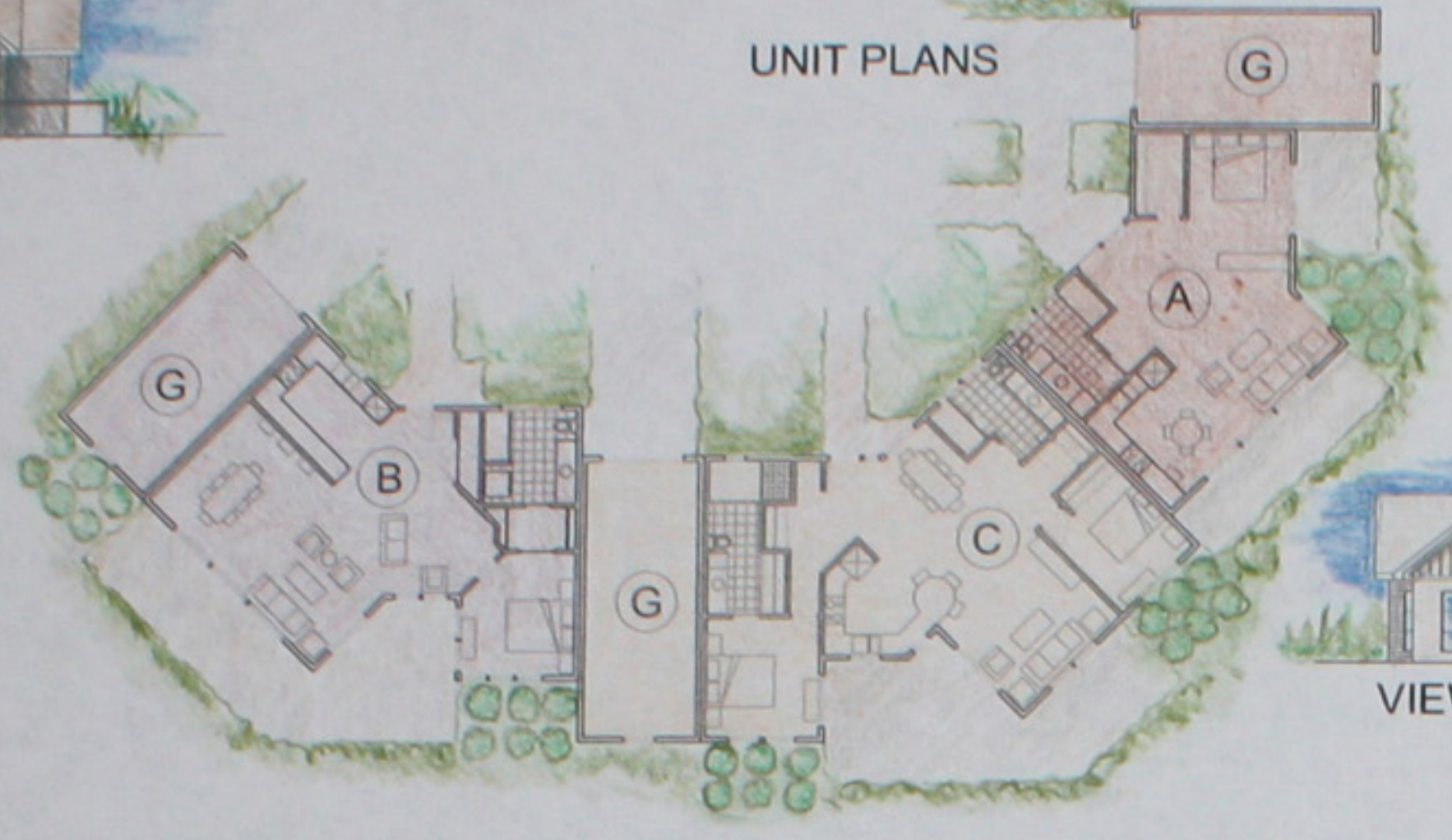




ENTRY COURT ELEVATION



VIEW ELEVATION (SIDE)



VIEW ELEVATION (SIDE)



VIEW ELEVATION



170 top

Comfort and Health
PassivHaus has been shown to have superior indoor air quality as it has a continuous flow of fresh air pumped into the living spaces, providing heated and oxygenated air in each room. A Heat Recovery Ventilator (HRV) passes the incoming air by the exhaust air to exchange almost 90% of the. This ensures that the fresh airflow is both oxygenated and heated or cooled for the environment. Seniors are more sensitive to heat fluctuations and drafts, and oxygen levels.

Net Zero Energy Buildings
A typical PassivHaus can achieve up to a 75% energy reduction compared to a typical California T-24 house. It does this by substituting cost effective insulation and air tightness for conventional HVAC systems, and instead heating by passive solar gain and internal gains from people, electrical equipment, hot water heater losses, and other existing internal heat sources. To achieve net zero, the few remaining energy reductions can cost effectively be achieved using photovoltaics. When the photovoltaics need to be replaced, fewer panels means lower maintenance costs.

Reduced energy costs and more energy efficiency creates cost stability against future energy price increases, an essential issue for seniors living on reduced and fixed incomes with escalating medical costs.

NARRATIVE

For years the original property owners in Bahia have looked at the abandoned terraced lots and wondered what would ever become of this scarred land. In this well-established community, our design team agreed that a priority for the proposed new homes would be to fit in with and be well received by the neighbors. We think we have a design solution that recognizes the value of the place, respects the community and surrounding open space. Our design is proposed to be sustainable and well suited to senior living. We understand that most members of the community are opposed to any project on this property. In order to get political, environmental and governmental support for this project, it will be critical for the design approach to be respectful of the community.

Working with the land, we have clustered the units creating forms that are intended to be "cousins" in character to the original homes along Topaz. The single story floor plans are designed so that the primary living rooms all enjoy territorial views of the marsh and Petaluma River basin. Every living unit will have a small outside terrace or deck with morning sun. Each unit meets the criteria for micro-universal design, ADA and they are Federal Fair Housing compliant. Multiple driveways in and out of each terrace along Bahia Drive would not be safe for seniors. Our proposed safer solution has one-way entries and exits from Bahia Drive. This also allows the opportunity to landscape along Bahia in a way that will provide screening of the new homes and reduce the visual impact of the existing terraces. Front entries can be seen from neighbors adding to a sense of security and to enhance social connection between neighbors. Community gardens are proposed to serve all residents of the Bahia community creating lovely places for gathering and working together. If the budget allows the give back to the community could be enhancements to the Bahia Community Center and grounds. Our design team will donate 20 hours to assist the Home Owners Association to look at the improvements that are already proposed and will provide professional input and guidance.

In the future individual units could be combined to achieve a congregative form of supportive housing. The Greenhouse, (tm) or Small House is such a format for example that can accommodate the delivery of assisted living or memory care services. Our project solution is guided by the goals to create independent and accessible housing for seniors who will also have the ability to age in place, downsizing without the stress of relocating.

Sustainable principles are incorporated with a goal for energy and water conservation. We are proposing a European "passive house" approach to increase comfort and improve indoor air quality. Durable cool roofs would result in a savings in energy bills and a 48% reduction in heat transfer to the attic if installed with a batten system. All insulation would be increased with no thermal breaks to ensure a cost effective and low energy building system. High performance windows and air-tight window frames result in a comfortable constant temperature. Glazing would be specific for orientation to optimize solar heat gain vs. cooling requirements. A heat recovery ventilation system would further maximize indoor air quality and a healthy inside environment and decrease energy costs. LEED energy certification standards are proposed to be integrated throughout the building and sitework. Graywater systems, Energy Star appliances, natural daylighting and LED lamps in fixtures would all be recommended as standard. Buildings are proposed to be traditional wood framing and one story to help keep foundation and overall construction costs down. Also very important, durable materials are recommended to stand up to the marine environment and to reduce longer-term maintenance costs.



BUILDING CONSTRUCTION COSTS	UMH A		UMH B		UMH C		UMH D	
	quantity	unit	quantity	unit	quantity	unit	quantity	unit
SMELL CONSTRUCTION								
Insulation, walls - asbestos to plank joists	720	sq ft	10,800	sq ft	13,300	sq ft	253	sq ft
Frame utilizing Advanced Framing Technique	8	each	8,000	each	8,000	each	10	each
	720	sq ft	22,320	sq ft	28,800	sq ft	34,800	sq ft
EXTERIOR FINISHES								
Claddings purchase and install	3	sq ft	2,250	sq ft	7,125	sq ft	8,500	sq ft
Exterior doors purchase and install	2	each	1,800	each	1,800	each	2	each
Roofing	884	sq ft	4,320	sq ft	5,700	sq ft	2,200	sq ft
Painting T-111	1800	sq ft	8,500	sq ft	11,215	sq ft	14,187	sq ft
Painting and gutters and trim	3	each	2,000	each	2,000	each	3	each
Paint Exterior	3	each	2,250	each	2,945	each	3,720	each
INTERIOR FINISHES								
Insulation walls, ceiling and underlaid								
Sheetrock	2520	sq ft	8,804	sq ft	7,425	sq ft	8,150	sq ft
Paint Interior	5	each	4,500	each	5,700	each	2,200	each
Roofing/hardware in living, dining, bath, the floors in kitchens, baths & showers	228	sq ft	4,088	sq ft	4,088	sq ft	242	sq ft
Carpet in bedrooms	280	sq ft	910	sq ft	988	sq ft	1,313	sq ft
Kitchen cabinets	1	each	4,000	each	5,000	each	1	each
Bath vanity	1	each	500	each	500	each	1	each
Interior doors	2	each	800	each	1,200	each	2,700	each
Interior trim and cabinet setting	1	each	2,880	each	3,800	each	4,800	each
Countertops	1	each	2,500	each	3,300	each	3,000	each
Appliances	1	each	8,500	each	8,500	each	1	each
ELECTRICAL, PLUMBING, MECHANICAL								
Theoretical								
Light Fixtures purchase								
Plumbing								
Plumbing Fixtures								
Heating unit HVAC								
Fire systems								
General Conditions								
Contractor Fee includes overhead and profit	7%		8,500	7%	18,775	7%	20,418	7%
TOTAL UNIT COSTS								
number of units								
TOTAL BUILDING CONSTRUCTION								
cost per sq ft of living area								

OPTIONAL ADD ON COMPONENTS	quantity	unit	substation	quantity	unit	substation	quantity	unit	substation
Solar Thermal Roof mounted collectors	2	each	1,800	2	each	1,800	2	each	1,800
Solar PV for some generation and air charging	800	watts	8,000	800	watts	8,000	800	watts	8,000
Emergency backup battery for power outages	3	each	5,000	3	each	5,000	3	each	5,000
Built in family room casework	3	each	1,200	3	each	1,200	3	each	1,200
Add hot water collection & grey water system	3	each	4,000	3	each	4,000	3	each	4,000

LANDSCAPE SITE COSTS	quantity	unit	substation	quantity	unit	substation	quantity	unit	substation
PAVING									
asphalt-concrete sidewalk	3,810	sq ft	27,275	3,810	sq ft	11,830			
walking path				3,810	sq ft	18,580			
COMMUNITY GARDENS									
Soil amend	1	sq ft	7,500	1	sq ft	7,500			
Wood planters	1	each	7,500	1	each	7,500			
pathways	1	sq ft	1,250	1	sq ft	1,250			
benches	1	each	800	2	each	1,600			
outdoor plants and shrubs	1	sq ft	8,000	1	sq ft	8,000			
low trees/shrub equipment	1	sq ft	2,500						
Drinking water, chairs and other	1	sq ft	5,000						
sober terrace outdoor fruit and nut trees	1	sq ft	5,000						
PLANTING									
import topsoil	51,000	sq ft	76,500	75,400	sq ft	113,100			
soil preservation/grading/retention	51,000	sq ft	30,420	75,400	sq ft	30,180			
type 1 planting - high intensity	12,000	sq ft	198,000	3,400	sq ft	30,180			
type 1 planting - moderate intensity	12,000	sq ft	84,000	45,000	sq ft	318,000			
type 1 planting - low intensity	27,000	sq ft	81,000	27,000	sq ft	81,000			
mulch	51,000	sq ft	20,400	75,400	sq ft	81,000			
soil stabilization fabric	27,000	sq ft	37,800	10,000	sq ft	14,000			
plant 3/4" low	75	each	22,500	75	each	22,500			
plant 10 gallon	125	each	21,875	125	each	21,875			
90-day maintenance	51,000	sq ft	7,650	75,400	sq ft	11,310			
IRRIGATION									
controller	2	each	8,800	2	each	6,400			
quick coupler valve	25	each	2,750	30	each	3,300			
dry irrigation - ground cover, shrubs, trees	51,000	sq ft	76,500	75,400	sq ft	113,100			
tree irrigation system	200	each	30,000	200	each	30,000			
SITE FURNISHINGS, LIGHTING									
benches (see furnished seating area)	3	each	6,000						
TOTAL LANDSCAPE CONSTRUCTION									

SITE DEVELOPMENT	quantity	unit	substation	quantity	unit	substation	quantity	unit	substation
Grading									
Drainage									
Paving									
Water Distribution									
Water/Water Collection									
Electric									
Cable									
Telephone									
City Factor	1.22		371,867						
TOTAL SITE DEVELOPMENT									
TOTAL PROJECT COSTS									
TOTAL AREAS									
Building Areas			25,150	sq ft					
Garage Areas			4,896	sq ft					
TOTAL			29,996	sq ft					
TOTAL COSTS									



SECTION A-A - MISTY COURT



SECTION A-A - BAHIA DRIVE

LEED and PassivHaus Certification

Home Size Reduction Points
The average home size for this proposal is under 900 sf per unit with an average size of 1.2 bedrooms per house. By being clustered, small floor area housing, the Bahia Drive units reduce the required points for certification by between 2.5 and 4.5 points. Other units will garner -1.5 or +1 points.

PassivHaus Points
A typical PassivHaus will generate 54 LEED credits. PassivHaus has been shown to typically create 19 LEED Energy and Atmosphere Exceptional Energy Performance (EA 1.2) points by surpassing California's low T-24 Energy Code by up to 75% and in combination with Energy Star with its Indoor Air Package. PassivHaus also delivers at least 24 total EA points with advanced lighting and appliance strategies.

LEED Points
Base Points
Using the home size reduction of 4.5 points, and the typical PassivHaus 54 LEED credits, many of the units achieve Silver LEED certification without further measures. However, many other LEED points are available to these units, including those listed below.

Innovation and Design (ID)
PassivHaus includes integrated project team, design charrette, and solar orientation planning, additional credits can be attained for LEED professional participation, and for durability planning, management, and verification. Innovations can include many of the PassivHaus strategies such as air sealing and thermal break techniques.

Location and Linkages (LU)
Although the site is already chosen, additional points will be attained with proximity to open space, which is accessed via trails through the clustered housing.

Sustainable Sites (SS)
Additional points will be achieved through erosion and storm water controls during and after construction, minimized disturbed areas to protect open spaces, no invasive plants, no turf, basic landscaping design strategies, drought tolerant plants, minimized irrigation flows, nontoxic pest controls, and compact development strategies.

Water Efficiency (WE)
Project can achieve additional points through gray water and rainwater harvesting, high-efficiency indoor plumbing fixtures and fittings, high efficiency irrigation system, and reduced overall irrigation demand.

Energy and Atmosphere (EA)
Beyond the deep energy reduction points already achieved through PassivHaus, additional points can be achieved through efficient hot water distribution and pipe insulation.

Materials and Resources (MR)
More points can be achieved through additional material-efficient advanced framing and trusses with energy heels manufactured off-site, and other framing efficiencies, as well as environmentally preferable products (such as cement board siding, recycled content insulation, etc.) and construction waste management strategies.

Indoor Environmental Quality (EQ)
Beyond the indoor air quality points achieved for combustion venting, moisture control, outdoor air ventilation, local exhaust, distribution of space heating and cooling, and air filtering, additional points can be achieved through indoor contaminant control, radon protection in moderate risk areas, and garage pollutant controls.

Awareness and Education (AE)
These points have already been included in the PassivHaus credits achieved above.



BAHIA DRIVE		of units	
Unit A - Accessory Stud	720	5	5 of 9
Unit B - 1 bdrm	950	1	
Unit C - 2 bdrm	1200	5	6 of 19
Total Units - Bahia Drive		11	
PARKING COUNT			
garage space	8		
open space	4		
guest space	5		
Total Parking - Bahia Drive		17	

Clustered Housing
Each property's site potential has been optimized. The proposed clustered Bahia and Misty homes create unique design ensembles. The residential units fit into the fabric of the existing community and demonstrate a sensitive, attractive, and affordable response working with the land.

Community Integration
The architecture is simple for affordable construction and yet sensitively stepped and clustered so that the new homes will blend in softly with the community. The architectural character is intended to respect the context of the neighborhood and to establish a simple, yet elegant architectural design response to the very challenging terrain. This approach should garner community support.

Senior Friendly Outside
Every unit is senior friendly and accessible. The concept of clustered housing supports the goal of having accessory units available for extended family or caretaker occupation. Entry courts with central circulation to each front door will encourage neighbor interaction and enhance a sense of security. All units will be ADA compliant with flat surfaces from parking and pickup areas into the house. All walkway slopes and door thresholds will be ADA compliant. Each cluster is accessible with a homeowner's vehicle and will be easy to access with Novato's Whistle Stop Wheels and for fire truck access.

Senior Friendly Inside
Each home will be energy efficient and comfortable. All interiors will have accessibility through wide doorways, lowered light switches, easier to open casement windows for natural ventilation, roll under sinks, and custom level appliances. Each room, hallway and bathroom is laid out to be spacious and accessible. Natural daylighting is proposed with skylights in each kitchen and solatubes into each bathroom.

Connections to Outdoors
Buildings are senior friendly and designed to take advantage of views opening to the Bahia marsh, Petaluma River and bay beyond. Each unit will have a small outdoor terrace or deck with container gardening. These container gardens and entry gardens can use household grey water for irrigation. Native and drought tolerant plantings are proposed for all open garden areas and they will attract insects, and birds as well as colorful native flowers.

MISTY COURT			
Unit A - Accessory Stud	750	4	4 of 9
Unit B - Studio	750	4	
Unit C - 1 bdrm	950	9	13 of 19
Total - Misty Court		17	
PARKING COUNT			
garage space	0		
open space	0		
guest space	3		
Total Parking - Misty Court		3	

BAHIA DRIVE and MISTY COURT			
TOTAL UNIT COUNT	28		
TOTAL PARKING COUNT	garage	open	guest
Bahia Drive	8	4	5
Misty Court	0	0	3
Total - Bahia and Misty	8	4	8



Storm Water
Hillside storm water is collected in swales to percolate into the ground. Catchment and a water storage tank is proposed to support the Misty site irrigation needs. The upper Misty site has an orchard area for walnuts, apricots or pear trees, which require light irrigation demands. Vineyards are not proposed due to the steep hillside terrain that would not be senior friendly to harvest grapes and because of higher ongoing demands for water.

Walking Trails and Open Space
An extension of the Rush Creek trail is proposed through the Bahia site, connecting the permanent open space reserve to the Misty site and back down the hillside leading to the Misty community garden. Walkways meander through and around each cluster of homes to provide recreational opportunities and to weave the new homes together. The open hillsides are preserved.

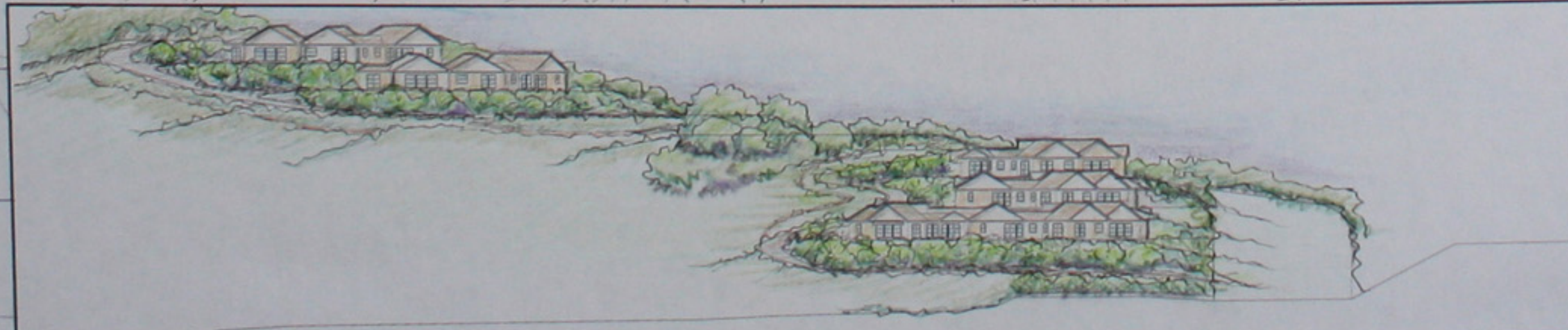
Gardens and Orchards
Local food production is anticipated from 3 community gardens and 4 orchards. A small fruit and vegetable stand is proposed at the lower Misty community garden for selling produce to residents. This stand will bring together the produce from gardens throughout the property and encourage interaction between the new residents and existing Bahia residents. The fruit and vegetable stand may create job opportunities. It is also envisioned that this garden may become a hub for public gatherings, gardening classes and arts and crafts. In the Misty community garden we are proposing beehives for cultivating local honey.



COMMUNITY GARDEN scale: 1"=20'



SKETCH VIEW OF MISTY COURT FROM ENTRANCE



SKETCH VIEW OF BAHIA DRIVE FROM TOPAZ

