

Final
~~PROGRESS~~ REPORT
FOREST SERVICE GRANT NO. ORUF-98-001

Period covered by this report: July 1, 1998 through July 1, 2000

NOTE: Please review the following information and revise/ complete as necessary

Issued to: University of Oregon

Address: Center for Housing Innovation, 5250 University of Oregon, Eugene, OR 97403-5250

Project Name: Comparing the Values of Urban Forests in New Community Development

Contact Person/ Principal Investigator:

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Date of Award: July 1, 1998

Grant Modifications: N/A

Date of Expiration: July 1, 2000

Funding: Federal Share: \$82,500 plus **Grantee Share:** \$116,067 = **Total Project:** \$198,567

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Project abstract (as defined by initial proposal and contract):

Comparing the Values of Urban Forests in New Community Development creates side-by-side comparisons of three alternative models of neighborhood development that demonstrate varying degrees of preserved forest and proposed tree planting. A low density 'conventional subdivision' plan, a higher density 'traditional neighborhood' plan, and a higher density 'sustainable plan' will be analyzed against measures of design, air and water quality, stormwater quantity, energy and cost. The project builds on 5 years of community investment in a growth management plan and planning process and, two years of university-based research and investment in community participation-oriented neighborhood planning tools. The results will provide quantitative and visual evidence of the costs and benefits of common neighborhood development practices and produce nationally applicable design guidelines. The knowledge and experience gained will contribute to the ongoing development and refinement of portable, low cost, renewable tools and processes designed to inform public participation in neighborhood planning and design. Findings will be disseminated locally through community participation, local media, exhibitions and presentations; and nationally through a guidelines publication, papers, WWW sites and University courses.

Project Progress:

This project includes **7 tasks**

- 1 TAILOR DIGITAL DATA BASE. This task is 100% complete. Products include: digital database; landscape analysis; local advisory committee formed and three meetings completed.
- 2 CREATE SUSTAINABLE PLAN This task is 100% complete. Products include: design and drawings for a sustainable development alternative (now called the Open Space Plan.)
- 3 DIGITIZE AND ANALYZE ALTERNATIVES This task is 100% complete. Products include: digitizing of the three alternative plans; testing measurement methods; initial measurements of the three alternative plans producing the Site Inventory and stormwater runoff estimates.
- 4 REFINE MEASURES AND PROFORMAS This task is 100% complete. Products include: critique of measures by the local advisory committee; revisions to what was measured and to how measuring was done.
- 5 EVALUATE AND COMPARE ALTERNATIVES This task is 100% complete. Products: side-by-side comparisons of the three alternatives in categories of environment, energy, cost, community; report of findings.
- 6 DEVELOP DESIGN EXAMPLES AND GUIDELINES This task is 100% complete. Products: published set of design guidelines for new developments with lower environmental impact. Report is entitled Green Neighborhoods: Planning and Design Guidelines for Air, Water, And Urban Forest Quality.
- 7 DISSEMINATE RESULTS This task is 100% complete. Products: WWW site for this project (results of Tasks 1, 2, 3, 4, and 5, posted); professional lectures (7 completed), papers (3 completed, one under review); local, state presentations (8 completed); final report (Task 6 above) completed and disseminated.

Project objectives:

National

1. Demonstrate a method of comparing neighborhood planning and design alternatives against an inclusive set of measures.
2. Illustrate best practices related to urban forestry and community development.
3. Contribute to the refinement of a replicable and renewable set of processes, tools and measures that increase public awareness of the environmental impact of common models of development.

Regional

1. Demonstrate application of regional and watershed scale environmental policy and measures (in progress by others - see related research section) to neighborhood scale planning and design.
2. Demonstrate a palette of neighborhood planning, design and construction practices applicable to the environmental issues and conditions of Willamette Valley communities.

Local

1. Cultivate local awareness and acceptance of new models of sustainable development practices applicable to the West Corvallis-North Philomath area..
2. Directly engage principal stakeholders in issues and concepts related to sustainable development and urban forestry.
3. Influence adoption of the West Corvallis-North Philomath Plan (beginning late 1998 and 1999) toward policies, guidelines and standards that benefit the environment.
4. Develop a site specific demonstration to local property owners and developers anticipated to initiate the first on-the-ground, model projects of the WCNP plan within a few years; which in turn, will influence subsequent development in this area.

Objectives met successfully to date:

National

1. *Demonstrate a method of comparing neighborhood planning and design alternatives.* This objective is 100% met through the completion of tasks 1,3,4 and 5.
2. *Illustrate best practices related to urban forestry and community development.* This objective is 100% achieved through distribution of the document Green Neighborhoods: Planning and Design Guidelines for Air, Water, And Urban Forest Quality and conference papers delivered to the American Society of Landscape Architects (ASLA) national conference in Portland, OR Fall, 1998, the Council of Educators in Landscape Architecture (CELA) annual conference, Arlington, TX Fall, 1998 ("Measuring the Values of Surface Stormwater Systems," by Cynthia Girling) and the Canadian Society of Landscape Architects Annual congress in May, 1999 in Vancouver, British Columbia. and National Urban Forest Conference, "Building Cities of Green," Seattle, WA, September, 1999; ASLA/CELA joint national conference, Boston, MA September, 1999, HOPES Annual Conference, Eugene, Oregon April, 2000, and Livable Oregon Conference, Portland Oregon, June, 2000. Two seminars on this topic were held at the University of Oregon, Spring, 1999 and Winter, 2000. Completion occurred through the posting of the WWW site and completing the design guidelines product.
3. *Contribute to the refinement of a replicable and renewable set of processes, tools and measures.* This objective is 100% met through the completion of tasks 1,3,4 and 5.

Regional

1. *Demonstrate application of regional and watershed scale environmental policy and measures to neighborhood scale planning and design.* This objective is 100% achieved through the distribution of the document, Green Neighborhoods: Planning and Design Guidelines for Air, Water, And Urban Forest Quality.
2. *Demonstrate a palette of neighborhood planning, design and construction practices.* This objective is 100% achieved through completion of the Open Space Plan, presentations to local and state agencies and a subsequent invitation to assist with neighborhood planning workshops in Eugene and the distribution of Green Neighborhoods: Planning and Design Guidelines for Air, Water, And Urban Forest Quality. As well, conference papers were delivered to the American Society of Landscape Architects (ASLA) national conference in Portland, OR Fall, 1998; the Council of Educators in Landscape Architecture (CELA) annual conference, Arlington, TX Fall, 1998 ("Measuring the Values of Surface Stormwater Systems." by Cynthia Girling); Canadian Society of Landscape Architects Annual Congress in May, 1999 in Vancouver, British Columbia; National Urban Forest Conference, "Building Cities of Green," Seattle, WA, September, 1999; ASLA/CELA joint national conference, Boston, MA September, 1999, HOPES Annual Conference, Eugene, Oregon April, 2000, and Livable Oregon Conference, Portland Oregon, June, 2000.

Local

1. *Cultivate local awareness and acceptance of new models of sustainable development practices.* This objective is 100% achieved through displays and lectures held in Corvallis, Oregon, July, 1998 and 1999.
2. *Directly engage principal stakeholders in issues and concepts related to sustainable development and urban forestry.* This objective is 100% achieved through displays held in Corvallis, July, 1998 and 1999 and the distribution of Green Neighborhoods: Planning and Design Guidelines for Air, Water, And Urban Forest Quality.
3. *Influence adoption of the West Corvallis-North Philomath Plan (beginning late 1998 and 1999) toward policies, guidelines and standards that benefit the environment.* This objective is 100% achieved through displays held in Corvallis, Summer 1998 and 1999. Elected officials were educated about alternative development practices. They will receive study findings in Fall, 1999 and the final report at the conclusion of this project. Note: the *WCNP Plan* has been adopted *and, in addition, relevant policies have been incorporated into the comprehensive plan revisions.*
4. *Develop a site specific demonstration to local property owners and developers.* This objective is 100% achieved through completion of the "open space plan" and display of same in Corvallis in July, 1998 and

1999 and the distribution of Green Neighborhoods: Planning and Design Guidelines for Air, Water, And Urban Forest Quality.

Objectives not yet met:

National

National objectives are complete. See above.

Regional

Regional objectives are complete. See above.

Local

Local objectives are complete. See above.

How will this project increase the knowledge we have about urban forestry? How will the public benefit?

The results of this project demonstrate nationally applicable models of evaluation and contribute evidence of the comparative performance of three nationally representative types of neighborhood scale development (a low density 'conventional subdivision' plan, a higher density 'traditional neighborhood' plan, and a higher density 'sustainable plan'). We have also generated illustrative planning and design examples and guidelines that demonstrate a range of strategies and best practices that will be of interest to community, professional and academic audiences. In addition, this project involves the participation of faculty and student assistants in professional schools of planning, landscape architecture and architecture who will carry these priorities, methods and experiences with them into their professional careers throughout the US. and abroad. At the state and regional level this work will demonstrate how smaller scale community actions can incrementally impact larger scale initiatives, in this case, the State of Oregon's efforts to manage growth concurrent with improving water quality and riparian habitat (The Oregon Plan, 1997). Locally this project is educating landowners, developers, the public, planners and elected officials about the environmental costs, benefits and compatibility of urban forests with the West Corvallis North Philomath Plan area.

What specific quantifiable results will be produced?

Note: two methods of measurement are used, *Net Energy Communities (NEC)* and *CITYgreen*.

ENVIRONMENT This project estimates environmental impact in categories of air, water and microclimate. NEC, for example, measures permeable surfaces (square feet), water demand (gal. per capita day) land cover and tree canopy (square feet); CITYgreen measures air pollution mitigation (carbon storage, sequestration, air pollutant removals in pounds), stormwater quantity (permeable surface in square feet and runoff in cubic feet per second, water quality (amounts of pollutants carried in runoff), and heat island mitigation (site albedo).

ENERGY *CITYgreen* estimates total energy savings through microclimate mitigation.

COST *NEC* estimates economic impact in categories of open space, and infrastructure. For example, relative costs attributable to stormwater infrastructure will be estimated for all three plans.

COMMUNITY: *NEC* estimates proximity to services (% of households within 1/4 mile of commercial, civic and open spaces), pedestrian access (% of streets with sidewalks, crossings and low traffic speeds), pedestrian attractiveness (% of buildings fronting streets, mix of stores and services, building scale) and affordability (% dwellings affordable at median income) and economic opportunity (potential job sites).

SUMMARY COMPARISONS: The three plans were then compared side by side against key indicators of land use, environment and investment performance. For example, in the environment category, they will be compared for % of site area in impermeable surface, % of land area in forest and shrub/scrub vs. turf or pavement, volume of stormwater runoff in acre-feet and so forth. This information is presented in tabular and visual formats.

How will the results be disseminated to the public?

We have posted the project description, methodology, findings and the design guidelines on a web site. Links to our WWW site are confirmed from American Forests, US Department of Energy's Center of Excellence in Sustainable Development, and will be requested from USDA Forest Service, American Society of Landscape Architects (ASLA), American Planning Association (APA), and the Urban Land Institute and state governments offices such as the Department of Forestry, Department of Land Conservation and Development; Governor's Livability Forum and others. The summary report and design guidelines publication will be available for purchase at cost through the Center for Housing Innovation, and as a PDF from our WWW site.

Principal investigators have and will continue present academic papers geared to professional audiences (ASLA, APA, Urban Forestry conferences). Aspects of this work will be used for educational purposes in courses and theses at the University of Oregon (classes in Open Space Planning, Elements of Neighborhood, Net Energy Communities and design studios emphasizing community design). In addition to the approximately 6 students directly employed on this project as research assistants, at least an additional 50 students in architecture, landscape architecture and planning a year have enrolled in courses directly related to this work. These students take the knowledge and experience gained to their careers around the USA and internationally.

Education of staff, the stakeholder group, and landowners in Corvallis has occurred through participation in this project. Exhibitions and public meetings were held in Corvallis displaying the three plans and the comparative evaluations in poster form. The final report, including design guidelines will be available at the local library and the planning departments of the two partners.

If a no-cost time extension has been requested for this project, why is (was) it needed?

N/A

List the active partners (key individuals or organizations) involved in the project to-date:

UNIVERSITY OF OREGON, DEPARTMENT OF LANDSCAPE ARCHITECTURE

Cynthia Girling, Co-principal Investigator and Associate Professor

BENTON COUNTY, OREGON

Jerry Davis, Director, Parks Department

Roger Irvin, Engineer, Department of Planning and Development

Al Kitzman, Arborist, Parks Department

CITY OF CORVALLIS, OREGON

Fred Towne, Associate Planner, Department of Planning and Development

Comments considered of importance but not covered above:

The presentation of this project to the City of Corvallis, City of Eugene, the City of Lake Oswego and the State of Oregon Department of Land Conservation and Development has leveraged additional related work with each of these agencies. The City of Eugene project, now completed, led to a partnership with them on a 1999 NUCFAC grant proposal (not funded).

The document, Green Neighborhoods: Planning and Design Guidelines for Air, Water, And Urban Forest Quality, was distributed to local, regional and national level reviewers in mid-December, 1999. It was significantly revised between January 2000 and completion in June 2000. Reviewers of this document are: City of Corvallis and Benton County partner staff, listed above and the Local Technical Advisory Committee for this project; Cheryl Kollin, American Forests; Deb Caraco, Center for Watershed Protection; Ken Snyder, US Department of Energy, Center for Excellence in Sustainable Development; Professor Mark Francis, University of California, Davis; Professor Bruce Ferguson, University of Georgia; Krista Reininga, URS Corp.; Joe Poracsky, Portland State University; Don Yon, Oregon Department of Environmental Quality; Amanda Puntin, Oregon Department of Land Conservation and Development.

This report was prepared by:

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Date: July 21, 2000.