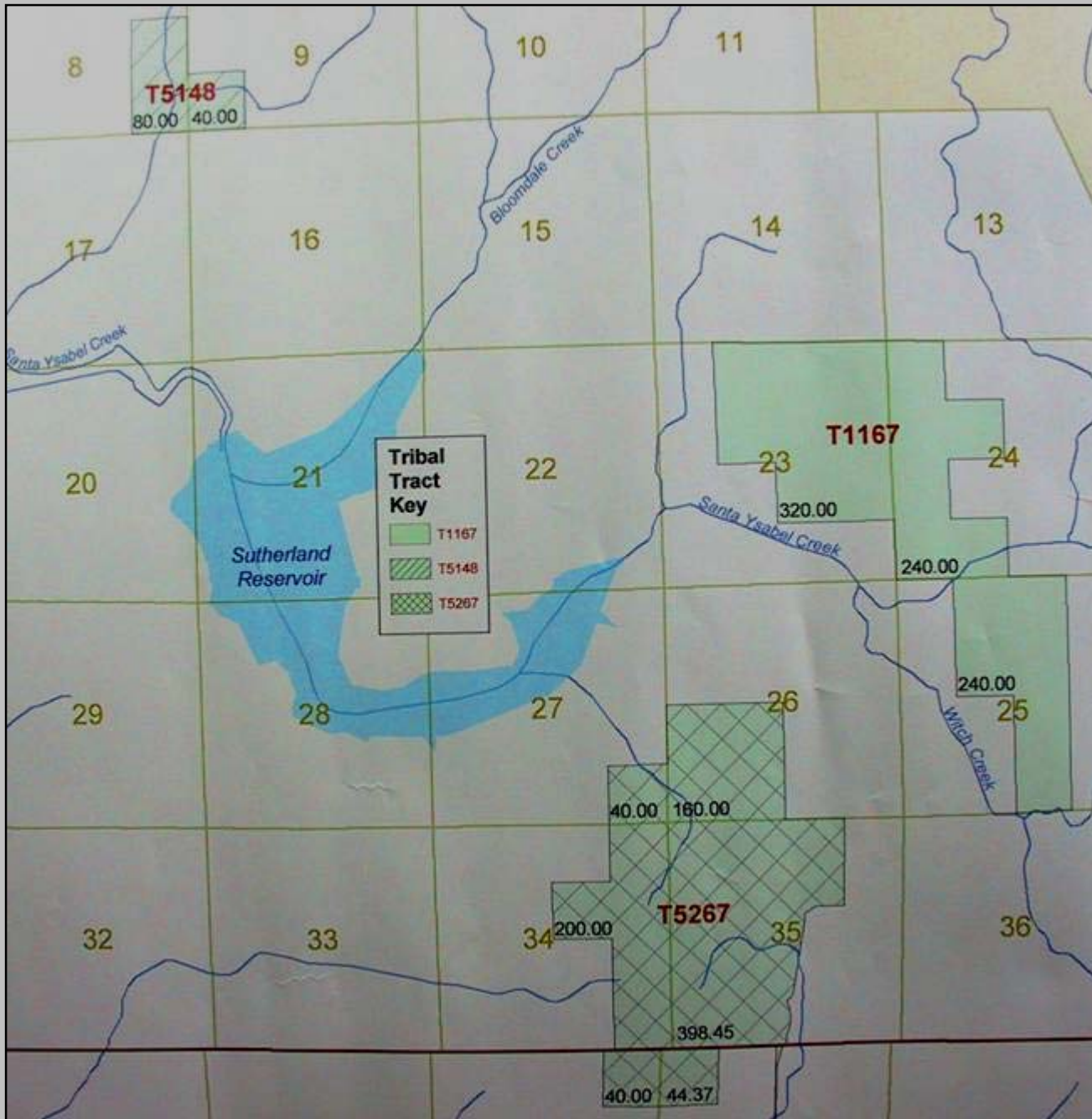




Mesa Grande Band of Mission Indians Tribal Energy Project Feasibility Study





The Land



The Land

- ⦿ Reservation consists of 1820 acres
- ⦿ Historically as low as 120 acres
- ⦿ Acquisition of 800+ acres in 1988
- ⦿ Purchase of 900 acres in 1998

The People

- ◉ 700 members today
- ◉ 130 living on Reservation
- ◉ 90% people on Reservation below poverty line
- ◉ Long waiting list of people wanting to live on Reservation

Challenges Facing the Tribe

- ⦿ Quality, Affordable Housing
- ⦿ Decent, Living Wage Jobs
- ⦿ Sustainable Growth

Upper Tract Housing



- ⦿ Older Homes
- ⦿ Remote, scattered sites
- ⦿ Many homes and trailers not weathertight
- ⦿ Many homes without power

Black Canyon Housing



- ⦿ Newer, clustered housing
- ⦿ Utility supplied power
- ⦿ Some of highest electricity rates in US
- ⦿ Unaffordable utility bills
- ⦿ Modern construction but not built for energy efficiency

Energy Issues for Existing Housing

- Hot and dry in summer
- Cold with some snow in winter
- Air conditioning driving \$300-400 per month utility bills during summer
- Power interruptions, especially during storms and fires
- Wood harvested on reservation to heat homes

Quality of Life Issues

- ① Comfort is not affordable on the reservation
- ① Wood provides a cheaper alternative to electricity, propane or kerosene
- ① Tribe now facing deforestation of land
- ① Wood smoke is a health hazard, especially for the young and old

Water Issues

- ⦿ All water is pumped from wells on the Reservation
- ⦿ On 900 acres: 10 wells drilled, only one with pump
- ⦿ Water pumping capacity key to fire safety also

Jobs

- ⦿ High unemployment on the Reservation
- ⦿ Tribal members want to move back to Reservation and work close by
- ⦿ Previous proposals to the Tribe have been for low paying, unskilled jobs that do nothing to sustain cultural values
- ⦿ Tribe sees skilled jobs in energy efficiency and renewable energy as key to its future

Accomplishments So Far

- ⦿ Acquisition of land suitable for housing
- ⦿ Successful housing development in Black Canyon
- ⦿ EPA feasibility study completed
- ⦿ Tribal leadership committed to a sustainable future

The Vision of the Future: Create an Energy Independent, Self-Sufficient Community

- ⦿ Start by addressing the needs of the people currently living on the Reservation
- ⦿ Provide relief from high utility bills through energy efficiency upgrades and renewable energy systems
- ⦿ Utilize the DOE Phase III development project grant to accomplish this phase

Leverage DOE funding to create job opportunities

- ⦿ Require job training of tribal members as part of development projects with outside contractors
- ⦿ Look for private/tribal partnerships that can provide long term employment opportunities
- ⦿ Obtain additional funding for energy efficiency measures

Leverage DOE funding to create job opportunities

- ⦿ Obtain additional funding for job training on the development project
- ⦿ Demonstrate to the whole tribe the benefits of renewable energy development
- ⦿ Build capacity for a future renewable energy based enterprise

Energy Improvements to the Upper Tracts Homes



- ⦿ Insulate and weatherize
- ⦿ Energy efficient windows
- ⦿ Hybrid photovoltaic systems, with battery storage and generator backup
- ⦿ Solar water heating for space heating and domestic hot water

Energy Improvements to the Black Canyon Homes



- ⦿ Optimize efficiency of existing HVAC systems
- ⦿ Add hydronic heating coil to existing HVAC systems
- ⦿ Grid-tied photovoltaic systems
- ⦿ Solar water heating for space heating and domestic hot water

Solar Water Pumping



- ⦿ Individual homes
- ⦿ Community wells
- ⦿ Buffalo
- ⦿ New housing developments

Design and Build a Model Zero Energy Community on the 900 acre site

- ⦿ Build homes for members currently living off Reservation
- ⦿ Build an eco-resort that can provide jobs and revenue for the tribe
- ⦿ Build a cultural/visitor center to celebrate the heritage of the tribe and promote understanding with the surrounding communities

Funding the Zero Energy Community

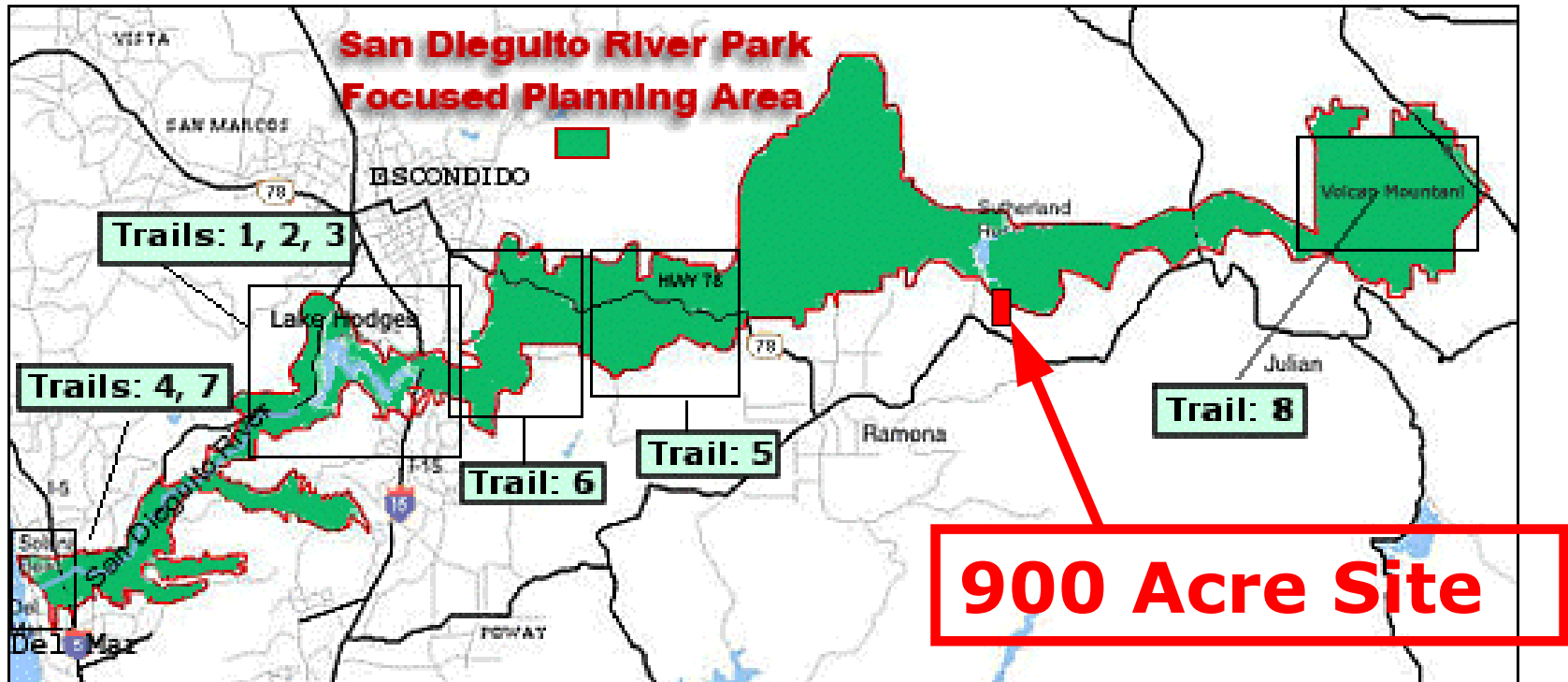
- ① Utilize funds already secured by the tribe for new housing
- ① Community Development Block Grants
- ① Private Foundation Green Building Grants
- ① Develop private/tribal strategic partnerships that promote long term economic development for the tribe

Zero Energy Buildings

- ⦿ Passive solar design
- ⦿ High R-value envelope
- ⦿ High thermal mass
- ⦿ Night ventilation cooling
- ⦿ High efficiency windows
- ⦿ High efficiency lighting
- ⦿ Photovoltaic systems
- ⦿ Solar water heating systems
- ⦿ Building energy modeling

Features of the Eco-Resort

- Direct Access to San Dieguito River Park



Features of the Eco-Resort

- ① Horse Camp with access to equestrian trails in the park
- ① Cabins
- ① Conference Center
- ① Campgrounds
- ① Mountain bike trails
- ① One hour from downtown San Diego



Conclusions

Development project assistance from DOE's Tribal Energy Program can solve immediate energy problems on the reservation

AND

provide a kick start for future sustainable development that meets Mesa Grande's goals of minimum environmental impact