Design Charrette

Scrapbook

Sustainable Community Homes

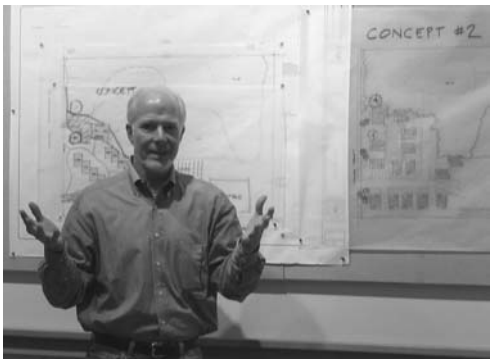
A Fourth Project of Lopez Community Land Trust

Lopez Island, Washington

March 19, 20, & 21 2006

What is a ***design charrette?***

A charrette is a creative, intense work session—a collaborative planning process—that harnesses the talents and energies of all interested parties to create and support a feasible plan that represents transformative community change.



Introduction

Sustainable Community Homes:

On Lopez Island, Washington, a plan has been percolating to build a community of sustainable homes, combining the latest technologies for:

- water reclamation, conservation and renewable energy production with time-tested passive solar designs
- using small footprints and simple designs
- working with safe, durable, healthy, and renewable materials
- in a setting that will honor both the natural environment and the sense of place for all its inhabitants
- with mixed-income neighbors and homes built to be permanently affordable.

An obvious question is— "How would you get such a lofty idea off the ground?"

A not-so-obvious answer is to invite thirty-five professionals--leaders and pioneers in their fields--to Lopez Island for an intensive, three-day design charrette.

In March 2006, Lopez Community Land Trust (LCLT) and A World Institute for Sustainable Humanity (A W.I.S.H.) did just that. What follows is a sketch of the process and results of that charrette.

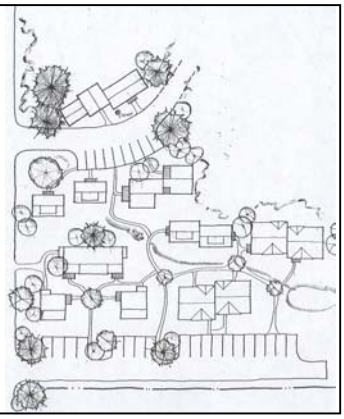
Desired outcomes from the charrette:

Drawings to illustrate design concepts, including:

- Sketch of site plan for 7 acre site
- Floor plans of two sample homes, and office & resource space

Written program addressing overall site, homes, & systems

Estimated costs and lifecycle information, outlining upfront costs and monthly operating costs



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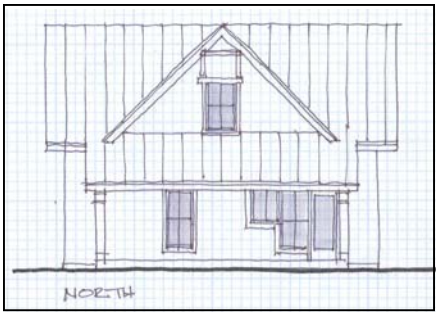


After the Charrette

Before the Charrette

Biographies Of Participants

Richard W. Hobbs FAIA, Strategy Design Inc., Facilitator

Richard Hobbs FAIA, provides vision and strategy for the Design Community. He is a proponent of Strategic Thinking and the Integration of Strategy, Design and Implementation for clients utilizing the design process, including professional service firms and organizations.

Vision Team

Lopez Community Land Trust (LCLT)

LCLT Board Members:

Cam DeVore, Read Langenbach, Bruce Creps, Todd Goldsmith, Diana Bower, Sue McCullough, Oscar Smaalders, Bill Evans, Kathy Keller, Jeffrey Dyer, Jamie Stephens

Sandy Bishop, *Executive Director* and **Jan Scilipoti**, *Assistant Director*

Sandy is the Executive Director and co-founder of the Lopez Community Land Trust (LCLT). Sandy does project management for local community based development. She has 16 years experience in managing a variety of projects: affordable housing, a children's center, skate park, farmers market site and community garden; complete with a solar-operated, surface catchment watering system and straw bale building.

A World Institute for a Sustainable Humanity (A W.I.S.H.)

Michael Karp, Executive Director

Michael is the founder, President and Chief Executive Officer for A World Institute for a Sustainable Humanity (A W.I.S.H), an international non-profit organization that creates models for sustainable solutions. A W.I.S.H is the umbrella organization for many sustainability projects around the world (see website at www.awish.net). He is also the Principal of Michael Karp & Associates, Inc., a national public interest consulting firm specializing in low-income energy issues, but working on many other issues of sustainability topics. His past clients span thirty states (including regulatory commissions, attorney general's offices, other state departments), the federal government, national foundations, and community based and public interest organizations.

Chuck Eberdt, A W.I.S.H. Board

Chuck has more than 25 years experience in energy efficient residential construction. He helped plan the first resource efficient building construction conference in Seattle in 1993.

Dave Finet, A W.I.S.H. Board

Dave provides experience in home performance contracting. He is involved in energy efficient, healthy home design and retrofit. Dave is an advocate for, and proponent of, modest sized housing with minimal operating and maintenance costs, as well as the 500 year home.

Design Teams—Architecture

Greene Partners Lopez Island, WA

***Joe Greene**, Architect, has extensive experience in residential design in the San Juan Islands. His design approach starts with a deep understanding of the land and the natural elements. As a Northwest architect, he furthers the marriage of site and structure, and takes great interest in the careful detailing of building envelopes and systems to create lasting buildings. His interest in green building comes from his personal connection to the natural environment.*

***Nancy Greene**, Designer, has worked in all aspects of the design and building field with an emphasis on project development and management. Her work at Greene Partners centers on construction management, site evaluation, building and interiors design, materials selection and lighting design. Her interest in building community is reflected in her volunteer work with Lopez Center and the San Juan County Land Bank. Nancy is also a member of the SJC Eco Building Guild and has participated in the Navigating Our Future Conference and Green Building Forum.*

***Todd Kegerreis**, Architect, has experience ranging from large scale commercial projects, industrial and health care facilities, to small sustainable residential design. As part of M.U.D. Design-Build on Lopez, he helped complete the first permitted contractor-built straw bale structure in San Juan County. His approach to design reflects his strong interest in environmentally-responsible design and construction. His past affiliations include the American Institute of Architects, the AIA Committee on the Environment, Cincinnati chapter and The Alternative Energy Association.*

Mithun Seattle, WA

***Bill Kreager**, FAIA MIRM, excels in making vibrant communities that speak to the distinctive lives of the people who live in them. Bill honors the notion of creating healthy habitats, and is passionate about using land and natural resources wisely to support the well-being of a community's inhabitants.*

***Mike Fowler**, Architect, has an extensive 18-year career specializing in residential, academic, and commercial design for projects along the East Coast and in the Pacific Northwest. In October 2004, Mike presented "Efficiency + Generation + Responsibility: An Equation for Sustainable Energy" to the Navigating Our Future Energy Forum on Orcas Island.*

***Erin Jacobs,** Landscape Designer, is passionate about design that reflects the contextual identity of a place – from its ecology to its community needs. Through the use of native plants and by making smart design choices, Erin weaves landscape architecture with functional environmentally intelligent site planning that reflects a place's specific history and character.*

Living Shelter Design Issaquah, WA

***Terry Phelan AIA**, specializes in sustainable home design employing appropriate healthy, energy-efficient, and alternative methods and materials. She is skilled at deep listening and intuitive understanding, employing creative problem solving to arrive at win-win results, and teaching through the hands-on process.*

Christopher Stafford Architects Port Townsend, WA

***Chris Stafford**, Architect, identifies environmentally responsible design opportunities, ensures these opportunities are incorporated in the scope of work of each project, and provides sustainable design tools for future projects.*

Technical Team

Michael Budnick & Laura Gibbons, Northwest Concepts Inc. , Land Preservation & Restoration

Michael is a creative land use consultant specializing in low impact, ecologically sensitive design solutions to preserve and restore home owners land throughout the construction process. Based on Orcas Island, Michael has over thirty years of experience in all phases of residential and commercial landscape design and construction.

Dana Brandt, Ecotech Energy Systems

Dana owns Ecotech Energy Systems, a renewable energy design and installation company. He has renewable energy experience from four continents, and holds a Master of Science with Honors in Renewable Energy from Loughborough University, England as well as a BS in Electrical Engineering. Dana's current projects include grid-tied and off-grid solar electric and wind power systems. He is also active in the immerging field of micro grids and distributed generation.

Joe Bullock, Re: Sources, Permaculture Design

Joseph is a Permaculture designer, with over 25 years experience with permaculture on his own property in Deer Harbor, Orcas Island. In addition to ten years of experience hosting and teaching courses on permaculture in Deer Harbor, he has also worked abroad.

Lisa Byers, OPAL CLT,
Management and Execution/Finance

Lisa has been the Executive Director of OPAL CLT since 1996. Her duties include overseeing low impact development site design and, increasingly, green building construction.

Judith Darst, Community, Trade, & Economic Development, Energy Code

Judith has a background in regulatory energy requirements, interpretations, and technical assistance. In her current position with CTED, she works closely with building science in weatherizing, repair, and rehabilitation of older low-income homes. She is also responsible for "renewables" and is looking for opportunities to incorporate renewable energy sources into projects statewide.

Tom Froning, Soundesign, Design/Build Contractor

Tom holds a B.S. in Industrial Design and certification in Permaculture Design, and is focused on the understanding of sustainable building practices and products.

Nick Gervasi, Collaborative Design/Build and Construction Management

Nick has provided an inordinate number of years of solid experience in design, construction management, and building practices on a broad range of building types, in a variety of climates, using traditional and various alternative building systems.

Geoff Holmes, Fisherman Bay Sewer District, Wastewater Treatment

Geoff is a former LCLT Board Member with experience as a general contractor and residential builder. He majored in architecture at the University of Pennsylvania and currently serves as the Superintendent of Fisherman Bay Sewer District.

Steve Hussey, Sustainable Building,
Design / Build

Steve started his career in civil engineering. Upon purchasing property in the San Juans, he recognized an urgent need to protect the local fragile ecosystems. He then started training in a wide range of 'green' skills. As a recent graduate of the state-certified 'Sustainable Building Advisor Program' he formed Sustainable Building LLC to act as a local resource for green building knowledge.

Matthew Maher, Green Horizon Builders, Design / Build

Matthew, Design Builder, has experience from both sides of the design table. Matthew sees sustainable community design as the balanced integration of architecture, systems, and human environments. He offers professional alternatives for today's changing world.

Christopher Mare, Village Design Institute, Village Design

Christopher's work is devoted to Ecovillage and Urban Village Design. He served as Curriculum Coordinator for Global Ecovillage Network and has conducted residential Ecovillage Design Courses for the Village Design Institute. He holds a self-designed BA: "Village Design: Ekistics for the 21st Century"; and a MA: "Whole Systems Design".

Gabriel Olmsted, OPAL CLT, Project Management

As project manager, Gabriel has coordinated the development and implementation of OPAL's green building guideline. She is currently planning a sustainable development "track" of classes for the upcoming National CLT Network Conference.

Suzanne Smith Olson, CLT Alliance & OPAL CLT, Storyteller

Suzanne has been working as the Communications Specialist for the Community Land Trust Alliance of the San Juan Islands since April 2005. Half of Suzanne's time is spent working for the CLT Alliance on educational projects, and half of her time she works for OPAL as a storyteller and editor, and providing support for membership outreach. Suzanne has ten years of experience serving the non-profit sector in Portland, Oregon and holds a B.A. from Prescott College in Literature and Writing.

Bob Paltrow, Bob Paltrow Design, Visual Artist

Bob is the Creative Director of Sound of Light Media Works, a full-spectrum media studio located in Bellingham, Washington that has provided distinctive graphic design, video, photography, illustration and multi-media services.

Pamela Pauly, On the Level, Design / Build Contractor

Pamela, a self-employed contractor, is the co-founder of M.U.D. (Making Unique Dwellings). She is a proponent of design/build concept, including straw bale/cob work.

Melissa Peterson, Enterprise Community Partners, Development Assistance

Melissa, MURP, is a Program Associate working with the Green Communities Initiative to provide development assistance for greening affordable housing.

Mark Tompkins, RS, Health & Community Services

Mark serves as Manager of Environmental Health for San Juan County, Washington.

Chris Webb & Assoc., Inc. PS, Civil Engineering/Low-Impact Development

Chris is a licensed professional civil engineer and a LEED Accredited Professional whose passion and technical expertise is focused on providing civil engineering designs that are based on ecological principles and demonstrate the highest degree of sustainability. Chris works as part of diverse design teams across the spectrum of projects scales from the single lot to large multi-unit developments and from master planning through permitting and construction documents. Chris' sustainable development project experience includes working with many local and state governments, private and public entities, utilities, and non-profit groups. He is a frequent speaker on the technical aspects of sustainability as it is applied in civil engineering.

Eric Youngren, Rainshadow Solar, Active Solar Design

Eric is the lead system designer and installer at Rainshadow Solar, on Orcas Island. His experience includes photovoltaic (PV), wind and micro-hydro electrical systems and solar thermal (hot water) systems.

LCLT and A W.I.S.H.

Guiding Design Program

Lopez Community Land Trust (LCLT) and A World-wide Institute for Sustainable Humanity (A.W.I.S.H.) have formed a partnership in order to facilitate the development of Sustainable Community Homes on Lopez Island as a demonstration project for replication. We intend to work with county, state and local jurisdictions for full recognition of a host of demonstration features. During the design charrette these features will be explored for consideration.

LCLT and A W.I.S.H. are committed to producing affordable homeownership and rental opportunities for Lopezians in a mixed-income, phased development of sustainable zero-net-energy homes along with a combined office/resource center. We are committed to utilizing green building materials and renewable energy resources. LCLT will own the land and forever hold it in trust. The 'Improvements' (homes) will either be owned with re-sale restrictions or rented to qualified households. The land on which the Improvements sit will be leased under the terms of a 99-year, one-time-renewable ground lease. This stock of perpetually affordable housing is intended to serve the community of Lopez for many generations to come. Phase I will take place on approximately 2 acres of a seven-acre parcel owned by LC LT in Lopez Village.

We imagine utilizing materials that have a long life and do not harm the environment. Technology breakthroughs are welcome but the emphasis is first and foremost on elegant solutions that are functional, simple and cost effective. Passive solar, high insulative values, fresh air through opening windows, and creating modest living spaces that are warm and welcoming are essential elements.

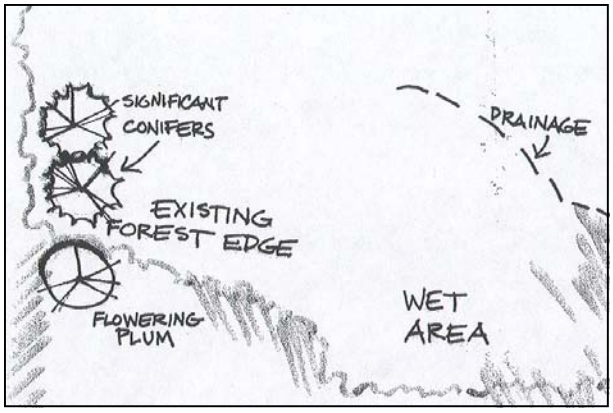
General Guiding Principle for Sustainability

Meeting the needs of the present without compromising the ability of the natural world to meet future needs.

Master plan

The development of the seven-acre site will be phased. The design charrette will specifically focus on Phase I, while broadly defining a conceptual master plan for the seven-acre site. Phase 1 includes the new construction of one resource center /office space with two SRO's (Single Room Occupancy) attached and up to 14 additional dwellings in a mixed-income neighborhood.

LCLT has no specific future plans but does not want to preclude options as we develop Phase I. Additional phases need to include sites for future affordable housing development and agriculture and forest set-asides.



Guiding Specific Principles for Sustainable Community Homes

Based on LCLT Housing Committee recommendations

- Select a development team with 100% commitment to the project Purpose and Guiding Principle
- Make development decisions based firstly on sustainability while assuring decisions are fair, cost effective and subjected to a predictable process
- Model buildings and infrastructure on natural systems in which there is little to no waste
- Mixed land use for work/live/agricultural possibilities
- Mixed income development
- Utilize perpetual renewable energy income sources to produce zero-net energy homes
- Foster distinctive, esthetically pleasing homes with a strong sense of place
- Recognize the importance of open space, farmland, natural beauty, and critical environmental areas in all final design schematics
- Encourage community collaboration in all phases of development
- Plan to share knowledge
- Create a walk-able neighborhood and address other various transportation choices
- Be a demonstration for both subsidized and market based developments

Major Project Considerations

The charrette team will work collaboratively to conceptually design modest structures that are friendly to users and the surrounding environment while meeting code requirements. In addition, the team will need to keep in mind that there will be volunteer participation during the construction phase. Volunteer labor is a crucial element in meeting affordability.

Functional Requirements— Resource center/office with combined Single Room Occupancy's (SRO's) and shared kitchen:

The office/resource center is specifically intended as a demonstration site open to Lopezians and visitors alike. Relocation of LCLT to this new location is critical in order to allow more public access to sustainable building techniques and land-use practices. It will also provide secure, affordable office space.

Considerations: Natural filtered light, good ventilation, passive solar, living roof, wastewater treatment, straw bale construction, composting toilet, rain gardens and other demonstration elements that meet the stated criteria throughout this document.

One shared water and sewer and electrical hook-up is crucial for affordability.

Approximately 770SF of office/resource space with two additional SRO's of up to 400 SF each. Total SF of building: 1,570 SF.

The main entry of the office/resource center can blend with a workstation and greeting area. Need wall space for displays and resource information with a sitting area for two-three people. Must have place for coats near entry. An area with shared access to the fax machine, copier, printer and other office equipment – does not need to have a separate room but needs a sense of privacy (information). Two or three small (100SF) office spaces with closing doors. One office will need a private outside entry as well as entry to the shared space.

The area between the office/resource center and SRO's will house a kitchen and accessible bathroom for use by staff and groups. The kitchen will also be available to SRO occupants periodically. The room where the kitchen is located should be large enough to hold 10 people around a meeting table and have a space for food preparation. A double sink, oven with cook top, refrigerator and food prep counter is necessary. An accessible bathroom with a hand held shower, needs to be nearby. Bathroom should include adequate storage for paper and cleaning supplies. This combined space is approximately 300 SF.

Storage space is crucial but need not be full headroom. Consider eaves, loft or other space that is not a premium to build. Storage includes approximately 30 file folder boxes, construction documents, outdoor tables, photographs and displays.

Two SRO's are flexible rental spaces designed for long-term occupancy or transitional housing. Each space will have a sitting/living/sleeping area with an accessible bathroom. The SRO's do not have kitchens but will have counter space enough for food prep, a toaster oven, tea-kettle, and a small cooking surface of some type. An under-the-counter refrigerator, and sink are necessary. Each SRO is approximately 400SF.

Functional Requirements— Homes

Specific features will be decided during the charrette based on the chart above, which represents a best guess for number of units, SF and household size.

Homes need to meet the needs of households ranging in size from single persons to families of 5 or more. Some homes will need to meet universal design for aging in place, while others will need to meet the needs of changing families.

Considerations include: Single Family Units, duplexes or four-plexes, live/work housing and other options including a combination and 'green' demonstration techniques.

Carefully consider designing two basic foot prints – (640 SF and 940SF) and (790 SF and 1090 SF) for ease in building and efficient materials use. Relationship to parking and designing for privacy need to be carefully thought through. Accessibility is an issue for some.

Square Footage Guidelines

Total SF of project is estimated at 14,130 SF of heated space and 3,380 of non-heated space as follows:

Square Footage Guidelines—Homes and Office/Resource

Unit	*# Units*	*People*	*BR*	*Bath*	*Kitchen*	*Heated*	*No-heat*	*Porches (es)*
SRO's	2	1	1	1	0	400	70	100
Office/Resource	1	0	0	1	1	770	0	100
640 sf	2	1-2	1	1	1	640	70	100
790 sf	4	2-3	2	1	1	790	80	120
940 sf	4	3-4	3	1	1	940	90	120
1090 sf	4	4-5	4	2	1	1090	100	140

A Common building for shared office equipment, laundry and guest space may be considered but is not included in the budget or SF estimates. A carport may also be considered, though, like the common building, it represents a larger funding challenge and brings forth a host of other issues regarding resource footprint use. Square footage estimates are as follows:

Square Footage Guidelines—Common Area & Covered Parking

Unit	*# Units*	*People*	*BR*	*Bath*	*Kitchen*	*Heated*	*No-heat*	*Porch (es)*		
Common		1	0	0	1	1	1090	0	140	
Covered Parking *of required. parking)*		1	0	0	0	0	0	4000	0	*(1/2*

Site Design

Note every item below is deemed Essential unless otherwise noted

Key: E=Essential D=Desirable O=Optional

1. Cluster homes
2. Minimize impervious surfaces
3. Follow natural topography
4. Create an edible landscape **(D)** with low water techniques and incorporate native (existing) vegetation in final design
5. Orient houses for daylight/solar gain**(#1),** privacy **(#2),** connection**(#3),** and view**(#4)**.
6. Locate infrastructure to preserve natural elements and to minimize disruption
7. Provide "private" outdoor spaces for each home
8. Plan for deer fencing of whole cluster and not individual homes **D or E (needs context)**
9. Leave a portion of the site undisturbed to provide habitat and bio-diversity
10. Provide for garden spaces **(O)**
11. Conduct soils/engineering analysis to prevent drainage problems and maximize use of prime soils
12. Prioritize pedestrian travel
13. Facilitate natural stormwater bio-detention
14. Design outdoor spaces for multiple uses **(D)**
15. Incorporate rainwater catchment **(D)**
16. Incorporate waste water recovery technology **(D)**
17. Utilize grid connected PV's and other renewable resources
18. Minimize the impact of cars **(E);** provide a hybrid or other non-gasoline flex car **(D)**

General Architecture and Building Design

Note every item below is deemed Essential unless otherwise noted

Key: E=Essential D=Desirable O=Optional

1. Design for passive solar and protect against summer heat—zero-net-energy homes
2. Provide flexible floor plan and multi use spaces
3. Minimize footprint
4. Provide adequate storage (inside and out)
5. Include covered porch/entry
6. Provide insulation values greater than standard
7. Reduce "thermal bridging" with insulated headers
8. Provide adequate eaves to protect siding and for aesthetic appeal
9. Install and maximize ventilation direct to outside
10. Use solar pre-heat for water
11. Design for minimal maintenance requirements (systems, materials)
12. Use local professionals, sub-contractors and suppliers when possible **(D)**

Before the Charrette

Materials / General Design Specifications

Note every item below is deemed Essential unless otherwise noted

Key: E=Essential D=Desirable O=Optional

1. Use sustainably harvested lumber and materials
2. Maintain high level of indoor air-quality
3. If carpet is installed, specify CRI's Green Label Certified
4. Install products (insulation, foam) with low VOC
5. Use water saving/efficient toilets and fixtures or composting toilets
6. Install energy efficient fixtures/bulbs
7. Use Energy Star rated appliances (both individual units and shared)
8. Use daylight/motion sensors or timers on all lighting **(D)** where appropriate and shield lighting for privacy
9. Re-use or re-claim lumber or other building materials (D)

Other

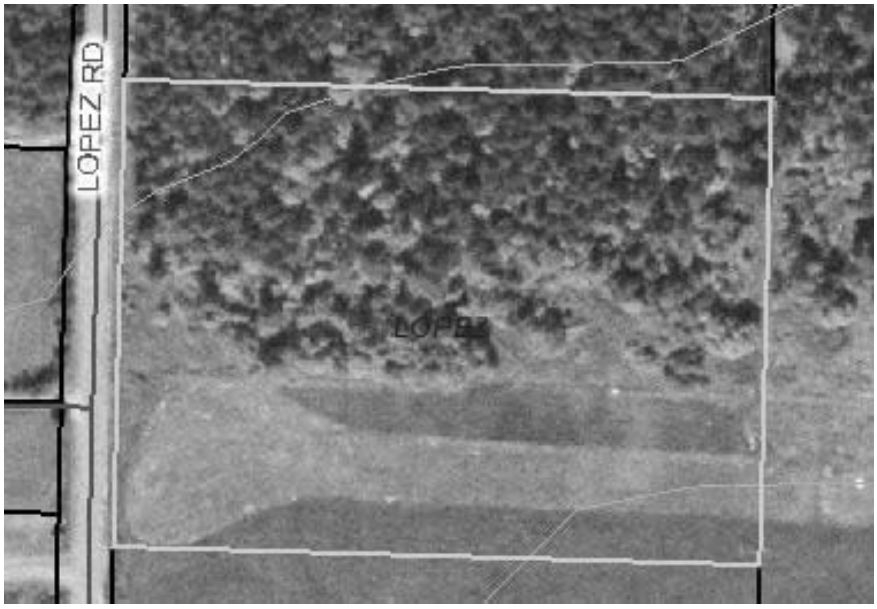
Note every item below is deemed Essential unless otherwise noted

Key: E=Essential D=Desirable O=Optional

- Document the process and create an owners maintenance and repair manual
- Consider a LCLT resource/office space for education, tours and on-going resource for the project with rental space
- Encourage community collaboration in design aspects including exploration of appropriate ownership method and resale formula **(D)**
- Create a central gathering place and a commons with office work space, shared equipment, extra bedroom with bath for guests **(O)**
- Design, fund and manage the project in a manner which recognizes sustainability on all levels (people, organizations, buildings, etc.)
- Include a carport **(O)**

During the Charrette

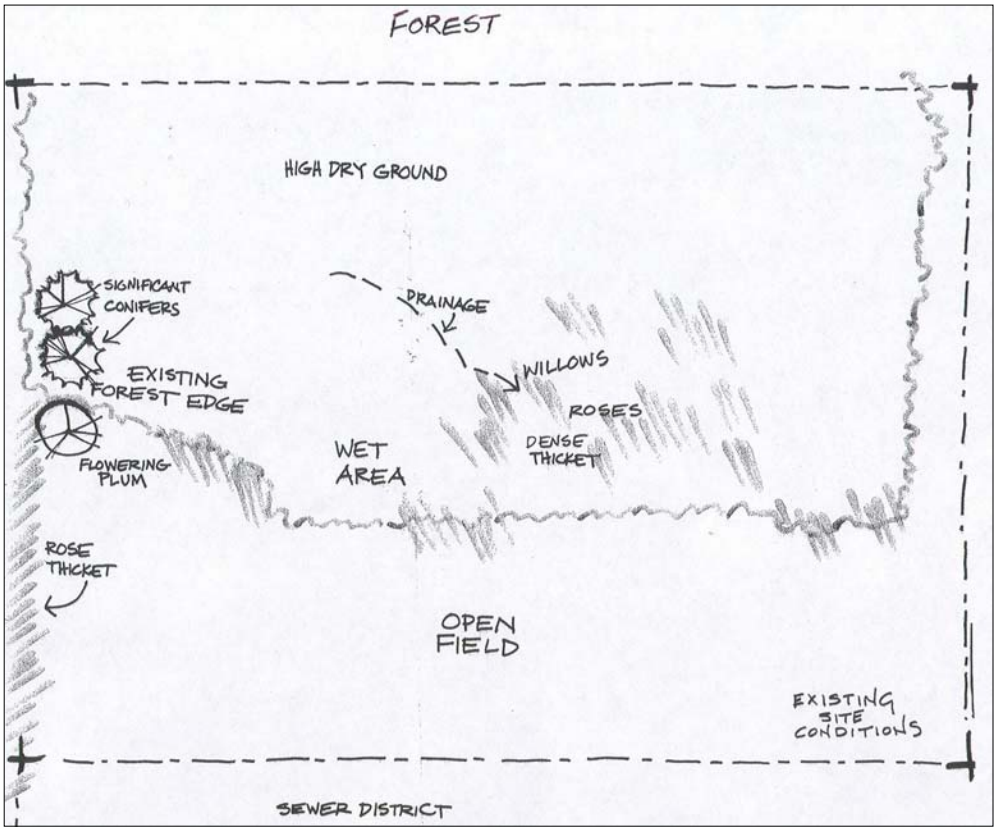
Sunday Walking the Land



The site for Sustainable Community Homes:

seven acres purchased in 2005, within walking distance of Lopez Village.

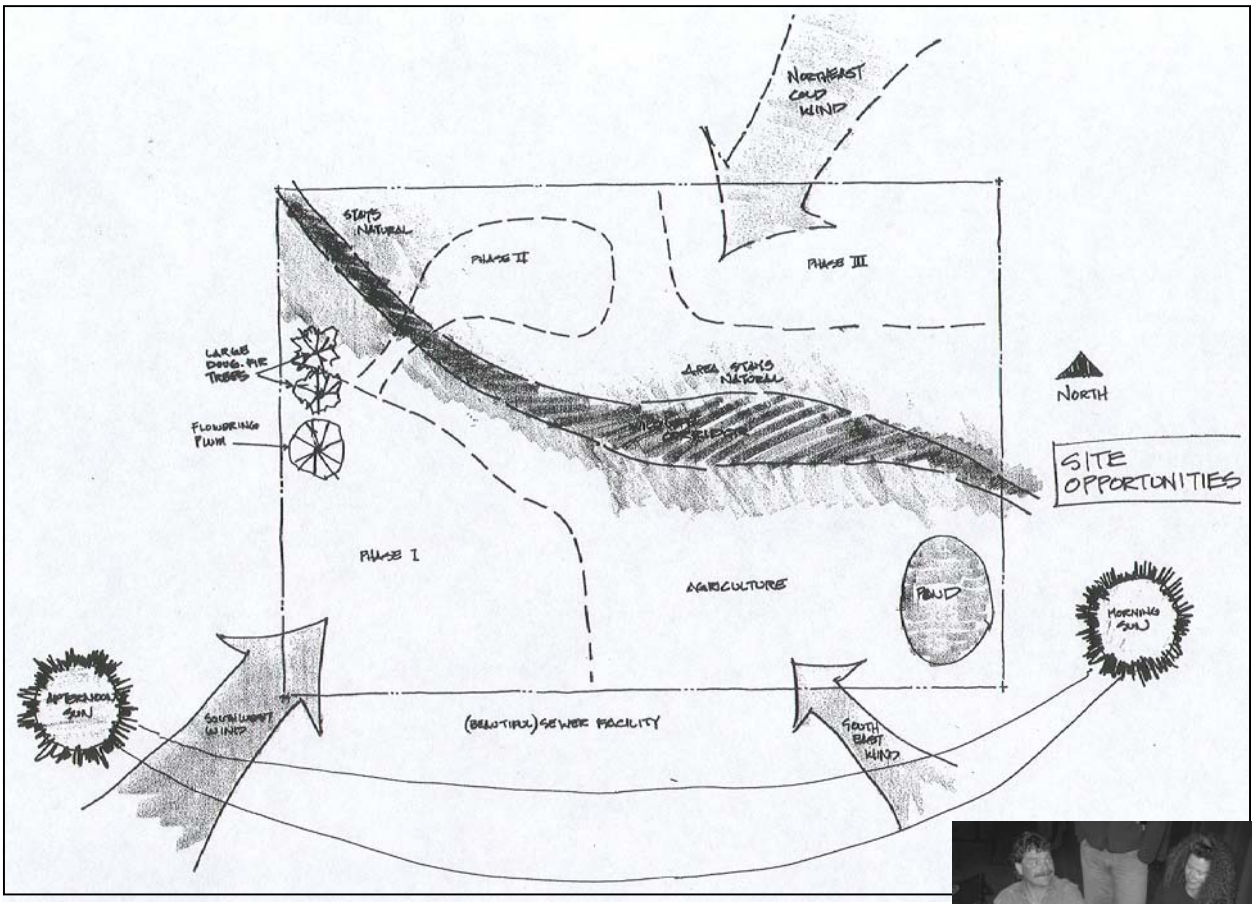
Aerial Photo not to scale



"Existing Site Conditions" Plan

During the Charrette

Taking soil samples from different areas and varying depths.



"Site Opportunities" Plan

During the Charrette

Sunday Initial Reflections

Land

Comments generated by the group after walking the land:

- Use and reuse all materials on site
- Get to know the neighbors on all sides of property
- Allow some of the land to be untouched by development
- Increase the curved 'edge' between the forest and the pasture;
    - boundary is where wildlife feeds
    - create zones for solar generation
    - use for food production
- Recognize the site potential: sun, water, soil
- Create spaces that help make a connection between people and food and the land
- Remember the southern-prevailing wind that goes up the valley in the winter months
- Do not consume more than is produced
- Minimize impact of building on the site; possibly cluster homes near road
- Pay attention to the soils; store according to types during site work
- Watch the trees and learn from them, use the forest as an educational tool
- Capitalize on long-range views across valley
- Maintain the wildlife corridor that runs east to west through the trees south of site
- Pursue the possibility of a shared access with LOHO (senior housing)
- Consult the 1957 "San Juan County Soil Survey" for existing site conditions
- In previous village planning sessions, it was suggested that a visual break be maintained east to west, just north of the Village

Water

Comments generated by the group after walking the land:

- Work toward zero-net-impact: with site hydrology, ground and storm water treatment
- The Fisherman Bay Sewer District treats domestic water only, no storm water, so the design must provide a plan for stormwater runoff
- Use as a demonstration project for innovative stormwater management; make systems visually appealing and process stormwater on site
- Water flows across property from north to south slope. Study the water flow at SE corner of the site; keep the existing site hydrology intact
- Note the large pond on a property to the east, and a wetland to the south
- LCLT land is not classified as wetland according to San Juan County maps

A testing tower for wind power generation will be installed on the site during Summer 2006.

Energy Systems

Comments generated by the group after walking the land:

- Consider phasing the energy systems installation if funding is an issue
- Research the possibility of seasonal micro-hydro power generation in conjunction with the sewer district out-flow
- Test site for wind generation

Building Design

Comments generated by the group after walking the land:

- Use the "sweet slope" to the south for passive solar gain and daylighting
- Locate buildings in clusters tucked against forest edge
- When locating buildings, consider the social aspects and take care not to isolate the residents, but help them relate to broader community instead
- The presence of hawks means mice, which means design rodent-proof structures
- Consider economic development piece of project, possibly related to the proximity of the Village
- Think about residents' lifestyles and plan for flexibility, for instance by providing parking for work-related vehicles
- In the building process, use common sense and sensitivity, causing minimal impact
- Discover any shared goals with county commissioners and encourage collaboration

Fisherman Bay Sewer District

Comments generated by the group after walking the land:

- Water treatment plant is located on 8 acres adjoining to the south, with an 80' required buffer at north edge of their property line
- A new constructed wetland is planned for the summer of 2006 on the east border of their property
- The economical use of potable water is a benefit to the Sewer District, but currently the rate structure does not encourage conservation; explore the possibility of a rate structure that does
- Foster a cooperative effort on zone at north edge of sewer district property; consider maintaining a separation with agriculture production, a windbreak, or soil berm
- May also need separation from the smell; a few days a year the treatment ponds do have an odor; the Sewer District is working with the anaerobic cells to correct

During the Charrette

Monday

LAND Break-out Session

Location of houses

- Possibly cluster at north and west sections of property
- Allow access for vehicles, consider pervious surfaces

Existing Forest

- Create 'pockets' on south edge, possibly bringing edge out instead of cutting in
- Not much variety of native plants exists: enhance diversity
- Build paths through woods with wheelchair access for seniors (LOHO land to north)

Pasture

- Consider a pond in lower area, for recreational use, fishing, or irrigation
- Possible market garden location (run by resident or community member)
- Upper portion could have playing field or outdoor event area
- Seasonal ground water present in pasture; make channels for flow, design plantings to improve percolation

Landscaping ideas

- Nut trees
- Standard fruit trees (will do well in seasonally-saturated soils)
- Remember deer fencing and gate locations, for walking and driving
- Grow blueberries in areas with more water
- Screen sewer treatment along south boundary with a planted buffer zone, either an orchard or with low plantings like bamboo, shrubs, and evergreen choices
- Locate in lower section of land

WATER Break-out Session

Water Principle One: Conservation

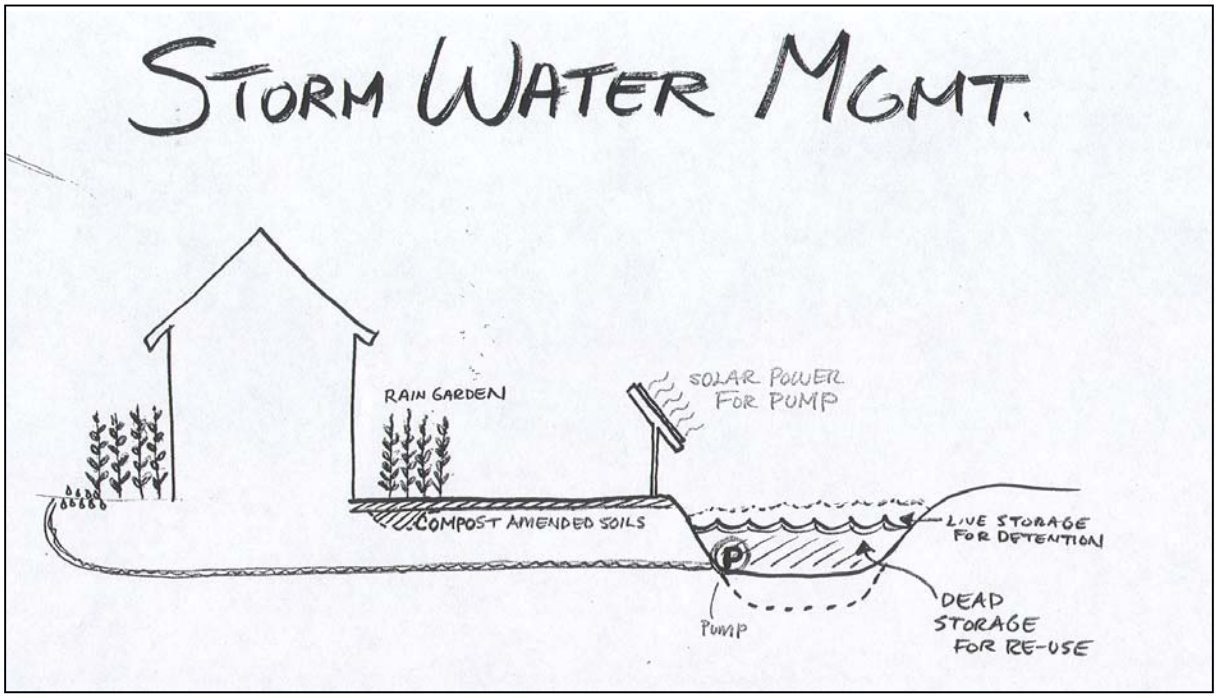
Reduce aquifer drain and the quantity of water that returns to Sound

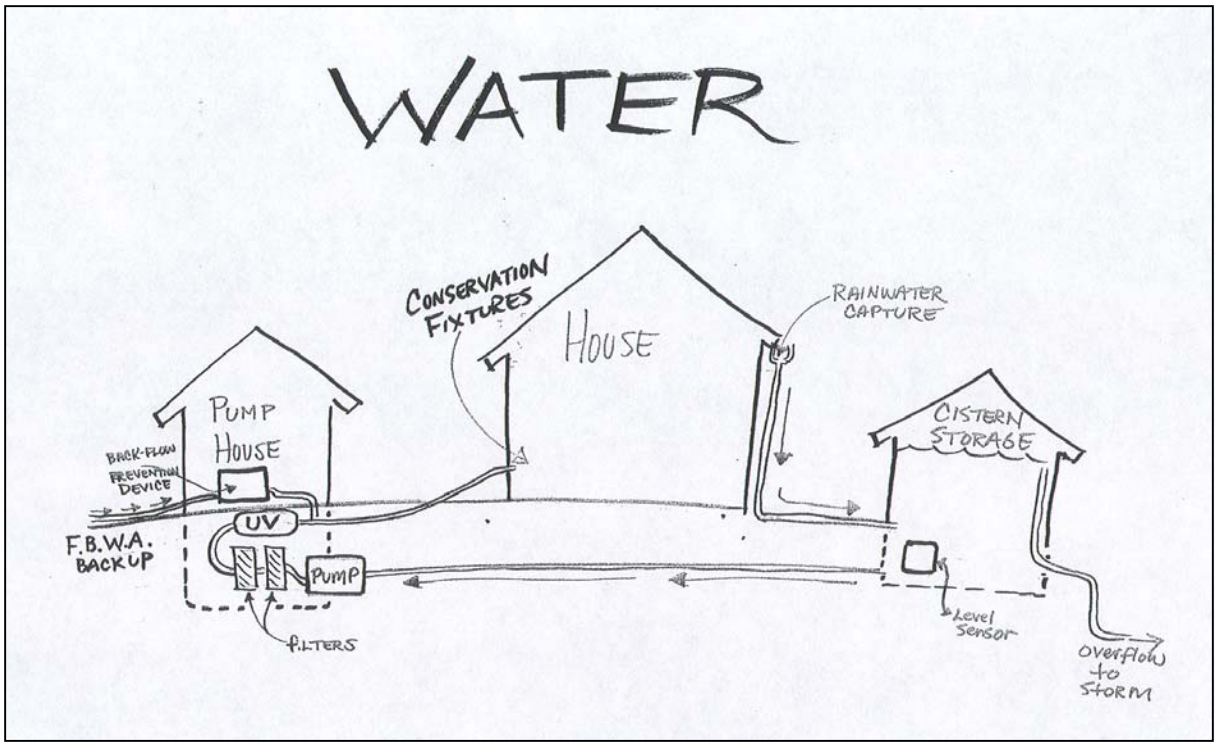
- Educate homeowners in conservation techniques
- Choose plumbing fixtures and appliances carefully
  - choose for water efficiency
  - consider composting toilets and/or dual-flush toilets
  - consider waterless urinals

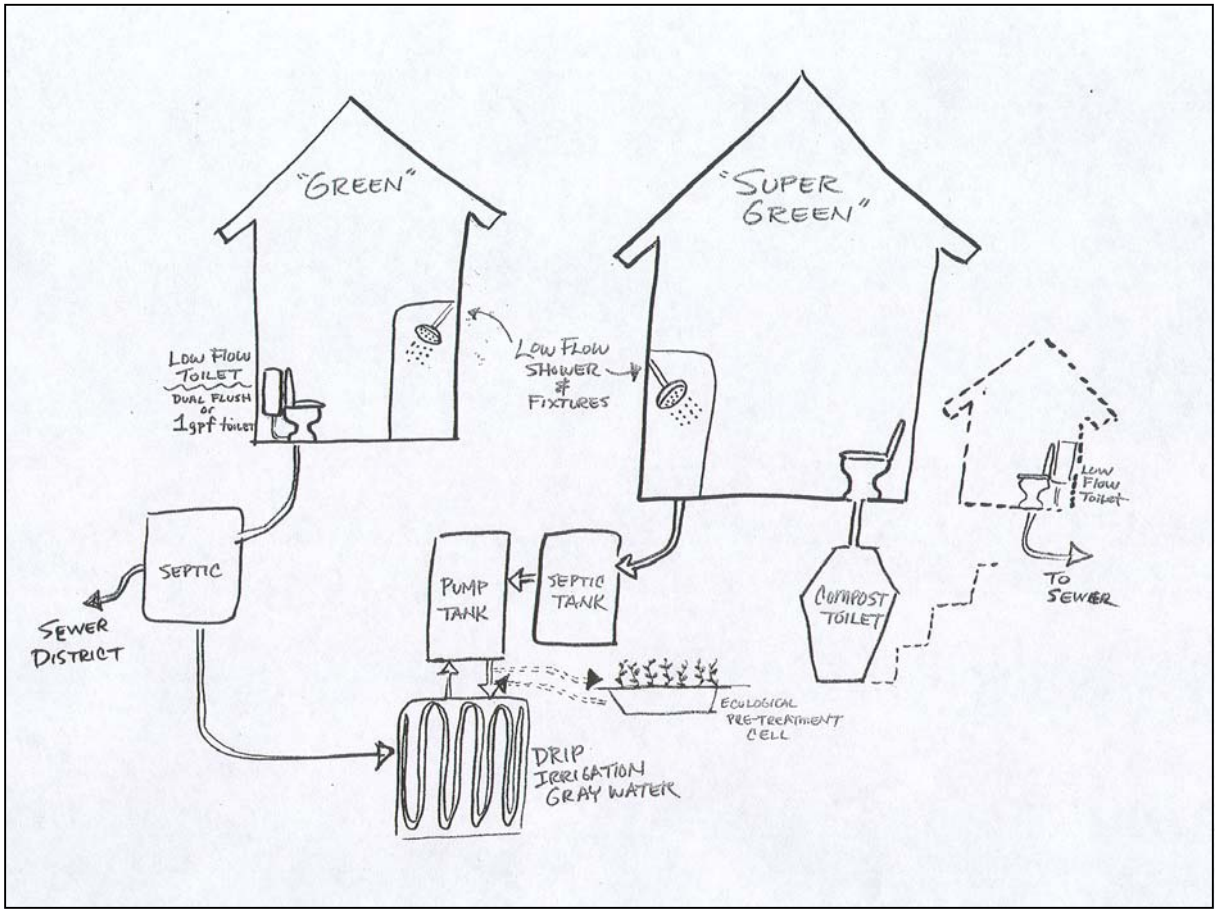
Water Principle Two: Reclamation

Keep waste water and storm water on property

- Reclaim as much water as possible from site, using hummocks, collection areas, and ponds
- Redistribute back to land as quickly as possible
- Consider perimeter drains on each unit to reduce load on each drain
- Use greywater for subsurface irrigation and outdoor (not potable) spigots
- Encourage retention on site to recharge aquifer with:
    - bioswales
    - ponds
    - maximized pervious surfaces and soils
- Use roof catchment greywater for
    - agriculture irrigation
    - toilets and washing machines
- Include water storage, possibly with high elevation silo filled by solar powered pump
- Consider an on-site wastewater treatment facility such as a living system (small constructed wetland), leading to subsurface irrigation for gardens
- Possibly use rainwater catchment for potable water
- Classify as a demonstration project, foregoing water and sewer hookups, including a monitoring system; keep in mind this will be time-consuming to design and may have added expense
- Irrigation for agriculture could possibly be pulled from surface sources with ram pumps
- Pond overflow naturally draining to south/southeast could help disperse existing drainage area and provide wildlife habitat



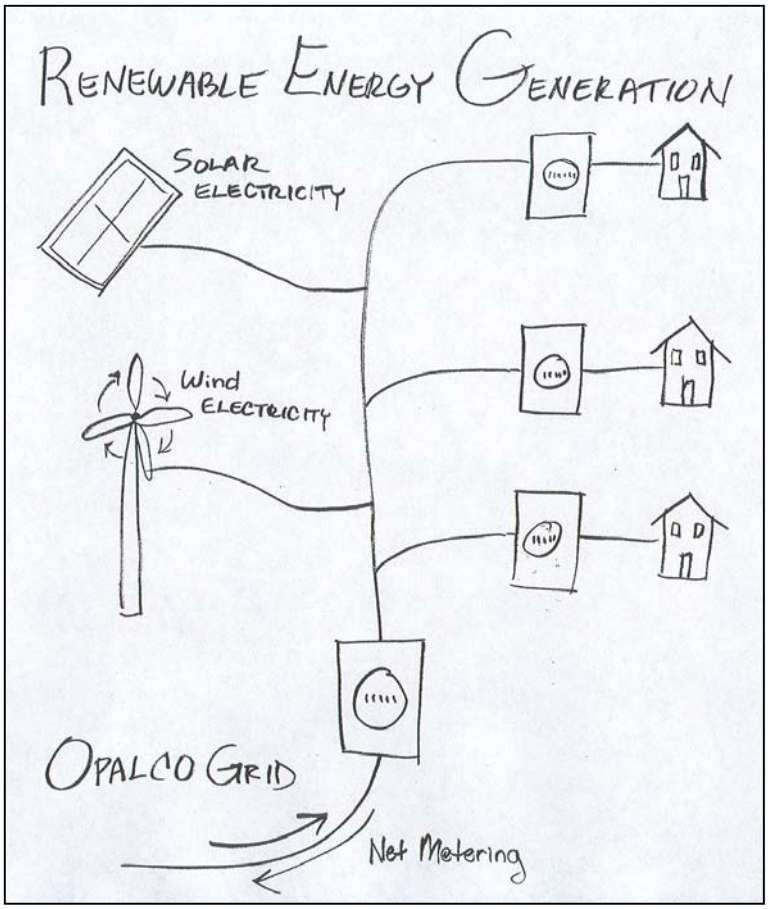

WATER
CONSERVATION FIXTURES
HOUSE
RAINWATER CAPTURE
PUMP HOUSE
CISTERN STORAGE
BACK-FLOW PREVENTION DEVICE
UV
F.B.W.A. BACKUP
PUMP
FILTERS
Level Sensor
Overflow to Storm


"GREEN"
"SUPER GREEN"
LOW FLOW TOILET
DUAL FLUSH or 1gpf toilet
LOW FLOW SHOWER & FIXTURES
LOW FLOW TOILET
SEPTIC
SEWER DISTRICT
PUMP TANK
SEPTIC TANK
COMPOST TOILET
TO SEWER
ECOLOGICAL PRE-TREATMENT CELL
DRIP IRRIGATION GRAY WATER

ENERGY Break-out Session

Renewable Power Generation

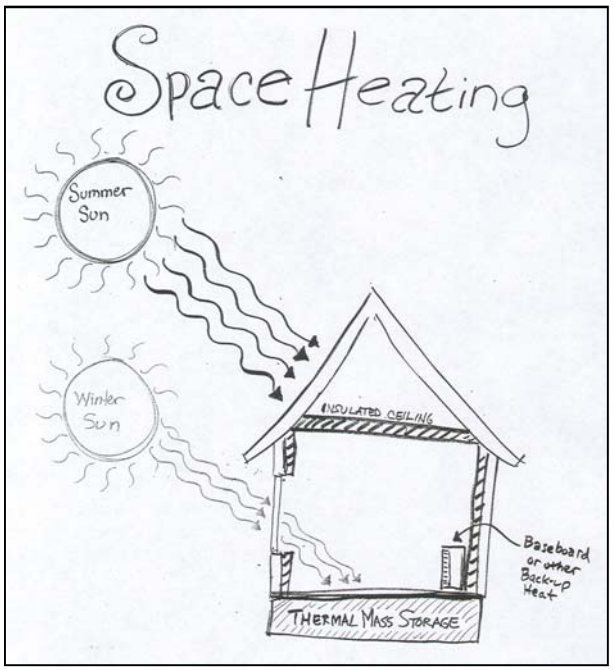
- Locate solar and wind on lower portion of pasture; siting is critical
- Consider phasing the installation to reduce initial costs
- Study site-specific shading devices and plantings
- Monitor wind patterns with anemometer to determine site possibilities for power generation
- Consider the production of power as a revenue source
- Net metering option:
    - one meter for all homes could be advantageous
    - submeter each home to track usage and help homeowners conserve
    - provide financial incentives for using less power
    - possibly buy/ sell shares from neighbors and OPALCO
- Explore the concept of an 'energy farm', with surplus power being sold off
- Encourage conservation by specifying efficient appliances and lighting
- Incorporate daylighting and natural ventilation in homes
- OPALCO's grid acts as "battery bank" for electricity generated
- Initial investment for renewable power production may have long payback time, but this could be offset by increases in OPALCO's energy costs, which are not predictable

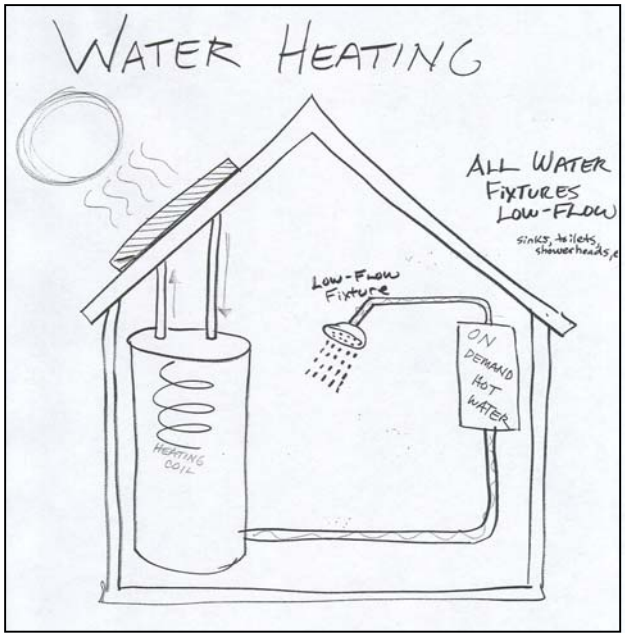


- After a discussion of possibly storing or banking heat in the ground to use later to generate electricity, the recommendation was to store heat as heat and store electricity as electricity (on OPALCO's existing grid)

Ambient Heating

- Passive solar as primary source
- Glazing: amount, location and type important
- Shape of buildings should be rectangular and oriented correctly east to west
- Incorporate shading to avoid overheating: overhangs, trees and/or vines
- Ventilation; use natural convection with a study of prevailing winds
- Heat storage and retention: use thermal mass and insulation
- Secondary heat source options
- Biodiesel
- Wind and biomass (from forest windfall) to generate electricity for small demands
- Consider district or centralized heating as secondary source, combined with hot water heating and solar water heating in slab heat coils
- Solar air heating (TROMBE concept) for domestic heating, with boiler





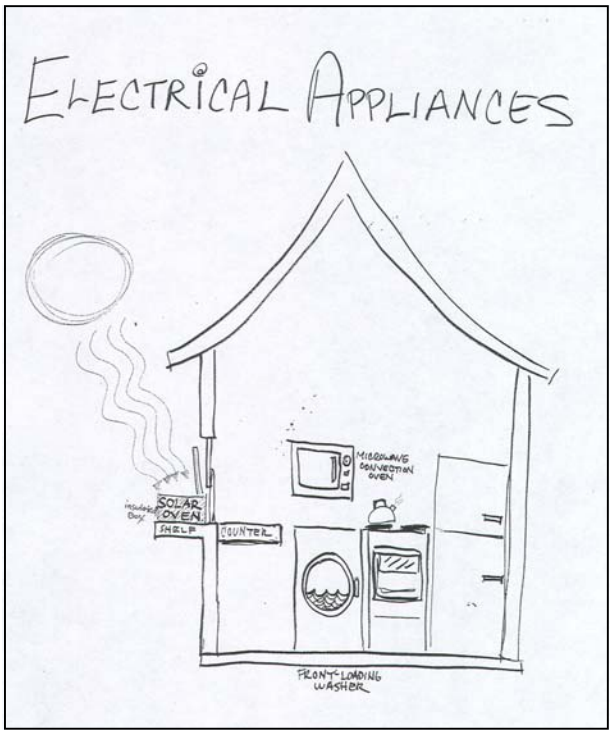
Water Heating

- Primary source: solar collectors (summers and some winters)
- Supplementary source: biomass, district heating, and/or electricity

During the Charrette

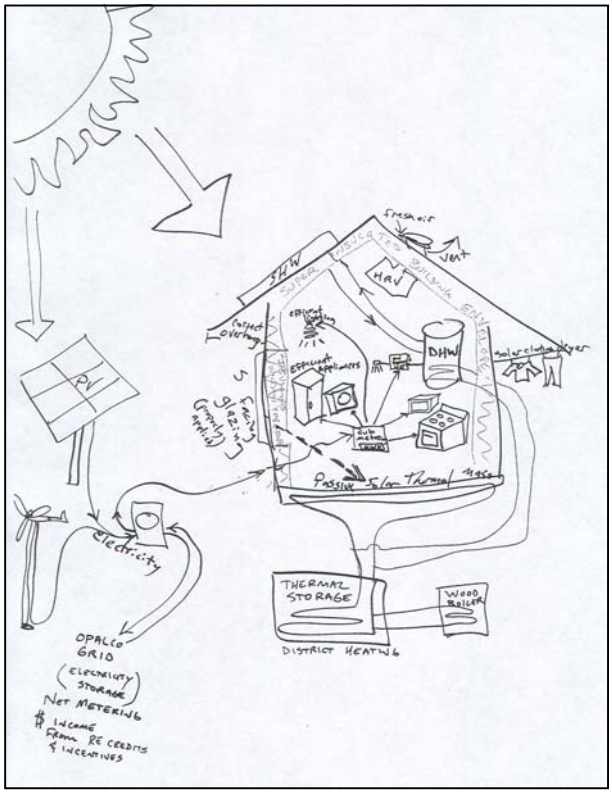
Cooking

- Electric- high loads but possibly from renewable source generated on site
- Propane- a possibility, but is not consistent with goal of zero net energy
- Solar ovens- could be a supplementary source, especially if located in accessible space (on a nearby deck, shared)



Clothes Washing and Drying

- Primary source: the sun (design clotheslines under overhangs and/or on porches)
- Backup source: electric dryer, possibly shared
- Washing machine with high speed spin will have low water use and also remove most moisture from clothes to speed drying
- Design a 'drying room' that has solar access and ventilation, and possibly is shared
- LCLT should control replacement of appliances to continue with conservation measures



Other possible secondary heat sources:

- Heat exchange system considerations include:
  - Type, air-to-air versus ground-to-thermal
  - Installation costs
  - Combining with solar heating
- Solar units—consider maintenance
- Hydrogen fuel cells—storage for hydrogen is problem
- Woodstoves—efficient burning reduces particulates and health risks
- Micro-hydro power generation
  - seasonally only off lower corner of land, or
  - in connection to sewer district outflow

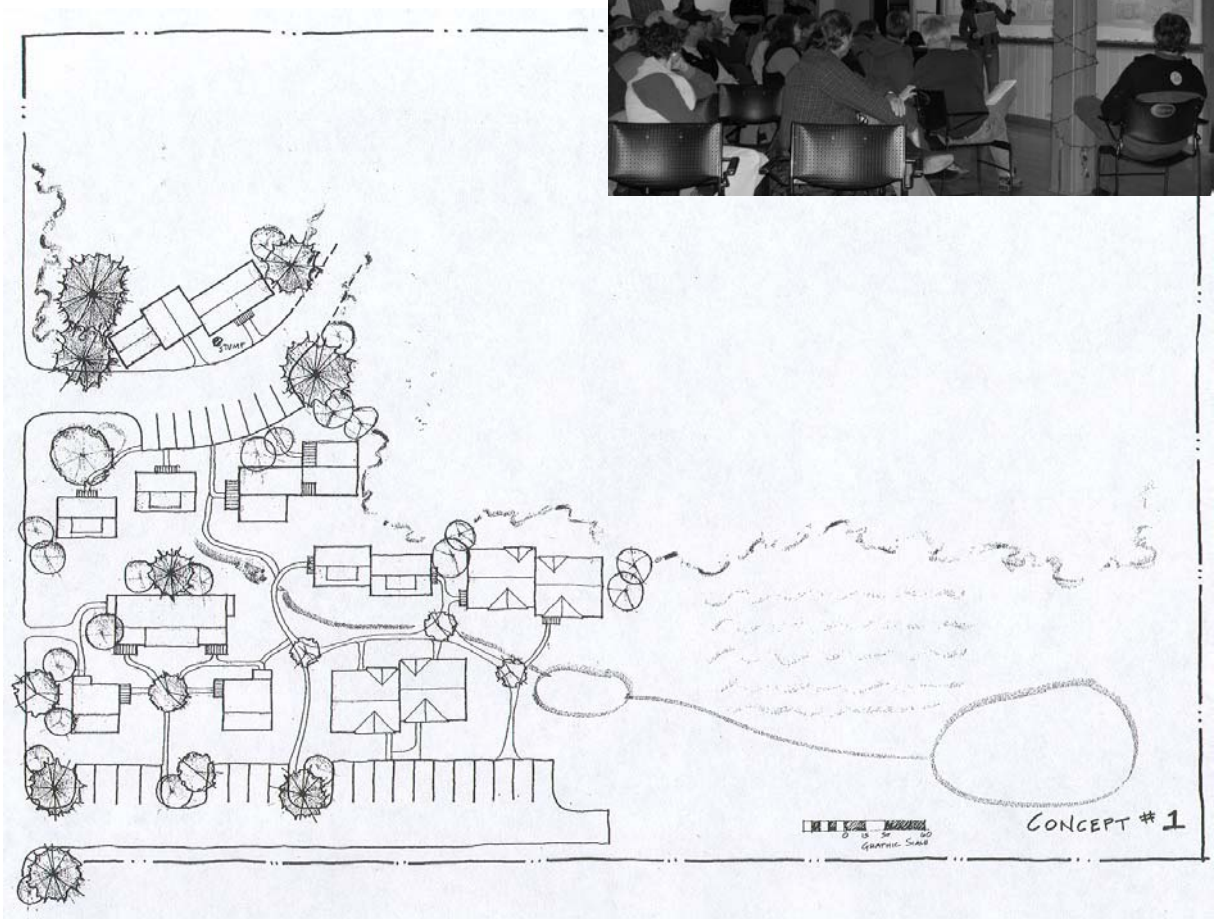
Monday Evening

Community Event

Presentation of Concepts by Architects

Concept Plan # 1

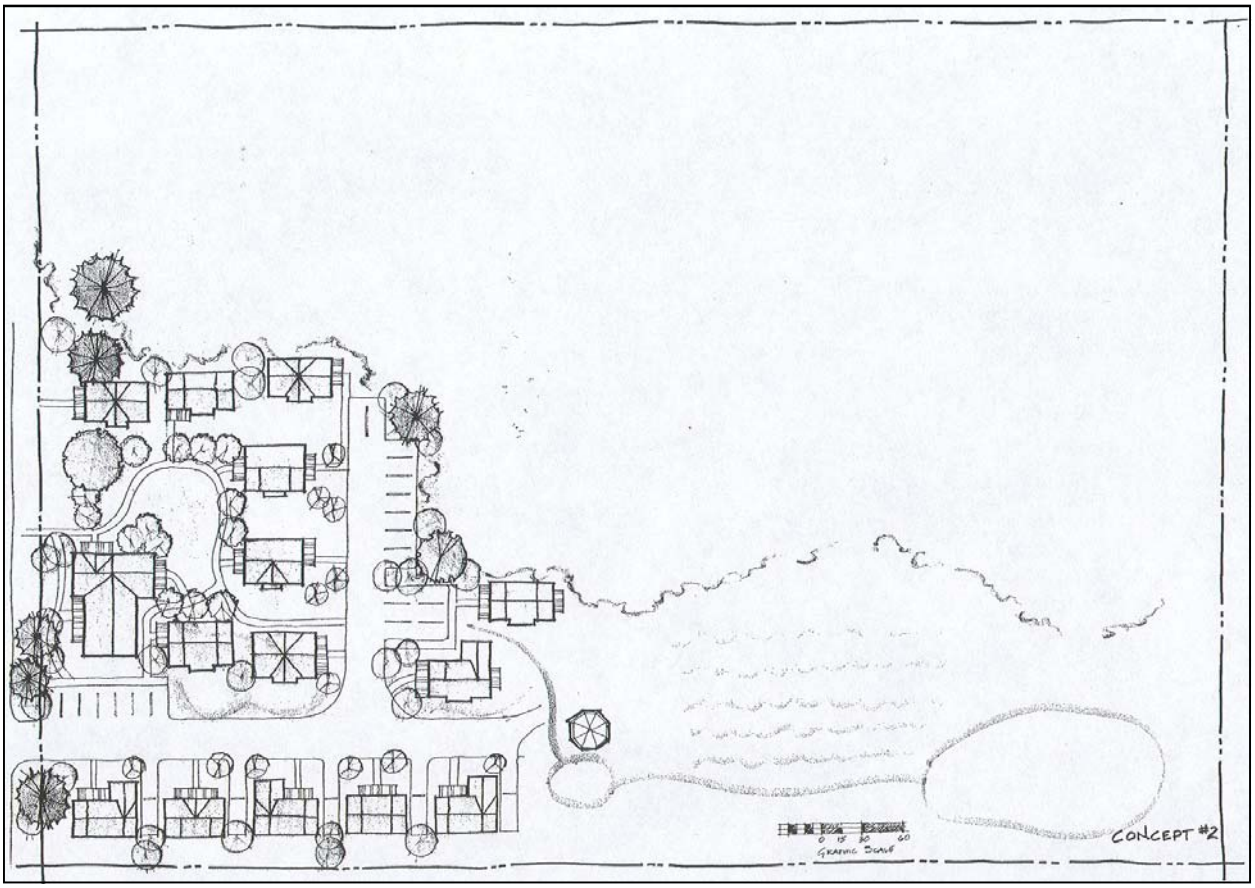
- Isolates parking, locating it along boundary by sewer treatment plant and by the Office
- Office is separate from the housing to increase privacy for the residents
- Stormwater runoff is addressed by showing a seasonal stream that runs between the homes, with paths along and over the stream
- The homes have passive solar orientation, with the long side of the homes facing south and most of the glazing occurring to the south. Smaller, fewer windows are on the north faces, which also enhances visual privacy in the direction toward the nearby homes
- Several different building types are represented
- Some are closer to parking, and have a one story floor plan for accessibility



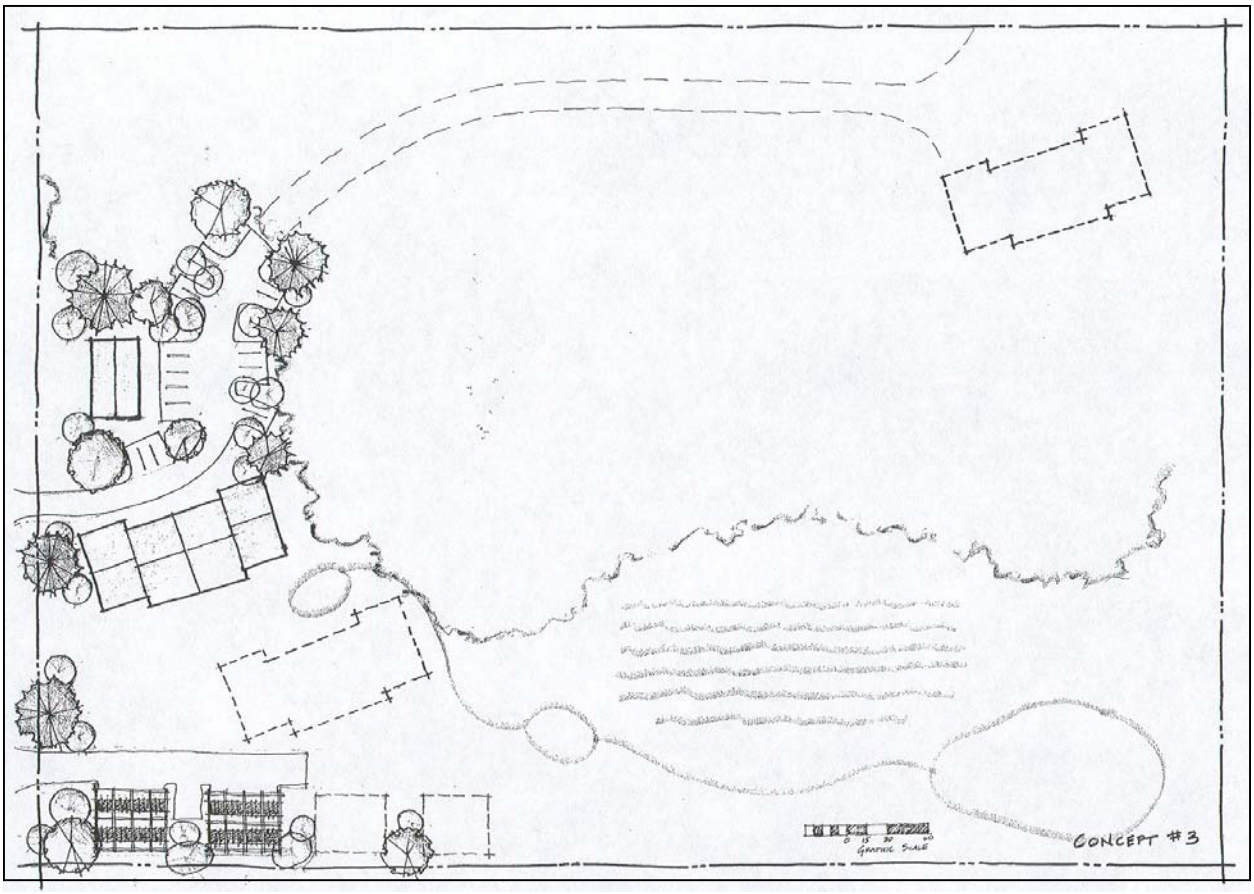
Concept Plan # 2

- On this plan parking is dispersed throughout the site, with some adjacent to the homes and some nearby.
- In terms of phasing, there could be a shared drive with LOHO, which could access future development on the north end of the property.
- The plan clusters the homes, allowing more open spaces.
- They include private garden areas.
- Water flow is shown that represent swales that accommodate seasonal movement.
- The architecture on Lopez has the shared characteristic of having a human scale. These detached homes with close parking are similar to existing Lopez homes.

- Coho and Morgantown are both 'behind' parking lots and berms, with their backs turned to the community. This plan shows the village centering around a green common area, with views toward the SE and the pond.
- The orientation of the buildings responds to light, for passive solar access.

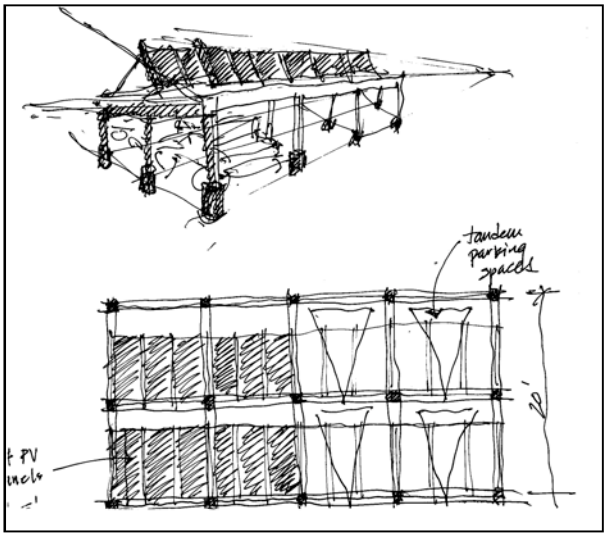


During the Charrette



Concept Plan # 3

- The homes are consolidated in larger 2-story structures. Connecting the units in this way uses the smallest overall footprint on the land.
- As in the previous version, these units all have outdoor space in the form of a patio or an outdoor deck, which could support container gardens.
- To reduce the scale of the building visually, the façade steps back several times, and the second floor steps back from the first.
- Shown here also is an idea for a PV arrays that are mounted above carports, acting both as solar collectors and protection for the vehicles below.



During the Charrette

Monday Evening Community Comments

Characteristics Desired in the Project

Generated by potential residents and other interested Lopezians attending the Community Event

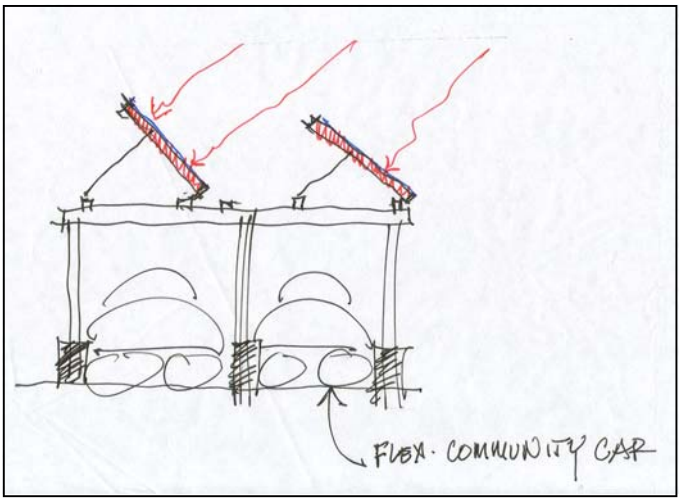
- Local parking
- Universal access (accessibility, ability to "age in place")
- Planning for all ages – diversity
- Encourage interaction between nature and people
- Create a master plan for tree areas: include LOHO land and entire area
- Foster education and awareness
- Plan for growth: 20-year plan, including education with community
- Access to exterior for children and pets
- Community garden for residents
- Food grade kitchen to share
- Private garden near each home
- Mitigate sewer treatment proximity
- Workshop space? Possibly as a rental to homeowners
- Shared dryers, tools, etc.
- Plan for shared maintenance
- Enhance open community connection
- Optimize views 'out'
- Paths, paved, with access to home with larger equipment
- Consider future residents; build in flexibility for our legacy
- Long life span; durability

During the Charrette

Tuesday Post-Community Event

Responses

Comments generated by design teams regarding Monday Evening Community Session

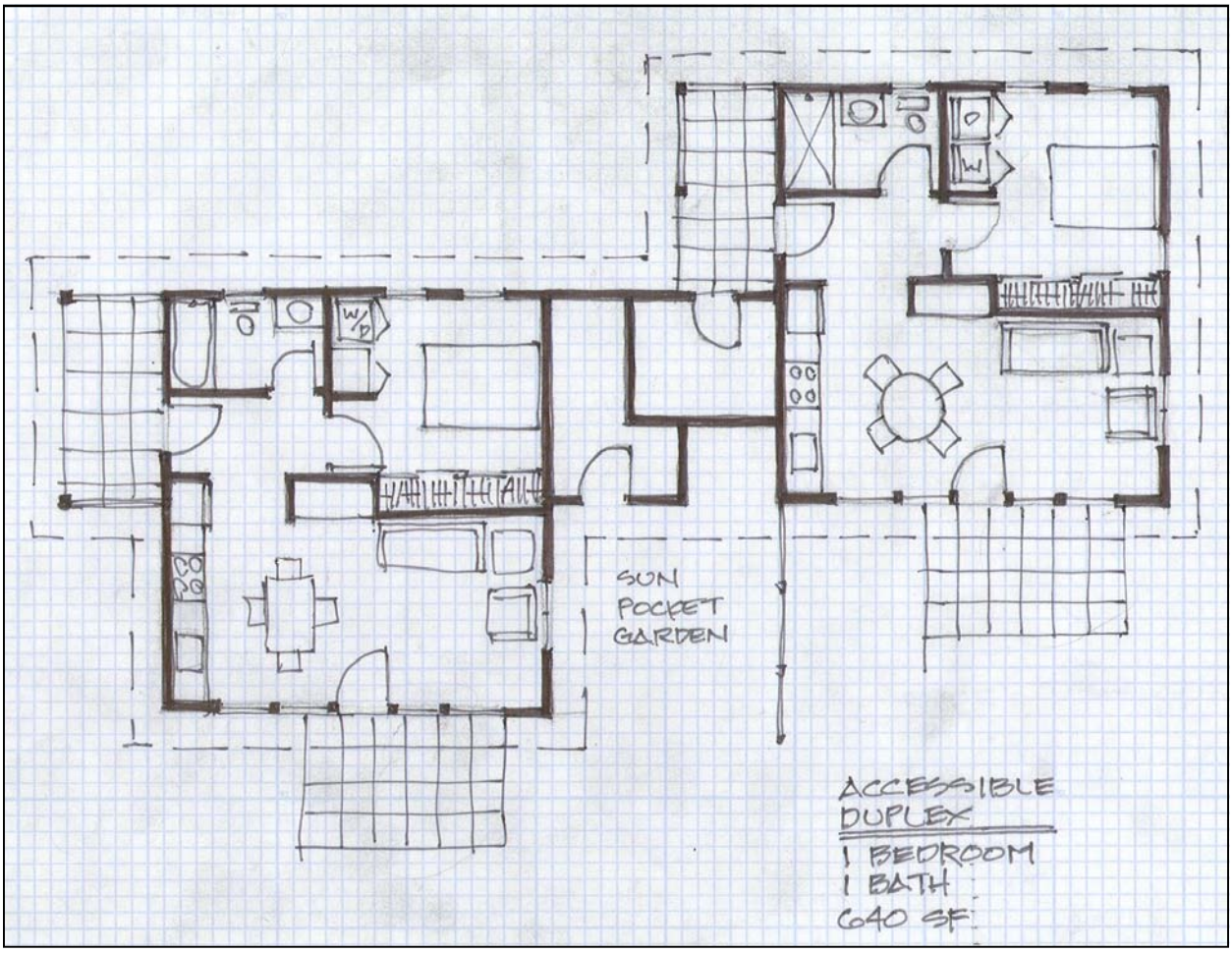


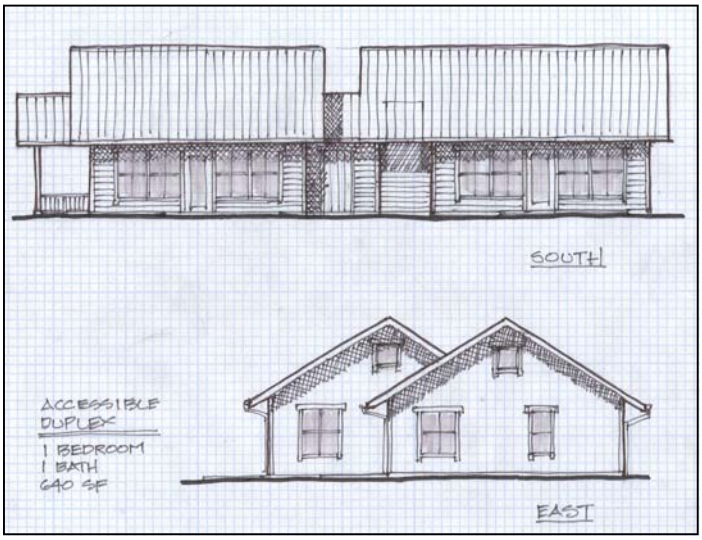
- Provide post-it notes for focused comments
- Consider dividing the homes into 'Green' versus 'Supergreen', allowing interested homeowners to be more conserving in their lifestyles
- Show future expansion possibilities on the site plan
- Include potential floor plans to engage potential homeowners in the homes
- Illustrate the character of the houses
- Emphasize the solar orientation and daylighting features
- Note the location of the LOHO (senior housing) land to the north and indicate a possible shared drive between the sites

During the Charrette

Tuesday Plans and Elevations

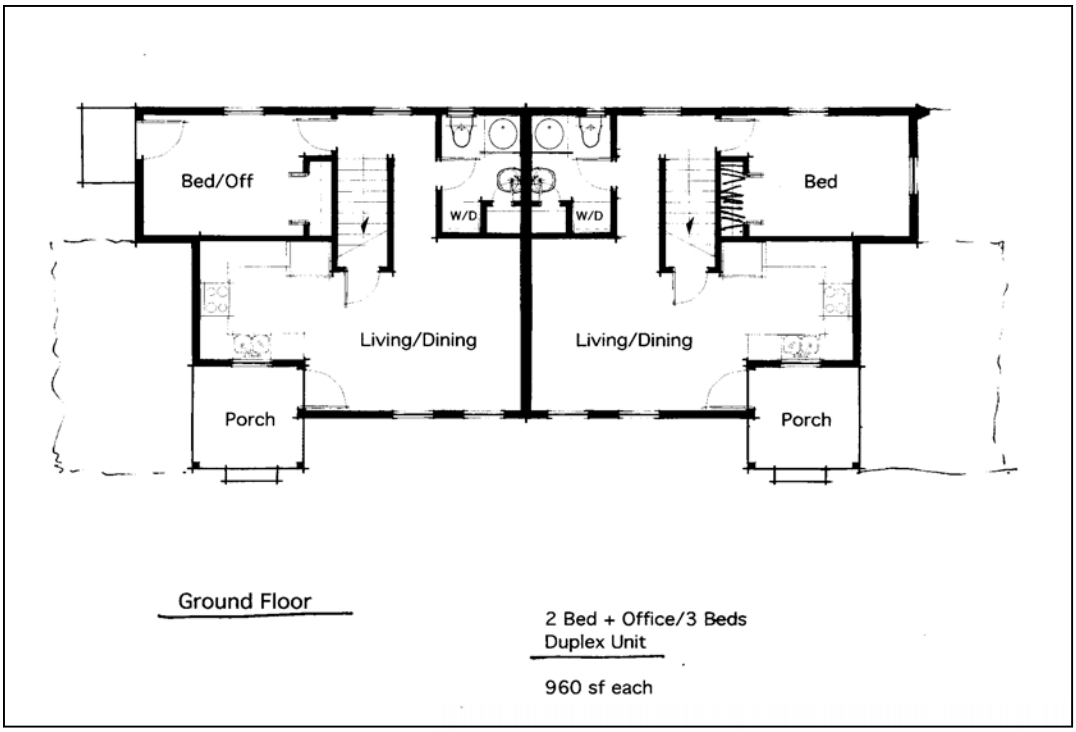
All not-to-scale





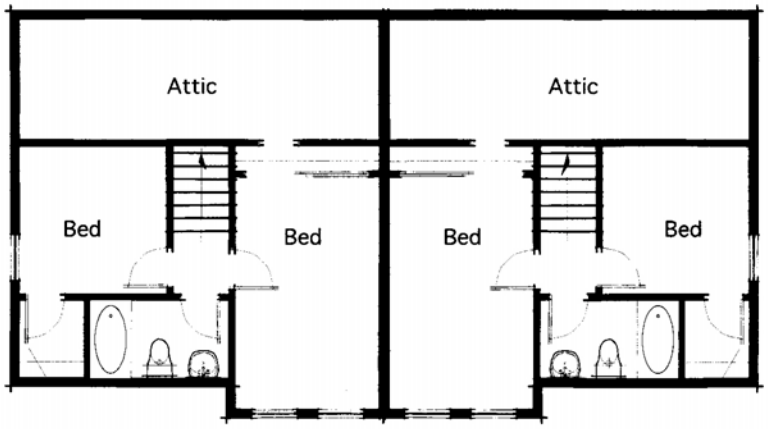
'Plum' Plan and Elevation

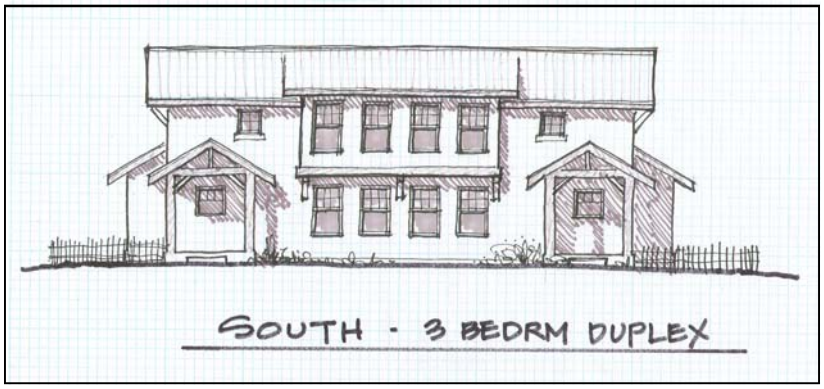
- Accessible duplex, 640 sf
- 70sf of unheated storage is located in between the duplexes, providing privacy.
- Living spaces are to the south, opening onto an outdoor patio.
- Discreet fencing encloses a private outdoor area.
- The bath is accessible.
- The homes have a comfortable cottage style, with a porch and a metal roof for water catchment.

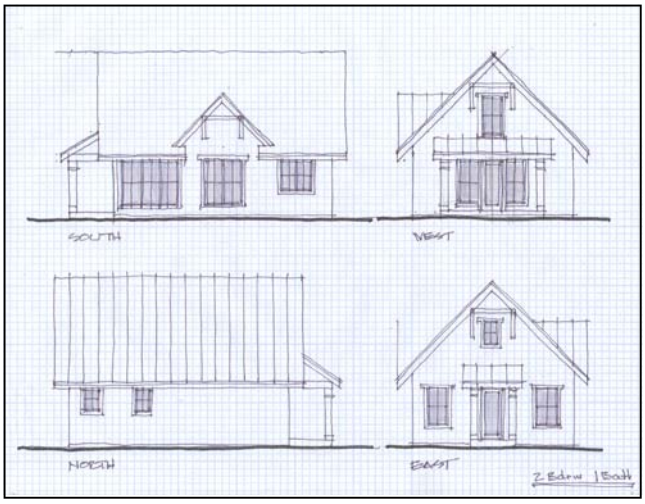


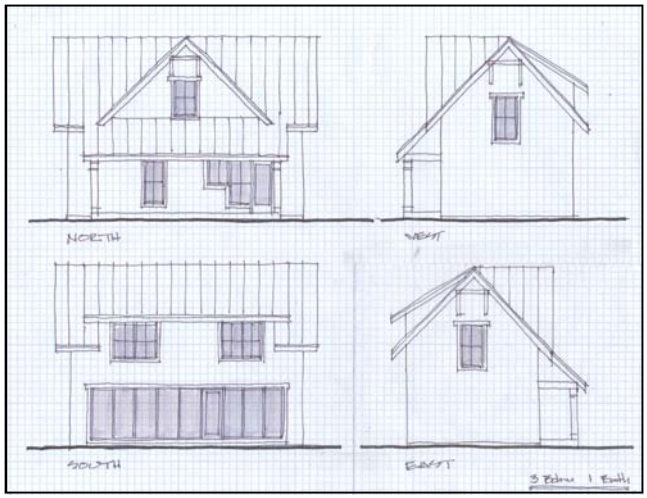
'Hawthorne' Plan and Elevations

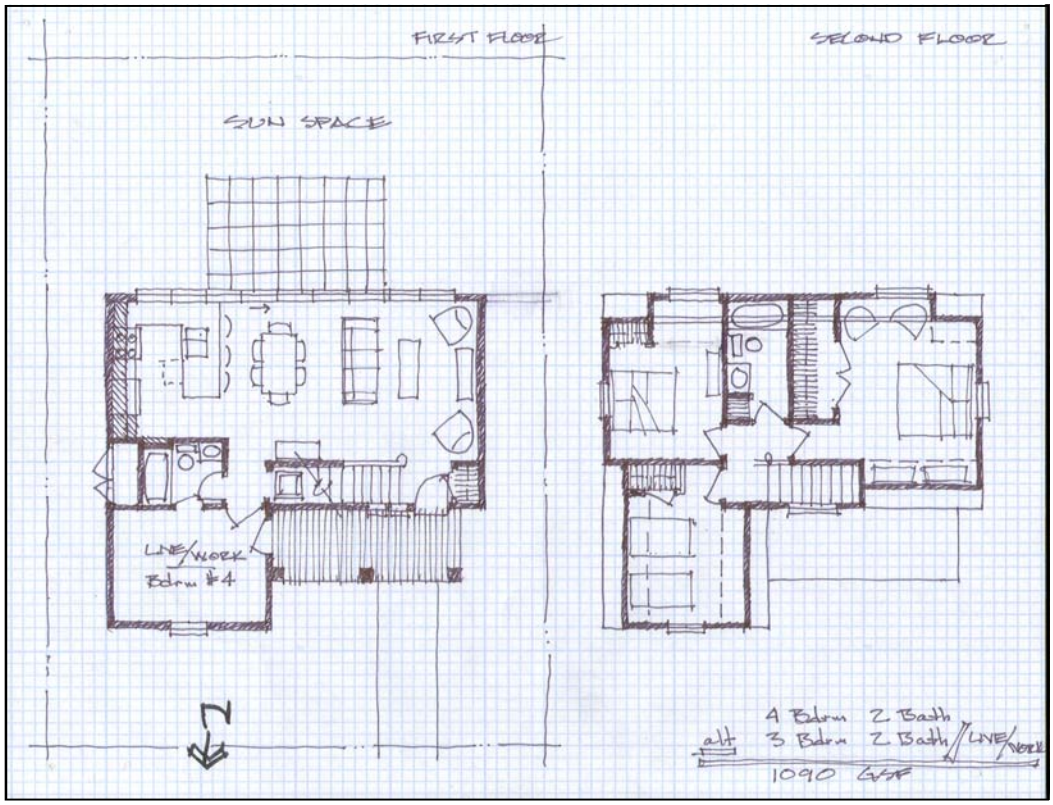
- 960 sf each
- Three bedroom units: are shown with a room on the first floor with a separate entrance that could be used as a home office.
- These are located nearer Lopez Road for easier public access.
- Duplex floor plan can be split into two single family residences.

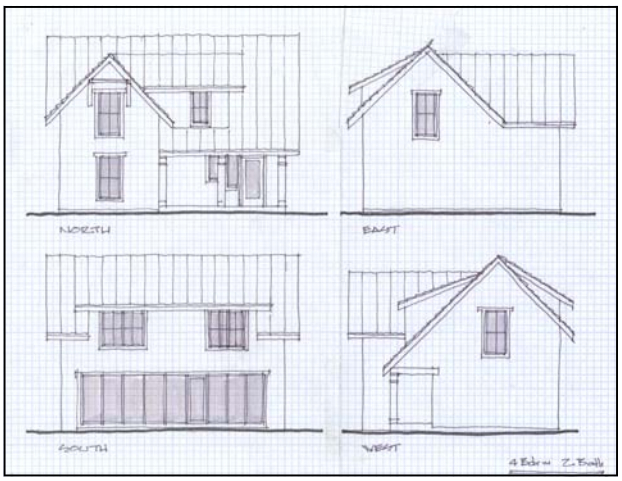








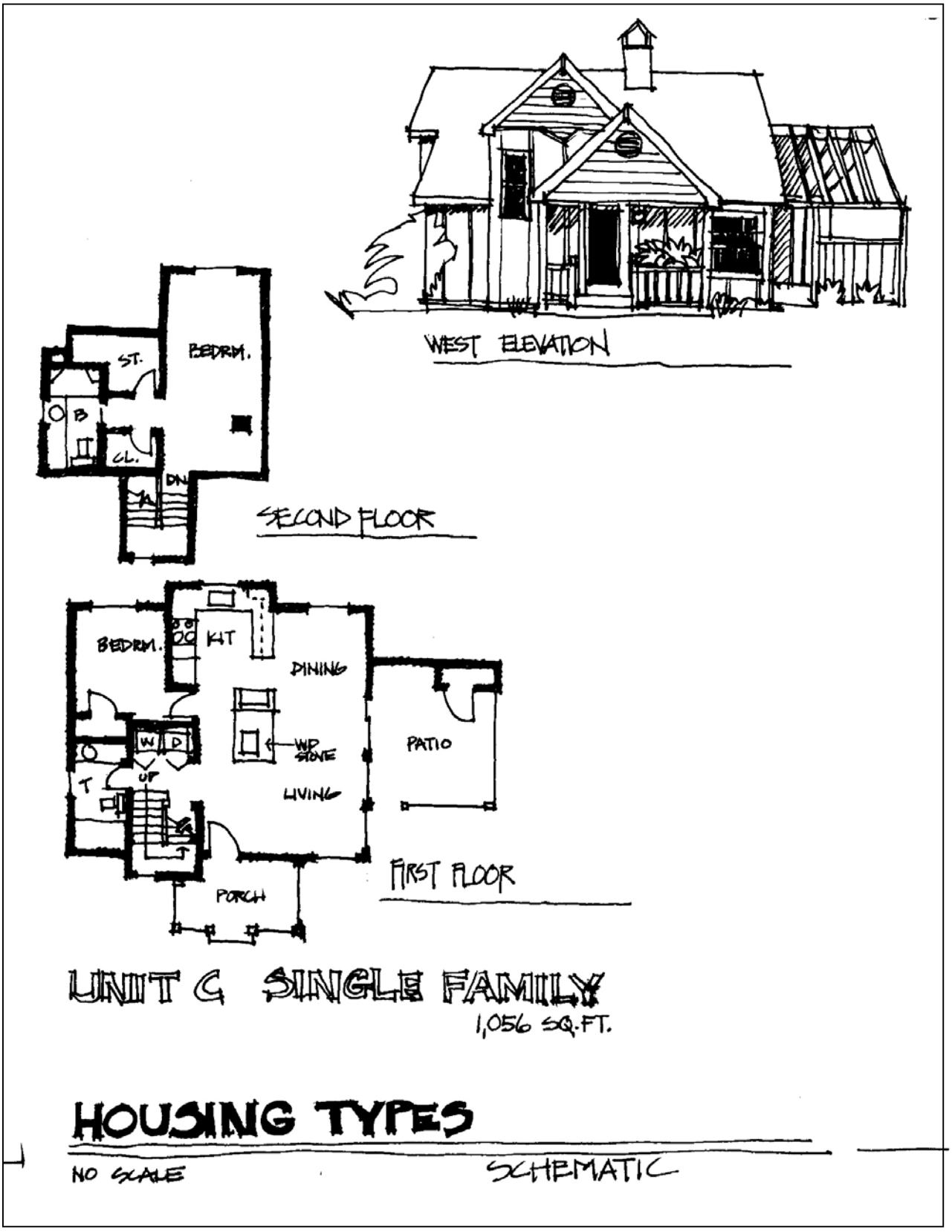




'Salal' Plan and Elevations

- Concept Plan # 2: 2, 3, and 4 Bedroom homes
- Some plans include a 'live/work' room with an exterior door
- Windows are located for visual privacy.
- All units include front and back porches.
- Charming homes with character, visual privacy, and orientation to views can be more densely placed.

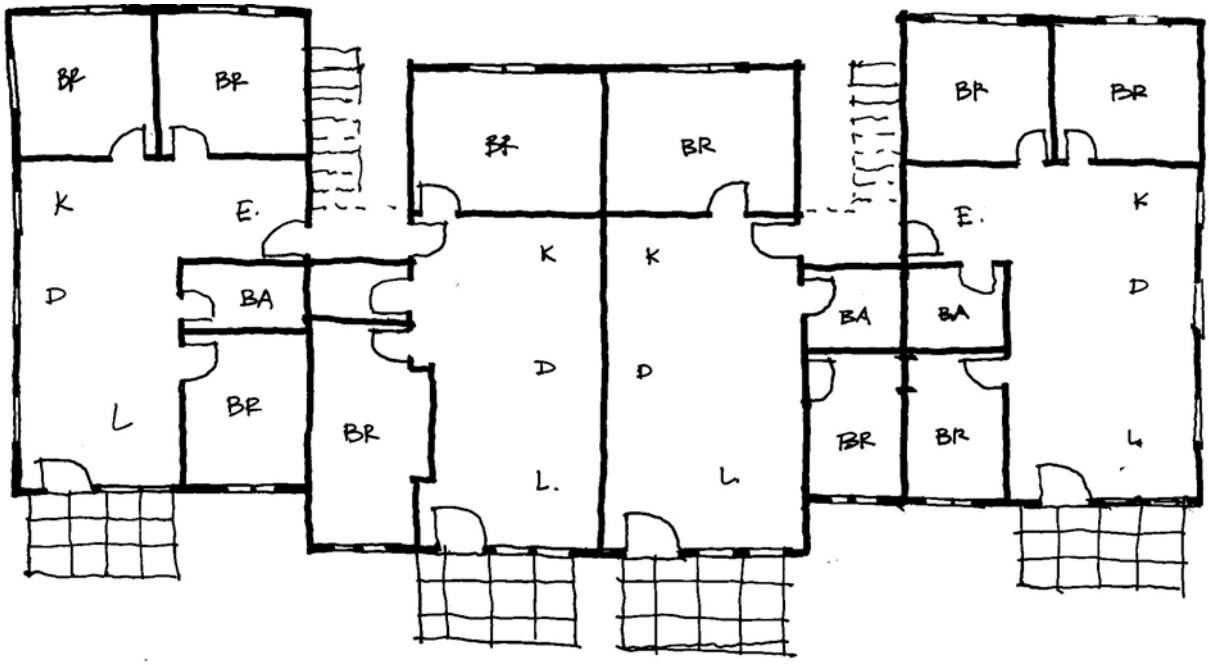
During the Charrette

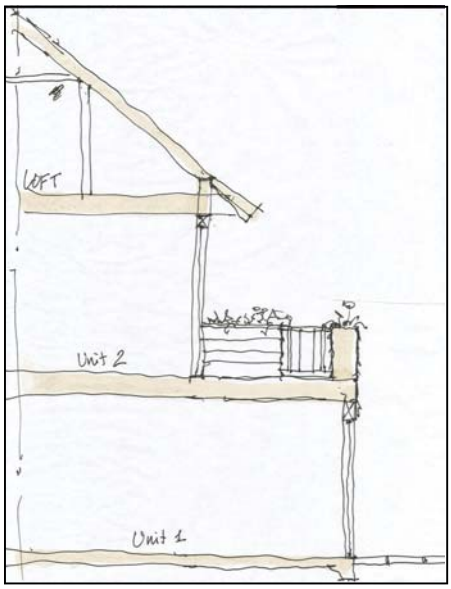


Historic Plan and Elevation

- Conceived by Rodney Morgan in 1990 for first LCLT Housing Project on Lopez

South Elevation





During the Charrette

"Rose" Plan, Elevation, & Section

- Concept Plan #3
- Smallest 'footprint' on the land
- Each home has access to the outdoors with a balcony or a terrace
- Visual scale of building is reduced by step-backs and terraces
- Where a shared wall is shown between units, these are built with a double line of studs with an air space between, and double sheet rock, which provides acoustical privacy at a reasonable cost.

Tuesday Evening Community Session

LCLT Introduction

To begin the second Community Session, Executive Director Sandy Bishop outlined LCLT's vision for Sustainable Community Homes:

Stewardship

- Small footprint
- Open space
- Connection to nature

Home and Community

- Connection to village
- Neighborhood
- Sense of place
- Privacy
- Healthy environment

Perpetual affordability

- Lower energy costs:
    - water
    - sewer
    - power
- Lower annual maintenance costs
- Long term durability

Tuesday Evening

Community Response

After the presentations of Tuesday's design drawings by the architectural teams, community members were given stacks of Post-it notes. They placed these on the drawings with the following comments. *(See pages 27, 28, & 29 for the Concept Plans.)*

Concept Plan # 1

- I like how the Office / Resource Center is more removed in this version.
- I like the office driveway separated from the community drive, but the single units housed with the office might feel detached from the community spirit feel.
- I like how the water flows through the development. The buildings have less of a 'face to face' placement.
- This multiplex of buildings where the houses are grouped by size may lead to polarizing the community with families in one area, singles and aging groups in others.
- I like this plan as a beginning. Cars by the water treatment – appropriate, and roads don't isolate houses from one another. I like the diverse opportunities for road access. I would like to see these units skewed a bit and taken out of the 90 degree relation they have to each other.
- All the south buildings will be looking at parked cars. Move the cars to Lopez Road. Resident's cars are not that attractive.
- I don't like the view of cars in the South. I would rather see short trees or plants. Gardens, please.
- Total black water treatment and reclamation using artificial wetlands or composting toilets.
- I like the more organic scattering of the buildings but dislike the duplex idea. Parking in one area is a plus.
- Back-up heat during power outages? Monitor unit and/or biodiesel?
- Quarter acre per resident needed for food production. Fruit trees. Permaculture.
- I like the surface water, ground water features! Need ability to enclose yard for pets.

During the Charrette

Concept Plan # 2

- Privacy privacy privacy please!
- This satisfies the 'privacy' issue the best.
- Use permeable hardscaping.
- Need to ensure the ability to have small fenced area around homes for pets.
- I prefer the parking on the outside in Concept # 1, but with separate houses I like Concept #2. The absence of condo or duplex living is why I live here.
- I'd like to see one story with two bedrooms.
- I love the medieval European Village concept of this concept, leaving the countryside around it for farming or whatever. The individual houses seem to fit better with the "Lopez" concept than the others.
- I like this one the best!
- I agree – except for all the pavement.
- I really like the idea of individual home structures. The privacy gardens in between homes are nice. Farmhouse style is appealing.
- Privacy is a major issue in past projects. Avoid 'store' door entry doors. Store doors in previous projects are usually curtained and covered for more privacy.
- Please make sure drainage is seriously dealt with. Past projects still have problems with standing water under houses.
- It seems as though combining 1,2,3 bedroom homes suggests inter-age residents! How enriching and wonderful that would be – an inclusive style. Love this concept.
- I would like to see the gardens to the south of the homes. I <u>love</u> Concept # 2!
- No one is going to want their porch to face the road
- I would. *[referencing previous comment]*
- What about mudroom / entrance or a place to take off jackets…?

Concept Plan # 3

- Outdoor siding options; stucco and plaster. Local talent can do.
- Masonry heaters – yes. Woodstoves are too polluting.
- Not all stoves… [referring to previous comment]
- I could not live this way.
- I think tall, skinny houses are more attractive than short, squat ones. Also they have a smaller footprint.
- No amount of staggered facades and articulated roof-lines will make this any less of a 'big box'.
- I would trade square footage for a 'better' house, privacy and separation any day of the week.

Gratitudes

For the Scrumptious Food! To Timothy Maxson, Wendy Westervelt, Pamela Maresten, and a host of other volunteers.

Sketches: Bob Paltrow

Photography: Bob Paltrow, Suzanne Olson, Judith Darst

For the delightful tour of your printmaking studio: great fun, Diana Bower!

For assistance with funding, we thank the Natural Resource Defense Council, The Opportunity Council, Enterprise Community Partners, and generous private Donors

To the Fearless and Far-thinking Design and Technical Team Folks, and All Board Members— *well done!*

To the Sky, Water, and Earth that will come in contact with the homes built by this project— have patience with us, we're trying...

After the Charrette

After the Charrette Press

LOPEZ COMMUNITY LAND TRUST GATHERS TALENT POOL TO DESIGN NEW ENERGY EFFICIENT AFFORDABLE HOMES

More than thirty people joined LCLT board and staff—including architects; engineers, energy and resource technical advisors; stakeholders and visionaries—for two and a half days of creative, collaborative, intensive work and dialogue: a design charrette to create the first conceptual plans for Lopez Community Land Trust's (LCLT's) next affordable housing development.

The design charrette was organized in partnership with A World Institute for Sustainable Humanity (A W.I.S.H.) and funded with support from the Enterprise Foundation, the Natural Resource Defense Council, the Opportunity Council and private donors. Sandy Bishop, Executive Director of LCLT and Michael Karp, Executive Director of A W.I.S.H share a vision of creating a zero-net-energy affordable home development on the seven acre parcel that LCLT purchased from the Pickering's in 2005. The site is located in Lopez Village on Lopez Road, adjacent to the sewage treatment ponds.

Four architectural firms selected in a competitive process made up the design team including: Nancy and Joe Greene and Todd Kegerreis of Greene Partners (Lopez Island); William Kreager, Mike Fowler and Erin Jacobs of MITHUN (Seattle); Terry Phelan of Living Shelter Design (Issaquah); and Chris Stafford of Chris Stafford Architect (Port Townsend). Technical advisors included (among others): Chris Webb, Chris Webb and Associates, Inc. PS Engineering, Eric Youngren of Rainshadow Solar; Dana Brandt of Ecotech Energy Systems; Michael Budnick of Northwest Concepts Inc.; Joe Bullock of Bullock Permaculture and Farm; Geoff Holmes of Fisherman Bay Sewer District; Pamela Pauly of M.U.D.; Mark Tompkins of San Juan County Health Department; Melissa Peterson of Enterprise Community Partners; Chris Mare of Village Design Institute. The charrette was facilitated by Richard Hobbs, FAIA of Strategy Design, Inc.

Others participants and advisors included: LCLT Board members, Read Langenbach, Bruce Creps, Jeff Dyer and Sue McCullough, LCLT assistant director, Jan Scilipoti; A W.I.S.H. Board members Dave Finet and Chuck Ebert who specialize in energy conservation and efficiency; Steve Hussey, Sustainable Building; Bill Lewis, Mitrebox Construction; Tom Froning, SoundDesign; Judith Darst, Washington State Community Trade and Economic Development; Gabriel Olmsted, OPAL Community Land Trust; Nick Gervasi, construction management; and Matthew Maher, Green Horizon Builders;

LCLT created a set of guidelines that specified new construction of one office space / resource center to include two attached single room occupancy units (SROs), and up to 14 additional dwellings of 640 – 1090 square feet in a mixed-income neighborhood. Teams were asked to maximize passive solar energy potential, minimize the footprint on the land and impact from cars, and incorporate rainwater catchment and wastewater recovery systems. Technological breakthroughs were welcomed, but the emphasis was first and foremost on elegant solutions that are functional, simple and cost-effective. The general guiding principle for sustainable was to meet the needs of the present without compromising the ability of the natural world to meet future needs.

Michael Karp and A W.I.S.H. are involved in projects related to sustainability world-wide. Karp's home base is on Lake Samish but he and his family are building a home on Lopez, where he has been visiting and working (through the Opportunity Council and the first San Juan County Affordable Housing Commission) for more than thirty years. Karp is excited about the possibility of creating a small-scale

sustainable neighborhood of green homes on Lopez and the potential for replicating the model created here on a larger scale for other communities around the world to access. "Sandy Bishop and the Lopez Community Land Trust have a history of success and persistence in achieving goals. I have total confidence in our ability to be successful in this project." A W.I.S.H. will help bring resources—in the form of expertise and potential funding—the project.

The charrette began on Sunday afternoon, March 19th, with a walk through of the property. Design and technical teams (focused on land, water, energy) identified issues and opportunities and then presented their findings to each other. Michael Budnick brought back a series of soil samples – mudballs - from the land and a crowd gathered to learn and map the soil character of each contour. Construction manager, Nick Gervasi urged the group to "listen to the trees" and create a development that blends with the existing Doug Fir forest, the rose brambles and pasture.

By Monday afternoon, the design team had their first conceptual sketches informed by their experience of the land the expertise of the technical teams. The public was invited in on Monday night to see the sketches, hear presentations about the group's best thinking on site planning, design and systems and then share their comments and ideas. A group of about 40 Lopezians gathered and discussed issues including parking, aging in place, educational opportunities, shared community space and green elements such as solar energy and composting toilets.

For prospective LCLT homeowner Donna Hasbrouk, Monday night was an exciting beginning. "I'm thrilled with the idea of learning and living with green and innovative technological systems and becoming more aware of how I use energy." A stonemason on the island, Donna sees affordable homeownership as her only option for staying in the community. "It's getting increasing harder to make a go of it here – but this is my home. I'm here because of the beauty and want to live in a way that I can interact with that beauty in my daily life."

Tuesday began with a review and discussion of the public comment before the designers sequestered themselves in a side room at the Lopez Community Center to refine their plans and ideas. The team discussed the bigger picture of why we are doing this and what sustainability means, returning to the guiding principles of the project: **Home and Community**—a healthy living environment that is connected with the neighborhood and village; **Perpetual Affordability**—lower energy and maintenance costs and modest homes with long-term durability; and **Stewardship**—a light footprint, conservation of open space and a connection to nature. By late Tuesday afternoon, the teams had created three strong concepts for site planning, each complete with sample floor plans, elevations, and the first glimpses of architectural character. LCLT's Annual Meeting opened on Tuesday evening with an opportunity to view the work of the charrette and hear presentations from the design team.

Team members were kept well nourished by a steady supply of good local foods prepared by Timothy Maxson and Wendy Westervelt and their many assistants.

LCLT will be immersed in this project for the next two to three years. During 2006, LCLT will continue to identify and qualify new homeowners and select the final design team for the project. Site preparation and permitting will begin in late 2006 with construction starting in early 2007. Occupancy of the first permanently affordable homes could occur as soon as December of 2007.

For more information and to apply for homeownership, please contact Sandy Bishop at 468-3723. To learn more about A W.I.S.H. visit www.awish.net.

Edited version printed in Islands' Sounder on Wednesday, April 12, 2006

Notes from LCLT and A W.I.S.H.

What will it take?

Hanging on the wall in the LCLT office is an excerpt from an article entitled *What Does it Take to Get to Zero?* The text outlines exactly why it is difficult to achieve zero-net-energy. Even agreeing on the definition zero net is complex. "You have to start pushing and doing a lot of things simultaneously. It's expensive and it's complicated." [1]

LCLT and A W.I.S.H. decided to 'start pushing' with a design charrette, in hopes that bringing like-minded design and technical professionals together would spark the project toward our admittedly ambitious goal.

Sandy Bishop, LCLT Executive Director and Michael Karp, Executive Director A W.I.S.H.

In this the design charrette model excelled. The three days with the group sustained a delightful level of enthusiastic discussion and interaction. The 'desired outcomes' listed on page 2, formulated before the event, became almost unnecessary compared with the connections that developed from the break-out groups, the forays onto the land, and the conversations that ensued while enjoying delicious food together.

Our desired outcomes as stated on page 2 were met, with the exception of cost estimating. This will become part of the Schematic Design phase of our planning with the design team selected to complete the project.

A telling example of this success can be seen in the dynamic nature of the architectural design teams. Originally conceived as three separate 'teams' (Greene Partners, Mithun, and Chris Stafford Architect/Living Shelter Designs), early on it became clear that the charrette would gain strength as a true collaborative event. As a result, the architects opted to work together through the design process.

The breakout sessions focusing on Land, Water, and Energy were key in assessing the systems involved in achieving zero-net design. Informal "field reports" were also a highlight, in which the attendees tramping through the valley sleuthing out the water flow patterns, vegetation, and soil types related their findings to the group.

In assessing the charrette afterward, perhaps there was too much emphasis on current site conditions and not enough thought given to developing a 200 – 500 year plan. When beginning the actual design process, the site will be evaluated with a long-range view, with recommendations for all future developments on the parcel prior to beginning the construction of this first phase.

[1] Environmental Building News, Volume 14, Number 10 – October 2005; *"Getting to Zero: The Frontier of Low-Energy Buildings"*

What's Next for Sustainable Community Homes

As of this writing in early June 2006, LCLT has pre-qualified 30 households for Sustainable Community Homes. The homeowner selection process is scheduled to be completed by September. Homeowners will then begin the training process that will lead to time spent helping to build the homes, and then to move-in scheduled for early 2008.

The core design team, including architect(s), energy systems consultant, civil engineering (water) consultant, and a permaculture consultant, should be selected by mid-June. Schematic Design will occur in late June and July, Design Development in August and September, with Construction Documents being completed in October through December 2006. Construction is scheduled to begin in the Spring of 2007.

The quest for funding sources continues. Integral to the zero-net energy concept is the connection with the Renewable Power Cooperative being formed in San Juan County.

For information about this as well as continuing updates on Sustainable Community Homes, see LCLT's website at www.lopezclt.org and A W.I.S.H.'s website at www.awish.net.

LCLT's summer intern, Leah Frost, is actively planning and building a 'clubhouse' for the land, made largely of donated and found materials.

Design Charrette **Scrapbook**

Compiled by Jan Scilipoti

Sustainable Community Homes

A Fourth Project of Lopez Community Land Trust

To become a member of the Lopez Community Land Trust,

please contact LCLT at:

Lopez Community Land Trust PO Box 25 Lopez Island, Washington 360-468-3723

lclt@rockisland.com

What happens when energy consultants are cut loose on zero-net-energy...

- Conceptual Energy Sketch, rendered by Bob Paltrow