North Desert Village Landscaping Experiment
Monitoring Human - Environment Interactions

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Project Goals

The goal of this project is to add a rich social science component to an already-existing multidisciplinary experiment of human and non-human environment interactions. The aim of this project is to study the reciprocal relationships between humans and different types of residential landscaping regimes.

Researchers at ASU's **Center for Environmental Studies (CES) Central Arizona-Phoenix Long Term Ecological Research (CAP-LTER) Project** have secured an agreement with the ASU-East campus to landscape selected clusters of faculty, staff, and family housing in the North Desert Village housing area (see map).

After a period of pre-treatment measurement of both human and environmental factors, clusters of residences will be assigned different landscaping treatments. After treatment has been completed, there will be measurement of both human and biophysical variation. This will allow us to examine the effects of different landscaping styles on human behavior, human attitudes, and environmental response.

Primary Goals

1. Establish a baseline set of personal characteristics and landscape attitudes and behaviors that influence residents' perceptions of and responses to the different landscape treatments.

2. Alter the landscapes using an experimental design with a control population.

3. Monitor changes in social variables continuously into the foreseeable future.

Experimental Treatment

The existing landscaping of North Desert Village formerly used high amounts of water, and the ASU-East staff plan to convert all units to "zero-scape," a minimal floral environment with mostly rock covering. This zero-scaping has not yet begun.

CAP-LTER researchers have received permission to selectively vary the landscaping of 24 units in North Desert Village groups (in clusters of residential units-see map). The remaining 122 units will be zero-scaped. Six of those will serve as a control.

In contiguous groups of six, units will receive one of four treatments that vary landscape design and water delivery:
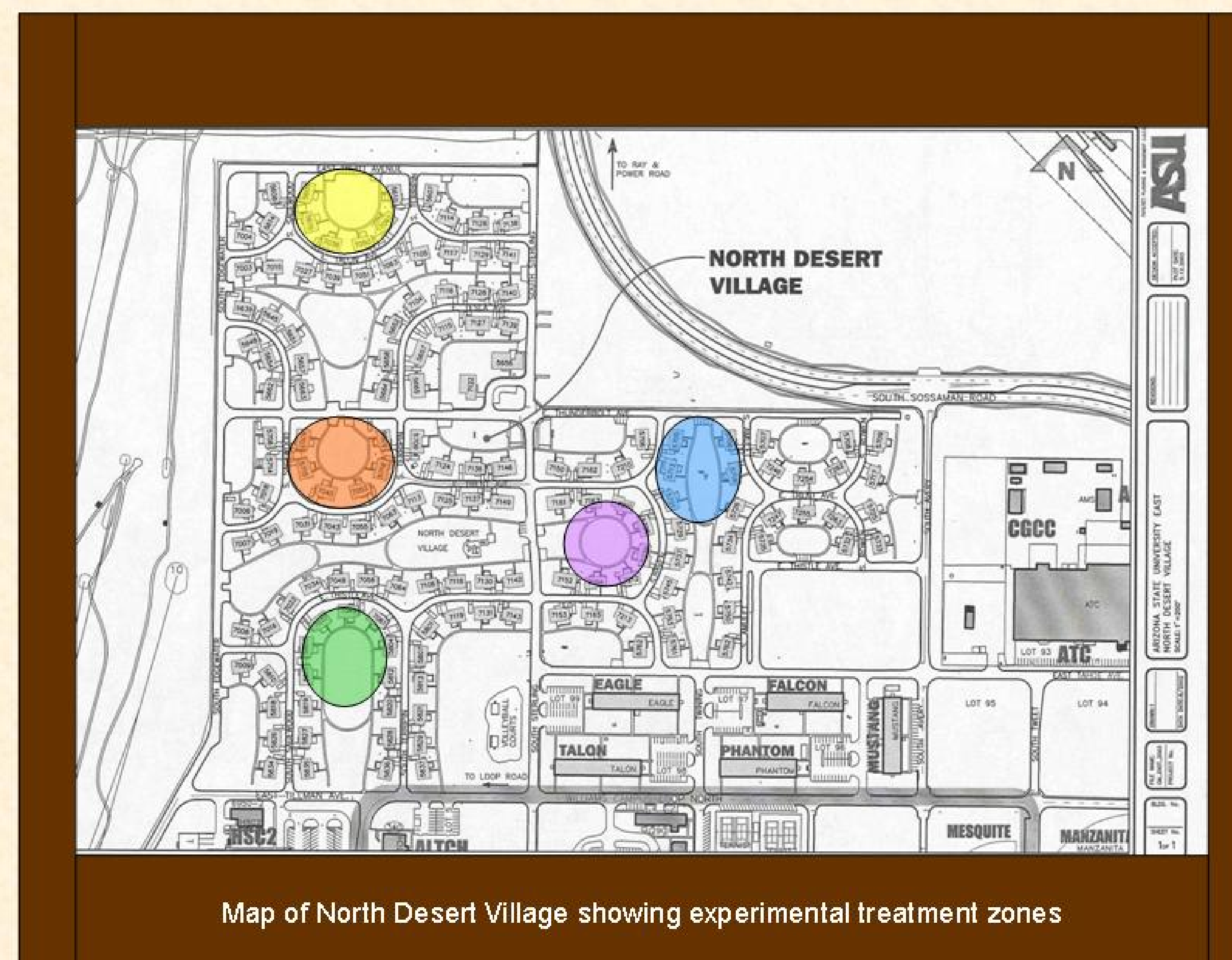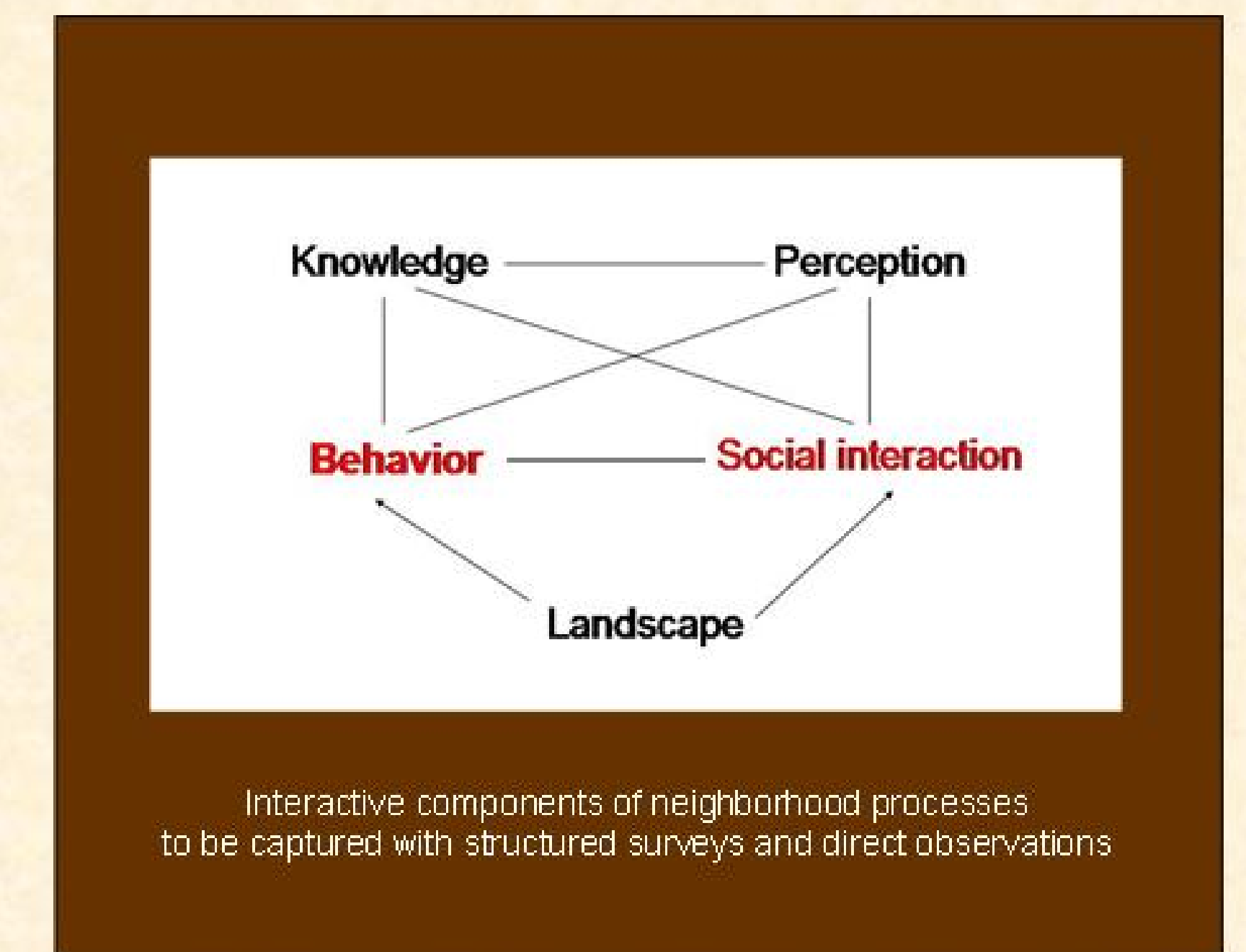
1. **Mesic / irrigated** (high water use plants and turf grass, with irrigation)

2. **Oasis / mixed** (a mixture of high and low water use plants and turf grass, with both drip irrigation and sprinkler systems)

3. **Xeric / drip** (low water use plants without turf grass, with a drip irrigation system)

4. **Native / minimal** (plants native to the Sonoran Desert, with minimal watering)

5. **Control** (zero-scaped)

Artist's Conceptions of Experimental Treatment Zones
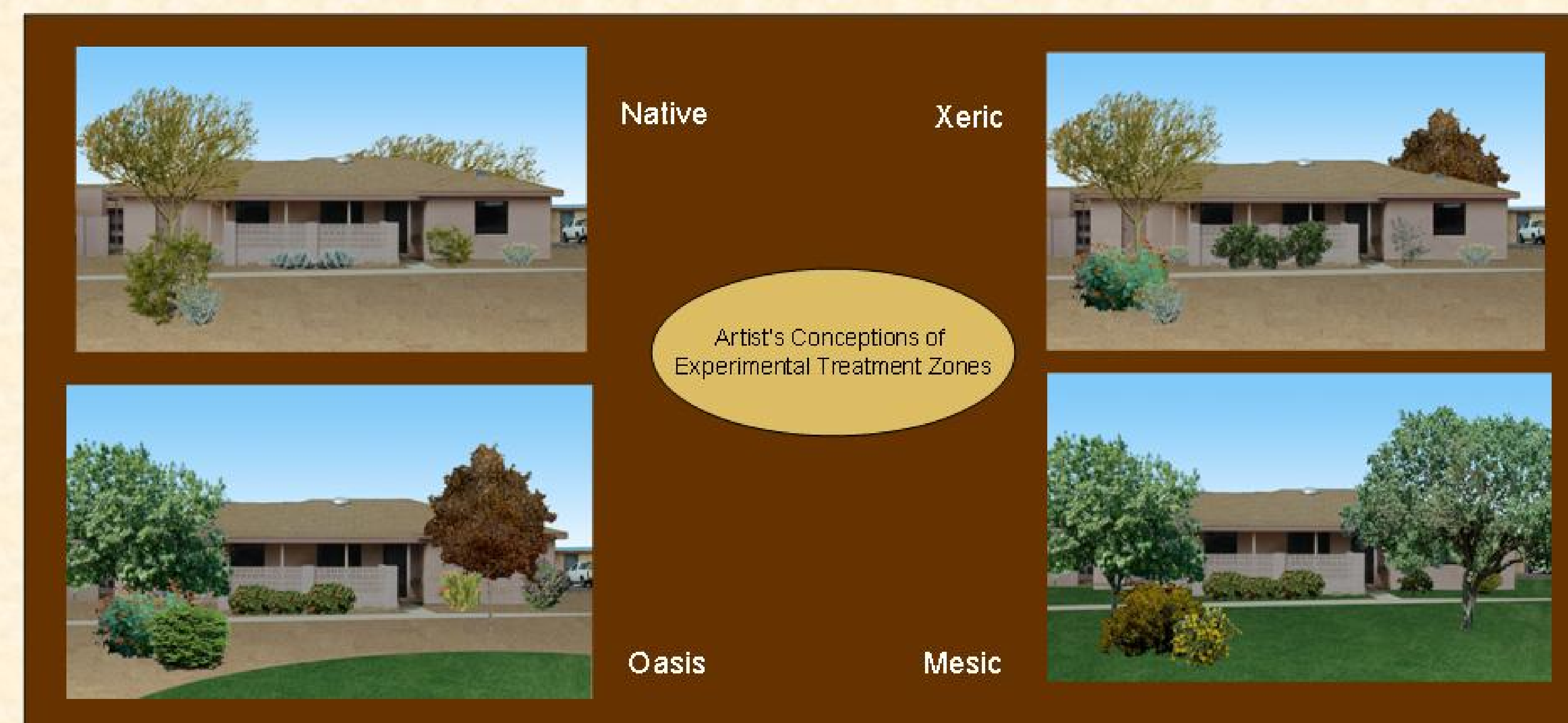
Rationale

To fully understand urban ecological process, it is necessary to examine the reciprocal effects (feedbacks) of different landscaping treatments on humans. We will collect the following types of information about residents of the North Desert Village project:

❖ Personal status attributes, including characteristics such as age, marital status, presence of children, gender, education, income, and geographic mobility history: these form the bases for potential change.

❖ Social networks: knowledge, behavior and perception are all conditioned by social interaction.

❖ Environmental values: to determine pre-treatment orientations and assess change.

❖ Assessments of landscape preference: because these are traditionally thought of as pre-requisites to landscaping choice.

❖ Behavior: this is what ultimately transforms the environment.

Interactive components of neighborhood processes to be captured with structured surveys and direct observations

Map of North Desert Village showing experimental treatment zones

Methods

The study will include both a structured survey and direct observations of behavior patterns before landscape alteration treatments and at continuous periodic intervals after experimental treatment. We will also qualitatively analyze audio recordings of discourses to supplement quantitative data.

North Desert Village in its current condition

Artist's conception of zero-scaping

Significance

We anticipate that our findings will further scholarly understandings of human interaction with very small-scale geographic environments, such as backyards and neighborhoods.

Although past research is primarily focused on more macro-scale landscapes such as forests, beaches, farms, and the built environment of the city, there is growing awareness that people respond to nature at a variety of scales and that there are potentially interesting and significant interdependencies across scales.

It is likely that small-scale behaviors at the individual level, such as water use and gardening activities, have large impacts when aggregated across tens of thousands of households. From a practical perspective, results of our study will inform local water managers and policy analysts of human response to landscape treatments with dramatically different water requirements.

Thus our research at the micro-level will investigate both individuals' attitudes and behaviors with different landscape treatments and explore the likely outcomes of a shift to water-saving landscape treatments.

Because landscaping treatments will include both manipulated and control neighborhoods, the project will be one of the few studies to examine the relationship between the biophysical environment and human behavior in an experimental, yet at the same time realistic, setting.

CES
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Central Arizona-Phoenix
Long-Term Ecological Research