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BEET ENERGY

MENDOTA ADVANCED BIOENERGY
BEET COOPERATIVE

California Energy Commission
Staff Workshop on 2010 Bioenergy Action Plan
Thursday, June 3, 2010

UC DAVIS
UNIVERSITY OF CALIFORNIA

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GOALS

- Sustainable producer of
  - Advanced biofuels,
  - Green-e electricity,
  - Biomethane as compressed natural gas (CNG)
  - Agricultural fertilizer products
  - Reclaimed water for crop/landscape use
- Highly integrated biorefinery using technology and resources developed from around the world
- Valued contributor to local economy

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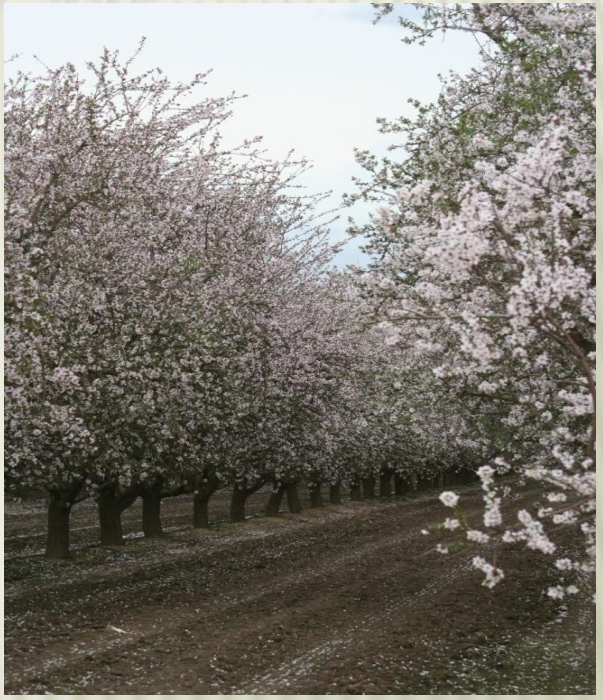
BIOREFINERY SUBSYSTEMS

- Biomass gasifier
- Advanced ethanol plant
- Anaerobic digester
- Water treatment plant



- Expected employment
  - 40-50 full time in biorefinery
  - Plus 40-50 harvest, trucking & support

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PROJECT DEVELOPMENT TEAM

Biorefinery Owner	
John Diener	Board President
Sharon Starcher	Board Administrative Coordinator
Arnold Daglia	Project Engineering Advisor
Leon Woods	Government Relations
Joe Marchini	Counsel, Baker, Manock & Jensen

Project Developer	
Jeff Manternach	CFO
Terry Kulesa	CEO

Applied Biofuels Research	
Dr. Ruihong Zhang	Biogas/Ethanol Production
Dr. Steve Kaffka	Sugar Beet/Biomass/Water

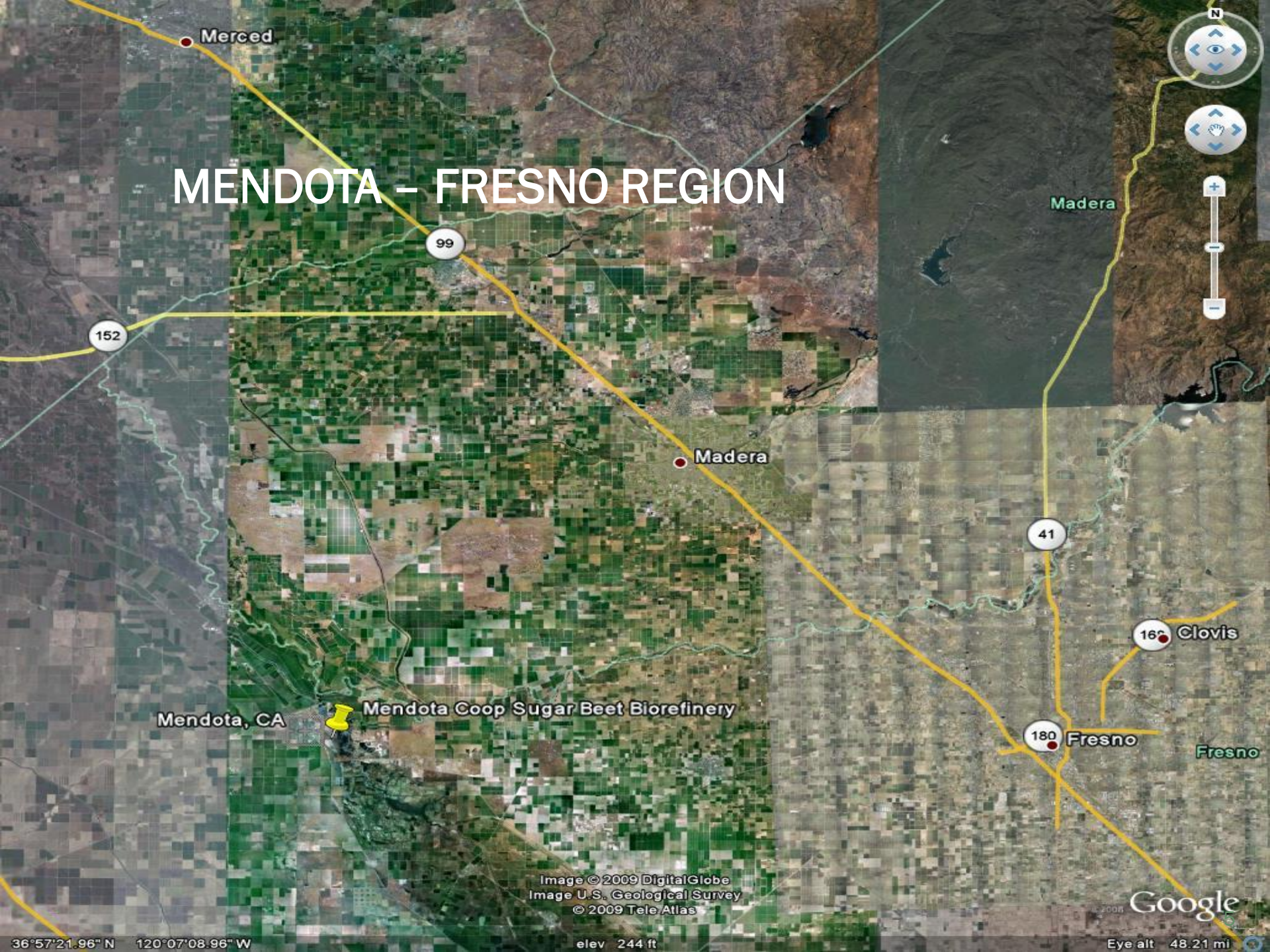
Project Management Liaison	
Dr. David Zoldoski	Director, ICWT
Jim Tischer	Project Consultant

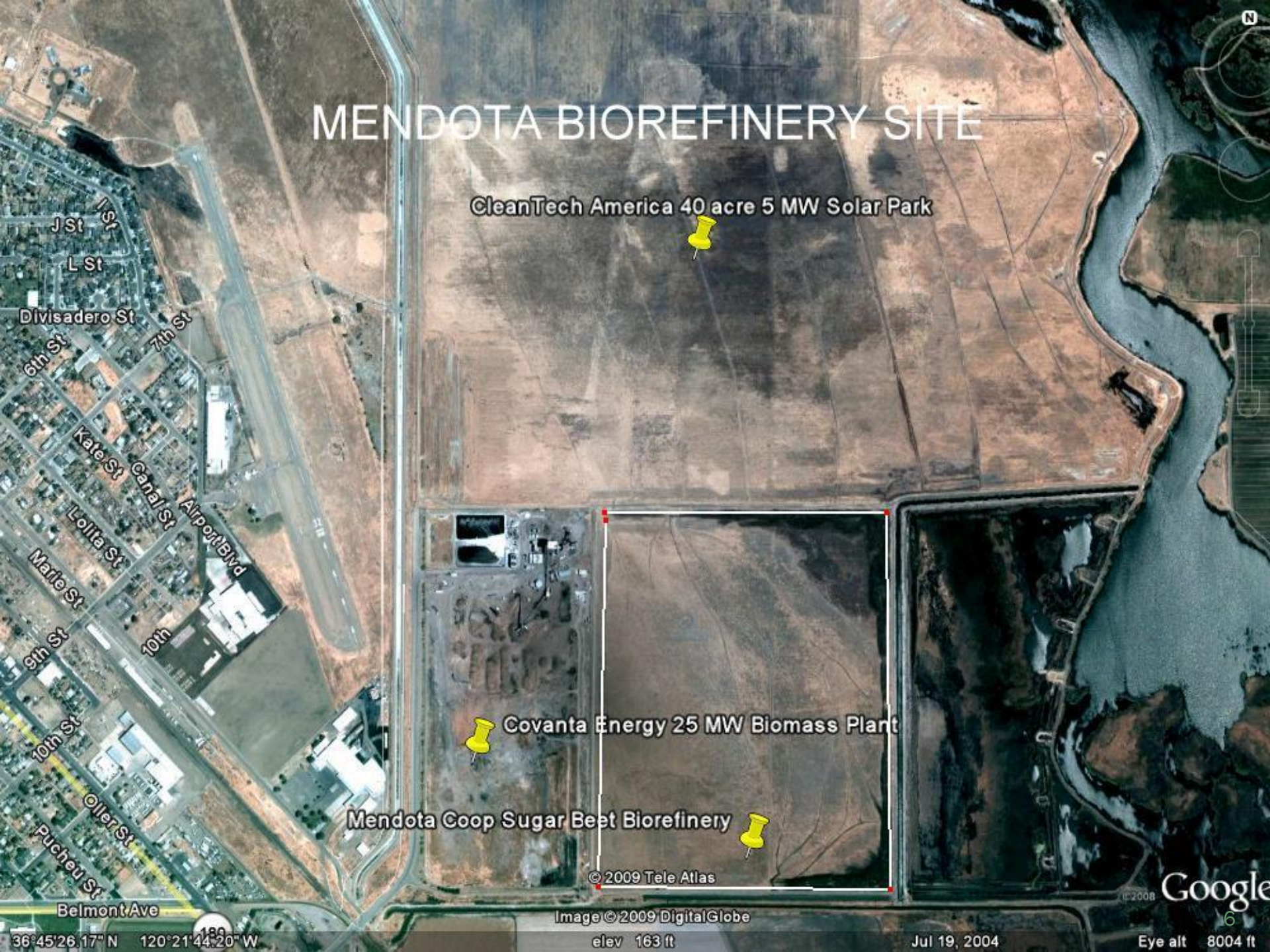
Local, State, Federal Incentives	
Shawn Garvey	CEO

Energy Product Sales	
Mike Jennings	CEO

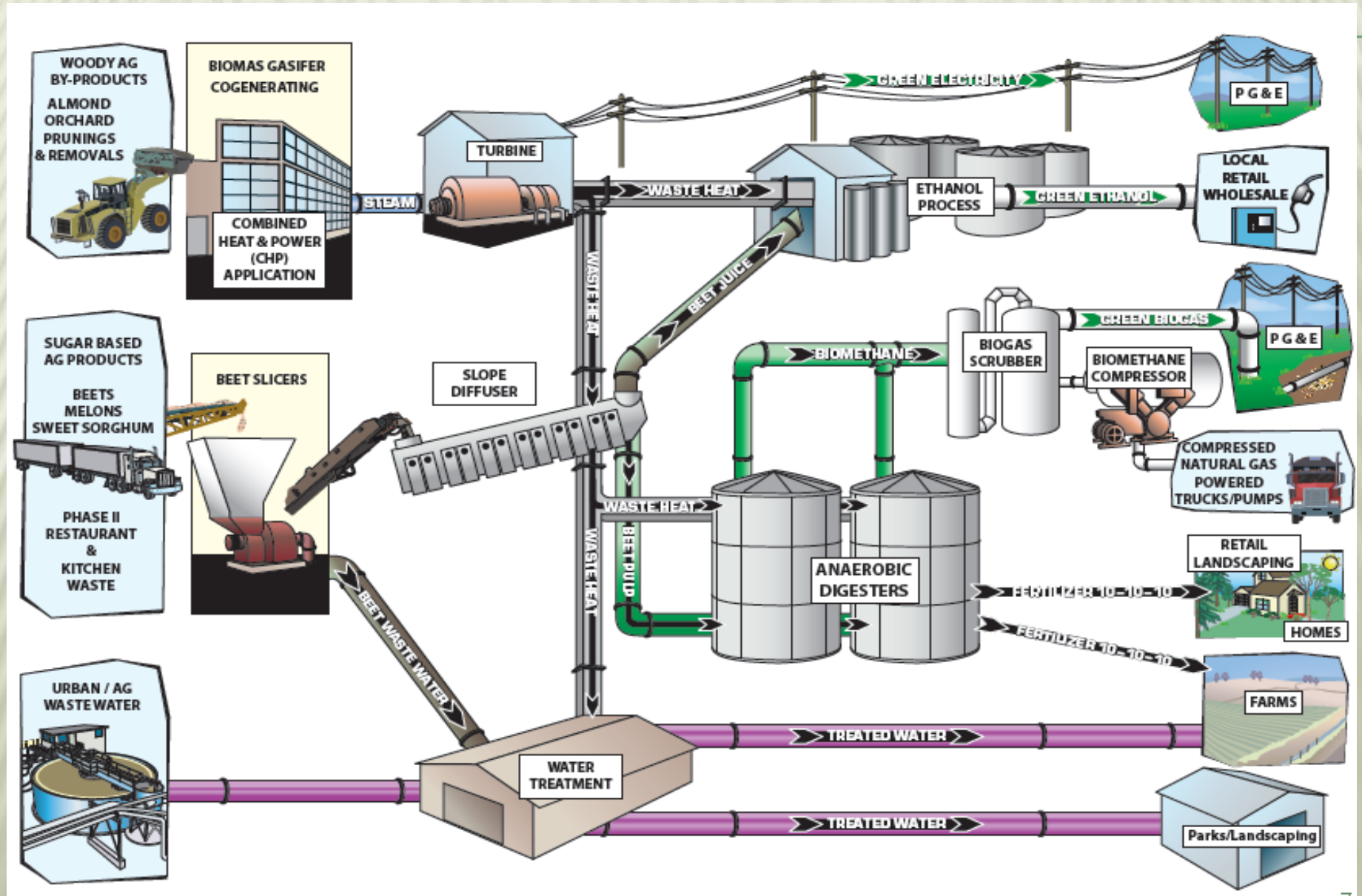
Biomass Resource Evaluation	
Tad Mason	CEO

Develop Sugar Beet BMP Handbook	
Ladi Asgill	Program Manager


MENDOTA – FRESNO REGION
Merced
99
152
Madera
Madera
41
Clovis
Mendota, CA
Mendota Coop Sugar Beet Biorefinery
180
Fresno
Fresno
Image © 2009 DigitalGlobe
Image U.S. Geological Survey
© 2009 Tele Atlas
Google
36°57'21.96" N 120°07'08.96" W
elev 244 ft
Eye alt 48.21 mi


MENDOTA BIOREFINERY SITE
CleanTech America 40 acre 5 MW Solar Park
Covanta Energy 25 MW Biomass Plant
Mendota Coop Sugar Beet Biorefinery
I St
J St
L St
Divisadero St
7th St
6th St
Kate St
Canal St
Airport Blvd
Lolita St
Marie St
9th St
10th
10th St
Oller St
Pucheu St
Belmont Ave
© 2009 Tele Atlas
Image © 2009 DigitalGlobe
36°45'26.17" N 120°21'44.20" W
elev 163 ft
Jul 19, 2004
Eye alt 8004 ft
Google

BIOREFINERY PROCESS (SCHEMATIC)



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MAJOR BIOREFINERY METRICS

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MAJOR UNITS	CAPACITY	ANNUAL PRODUCTION
Biomass Gasifier, Steam Turbine	120K lbs/hr @ 750°F	6.3 MW
Advanced Ethanol Plant	30 MM Gal/Yr nameplate	33,490,279 Gal/Yr
Anaerobic Digester	1,470 Tns/Day	537,000 Tns/Yr
Biomethane	4,900 SCF/Day	1.6 MM/MCF/Yr
MAJOR LOCAL FEED STOCKS		
Sugar beets w/in 40 miles		840,000 Tns/Yr
Almond prunings w/in 50 miles		50,000 BDT/Yr
Grain, melons, rice straw, manure, etc.		30,000 Tns/Yr
Regionally Sourced Grain available as needed		148,000 Tns/Yr
WATER BALANCE		
City of Mendota WWT Plant	+1.0 MGD (694 gpm)	+1,050 Ac-Ft/Yr
Biorefinery Water Requirements	-1.3 MGD (920 gpm)	-1,341 Ac-Ft/Yr
Biorefinery Waste Water, Treated	+ .65 MGD (450 gpm)	+656 Ac-Ft/Yr
	NET	+365 Ac-Ft/Yr

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UC DAVIS RESEARCH

Sugar Beets on Research Farm

Pilot Bio-Digester Facility

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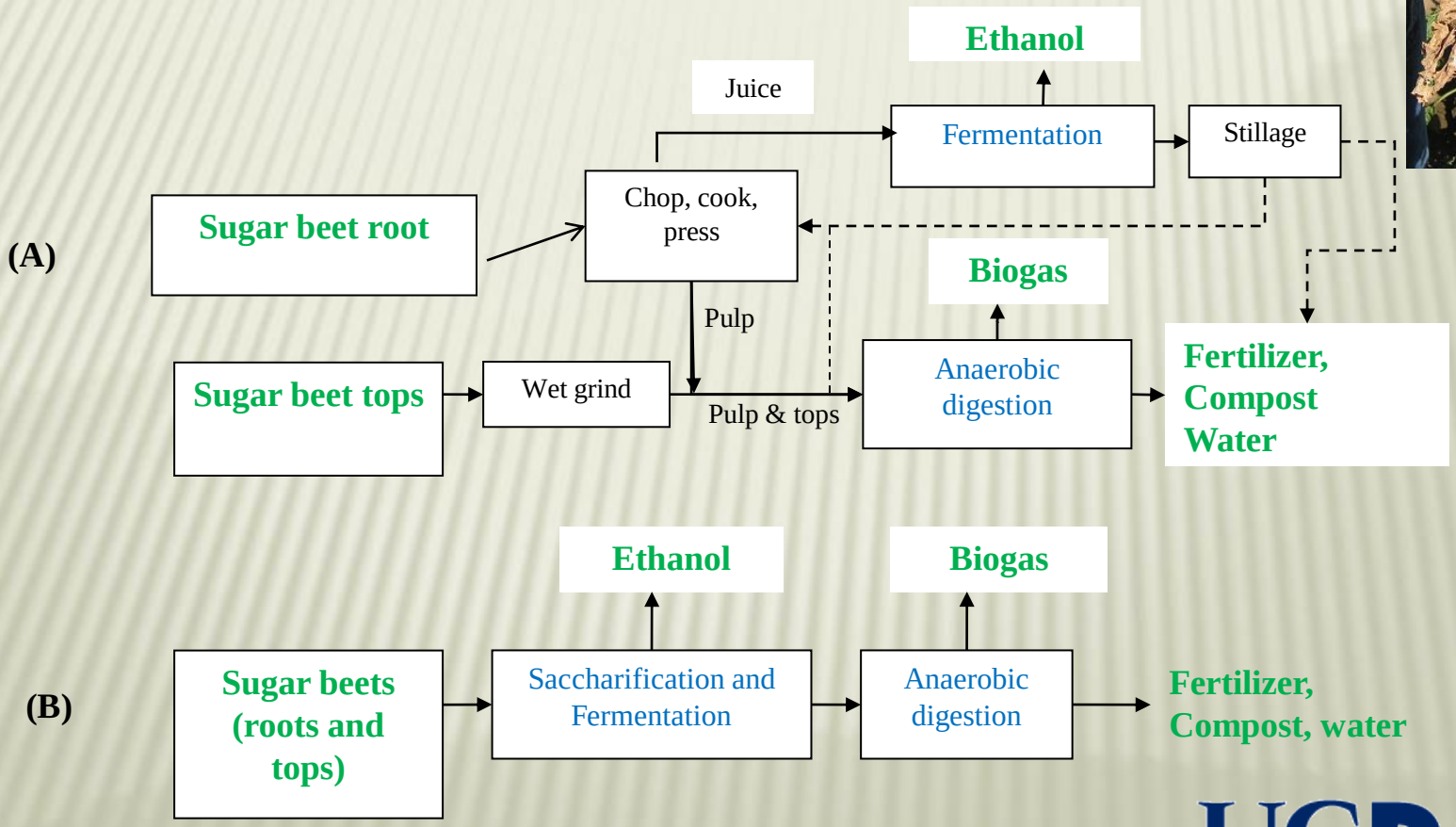
BEET CONVERSION PATHWAYS



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PILOT FACILITY TESTING

- Existing Facility for Anaerobic Digestion
  - whole beets, beet tops and pulp
- Modified facility for ethanol fermentation
  - Beet fractionation equipment (juice and pulp separation)
  - Ethanol recovery equipment

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QUESTIONS?

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