

JANUARY 2025



Forest Reciprocity Group

Pole Aggregation Depot

Incentivizing Healthy Land
Stewardship





Table of Contents

| | |
|--|----|
| I. Executive Summary | 3 |
| II. Our Team | 4 |
| III. The Problems, our Solutions | 5 |
| IV. Benefits of an Organized Facility | 6 |
| V. Our Products | 7 |
| VI. Our Services | 8 |
| VII. Doing Business as a Nonprofit | 9 |
| VIII. How We Process Round Timber | 10 |
| IX. Wood Basket Analysis - Hales Grove Site | 11 |
| X. Wood Basket Analysis - South Leggett Sites | 12 |
| XI. Map of South Leggett Sites | 13 |
| XII. Regional Predominance of Small Diameter Trees | 14 |
| XIII. Jobs at FRG PAD Primary Processing Site | 15 |
| XIV. Technical Development | 16 |
| XV. Plant Design | 17 |
| XVI. Market Analysis | 18 |
| XVII. Our Strategy | 19 |
| XVIII. Summary and Recommendations | 20 |
| XIX. SWOT Analysis | 21 |
| XX. Acknowledgements | 22 |
| XXI. Appendix | 23 |

Executive Summary

PAGE 3

Forest Reciprocity Group Pole Aggregation Depot (FRG PAD)

Mission

To increase incentives for forest restoration through sustainable round timber production.

Vision

To model and build out a replicable round pole processing and marketing business.



The Product

We produce, market, and sell Round Timber (RT), ranging from utility and furniture sizes to interior finish quality, Structural Round Timber (SRT) for use in construction.

Our Team

Eric Lassotovitch, Matilda Hernandez-Miyares, Bodhi Harnish
Govinda Dalton, and Jenny Burnstad

The Overall Industry

While dimensional lumber dominates the building materials market, architects, designers, and builders are increasingly interested in more climate-friendly, fire resilient, and biophilic building materials.

The Challenges

The region currently lacks a source for graded Structural Round Timber (SRT), so in that way there is no competitor. In competing with dimensional lumber, SRT's higher price is justified by its superior strength, sustainability, durability, and aesthetic value.

The Financial Status

FRG PAD is seeking grants and investment to scale its operations. Financial resources will focus on developing and staffing an aggregation and processing facility.

Future Plans

Aggregation &
Primary Processing Site

In 2025, FRG PAD will utilize Whitethorn Construction's kiln and yard to begin initial production. In 2028 we will be operational at our permanent FRG PAD in South Leggett.

Other Future Plans

Mobile Unit Development
Secondary Processing at
Tan Oak Park

Workshops on building with round wood will continue to be offered in close collaboration with Northern Mendocino Ecosystem Recovery Alliance (NM-ERA) at Tan Oak Park (TOP). In 2025-26 FRG at TOP, will plan and build our pilot Mobile Restoration, Harvesting and Processing Unit. (Mobile Unit)

Our Team

PAGE 4

Eric Lassotovitch

FRG PAD
Coordinator
(Primary processing)

Eric, a licensed building contractor, brings over three decades of woodworking & ecological home building expertise.

Jen Burnstad

Fiscal Director,
Cloud Forest
Institute
FRG Grant
Administrator

Jen has over 20 years experience in non-profit management and multi-fund accounting. She and CFI play vital roles helping local, national and international public benefit projects fulfill their environmental education missions.

Govinda Dalton

Mobile Unit
Coordinator

Govinda has over 40 years of expertise in wood resource utilization, evolving from traditional tree services to pioneering fuel load reduction solutions and developing an award-winning proposal for a small diameter pole processing and distribution yard in 2007.

Matilda Hernandez-Miyares

Hop Around
coordinator

Matilda has been a FRG member since 2021, driven by her love of the forest and a desire to tend in community. She coordinates FRG Hops, which are barn-raising style community pole building workshops.

Bodhi Harnish

Tan Oak Park
Fabrication
Coordinator
(Secondary
Processing)

Bodhi is exploring an interdisciplinary path in participatory design, natural building, and alternative energy systems.

Kerryanna Reynolds

Facilitator

For this project, Kerryanna provided facilitation for FRG team and stakeholder meetings, and supported business plan editing and layout.



From left to right: Bodhi, Kerryanna, Eric, Jen, Govinda, Matilda. Willits Retreat, January 2025

The Problems, Our Solutions

Managing fire risk requires building an economic framework where forest thinning generates value.

PAGE 5

The Problem

Overcrowded, Fire Prone Forests

Due to past logging and fire suppression practices, northern Mendocino and southern Humboldt Counties are abundant with overcrowded forests that deplete water resources, stunt tree growth, and are prone to catastrophic wildfires.

High Cost of Forest Thinning

Forest thinning and maintenance has an expensive price tag, and grant funds are not long term solutions.

Lack of SRT Supply

The positive shift towards fire resistant, natural building in the North Coast is hampered by the lack of a regional source for Structural Round Timber.

Policy Barriers

Many timberlands in our region have excess material that needs removal but the costs of developing Timber Harvest Plans (THPs) exceed potential returns. This discourages landowners, additionally, CFIP regulations present a major barrier to Round Timber utilization.

The Solution

Forest Thinning

Ecologically sensitive forest thinning is proven to improve the health and fire resilience of our region's forests. Forest thinning needs to become a widespread practice across the region to achieve greater fire resilience in the face of megafires such as the August Complex of 2020.

Fund Thinning via Forest Byproducts

We will offset the cost of forest thinning through the aggregation, processing, and marketing of Round Timber from forest thinning projects.

Create Regional SRT Source

We will create a regional source for cured, peeled, and graded Structural Round Timber for natural construction projects.

Policy Reform

By conducting harvesting trials, we hope to gain clarity on important policies that the state has been reluctant to define. We will continue to advocate for forest friendly solutions to our housing crisis. By growing strong partnerships we can explore the potential of this material and eventually standardize its use in the building industry.

Building departments and insurance companies could incentivize and streamline fire resistant natural housing. For example pre-approved timber frame ADUs.

Benefits of an Organized Facility

Having the right spaces and equipment will streamline SRT production.

PAGE 6

Unplanned

Inadequate Handling Equipment

Maneuvering SRT with inadequate handling equipment is lengthy, sometimes dangerous, and can damage the final product.

Unsorted SRT Piles

Disorganized piles of logs, often stacked on top of the logs needed for a project, make for unnecessary handling and labor costs.

Pressure Washing in a Log Wallow

Removing sap or mold from SRT without the facilities to capture and reuse process water can take 30-45 minutes per log with a normal volume delivery pressure washer and creates a mud pit.

Inadequate or Non-Existent Log Curing and Storage

Curing logs in the open air can lead to infestations and cracking. Inappropriate SRT storage leads to moldy and/or cracked logs. Moldy logs need to be pressure washed again, and cracks are undesirable.

Organized

Appropriate Handling Equipment

Maneuvering SRT with appropriate handling equipment such as an overhead gantry and a tele-handler with a padded grapple makes the operation shorter, safer, and does not damage the final product.

Sorted SRT Piles

Sorting SRT by diameter, grade, length and sweep makes it simple to gather the material needed for any given project.

Pressure Washing in a Dedicated Booth

Dedicated facilities allow for the use of faster, high volume pressure washers, and minimize water use by capturing, filtering and reusing process water.

Climate Controlled Log Curing & Storage

Kiln curing logs curtails cracking problems and kills potential beetle infestations. Storing SRT in a building designed to keep SRT from drying out too much or growing mold will ensure that inventory is ready when needed.

Our Products

PAGE 7

We produce, market, and sell round timber, with a focus on Douglas fir. Our products range from utility and furniture sizes to interior finish quality Structural Round Timber for use in construction.

Structural Round Timber



Interior finish quality, peeled, dried & graded (construction-ready).

Ideal for exposed structure framing.

Available in 6"-14" diameter

Available in 16' & 24' lengths and varying degrees of sweep (bend).

Utility Posts and Stakes



Utility grade posts and tree stakes for erosion control and forest health projects. These are often used for Post Assisted Log Structures (PALS) and Beaver Dam Analogs (BDA).

Mechanically turned round timber, available in 2.7"-5" diameter.

Small Structural Round Timber



Dried & Graded

Available in 4"-6" diameter, ideal for railing posts or small structure framing.



Knee Brace Material used for 45 degree post and beams bracing, 3 1/2"-4 1/2" diameter.

Available in 12' & 16' lengths.

Round Timber for Furniture

Our 1"-6" diameter hand peeled round wood is ideal for furniture craftsmen and designers.

Air-dried or kiln dried for minimal checking.



Our Services

PAGE 8

We provide a variety of wood product services.



Our Primary Service - SRT Processing and Sales

- We source poles from landowners and businesses in compliance with ecological and regulatory guidelines.
- We cure, peel, and track/grade stamp* them as Structural Round Timber (SRT).
- We will market the processed SRT to architects and designers

Our Secondary Services

- We aggregate, bundle, and make available hand-peeled Round Timber to furniture makers and other craftspeople and Machine peeled utility posts and stakes.
- We offer customized orders.
- We offer wood harvesting and processing trainings, and guidance based on the needs and interests of the local community.

*A **grade stamp** is a mark on lumber that indicates the wood's structural strength. Grade stamps are required by architects and building codes.



This POSCH Schälprofi pointing and debarking machine is an example of the type of equipment that will be used with the Mobile Unit. Photo courtesy of posch.com.

Doing Business as a Nonprofit

PAGE 9

Our nonprofit business will provide a regional source for round timber products.

Nonprofit Status

Forest Reciprocity Group (FRG) is a fiscally sponsored initiative of Cloud Forest Institute (CFI), a 501c(3) educational and scientific nonprofit.

Advantage of Nonprofit Structure

Our nonprofit is governed by a board of directors committed to securing grants and maintaining both ecological stewardship and public benefit as our core mission priorities.



Promoting Rural Forest Health Economy

By making RT products, including SRT, available to the public we will further our non-profit mission to educate and promote forest health and healthy housing.

We will pay our staff a living wage, incubate local round timber businesses, and support forest restoration projects.

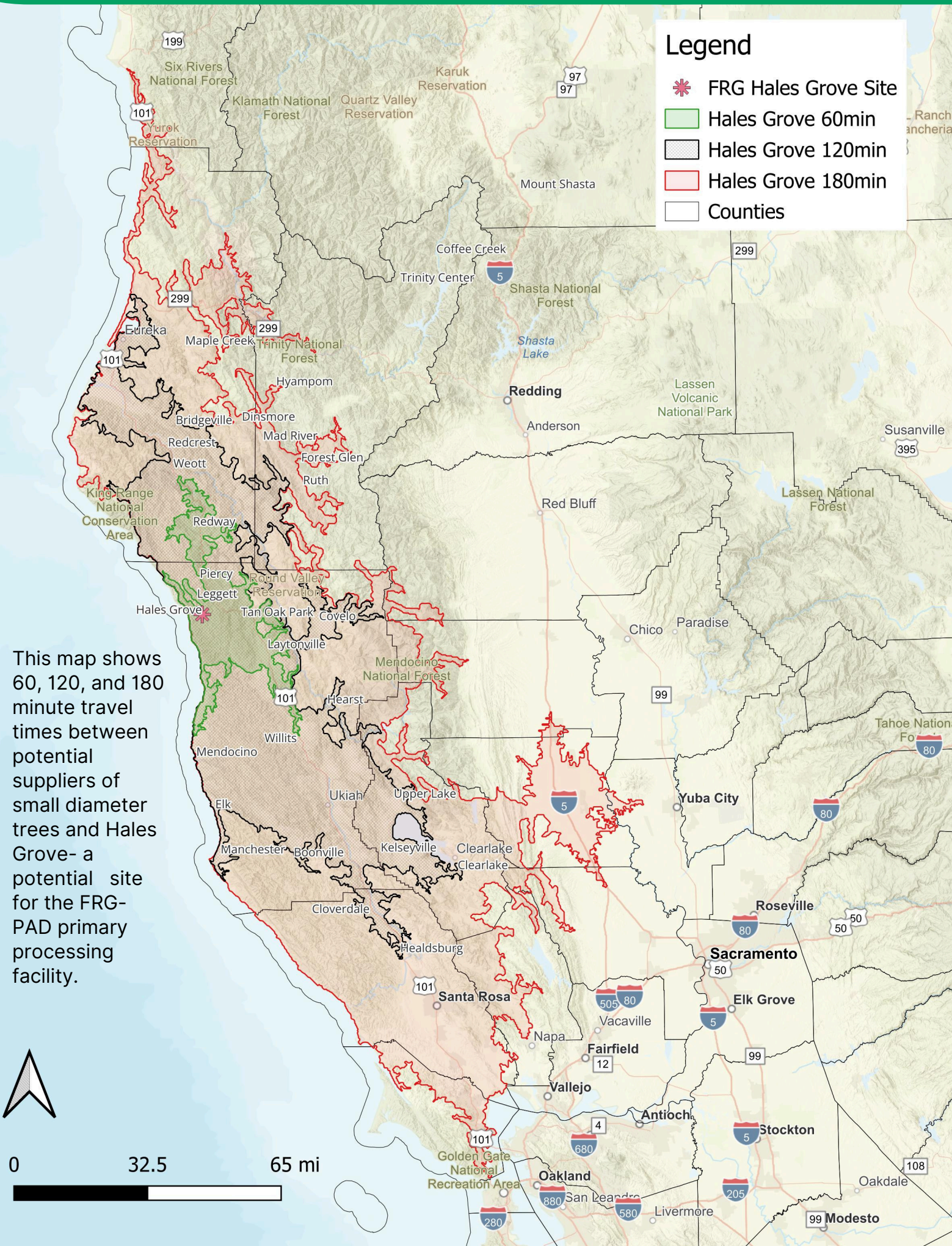
How We Process Round Timber

PAGE 10

Sorting, peeling, curing and grading Round Timber for minimal checking

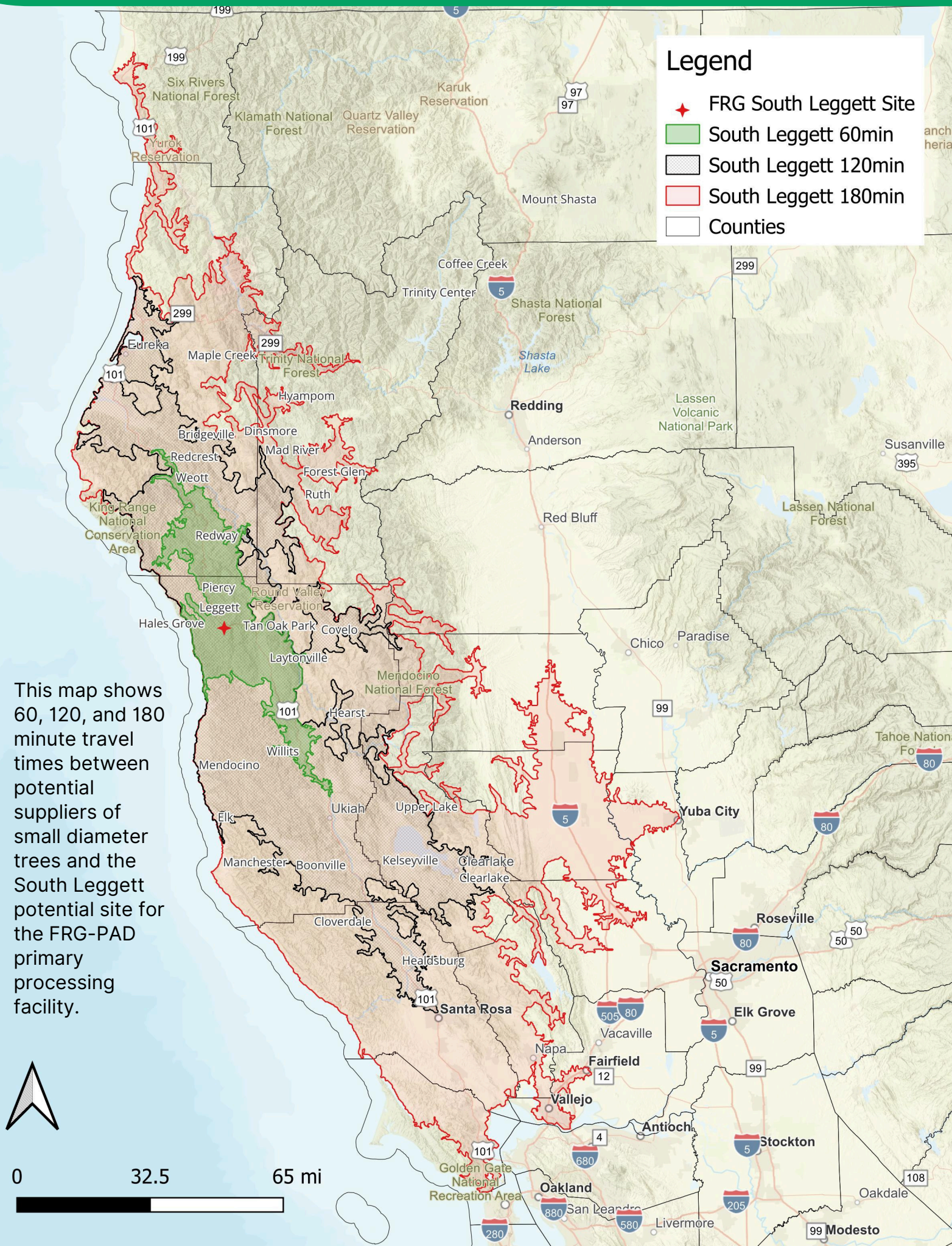
| Selection at Harvest Site | Intake & Peeling | Grading & Sealing | Sorting & Drying | Inventory & Sales |
|---|---|---|---|--|
| <ul style="list-style-type: none">• We will be working with foresters, to integrate RT selection into timber harvest plans.• We will train forest health crews to selectively harvest RT from legal sources• Once prepped, harvested logs are carefully loaded and transported to our processing facility | <p>In the Sorting Barn Raw logs are:</p> <ul style="list-style-type: none">• Sawn to the collar at all branch stubs• Scanned for metal• Chopped to remove metal• Sorted for size category• 6"-14" diameter are pressure-washer peeled for SRT production• 3"-6" are turned to standardized diameters or hand peeled• 1"-6", non-structural logs are hand peeled, and made available for furniture and other non-structural uses. | <p>SRT logs are then:</p> <ul style="list-style-type: none">• Scanned by an ultrasonic grading machine for internal rot and strength• Visually graded (some logs sorted out to be chipped)• Stamped with QR origin & lot code and grade stamp• Sealed with end sealer on ends and knots. | <p>SRT logs are then:</p> <ul style="list-style-type: none">• Sorted by diameter, grade & sweep• Racked on pallets• Loaded into a climate-control barn or directly into dry kilns.• Each pallet has a QR tag to track its drying schedule• As inventory needs to be replenished logs are dried in the dry kilns | <ul style="list-style-type: none">• Cured SRT logs are inventoried and stored in a moisture-controlled product barn until sold.• RT logs are sold & transported to retail stores & manufacturers |

Woodbasket Analysis - Hales Grove Site



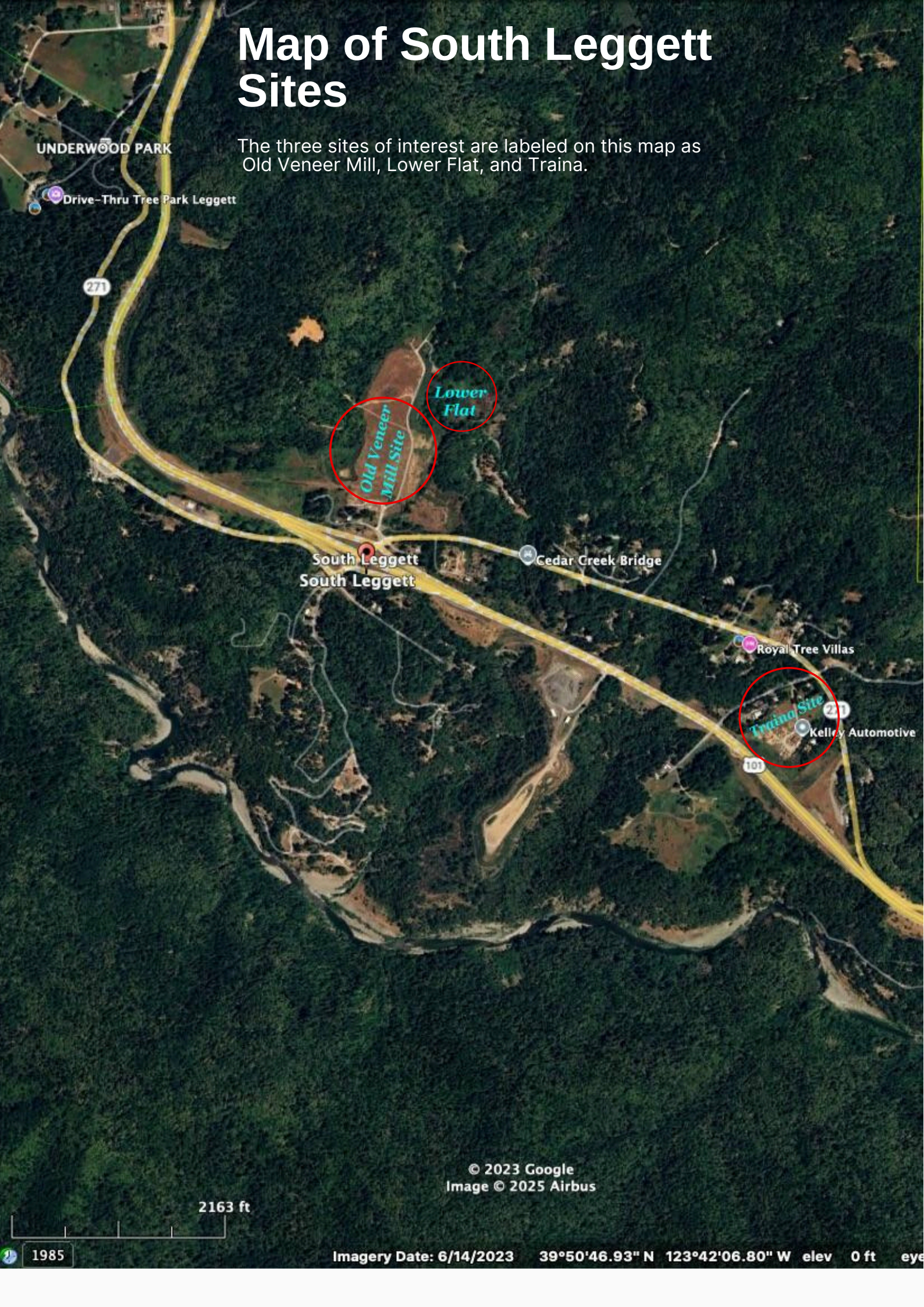
Woodbasket Analysis - South Leggett Sites

PAGE 12



Map of South Leggett Sites

The three sites of interest are labeled on this map as Old Veneer Mill, Lower Flat, and Traina.



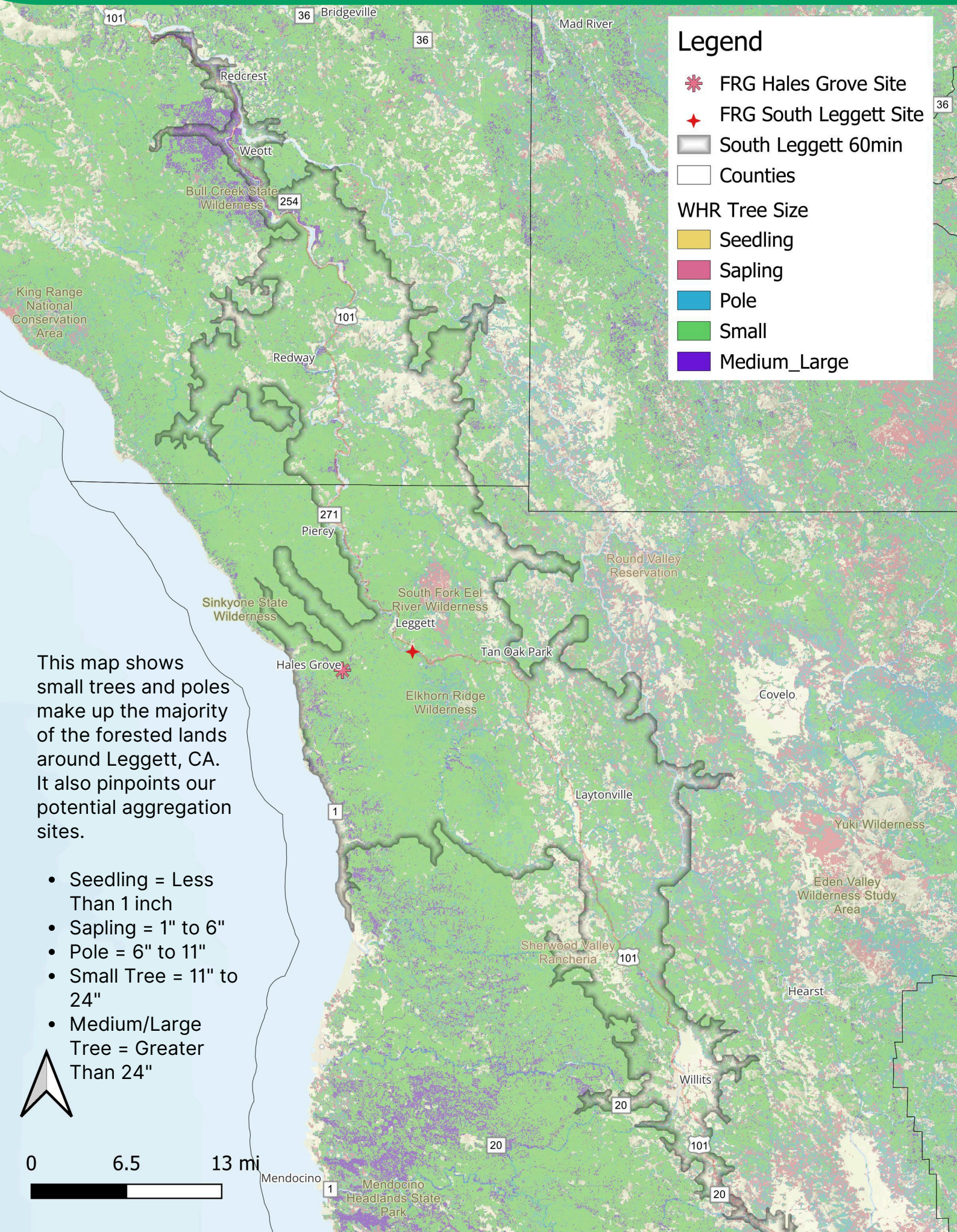
© 2023 Google
Image © 2025 Airbus

2163 ft

Imagery Date: 6/14/2023 39°50'46.93" N 123°42'06.80" W elev 0 ft eye

1985

Regional Predominance of Small Diameter Trees



This map shows small trees and poles make up the majority of the forested lands around Leggett, CA. It also pinpoints our potential aggregation sites.

- Seedling = Less Than 1 inch
- Sapling = 1" to 6"
- Pole = 6" to 11"
- Small Tree = 11" to 24"
- Medium/Large Tree = Greater Than 24"

Jobs at Primary FRG-PAD Processing Site

PAGE 15

The primary processing facility will support a number of seasonal and year-round jobs.

Part time, Year Round Jobs

- **Project Director**, 20 hrs/week
- **Sales and Marketing Manager**, 20 hrs/wk
- **Admin Assistant/Tracking System**, 20 hrs/wk
- **Bookkeeper**, 5 hrs/week

Full time, Seasonal Processing Jobs May 1 - Sept. 1

- **Operations Manager/Maintenance Technician**
- **Debarking & Curing Technician**
- **2 Sorting/Grading/Forklift Operators**
- **Log Trucker/Handler**

Estimated Total Annual Labor Cost: \$263,100

Technical Development

Developing appropriate technology to support Round Timber utilization

The following technical innovations could significantly improve economic feasibility:

Mobile Unit

This concept includes an efficient design for a sturdy, lightweight, 16' x 26' insulated panel building that can break down and move with ease. We are working with Environmental Engineering students at Cal Poly Humboldt for their capstone project.

See Appendix for a preliminary equipment list for the mobile unit.

Ultrasonic internal decay scanner

Healthy wood transmits sound waves faster than decayed wood. We have developed an early schematic design for a scanner specific to our needs.

Pressure Washer Debarker

Hand peeling logs is labor intensive and cost prohibitive for the primary aggregation and processing yard. Blade debarkers currently on the market create checks in the logs that degrade their quality. Whitchurch Engineering has created a proof of concept proposal for a custom pressure washer debarking, which will peel and wash logs in one step.

Pressure Washer Debarker
Concept Drawing from
Whitchurch Engineering

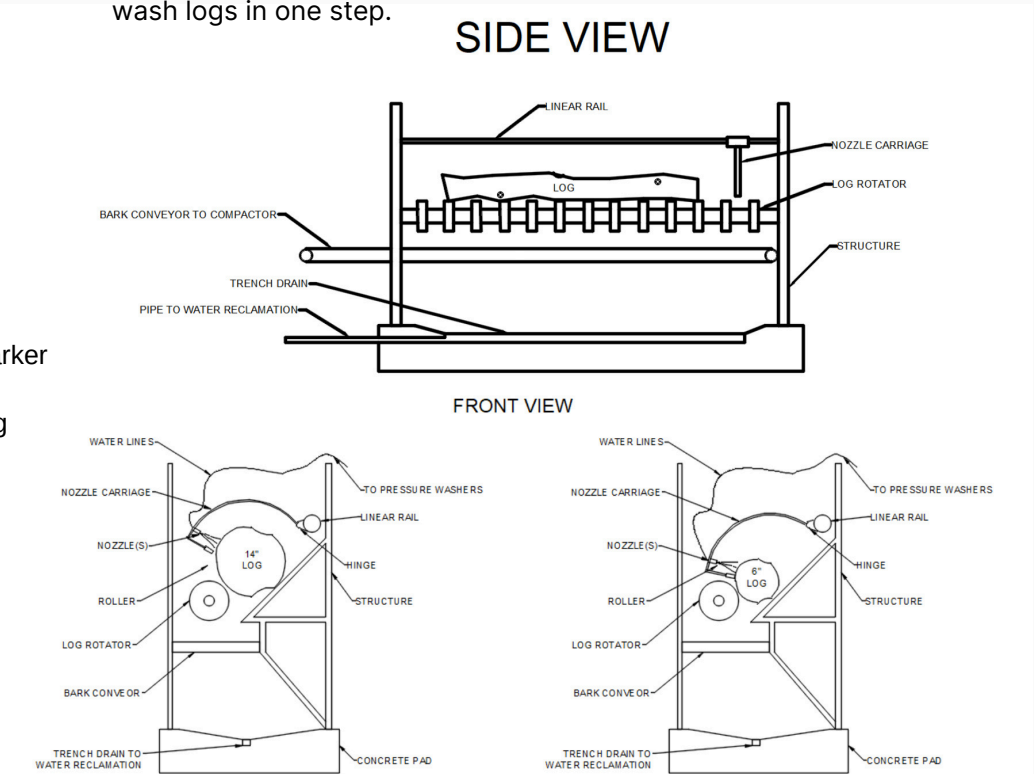


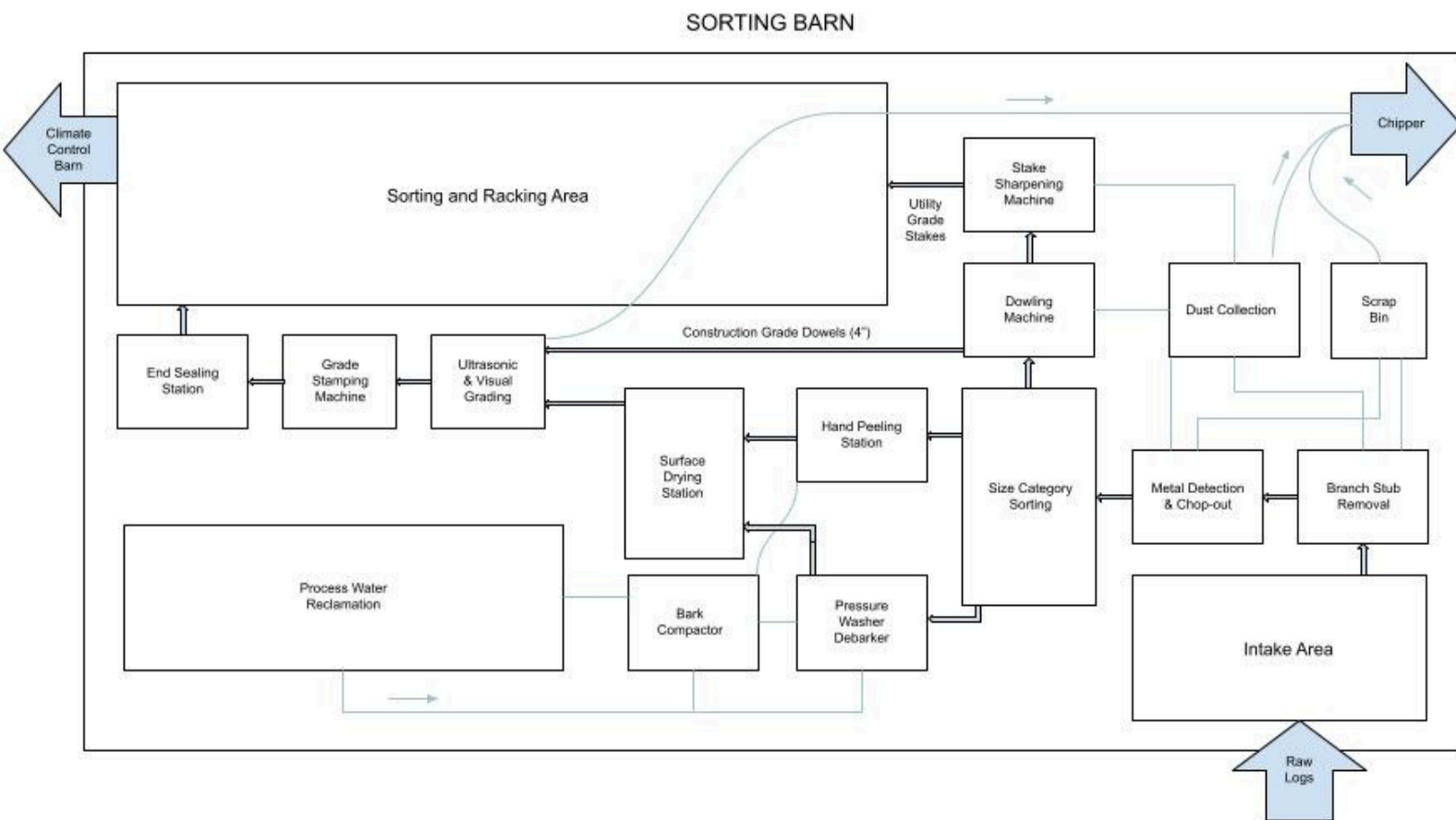
Figure 5: Proposed Conceptual System Layout Side and Front View

Plant Design

Primary Processing & Aggregation Site

PAGE 17

A Post & Pole Equipment manufacturer is helping finalize our plant design and budget. The preliminary design is shown here.



Market Analysis

For the time being no comparable source exists in our region. Market acceptance of Round Timber represents both a challenge and an opportunity in the construction industry.

PAGE 18

A Promising Future for the Forest Health Economy

Round timber can revolutionize both forest restoration and construction. Trees evolved naturally as efficient load-bearing structures, making their round form ideal for building.

The Challenge Now

The challenge now is coordinating supply with demand. We need enough peeled poles available to support both experimentation and early adopters, so this fantastic natural building material can gain traction.



Target Markets

- Architects, Landscapers
- Natural/Green builders
- Natural Building Material Suppliers (wholesale & retail)
- Institutions (State/National parks, Eco-resorts, Universities)
- Furniture makers and craftspeople

Market Barriers

- Currently industry software and other conventions are set up mostly for dimensional lumber, making it challenging for engineers, architects, and contractors to incorporate round timber.
- Lack of fully developed peeled pole grading systems and specifications
- Lack of standard building codes for round timber construction



Photo courtesy of ClearShotCreations

Overcoming Obstacles

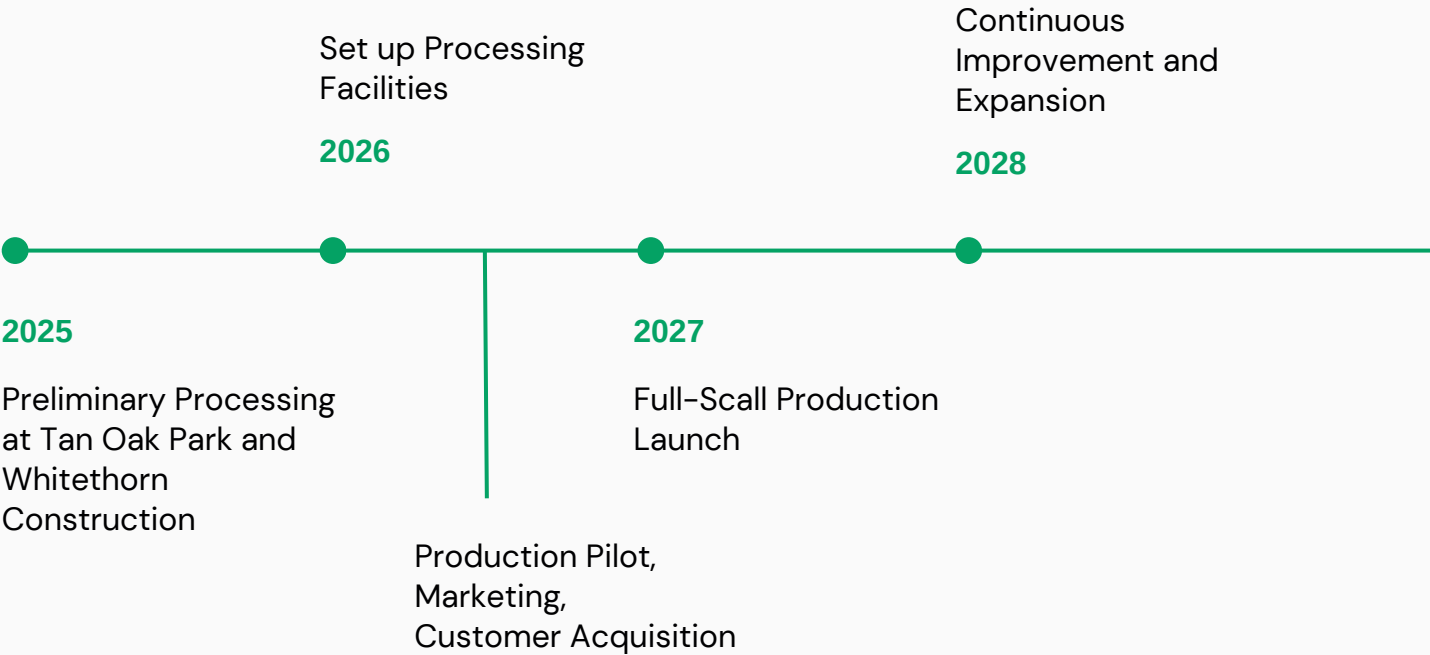
To accelerate market adoption, several key initiatives are necessary:

- Updates to building codes and grading standards to explicitly address SRT construction
- Education and training programs for construction professionals
- Creation of simplified design tools and guidelines for architects and engineers

Strategy: Keep it simple, with a forest-first ethos

Throughout 2025 and 2026 we will focus on securing funding and permits, and building long-term partnerships with suppliers and distributors.

2026 and 2027 will also see hiring and training core staff and developing standard operating procedures and safety protocols.



Summary and Recommendations

While round timber aggregation shows promising potential for our region, we continue to evaluate economic feasibility and cost structures to ensure long-term sustainability.

We recommend public investment in the following areas to fully realize the potential of this enterprise.

Research & Development

- Develop efficient processing methods:
 - pressure washer debarking
 - ultrasonic decay detection
- Optimize production costs through improved kiln drying processes
- Design harvesting protocols to preserve the outer tension fibers of the tree
- Integrate round timber harvesting with forest health projects
- Engineer cost-effective manufacturing tools and plant design

Regulatory & Operational Improvements

- Streamline regulations to increase operational scale
- Establish diverse legal pathways for wood sourcing
- Build organizational capacity through strategic hiring:
 - Sales and marketing
 - Operations tracking
 - Mobile processing
 - Project management

Market Development

- Expand pre-engineered design elements and building plans
- Research material properties for building code integration
- Construct demonstration manufacturing facilities
- Establish product feasibility and cost benchmarks



Photo courtesy of ClearShotCreations

Strengths:

1. Innovative semi-kiln drying process producing minimally checked poles
2. Strong focus on sustainability and local forest health
3. Ability to utilize small-diameter trees from forest thinning operations
4. Diverse team with expertise in construction, forestry, and sustainable practices
5. Local sourcing reduces transportation costs and carbon footprint
6. Our product used in braced timber frames surrounded by natural plastered walls brings superior seismic and fire resistance compared to typical shear wall construction
7. Alignment with growing demand for sustainable building materials
8. Potential for custom sizing and specifications

Weaknesses:

1. Limited personnel resources and organizational capacity in startup phase
2. Products need to become more established in the marketplace
3. Seasonal nature of production (May to September) may lead to cash flow challenges
4. Limited initial production capacity (until FRG PAD is built)
5. Production costs will involve specialized processes and are still to be determined
6. Reliance on specific tree species (mostly Douglas fir and some Redwood)
7. Initial R&D capital needed for specialized equipment (e.g., ultrasonic internal decay scanner, debarking systems)

Opportunities:

1. Growing market and need for sustainable and fire-resistant earth plastered timber frames
2. Increasing focus on seismic and fire safety in construction
3. Potential partnerships with eco-conscious architects and builders
4. Expansion into new product lines (e.g., furniture & specialized construction elements such as trusses)
5. Obtaining L.E.E.D. green building certifications, and integration into the Universal Building Code (UBC)
6. Educating consumers and construction professionals about the benefits of structural round timber
7. Potential for government contracts and subsidies that support sustainable forestry practices
8. Replication into broader geographical markets beyond Northern California
9. Establish robust feedback and adaptation mechanisms to adjust for any unintended consequences

Threats:

1. Push back from current building industry establishment
2. Economic downturns affecting construction industry
3. Building codes changes could impact product use (although positive changes are more likely)
4. Climate change affecting local forest health and available raw materials
5. Potential supply chain disruptions
6. Fluctuations in timber prices affecting profitability

Acknowledgements

Forest Reciprocity Group would like to express our gratitude to our Working Group members and collaborators whose advice and support has been, and continues to be, vitally important to the development of our mission to thin overburdened forests for fire resilience, create jobs, and make available the superior building material of SRT.

PAGE 22

Thank you!

Chuck Payne, Cloud Forest Institute Director and FRG member

Peter Roediger, FRG and Biochar Coalition

River Lassotovitch

Emily Hobelman

Clarke Stevenson, The Watershed Resource and Training Center

Paul Bozzo, Small Business Development Center

Kathy Moxon, Redwood Forest Foundation, Inc (RFFI)

Karen Youngblood, Usal Redwood Forest and RFFI

Linwood Gill, now retired from Usal Redwood Forest and RFFI

Steve Severi, Usal Redwood Forest and RFFI

Gray Shaw, Institute of Sustainable Forestry and Black Ripple

Will Emerson, Northern Mendocino Ecosystem Recovery Alliance (NM-ERA)

Jessica Roemer, NM-ERA and Family & Friends United by AIDS

Jessica Martinelli, NM-ERA

Vincent Brown, NM-ERA

John Cunnann, Wildwood Crafts

Emily Tecchio, Mendocino County Fire Safe Council

Anna Hope Far-Porte, Sherwood Valley Band of Pomo Indians

Terri McCartney, Pinoleville Pomo Nation Environmental Protection Dept.

John Haschak, Mendocino County Supervisor

Kim Coontz, California Center for Cooperative Development

Pedro Maturana, California Center for Cooperative Development

Clifford Paulin, Attorney

Elliot Kuskulis, Tukman Geospatial

Michael Furniss, Sacred Groves

Eric Almquist, Almquist Lumber

Appendix

List of supporting documentation, which can also be found in this [pubic shared folder](#).

PAGE 23

For more information or to report broken hyperlinks, please email jenny@forestreciprocity.org

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|--|--|
| Memo of Understanding between FRG and NM-ERA/Tan Oak Park | https://drive.google.com/file/d/1TsQQxdqgf8vh4z_RX9Y0HyDNooT52pnG/view?usp=sharing |
| Letter of Support from Redwood Forest Foundation, Inc | https://drive.google.com/file/d/1MuDoDv5KPEHjb1fdqdfcucqJ1gGtYI1E/view?usp=sharing |
| Entity Type Research | FRG did considerable research on forming a cooperative business as well as other entity types. This is a summary of findings. https://drive.google.com/file/d/1pC8vCW1-MHZd1zpq9Bq2ttJVgUCCU41a/view?usp=sharing |
| Financials | This is the work completed to date on the financials for the FRG-PAD primary processing site. https://drive.google.com/file/d/1uf5vd_GzHibvLhyX-QTI6p8BFiKLEPAI/view?usp=sharing |
| Preliminary List of Equipment for Mobile Unit | Equipment List with Pictures: https://drive.google.com/file/d/1_jQZY-NrTka3gkfZaBSbC8J55crrjgA_/view?usp=sharing |
| Pressure Washer Debarker Engineering Specs | Proof of Concept: https://drive.google.com/file/d/1L5s7jtrYW8KXr9GKHAAb_kH0FYwO77P3J/view?usp=sharing Calculations: https://drive.google.com/file/d/1H-Y2aCcvjiQaL3ujrtucsciKsFbT34hB/view?usp=sharing |