



WESTCARB Annual Business Meeting

Afforestation/reforestation pilot projects on private lands in Shasta County, CA

Nicholas Martin, Winrock International
Bob Rynearson, WM Beaty & Associates
Leslie Bryan, Western Shasta RCD


Seattle, WA
November 27, 2007

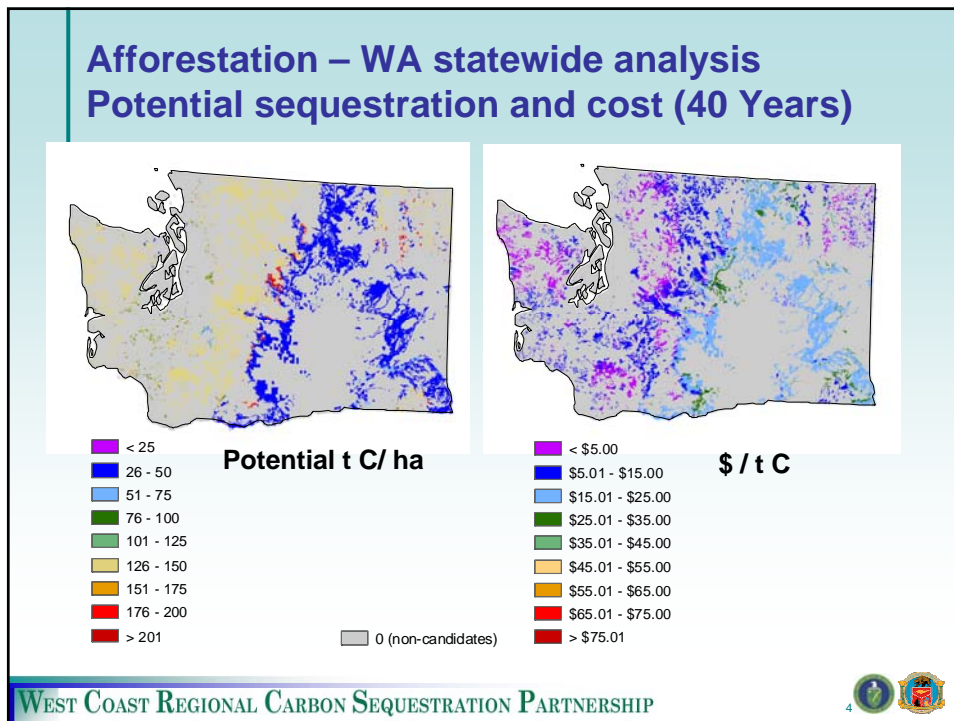
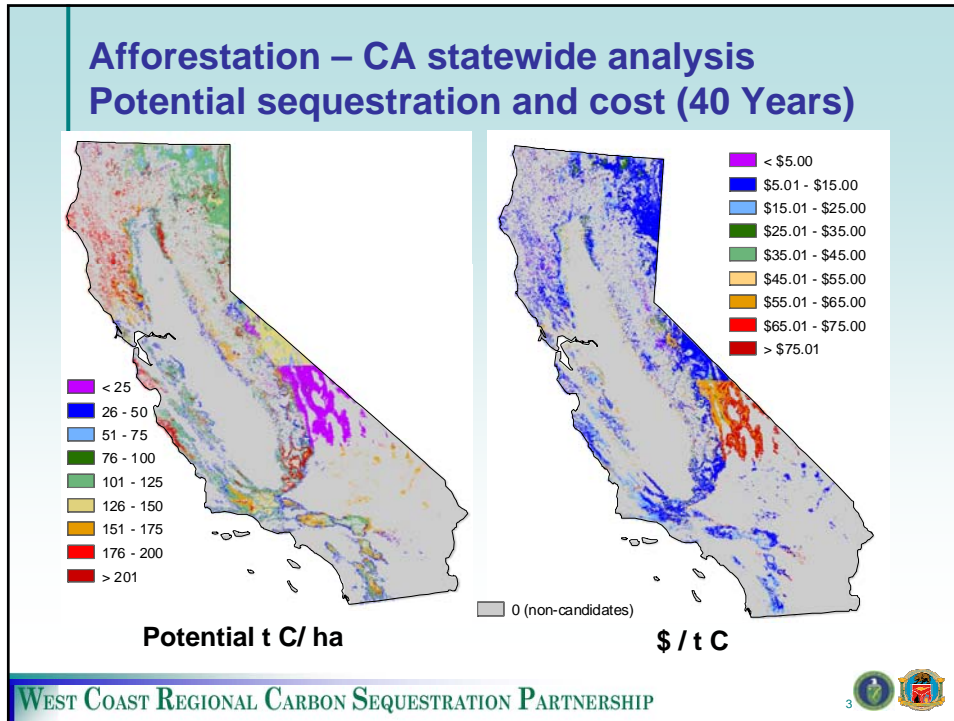


Phase II Objectives: Terrestrial Sequestration

- Validate and demonstrate the terrestrial carbon sequestration opportunities identified in Phase I, through pilot projects, methodology development, reporting, and market recognition
- Research to inform decisions by policymakers, communities, and businesses on how to invest in CCS technology development and deployment to achieve climate change mitigation objectives
 - *Afforestation/reforestation*
 - *Fire/fuel reduction/biomass energy*
 - *Forest management*
 - *Washington pilots?*

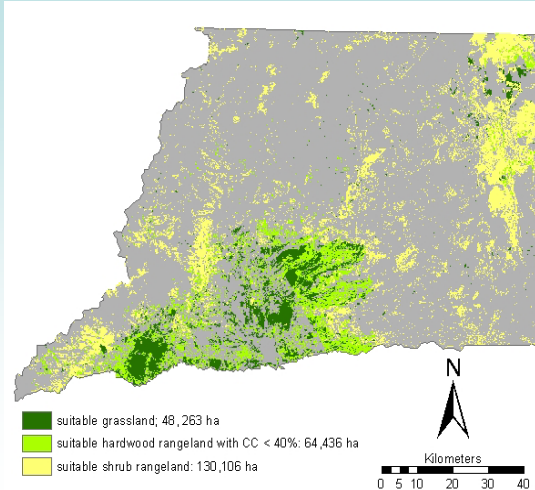
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Afforestation at Shasta County level

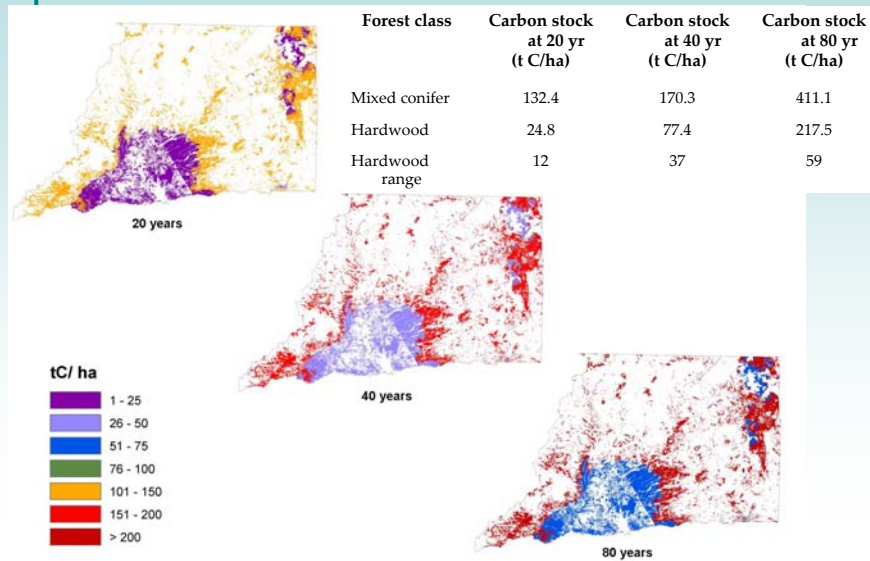
- Candidate rangelands suitable for afforestation:
 - 600,000 acres (80% of total rangeland)
 - Grassland: 119,210 acres
 - Hardwood rangeland: 159,157 acres
 - Shrub rangeland: 321,362 acres



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Rates of carbon accumulation

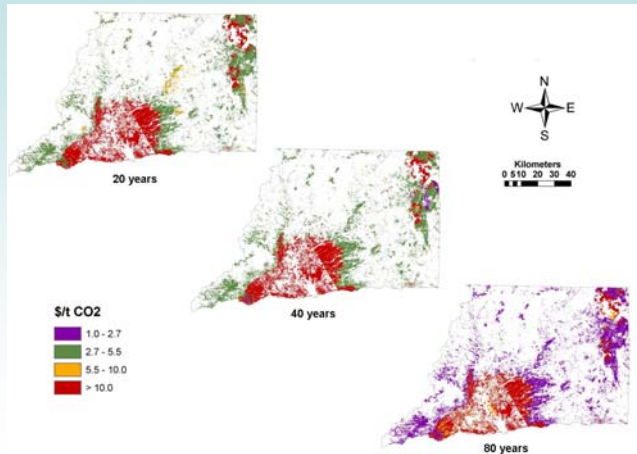


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Costs of afforesting rangelands

- Opportunity costs
- Conversion costs
- Maintenance costs
- Measurement and monitoring costs
- Present value of all costs



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Phase II objectives for afforestation

- Validate Phase I potential through actual pilots
 - Baseline carbon stocks
 - Carbon accumulation potential
 - Costs (site prep, planting, maintenance, MMV, registration and reporting)
- Explore conditions of landowner participation
 - Are the project designs assumed in Phase I those of most interest to landowners? What type of landowners? Under what conditions?
- Gain on-the-ground experience in site prep requirements, planting, maintenance, carbon registries/markets for expansion/replication
- “Road-test” Registry protocols and inform protocol development

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Afforestation in Phase II: activities

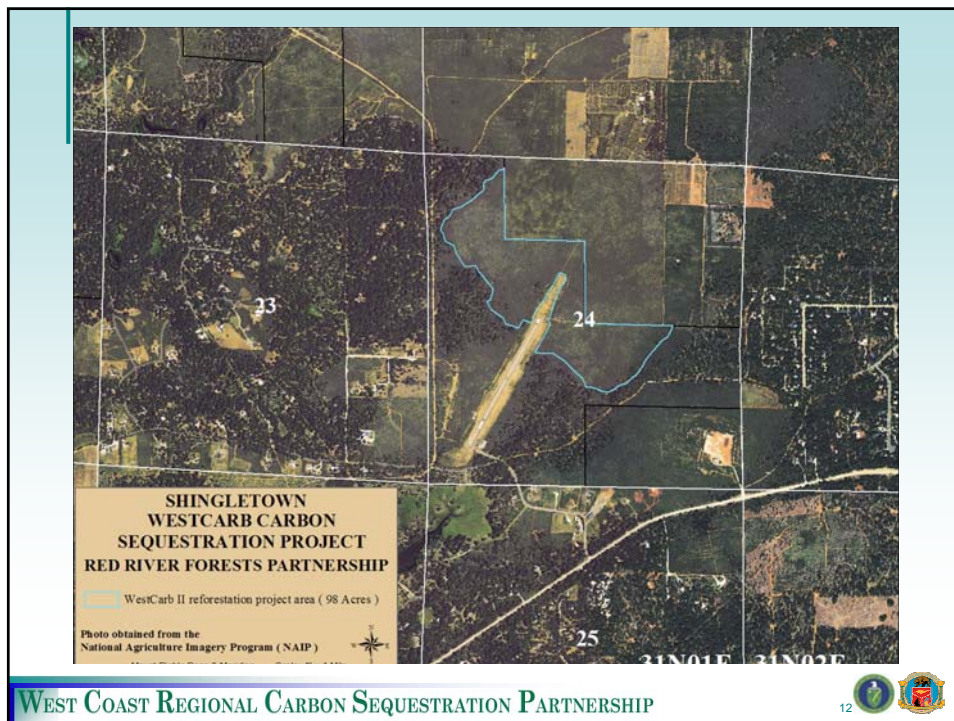
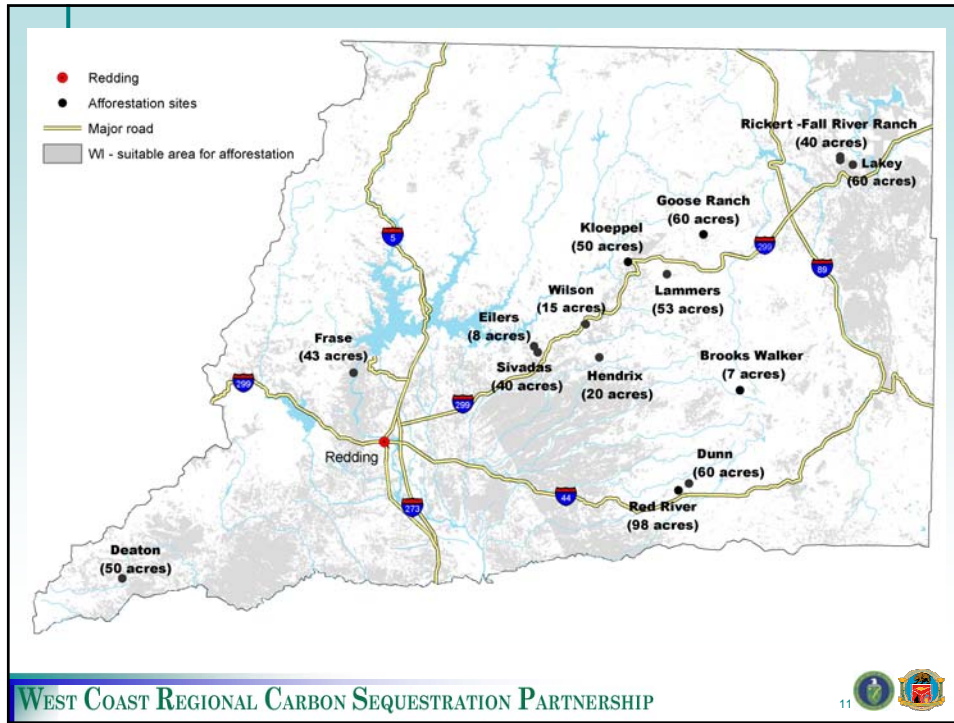
- Refine classification of lands for afforestation potential
- Set criteria for distribution of pilot plantings
- Recruit landowners for cost-shared afforestation pilots; negotiate agreements
- Prepare planting & maintenance plans
- Source seed and grow seedlings in nurseries
- Take baseline carbon measurements
- Implement site prep, planting, and initial maintenance treatments
- Collect data on establishment and maintenance costs
- Model carbon accumulation
- Test reporting protocols; work with willing landowners to explore options for reporting projects and/or selling credits



Afforestation in Phase II: current status

- ~400 landowners contacted, through mailings and watershed groups
- 48 interviewed in formal survey on willingness, cost-sharing, site conditions, acres, species preferences, etc.
- Subset chosen, based on analysis and field visits, suitable for WESTCARB afforestation pilots
- 15 site-specific planting plans developed
 - Acres, soils, seed zone, site class, precipitation, current vegetation; step-by-step plan for site prep, planting, chemical and mechanical treatments; estimated costs including WESTCARB and landowner portions
 - Planting in 2008 and 2009
- 9 pilots underway, with landowner agreements signed (344 acres)
 - One or more additional in development or negotiation with landowners
- Site preparation complete on four projects for 2008 planting







Preliminary findings 3

- Projects have substantial co-benefits
 - Healthier forest with habitat diversity
 - Timber and biomass fuel values
 - Fire risk reduction (interrupt brush and burn cycle)
- Climate change scenarios and climate change adaptation may affect future planning
- Projects with biomass removal for biopower are challenging; added cost and added benefit
 - Improves overall GHG balance of project (by GHG emissions of biopower alternative displaced)
 - Need for a local processing industry, as in fuel reduction case



- 98-acre brush afforestation
- Baseline carbon stocks 17 tCO₂/acre
- Carbon accumulation potential, estimated, at 40 years: 250 tCO₂/acre
- Sequestration benefit 23,000 tCO₂ (40 years)
- Biomass fuel yield 10 BDT/acre conservative
- Fossil fuel displacement benefit 489 tCO₂e (year 1)



Gaining Interest

- Initial Stakeholder Meeting
- More than 400 Landowners Contacted
- Scoping Letters Sent to Landowners With 100+ Acres in Priority Areas
- Presentations at Local and Regional Meetings
- Outreach at Fairs and Festivals
- Newsletter Articles
- Word of Mouth

Landowner Education

- Climate Change
- Carbon Sequestration
- Carbon Market
- Forestry
- Oak Woodland Afforestation



Let's Talk...

Are we really the cause?

Is there really anything
we can do about it?

Is it really a problem?

Is it true?

Isn't it natural?

Carbon Sequest... what?

OK, Maybe I'm Interested... Survey Me!

48 Landowners Interviewed

- Willingness
- Cost-sharing
- Site Conditions
- Acres
- Species Preferences

How much will it cost?

What's it going to look like?

What is expected from me?

How much can I earn?

What Sites Can Grow Trees?

- GIS
 - Canopy
 - Elevation
 - Seedzone
 - Soils
 - Slope
 - Accessibility

Next Step... Site Visits

Aerial Photo



LANDOWNER:
EILERS

AERIAL

T33N R2W S9

SEED ZONE: 521

1 inch equals 880 feet

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Topography



LANDOWNER:
EILERS

TOPO

T33N R2W S9

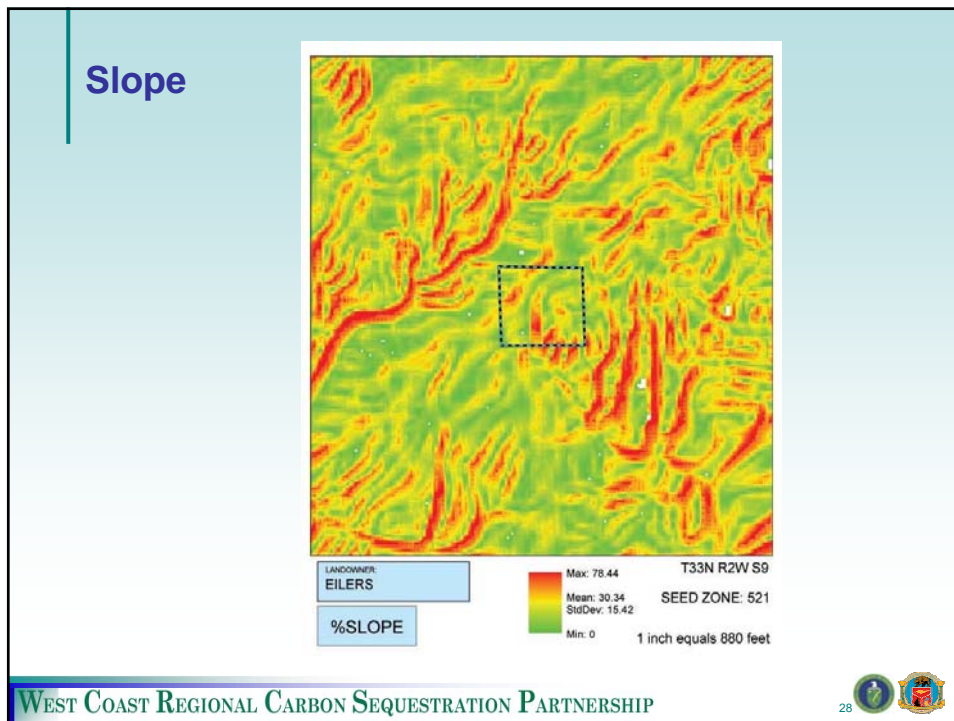
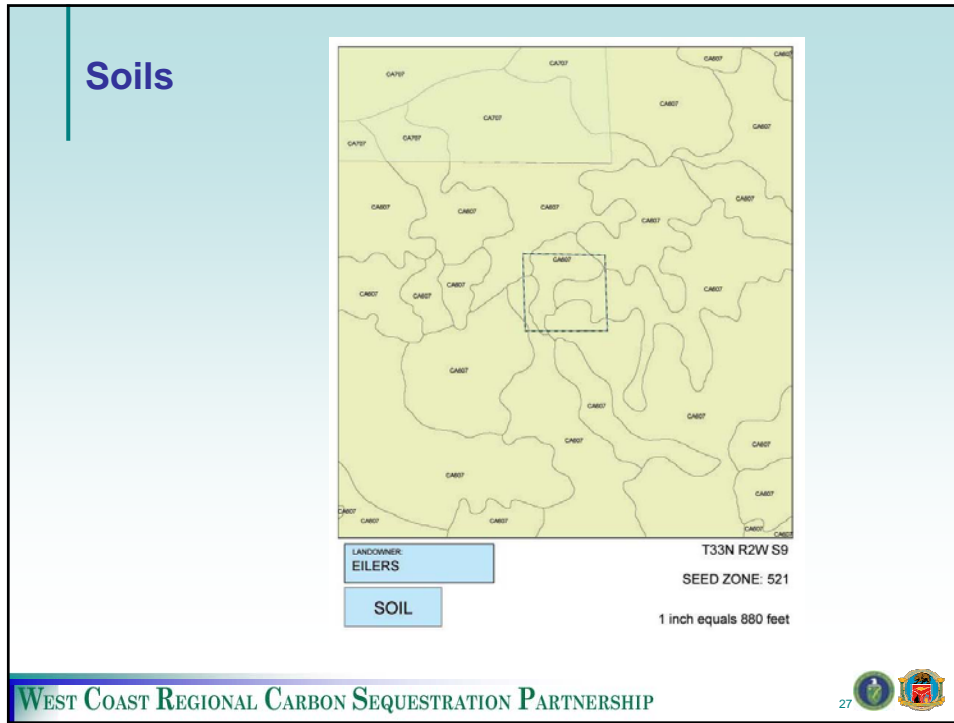
SEED ZONE: 521

1 inch equals 880 feet

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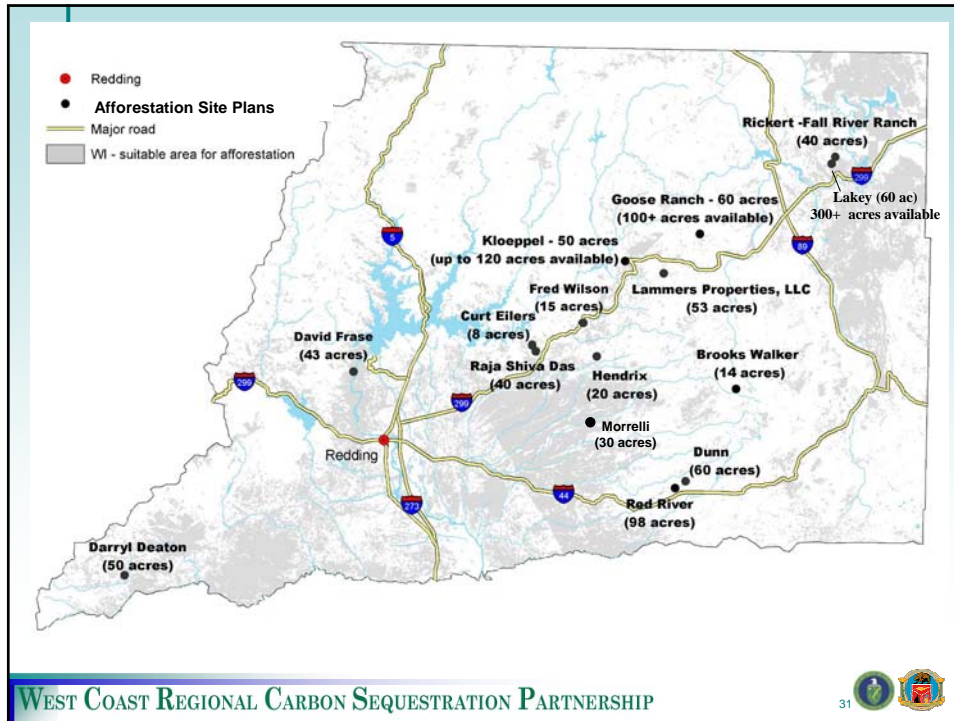
Afforestation in Phase II: activities

Bob Rynearson, WM Beaty & Associates

- Refine classification of lands for afforestation potential
- Set criteria for distribution of pilot plantings
- **Recruit landowners for cost-shared afforestation pilots; negotiate agreements** (provide professional forestry advice to WSRCD and Winrock)
- **Prepare planting & maintenance plans**
- **Source seed and grow seedlings in nurseries**
- Take baseline carbon measurements
- **Implement site prep, planting, and initial maintenance treatments** (Provide professional forestry advice to Winrock)
- Collect data on establishment and maintenance costs
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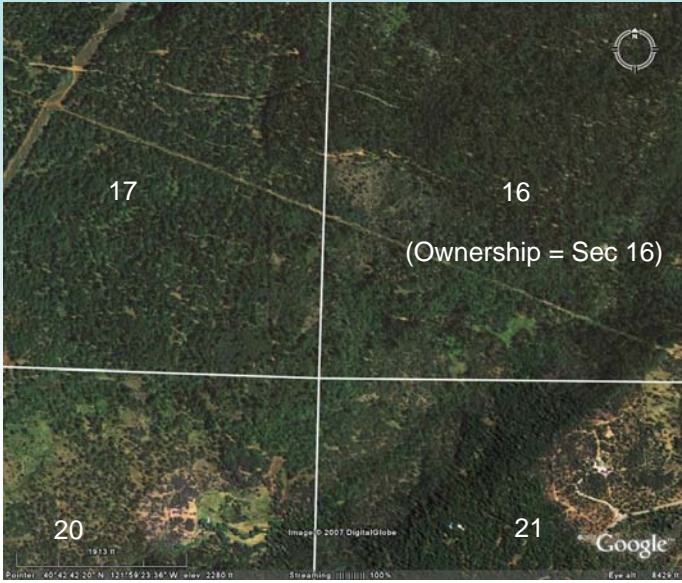
Afforestation in Phase II: Professional Forestry Consultation as of 11/28/07

- Provided professional forestry **review of 40+ potential projects from office** data (photos, soils, topo. maps etc.) & personal experience
- **Visited 17 properties/potential projects** (including discussions with most of the landowners). Filled out the following information on factors that influence feasibility and specific project location, plan, timing & mitigations.
 - Acres, access, utilities/easements, sensitive areas, surveyed corners/lines (GPS'd during site visit to establish land net control), soils, slope, aspect, seed zone, site class, precipitation, current vegetation (species and size/age), operational feasibility
- **Prepared 15 site-specific afforestation project plans**
 - Background information (see items above)
 - Step-by-step plan & timeline for site prep, planting, seedling protection, chemical and mechanical treatments
 - estimated costs by step & year
- **Supervised Afforestation Contractor's work on 4 projects** (Mechanical site preparation for 2008 planting completed)





Section Lines based upon USGS Mapping: no land-net control to actual surveyed corners so lines are only approximations of actual




17 16
(Ownership = Sec 16)
20 21
Google
1613 ft
Pointer: 45°42'42.20"N 121°59'23.36"W elev: 2285 ft
Steering: 100%

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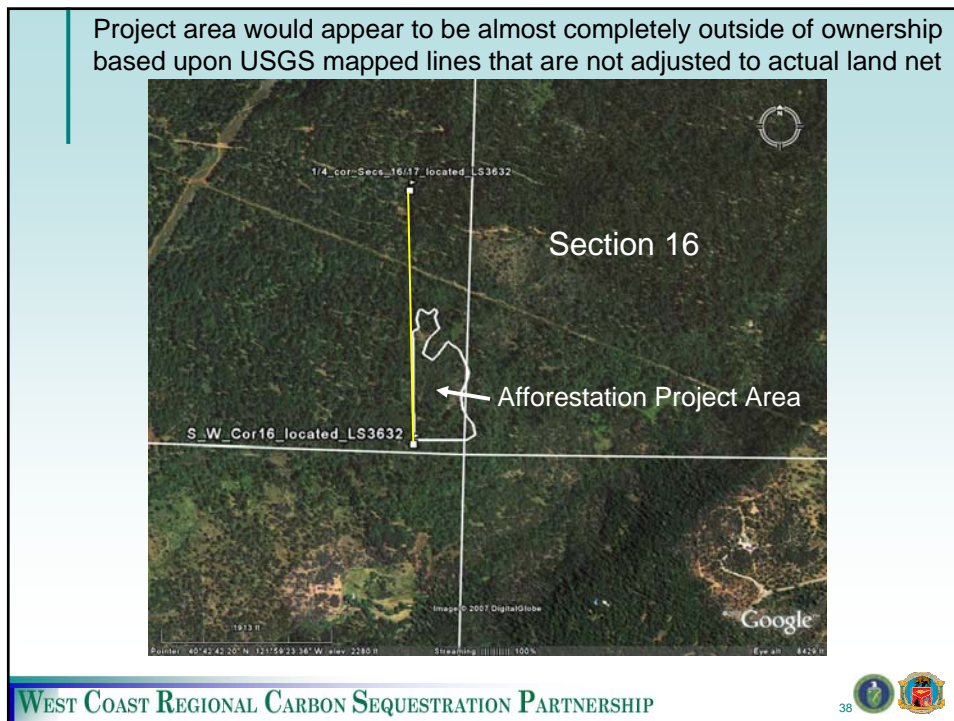
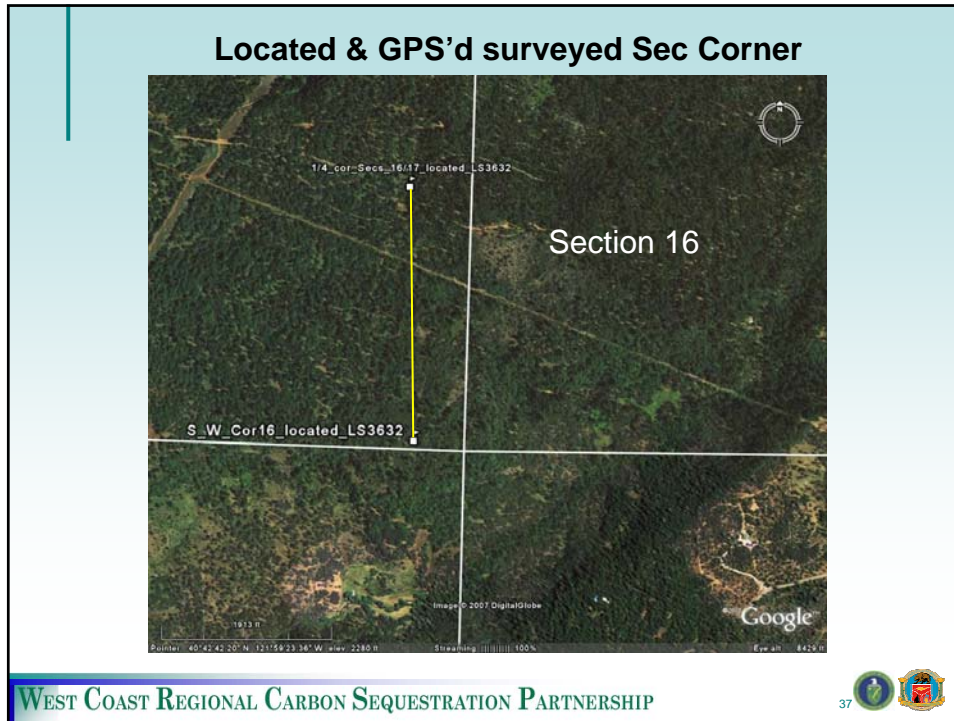
Located and GPS'd surveyed 1/4 corner

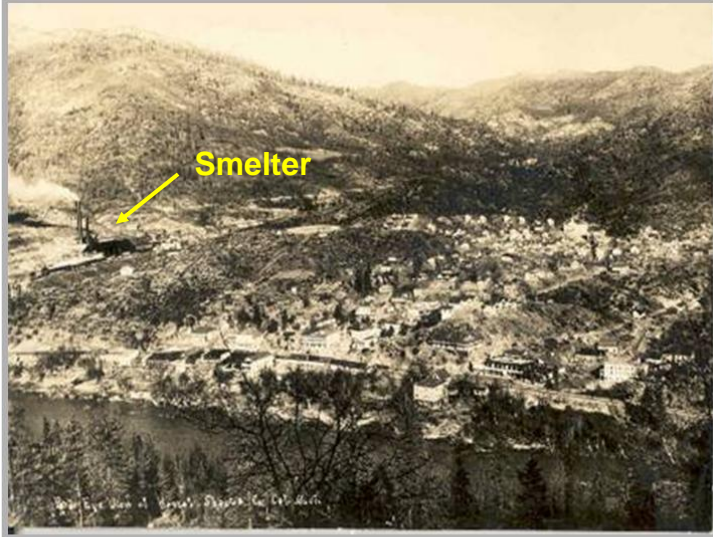


1/4_cor-Secs_1617_located_L33632
17 16
20 21
Google
1613 ft
Pointer: 45°42'42.20"N 121°59'23.36"W elev: 2285 ft
Steering: 100%

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Smelter

Fumes from the copper smelting activities in the early 1900's killed off thousands of acres of ponderosa pine forest along the Sac. river


Kennet 1907

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Private land @ 800' elev. in Sacramento River drainage impacted by early 1900's copper smelting fumes



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1992 Fountain Fire: 65,000 acres

- Timber companies replanted within 5 years after fire: now 10 to 20 ft. tall conifers & some re-sprouted oaks
- Most “small” non-industrial landowners did not replant: now brush and re-sprouted oaks



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1992 Fountain Fire @ 3,000' elev.




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Timely afforestation soon after wildfire would =

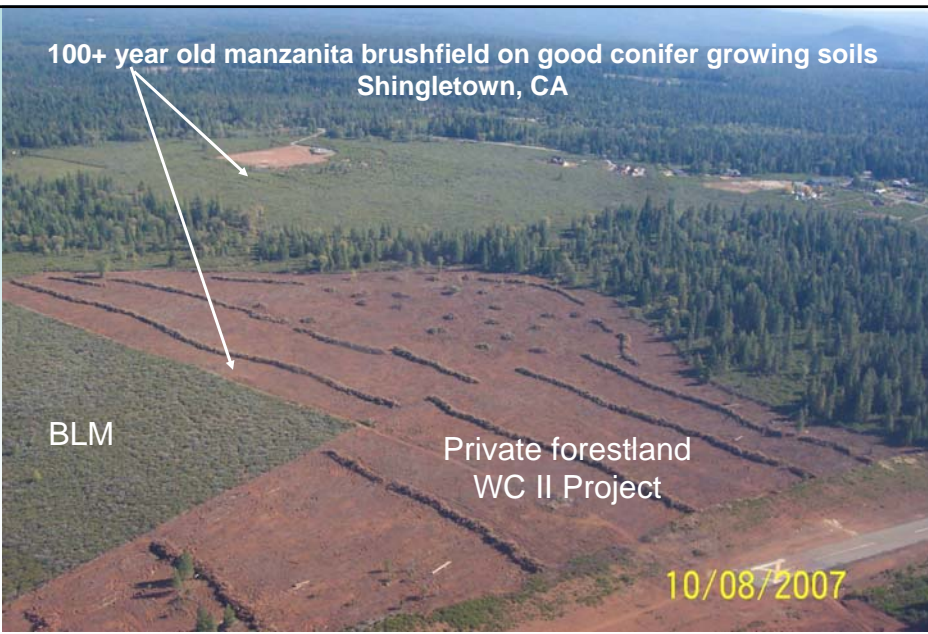
- **Much less cost**
- **Much less soil and site disturbance**



**August 1982 Chalk Fire &
July 2007 Power Fire
NE Shasta County**


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100+ year old manzanita brushfield on good conifer growing soils
Shingletown, CA



BLM Private forestland
WC II Project

10/08/2007

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BASIC AFFORESTATION STEPS (Sequential)

1. **Fall 1st Year:** Collect cones & process seed (or purchase seed) of desired species from appropriate zone and elevation
2. **Winter 1st Year:** Contract w/ Nursery to grow seedlings
3. **Summer 2nd Year:** Mechanical and/or Chemical Treatments to Prepare Site for Planting (Site Prep)
4. **Fall/Winter 2nd Year:** Burn piles (if necessary)
5. **Winter 2nd Year:** Lift & Package Seedlings & Transport to Cold Storage Facility
6. **Spring 3rd Year:** Plant Seedlings
7. **Spring 3rd Year:** Install Seedling protectors (if needed)
8. **3rd - 6th Years:** Follow up release spray to control competing vegetation

Contact info

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