Sustainable Investing

Innovative Plans From a New Generation
Blue Forest

Conservation Notes
The Problem: Drought

37% of the US is in “moderate drought”

94% of California is in “severe drought”

“The worst drought in 1,200 years”

Source: American Geophysical Union, US Drought Monitor.
Drought is exacerbated by Climate Change

California snowpack currently at 5% of historical average

CA’s snowpack usually holds as much water (15mm acre feet) as all state reservoirs combined
The drought has real impact on farmers

$5.7 Billion Direct economic losses due to California agriculture in 2014 ALONE

23,000 expected agriculture jobs lost in 2015
Lack of effective and affordable solutions

<table>
<thead>
<tr>
<th>Service</th>
<th>Cost per Acre Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desalination</td>
<td>$2,000</td>
</tr>
<tr>
<td>Wastewater Recycling</td>
<td>$1,000</td>
</tr>
<tr>
<td>Reservoir Creation</td>
<td>$1,000</td>
</tr>
<tr>
<td>Emergency Purchases</td>
<td>$500</td>
</tr>
<tr>
<td>Our Solution</td>
<td>$200</td>
</tr>
</tbody>
</table>

Source: SF Gate, EBMUD.
An effective, low-cost option: Forest Management

Current State: Overgrown

Proactively Managed

For each acre managed, intervention can generate 125-366 gallons of water per day
Forest Management – Example
El Dorado National Forest

Improved retention of snowpack with thinning
Forest Management benefits are multifaceted:

- Improved Water Retention
- Reduced Risk of Fire

Folsom Lake: 2011 vs. 2014
Engaged and willing stakeholders

<table>
<thead>
<tr>
<th>US Forest Service</th>
<th>Water Utility</th>
<th>Electric Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vicious cycle in which expensive fire suppression limits budget for proactive measures such as forest management</td>
<td>Currently paying up to $1,300 per acre foot for water vs. our proposed pricing of $200</td>
<td>Federal and state climate change regulations require affordable, low-carbon generation</td>
</tr>
</tbody>
</table>

Why Now?  
- Climate change exacerbating drought and fire risk – no end in sight  
- States of emergency declared in CA as a result of wildfires and droughts; CA Governor Brown announced $1bn plan to support water projects statewide  
- USDAFS actively searching for low cost forest management / fire suppression services due to budgetary constraints
Blue Forest conservation notes
Fund structure

Debt Investors → Funds → Special Purpose Vehicle
Equity Investors ← Notes ← Residual CF

Funds → Contracted Cash Flows → Forest Management → Contracted Cash Flows

Water Benefits
Fire Suppression Benefits

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Multiple sources of cash flow

Cash Flow Assumptions: Water sold at $200/acre-foot (assuming increased flow of 0.2 acre-feet per acre thinned vs expected increased flow of 0.14-0.41), hydropower utilization of only 20%, low end productivity of 12MW generated per acre-foot (productive range is 12-23MW per acre-foot) and $35/MWh pricing (low end of FERC historical pricing in California from 2003-2012), 3% return on fire suppression benefit.
Acknowledging and mitigating risks

Success determined through modeling outputs

- Empirical models are widely used and standardized; conservative assumptions foster stakeholder agreement, easier than RCTs

Pay for success models monetize avoided costs only

- Two out of three cash flow streams are derived from actual revenues provided and do not rely on budgeted savings to repay investors

Utilities are risk averse and slow to act

- No upfront capital is required as utilities pay only for benefits received. Drought is so severe that utilities can’t afford to wait

Forest Service faces budget limitations

- Precedent set by similar projects in other states, no upfront capital required
Due diligence and implementation

### Potential Partners

1. Identify target land & stakeholders
   - The Nature Conservancy
   - Sierra Nevada Conservancy

2. Launch GP & Engage Stakeholders
   - PG&E
   - EBMUD

3. Secure Investors
   - Morgan Stanley
   - Imprint Capital
   - Sonen Capital
   - Merrill Lynch
   - CREDIT SUISSE

4. Independent Board to Manage Future Opportunities
   - The Lyme Timber Company
   - American Water Works Association
   - The Nature Conservancy

### Required Actions

1. Identify timberland with best forest management opportunities and size market opportunity
2. Test and pilot forest management techniques
3. Determine stakeholder costs and motivations
4. Test PFS structure with real market feedback

- Finalize PFS metrics and cash flows
- Determine deal cash flows and create preliminary deal structure
- Engage and negotiate stakeholder contracts
- Identify/vet USDAFS approved laborers

- Targeted roadshow for investment advisors
- Engage impact-focused institutional clients and family offices
- Engage impact fund of funds managers
- Potentially engage investment banks with debt opportunity for their HNW private clients

- Ongoing assessment of forest mgmt process
- Tap external stakeholders and field leading researchers as board members
- Ease replication and re-funding of deals
- Manage potential stakeholder relationships
Total investable market: $1.6bn

**Western US**

10YR useful life of Forest Management Activities allows for a consistent cycle of financing opportunities

<table>
<thead>
<tr>
<th>Region</th>
<th>Watershed</th>
<th>Cost*</th>
<th>Households Served</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Sierra</td>
<td>Mokelumne River</td>
<td>$67mm</td>
<td>23k – 68k</td>
</tr>
<tr>
<td></td>
<td>Battle Creek</td>
<td>$26mm</td>
<td>9k – 26k</td>
</tr>
<tr>
<td></td>
<td>Mill Creek</td>
<td>$10mm</td>
<td>3k – 10k</td>
</tr>
<tr>
<td></td>
<td>Deer Creek</td>
<td>$16mm</td>
<td>6k – 16k</td>
</tr>
<tr>
<td></td>
<td>Butte Creek</td>
<td>$12mm</td>
<td>4k – 12k</td>
</tr>
<tr>
<td></td>
<td>Feather River</td>
<td>$770mm</td>
<td>267k – 782k</td>
</tr>
<tr>
<td></td>
<td>Yuba River</td>
<td>$201mm</td>
<td>70k – 204k</td>
</tr>
<tr>
<td></td>
<td>Bear River</td>
<td>$7mm</td>
<td>2k – 7k</td>
</tr>
<tr>
<td></td>
<td>American River</td>
<td>$260mm</td>
<td>90k – 264k</td>
</tr>
<tr>
<td></td>
<td>Consumnes River</td>
<td>$86mm</td>
<td>30k – 87k</td>
</tr>
<tr>
<td>Eastern Sierra</td>
<td>Truckee/Tahoe</td>
<td>$139mm</td>
<td>48k – 141k</td>
</tr>
<tr>
<td></td>
<td>West Carson River</td>
<td>$11mm</td>
<td>4k – 11k</td>
</tr>
<tr>
<td></td>
<td>East Carson River</td>
<td>$27mm</td>
<td>9k – 27k</td>
</tr>
</tbody>
</table>

*Assumes net cost of $1,000 per operable acre managed
### Social and environmental impact

#### Impact

- **CO₂**
- **Water**
- **Wildfire fighter**
- **Rural forest thinning laborers**

#### Direct Beneficiaries

- Electric utilities
- Citizens of wildfire-prone areas
- Citizens & agriculture in drought-ridden states
- Water utilities
- Firefighters
- Drought-afflicted farmers
- Rural forest thinning laborers

#### Measurement Tools

- Actual vs. expected carbon emissions
- Actual vs. expected water flow and turbidity
- Actual vs. historical casualties
- Number of jobs created or saved
Meet the Blue Forest team

Zach Knight  Leigh Madeira  Chad Reed  Nick Wobbrock

A diverse and passionate team

Finance and Investing

Social and Environmental Impact

Government and Engineering

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Appendix
## Blue Forest Conservation Notes

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BFCN Total Funded Amount</td>
<td>$67mm</td>
</tr>
<tr>
<td>Debt Tranche</td>
<td>$33mm priced @ 95.24 to yield 5%</td>
</tr>
<tr>
<td>Coupon</td>
<td>5% fixed or 6 mL + 460, paid semiannual</td>
</tr>
<tr>
<td>Term</td>
<td>7 years, amortizing beginning in year 2</td>
</tr>
<tr>
<td>Equity Tranche</td>
<td>$33.7mm, 12-15% Target IRR</td>
</tr>
<tr>
<td>Management Equity Investment</td>
<td>Minimum of $17mm</td>
</tr>
<tr>
<td>Final Legal Maturity</td>
<td>10 years</td>
</tr>
<tr>
<td>Senior Management Fees</td>
<td>50bps, paid annually</td>
</tr>
<tr>
<td>Subordinate Management Fees</td>
<td>100bps, paid upon satisfying annual interest and amortization payments</td>
</tr>
<tr>
<td>Underwriting Fee</td>
<td>2%, Paid upon closing</td>
</tr>
</tbody>
</table>
Blue Forest’s appeal to investors

- Expressed investor demand
- Cash flows accrue immediately
- Portfolio diversification benefits
- Multiple CF sources from low-risk counterparties
- Note issuance platform allows for scale and replication
- Alignment of incentives with manager taking 50% equity stake
- Flexible structure allows for tailored investment opportunity
Vicious cycle of Forest Service budget

The New York Times

The Opinion Pages | OP-ED CONTRIBUTORS

Paying for the Forest Fire Next Time

By DAN GLICKMAN and HARRIS SHERMAN | JUNE 17, 2014

WE’RE just midway through June and have already witnessed major fires in California, Arizona, New Mexico and Alaska. Many of these wildfires have grown in heat, intensity and size in recent years, consuming millions of acres with disastrous consequences and costs. They have become the new reality in the Western United States.

Megaﬁres have exploded in number over the last decade for several reasons. First, shorter and warmer winters followed by hotter and drier summers have signiﬁcantly extended the fire season. Second, the conditions of Western forests have left them vulnerable. They are dense, lack species diversity and are overpopulated with older, diseased trees susceptible to epidemics like the bark beetle infestation that has left behind 40 million acres of dead trees. Dense underbrush and dead trees are fuel for extreme wildfires.
Forest Management research

*Mokelumne Watershed Avoided Cost Analysis*
April 10, 2014

“We’re working now to identify new investors—engaging people who have something to gain by having healthy watersheds, not just because it’s the right thing ecologically, but also because economically it makes sense.”
- Kim Carr, Lead on Mokelumne Watershed Study

“Investing in proactive forest management activities can save up to three times the cost of future fires, reduce high-severity fire by up to 75 percent, and bring added benefits for people, water, and wildlife.”
- USDA Forest Service

“[The study is] a scientifically defensible research study that reinforces what foresters and resource specialists have known for years – well-designed forest management activities focused on returning uncharacteristically dense forest ecosystems to their natural stocking levels can provide a multitude of economic, social and environmental benefits”
- Integrated Natural Resources Management
## Forest Management comparables

<table>
<thead>
<tr>
<th></th>
<th>Upfront Capital Provider</th>
<th>Stakeholders</th>
<th>Targeted Benefits</th>
<th>Pay for Success?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arizona</strong></td>
<td>USDAFS</td>
<td>USDAFS</td>
<td>Fire Suppression</td>
<td>No</td>
</tr>
<tr>
<td><strong>Denver</strong></td>
<td>USDAFS &amp; Denver Water</td>
<td>USDAFS &amp; Denver Water</td>
<td>Fire Suppression &amp; Reservoir Debris Reduction</td>
<td>No</td>
</tr>
<tr>
<td><strong>Blue Forest</strong></td>
<td>Private Investors</td>
<td>EBMUD, PG&amp;E, USDAFS</td>
<td>Water Supply Augmentation, Hydroelectric Power, Fire Suppression</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Figure ES-2. High-Intensity Wildfire Pre- and Post-Treatments

CA’s snowpack usually holds as much water (15mm acre feet) as all state reservoirs combined