

### RESEARCH AND DEVELOPMENT

Sustainable design is a new approach that requires research and development be integral parts of architectural practice. SLOG has been in the forefront of research, development, and application of affordability, regional considerations, passive design, green materials, and water resource issues as they affect sustainable design.



Camp Ocean Pines, Cambria, California

**AFFORDABILITY** was the key to the rejuvenation of **Camp Ocean Pines** in Cambria, California. This old YMCA camp had worn out infrastructure and an extremely low budget for new buildings. For its transformation into a local arts and conservation camp we developed 12 twelve-person cabins at a very low cost by:

1. Research on camp regulatory and permitting issues, which streamlined the process and greatly reduced fees.
2. Reduction of materials costs by the use of site milled lumber from dead trees on site and straw bale shear walls.
3. Design and construction of a prototype cabin using a design-build process costing \$50 per square foot.
4. Construction of remaining cabins with volunteer workshops.

These efforts have resulted in the following SLOG milestones:

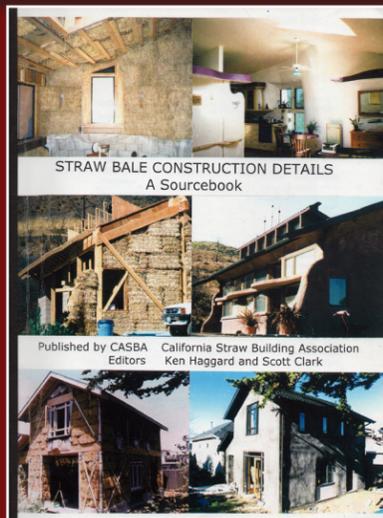
First passive solar building in California

First Place Award AIA International Competition on Sustainable Communities

First Net Zero energy commercial building in California

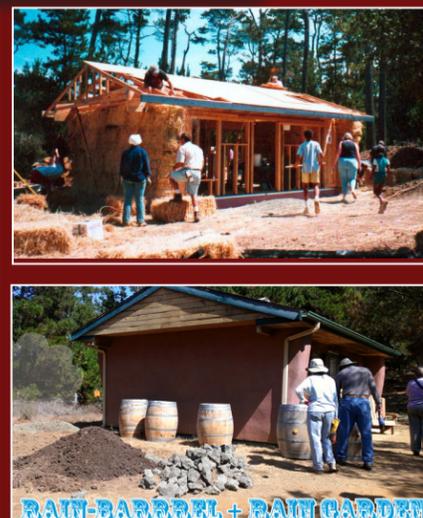
First LEED certified synagogue in the United States

First book on straw bale construction details for the California Straw Bale Association



STRAW BALE CONSTRUCTION DETAILS: A Sourcebook

Published by CASBA Editors California Straw Building Association Ken Haggard and Scott Clark

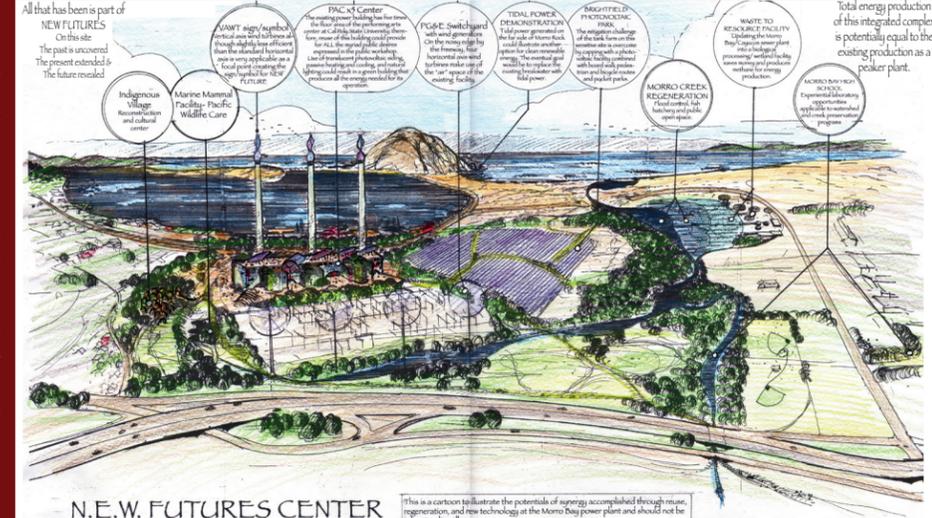


RAIN-BARREL + RAIN GARDEN

Community workshop for cabin construction at Camp Ocean Pines in Cambria California shown left.

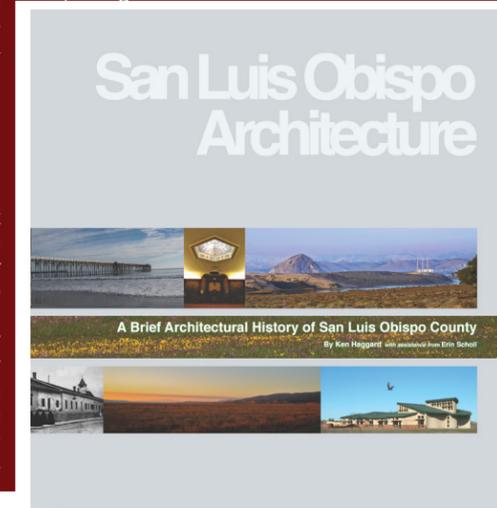
Rainwater catchment systems and a rain garden were later installed at Camp Ocean Pines through a similar community workshop led by SLOG in conjunction with SLO Green Build's Appropriate Technology Coalition.

Sustainable design places a new emphasis on localism with less importation of energy and resources. SLOG has been involved in the development of research that allows for this. For example, the N.E.W. Futures Center project shown below is a conceptual study for the conversion of the obsolete power plant in Morro Bay to a coastal energy/environmental cultural facility with efforts that allow sustainable approaches to water use and reclamation as well as sustainable energy production.

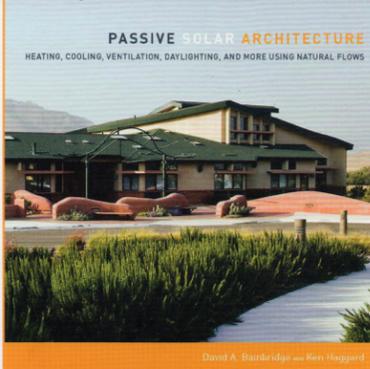
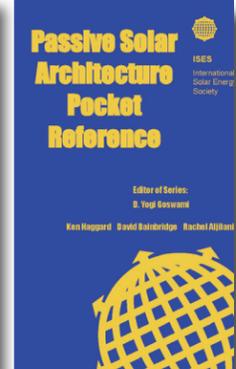
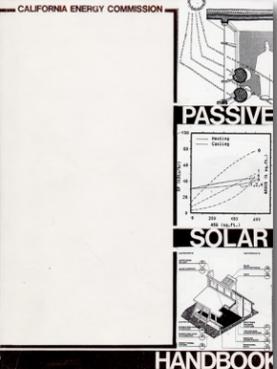


N.E.W. FUTURES CENTER

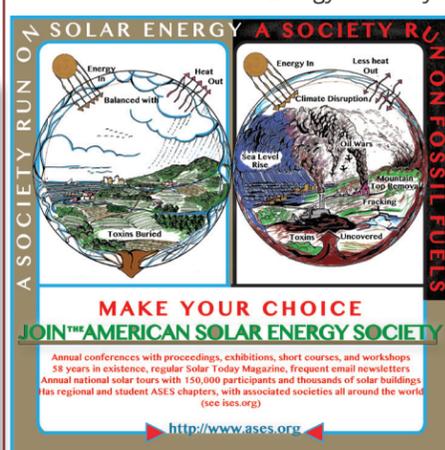
This new localism requires a deeper understanding of place. The book shown below about the architectural history of San Luis Obispo called *San Luis Obispo Architecture*, was produced to educate clients, planners, and politicians about the unique place in which we are privileged to live and build.



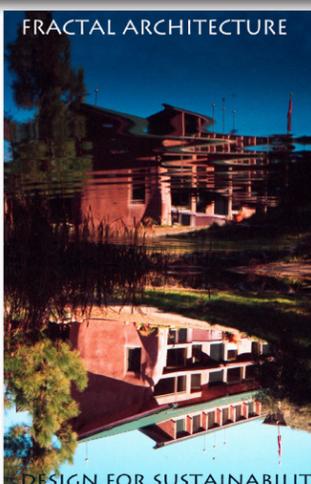
San Luis Sustainability Group has been involved in the development of **Passive Design** from its beginning, designing over 200 passive buildings and developing technical publications such as: *The Passive Solar Handbook for California* for the Energy Commission, *The Passive Solar Architecture Pocket Reference* for the International Solar Energy Society, *Passive Solar Architecture: a text book on the subject* published by Chelsea Green in 2013.



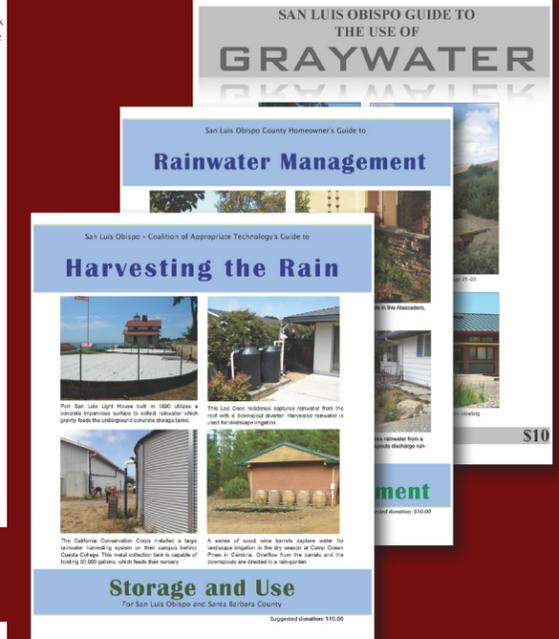
Poster graphic created by SLOG for the American Solar Energy Society.



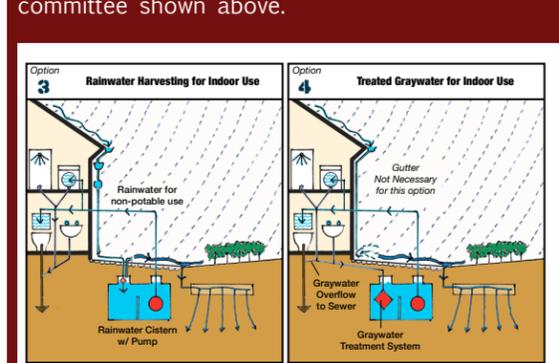
It is our opinion that sustainable design is not just modern architecture in 'green' clothing, but a new architecture for the 21st century. The implications of this on the architectural vocabulary of geometry, history, and aesthetics are explored in this book by SLOG.



A. CONCEPTS		B. CONTEXTS	
1. Sustainability definitions and concepts 11	2. Fractal Geometry definitions and concepts 43	1. Time fractal time & history 87	2. Place our dynamic fractal planet 109
3. conceptual problems & approaches 12	fractal primer 56	some patterns in environmental design 95	scaling of place 112
4. language for a sustainable era 21	tools for reintegration 72	historical transformation 97	dynamics of place 119
5. aesthetics of sustainability 23	aesthetics and geometry 73	aesthetics and symbolism 98	aesthetics of place 123
6. sustainable systems 34	fractal architecture 34	prototypes of sustainable design 100	regenerative, and life cycle design 127
7. Los Osos 35	a small cottage 78	Ubud region of Bali 107	Trout Farm Complex 126
8. 51-52 general design principles for sustainability	83-84 changes in the design process via fractal geometry	108 the new millennium and cultural era	111-112 reconnecting human and natural processes in a planetary context
<b>Estimated Cost</b> 21		<b>Estimated Cost</b> 25	
<b>Estimated Savings</b>		<b>Estimated Savings</b>	



Various publications by SLOG in combination with SLO Green Build's Appropriate Technology committee shown above.



Combining Option 3, which uses harvested rain water for indoor, non-potable uses, with direct use of graywater for landscape irrigation increases the water conservation advantages of the system.

Benefits	Effectiveness Rating	Benefits	Effectiveness Rating
Reduce Runoff	6	Reduce Runoff	3
Recharge Ground Water	3	Recharge Ground Water	4
Improve Water Quality	6	Improve Water Quality	8
Conserve Water	6	Conserve Water	8
<b>Total</b>	<b>21</b>	<b>Total</b>	<b>25</b>

A page from an informational pamphlet showing research conducted by SLOG and SLO Green Build for the County of San Luis Obispo's Septic Decommissioning and Reuse Plan for the Los Osos Wastewater Project.