

Ethan Cohen
Permaculture Design Contest
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Design Narrative

This project transforms a quarter-acre suburban lot in Highlands Ranch, Colorado into a living demonstration of how regenerative design can flourish even within the limits of HOA regulations. The clients, a young couple, had clear goals: they wanted to cut their water bill in half, remove most of their turfgrass while still keeping an area for gathering/play, replace resource-intensive lawn with drought-tolerant natives, and create an abundant food-producing landscape. Just as importantly, they wanted their property to serve as an example of how much life and productivity can fit into a small suburban lot.

The design begins with the realities of the site. The climate is semi-arid, with only seventeen inches of annual rainfall and hot summers. The soils are clay-loam with high alkalinity and low organic matter—conditions that can hold water but often shed it before plants benefit. Winter winds sweep down from the north, and the property sits under the watchful eye of an HOA that enforces strict rules on the appearance of the front yard. These constraints shaped a design that is at once functional, resilient, and beautiful, weaving ecological abundance into the fabric of a conventional neighborhood.

Water was the first priority. A 1,500 square foot roof helps to catch almost 16,000 gallons of water over the course of the year, stored mainly in the ground. Two rain barrels catch one hundred gallons, the HOA limit for above ground catchment. A wicking bed captures and uses almost one-hundred-fifty gallons of rainwater from a downspout diversion gutter, all while circumventing the HOA's classification of a rain barrel and making for a more efficient raised bed watering system. A rain basin that overflows into a mulched swale/drainage tile system helps spread and sink the water into the edible production areas. Greywater from the laundry, about fifteen gallons per wash cycle, is routed into perennial flower beds, further reducing reliance on potable water. All new planting beds are supported by efficient drip irrigation. Together, these strategies are expected to cut household water use by at least half, a significant savings in both cost and resource use.

The lawn, once the dominant feature, was reimagined. Three thousand square feet of Kentucky Bluegrass turf will be removed and replaced with native gardens, perennial food guilds, and pollinator habitat. Two thousand square feet of grass will remain, overseeded with clover to fix nitrogen and reduce inputs, creating a safe and resilient space for gatherings or a child to run around. This balance preserves family function while opening space for ecological and productive abundance.

Food production is integrated throughout the site. Cordon fruit trees line a trellis that doubles as a privacy hedge from neighbors and acts as a windbreak from winds coming off the mountains, while also bearing apples, pears, plums, peaches, and cherries. Berries such as currants, gooseberries, raspberries, and blackberries form living edges. Grapes climb up the 2-story deck, while herbs, perennial vegetables, and culinary plants fill beds and borders. A small vertical greenhouse against the south wall of the house and seasonal hoop house over wicking bed extend the harvest, allowing for fresh food nearly year-round. Together, these systems are expected to yield as much as five hundred pounds of food annually.

Equally important is the web of biodiversity created by more than seventy species of drought-tolerant natives and ornamentals, selected for their beauty, hardiness, and ecological

role. Yarrow, rabbitbrush, coneflowers, milkweed, lavender, and goldenrod ensure continuous bloom, drawing in pollinators and beneficial insects. Deep-rooted grasses and nitrogen-fixing plants stabilize soils, improve structure, and build fertility over time. The transformation replaces a monoculture lawn with a resilient polyculture that supports both people and wildlife.

Human spaces are woven throughout. A compost bin, tool shed, and potting area provide the backbone for ongoing stewardship. A fire pit creates a gathering place for family and friends, while shaded seating areas invite rest and connection with the landscape. In the front yard, ornamental native plants and a cactus/dry gardens with rock mulch meet HOA aesthetic standards, proving that ecological design can also be ornamental and compliant.

The impact of this project extends beyond the family. It will be installed with the help of local volunteers and neighbors, drawing the community into the process and sharing knowledge and skills. The finished landscape will serve as a demonstration site, showing other homeowners what is possible when regenerative thinking is applied at the suburban scale. Tours, informal gatherings, and simple visibility from the street will help spark conversations about water, food, and beauty in an era where all three are precious.

In the end, this design tells a story of balance. It cuts water use while enhancing abundance, reduces lawn while preserving play, complies with HOA rules while pushing the boundaries of what is possible, and creates food and beauty where once there was only grass. It shows that regenerative design is not confined to farms or rural homesteads. It can take root in quarter-acre lots, behind HOA-approved facades, and in the daily lives of young families who want a better way to live on the land.