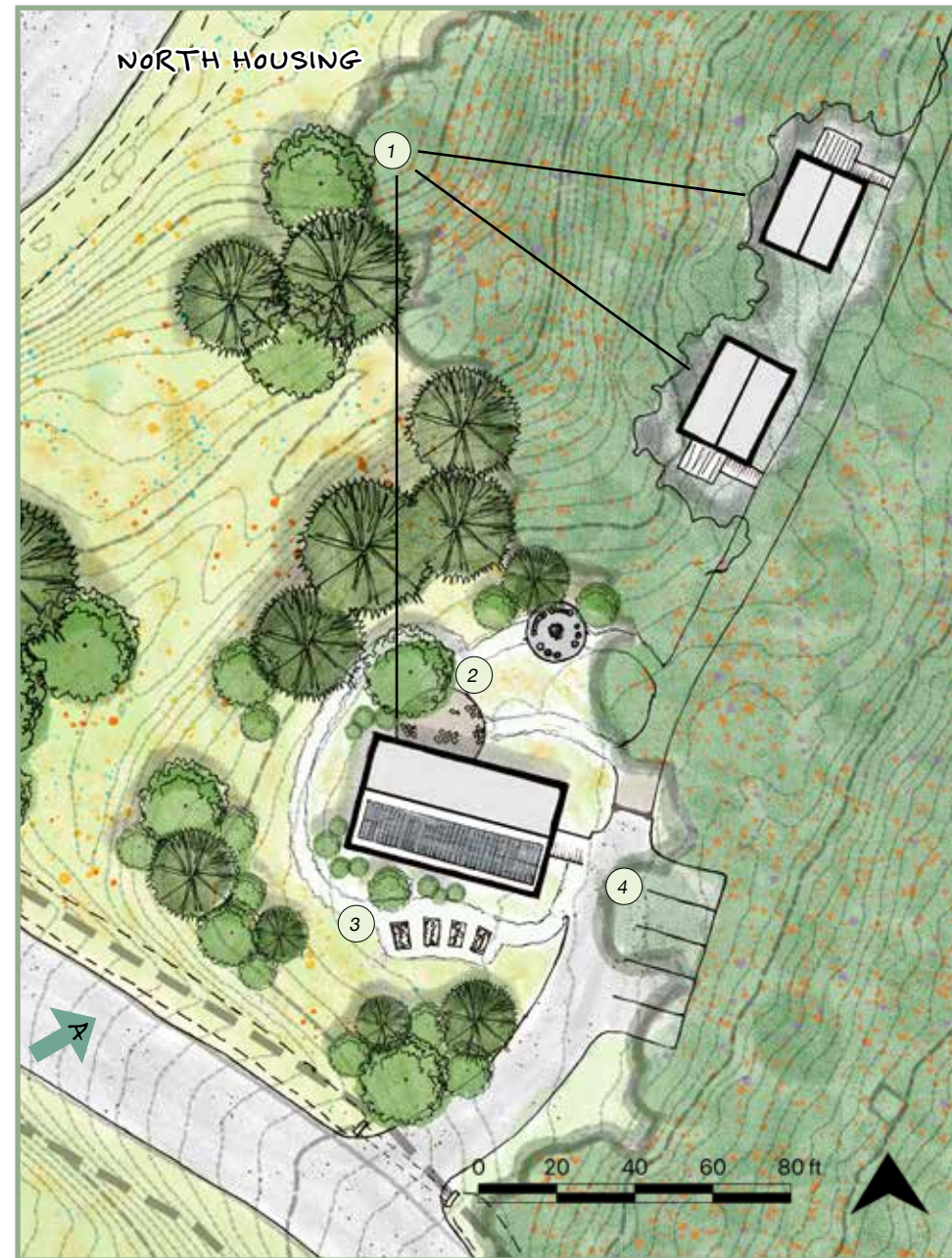
The historic farmhouse, currently being used for staff offices, is renovated to accommodate approximately 10 beds. An additional bunkhouse is placed between this farmhouse and the toe of the slope, accommodating up to 16 more people.

6 Gathering Space

The new bunkhouse incorporates a porch that offers a scenic view north of Killington. The two bunkhouses share a side/backyard. Perhaps an outdoor kitchen or pizza oven?

7 Driveway, Paths, and Parking

The existing driveway provides access to the bunkhouse and farmhouse, and there is room for 6 to 7 cars to park without need for significant expansion of the driveway. A crushed-stone-surfaced pathway connects the north porch of the new bunkhouse to the gathering space west of the farmhouse.



Universal Access Trail

Trailhead Kiosk

Signs for the trail begin near the parking lot, guiding visitors to a more detailed trailhead kiosk just south of the welcome center. The kiosk incorporates important information about the accessibility of the trail to allow users to make informed decisions on whether it suits their abilities. This information should include the trail length, type of surface, typical and minimum tread width, typical and maximum running slope, and the typical and maximum cross slope. The kiosk is also an opportunity to share information with visitors about Farm & Wilderness, the natural environment, and the Indigenous and colonial history of people on the landscape.

Alongside the Fair Day Berm

The trail begins framed by meadow and gardens near the playscape. It then slowly climbs the hillside that serves as seating for Fair Day events. The trail moves mostly parallel with contours, to maintain slopes that are compliant with ABA standards. It slowly gains elevation, leading to expansive views across the fair fields and out over the area surrounding the Welcome Center.

Through the Woods Below Barn Day Camp

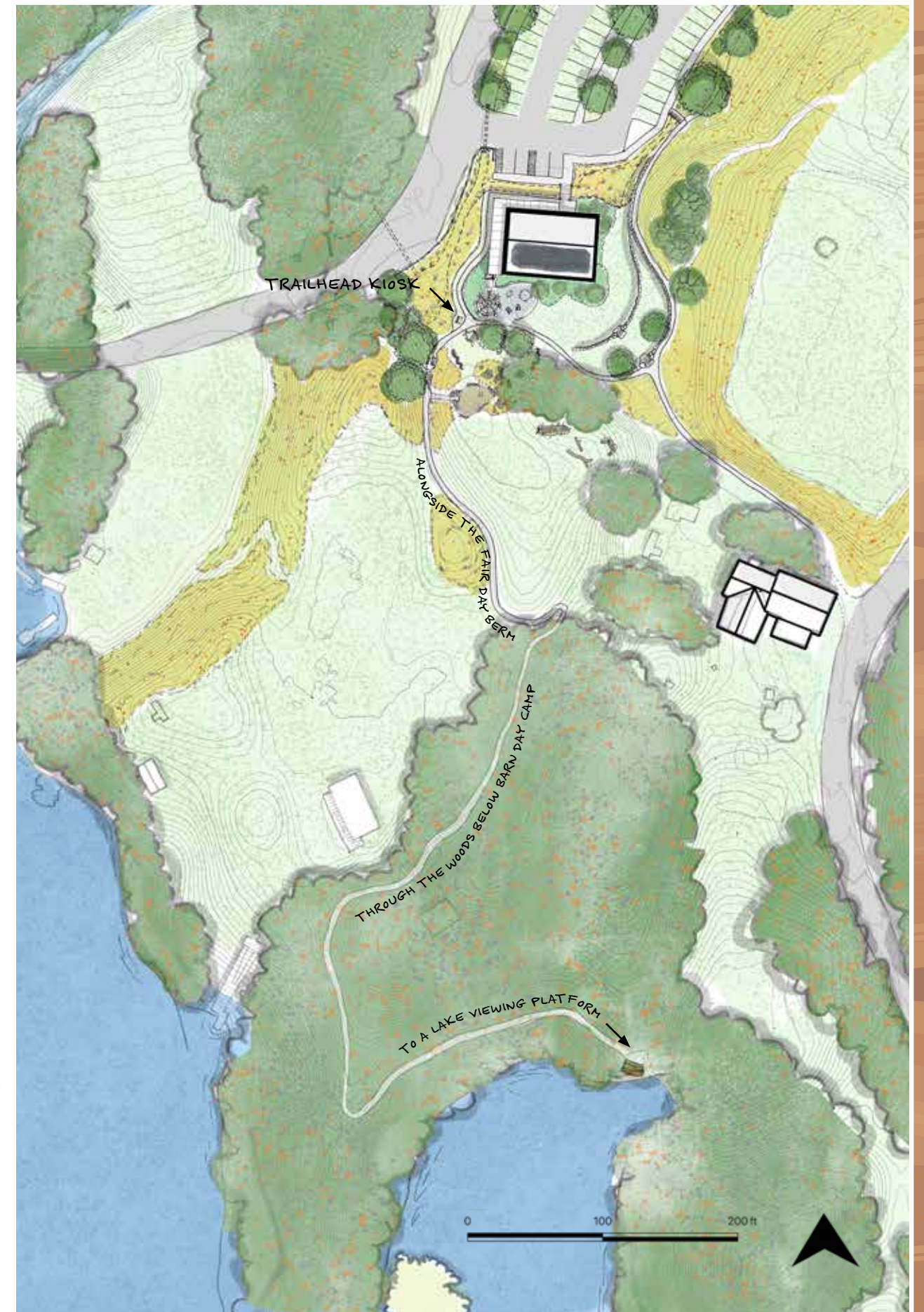
The trail then winds into the mixed conifer and deciduous forest to the southwest of Barn Day Camp, making its way south towards the shore of Woodward Reservoir. This area is quite steep and will require careful construction to avoid erosion on the hillside. The trail runs parallel to contour, slowly lowering in elevation until it reaches a lake viewing platform with a view out to the dwarf-shrub bog.

To a Lake Viewing Platform

A raised lake viewing platform stretches from the trail out above the shore, providing an area of rest and observation overlooking the water and the rare dwarf shrub bog which floats just to the south. The quiet inlet of the reservoir is a place for solitude and rest, surrounded by woodlands and the water. The lake viewing platform allows universal access to view a habitat that rarely is accessible to those with limited mobility.

Farm & Wilderness Accessible Trail Specifications

- ◆ Distance to Lake View
 - 1000 feet
- ◆ Trail width
 - 3.5 feet
- ◆ Maximum Running Slope
 - 10% for 10 feet
- ◆ Maximum Cross Slope
 - 5%
- ◆ Surface Material
 - Compacted Stone Dust



Maintenance Area & Staff Parking

1 Entrance to Maintenance Facility

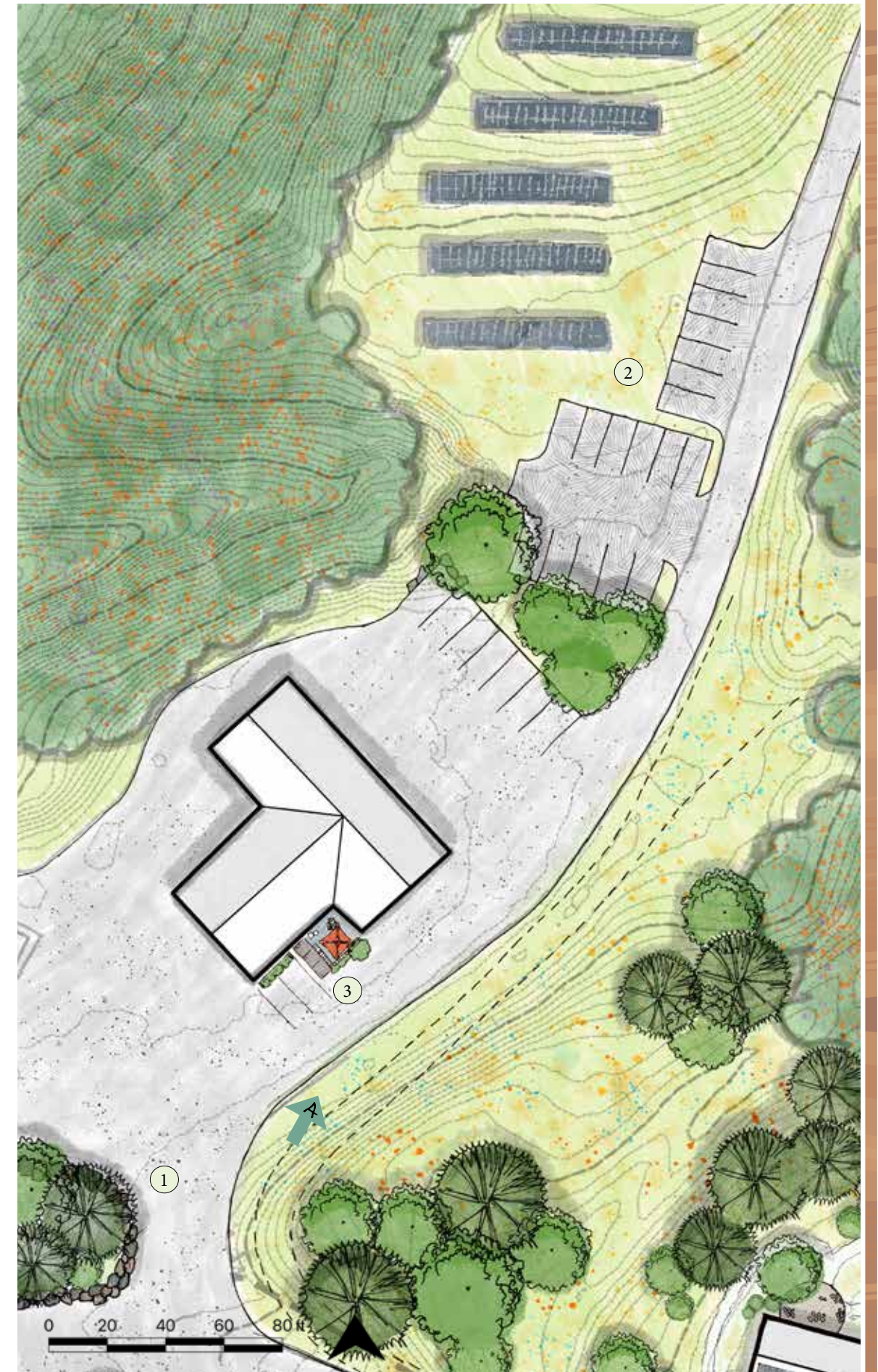
The access to the maintenance building from F&W Road is shifted approximately 30 feet to the east. Wayfinding becomes more clear, as this removes the long sightline to the maintenance building that makes it so prominent upon arrival. The entrance does become more visible to drivers as they get closer. This entrance is also aligned with an access point to the main parking lot in order to create flexible movement for larger vehicles and trailers.

2 25-Vehicle Capacity Overflow Staff Parking

25 parking stalls, 10 feet wide by 20 feet long, are sited north of the maintenance facility and below the solar field. This site is already relatively flat, clear, and compacted. The stalls allow room for vans and pickup trucks and provide a space for seasonal staff vehicles to be parked away from the arrival experience. The trash and recycling containers are moved to the southwest of the maintenance building. Since this lot is adjacent to a steep slope that runs down to Reservoir Brook, it is particularly important that it has a permeable surface. Additionally, vegetated bioswales and buffers around the parking lot help to intercept stormwater before it flows down the slope to the brook.

3 Staff Gathering & Gardens

A 15-foot-by-15-foot patio is tucked into the a south corner of the maintenance building, providing a gathering and resting space for Farm & Wilderness staff who work in the building. Raised planting boxes hem in the patio from the road and line the outside wall adjacent to two parking spaces. The planting boxes help to soften the edges of the building, knitting it into the landscape.



Grading & Stormwater Plan

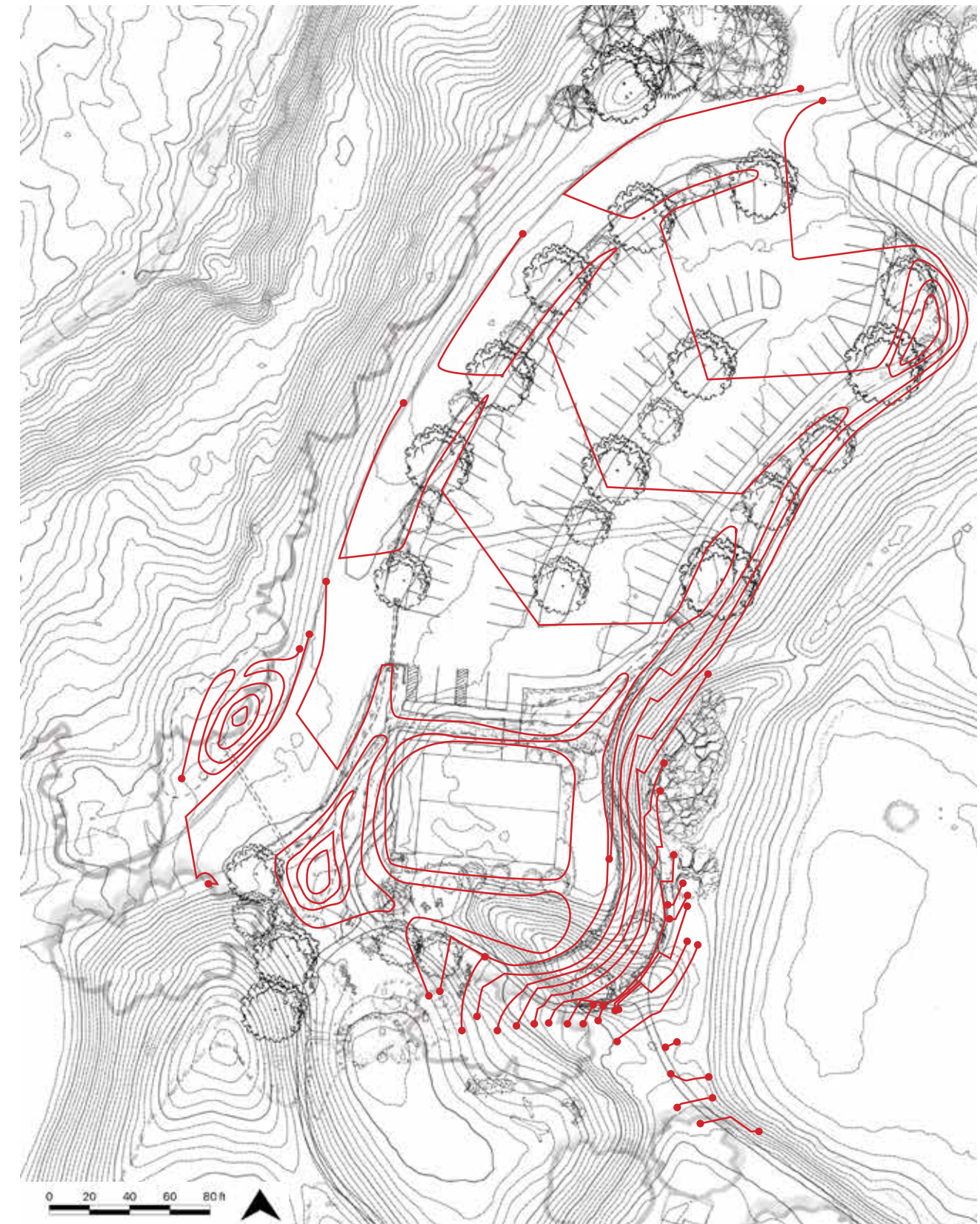
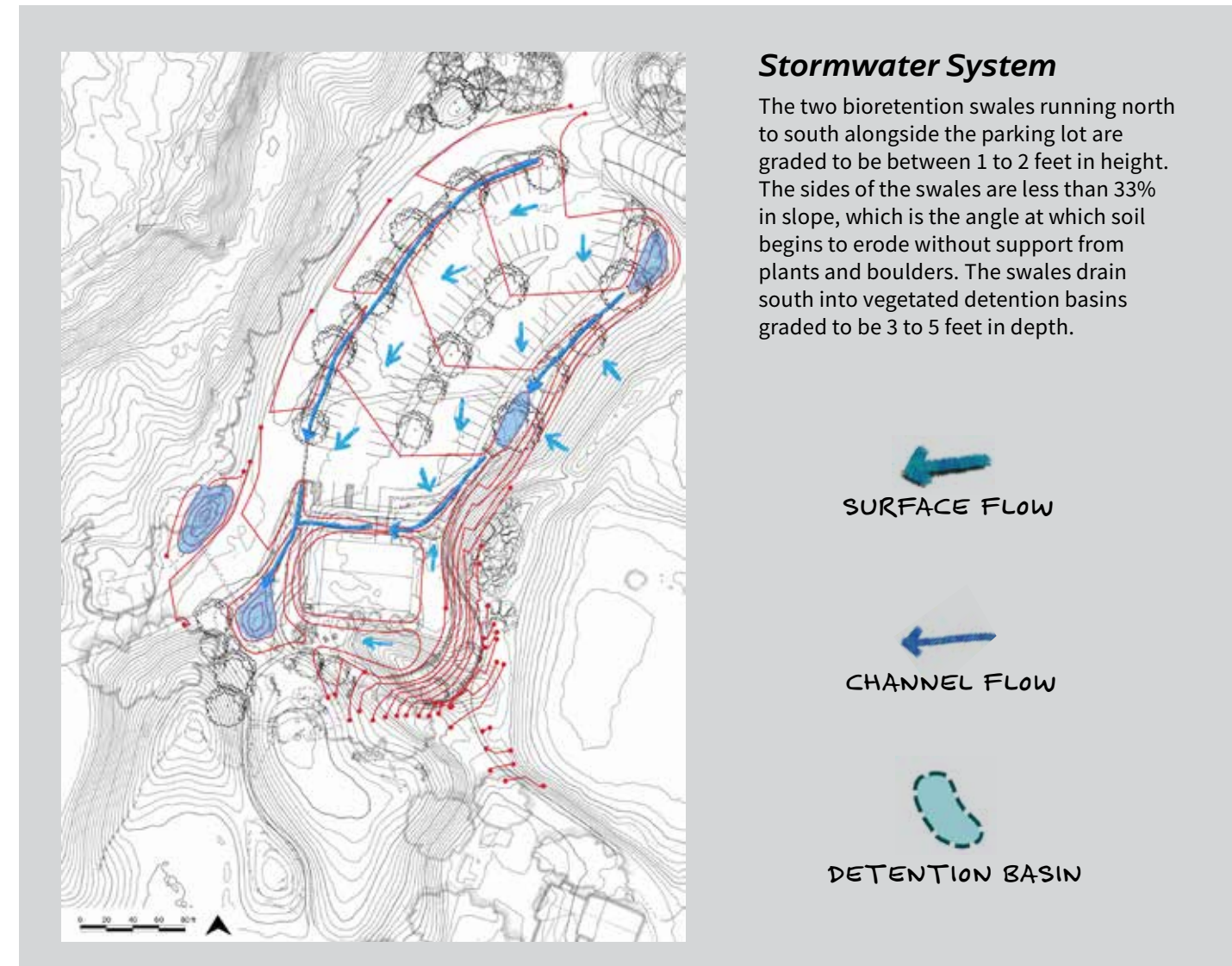
Parking Lot and Welcome Center Grading

The parking lot is sited on an area that is currently 3 to 7 feet lower in elevation than the proposed location of the Welcome Center. The design proposes regrading this site to have more gradual elevation change in order to allow more universally accessible paths and movement from the parking lot to the Welcome Center.

The parking lot area is filled 1 to 4 feet higher than its current elevation. Because of this the road is also raised slightly in order to be near the same elevation as the parking lot. The parking lot lowers in elevation north to south, with the middle slightly raised in order to shed water out towards the two bioretention swales. The existing gravel pad that the Welcome Center is sited on is lowered approximately 2 feet in order to meet the grade of the adjacent parking lot.

Paths and Retaining Walls

All paths through the parking lot and around the Welcome Center are graded to be less than 5% in slope to be ADA compliant. When they approach significant elevation change, they run near parallel to contour to allow more gradual change in height. This is true for the path that runs up the berm to the east of the parking lot. The path slowly works uphill. It then approaches the stepped retaining walls, which creates terraces that allow greater room for the path to traverse.



This grading plan is conceptual. Further input from an engineer and landscape architect would be needed to determine the precise grading needed to accommodate the design. A more detailed grading plan may also reveal changes needed in the design such as path alignment and stormwater drainage.

Planting Palettes

Bioswales and Detention Basins

The selected trees, shrubs, and understory plants are capable of growing in both moist and dry conditions, making them well equipped for the varying moisture conditions in the bioswales and detention basins. These plants are also chosen for the benefit they provide to pollinators, birds, and small mammals, as well as their complimentary color and textural characteristics through the seasons.

	Botanical Name	Common Name	Height	Spacing	Sun/shade	Bloom Time	Color Interest
understory	<i>Acorus americanus</i>	sweet flag	2 ft	18"	Sun	May - Jul	
	<i>Anemone canadensis</i>	Canada anemone	1 ft	8"	sun - part shade	May-Jun	
	<i>Asclepias incarnata</i>	rose milkweed	4 ft	18"	sun - part shade	Jun-Aug	
	<i>Carex grayi</i>	common bur sedge	3 ft	18"	sun - shade	May - Aug	
	<i>Carex sprengei</i>	long-beaked sedge	2 ft	12"	part sun - shade	May - Jul	
	<i>Iris versicolor</i>	northern blue flag	3 ft	18"	sun - part shade	May - Jul	
	<i>Lobelia cardinalis</i>	cardinal flower	4 ft	18"	sun - part shade	Jul - Sept	
	<i>Panicum Virgatum</i>	switch grass	4 ft	24"	sun - part shade	Jul - Sept	
	<i>Rudbeckia hirta</i>	black-eyed Susan	2 ft	16"	sun - part shade	Jun - Oct	
	<i>Zizia aurea</i>	golden Alexander	3 ft	18"	sun - part shade	Apr - Jun	
tree shrub	<i>Sambucus canadensis</i>	elderberry	10 ft	48"	sun - part shade	Jun - Aug	
	<i>Cornus stolonifera</i>	red osier dogwood	10 ft	2-5 ft	sun - part shade	Jun - Sep	
	<i>Ilex verticillata</i> 'red sprite'	winterberry holly	4 ft	2.5 ft	sun - part shade	June - July	
	<i>Acer rubrum</i>	red maple	40-60 ft	-	sun - shade	Mar - Apr	
	<i>Alnus incana subsp. rugosa</i>	speckled alder	20-30 ft	-	sun - part shade	Apr - May	



elderberry



golden Alexander



cardinal flower



switch grass



rose milkweed



northern blue flag



Perennial Garden

This list comprises a mix of reliable native and non-native perennial plants that form complementary colors and textures throughout different seasons. These plants were selected for their ability to fit within the context of a more orderly landscape. They can be planted densely to minimize the sunlight that reaches the ground, thus diminishing the germination of unwanted plants in the seedbank.



anise hyssop



narrow-leaf blue star



coneflower



beardtongue



daylily



bloody cranesbill



smooth hydrangea



peony

Botanical Name	Common Name	Height	Spacing	Sun/shade	Bloom Time	Color of Interest
<i>Abelia mosanensis</i>	fragrant abelia	5 ft	5 ft	sun - part shade	May - Jun	
<i>Achillea x "Firefly Sunshine"</i>	yarrow	2 ft	18"	sun	Jun - Aug	
<i>Agastache "Blue Fortune"</i>	anise hyssop	3 ft	20"	sun - part shade	Jul - Sep	
<i>Amsonia hubrichtii</i>	narrow-leaf blue star	2 ft	24"	sun - part shade	May - Jun	
<i>Aristolochia macrophylla</i>	dutchman's pipe	25 ft	variable	part shade	May - Jun	
<i>Echinacea "Cheyenne Spirit"</i>	coneflower	3 ft	18"	sun	Jun - Aug	
<i>Gaillardia "Arizona Red"</i>	blanket flower	1 ft	12"	sun	Jun - Sep	
<i>Geranium sanguineum "Rozanne"</i>	bloody cranesbill	2 ft	18"	sun	Jun - Aug	
<i>Geum triflorum</i>	prairie smoke	1 ft	6"	sun - part shade	Apr - Jun	
<i>Hemerocallis "Happy Returns"</i>	daylily	2 ft	20"	sun - part shade	Jun - Jul	
<i>Hydrangea arborescens "Annabelle"</i>	smooth hydrangea	4 ft	5 ft	sun - part shade	Jul - Sep	
<i>Hydrangea paniculata "Vanilla Strawberry"</i>	panicle hydrangea	6 ft	5 ft	sun - part shade	Jul - Sep	
<i>Lonicera sempervirens "Major Wheeler"</i>	honeysuckle vine	8 ft	variable	sun	Jun - Jul	
<i>Paeonia "Dr. Alexander Fleming"</i>	peony	3 ft	24"	sun	Jun	
<i>Paeonia "Karl Rosenfeld"</i>	peony	3 ft	24"	sun - part shade	Jun	
<i>Penstemon digitalis</i>	beardtongue	3 ft	16"	sun - part shade	Jun - Jul	
<i>Rosa virginiana</i>	wild rose	5 ft	8 ft	part shade - shade	Jun - Aug	

Planting Palettes (cont.)

Bioswales and Detention Basins

These species are selected to fill multiple ecological niches. A mix of long-lived species and short lived species that freely self seed comprise a plant community that is able to regenerate over time and fill multiple roles.

	Botanical Name	Common Name	Height	Spread	Other Notes
tree	<i>Elaeagnus multiflora</i>	goumi	15'	15'	Partially self-fertile--plant more than one if production is low.
	<i>Prunus cerasus "Montmorency"</i>	tart cherry	12'	10'	Self-fertile, but planting 2 or more ensures the best crop.
	<i>Prunus maritima</i>	beach plum	12'	12'	Not self-fertile--needs 2 seed-grown plants or compatible cultivars for pollination.
	<i>Prunus x "Alderman"</i>	Alderman plum	20'	20'	Plant with "Toka" or other compatible Japanese-American hybrid plum for pollination.
	<i>Prunus x "Toka"</i>	bubblegum plum	14'	14'	Plant with "Alderman" or other compatible Japanese-American hybrid plum for pollination.
shrub	<i>Amelanchier x "Regent"</i>	Saskatoon serviceberry	6'	6'	Compact cultivar keeps fruit low to the ground and easy to harvest.
	<i>Lonicera kamchatica</i>	honeyberry	4'	4'	Not self-fertile--plant 2 compatible cultivars for pollination.

Orchard

These fruit trees and shrubs were selected for their affinity for sandy, well-drained soil, cold hardiness, and ripening time. While unconventional choices for an orchard, their fruits will be more likely to ripen in time for campers to enjoy before returning home for the summer.

Botanical Name	Common Name	Height	Spread	Sun/shade	Wildlife/Landscape value
<i>Myrica pensylvanica</i>	bayberry	5-10'	5-10'	Full sun to part shade	Semi-evergreen, silver berries with fragrant wax
<i>Picea glauca</i>	white spruce	40-60'	20'	Full sun	Evergreen
<i>Juniperus virginiana</i>	eastern red cedar	35-70'	30-40'	Full sun	Evergreen with blue berries that birds love
<i>Carya ovata</i>	shagbark hickory	70-80'	50'	Full sun - part shade	Catkins and nuts have high wildlife value, nuts are edible
<i>Tilia americana</i>	American linden	60-80'	50-60'	Full sun - shade	Fragrant blooms in June-July, supports native bees
<i>Celtis occidentalis</i>	hackberry	50-70'	40-50'	Full sun	Birds and mammals love the fruits, bark has interesting texture
<i>Quercus rubra</i>	red oak	70'	50'	Full sun	Important food source for wildlife

Trees and Screening

A mix of deciduous and coniferous trees knit buildings and other structures in with the landscape. Trees of varying sizes and shapes allow flexible screening of views, the ability to provide passive solar gain and protection from winter winds. Trees were also selected based on their adaptability to climate forecasts.

Botanical Name	Common Name	Height	Spacing	Sun/shade	Bloom Time	Color of Interest	Habitat Value And Other Notes
<i>Aster novi-belgii</i>	New York aster	3 ft	24"	sun to part shade	Aug - Sept		Host species for the pearl crescent butterfly. Flowers are popular with pollinators.
<i>Lupinus perennis</i>	sundial lupine	2 ft	10"	sun to part shade	May - July		Host plant for the Karner Blue butterfly.
<i>Monarda fistulosa</i>	wild bergamont	4 ft	20"	Sun to part shade	July - Aug		Host plant raspberry pyrausta butterfly.
<i>Liatris aspera</i>	button blazing star	3 ft	16"	sun - part shade	July - Aug		Pollinator magnet, brilliant purple flowers in late summer.
<i>Panicum virgatum</i>	switchgrass	4 ft	24"	sun - part shade	Jul - Sept		Seeds are food source for birds and small mammals. Provides nesting material as well.
<i>Pycnanthemum muticum</i>	clustered mountain mint	3 ft	18"	sun - part shade	July - Sept		Long -lasting flowers are very popular with pollinators. Can spread aggressively via rhizomes.
<i>Rudbeckia hirta</i>	black-eyed Susan	2 ft	16"	sun - part shade	Jun - Oct		Larval host plants of the silvery checkerspot. Short lived but will reseed itself.
<i>Schizachyrium scoparium</i>	little bluestem	3 ft	18"	sun-part shade	July - Oct		Mounding grass. Forage and cover for birds.
<i>Solidago speciosa</i>	showy goldenrod	4 ft	24"	sun - part shade	Sep - Oct		Food source for many pollinators and birds. Host species for wavy-lined emerald moth.
<i>Asclepias syriaca</i>	common milkweed	3 ft	30"	sun-part shade	Jun - Aug		Fragrant bloom. An important source of nectar, host plant for the Monarch Butterfly.
<i>Sorghastrum nutans</i>	Indian grass	6 ft	30"	sun-part shade	Aug - Sep		One of the first warm-season grasses to form seeds--attracts birds, host plant.

If Planting From Seed, Consider the Showy Wildflower Seed Mix from New England Wetland Plants Inc.



little bluestem



button blazing star



sundial lupine



showy goldenrod

Land Statement

Abenaki People of the Dawn / Wabanaki (Dawnland Confederacy) N'dakinna



This map, developed by Native Land Digital (a not-for-profit organization in Canada), shows an estimation of the territories that Indigenous people of colonized New England inhabited. Farm and Wilderness is located on the ancestral homelands of the Abenaki People of the Dawn and Wabanaki (Dawnland Confederacy).

The following pages explore opportunities and visions for creating a more welcoming and inviting landscape for Farm & Wilderness summer camps. A question inherent to this exploration is to whom the organization, and the land it occupies, is welcoming and accessible. The power and privilege to inform and make decisions related to the landscape comes with the obligation to acknowledge the history of settler colonization and the forced removal and erasure of indigenous people from the land.

Farm & Wilderness is located on land that was stolen from the Abenaki People of the Dawn by European colonists. This land is known to the Abenaki people as N'dakinna, or "homeland." The Abenaki People of the Dawn have continually inhabited and stewarded this land for over 12,000 years.

Abenaki and other indigenous peoples continue to call Vermont home today. There are four contemporary Vermont Abenaki communities including Missisquoi, Nulhegan, Koas, and Elnu. In addition, there are organizations and groups, such as the Vermont Indigenous Heritage Center, working to advocate for Abenaki people and educate the broader public about their culture and history. The designs and plans outlined in this document have not been reviewed nor endorsed by any local tribal nation including the Vermont Abenaki communities.

Index

- Land Statement..... 1**
- Introduction & Goals..... 2**
- Existing Conditions..... 3**
- Community..... 4**
- Pedestrian & Vehicle Circulation..... 5**
- Snapshots of Circulation 6**
- Arrival Sequence & Views..... 7**
- Slopes 8**
- Drainage, Stormwater, & Soils..... 9**
- Zoning, Regulations, & Utilities.....10**
- Direct & Passive Solar11**
- Summary Analysis: Woodward Arrival.....12**
- Hall Lots: Existing Conditions & Access.....13**
- Hall Lots: Landscape Analysis14**
- Hall Lots: Summary & Building Suitability15**
- Design Alternatives.....16**
- Final Design: Overview.....17**
- Final Design18**
- Final Design (spread)19**
- Welcome Center20**
- Natural Play Area.....21**
- Main Parking Lot.....22**
- Housing.....23**
- Universal Access Trail.....24**
- Maintenance Area & Staff Parking25**
- Grading & Stormwater Plan26**
- Planting Palettes27**
- Planting Palettes (cont.).....28**
- Construction Details, Precedents, & Cost Estimate29**



Introduction

Farm & Wilderness (F&W) is a summer camp organization that provides immersive outdoor experiences for youth among the forests, hills, and lakes of south-central Vermont. Many of its summer camps are located on a 620-acre parcel on the eastern side of Woodward Reservoir in Plymouth, Vermont. The property rests on a forested, east-facing hillside that slopes down to the reservoir. The camps are lower down in the valley near the reservoir, while much of the hillside is conserved for habitat and outdoor recreation as forest legacy land.

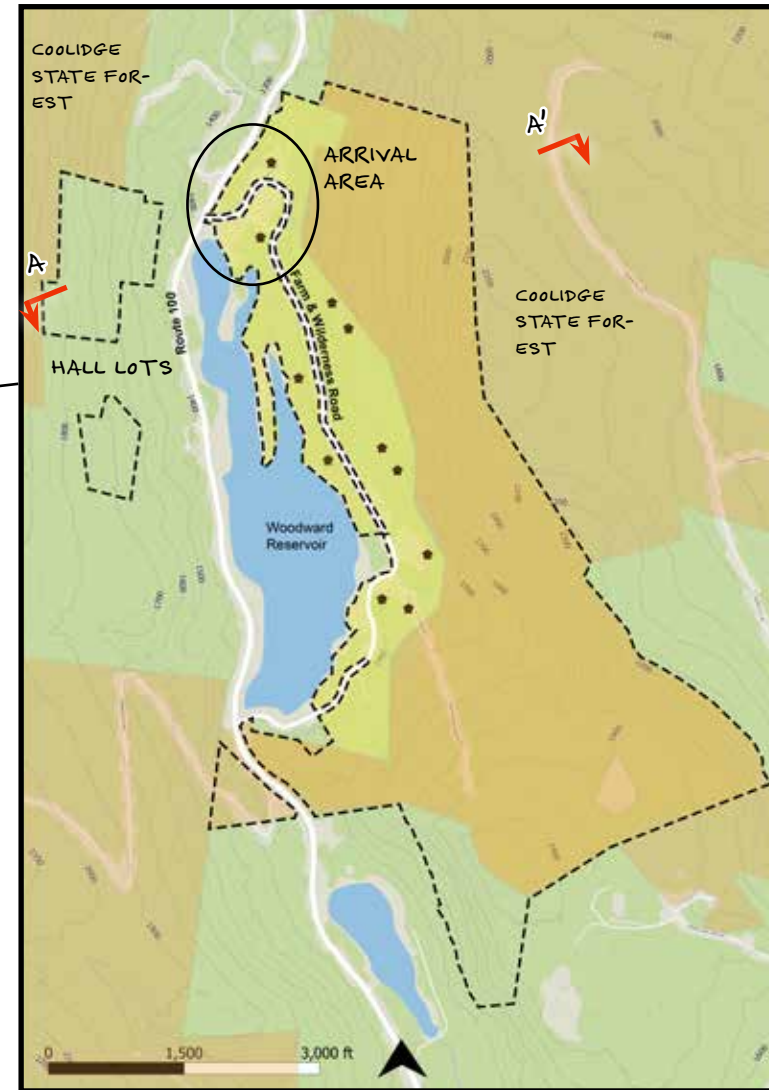
F&W is hoping to reimagine the arrival area to this property, which is situated on the northern tip of Woodward Reservoir. This space provides the first impression to visitors and campers upon arrival. Many within the organization feel this space is confusing, uninviting, and inaccessible to many of its visitors. Instead, Farm & Wilderness envisions an arrival experience that is beautiful and engaging, provides clearer wayfinding, and generates the joy and excitement that campers feel on the rest of the property.

As part of this vision, F&W is considering how the space might accommodate future uses and invitations to the public. This includes the siting of a welcome center and a public and universal access trail. In addition, Farm & Wilderness is considering what it would take to expand its programming beyond just the summer months. Doing so would require more winterized housing for staff. Farm & Wilderness would like to explore options for siting housing both in the arrival area and on the Hall Lots, which are four other parcels that it owns on the other side of Route 100.

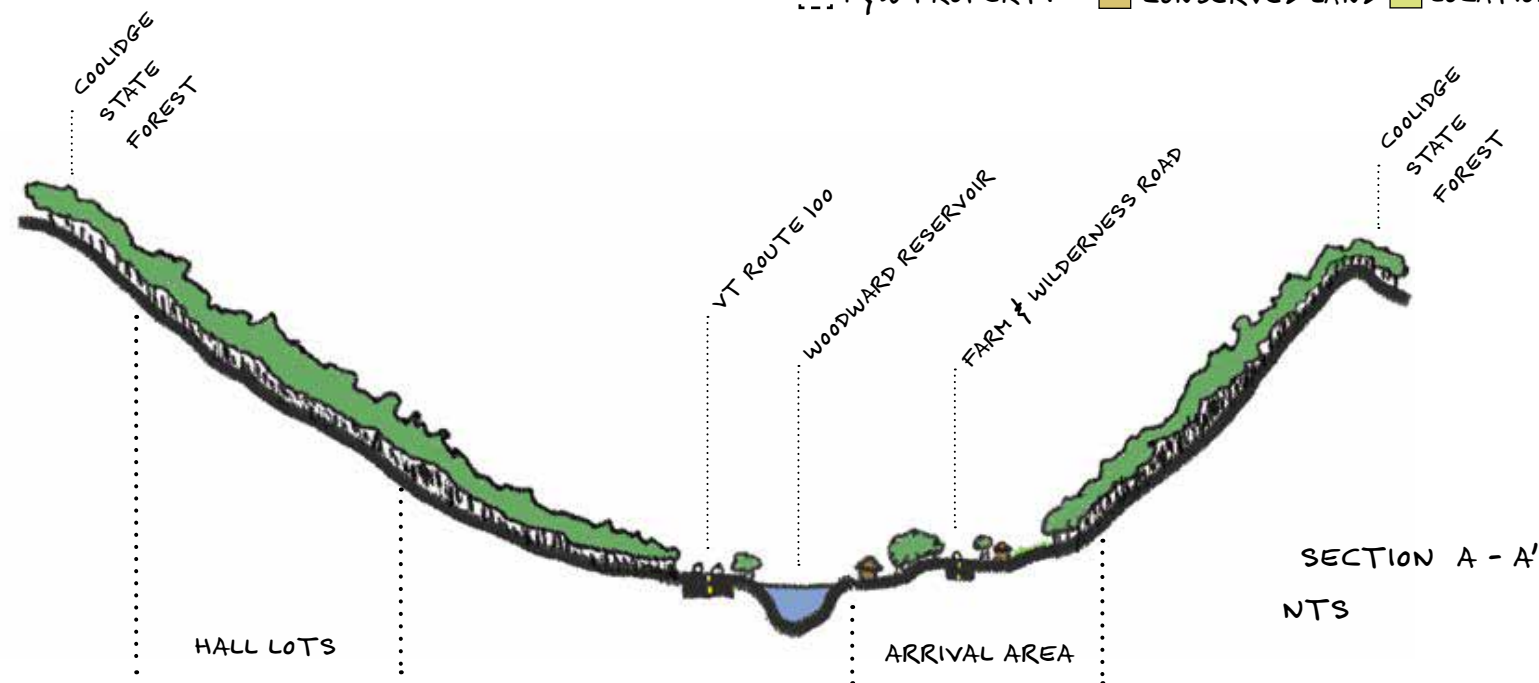


Above: F&W is located in the hills and forest of south central Vermont.

Right: F&W owns a 620-acre parcel east of Route 100 in Plymouth VT, as well as 4 parcels west of Route 100.



--- F&W PROPERTY ■ CONSERVED LAND ■ LOCATION OF CAMPS



Client Goals



An inviting arrival experience

Farm & Wilderness wants its landscape to provide a welcoming experience to both new and returning visitors by incorporating clear and intuitive wayfinding and accessibility to all, while reflecting the organization's values.

A new welcome center

F&W is in the process of designing a new, multi-use Welcome Center that will provide its staff, campers, and greater community with space to gather, relax, and learn. The organization wants to explore appropriate locations for this Welcome Center and envision the landscape around a predetermined building footprint.



Year-round housing for staff

F&W would like to explore suitable locations and configurations for year-round housing for 50 people. The sites they would like to consider include the Woodward Arrival Area, as well as the Hall Lots west of Route 100.

Better accessibility in the arrival area and a public accessible trail

F&W wants to explore ways to improve accessibility to all people in the Woodward Arrival Area by connecting zones of use with accessible pathways and finding a suitable location to build an accessible trail.



Existing Conditions

The arrival area to Farm & Wilderness is situated on the northern tip of Woodward Reservoir where town-owned Farm & Wilderness Road extends off Route 100. The road first travels over the dam that holds in the reservoir, which then loops north in a 'U' shape. From there it travels south to the location of the overnight camps. The arrival area shown in the map to the right is roughly 30 acres in size. It has very undulating topography that slopes down to the reservoir and Reservoir Brook, which flows to the north off Farm & Wilderness property.

Northern hardwood forest covers much of the hillside that rises up to the east, which is contiguous with Farm & Wilderness' forest legacy land and the Coolidge State Forest. There is little space below the hillside that is not heavily used by Farm & Wilderness for their operations and

programming. Open fields located below the hillside are often used for play, livestock grazing, large gatherings, and in some locations, for spreading the compost from the many composting toilets on the property.

There are three larger buildings including an office, day camp, and maintenance building as well as several smaller structures like outhouses and open-air cabins tucked in the woods. The amount of activities and needs of the arrival area has given it a somewhat utilitarian appearance in certain locations. Immediate upon arrival is a view of large gravel parking lots and the maintenance building. Although both are critical for the camp's operations, they contribute to a confusing and somewhat uninviting experience for visitors.



1 Maintenance Building | Hosts some staff offices, garage stalls, and space for supporting projects and storing equipment.



2 Staff Offices | Located on a small hill above Farm and Wilderness Rd, the staff offices are held in an old farmhouse. According to F&W, its location makes it difficult to find for first-time visitors.



3 Barn Day Camp | Located along F&W Road and welcomes 80 to 100 campers ages 4 to 7 per session through the summer months.



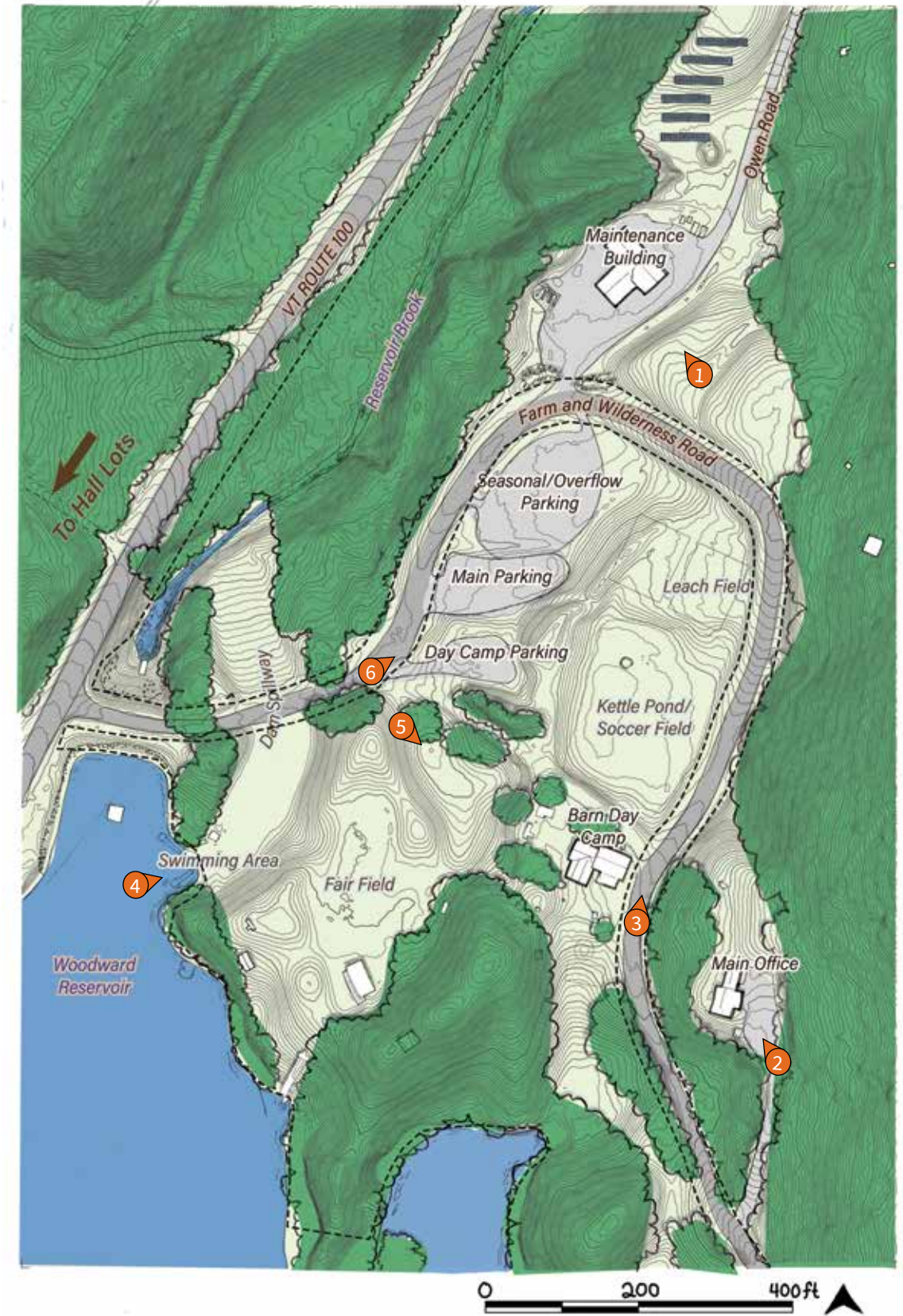
4 Woodward Reservoir Beach | A sandy and gently sloping beach provides an excellent place to swim. The beach is used daily in the summer by campers and occasionally by Barn Day Camp parents. Farm & Wilderness is required to staff a lifeguard when anyone is swimming here.



5 Fair Fields | Another highly used area is the fair fields which host a large event at the end of the summer when parents reunite with their kids and celebrate the joys of camp!



6 Parking Lots | A series of parking lots are used for day camp pick-up and drop-off, as well as parking for seasonal staff vehicles. The parking lots receive some public use during the offseason for folks who enjoy walking along F&W Rd.



Community

Mission

Meaningful work, joyful play, and rugged outdoor living.

Farm & Wilderness currently runs seven camp programs per summer for ages 4 to 17. The camps provide immersive, outdoor experiences that focus on simple living, organic farming, and wilderness training. The organization aims to uphold its mission and values in an environment that is inclusive and accessible to children regardless of economic or social background.

F&W has a long history of pursuing equity and inclusion. It was one of the first racially integrated summer camps in the United States. Throughout its nearly 80 years of operation, the organization has also adapted to changing social values and new research about human needs. Today, there is careful effort put towards honoring the identity of each member of the community, particularly in the area of its gender-inclusive camp structures.

F&W employs 16 year-round staff members, 9 camp directors, and approximately 200 seasonal staff. Camp directors and seasonal staff live on-site during the summer months; 10 to 15 year-round staff live off-site and commute in; and a handful of year-round staff live on-site all months of the year.

“At Farm & Wilderness summer camps in Vermont, we believe that a diverse community makes us stronger and more resilient. Our Quaker heritage lays out the concept of the ‘Light of the Spirit’ in each person and we work each year to live up to this ideal. Our goal is to provide an open and affirming space for children, young people and staff, where they feel welcomed for who they are, not feel pressured to be something else.”

– From the F&W Inclusivity and Equity Statement

Where the F&W community meets the greater community...

Farm & Wilderness began the process of designing a Welcome Center over 10 years ago. Employees identified the need for a space that would serve many different purposes; i.e. provide amenities for seasonal staff, offer a space to display the abundant archive, incorporate a large meeting room that could be used by F&W or be available to rent, and serve as a place where Farm & Wilderness could better interact with the public. The design of this building has gone through many iterations, and while Farm and Wilderness will be ultimately responsible for determining the programming of the building and how it will fit the community, the goal of this project is to imagine how that building could fit the landscape.



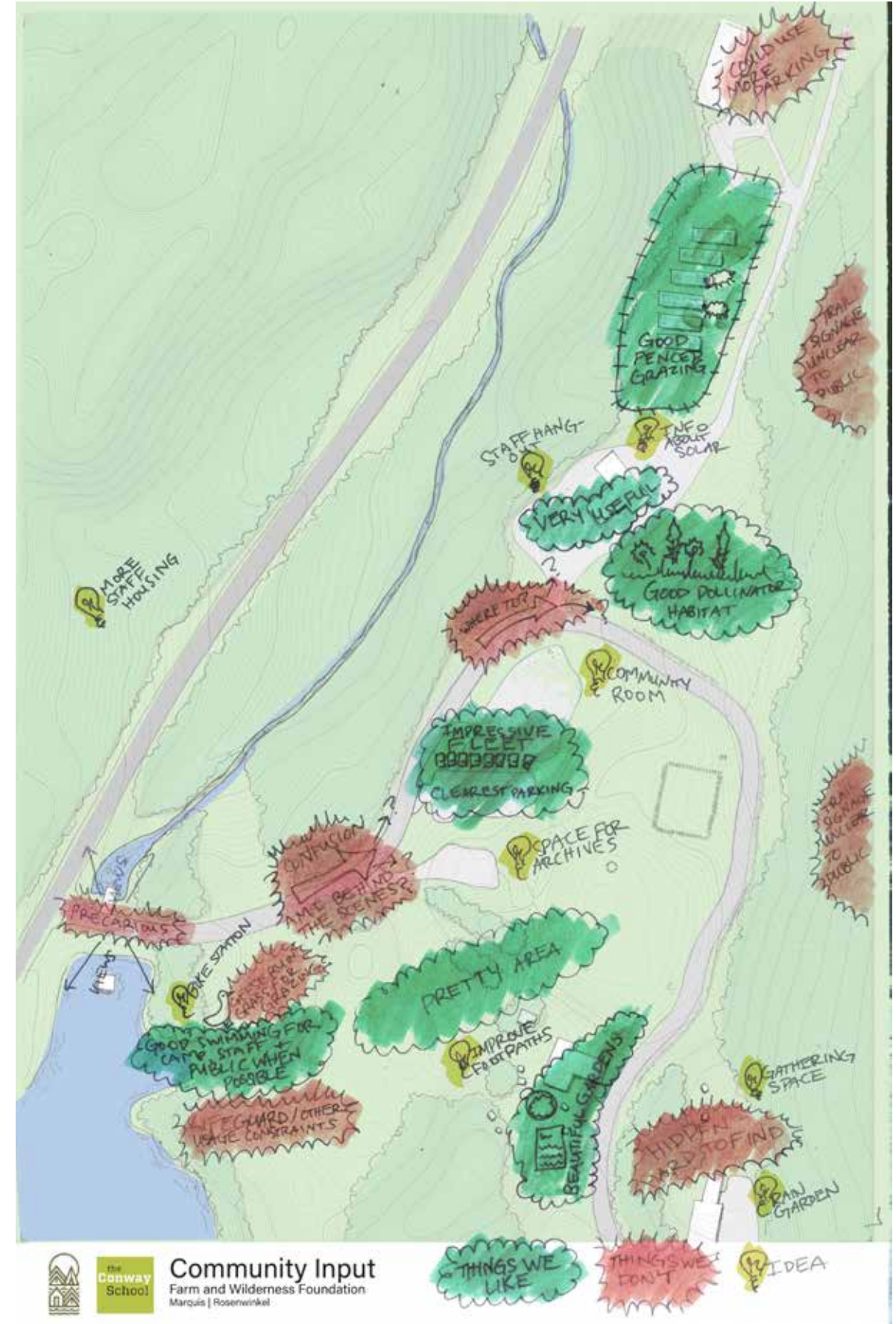
Staff Input on Arrival Space

This map illustrates areas that a group of camp staff stakeholders, including administrative staff and camp directors, feel are assets, constraints, or areas to change in the Woodward arrival area. The staff and camp directors present at the community meeting on May 6, 2022 expressed appreciation for the lovely views over the reservoir and rolling fields; the amenities useful to daily operations, like the maintenance facility; and places of high ecological and agricultural value, like pollinator habitats and lawns to pasture their animals. The stakeholders’ concerns about the space included unwelcoming views, parts of the road that feel unsafe, and difficult or counterintuitive wayfinding. Ideas for how the space could be improved included incorporating more gathering spaces, more gardens, and more opportunity for public education about F&W’s resources.

Other potential stakeholders to this project, who have not yet been directly involved, include parents/guardians of Barn Day Camp campers, the campers themselves, and members of the public whom the Welcome Center and Accessible Trail are meant to serve. Keeping these stakeholders engaged through the review process will help ensure that the project serves the community.



F&W Staff offer their input on the arrival space at the May 6th community meeting.

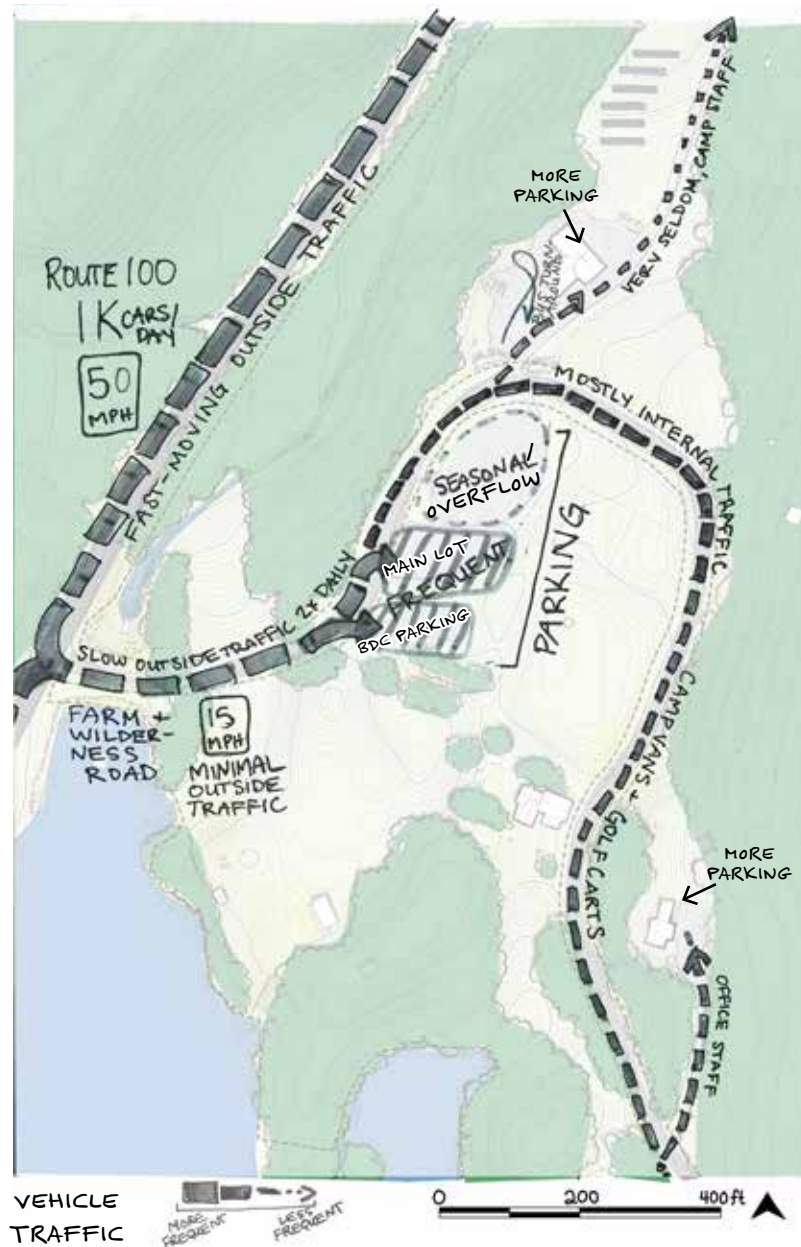


Pedestrian & Vehicle Circulation

Vehicle Circulation

The junction of Farm and Wilderness Road and Route 100 at the north entrance of Woodward Reservoir serves as the main arrival to the summer camps. External vehicular traffic (i.e., vehicles that are not staff or camp vehicles) typically circulates between the intersection of Route 100 and the parking lots. Larger trucks, i.e., delivery trucks and trash/recycling trucks, enter off Route 100 and travel to the maintenance facility, using the open space to turn around. Other large vehicles like shuttle buses also use the maintenance facility space to turn around.

Along Farm & Wilderness Road past the maintenance facility and current parking lots, vehicular traffic is mostly limited to internal camp vehicles. Camp employees run trash and recycling to the maintenance facility once daily, and camp vans come and go when bringing campers on excursions. Farm & Wilderness has made efforts to reduce its use of gas-powered vehicles in recent years, shifting to electric vehicles and staying on-site when possible.



Roads

- Route 100: State-owned, 50mph, 1,000 cars daily; “Summer Camp Area” signs at either end of Farm and Wilderness Road on Route 100
- Farm and Wilderness Road: Town-owned, 15mph, minimal outside traffic daily, leads to camps along Woodward then exits south

Parking

- Barn Day Camp parking lot: 5K square feet, requires spaces for 70 vehicles
- Main Lot: 10k square feet
- Summer Staff/Overflow Parking: 25K square feet
- Extra spaces by Maintenance Facility and Main Office

Design Implications

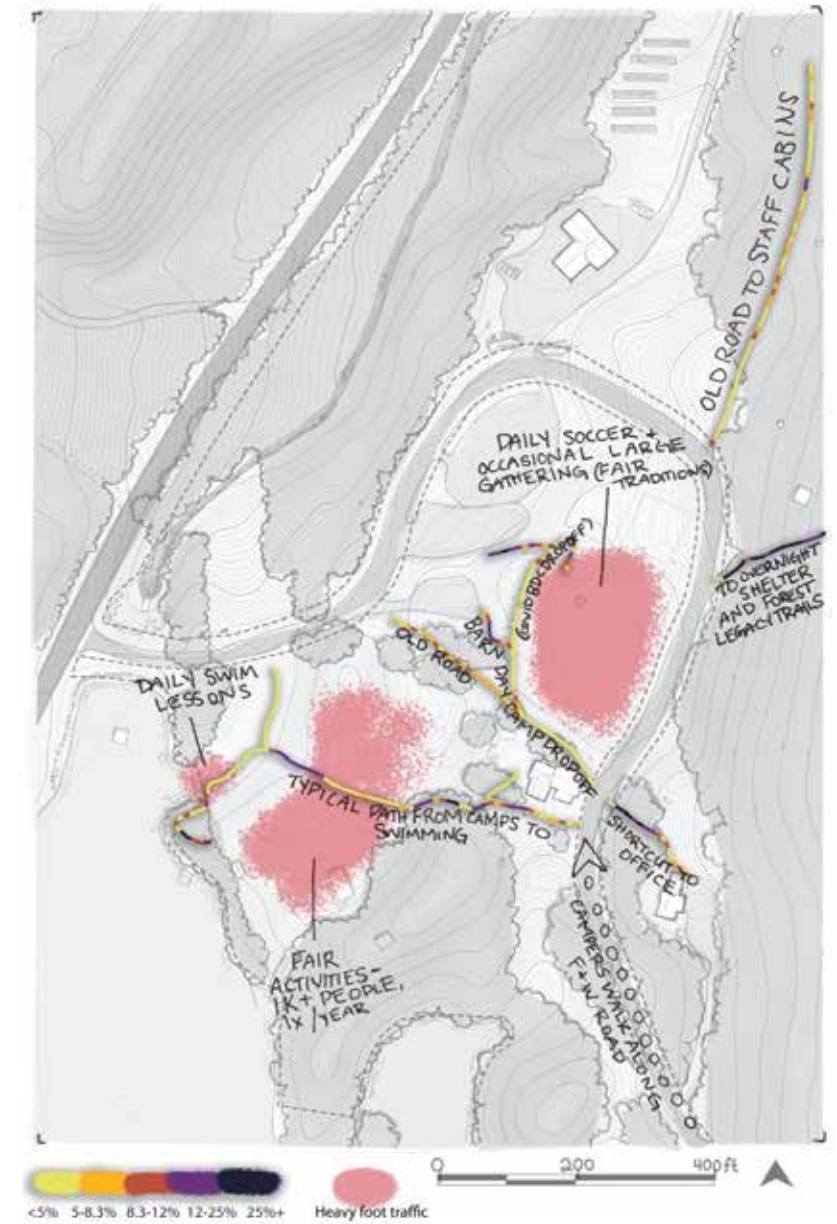
The roads near and bisecting the focus area are under state and town jurisdiction, so any changes to these roads may require permitting, extended review processes. Adding buildings and parking lots to the arrival space could change patterns of pedestrian and vehicular circulation. Parking is a heavy demand on the spatial requirements of this site. The space that is currently allocated to Barn Day Camp parking does not adequately accommodate the demand. If there are opportunities to relieve this pressure through offsite or non-spatial means, like encouraging use of a shuttle or carpooling, it will offer space for other uses in the arrival area.

Pedestrian Circulation

The often steep and undulating topography in this area creates challenges for pedestrian circulation. Shown on the map are commonly taken routes between zones of use (specifically the parking lot, main office, soccer field, fair fields, swimming area, and shelters) in the arrival area. These informal paths are worn down to mineral soil in places from heavy foot traffic, and some are showing signs of entrenchment, compaction, and erosion. See sheet 6 (Snapshots of Circulation) for a detailed analysis of different patterns of circulation at different times throughout the season. All of these routes contain slopes greater than 12%, and many of them have a narrow and uneven treadway, so there are no universally accessible paths between zones of use at the arrival area. Highlighted in red are broad areas that receive heavy foot traffic—the kettle pond is used as a soccer field; the fair fields hold over a thousand people on fair day; and each of their camps runs daily swimming lessons by the reservoir.

Design Implications

The steep slopes in this arrival area present the greatest constraint to accessibility. In order for paths that connect zones of use to meet accessibility standards, longer routes and significant grading may be necessary.



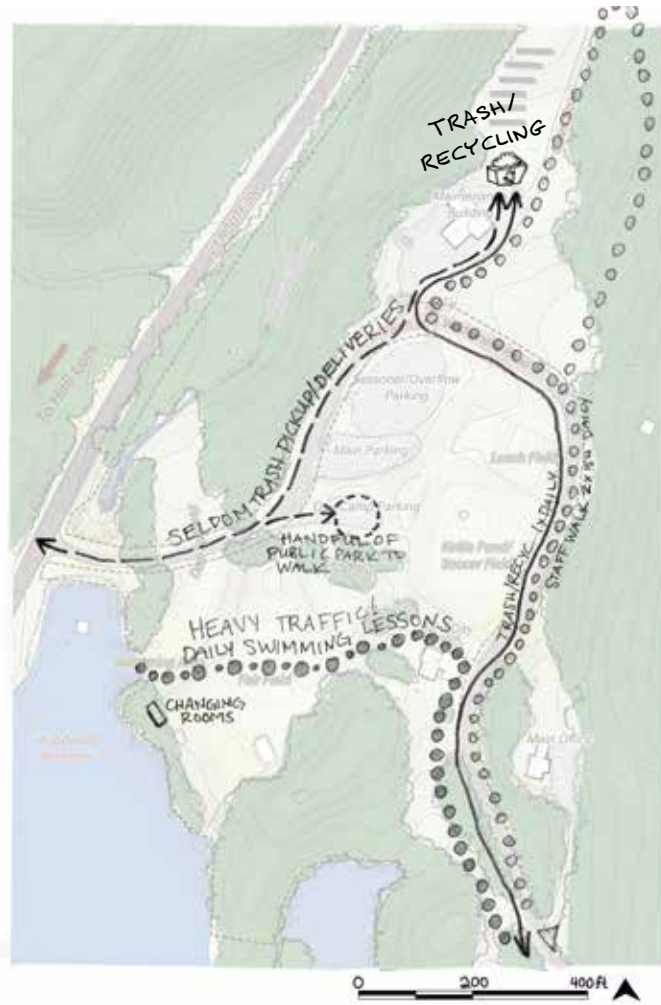
Architectural Barriers Act Trail Accessibility Standards

Maximum Running Slope and Segment Length		
Running Slope of Segment		Maximum Length
Steeper than	But not steeper than	
1:20 (5%)	1:12 (8.3%)	200 Feet
1:12 (8.3%)	1:10 (10%)	30 Feet
1:10 (10%)	1:8 (12%)	10 Feet
1:8 (12%) or greater		Does not meet accessibility standards



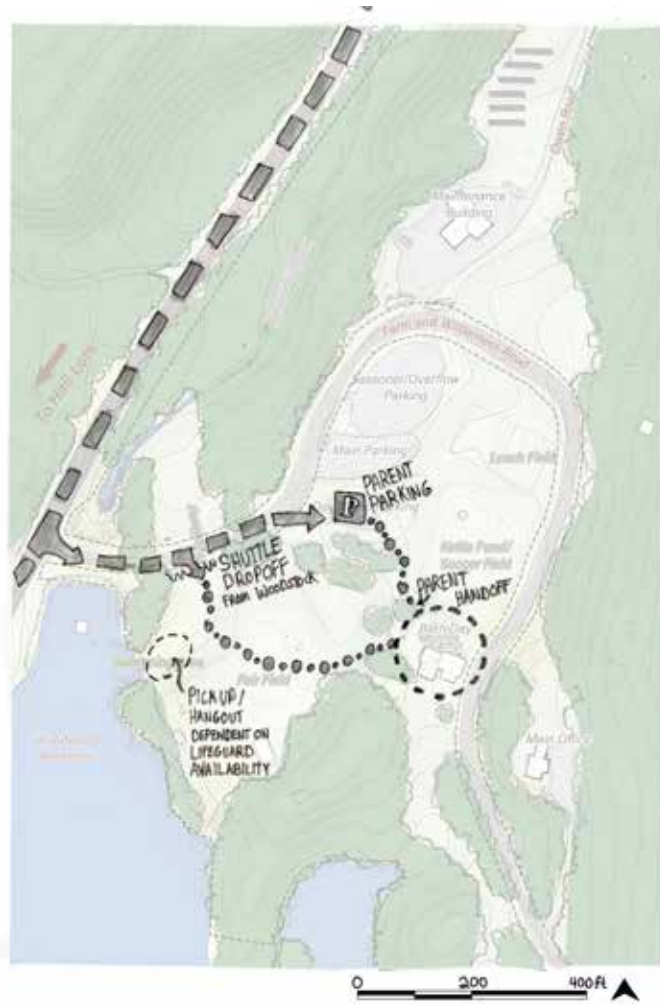
Snapshots of Circulation

The Woodward arrival area is a multi-use space with complex operations that change at different times of the year. The maps below describe vehicular and pedestrian circulation on different days of the Farm & Wilderness season, which require different logistical patterns. Each logistical operation is broken down into spatial requirements that the final design should aim to accommodate. Some of these spatial requirements are currently met by the existing conditions of the site. Some conditions need improvements to achieve the client goals, particularly around accessibility.



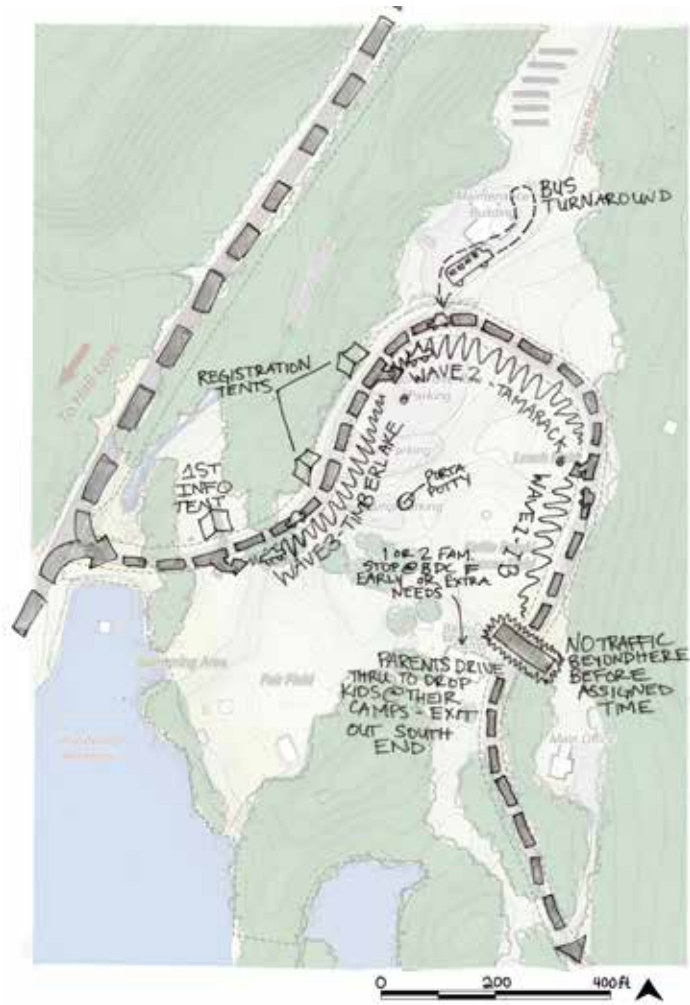
Daily Summer Operations

- ✓ Access from camps to trash and recycling bins for daily deposits
- ✓ Access for trucks to pick up trash and recycling and turn around
- ✓ Parking for administrative staff (up to 10)
- ✓ Parking for seasonal staff (40?)
- ✗ Accessible and sustainably built route from camps to swimming area for daily swimming lessons
- ✗ Accessible and sustainably built footpaths between staff housing and work areas (main offices, camps)



Barn Day Camp Pickup and Dropoff

- ✓ Camper hand-off area for parents and campers to gather, separate from Barn Day Camp main area (visual separation ideal for smooth child transition)
- ✓ Woodstock shuttle dropoff, accessible to camper hand-off area and space for bus turnaround
- ✗ Parent hangout area to accommodate desires of parents to linger and converse (visually separate from campers)
- ✗ Parent parking for 70 cars with accessible pedestrian route to camper hand-off area



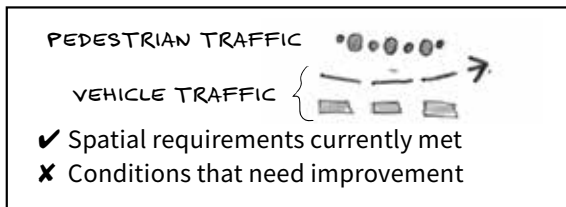
Summer Dropoff

- ✓ Space to process camper intake paperwork, currently tents set up along Farm and Wilderness Road
- ✓ Shoulder space for cars to pull off and form queue
- ✓ Safe bus drop-off and turnaround
- ✓ Additional bathroom (portapotty)
- ✓ Entertainment, or space for children struggling with transition to feel comfortable and excited about arriving at camp
- ✓ Exit at south end—one way traffic



Fair Day

- ✓ Safe bus dropoff and turnaround
- ✓ Pedestrian access from camps to Fair Grounds
- ✓ Open space for ~1000 people to gather
- ✓ Separate space (traditionally soccer field/kettle pond), same capacity, for fire and other festivities
- ✗ Accessible pedestrian path from Fair Grounds to soccer field for fire and other festivities
- ✗ Accessible pedestrian path from bus dropoff to Fair Grounds



Arrival Sequence & Views

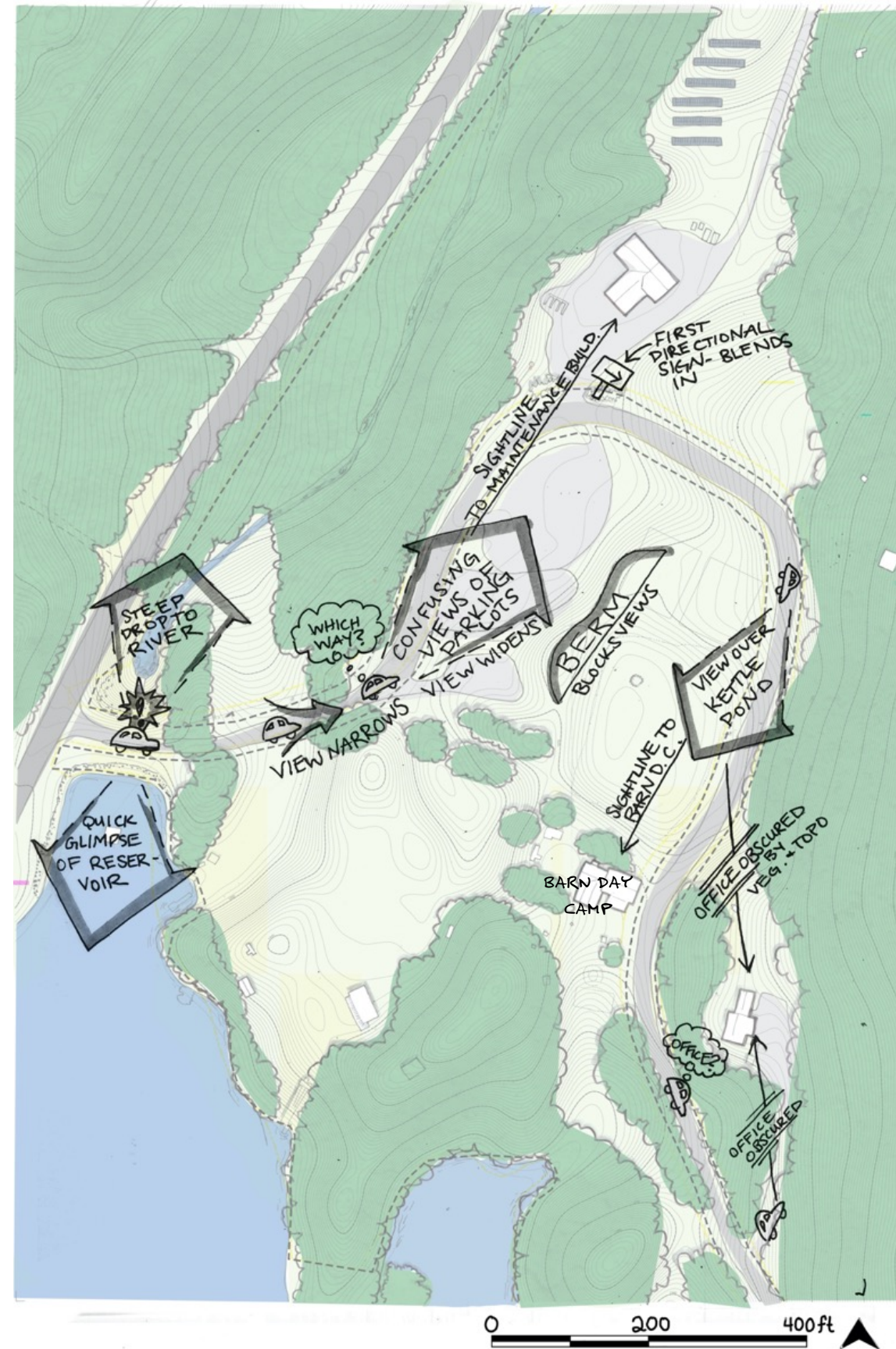
Farm & Wilderness feels that the current arrival sequence at the main entrance to the property does not inspire a feeling of joy, community, and comfort. Upon entering from Route 100, visitors are greeted by a quick and somewhat obstructed view of the Woodward Reservoir to the right and Reservoir Brook to the left. Staff report that the steep drop to the river feels precarious, especially in high vehicles like the 12-passenger camp vans. The view then narrows through mature white pines on both sides as the road curves left, then opens again to long views of the existing parking lots and maintenance building. New visitors report feeling confused about where to go at this point and often head towards the maintenance facility, thinking that it's the main office. The main office is an additional 1,300 feet farther on Farm and Wilderness Road, across from the Barn Day Camp building. Parking for these facilities requires walking several hundred feet over steeply sloped terrain without formal paths.

Arrival Sequence

- Turn from Route 100 at North Entrance
- Glimpse of Woodward Reservoir
- View narrows through mature pines
- View opens to parking lots
- Long sightline to maintenance facility
- Long drive around loop to get to Main Office

Design Implications

Views are the main contributing factor to the unwelcoming arrival sequence. After the brief view of the reservoir when first entering the property, the dominating views do not convey the joyful play, meaningful work, and rugged outdoor living that Farm and Wilderness cultivates on the rest of their property. Breaking up views to private spaces and creating clearer sightlines to desired spaces may help new visitors understand wayfinding naturally without additional signage. Existing sightlines to the maintenance facility should be altered to create more wayfinding clarity and a sense of “public vs private” space. The undulating topography and dynamic changes in elevation may present an opportunity to hide views of undesired features and create visual hierarchy to aid in wayfinding. To convey the “magic” that is present in the rest of the camps, placing features that communicate the organization’s mission towards the entrance may help create a sense of welcome.



The first view of the property looks south over Woodward Reservoir at the turn off Route 100.



The view then narrows between berms and mature white pines after entering.



After emerging from the berms and white pines, the view opens to a long view of the maintenance building and parking lots. The road also appears to fork to the right due to the topography change blocking the view of the Barn Day Camp parking lot.

Slopes

The arrival area sits at the bottom of a valley, with a steep hillside rising up directly to the east of the site and to the west of Route 100. The slopes on these hillsides often exceed 33%, shown in the darkest shade of blue on the map to the right. This is the angle at which most soils will begin to slough off, or erode, without support from vegetation, boulders, and rocks.

Flatter areas within the arrival area are less than 15% in slope and are often heavily trafficked areas. They include the roads, parking lots, maintenance area, soccer fields, fair fields, and dam spillway (shown by white, and lighter shades of blue). There is little flat space on the site that is not developed or utilized by the camp for their programming and operations.

Most of the flat spaces are also not continuous, but instead separated by sinuous and steep mounds and berms. Many of these mounds have been designed and shaped by humans over the years. The berms along the dam spillway and which the fair fields rest atop are the result of the reconstruction of the Woodward dam in the 1980s. It's also possible that some of the mounds are the result of past glaciation. Eskers are gravel and sand deposits formed by retreating glaciers at the end of the last ice age. The hills that form extended peninsulas out into Woodward Reservoir beginning at the southern extent of the map may be naturally occurring eskers. Both constructed berms and natural eskers separate spaces by blocking views from below and making movement between areas more difficult. However, the vantage points from the top reveal expansive views.

Design Implications

Siting Buildings | The steep slopes that cover much of the arrival area pose a challenge to siting buildings including the welcome center and staff housing. Constructing on slopes that are greater than 15% can be more expensive and disruptive to soil health, hydrology, and vegetation. Steep slopes hinder development on the hillside to the east of the site, the sides of eskers, and the land adjacent to Reservoir Brook and Woodward reservoir. In order to incorporate new buildings, the arrangement and uses of areas with less than 15% slope may need to be changed or reorganized.

Accessible Paths and Trails | Steep slopes across the site also constrain the layout of accessible paths and trails. Paths that are ADA accessible must not exceed 8.3% in slope. Paths that are ABA accessible must not exceed 12% slope for any distance greater than 10 feet. In order to provide equitable freedom of movement across the site, it may be necessary for paths to run parallel with contour or be regraded.

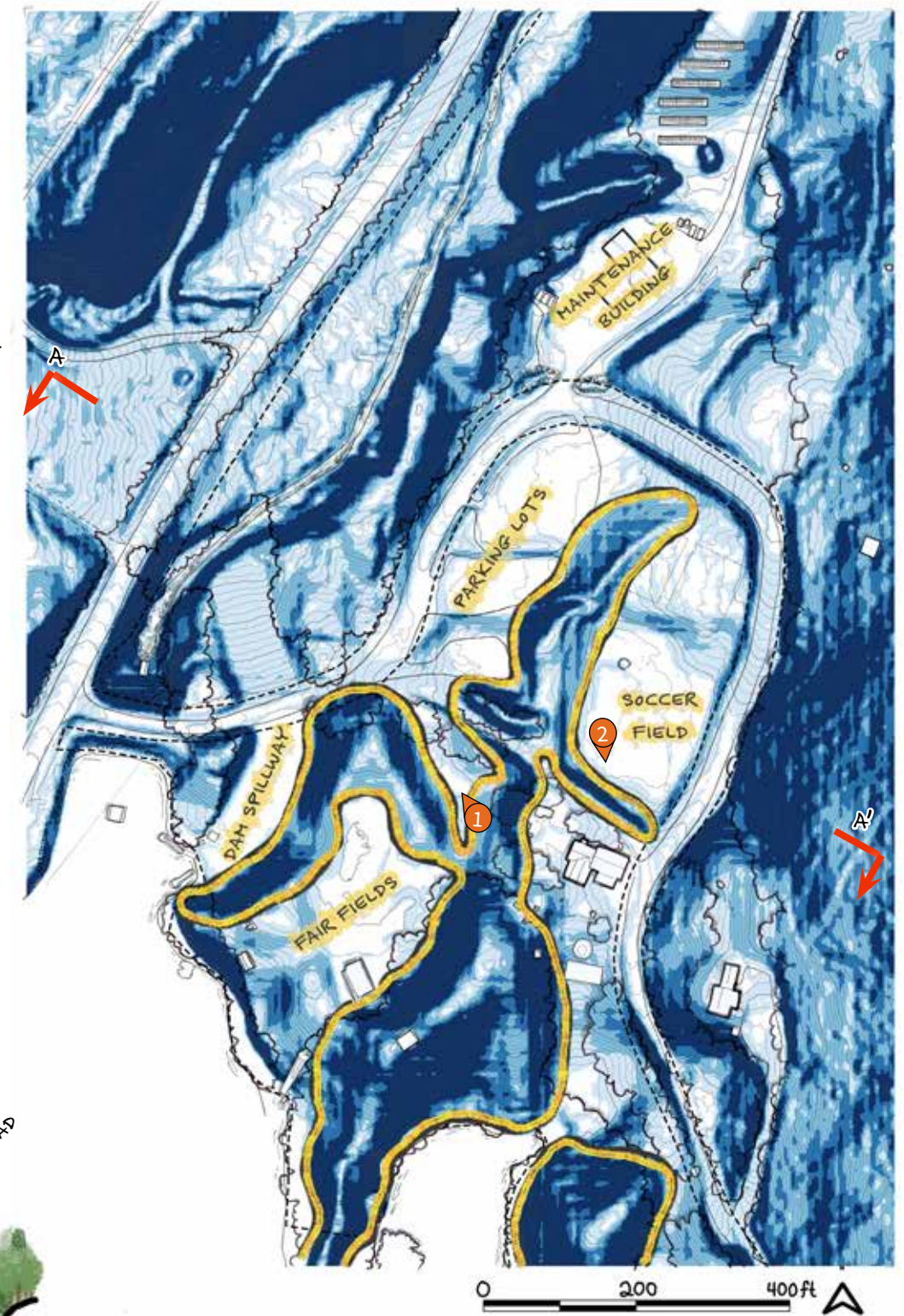
Topography as an Asset | The undulating topography creates interesting and unique views and places for play. Many of the eskers and built mounds are also used to host larger gatherings, acting as a natural amphitheater. They also offer opportunities to separate spaces, making some parts of the landscape private from others. Highlighting these landforms and making accessible paths to high points could help create unique experiences and preserve a connection to the geologic past.



Left: The rolling hills surrounding the fair field create unique places for play and offer unique views.



Right: Steep slopes separate areas of high use, creating steep paths to destinations such as Barn Day Camp.

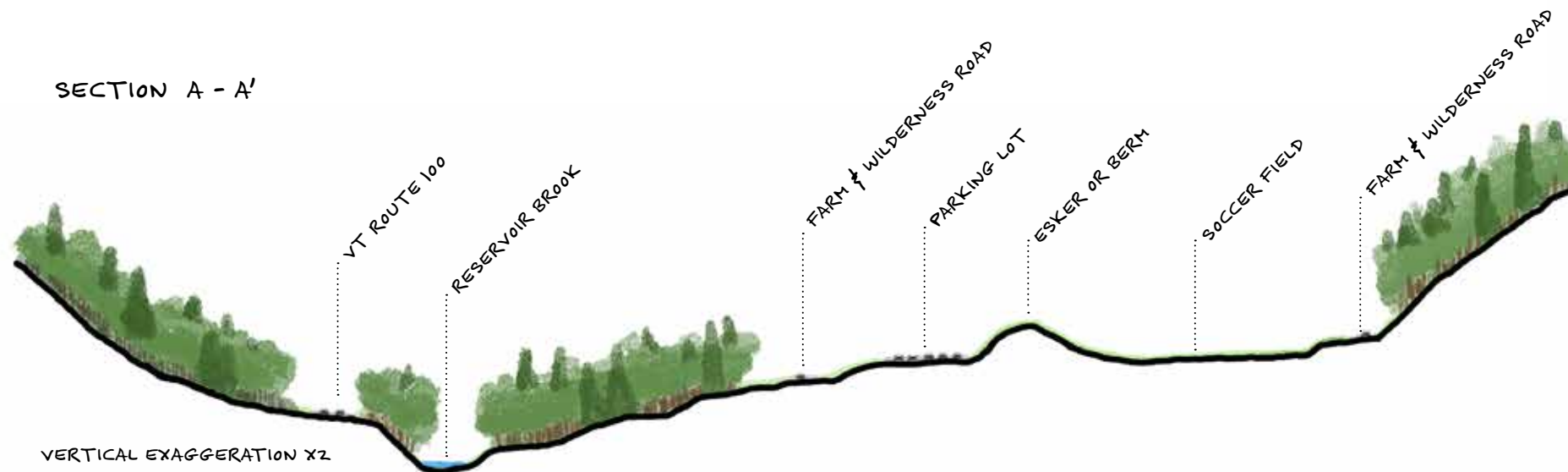


Slope

- 0 - 5%
- 5 - 8.3%
- 8.3 - 15%

- 15 - 25%
- >30%

ESKER OR BERM



Drainage, Stormwater, & Soils

Drainage & Stormwater

Surface water generally flows east to west across the arrival area towards Reservoir Brook and Woodward Reservoir. There are a series of swales and culverts which channel runoff around and off developed spaces and into retention basins. For example, water that flows down the east hillside catches on a swale that runs along Farm & Wilderness Road and flows under the road through a culvert into a retention basin, which also serves as the soccer field.

These basins slow stormwater and allow pollutants and sediment to settle out before entering the brook and reservoir. Overflows still drain into these bodies of water and can contribute to downstream flooding, erosion, and pollution. There are a few areas where the stormwater system is not functioning well. Some swales and culverts are becoming blocked by gravel which is pushed off the road from a snow plow. In addition, there is a portion of Farm & Wilderness Road that washes out because of poor grading that allows water to run down the length of the steep road.

Soils

Most soils in the arrival area are an excessively drained loamy sand that helps to infiltrate water quickly on site. These soils, represented by the yellow on the map at right, are also well suited for on-site septic systems according to data from NRCS. The steeper hillsides are composed of a well drained glacial till but are not suited for septic due to the steep slopes. These areas are shaded purple.

Design Implications

Retaining and Slowing Stormwater | In order to protect local and regional water resources, any new impervious surfaces, including buildings, roads, and parking lots, will need to be supported by stormwater systems that help to slow increased runoff from those surfaces. Doing so is important to protect the water quality of Woodward Reservoir and the Ottauquechee River. It will also help reduce peak flows in rivers during storms and therefore assist the region to adapt to more severe and frequent flooding events.

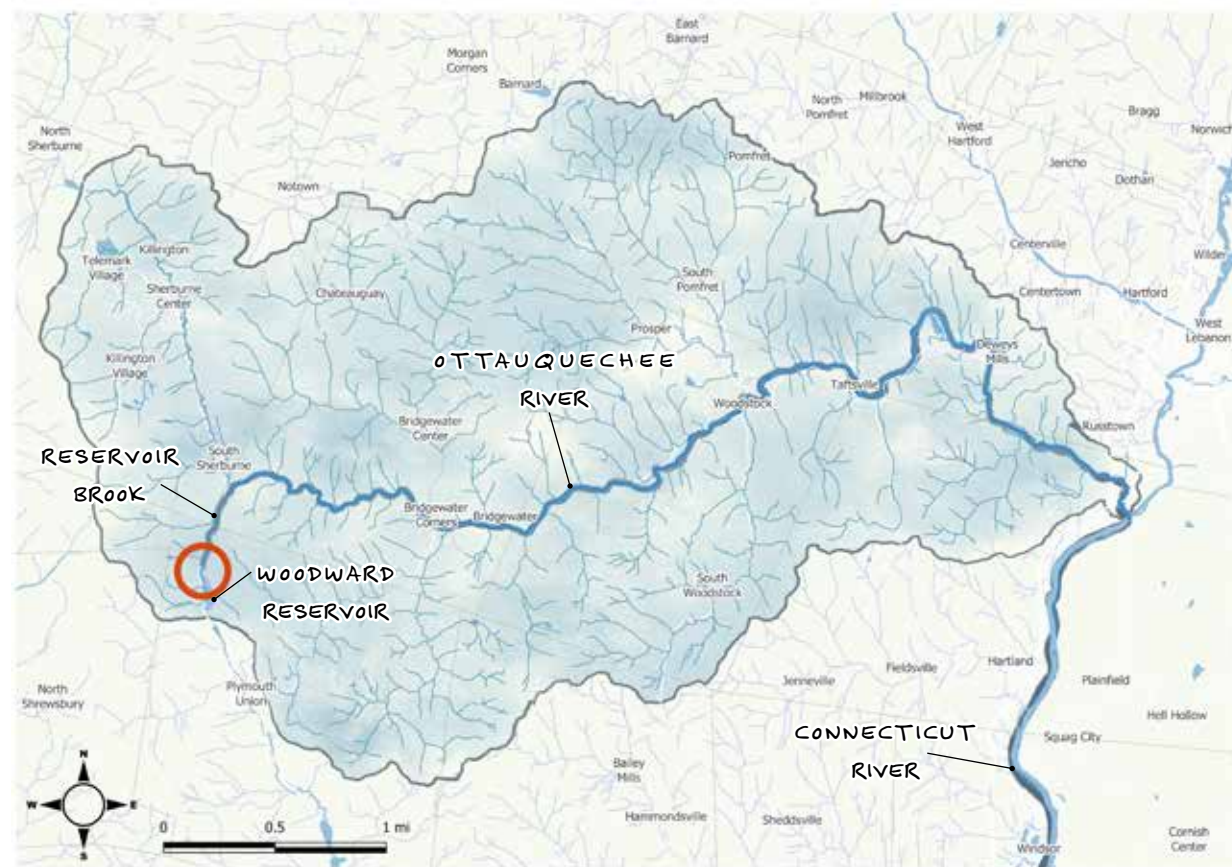
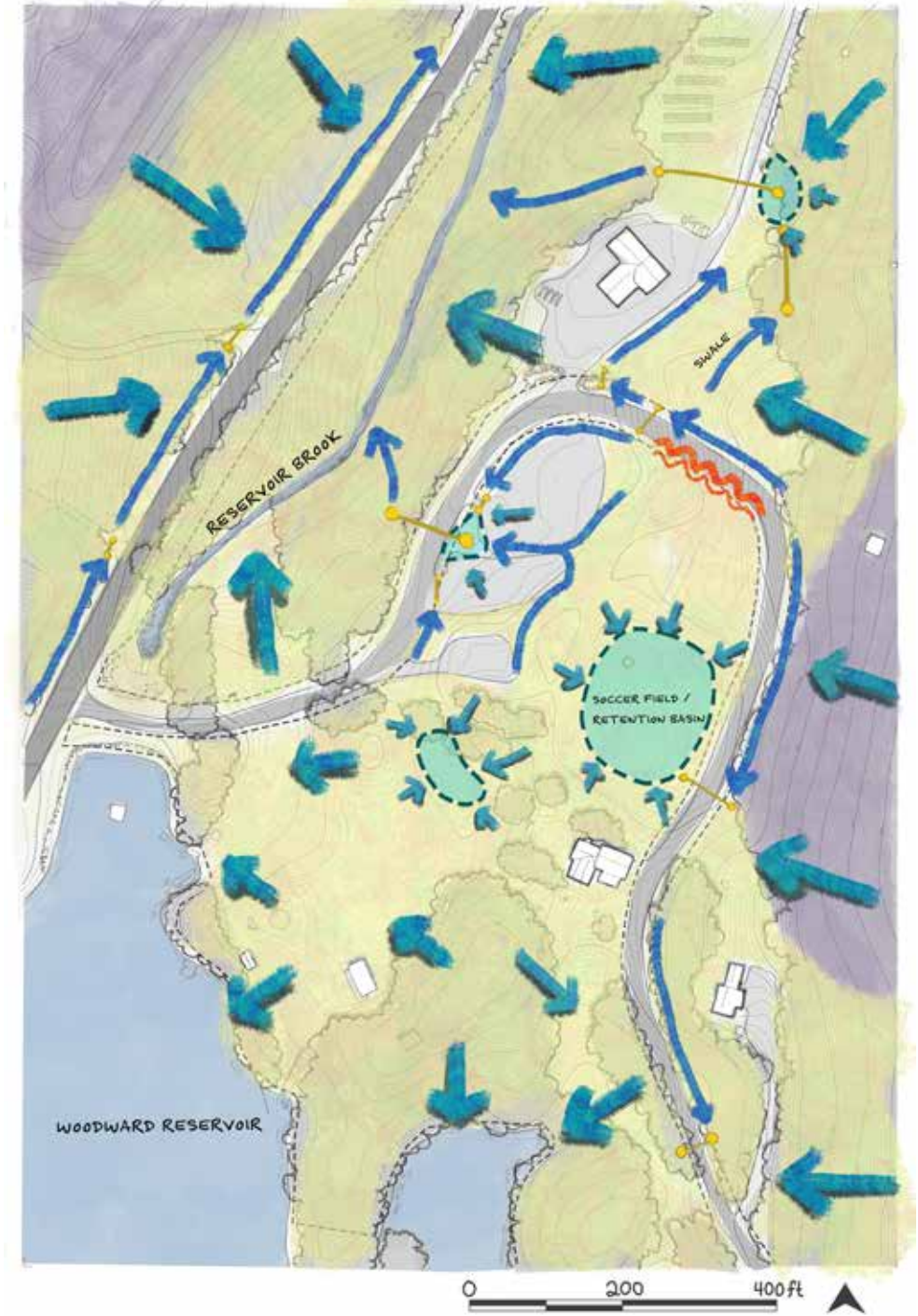
Siting Buildings | Both the housing and welcome center will require on-site septic systems. Soils that are suited for septic systems exist across most of the arrival area but exclude the hillside to the east of Farm and Wilderness Road.

SOILS

- EXCESSIVELY DRAINED AND WELL TO MODERATELY WELL SUITED FOR SEPTIC
- WELL DRAINED AND NOT SUITED FOR SEPTIC

DRAINAGE & STORMWATER

- EROSION
- CULVERT
- SURFACE FLOW
- CHANNEL FLOW
- DETENTION BASIN



Watershed Context

Woodward Reservoir is located at the top of the Ottauquechee River Watershed which drains east into the Connecticut River. Upland streams near the top of watersheds contribute the most significant amounts of organic and inorganic matter to the watershed, providing the “basic building blocks for the food web of the stream system” (Nature Conservancy, 2008). Upland streams also have significant influence on river morphology downstream.

Sites at the top of watersheds are thus particularly influential on water quality of downstream waters and flood resiliency. Climate change will further stress these systems as large precipitation events increase in frequency and severity, similar to what happened during Tropical Storm Irene in 2011. Building a climate resilient future will require that landowners at the top of the watershed, such as F&W, carefully plan development and stormwater systems to minimize stormwater runoff.

Smith, M., Schiff, R., Olivero, A., & Macbroom, J. (2008, April). The Active River Area - A Conservation Framework for Protecting Rivers and Streams. The Nature Conservancy.



Impacts in the Ottauquechee River Watershed from Tropical Storm Irene in 2011.



Zoning, Regulations, & Utilities

Zoning & Other Regulations

According to the Town of Plymouth's zoning map, the arrival area is zoned as Rural Residential 2. This zoning district requires that any lot be at least 2 acres in size, and have a 50-foot frontage and 50-foot setback from public roads. In addition, the zoning bylaws state that building heights be restricted to 35 feet and a maximum building footprint of 5,000 square feet. Multiple dwelling units are conditionally permitted in this zoning district. Adding new buildings to the site will likely require further subdivision of the lot or a zoning variance since there are already so many other buildings on the property.

The town bylaws also show that the arrival area is within a shoreland overlay district. The shoreland overlay district requires any new structure be set back 75 feet from Woodward Reservoir. The state of Vermont also regulates activities within 250 feet of the shoreline via the Shoreland Protection Act. Permits are required from the state in order to build or expand structures and other impervious surfaces, or clear vegetation within this zone.

There is also a flood hazard protection overlay district designated in Plymouth's town bylaws along Reservoir Brook. The extent of the overlay is determined by the river corridor area that is defined by the Vermont Agency of Natural Resources. This overlay restricts development that would diminish water quality, impair floodplain services, or increase vulnerability to the hazards of floods.

Design Implications

A design may best avoid legal constraints by siting buildings and impervious surfaces outside the zoning setback, protected shoreland area, and river corridor area. Areas that avoid the zoning setback and adhere to environmental regulations include the east hillside, space around the staff office building, the solar fields and open space east of the maintenance building, the east half of the parking lots, soccer field, and the space just west of Barn Day Camp.

Zoning variances and environmental permits will likely be needed in order to construct additional buildings and increase additional impervious surface even if outside the regulated areas. A design that incorporates stormwater collection systems will be less likely to run into obstacles while going through the environmental permitting process.

Utilities

Both the welcome center and year-round housing will require access to electricity, water, and on-site septic systems.

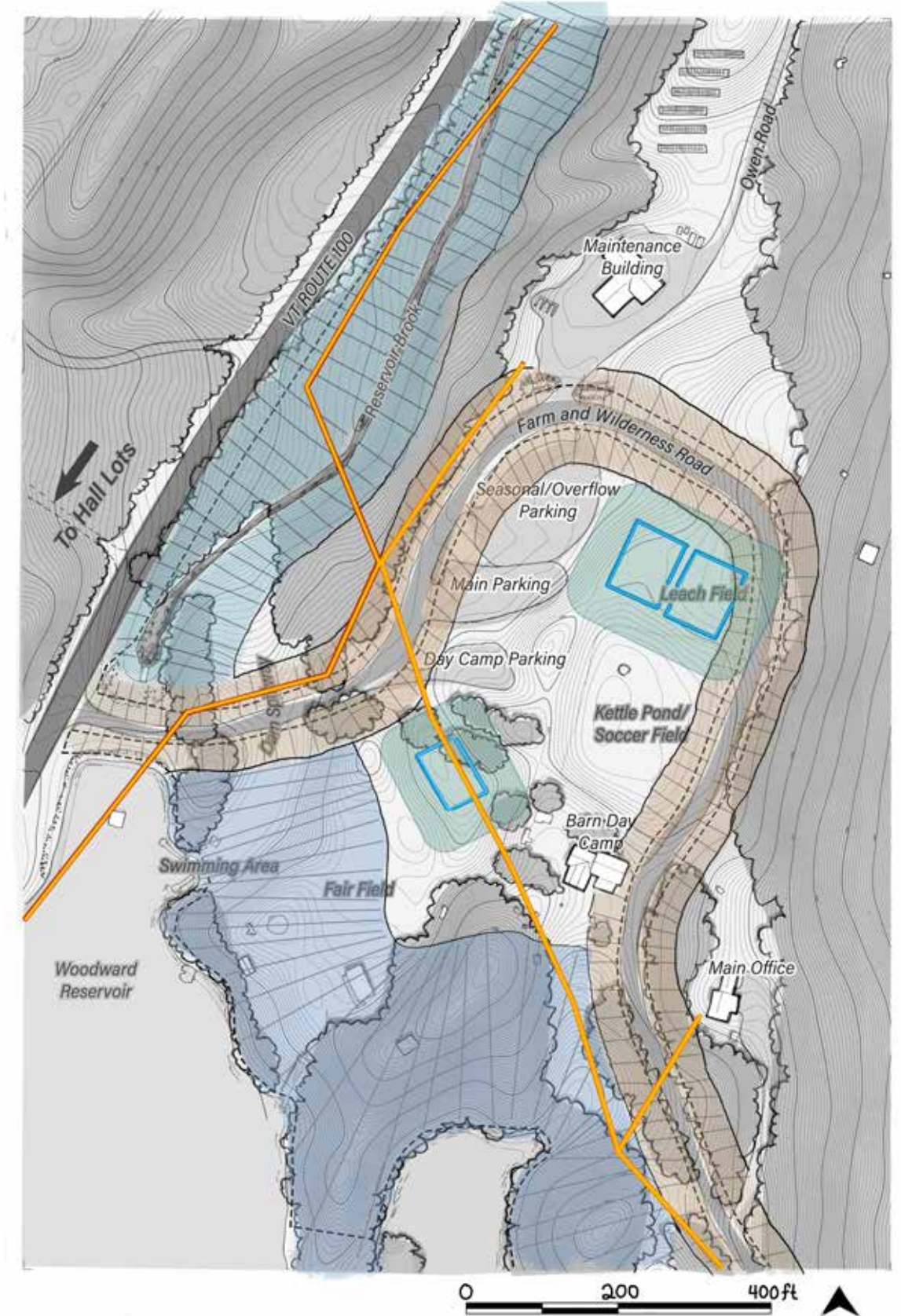
Electricity | Several above-ground power lines cross the site. Three-phase power lines span the reservoir and extend north along Reservoir Brook, providing the capacity for the solar array north of the maintenance building. Single-phase power lines extend from the three-phase line off towards the maintenance building, barn day camp, and staff offices. Connecting new buildings to the grid would require extending single-phase lines to the buildings. Above-ground lines may impact views while burying lines may cost more. However, burying lines could have the added benefit of creating greater resilience to power outages during storms.

Wells and Septic | Wells and septic systems will be needed for any new year-round buildings in the arrival area. If capacity allows, it may be easiest and least expensive for new buildings to share wells and septic systems with already existing buildings. There are currently two leach fields north of the soccer field that serve Timberlake summer camp to the south of the site. In addition, there is a planned leach field for Barn Day Camp that is to be sited in the low point below the fair fields.

If there is a need to drill new wells, their location will need to comply with Vermont regulations. According to Vermont's Chapter 21 Water Supply Rules, wells must be sited 25 feet from roads and parking lots, 50 feet from subsurface wastewater piping and related tanks, and 10 feet from buildings. The distance a well can be from a leach field is determined by a calculation that incorporates the daily demand of the well and the size of the leach field. The EPA, however, recommends 50 feet of separation between wells and leach fields. The 50-foot buffer around the existing leach fields shown in the map should be considered a minimum, as the excessively drained sandy soil on the site may require that the distance between wells and septic system be greater.

Design Implications

Because of the spatial constraints of siting new wells and septic systems, it should be thoroughly explored if new buildings can tie into existing utilities from other buildings. Sharing wells and/or septic systems would also allow greater flexibility for where animals can graze, and for where gardens and trees can be planted. It would additionally reduce excavation and construction needed to install a new leach field. Existing power lines make it easy for new buildings to tie into the new grid. Three-phase power lines allow the capacity for larger scale solar panels if it is desired.



REGULATED AREAS

- 50' zoning setback
- 250' shoreland protection
- River Corridor Area

UTILITIES

- 3-phase power lines
- Single-phase power lines
- Existing & Planned Leach Fields
- 50' leach field buffer

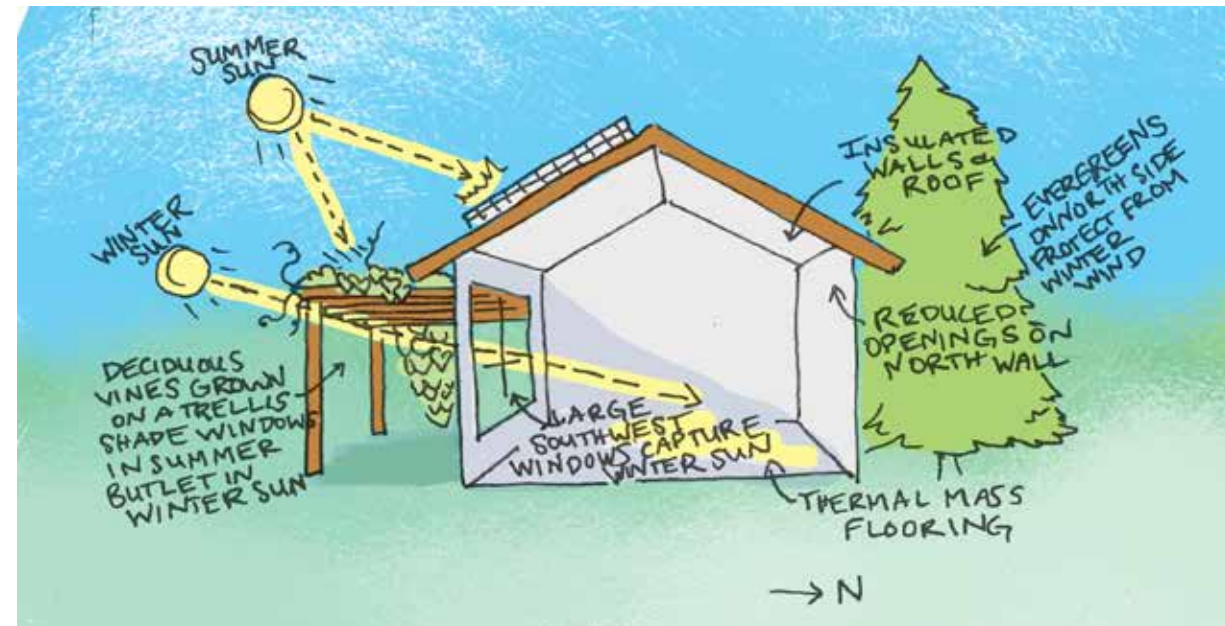
Direct & Passive Solar

Farm and Wilderness currently harvests renewable energy. The current solar array, located towards the northern edge of the clearing in the Woodward arrival area, produces 80,000 kilowatt hours (kwh) per year on average. The roof-mounted panels at Tamarack Farm produce 18,000 kwh per year. F&W's yearly electric usage is currently around 100,000 kwh. As F&W has made progress towards reducing its use of fossil fuels, its electricity usage has risen to fulfill those demands, and it is in the process of implementing plans to further reduce its use of fossil fuels. The organization's yearly net CO2 emissions have been trending downwards over the last ten years.

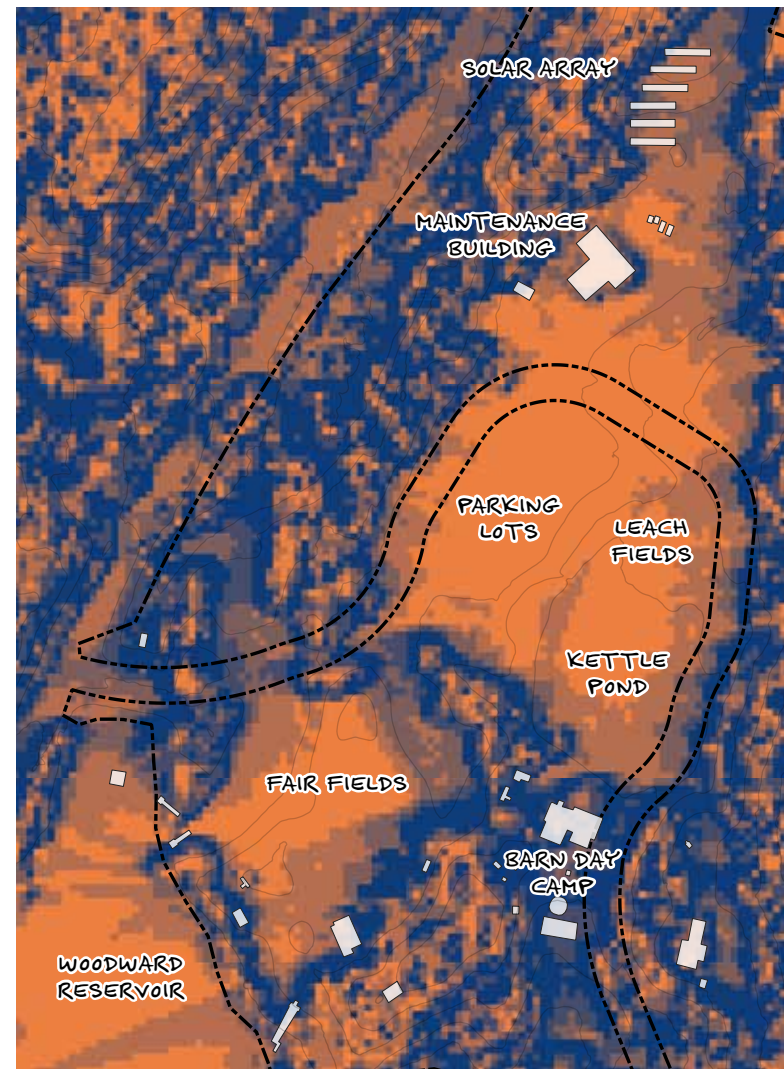
The solar irradiation analysis maps at right show the amount of irradiation within the Woodward arrival area at the Winter Solstice and Summer Solstice, which provide an estimate of the minimum and maximum daily averages throughout the year. Maximum irradiation differs greatly between the Winter and Summer Solstice, reaching about 550 watt hours per square meter in the winter and over 7,000 in the summer. Locations in the Woodward Arrival area that receive the most irradiation are in cleared areas, such as the fair fields, parking lots, kettle pond, leach field, and raised landform by the maintenance building. On the Winter Solstice, when the sun overall is weakest, irradiation tends to be strongest on south- and west-facing slopes. The raised landform near the maintenance building appears to have the best solar potential at all times of the year.

Design Implications

The addition of structures, especially those that would be open year-round, will require more power to operate. Siting and designing future buildings, especially those that will be used for winter housing, should be sited for optimal direct solar gain and passive heating and cooling to help keep F&W's CO2 emissions on a downward trend. F&W does have some existing structures that may be converted to year-round housing, which is a good way to fulfill its housing needs while reducing disturbance from new construction; however, these buildings may be poorly insulated and less efficient to heat and may not be oriented for solar gain, so additional measures may need to be taken to keep the need for fossil fuel and combustion low.



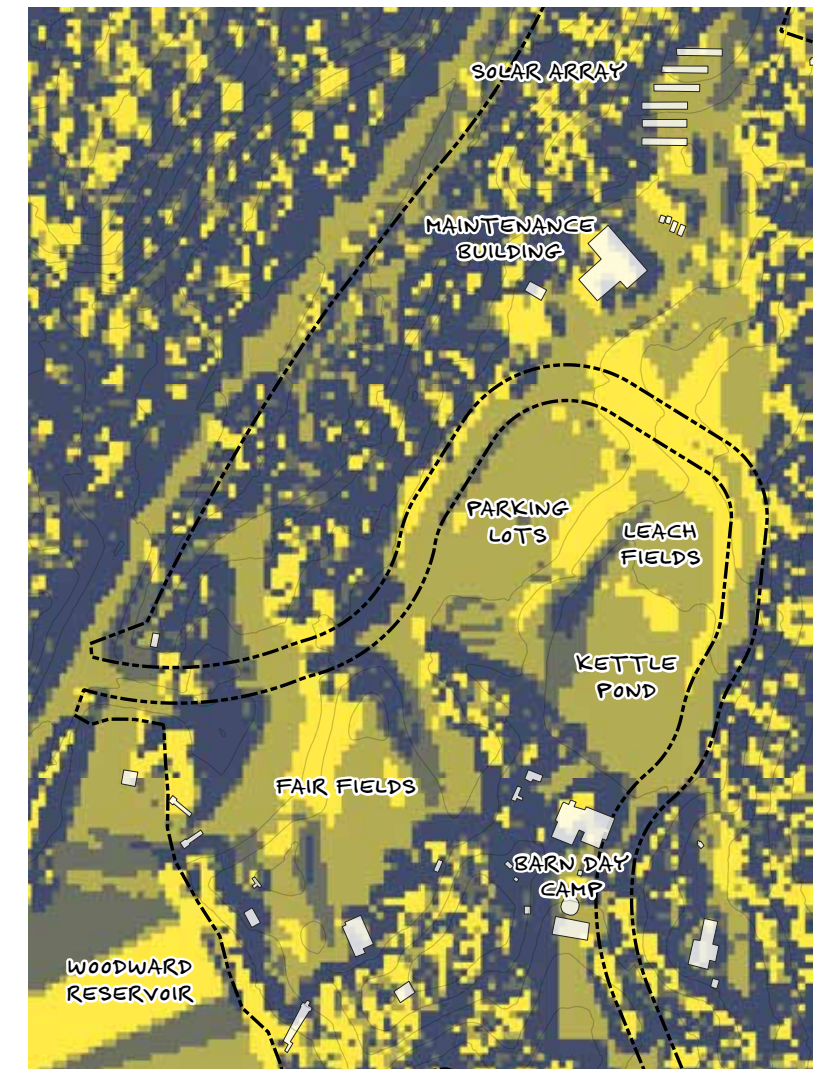
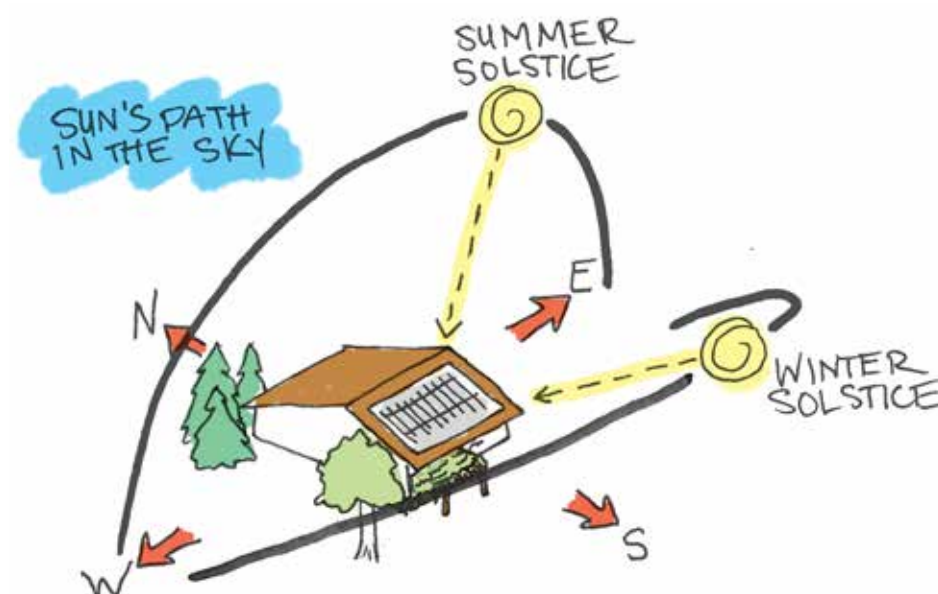
Following best practices for passive solar gain when siting and designing buildings will help reduce energy demands related to summer cooling and winter heating. A south- or southwest-facing roof is also most suitable for mounting PV panels.



Irradiation Watt Hours per Square Meter Daily
 Band 1 (Gray)
 ≤ 4000.0000
 4000.0000 - 5000.0000
 5000.0000 - 6000.0000
 6000.0000 - 7000.0000
 > 7000.0000

0 200 400 ft
 1:1,200

Solar Irradiation at Summer Solstice



Irradiation Watt Hours per Square Meter Daily
 Band 1 (Gray)
 ≤ 400.0000
 400.0000 - 450.0000
 450.0000 - 500.0000
 500.0000 - 550.0000
 > 550.0000

0 200 400 ft
 1:1,200

Solar Irradiation at Winter Solstice



Roof-mounted solar at Tamarack Farm.



View of the solar array north of the maintenance building from Barn Day Camp.

Summary Analysis: Woodward Arrival

The table below illustrates the implications of major observations across the Woodward Arrival site for each goal.



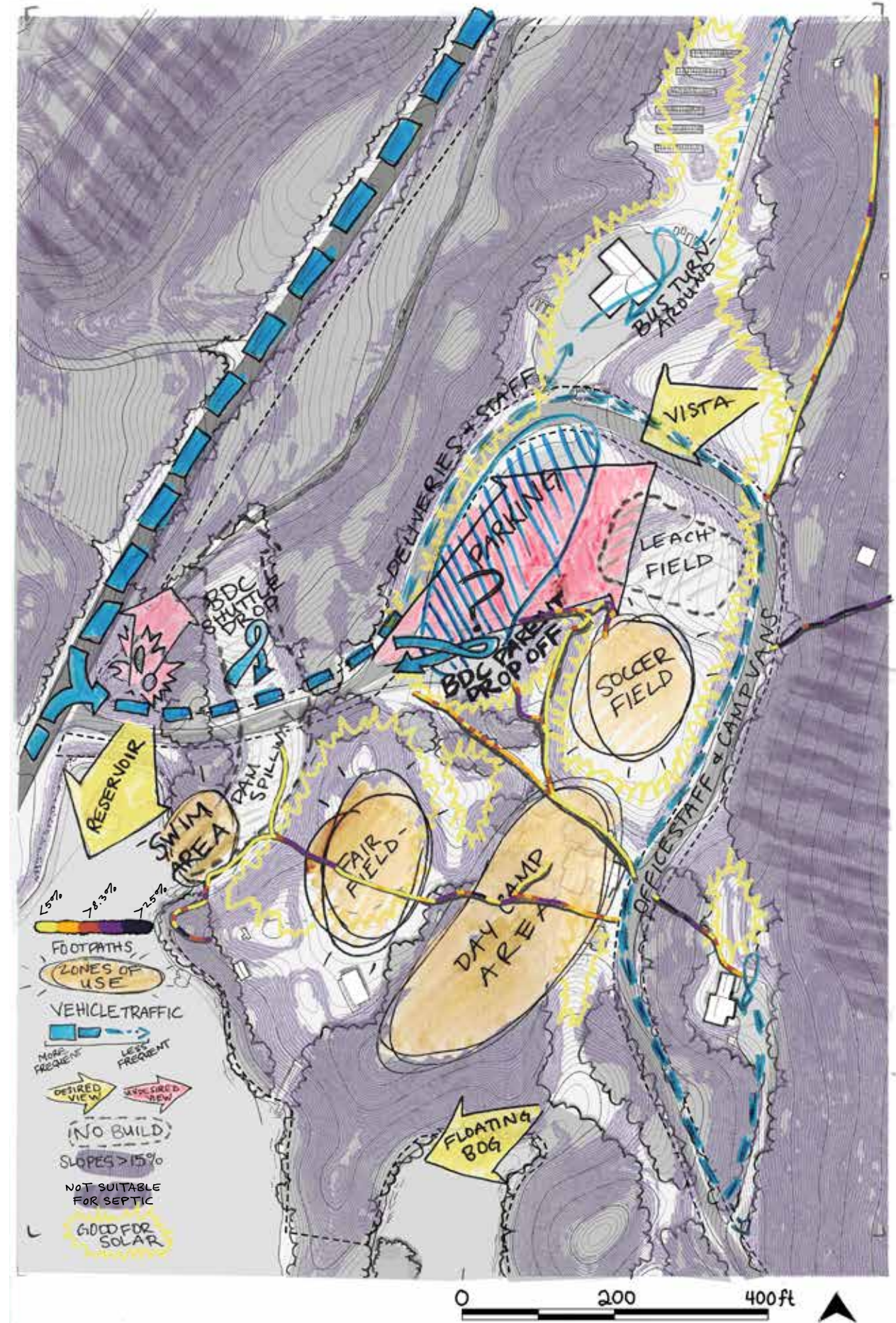
Observation	Arrival Experience	Welcome Center	Housing	Trail & Accessibility
Topography undulates and some slopes are steep.	Topographic changes define the space and give it a unique character.	Steep slopes constrain areas for construction, but also create views.	Steep slopes constrain areas for construction, but also create views.	Steep slopes constrain alignment of a <12% grade, but offer range of trail experience.
Topography creates site dynamics of prospect (scenic views out) and refuge (sense of enclosure and protection).	Views over reservoir brook are scenic, but also feel precarious.	Some suitable building sites have scenic views of the surrounding hills and reservoir.	Some suitable building sites have scenic views of the surrounding hills and reservoir.	Rolling slopes offer opportunities for rest after climbs and scenic views.
The alignment of F&W Road includes long sightlines to the maintenance building upon first arrival and a complicated path to the main office.	The road orientation and views along it create a confusing wayfinding experience for new visitors, as guests are inclined to approach the maintenance building instead of the main office.	Neutral	Neutral	Neutral
Parking lots are some of the first things a visitor sees when entering the Farm and Wilderness property.	While it is easy to find the parking lots, it can then be difficult to find where to go, and the utilitarian views feel unwelcoming.	The parking lot location is central and easy for new visitors to find.	Neutral	Neutral
Soils are sandy and well draining.	Neutral	Most soils within the Woodward area can infiltrate runoff from new impervious surface like parking and roofs, and soils are suitable for septic.	Most soils within the Woodward area can infiltrate runoff from new impervious surface like parking and roofs, and soils are suitable for septic.	Soils will help drain water and help prevent low or flat spots from becoming saturated.
The area has existing features and disturbed areas such as an old graded building footprint and gravel parking lots.	The utilitarian needs of the space impact its aesthetic value.	Siting buildings within areas that have already been disturbed may help reduce the need for disturbance in other areas.	Siting buildings within areas that have already been disturbed may help reduce the need for disturbance in other areas.	Siting a trail near a utilitarian feature may not feel like a pleasant experience, but those utilitarian features may need to be close by to provide better accessibility.
The area is largely cleared of mature vegetation in a large swath towards the center of the site, making the area sunny.	Cleared vegetation creates the bucolic, pastoral aesthetic that the client enjoys, but it also gives way to undesirable views of parking lots and maintenance building.	Most suitable building locations within the arrival area present opportunities for roof-mounted solar.	Most suitable building locations within the arrival area present opportunities for roof-mounted solar.	Sunny paths can be pleasant when weather is crisp, but can be uncomfortable in the heat of summer.
Steep slopes divide zones of use.	Berms can help break up undesired views and keep pedestrian and vehicle traffic separate, but it becomes more challenging to move between zones of use once parked.	Areas that may be suitable for building may actually be less suitable if they are difficult to access from other zones of use.	Areas that may be suitable for building may actually be less suitable if they are difficult to access from other zones of use.	Longer paths and more significant grading may be required to provide accessible pedestrian access between the housing and other zones of use.

Siting Welcome Center and Housing

The new buildings may be best suited for areas already cleared, with good solar access, less than 15% slope, and soils well suited for on-site septic. Locations with these specifications include the parking lots, soccer fields, the hill east of the maintenance building, and the open space northeast of the office building. The dam spillway, maintenance area, fair fields, and leach field also meet these specifications but their current use may restrict their suitability for siting buildings.

Improving the Human Experience

Many of the more utilitarian structures and needs of the arrival area, including parking lots and the maintenance building, are very visible upon arrival. Meanwhile, destinations, such as the offices and day camp are hidden from any arrival views. This lends to an uninviting and confusing experience for first-time visitors. In addition, footpaths connect areas of high use but often run perpendicular to contour and therefore are quite steep and inaccessible to those with limited mobility. The experience and wayfinding of the arrival area may be improved by removing or screening the parking lots and maintenance building, and creating more accessible paths between the parking and some of the areas of high use.



Hall Lots: Existing Conditions & Access

Farm & Wilderness recently acquired four lots that are part of an undeveloped subdivision known as the Hall Lots. The four parcels, across Route 100 from its summer camps, sit on a heavily wooded hillside that rises up from the west side of Woodward Reservoir. Farm & Wilderness would like to explore whether the Hall Lots are well suited for siting year-round staff housing.

There are two other parcels that make up the Hall Lots which Farm & Wilderness does not own, as well as a 120-acre commons. According to the deed for the lots, Farm & Wilderness may have some jurisdiction over the commons depending on the status of the organization which originally oversaw the care for this land. While there remains ambiguity within the language of the deed surrounding this, the commons will be included in analysis of the Hall Lots for staff housing in the case that Farm & Wilderness could legally develop on this land.

Access & Circulation to the Hall Lots

Access to the Hall Lots is provided by a private gravel drive which comes off Route 100 approximately 850 feet south of Farm & Wilderness Road. A slight bend in Route 100 to the south of the gravel drive makes it difficult to see oncoming traffic from the intersection. The gravel drive quickly ascends the hill and winds its way through each Hall Lot parcel but just barely enters the southernmost parcel which Farm & Wilderness owns. The only structure on the lots is a recently constructed wilderness shelter at the end of the gravel drive on F&W second most northern parcel.

The drive is currently not usable by vehicle as thirteen culverts along its path have been washed out. During a site visit in March of 2022, small intermittent streams crossed the road in some of these locations, resulting in an eroded surface.

Design Implications

While using the existing road would reduce the amount of disturbance that would be required to access the Hall Lots, its poor condition means it would take a significant amount of work to repair and possibly maintain for vehicle access. However, one staff member of Farm & Wilderness noted that this road was carefully designed by an engineer and that the culvert washouts were likely due to lack of maintenance. Further study may help to assess how susceptible the road is to future washouts, especially taking into account climate forecasts.

Siting staff housing on the Hall Lots would create an increase in pedestrian and vehicle traffic moving along and across Route 100 for staff to access the rest of Farm & Wilderness property. Route 100 has speed limits of 50 mph and approximately 1,000 vehicles driving on it per day (Vtrans). If staff wished to move back and forth from the Hall Lots to the main property it could require walking across this traffic which could potentially be dangerous. Or, if it is necessary to drive, it would increase vehicle and fossil fuel use.



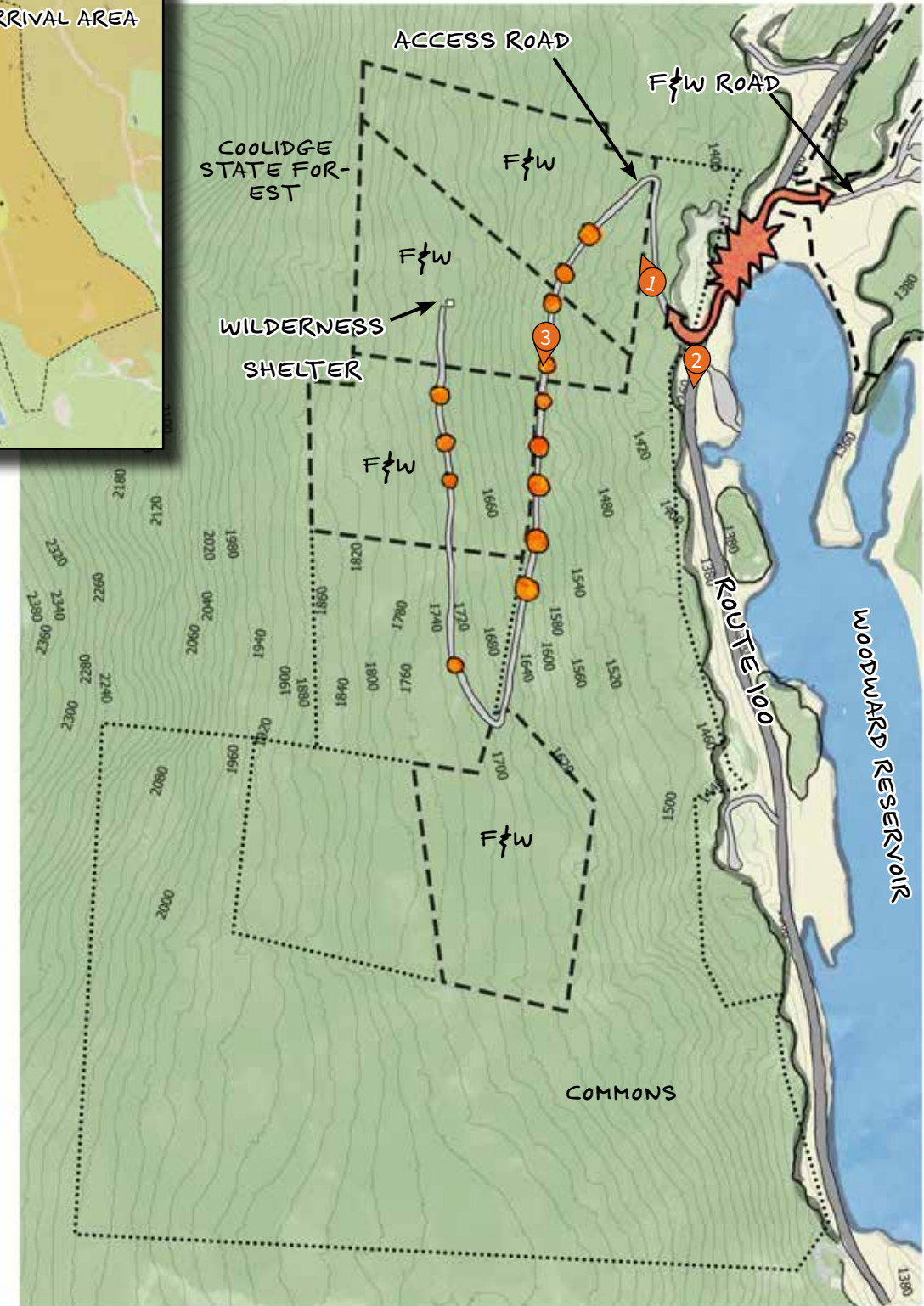
1 A gravel road ascends the hillside giving access to the Hall Lots.



2 This image shows the view south from the intersection of the access road and Route 100. The slight bend in Route 100 makes it difficult to see oncoming traffic.



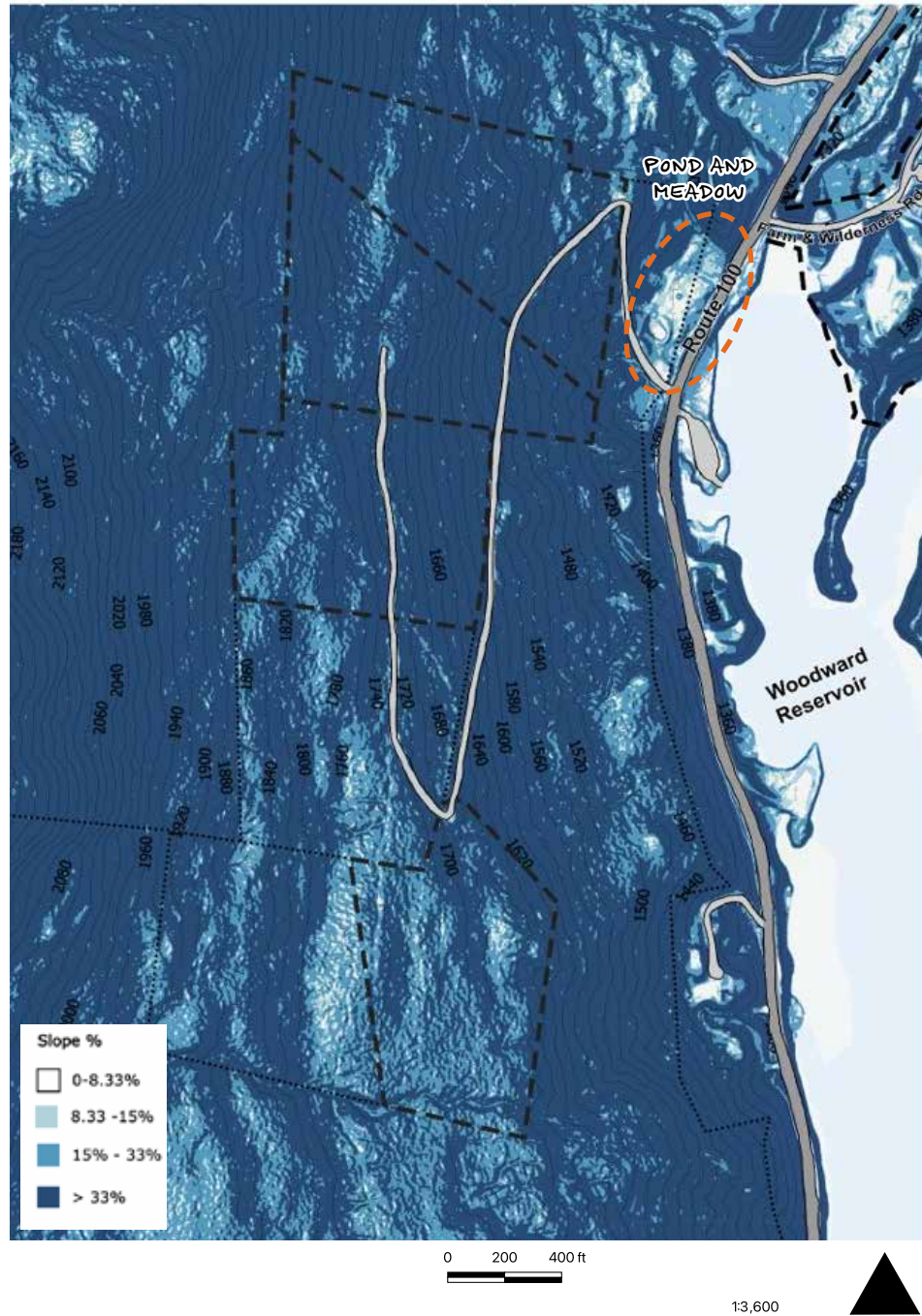
3 There are 13 culvert washouts on the access road.



○ CULVERT WASHOUT

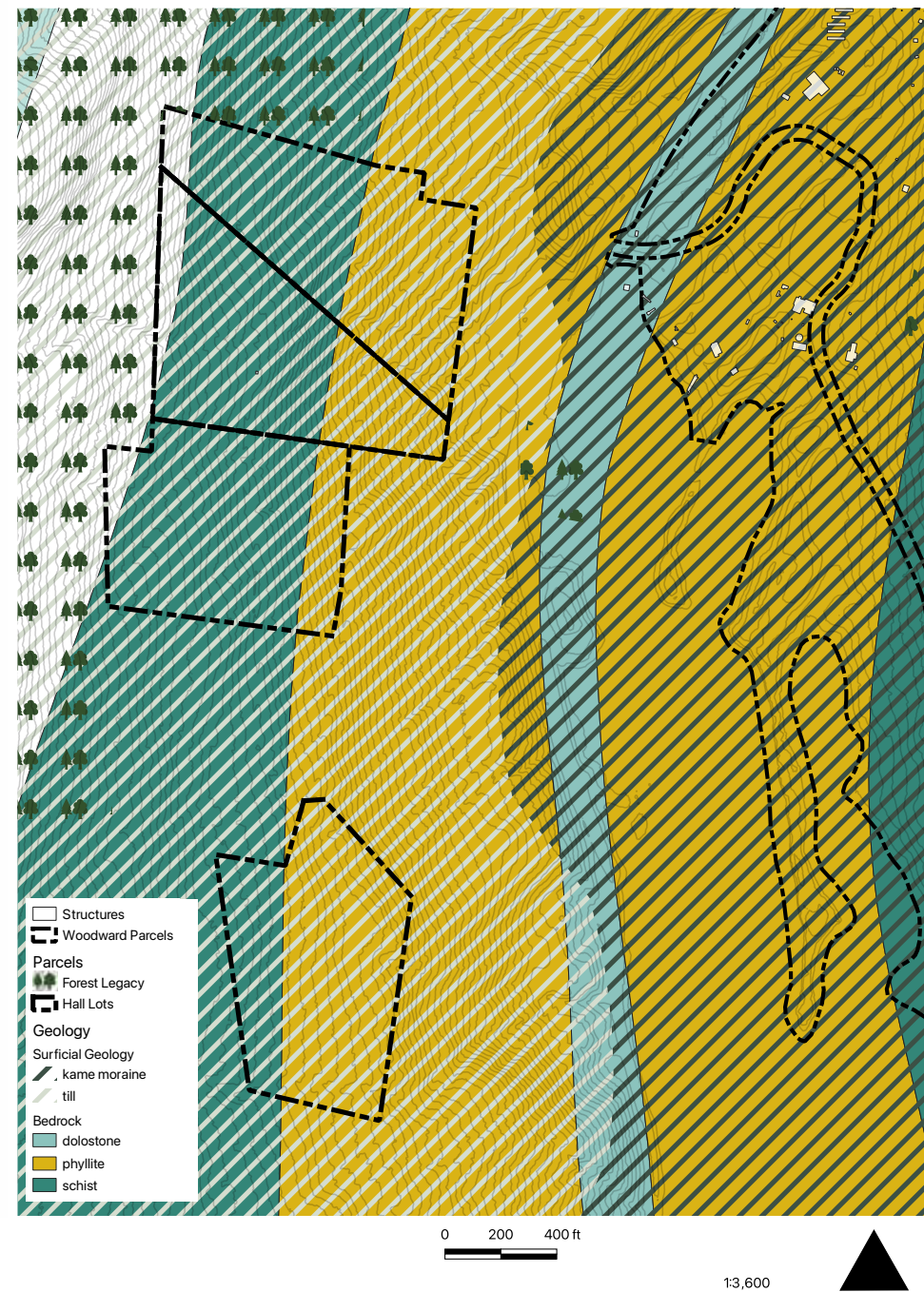
★ ROUTE 100 CROSSING

Hall Lots: Landscape Analysis



Slopes

There are extremely steep slopes across the Hall Lots, often above 33%. Slopes greater than 33% are most subject to erosion if disturbed. Areas to the south are less steep and disturbance from construction may pose less of a risk of erosion, but access by road is more difficult. There are, however, a few isolated locations near the road where slopes are less than 33%. These areas may be most suitable for building, as the cost and disturbance would be lowest where slopes are gentle, and flatter areas are more suitable for septic. Siting buildings on slopes less than 8.3% would make it easiest to achieve universal accessibility around the buildings. Above 8.3%, more significant grading or longer paths parallel to contour would be required to achieve accessible path slopes.



Bedrock & Surficial Geology

The parcels lay across two bands of bedrock; the west side of the parcels is underlain by schist, and the east side falls on a band of dolomitic phyllite. A band of dolostone bedrock runs along Woodward Reservoir farther east. Phyllite and dolostone are both dolomitic bedrock types, which typically create rich, alkaline soils. Dolomitic bedrock is regionally uncommon and can give rise to ecologically significant plant communities and habitat, especially where bedrock is close to the surface and is oriented on a north-facing slope. According to the 1970 Surficial Geologic Map of Vermont, surficial geology on these parcels is characterized by glacial till, which “[reflects] the topography of the underlying bedrock surface,” and is “thicker in the valleys and thinner in the uplands.”

Vegetation

Most of the Hall Lot area is covered by forest that has been managed in the recent past for timber, with a small engineered pond and open meadow (at right) close to Route 100. The plant communities here have not been inventoried, but a baseline documentation report completed by Redstart Forestry for the Forest Legacy Land on the eastern and southern portions of the Woodward property could provide



insight into what plant communities may be found here. Ecologists identified several ecologically significant areas and rare plants on nearby Farm and Wilderness property that share many characteristics with the Hall Lots. The design team did observe a diverse understory of herbaceous spring ephemerals on an early spring site visit, which included populations of early blue cohosh (*Caulophyllum thalictroides*), wild leek (*Allium tricoccum*), both shown at left, as well as trout lily (*Erythronium americanum*) and dutchman's breeches (*Dicentra cucullaria*).

Rare and uncommon plants observed nearby:

- Green spleenwort (*Asplenium veride*): Restricted to dolomite ledge, found on both sides of Route 100 at south end of Woodward Reservoir
- Summer sedge (*Carex aestivalis*)
- Stout goldenrod (*Solidago squarrosa*)
- Back's sedge (*Carex backii*)
- American ginseng (*Panax quinquefolis*)
- Wood millet (*Milium effusum*)

Rare and/or ecologically significant plant communities observed nearby:

- Rich Northern Hardwood Forest
- Red Oak-Northern Hardwood Forest
- Dwarf Shrub Bog

Design Implications

A full ecological assessment including rare plant inventory should be completed before moving forward in the development process. Conceptual designs and suitable building locations proposed in this plan were based on the level of assessment the design team was able to complete during the analysis period, which included analysis of slopes, access, and observed level of disturbance. However, if a full assessment by a forester or ecologist reveals the presence of rare species, this should preclude building in any of the proposed locations. Areas where species that may be threatened by over-collection grow, such as American ginseng and wild leek, should remain less accessible to the public to protect the future of these populations.

The Hall Lots appear to be ecologically significant, and they could offer Farm and Wilderness an important opportunity to extend their conservation efforts. Development may be possible but should be considered with great care, and low-impact building techniques should be employed wherever possible.

Hall Lots: Summary & Building Suitability

The Hall Lots provide Farm & Wilderness with an opportunity to site staff housing away from its main property. This could alleviate current or future spatial constraints to siting new buildings found on other parts of its properties. Even though it's in need of repair, the access road provides the existing infrastructure needed to access the lots. In addition, the forested hillside offers a nature-immersed space, away from the summer camps, that could provide room for solitude and rest for staff.

However, initial analysis of the Hall Lots revealed several obstacles to siting housing on the Farm & Wilderness owned parcels. The lack of space with slopes less than 15% and with soil that is suitable for on-site septic systems

greatly constrains where housing could be built. In addition, if vehicle access to the lots is desired, the access road would require repair due to several culvert washouts. Maintaining the road may also be difficult as climate forecasts predict stronger storms that would make future washouts more likely. In addition, the underlying bedrock and adjacency to larger expanses of conserved land suggest that it may be important to protect the Hall Lots from development for habitat purposes. Lastly, siting housing across Route 100 from Farm & Wilderness' main property could create a dangerous pedestrian crossing.

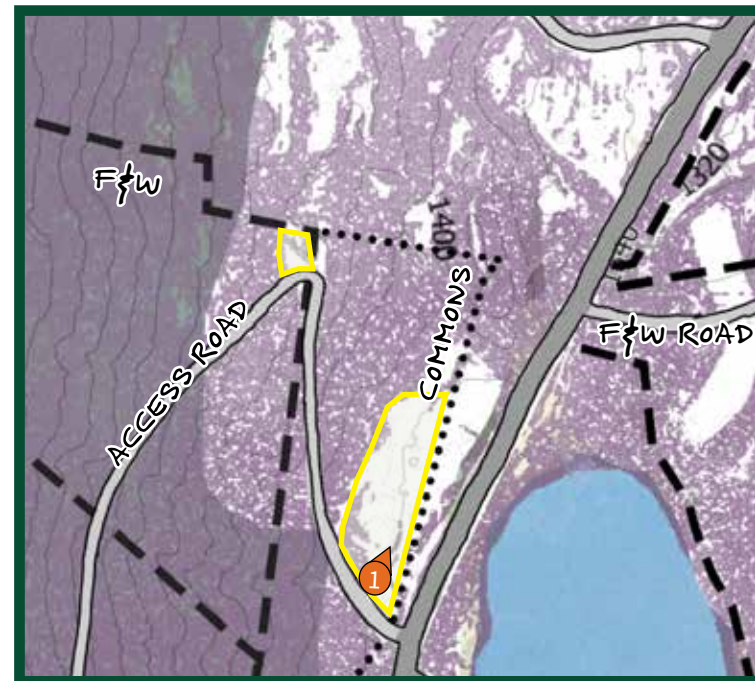
Building Suitability

The many constraints to building on the Hall Lots left only a few places that seemed well suited for housing. An overlay of the analyses revealed two locations that could potentially serve as building locations if Farm & Wilderness decides to further explore this option in the future. Both locations are on land with less than 15% slope and with soils moderately to well suited for on-site septic. They also are located near where the access road joins Route 100 in order that less of the road would need to be repaired, maintained, or extended in order to access the housing by vehicle.

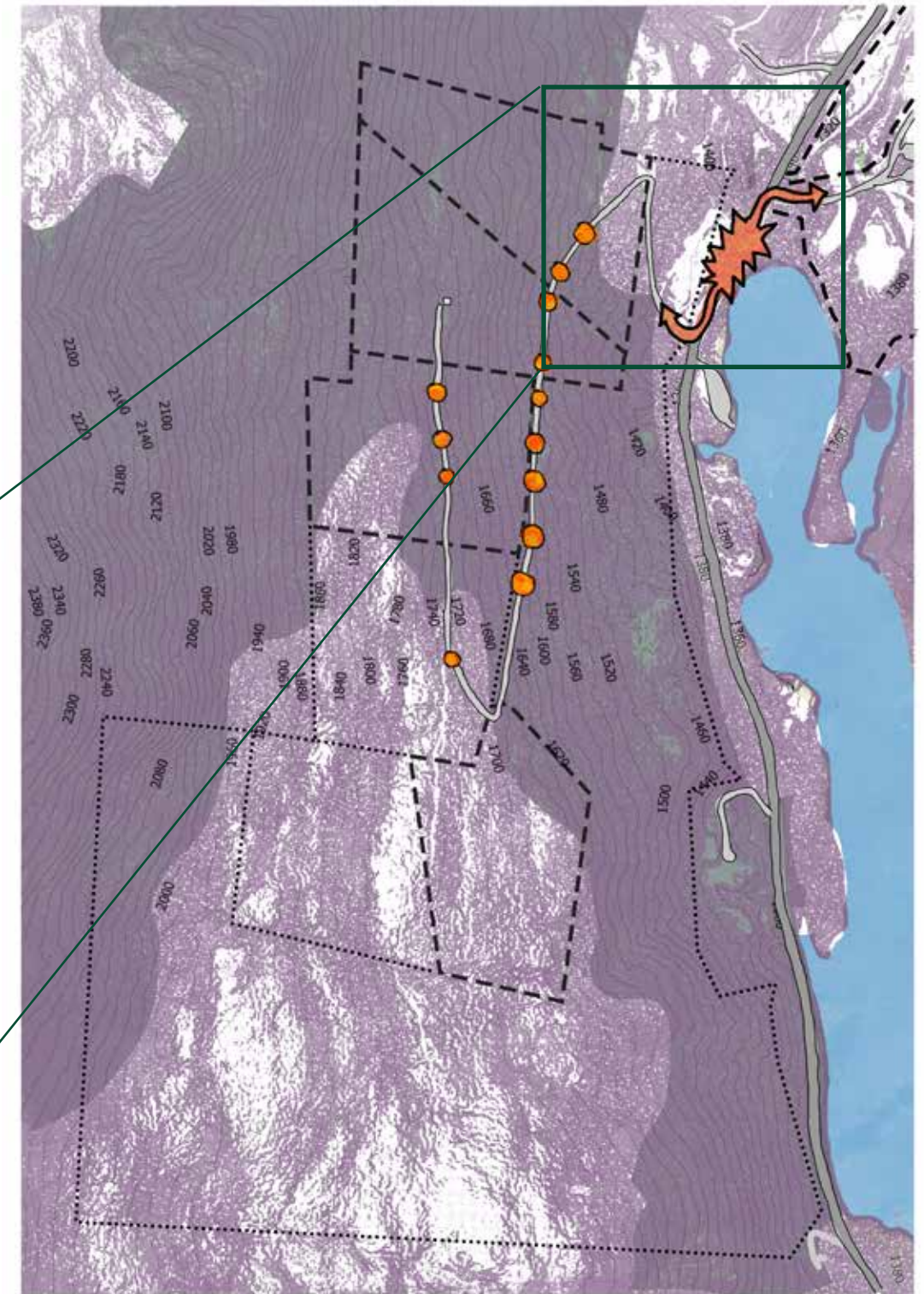
The first site is located off the first turn of the access road on the most northern Hall Lot parcel owned by Farm & Wilderness. It is a wooded site on a part of the hillside that levels off for an approximately 3,500-square-foot area. It is adjacent to the access road prior to any of the culvert washouts. Vehicle access would require repairing a small section of road that has not experienced any severe washouts.

The second site is located on the Commons lot that Farm & Wilderness does not own, but could potentially have legal jurisdiction over in the future. The site is located on the north part of the Commons where the access road meets Route 100. This area is flat and already cleared. According to the property deed, its original use was intended to be a plant nursery. It is closer to Farm & Wilderness Road, making access to the rest of the property easier; however, the potential danger in pedestrians crossing Route 100 would still need to be considered.

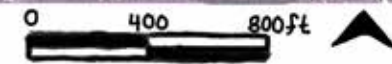
Further assessment of these locations is needed before determining their suitability for housing development. A baseline ecological assessment would help determine what unique habitat and rare species are found on the Hall Lots and how development could impact them. In addition, a greater legal understanding of the language within the Hall Lot deed would help to determine if Farm & Wilderness could ever site housing on the Commons, which the analysis in this report determined may be better suited for development than the F&W owned Hall Lot parcels.



View looking north of the meadow and engineered pond near Route 100, part of the Hall Lot Commons.



- > 15% Slope
- > 15% Slope and not suitable for septic
- Culvert Washout
- Route 100 Crossing



Design Alternatives



A Familiar Arrival

This design makes the most of existing conditions and infrastructure to minimize disturbance in other areas. The Welcome Center is sited on an existing graded pad near the entrance so it is immediately visible upon arrival. A main lot accommodates parking for the Welcome Center and Barn Day Camp Dropoff, and additional parking is sited near the solar array. Bunkhouses and cabins accommodate at least 50 additional people in the Woodward Arrival area. An accessible trail traverses across the fair fields, through the woods near Barn Day Camp, to a viewing platform along the reservoir.



A Green Arrival

In this design, parking is relocated from the first leg of the loop road to the kettle pond, removing it from the arrival sequence. The lot accommodates up to 100 vehicles and harvests the strong solar irradiation with PV shades. The Welcome Center rises over a long view of green landscape features like a vegetated bioretention basin and a relocated soccer field around the first leg of the loop. Housing is minimal in this design, so more capacity may be needed in other places on the property, like at the Hall Lots. An accessible trail loops through wildflower meadows that frame the fairgrounds and leads to the reservoir swimming area.



A Playful Arrival

This concept makes use of the interesting topography and natural features of the site to create a playscape that greets visitors on their first arrival. In this alternative, the Welcome Center is sited on the highpoint at the north of the site, which has beautiful views out over the reservoir. A reinforced turf, permeable parking lot provides parking for Barn Day Camp dropoff as well as the Welcome Center, with several spaces tucked into the slope on the other side of Farm and Wilderness Road to provide direct access to the Welcome Center. This concept supports about half of the housing needs in the Woodward Area in a bunkhouse and cabins, so housing for 20 to 30 would be needed elsewhere on the property. There are also gardens and a “natural” playscape that could be available to the public when appropriate, in addition to the accessible trail, which switchbacks up the west-facing slope to provide access to the Forest Legacy Land.

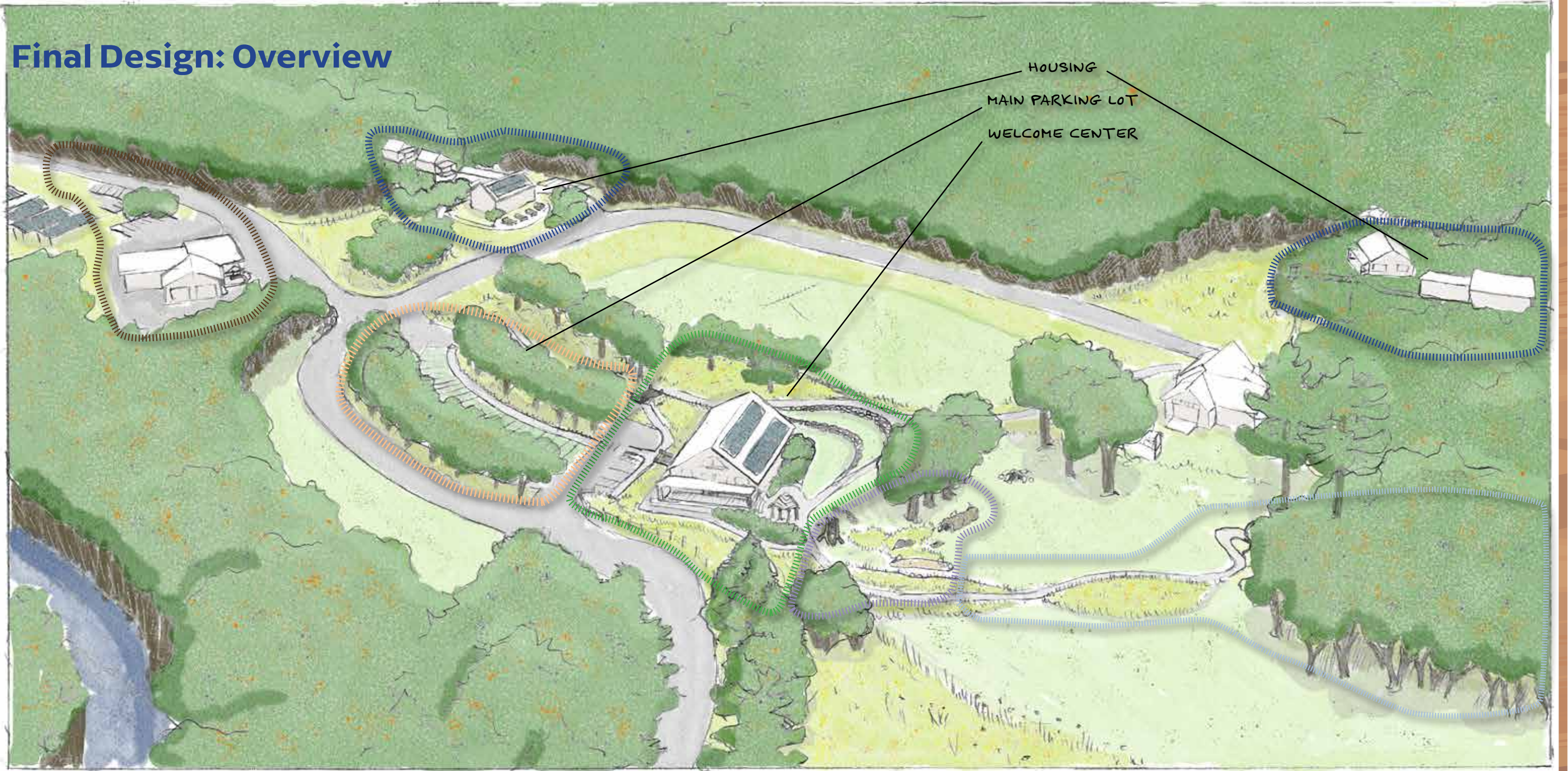


A Clear Arrival

In this concept, Farm and Wilderness road is rerouted to approach the Welcome Center more directly, which is sited on the flat, cleared area east of the maintenance building. Parking in this design is split between the right and left sides of the road, with a lot specifically intended for Barn Day Camp dropoff and a 40 to 50-person lot northwest of Farm and Wilderness Road for the Welcome Center. This design also incorporates a reinforced turf lawn for overflow parking. Elements from the other alternatives could be incorporated into this design to meet housing and access goals.









Final Design: Overview



The final design welcomes visitors to Farm & Wilderness with an experience that is engaging, inviting, and reflective of the values of the Farm & Wilderness community. The Welcome Center greets visitors at the first turn on F&W Road, framed by stands of trees and gardens. The parking lot, while located in a similar position to its current location, is lined by trees and planted stormwater swales, therefore helping to naturalize it within the landscape. Four new buildings for year round staff housing are sited on flatter locations north and east of F&W Road and provide staff with privacy and a place to connect with one another.

ADA accessible paths connect the parking lot, Welcome Center, and Barn Day Camp. An ABA accessible path extends from the Welcome Center, through gardens, meadows, and woods, to a viewing platform over Woodward Reservoir. Patios, decks, interactive gardens, and play spaces connect buildings and parking to the landscape, providing opportunities to engage with the natural beauty of Farm & Wilderness.

Final Design	18 - 19
 Welcome Center	20
 Natural Play Area	21
 Main Parking Lot	22
 Housing	23
 Universal Access Trail	24
 Maintenance Building & Staff Parking	25



Final Design

1 Welcome Center

The Welcome Center greets visitors at the first turn of Farm & Wilderness Road. It is immediately visible upon turning onto the road, making it a clear destination. Trees and gardens planted around the building help to blend it with the landscape. Constructing the building on an existing gravel pad minimizes the need to clear land for construction, though some regrading is necessary. The building is oriented with the roof facing south for solar gain.

2 Year-Round Housing

Year-round housing for fifty staff is incorporated into multiple buildings that run northeast to southeast of Farm & Wilderness Road. Clusters of staff housing with communal outdoor spaces creates a village feel. Since office space is moved to the Welcome Center, the current office building to the southeast is converted to housing for six to eight people. A dormitory style building with capacity for 16 people is sited adjacent to this converted building. A path runs to the north from these buildings to another group of staff housing structures. A similarly sized dormitory building with capacity for sixteen people is sited on a raised, flat and cleared area east of the maintenance building. Two smaller cabins are built in the woods on the hillside from the logging road which leads to the Buehl House. The dormitory-style buildings can accommodate larger groups while the smaller cabins can be used for staff that require more privacy or can be rented to small groups as needed.

3 83-Vehicle Parking Lot

An 83-vehicle capacity parking lot is designed to maximize efficiency, manage stormwater, and provide easy and safe access to the rest of Farm & Wilderness. Although still very visible upon arrival, the parking lot is buffered from the road by a vegetated swale lined with trees. Paths span the length of the parking lot, helping to minimize vehicle and pedestrian conflict. The parking lot lanes are paved while the stalls are semi-pervious reinforced turf blocks. It is sited on existing gravel lots that are already cleared and compacted, thus lessening the impact on other areas that do not yet have compacted soils.

4 Playscape & Interactive Gardens

A garden interspersed with rustic play features extends south from the Welcome Center, inviting visitors out into this part of the landscape. The gardens include native vegetation beneficial for pollinators, birds, and other wildlife in addition to edible plants that can be gathered by office staff, visitors, and Barn Day Camp campers. Play features are built into slopes, inspiring creative movement across the rolling topography. The gardens and playscape are sheltered from the parking lots, but adjacent to the Welcome Center and the ABA trailhead, making it highly accessible and visible for visitors. At the same time, it is screened from Barn Day Camp and at a lower elevation, thus allowing separation and privacy

5 25-Vehicle Permeable Parking Lot

A 25-vehicle capacity parking lot for seasonal staff vehicles is sited north of the maintenance building, below the solar field, in an area that is already cleared and relatively flat. The parking lot allows most seasonal staff vehicles to be out of sight of visitors. Since this lot is adjacent to a steep slope that runs down to Reservoir Brook, it is important that some or all of it is built with a permeable surface.

6 Adjusted Entrance to Maintenance Building

A berm fully screens the current long sightline to the maintenance building from the first turn of Farm & Wilderness Road. Vehicles approaching from the main entrance must take a 90 degree turn to enter the driveway. This aims to improve intuitive wayfinding by making the entrance to the maintenance facility feel less prominent to new visitors.

7 Accessible Trail

A berm fully screens the current long sightline to the maintenance building from the first turn of Farm & Wilderness Road. Vehicles approaching from the main entrance must take a 90 degree turn to enter the driveway. This aims to improve intuitive wayfinding by making the entrance to the maintenance facility feel less prominent to new visitors.

8 Wildflower Meadows

Pollinator-friendly meadows frame the fair fields, creating greater habitat value than the currently mown lawn, and insulating campers from the road. The densely vegetated meadows also discourage geese from the area and therefore provide greater opportunity for grazing livestock.



Final Design



25-VEHICLE CAPACITY LOT
STAFF GATHERING SPACE
83-VEHICLE CAPACITY LOT
REINFORCED TURF STALLS

1-4 PERSON CABINS
16-PERSON BUNKHOUSE
STAFF GARDEN BEDS

WELCOME CENTER
PERGOLA AND PATIO
GARDEN PLAY AREA
TERRACES
— MEADOW
ACCESSIBLE TRAIL
OBSERVATION DECK

16-PERSON BUNKHOUSE
RENOVATED FARMHOUSE
GATHERING SPACE

WOODWARD RESERVOIR

0 100 200 ft



Final Design
Farm and Wilderness, Inc
401 Farm And Wilderness Rd, Plymouth, VT 05056

Marquis / Rosenwinkel
SPRING 2022

Not for construction. Part of a student project and not based on a legal survey.

the Graduate Program in Sustainable
Landscape Planning + Design
Conway School

Welcome Center

1 Welcome Center

The Welcome Center is visible soon after turning onto Farm and Wilderness Road from Route 100, making it a clear destination and focal point on the landscape. The building is close to the parking lot to the north and sidewalks help to separate pedestrians from vehicles. Accessible paths connect the Welcome Center to Barn Day Camp and a longer out-and-back trail that leads to an overlook of Woodward Reservoir. Constructing the Welcome Center on an existing gravel pad minimizes clearing that would be required for construction in undisturbed areas.

2 Gathering Space

An arbor frames the transition from the Welcome Center porch to an outdoor gravel patio that could be used as an outdoor classroom or lounge. A pergola built from rough-cut wood harvested from F&W's property provides shelter over a circle of cut log seats for planned gatherings, and additional tables and seating allow employees and visitors to enjoy a break outdoors. This area is shaded from the south by the existing sugar maples that once flanked the approach to F&W.

3 Garden Play Area

The corner gathering space transitions south into a nature-inspired play area with play structures made from materials found on site, like boulders and logs from trees removed during construction. The design prioritizes loose parts and adventure play with varying levels of challenge for different age groups.

4 Terraces

The berm to the north side of the old entrance road is removed to create seat-height terraces that define the space to the southeast of the Welcome Center, creating an amphitheater-like effect for larger gatherings.

5 Esker Orchard

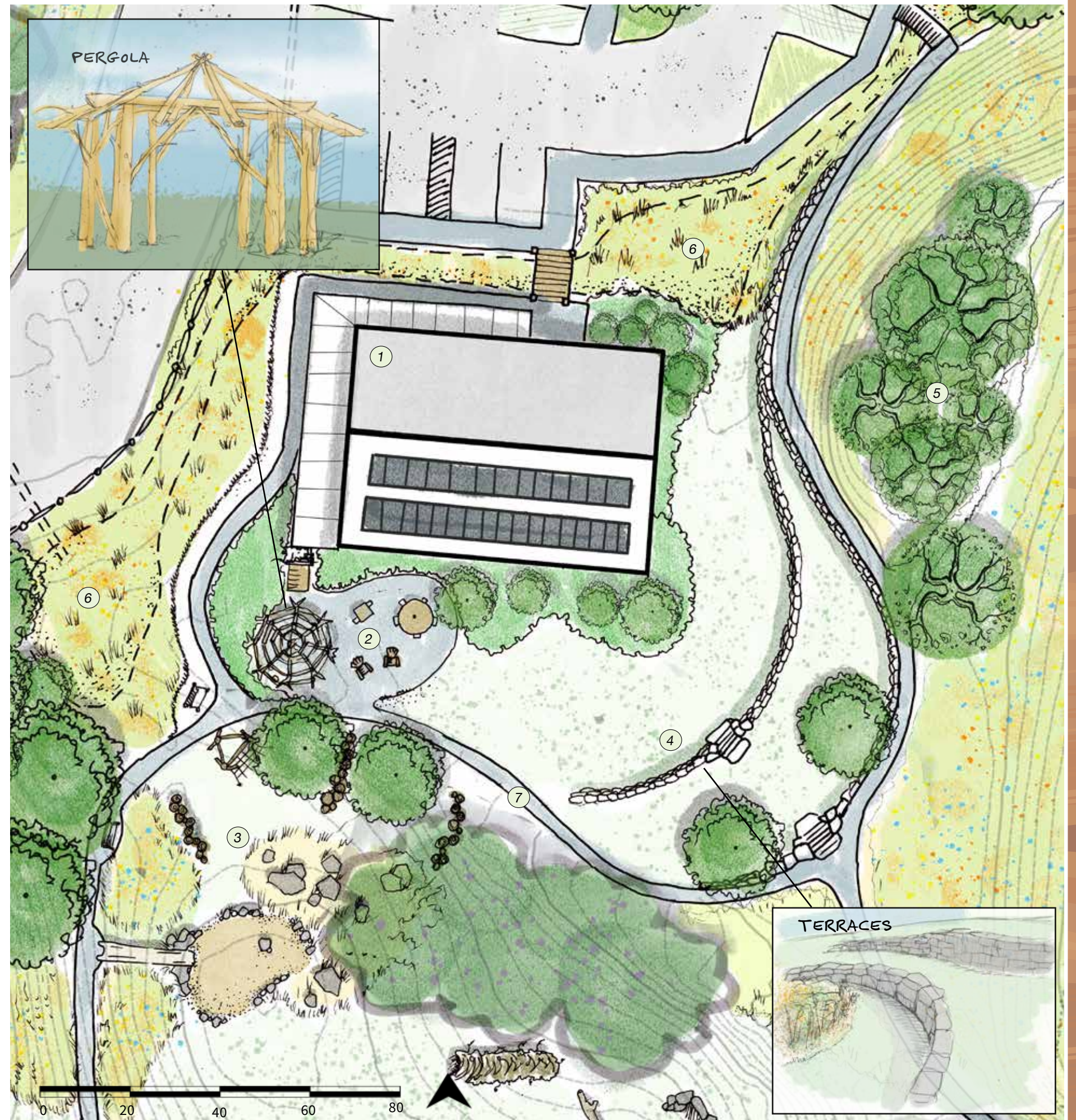
A grove of mixed fruit trees is perched on top of the berm to the east of the Welcome Center, offering edibles and providing dappled shade to grazing animals or humans watching soccer games in the kettle pond.

6 Bioretention Basins

Bioretention basins collect and filter stormwater runoff from the parking lots and Welcome Center roof, also adding visual interest and habitat for birds and pollinators. Overflow drains help to prevent flooding during extreme weather events.

7 Trails and Footpaths

Trails and footpaths connect zones of use and provide an accessible network of pedestrian circulation that does not exceed 8.3% grade.



Natural Play Area

1 Maple Climber

The aging maple trees located on top of the berm on the north side of the old road have been removed, as their age and declining health mean they pose a safety hazard. In this design they are given new life by transforming the limbs into a climbing structure. Inspired by a structure at the Missouri Botanical Garden.

2 Stump Steps

Tree trunks removed during construction are bucked and set into the hillside at uneven heights to create challenging stairs.

3 Secret Cavern

At the top of the steep hillside to the east of the play area, a small area is excavated, reinforced with stone, and covered with a turf roof to create a kid-sized play cave. This cave should be engineered with safety in mind.

4 Sand Pit

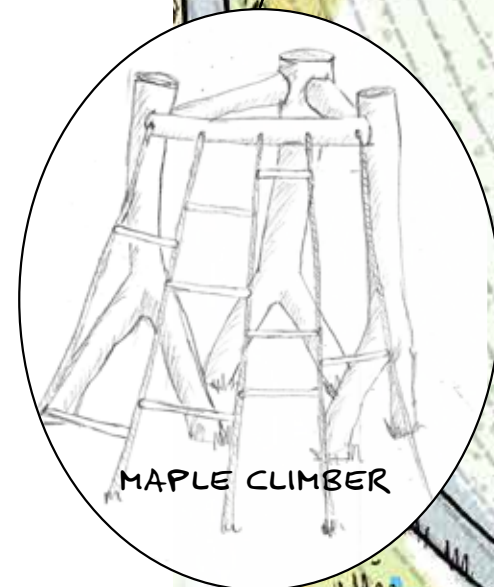
The natural low point in the topography is filled with sand--a geologically appropriate feature that offers a chance for kids of all ages to dig, fling, construct, and destroy.

5 Woven Tunnel

Campers can help construct a tunnel woven from live twigs and watch their creation grow year after year, even as they outgrow it.

6 Hill-slide

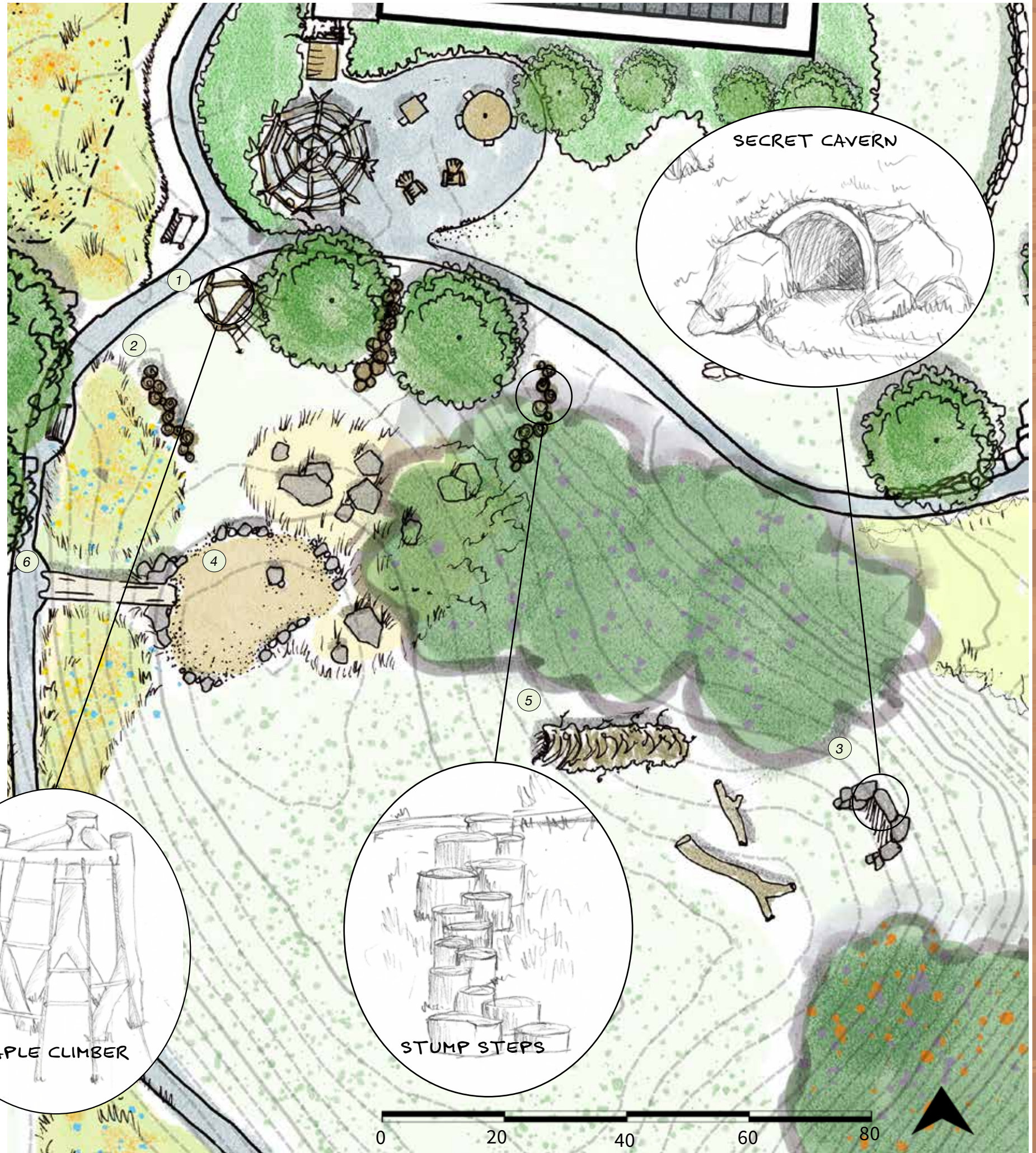
The hill-slide is the fastest way from the top of the hillside to the bottom of the sand pit.



MAPLE CLIMBER



STUMP STEPS



SECRET CAVERN



Main Parking Lot

1 Bioretention Swales

Two bioretention swales run the length of the parking lot, intercepting and cleaning stormwater runoff from the parking lot and esker to the east. The swales are planted with a combination of understory plant species and small trees which are all drought and flood tolerant. The trees provide shade for cars and buffer the parking lot from initial arrival views. The swales move water south to a detention basin southeast of the Welcome Center, which overflows to a second detention basin on the other side of Farm & Wilderness Road.

2 Accessible Paths with Minimal Traffic Crossings

ADA paths run alongside the easternmost vegetated swale and the middle line of gardens and trees. They also run alongside the adjacent parking stalls, making them easily accessible. Their adjacency to the swales and trees provides visitors with shaded and green walkways as they make their way south to the Welcome Center or Day Camp. The easternmost walkway requires zero traffic crossings and western walkway requires one traffic crossing in front of the Welcome Center.

3 Paved Two-Way Traffic Lanes

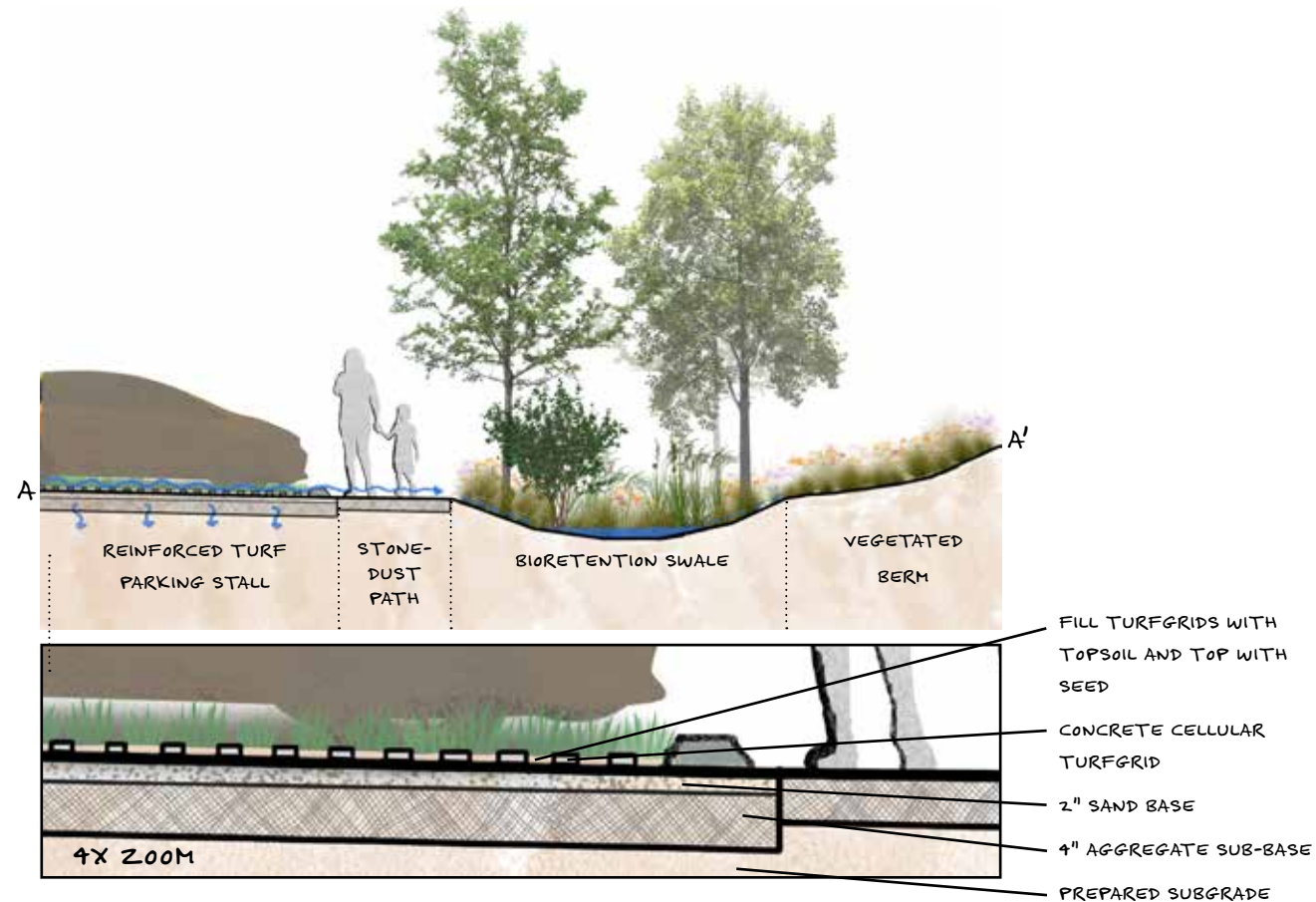
Each parking aisle is 26 feet wide and allows for two-way traffic. Access to the parking lot from Farm & Wilderness Road is allowed at the most southern and northern points of the parking lot creating easy and clear movement through the parking lot.

4 83 Reinforced Turf Parking Stalls

83 parking stalls nine feet wide by eighteen feet long are aligned in three curving rows east to west. Reinforced turf allows stormwater to permeate and gives the parking lot a greener appearance. 83 spaces provide enough parking for office staff, Barn Day Camp parents, and a few visitors.

5 4 Accessible Parking Stalls

4 additional parking stalls provide accessible parking close to the Welcome Center without requiring any traffic crossings. Three of the four spaces are wider and are adjacent to an access aisle, making them van accessible.



Housing

The Woodward Arrival Area could support housing for the goal of 50 people through a combination of new buildings and conversion of existing structures. Development density helps reduce disturbance and creates the feel of a village. The North Housing node accommodates up to 24, and the South Housing node accommodates up to 26.

North Housing

1 Bunkhouse and Cabins

A bunkhouse looks out over the mountains and reservoir from the high point at the northeast corner of the arrival area can accommodate up to 16 people. Two smaller cabins located north of this duplex along the forest road can accommodate up to 4 people each, but would be comfortable for a single person or couple if a more private accommodation is desired.

2 Gathering Space

A fire pit and patio offer space for staff to unwind and connect after work and on weekends.

3 Staff Garden Beds

A cleared, south-facing slope is a good location for growing veggies, herbs, or cut flowers chosen and maintained by staff. The site's history of being fertilized with humanure means that the soil is incredibly rich. It is safe to consume produce grown here, though it does not meet current organic certification requirements that F&W adhere to with the produce they offer to the public.

4 Driveway, Paths, and Parking

The forest road is expanded and surfaced with gravel to create a driveway and parking for five vehicles close to the bunkhouse. The forest road continues to provide access to the private cabins, as well as the proposed Buehl triplex that is currently in development.

South Housing

5 Renovated Farmhouse and New Bunkhouse

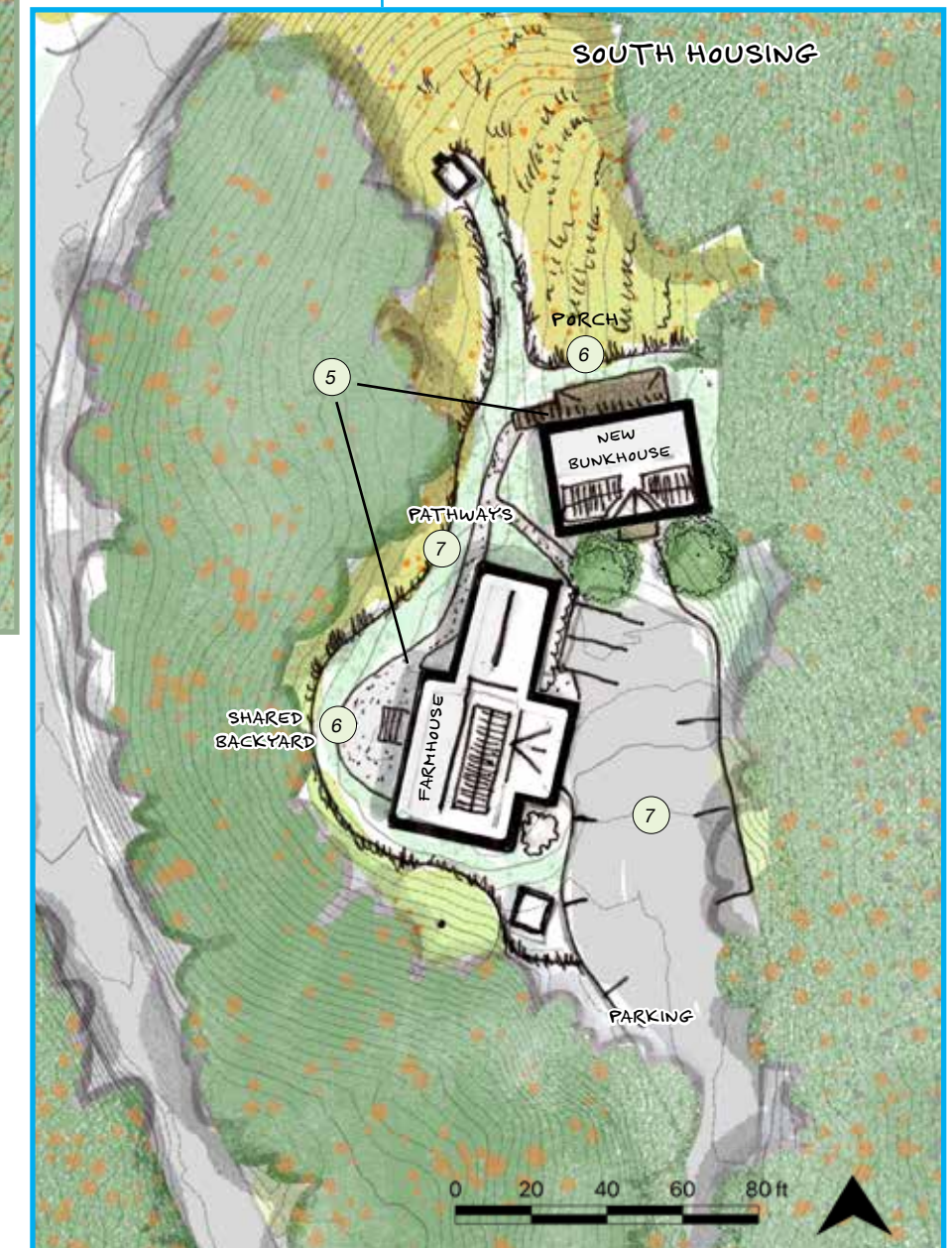
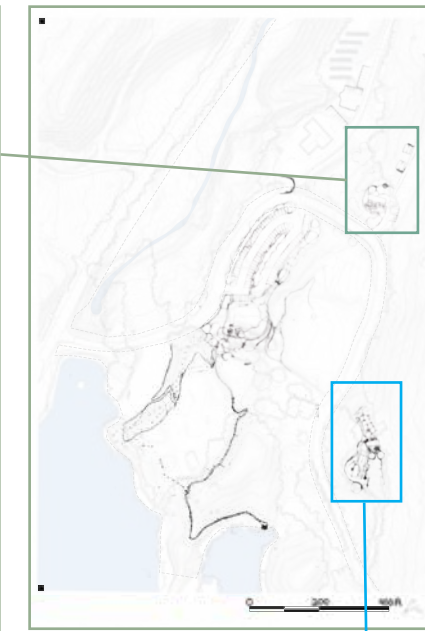
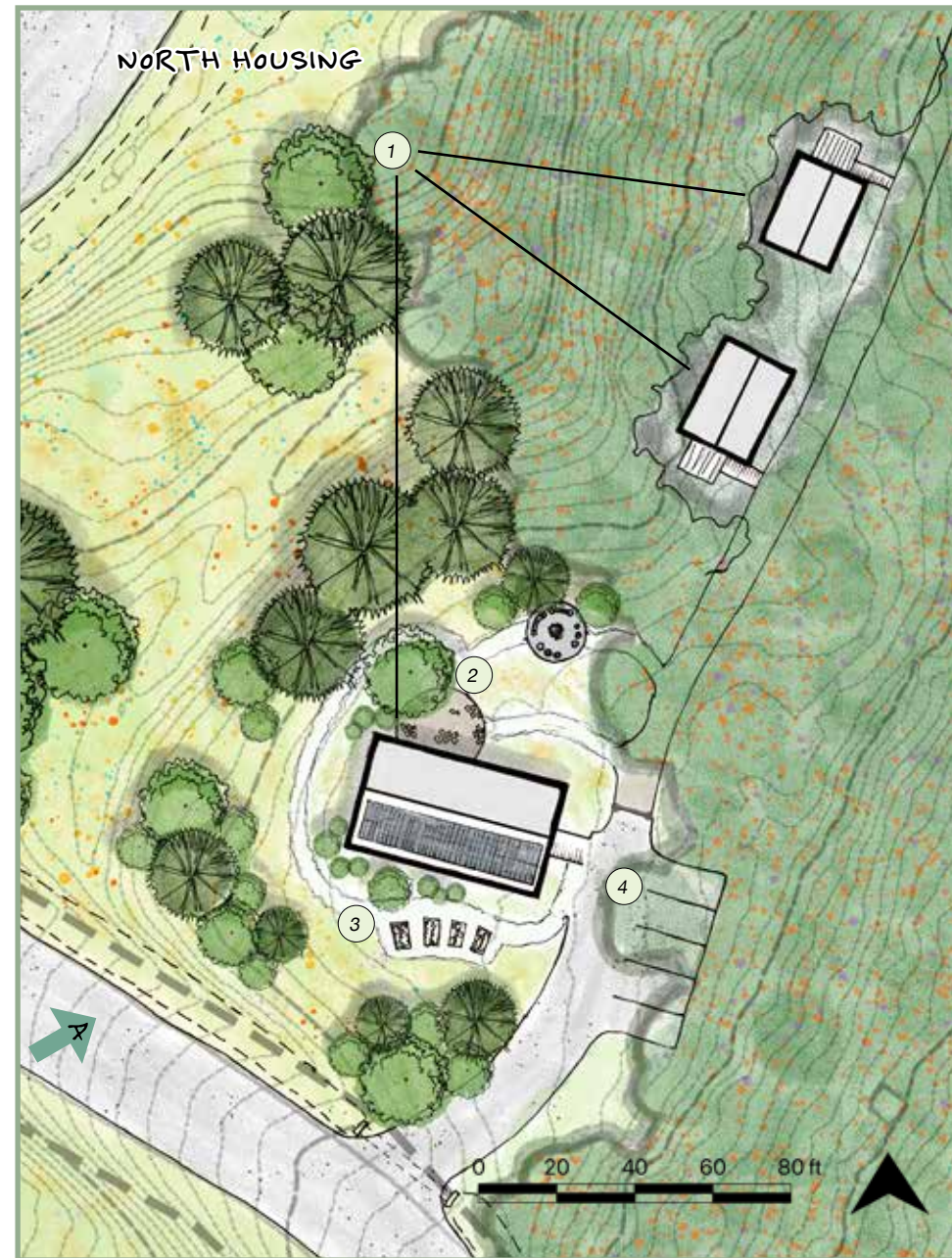
The historic farmhouse, currently being used for staff offices, is renovated to accommodate approximately 10 beds. An additional bunkhouse is placed between this farmhouse and the toe of the slope, accommodating up to 16 more people.

6 Gathering Space

The new bunkhouse incorporates a porch that offers a scenic view north of Killington. The two bunkhouses share a side/backyard. Perhaps an outdoor kitchen or pizza oven?

7 Driveway, Paths, and Parking

The existing driveway provides access to the bunkhouse and farmhouse, and there is room for 6 to 7 cars to park without need for significant expansion of the driveway. A crushed-stone-surfaced pathway connects the north porch of the new bunkhouse to the gathering space west of the farmhouse.



Universal Access Trail

Trailhead Kiosk

Signs for the trail begin near the parking lot, guiding visitors to a more detailed trailhead kiosk just south of the welcome center. The kiosk incorporates important information about the accessibility of the trail to allow users to make informed decisions on whether it suits their abilities. This information should include the trail length, type of surface, typical and minimum tread width, typical and maximum running slope, and the typical and maximum cross slope. The kiosk is also an opportunity to share information with visitors about Farm & Wilderness, the natural environment, and the Indigenous and colonial history of people on the landscape.

Alongside the Fair Day Berm

The trail begins framed by meadow and gardens near the playscape. It then slowly climbs the hillside that serves as seating for Fair Day events. The trail moves mostly parallel with contours, to maintain slopes that are compliant with ABA standards. It slowly gains elevation, leading to expansive views across the fair fields and out over the area surrounding the Welcome Center.

Through the Woods Below Barn Day Camp

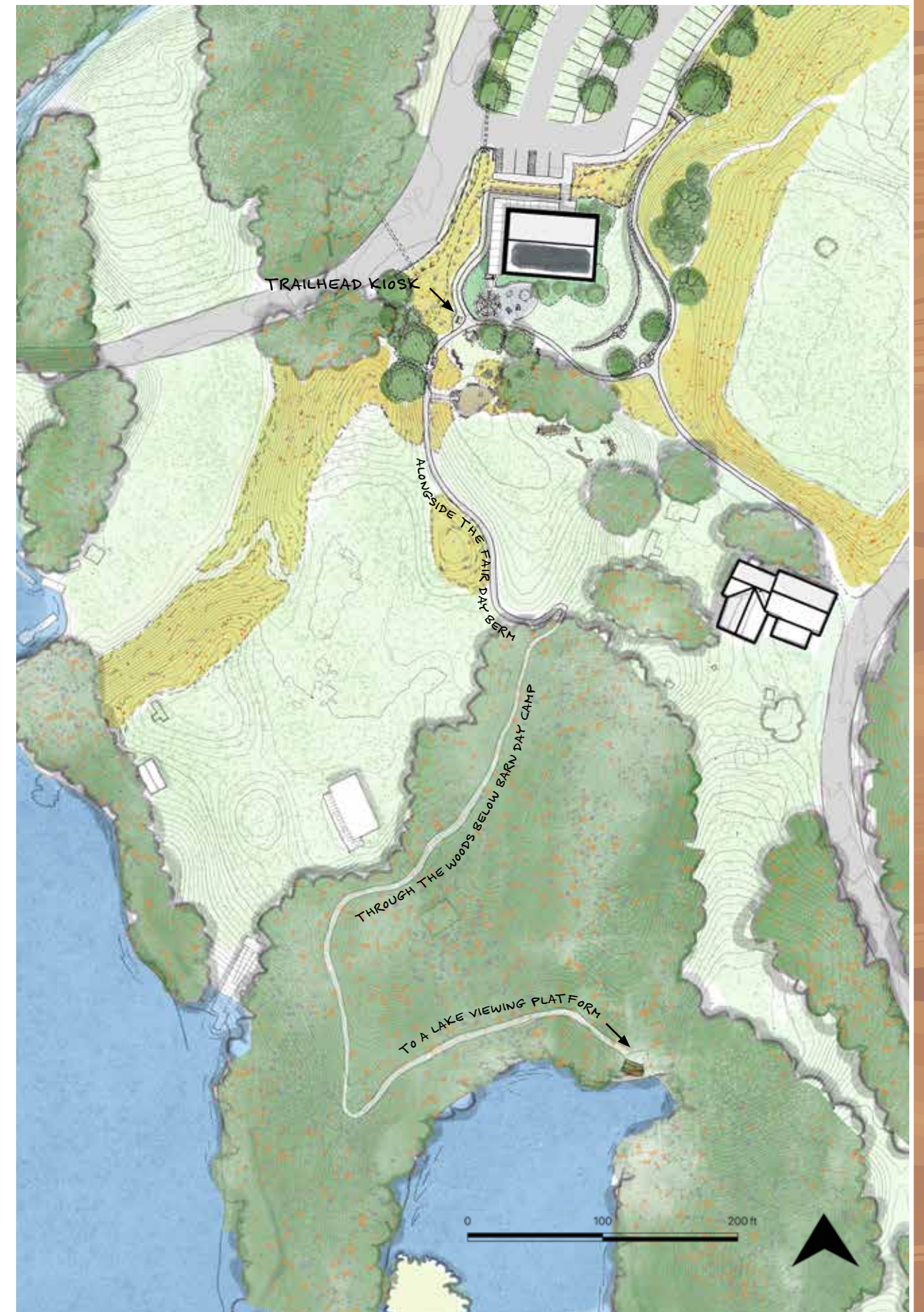
The trail then winds into the mixed conifer and deciduous forest to the southwest of Barn Day Camp, making its way south towards the shore of Woodward Reservoir. This area is quite steep and will require careful construction to avoid erosion on the hillside. The trail runs parallel to contour, slowly lowering in elevation until it reaches a lake viewing platform with a view out to the dwarf-shrub bog.

To a Lake Viewing Platform

A raised lake viewing platform stretches from the trail out above the shore, providing an area of rest and observation overlooking the water and the rare dwarf shrub bog which floats just to the south. The quiet inlet of the reservoir is a place for solitude and rest, surrounded by woodlands and the water. The lake viewing platform allows universal access to view a habitat that rarely is accessible to those with limited mobility.

Farm & Wilderness Accessible Trail Specifications

- ◆ Distance to Lake View
 - 1000 feet
- ◆ Trail width
 - 3.5 feet
- ◆ Maximum Running Slope
 - 10% for 10 feet
- ◆ Maximum Cross Slope
 - 5%
- ◆ Surface Material
 - Compacted Stone Dust



Maintenance Area & Staff Parking

1 Entrance to Maintenance Facility

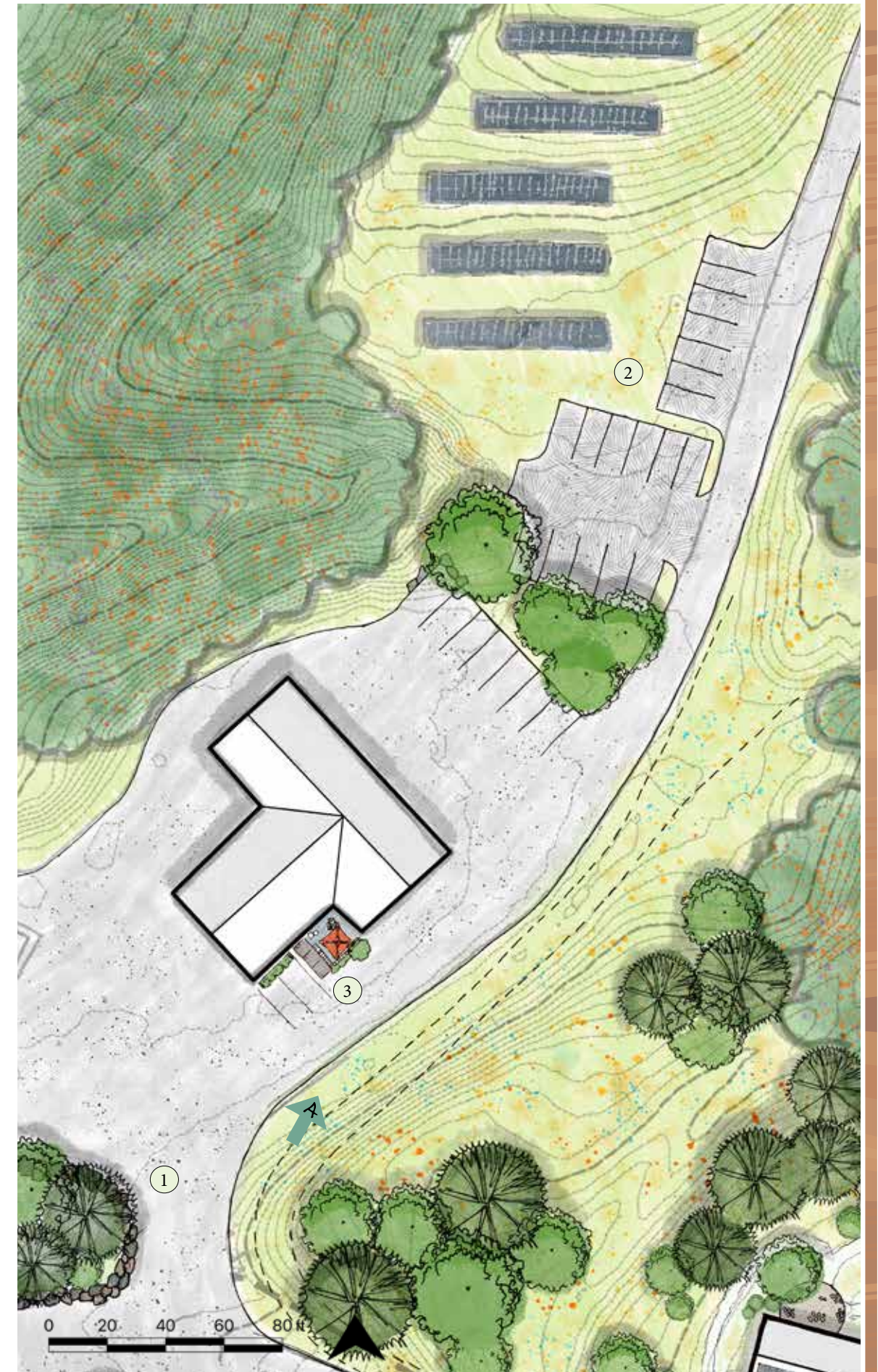
The access to the maintenance building from F&W Road is shifted approximately 30 feet to the east. Wayfinding becomes more clear, as this removes the long sightline to the maintenance building that makes it so prominent upon arrival. The entrance does become more visible to drivers as they get closer. This entrance is also aligned with an access point to the main parking lot in order to create flexible movement for larger vehicles and trailers.

2 25-Vehicle Capacity Overflow Staff Parking

25 parking stalls, 10 feet wide by 20 feet long, are sited north of the maintenance facility and below the solar field. This site is already relatively flat, clear, and compacted. The stalls allow room for vans and pickup trucks and provide a space for seasonal staff vehicles to be parked away from the arrival experience. The trash and recycling containers are moved to the southwest of the maintenance building. Since this lot is adjacent to a steep slope that runs down to Reservoir Brook, it is particularly important that it has a permeable surface. Additionally, vegetated bioswales and buffers around the parking lot help to intercept stormwater before it flows down the slope to the brook.

3 Staff Gathering & Gardens

A 15-foot-by-15-foot patio is tucked into the a south corner of the maintenance building, providing a gathering and resting space for Farm & Wilderness staff who work in the building. Raised planting boxes hem in the patio from the road and line the outside wall adjacent to two parking spaces. The planting boxes help to soften the edges of the building, knitting it into the landscape.



Grading & Stormwater Plan

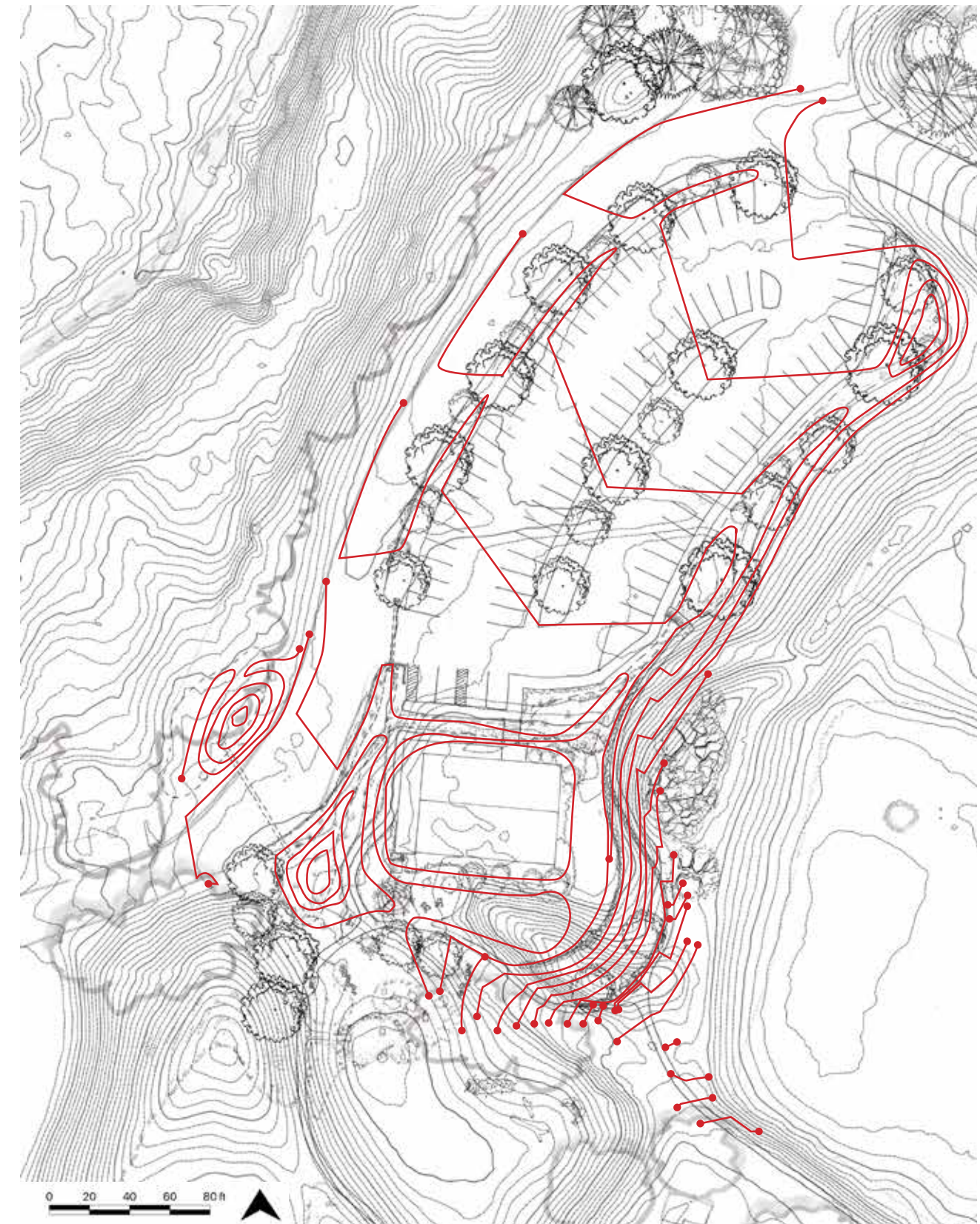
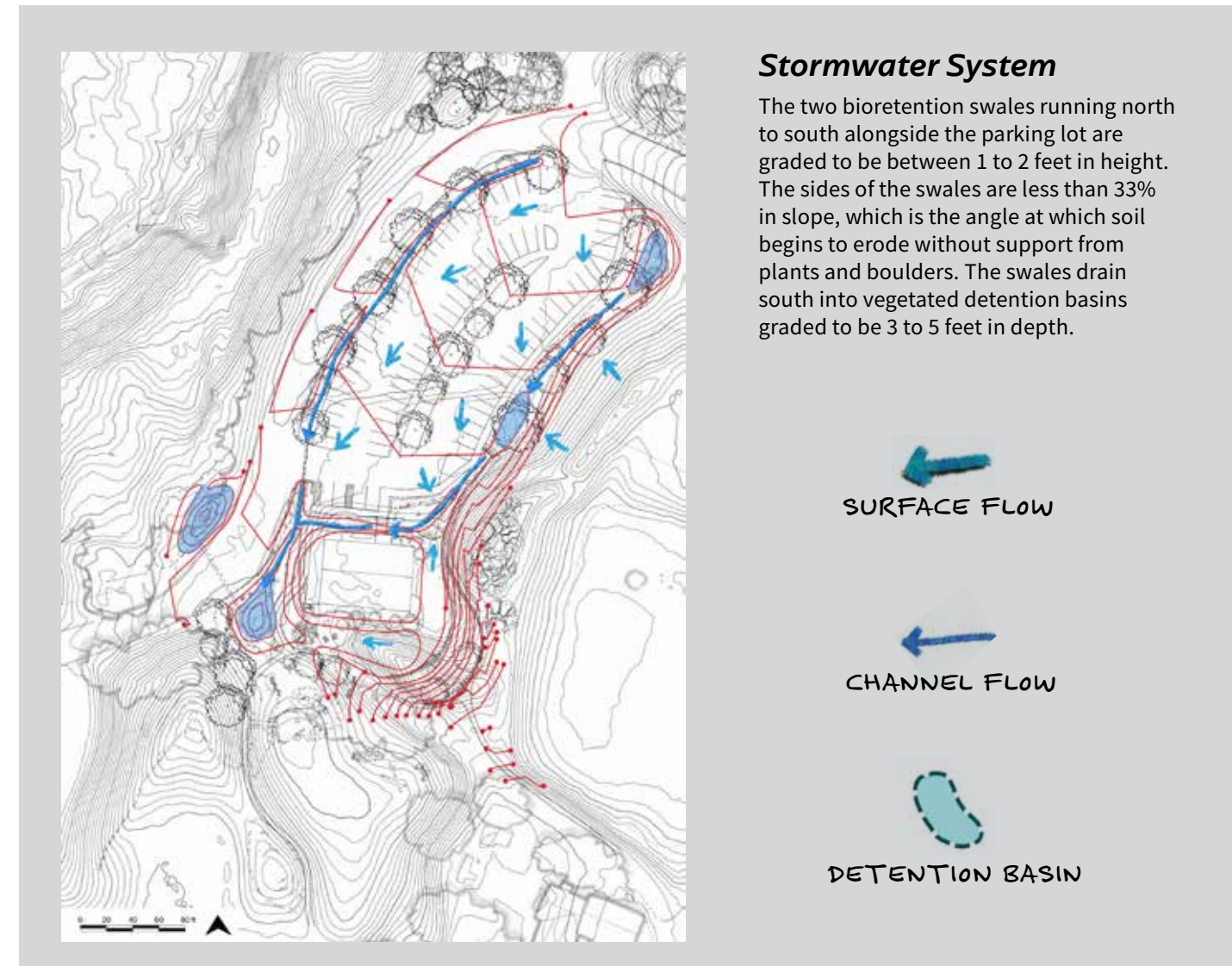
Parking Lot and Welcome Center Grading

The parking lot is sited on an area that is currently 3 to 7 feet lower in elevation than the proposed location of the Welcome Center. The design proposes regrading this site to have more gradual elevation change in order to allow more universally accessible paths and movement from the parking lot to the Welcome Center.

The parking lot area is filled 1 to 4 feet higher than its current elevation. Because of this the road is also raised slightly in order to be near the same elevation as the parking lot. The parking lot lowers in elevation north to south, with the middle slightly raised in order to shed water out towards the two bioretention swales. The existing gravel pad that the Welcome Center is sited on is lowered approximately 2 feet in order to meet the grade of the adjacent parking lot.

Paths and Retaining Walls

All paths through the parking lot and around the Welcome Center are graded to be less than 5% in slope to be ADA compliant. When they approach significant elevation change, they run near parallel to contour to allow more gradual change in height. This is true for the path that runs up the berm to the east of the parking lot. The path slowly works uphill. It then approaches the stepped retaining walls, which creates terraces that allow greater room for the path to traverse.



This grading plan is conceptual. Further input from an engineer and landscape architect would be needed to determine the precise grading needed to accommodate the design. A more detailed grading plan may also reveal changes needed in the design such as path alignment and stormwater drainage.

Planting Palettes

Bioswales and Detention Basins

The selected trees, shrubs, and understory plants are capable of growing in both moist and dry conditions, making them well equipped for the varying moisture conditions in the bioswales and detention basins. These plants are also chosen for the benefit they provide to pollinators, birds, and small mammals, as well as their complimentary color and textural characteristics through the seasons.

	Botanical Name	Common Name	Height	Spacing	Sun/shade	Bloom Time	Color Interest
understory	<i>Acorus americanus</i>	sweet flag	2 ft	18"	Sun	May - Jul	
	<i>Anemone canadensis</i>	Canada anemone	1 ft	8"	sun - part shade	May-Jun	
	<i>Asclepias incarnata</i>	rose milkweed	4 ft	18"	sun - part shade	Jun-Aug	
	<i>Carex grayi</i>	common bur sedge	3 ft	18"	sun - shade	May - Aug	
	<i>Carex sprengei</i>	long-beaked sedge	2 ft	12"	part sun - shade	May - Jul	
	<i>Iris versicolor</i>	northern blue flag	3 ft	18"	sun - part shade	May - Jul	
	<i>Lobelia cardinalis</i>	cardinal flower	4 ft	18"	sun - part shade	Jul - Sept	
	<i>Panicum Virgatum</i>	switch grass	4 ft	24"	sun - part shade	Jul - Sept	
	<i>Rudbeckia hirta</i>	black-eyed Susan	2 ft	16"	sun - part shade	Jun - Oct	
	<i>Zizia aurea</i>	golden Alexander	3 ft	18"	sun - part shade	Apr - Jun	
tree shrub	<i>Sambucus canadensis</i>	elderberry	10 ft	48"	sun - part shade	Jun - Aug	
	<i>Cornus stolonifera</i>	red osier dogwood	10 ft	2-5 ft	sun - part shade	Jun - Sep	
	<i>Ilex verticillata</i> 'red sprite'	winterberry holly	4 ft	2.5 ft	sun - part shade	June - July	
	<i>Acer rubrum</i>	red maple	40-60 ft	-	sun - shade	Mar - Apr	
	<i>Alnus incana subsp. rugosa</i>	speckled alder	20-30 ft	-	sun - part shade	Apr - May	



elderberry



golden Alexander



cardinal flower



switch grass



rose milkweed



northern blue flag



Botanical Name	Common Name	Height	Spacing	Sun/shade	Bloom Time	Color of Interest
<i>Abelia mosanensis</i>	fragrant abelia	5 ft	5 ft	sun - part shade	May - Jun	
<i>Achillea x "Firefly Sunshine"</i>	yarrow	2 ft	18"	sun	Jun - Aug	
<i>Agastache "Blue Fortune"</i>	anise hyssop	3 ft	20"	sun - part shade	Jul - Sep	
<i>Amsonia hubrichtii</i>	narrow-leaf blue star	2 ft	24"	sun - part shade	May - Jun	
<i>Aristolochia macrophylla</i>	dutchman's pipe	25 ft	variable	part shade	May - Jun	
<i>Echinacea "Cheyenne Spirit"</i>	coneflower	3 ft	18"	sun	Jun - Aug	
<i>Gaillardia "Arizona Red"</i>	blanket flower	1 ft	12"	sun	Jun - Sep	
<i>Geranium sanguineum "Rozanne"</i>	bloody cranesbill	2 ft	18"	sun	Jun - Aug	
<i>Geum triflorum</i>	prairie smoke	1 ft	6"	sun - part shade	Apr - Jun	
<i>Hemerocallis "Happy Returns"</i>	daylily	2 ft	20"	sun - part shade	Jun - Jul	
<i>Hydrangea arborescens "Annabelle"</i>	smooth hydrangea	4 ft	5 ft	sun - part shade	Jul - Sep	
<i>Hydrangea paniculata "Vanilla Strawberry"</i>	panicle hydrangea	6 ft	5 ft	sun - part shade	Jul - Sep	
<i>Lonicera sempervirens "Major Wheeler"</i>	honeysuckle vine	8 ft	variable	sun	Jun - Jul	
<i>Paeonia "Dr. Alexander Fleming"</i>	peony	3 ft	24"	sun	Jun	
<i>Paeonia "Karl Rosenfeld"</i>	peony	3 ft	24"	sun - part shade	Jun	
<i>Penstemon digitalis</i>	beardtongue	3 ft	16"	sun - part shade	Jun - Jul	
<i>Rosa virginiana</i>	wild rose	5 ft	8 ft	part shade - shade	Jun - Aug	

Perennial Garden

This list comprises a mix of reliable native and non-native perennial plants that form complementary colors and textures throughout different seasons. These plants were selected for their ability to fit within the context of a more orderly landscape. They can be planted densely to minimize the sunlight that reaches the ground, thus diminishing the germination of unwanted plants in the seedbank.



anise hyssop



narrow-leaf blue star



coneflower



beardtongue



daylily



bloody cranesbill



smooth hydrangea



peony

Planting Palettes (cont.)

Bioswales and Detention Basins

These species are selected to fill multiple ecological niches. A mix of long-lived species and short lived species that freely self seed comprise a plant community that is able to regenerate over time and fill multiple roles.

	Botanical Name	Common Name	Height	Spread	Other Notes
tree	<i>Elaeagnus multiflora</i>	goumi	15'	15'	Partially self-fertile--plant more than one if production is low.
	<i>Prunus cerasus "Montmorency"</i>	tart cherry	12'	10'	Self-fertile, but planting 2 or more ensures the best crop.
	<i>Prunus maritima</i>	beach plum	12'	12'	Not self-fertile--needs 2 seed-grown plants or compatible cultivars for pollination.
	<i>Prunus x "Alderman"</i>	Alderman plum	20'	20'	Plant with "Toka" or other compatible Japanese-American hybrid plum for pollination.
	<i>Prunus x "Toka"</i>	bubblegum plum	14'	14'	Plant with "Alderman" or other compatible Japanese-American hybrid plum for pollination.
shrub	<i>Amelanchier x "Regent"</i>	Saskatoon serviceberry	6'	6'	Compact cultivar keeps fruit low to the ground and easy to harvest.
	<i>Lonicera kamchatica</i>	honeyberry	4'	4'	Not self-fertile--plant 2 compatible cultivars for pollination.

Orchard

These fruit trees and shrubs were selected for their affinity for sandy, well-drained soil, cold hardiness, and ripening time. While unconventional choices for an orchard, their fruits will be more likely to ripen in time for campers to enjoy before returning home for the summer.

Botanical Name	Common Name	Height	Spread	Sun/shade	Wildlife/Landscape value
<i>Myrica pensylvanica</i>	bayberry	5-10'	5-10'	Full sun to part shade	Semi-evergreen, silver berries with fragrant wax
<i>Picea glauca</i>	white spruce	40-60'	20'	Full sun	Evergreen
<i>Juniperus virginiana</i>	eastern red cedar	35-70'	30-40'	Full sun	Evergreen with blue berries that birds love
<i>Carya ovata</i>	shagbark hickory	70-80'	50'	Full sun - part shade	Catkins and nuts have high wildlife value, nuts are edible
<i>Tilia americana</i>	American linden	60-80'	50-60'	Full sun - shade	Fragrant blooms in June-July, supports native bees
<i>Celtis occidentalis</i>	hackberry	50-70'	40-50'	Full sun	Birds and mammals love the fruits, bark has interesting texture
<i>Quercus rubra</i>	red oak	70'	50'	Full sun	Important food source for wildlife

Trees and Screening

A mix of deciduous and coniferous trees knit buildings and other structures in with the landscape. Trees of varying sizes and shapes allow flexible screening of views, the ability to provide passive solar gain and protection from winter winds. Trees were also selected based on their adaptability to climate forecasts.

Botanical Name	Common Name	Height	Spacing	Sun/shade	Bloom Time	Color of Interest	Habitat Value And Other Notes
<i>Aster novi-belgii</i>	New York aster	3 ft	24"	sun to part shade	Aug - Sept		Host species for the pearl crescent butterfly. Flowers are popular with pollinators.
<i>Lupinus perennis</i>	sundial lupine	2 ft	10"	sun to part shade	May - July		Host plant for the Karner Blue butterfly.
<i>Monarda fistulosa</i>	wild bergamont	4 ft	20"	Sun to part shade	July - Aug		Host plant raspberry pyrausta butterfly.
<i>Liatris aspera</i>	button blazing star	3 ft	16"	sun - part shade	July - Aug		Pollinator magnet, brilliant purple flowers in late summer.
<i>Panicum virgatum</i>	switchgrass	4 ft	24"	sun - part shade	Jul - Sept		Seeds are food source for birds and small mammals. Provides nesting material as well.
<i>Pycnanthemum muticum</i>	clustered mountain mint	3 ft	18"	sun - part shade	July - Sept		Long -lasting flowers are very popular with pollinators. Can spread aggressively via rhizomes.
<i>Rudbeckia hirta</i>	black-eyed Susan	2 ft	16"	sun - part shade	Jun - Oct		Larval host plants of the silvery checkerspot. Short lived but will reseed itself.
<i>Schizachyrium scoparium</i>	little bluestem	3 ft	18"	sun-part shade	July - Oct		Mounding grass. Forage and cover for birds.
<i>Solidago speciosa</i>	showy goldenrod	4 ft	24"	sun - part shade	Sep - Oct		Food source for many pollinators and birds. Host species for wavy-lined emerald moth.
<i>Asclepias syriaca</i>	common milkweed	3 ft	30"	sun-part shade	Jun - Aug		Fragrant bloom. An important source of nectar, host plant for the Monarch Butterfly.
<i>Sorghastrum nutans</i>	Indian grass	6 ft	30"	sun-part shade	Aug - Sep		One of the first warm-season grasses to form seeds--attracts birds, host plant.

If Planting From Seed, Consider the Showy Wildflower Seed Mix from New England Wetland Plants Inc.



little bluestem



button blazing star



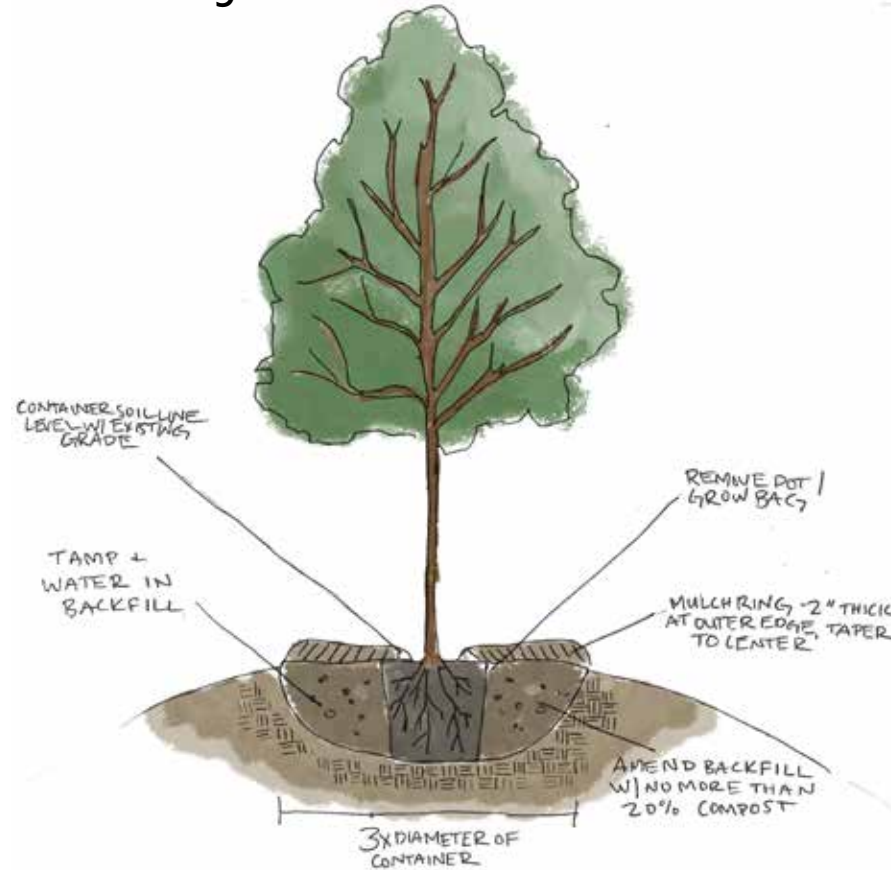
sundial lupine



showy goldenrod

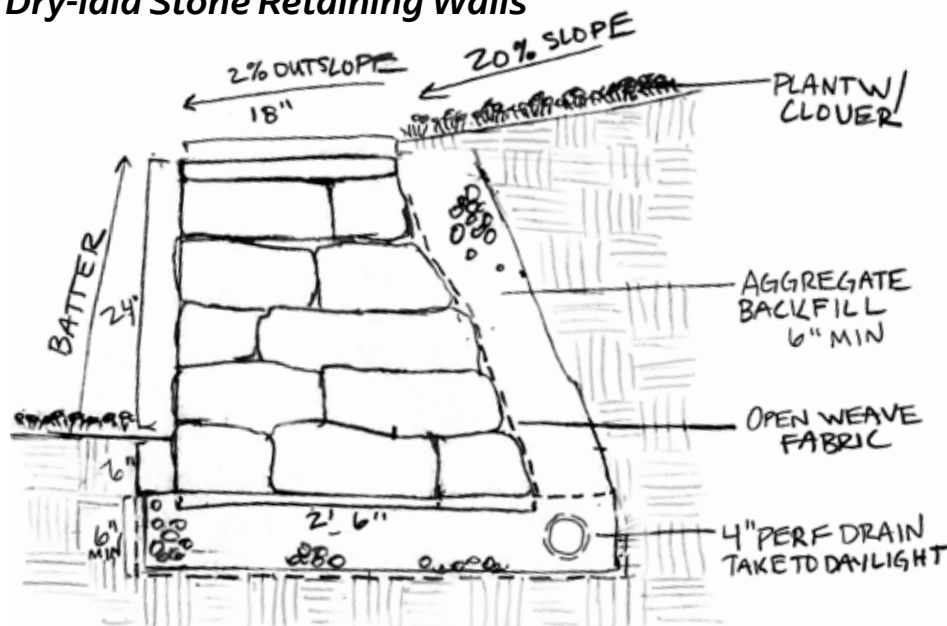
Construction Details & Precedents

Tree Planting



10-gallon container trees should be planted where plans specify--see planting palettes for species selection.

Dry-laid Stone Retaining Walls



Dry-laid stone forms retaining walls that create the terraces around the back of the Welcome Center.

ABA Trail



An ABA trail made of compacted stone dust provides a solid, durable, and universally accessible footpath. Typically, the gravel base is 4 to 6 inches deep and lined underneath by a protective weed barrier fabric.

Image: Timber and Stone, LLC | Spruce Peak Pathways, Stowe, VT

Playscape



Playscapes can utilize materials already found across the landscape such as logs and boulders, reorganizing them into creative shapes and purposes. Like in the design, the above photo shows logs that create a playful edge to a sand pit, that are also fun to balance on. Using found material is more sustainable and blends the playscape into its surrounding environment.

Image: Anne O'C. Albrecht Nature Playscape, St. Louis, MO

Reinforced Turf



Concrete-block, reinforced turf creates a permeable surface and softens the typical utilitarian appearance of parking lots.

Image: Custom Stoneworks & Design, Inc., Baltimore, MD

Bioretention Swales



Bioswales in the parking lot at the Missouri Botanical Gardens are spanned by wooden bridges. The Design in this plan incorporates several similar bridges that allow visitors to Farm & Wilderness to cross these vegetated swales and experience them from a slightly elevated position.

Image: Pashek + MTR | Missouri Botanical Garden, St. Louis, MO

Preliminary Cost Estimate

The cost below is a rough, conceptual estimate of the cost of materials and contractor labor. The estimate is subject to changes in market value and construction contingencies; costs may be reduced if labor is supplied by Farm and Wilderness or materials are sourced onsite. Not included in this estimate are the cost of buildings and ongoing maintenance. Further decisions must be made on design elements and structural engineering that will affect the final cost of the project.

Line Item	Unit	Quantity	Cost/Unit	Total
Fill (with excavation subtracted)	cu. yd	3400	\$25	\$85,000
Excavation (used for fill)	cu. yd.	2200	\$15	\$33,000
Clearing Vegetation	lump sum			\$5,000
Bioswales & Detention Basin	cu. yd.	900	\$25	\$22,500
Gravel Parking Lot	sq. ft.	18700	\$4	\$74,800
Pervious Parking Lot	sq. ft.	19300	\$20	\$386,000
ADA Gravel paths	sq. ft.	5520	\$8	\$44,160
ABA Trail	sq. ft.	3500	\$20	\$70,000
Gravel Patio	sq. ft.	1600	\$6	\$9,600
Stone Patio	sq. ft.	500	\$24	\$12,000
Dry-Stack Retaining Walls	sq. face ft.	1100	\$80	\$88,000
Wooden Lake Observation Deck	sq. ft.	150	\$90	\$13,500
Gardens	sq. ft.	13650	\$10	\$136,500
Shrubs (2&3 gal.)	each	62	\$60	\$3,720
Trees (10 gal)	each	36	\$200	\$7,200
Seeded Meadow	ac.	2	\$3,500	\$7,000
Wooden Bridges	sq. ft.	200	90	\$18,000
Trailhead Kiosk	lump sum			\$2,500
Benches & Tables	lump sum			\$2,500
Pergola	lump sum			\$1,600
Raised Beds & Planter boxes	lump sum			\$2,000
Total				\$1,024,580