

Land Use and Future Development Alternatives for the Tulsa Turkey Mountain Urban Wilderness: Dynamic Design Studio in the Public Realm

JAMES R. PATTERSON, AIA
JAMES L. SIPES, ASLA
University of Oklahoma

In the Spring of 1996, two programs of the University of Oklahoma College of Architecture — the Graduate Architecture Studio in Urban Design at the Tulsa campus, and the Graduate Landscape Architecture Studio at the Norman campus 125 miles away, developed a master plan for the Turkey Mountain Urban Wilderness Area in Tulsa, Oklahoma as part of an urban design studio. The site presented a challenge because of conflicts between user groups, developmental pressures, and the ecological sensitivity of the site. Pedagogically, the project and process was highly experimental and sought to explore potential outcomes in three objective areas: (1) to involve students in an interdisciplinary design process, incorporating three divergent disciplines, and employing dissimilar tools; (2) to expose students to the dynamics of user involvement in the design process; and (3) to demonstrate the value of developing alternative schemes for public evaluation. Direct user input was incorporated as an ongoing feature of the design process via a series of public forums and a write-in campaign promoted by a local newspaper. The public forums were held in the design studio amidst tracings, boards and models of work. The research methodology was a studio process of data gathering, then assembling the apparent most promising critical performance models. The Urban Design Studio team produced two alternative schemes for the entire River Park System. The Landscape Architecture studio produced three alternative schemes for the Turkey Mountain Urban Wilderness Area. Alternatives were computer modeled and represented in large drawings suitable for public group review. Students and participants in the project came to view design, and periodic design review, as a powerful ongoing environmental management tool rather than the more conventional, limited “problem solving” process that is fixed in time. Results of the work were significant in demonstrating the value of design studios as a sounding board for democratic public will.

PROJECT PURPOSE

As cities grow it becomes increasingly important to understand the structure, function, and value of ecosystems that

can thrive in our rapidly urbanizing landscapes. (McPherson, 1996) The City of Tulsa was settled approximately 100 years ago in Indian Territory, on the banks of the Arkansas River. Tulsa boomed after the discovery of oil in the early 1900s and has continued to prosper. Today, Tulsa covers almost 200 square miles and has around 400,000 residents. In 1989, the Tulsa Metropolitan Area Planning Commission created the *Park, Recreation & Open Space Plan 1988-2005* to help guide future recreation-oriented decisions. One major finding of the plan was that Tulsa's 6,552 acres of park land were insufficient considering existing park land deficiencies and projected population increases. The plan also expressed concern that existing park facilities were being dramatically overused and that some of the more critical natural and scenic areas were in danger of being decimated by such overuse.

Tulsa needs to find a way to balance immediate needs while developing long term strategies for community planning and to understand the impact of community settlement on the natural resources of the region. This awareness could help shape policies and community design strategies that meet present needs while protecting natural resources to meet long-range community needs in order to build towards a sustainable future. A sustainable society is one that satisfies its needs without jeopardizing the prospects of future generations. (from Worldwatch, 1990)

PROJECT BACKGROUND

Two of the goals identified in the Park, Recreation & Open Space Plan are (1) to establish a metropolitan-wide Tulsa Trails system, and (2) to preserve natural and scenic areas. To meet the first goal, Tulsa created the River Parks System. For the second, Tulsa developed the Turkey Mountain Urban Wilderness Area.

River Parks System

In the 1970s, as the city's gift to itself for its 75th birthday, the citizens of Tulsa began developing the River Parks System. The River Parks System is nestled along the banks of the

Arkansas River and is within walking distance of downtown Tulsa. There are more than five miles of linear park land along the east bank of the river and two miles of park land on the west bank. The parks are a gathering place for the people of Tulsa and attract more than 500,000 people annually. The park system is managed by the River Parks Authority who are responsible for design, maintenance, acquisition, and day-to-day operations. Approximately 25 special events are conducted annually: these include soccer tournaments, raft races, festivals, concerts, symphonies, egg hunts, Christmas lights, fireworks, movies, duck races, kite flying, bike tours and races, track events, contests, competitions, and educational activities.

Included in the River Parks System are features such as an exercise course, public art, picnic facilities, park benches and site furnishings, nature trails, low-water dam, parking lots, Frisbee golf course, playgrounds, bicycle and jogging trails, volleyball courts, tennis courts, festival sites, marina, fishing piers, floating stage, and public restrooms and showers. The old Midland Valley Railroad pedestrian bridge, Rugby Field, Blair Fountain, Zink Lake, Crow Creek Bridge, and River West are some of the more popular visitation spots of the River Parks system. Plans are underway to construct the Tulsa Aquarium, a science and education resource center that will include over 200 exhibits and will hold over a million gallons of water. The Tulsa Aquarium is expected to dramatically increase tourism in Tulsa once it is completed; preliminary estimates are that the Aquarium will generate around 500,000 visitors per year.

Multi-use pedestrian and bicycle trails tie the entire River Parks System together and connects it with other major public facilities in the area. These trails are used by the public as walking, bicycle and jogging paths linking neighborhoods, parks, education sites, commercial centers and major public open spaces and recreation facilities. Linked with the traditional park system and local creeks and their tributaries, the incoming trails preserve valuable natural resources and provide greenway open spaces within the Tulsa urban setting. River Parks Authority plans to extend existing trails and eventually develop a 50-mile trail network throughout the metropolitan area and add an additional 29 miles of trails along highways.

Turkey Mountain Urban Wilderness Area

Turkey Mountain is located west of the Arkansas River between I-44 and 71st Street and is one of the most prominent features of the River Parks system. An established landmark in the Tulsa area, Turkey Mountain provides a phenomenal view from the top of the bluff. The mountain is characterized by dense vegetation, scattered grasses, rock outcroppings, and steep topography. The east-facing bluff is faced with enormous sandstone and limestone outcroppings and trees; the area west of the ridge is hilly and undulating with dense expanses of trees. Having only been cleared in small areas for oil drilling operations, the vegetation is quite dense on the

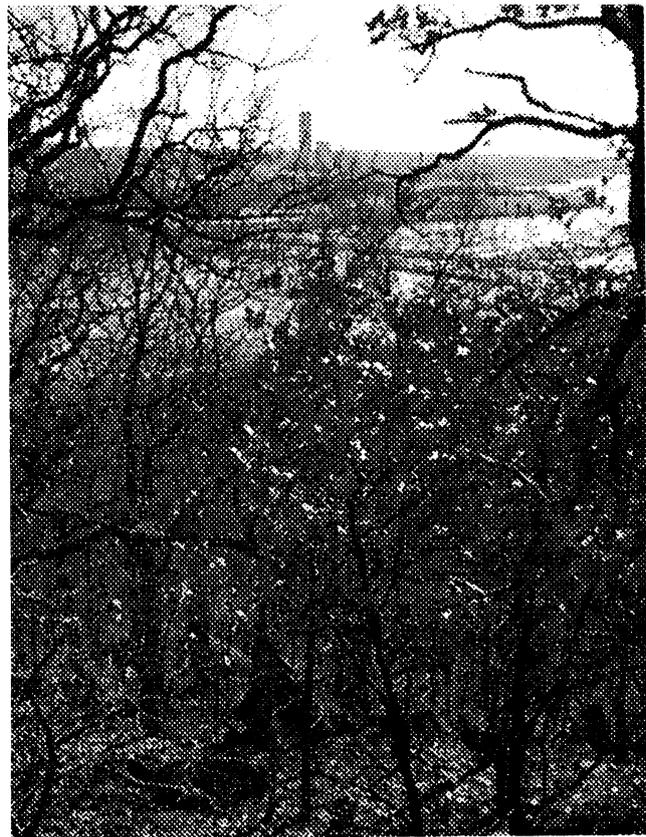


Fig. 1. View of downtown Tulsa from Turkey Mountain.

entire mountain. There are still large amounts of old cable, pipe and other oil well equipment scattered through the property, and areas where oil has been discharged on the ground.

In 1978, Turkey Mountain was acquired by the River Parks Authority to serve as an urban wilderness area for the citizens of Tulsa. Since its acquisition, Turkey Mountain has been left basically undeveloped with only minor improvements being added. Plans are to extend the River Parks System to include the Wilderness Area. Adjacent to the site are mixed land uses of agriculture and single-family residential. Residential development in the immediate area east of the site is sparse due to lack of utilities, but heavy residential construction has occurred just one mile to the west.

PROJECT APPROACH

Two programs of the University of Oklahoma College of Architecture combined forces to develop a master plan which would help Tulsa shape policies and community design strategies that meet present recreation and open space needs while protecting natural resources and meeting long-range community needs. The Graduate Architecture Studio in Urban Design at the Tulsa focused on the River Parks System and the Graduate Landscape Architecture Studio at the Norman campus, 125 miles away, focused on

the Turkey Mountain Urban Wilderness Area.

Pedagogically, the project and process was highly experimental, and sought to explore potential outcomes in the following three objective areas:

First, to involve students in an interdisciplinary design process, incorporating three divergent disciplines, and employing dissimilar tools. The urban design studio, traditionally architecture based, invariably took a physical view of design. The landscape architecture studio employed a largely environmental view of the work. The public entity, Tulsa River Parks Authority, took a largely political and governmental view of the work, especially cogent in this project since the executive director of that body is a Landscape Architect by discipline. In the structuring of the work, however, each of the two studios and the public entity had approximately the same influence over the work, thus collaboration was essential.

Second, to expose students to the dynamics of user involvement in the design process. In this case, the users were a diverse group of public and private interests, in which hostility and conflict was already escalating at the beginning of the work. The work of the studio, from beginning rough stages, was highly publicized and featured on a continuous basis expressly to attract local public interest and involvement. Devices for receiving and assimilating public opinion into the design process were developed.

Third, to demonstrate the value of developing alternative schemes for public evaluation. Students were engaged in a design process that was iterative and expansive, rather than one culminating in a narrowing, and freezing, of alternatives.

PROBLEMS & CONCERNS

There were a number of potential obstacles that had to be addressed if the Turkey Mountain Urban Wilderness Area was going to environmentally sustainable as well as meet current and future recreation needs. One major concern was that the site would be irreparably damaged because of three factors: (1) much of the mountain was already being damaged by overuse, (2) the amount of use was expected to increase dramatically in the next few years, and (3) pressures to develop the mountain were also increasing. The quantity of people utilizing the urban wilderness area is steadily increasing and will rapidly grow with the west bank trail development.

Development on Turkey Mountain has been minimal because of the lack of adequate utilities. The area is currently served by twelve and sixteen-inch water lines, but additional water distribution lines are required. The northern watershed is adequately served by a major sanitary sewer line. A water tower is being constructed on land adjacent to the Urban Wilderness Area and is expected to lead to a dramatic increase in new residential development.

Another major concern was potential conflicts between user groups. Conflicts have been minimal in the past, primarily because usage of Turkey Mountain was low. But as the

number of users increased, so has the conflicts between users. Environmental groups want to restrict virtually all uses except passive activities such as hiking and bird-watching. Hikers, runners, and mountain bikers do not want to share trails with horses because horses damaged trails if they were damp and left undesirable waste. The bicyclists want the trails trimmed, while horse-back riders want wider, more rugged trails. Runners need some form of running surface to avoid injury and are concerned about being run over by bikers or horses.

Conflict management and collaborative problem-solving approaches offer the potential to convene diverse stakeholders to produce long-lasting solutions to problems associated with projects in the public sector. When non-adversarial forums are structured for community participants, effective information gathering and consensus-building can occur. In the long-run, when public stakeholders are armed with correct and reliable information, sound decisions can be made. These decisions must be based upon a clear understanding of available information by the public as well as an investment in participation which supports project implementation. (Trowbridge, 1996)

Some basic premises of conflict resolution include: (1) recognition that enduring solutions to multi-party conflicts necessitate collaborative, inclusive decision-making processes; (2) creating interest-based negotiations necessary to get people to think about the problem at hand and do problem-solving rather than take positions; and (3) identification of shared assumptions rather than shared disagreements as an essential basis for consensus-building. (Trowbridge, 1996)

SIMILAR PROJECTS / RESEARCH

Prior to making any design decisions, students reviewed previous research projects that addressed environmental sustainability in urban areas. They also reviewed parks similar to the Turkey Mountain Urban Wilderness Area. Some of these included Stanley Park in Vancouver, Canada; Mill Race Park in Columbus, Indiana; and River Walk Civic Places in Chesapeake, Virginia. Stanley Park was of particular interest because it is a 1,000-acre wilderness park just blocks from downtown Vancouver. Voyageurs National Park in Minnesota, Mojave National Preserve in California, Everglades National Park in Florida, Yellowstone National Park in Wyoming, and Yosemite National Park in California are all national parks being threatened by developmental pressures. (Sloan, 1996) A similar interdisciplinary design assistance team worked with the community of Nuevo Gualcho in El Salvador to create a vision for the future that included both short and long-term strategies for sustainable settlement (Hill, 1996).

An interpretive wayfinding system for the St. Anthony Falls Heritage Trail in Minneapolis, MN tells of the river's dynamic history, from prehistoric geologic time to more recent influences on and around the river. (Donovan, 1996)

The main components of the wayfind system are information kiosks, historic interpretive panels and trail waymarkers. Each element was located strategically in order to bring the trail user in immediate contact with the rivers historic features.

A number of studies have established relationships between different urban forest structures and specific benefits such as visual quality, energy savings, removal of atmospheric carbon dioxide, wildlife habitat, and personal safety. However, quantitative techniques for evaluating tradeoffs associated with multiple functions from a specific landscape are lacking. (McPherson, 1996) The purpose of the Sacramento Urban Forest Ecosystem Study is to enhance understanding of the regions urban forest ecosystem by quantifying its structure, function, and value. (Stone, 1995)

DESIGN SOLUTIONS

The Graduate Architecture Studio in Urban Design at the Tulsa campus produced two alternative schemes for the entire River Parks System. The Graduate Landscape Architecture Studio at the Norman campus, 125 miles away, produced three alternative schemes for the Turkey Mountain Urban Wilderness Area.

Prior to beginning the design phase of this project, students conducted a detailed inventory and analysis of public parkland and facilities and reviewed information such as a Flood Insurance Study, ADA Accessibility Guidelines, local flood prevention projects, public water supply standards for Oklahoma, stormwater drainage, oil and gas records from the Oklahoma Corporation Commission, soil surveys, average annual precipitation, hardiness zones, archeological surveys, Oklahoma water quality standards, utilities, and surrounding landuses.

Students were divided into five different groups. Two groups consisted of one student while the other three in-

cluded four to five students in each. Group assignments were based upon each students stated objectives, indicated scope of work, and definition of urban wilderness.

The first student developed a master plan for expanding the River Parks System to include the Turkey Mountain Urban Wilderness area and the proposed Tulsa Aquarium. Several areas of consideration that would greatly enhance the preservation of the riverfront corridor were developed, giving a sense that this whole area is connected from Sand Springs to Jenks. The large scale master plan proposed an equestrian center with trails, a pedestrian corridor with walkways and jogging trails, a pedestrian-oriented farmers market, and a trolley system which would link the proposed aquarium to downtown Tulsa. These additions would help maintain the popularity of the River Parks System as a greenway that attracts Tulsas citizens for leisure, educational, and recreational activities.

A second student proposed a series of trails and minor improvements such as plantings and parking for the Wilderness Area. In addition, they proposed converting the Southside Sewage Treatment Plant, located at the confluence of Mooser Creek at the Arkansas River, into a recreation area that would tie into the existing River Parks System.

The third group recommended maintaining the rugged character of Turkey Mountain and proposed a series of trails, open spaces, parking areas, ponds for wildlife habitat, and a staging area for cross country and mountain bike races. All proposals were within the existing boundaries of the Turkey Mountain Urban Wilderness Area, and the majority of the site was left undeveloped.

The fourth group proposed to enhance the restoration of the site by acquiring surrounding land to supplement the parks size and as a mitigation measure against future degradation of the site while protecting the environment, habitat, and the recreational quality. The plan recommended reestablishing diversity, including more native plant species, and increasing scenic qualities and wildlife. A new cultural center would be used to attract visitors interesting in learning about issues of environmental habit and sustainability.

The fifth group addressed not only the urban wilderness area, but also developed proposals for surrounding land uses that would be environmentally sound and not have a negative impact on the site. In 1983, one landowner hired a design consult to create a master plan for the area west of the Wilderness Area. Building upon this idea, the design group proposed a more environmentally sensitive development that would include a town center, commercial and office space, single-family and multi-family residential areas, the wilderness area, and a large buffer to protect the wilderness area from negative impacts of the residential area. The group proposed rerouting Elwood Avenue along the west side of the Wilderness Area to accommodate development.

All five groups established design standards for trails, parking areas, and proposed keeping parking areas on the perimeter and allowing only trails or similar compatible facilities to be built in the interior to help keep noise levels,

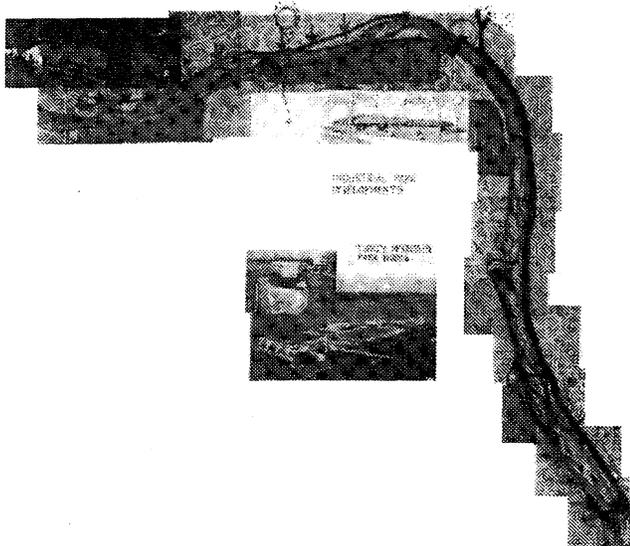


Fig. 2. Plan showing extension of River Parks System from Sand Springs to Jenks.

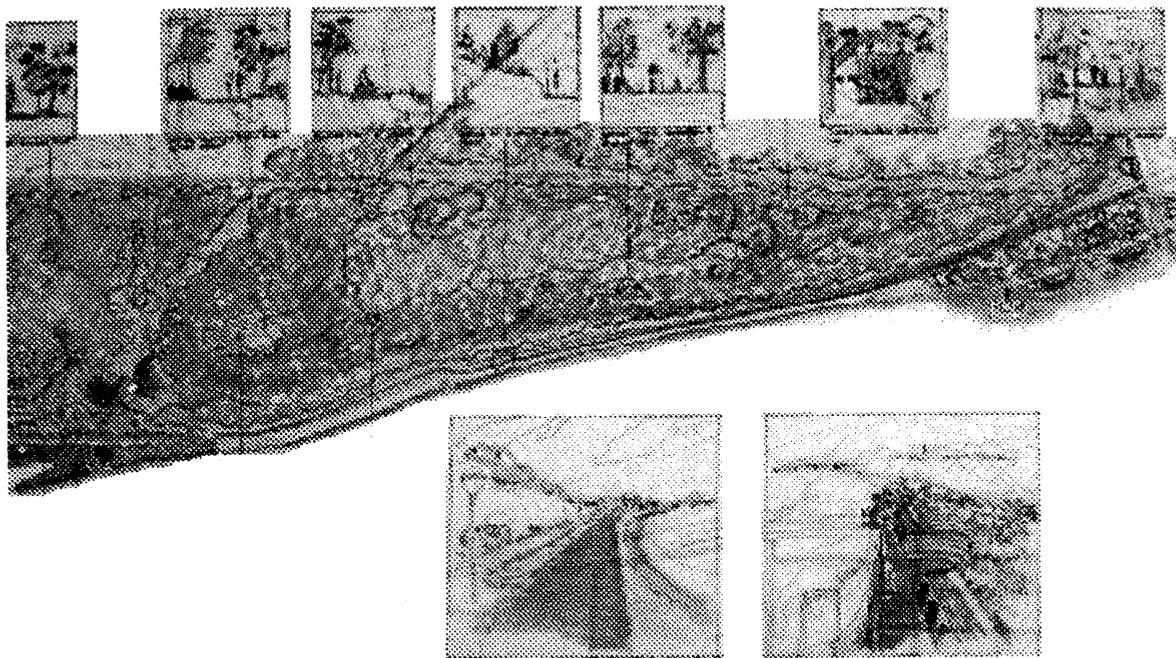


Fig. 3. Plan showing design for Turkey Mountain and Southside Sewage Treatment Plant.



Fig. 4. Detailed plan of staging area.

numbers of people, and subsequent disturbance of wildlife to a minimum. Each group also developed a mechanism for collecting scientific data to monitor the environmental health of Turkey Mountain. All three groups offered alternatives for fulfilling the three essential steps required for effective planning to conserve wildlife habitat: (1) Setting specific goals for wildlife as a component of future landscapes; (2) developing a credible and understandable procedure for ranking areas of landscape in terms of their ability to achieve those goals, and (3) choosing regulatory and free market tools to protect high priority areas. These regulatory and free market tools include a wide range of actions such as protection actions, including acquisition and easement, protection via zoning, and incentives. Students reviewed potential methods of generating revenue identified included user fees, program and class fees, rentals, concessions, contracts with private entities, donations, and volunteers

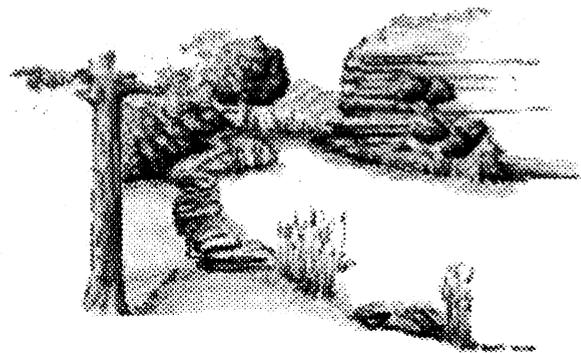


Fig. 5. Character sketch of trails along Mooser Creek.

CONCLUSION

Students completed the four month study and presented their alternatives to interested citizens and organizations at a public meeting in Tulsa on May 4, 1996. Although there were some strong conflicting opinions, most in attendance agreed that Turkey Mountain is a unique site affording man different uses and that steps must be taken to prevent it from natural or unnatural deterioration.

The results of the work were most significant in demonstrating the value of design studios as a sounding board for democratic public will. In the paper we delineated the three different aspects by which public involvement informed the design process, and the ways in which public interests were enriched by the design students' work.

Students and participants in the project came to view design, and periodic design review, as a powerful ongoing environmental management tool, rather than the more conventional, limited "problem solving" process that is fixed in time.

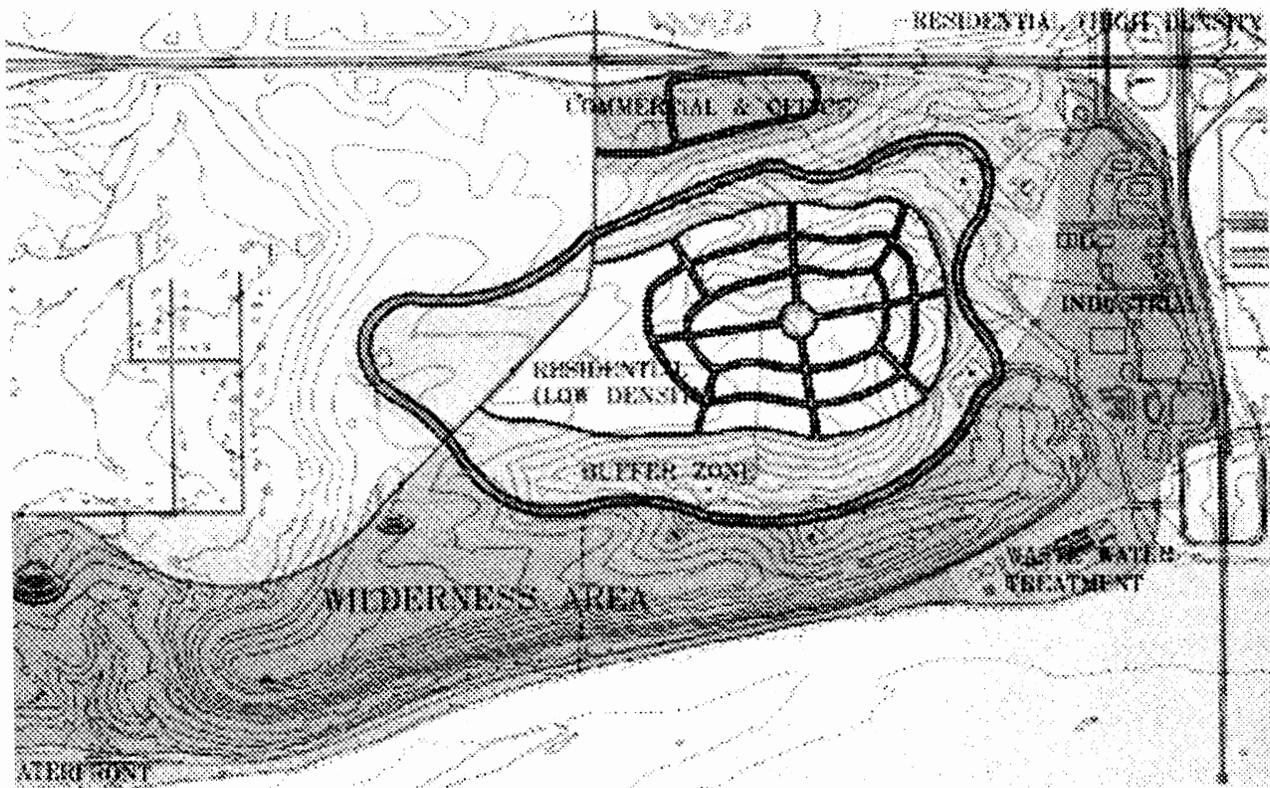


Fig. 6. Conceptual plan showing developed land and Wilderness Area.

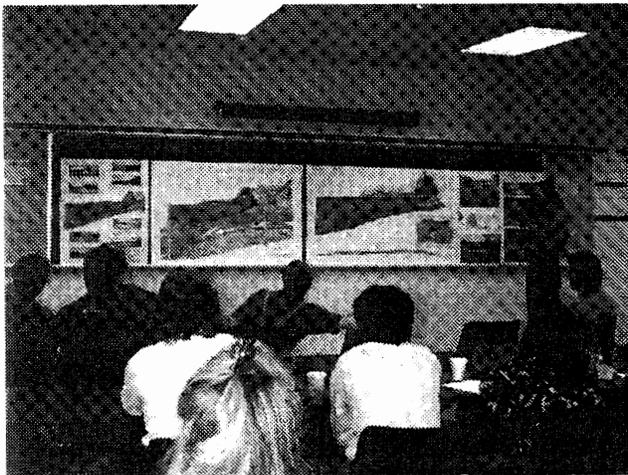


Fig. 7. Photograph from public meeting.

REFERENCES

- Sloan, Gene. A Cry over Minnesota National Park Wilderness. *USA Today*, February 28, 1996, pp. 7D.
- AASHTO Task Force on Geometric Design. *Guide for the Development of Bicycle Facilities*, American Association of State Highway and Transportation Officials, 1991.
- Donovan, Jim. Planning Safe Bicycle Routes: A Feasibility Analysis Method. *1996 Annual Meeting Proceedings of the American Society of Landscape Architects*, pp. 145-147.
- McPherson, E. Gregory. Urban Forest Landscapes, How Greenery Saves Greenbacks, *1996 Annual Meeting Proceedings of the American Society of Landscape Architects*, pp. 27-29.
- Hill, Margarita. Planning for a Sustainable Future in Nuevo Gulacho, El Salvador. *1996 Annual Meeting Proceedings of the American Society of Landscape Architects*, pp. 19-23.
- Arendt, Randall. *Designing Open Space Subdivisions: A Practical Step-by-Step Approach*, Media, PA: Natural Trust, Inc. 1994.
- Duerksen, Christopher and N. Thompson Hobbs. Wildlife Habitat Protection in Urbanizing Areas: A Collaborative Approach. *Proceedings of the 1995 Annual Meeting of the American Society of Landscape Architects*, pp. 31.
- Federal Emergency Management Agency. *Flood Insurance Study*. 1991.
- Hudgins, Thompson, Ball & Associates, Inc. *A Development Plan for River Lakes Park*. 1968.
- McPherson, E., Nowak, D.J., and R.A. Rowntree. Chicagos Urban Forest Ecosystem: Results of the Chicago Urban Forest Climate Project. *General Technical Report No. NE-186*, Radnor, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station, 1994.
- Trowbridge, Peter. When Advocacy Isn't Enough: A Contemporary Approach to Community. *1996 Annual Meeting Proceedings of the American Society of Landscape Architects*, pp. 172-174.
- Lyle, John T. *Regenerative Design for Sustainable Development*. New York: John Wiley and Sons, 1994.
- Stine, Sharon. 1995. Learning Towards a Sustainable Future. *Solar Today*, Vol. 9, Number 4, July/August, pp. 30-33.
- Tulsa Metropolitan Area Planning Commission. *Park, Recreation & Open Space Plan 1988-2005*, 1989.