

*Creating Community Greenspace:  
A Handbook for Developing Sustainable Open  
Spaces In Central Cities*

by

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with

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for

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## Foreward

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Exactly 100 years ago the United States was in the midst of the City Beautiful Movement. All over the nation, urban reformers were overcome with the great power and potential of cities, and they devoted themselves to creating majestic parks and plazas, great buildings and vistas, fine monuments and boulevards. The movement was potentially transforming for our cities, but it was nipped in the bud by the growth of the automobile culture, and for much of the century the nation was more preoccupied with suburbs than with cities.

Now it's 100 years later, the suburbs have finally revealed their limitations, and the pendulum is swinging back to the center. This time it is a City Revival Movement that cherishes the urban streetscape, the walkable and bikable community, the dense fabric of closely reachable shops, offices and housing -- and of parks. These parks may well include ballfields and playgrounds but they are much more than that -- they shape and define cities, they allow for views and for chance meetings, they provide spaces to breathe, reflect and appreciate nature.

The revival of our great city parks -- and also the creation of many new facilities of all sizes and types -- is being driven by a wide cross-section of activists, from

housewives to recovering cancer patients, from bicycle enthusiasts to dog owners, from community groups to business companies, from mayors to schoolchildren. It's happening in every urban agglomeration from the densely crowded Northeast to the endlessly sprawling Southwest.

With *Creating Community Greenspace*, Terence Young and Travis Longcore have provided a valuable new tool to support this revived urban parks movement. With a broad survey of what approaches are available and what's already been done, this handbook gives just the right mixture of exhortation and down-to-earth advice to help every citizen make his or her locale just a little bit better. There's a wealth of information here just waiting to be combined with the spark of local activism.

## EXECUTIVE SUMMARY

California is a highly urbanized state with approximately 80 percent of its population living in metropolitan areas. Some sections of these cities come close to being sustainable because they are economically productive, ecologically rich and socially supportive. However, large portions, especially the central districts, are markedly unsustainable. This report addresses the community greenspace characteristics of these unsustainable urban areas. Too many California cities are woefully short of public parks, street trees, community gardens, and other neighborhood greenery. Even seemingly well supplied cities are deficient at the scale of the neighborhood because a large portion of the greenspace is concentrated in one large park or maybe a handful of parks, rendering it unusable on an everyday basis. While these larger greenspaces are valuable and deserve continuing support, they cannot substitute for smaller features within easy walking distance of every resident. People need parks, street trees, and other green settings in their neighborhoods.

This case study collection and development guidelines are for the resident wondering if his or her community could not have more greenspace, the advocate seeking, say, more street trees or a community garden, and the professional planning the urban landscape. The authors' emphasis is on small spaces, since these are most likely available in central cities, and on practicality – what sort of community successes have been accomplished elsewhere and what ecological factors need to be considered when a green space is being created or restored. Before detailing the cases and guidelines, we present the economic, ecologic, and social benefits of greenspace.

Greenspace promotes prosperity by stimulating interest in a neighborhood, raising nearby property values, which benefits both owners and the local government. The latter benefits from the increased tax base which not only pays for the improvements installed but generates revenues in excess of these costs. This additional income can be used to develop other municipal amenities or lower different taxes. Attractive, well-tended greenspace can even serve as a redevelopment tool in weak or failing neighborhoods since it tends to attract private investments.

Parks, street trees, rooftop gardens, and the like are linked into nearby and regional ecosystems, providing both adjacent and distant ecological benefits. They diminish the urban heat island effect – the tendency for a city to be warmer than its surrounding rural areas – so that ozone is abated and less fossil fuel need be burned to power air conditioners. Greenspace also reduces peak stream flows, decreasing the frequency of flooding and water pollution while furthering groundwater recharge. Native trees, shrubs, and other plants also maintain and encourage local biodiversity since indigenous animals often need them as a part of their niches. (See the development guidelines for more on how to create the most ecologically effective sites.)

Greenspace also helps develop strong communities by contributing to mental well being and by binding people together through their public space. Studies show urban Americans prefer naturalized streets and neighborhoods to fully architectural ones. Stress is lessened while feelings of affection, playfulness, and friendliness expand. Parks, for example, promote a sense of belonging even as they boost morale and pride. Both children and adults interact in greenspaces and often have to

cooperate to create and maintain them.

### **Case-Study Collection**

The benefits of urban greenery are followed by 18 case studies with a variety of associated sidebars. These greenspaces were developed following three basic design, funding, construction, and management models – largely public, a relatively balanced blend of public and private, or largely private – but they are divided here into two broad categories – conventional and novel types of places. Each, regardless of the general acceptance for its design, is a success story, the tale of a central city community which augmented its greenery.

The conventional greenspaces consist of three new and three revitalized small parks, two street-tree programs, and two community gardens. The Mount Hope Playground in New York City's south Bronx serves 2,000 children. It was developed on an abandoned, vacant lot by a partnership of the Mount Hope Organization, the Mayor's Office, the Trust for Public Land, and the Metropolitan Life Foundation. This neighborhood park includes play structures, flowerbeds, trees, and picnic tables.

Ecology Park in Toronto is a display project of an environmental organization, the Pollution Probe Foundation. Situated on a vacant, publicly owned site, the park provides greenspace in a park-poor area of the city and demonstrates the potential for natural landscaping in an urban setting. A volunteer steering committee guided the site's development, relying heavily on public and private donations as well as the labor of more than 120 volunteers from the neighborhood.

Grand Hope Park in downtown Los Angeles is owned by the city's Community Redevelopment Agency but has been designed, constructed and managed by a non-profit Business Improvement District. Sharing its site with a school and, apartment and office buildings, the city hopes the park will spur additional development in the area.

Schenectady, New York's Carrie Street Park was badly rundown from use and neglect when a local homeowners association teamed with a city parks preservation group to approach a nearby corporation about sharing the costs of a renovation. The business was seen as a potential partner because it ran the city's wastewater treatment complex about one mile from the park. Working with the city parks and recreation department as well, the park's equipment and grounds were refurbished by the three partners during summer 1994. Many neighborhood adults and children discovered the park for the first time that summer because of their neighbors' involvement and concern.

Beaver Hills House Park sits in the heart of downtown Edmonton, Alberta. Surrounded by busy roads, high rises, and shops, it was created in 1980 to be an "oasis of green." Unfortunately, the site came to suffer from illicit activities so was redeveloped during the 1990s. The redesign process actively involved local businesses and residents with a final, revised layout that retained many original features but improved safety and increased legitimate usage.

Unlike Carrie Street and Beaver Hills House parks, Hawthorne Park in Kansas City was redesigned almost completely. It was an older, rundown park in a gentrifying neighborhood when the city decided to renovate it as a specialized facility, one that would serve a range of physically and developmentally disabled children as well as

many traditional park users. The visioning and design process was particularly difficult because there were no prototypes for this new style of park. Nevertheless, the new facilities attract and accommodate numerous disabled children and, contrary to many fears, are not boring to able-bodied children.

Trees for Tucson in Arizona is dedicated to encouraging and facilitating desert-adapted tree planting in the metropolitan area. Motivated by the American Forestry Association's Global ReLeaf Initiative, the program has been chugging along since 1989. Run by politically astute leaders who have carefully garnered public support for their agenda and partnered with Tucson Electric Power, the group has planted over 18,000 trees to date.

San Francisco's Friends of the Urban Forest began in the early 1980s as a response to municipal budget cuts prompted by the passage of Proposition 13. With financial support from individuals, governments, corporations, and foundations, the association has planted approximately 30,000 trees, over 25% of San Francisco's street trees. Friends emphasizes community involvement. They assist a neighborhood group, which must initiate the effort, participate in the planning and planting, pay about half the association's costs, and identify at least one resident who will care for the young tree. Over the years, the Friends has grown to offer maintenance programs, a summer youth program, neighborhood tree tours, education programs, and an annual award.

Alexandria, Virginia has the occasional vacant, weedy lot and David Wagoner began wondering in summer 1995 if he could convert one of them into a community garden. Wagoner had recently become an eager vegetable gardener and was looking



for more space to plant. Finding a nearby location, he convinced his neighbors, some of whom used the lot as a dog run or play area, of a community garden's value. Having won their support and even before planting began, Wagoner felt "like success had been met . . . because I was getting a sense of my community." Once the garden was begun, his sense of community grew even further plus he gained a greater understanding of nature and appreciation for both.

Philadelphia, unlike Alexandria, has many abandoned, vacant lots in its central areas. Disinvestment, growing unemployment, disinterest, and changing demographics have pummeled these areas, leaving numerous unmaintained properties. However, the Pennsylvania Horticultural Society has labored to help green these empty spaces through Philadelphia Green, a program offering technical assistance and some materials to residents who wish to create community gardens. In the 1980s they assisted the Warrington Community Garden, which had begun with neighbors tending small plots in the 1970s. The gardeners approached Philadelphia Green in the 1980s because they were about to lose their land to private development. Working together, they created the Neighborhood Gardens Association, a land trust to hold title to Warrington and other Philadelphia gardens so they will not be lost.

The novel greenspaces consist of school gardens and butterfly gardens, greened roadway covers, underground parking structures, rooftops, and alleys, plus daylighted streams and environmental art. Recently California recommended that every school develop a garden where students will acquire a better understanding about food and nutrition. Ventura County schools have created 109 gardens so far with plans to

develop the rest soon. They are well ahead of their associates in Los Angeles County because of a trust from a local resident who wanted to educate the public about the importance of agriculture. The gardens are located in schools at all levels and have taken a variety of forms ranging from traditional vegetable gardens to ones incorporating biogeography lessons.

Ventura, California's Midtown Monarch Paradise Park developed after a resident became annoyed by the trash, derelict automobiles, and illicit activities in a nearby vacant lot even as she was attracted by its Monarch Butterflies. Working with the Midtown Ventura Community Council, they obtained two small state grants, donated materials, and volunteers to transform the diminutive plot into a wildlife garden which may lack swings and picnic tables but still is a place enjoyed by the neighborhood.

Seattle, Washington's Freeway Park is an unusually creative and inspirational example of reclaiming freeway rights-of-way to increase greenspace. Essentially, the park is a five-acre bridge stretching over Interstate-5. It reconnects downtown with the neighborhoods lost when the freeway was constructed. Surprisingly quiet despite the rush of automobiles below, the park is covered in thick plantings, fountains, and a variety of places where people can enjoy themselves.

In the mid-1950s, Boston's Post Office Square was converted into a new four-story parking structure serving nearby merchants but by the 1970s had devolved into an ugly if profitable blight on the district. Tired of the eyesore, local businessmen banded together to create an organization, the Friends of Post Office Square, which planned a replacement subterranean parking garage with a greenspace on top. The final

agreement between the city, the Friends, and financiers created a non-profit corporation to run the garage and park, provided a fixed return for investors, and property taxes for the city. In addition, the city pays nothing for the park's operation and all net cash is used to support other city parks. When all debt and equity are repaid, the city will regain ownership of the site. This combination amenity was completed in 1992 and has been both popular and heavily used but has only been able to cover its own costs. There have been no extra funds for other parks.

Eco-roofs are common in many European cities, especially in Germany and the Netherlands. Linz, Austria, for example, includes over 300 and has been subsidizing their creation since the 1980s by covering 35% of the installation costs. "Greenroofs," as one variant is called, have thin soil, cover the entire roof, take little if any irrigation, and employ a small variety of tough plants. These can be used on any residential, commercial, or industrial roofs with a pitch of less than 30 degrees. "Roof or Rooftop Gardens," in contrast, look much like a raised-bed garden but sit atop a level building roof. Eco-roofs promote biodiversity, reduce energy consumption, and extend the life of traditional roofs by reducing their exposure to UV rays.

Alleys are usually treated as nothing more than utilitarian routes with little thought given to them as living areas. Medford, Oregon, in response to blighted conditions downtown, decided its alleys would be appealing, pedestrian-oriented green and recreation spaces. The Medford Urban Renewal Agency has worked with local resident and business committees to rekindle the value of alleys by installing cobblestone pavers, adding plants, and other improvements.

The stream running through Strawberry Creek Park in Berkeley, California was once buried 20 feet below the surface. During the 1980s, before the site was greened, the city's landscape architect decided to create a park and "daylight," that is re-naturalize, the stream. Other city agencies, however, thought the water would be more of a nuisance than an amenity. Luckily, the public agreed with the landscape architect, coming out strongly in support of the project. As the watercourse was cleared and the pipes broken, the removed material was recycled into stepping stones, riprap, hills, and mounds even as native species were planted along and above the creek.

Finally, urban parks are works of art but other media can be used to green our lives even as they express our understanding of the relationship between people and nature. One, Exchanger Fountain in Anaheim, California, brings environmental issues onto the city street where people can easily forget their dependence on the natural world. It is a wheelchair-accessible drinking fountain whose design recalls the history of the city, people's reliance on nature, and the interconnectedness of our lives. With its thoughtful and pleasing design, the fountain is not only attractive, its graywater irrigates a native willow planted at its base.

The authors encouraged readers to explore *every* case study rather than just the one or two of specific topical interest because you may find answers for your concerns in several locations. Every study is necessarily brief and cannot explore all the questions, struggles, despair, and triumph in each case, only a limited number of highlights. A solution to your challenge may turn up in a study about a different type of greenspace. Readers are also reminded to be patient and persistent in the pursuit of

their community greenspace. The cases presented all took a long time and much effort. You are likely to face the same conditions and must always keep your eye on the goal to succeed.

## **Development Guidelines**

Many urban residents have little or no access to natural greenspace, primarily because urban development completely obliterates native habitats, especially at the urban core. However, the social, economic, and ecological benefits of urban greenspace are well established. We offer guidelines for two types of urban greenspace improvements: systemic and specific. Systemic greenspace improvements include such public policy issues as landscaping, building and lot design, and parking lots. Specific greenspace improvements involve the acquisition of sites and their management as greenspace or changing management of properties already in public ownership.

Systemic greenspace improvements may be implemented through landscaping ordinances (regulation of irrigation, limits on lawn area, drought tolerant landscaping, establishment of community forest plans, identification of highly invasive species, limitation of tree and vegetation removal, and requirements of an approved landscaping plan for new construction), street tree ordinances (choosing species for wildlife and environmental value, enforcing arboricultural trimming standards), and building codes (requiring treed parking lots, encouraging natural stormwater cleansing, and requiring more permeable surfaces, e.g., Hollywood driveways). Systemic improvements guided

in this manner can provide for reduced and cleaner stormwater runoff, reduced overall water consumption, ameliorated temperatures, improved air quality, and better wildlife habitat.

Discussion of site-specific greenspaces in highly urbanized regions largely has centered on larger areas, while discounting or ignoring small sites. However, small greenspaces offer many social and ecological benefits. Provision of such smaller spaces (< 1 acre) throughout the urban fabric is beneficial both to residents and wildlife. Parks are the most common of these greenspaces, and consideration of the literature of their social and environmental context results in the suggestion of the following guidelines for park development in the highly urban areas of California:

- 1) Every urban resident should be provided with: a small open space (<5 acres) within 1/4 mile from home, a significant (25–50 acre) open space within 1 mile from home, a large (50–250 acre) open space within 3 miles from home, and a regional (250+ acre) open space within 7 miles from home.
- 2) No minimum size limit should be imposed on potential small open spaces, and open space acquisition should begin with detailed street-by-street surveys of all available parcels.
- 3) Natural greenspaces should be developed with a minimum of nonpermeable surfaces, and kept free of commercial activity.
- 4) Native trees and shrubs should be used for natural greenspaces, including oaks, sycamores, alders, and willows, all of which make excellent landscape trees.

5) Landscaping should provide horizontal and vertical complexity for wildlife and unstructured children's play.

6) Where feasible, hydrologic features such as streams should be reincorporated into the topography to provide both wildlife habitat and exploration areas for children.

In addition to parks, water management areas such as detention basins and channels offer opportunities for greenspace improvements. We suggest that publicly owned "sumps" be designed to incorporate vegetation that simultaneously cleanses stormwater and provides many collateral benefits (e.g., wildlife habitat, improved esthetics, cooled temperatures, and improved air quality).

Development of an open space network in highly urban areas is a special challenge. However, the potential to improve the environment of cities is great. Systemic and site-specific strategies must be employed. The key is to remember that small is beautiful, greenspaces can be fit in around the edges, in vacant lots and in forgotten corners. With public involvement and support, the potential still remains to transform even the densest urban neighborhood into a more sustainable and livable environment.

## **WHY CALIFORNIA NEEDS COMMUNITY GREENSPACE**

California is a highly urbanized state with nearly 80 percent of the population living in such metropolitan areas as Crescent City, Red Bluff, Fresno, Los Angeles, and El Centro. In addition to being home to most Californians, cities are the primary sites for most of the state's schools, entertainments, and economic activities. Happily, some urban areas come close to sustainability because they are highly productive, ecologically rich, and socially supportive. To reach this end, residents, businesses, and governments pursue a balance between economic, environmental, and social development. They recognize that a long term emphasis on only one or two would come at the expense of the others, reducing the livability of their city today and into the future. The majority of California's urban areas, however, are not even approaching the goal. Unfortunately, large sections of the cities, especially the older inner neighborhoods built before 1945, are markedly unsustainable with economic development mixed, social indicators sagging, and environments increasingly forbidding.

As difficult as it is sometimes to imagine, many of these neighborhoods were appealing and prosperous before they sank into their current condition. They developed when local businesses were thriving and jobs available, when housing, education and health statistics were laudable, and when greenery was prolific. The natural features were richer and more attractive then because the areas were so near the urban fringe with rural and wild nature but a short, sometimes walkable distance away. In addition,



many streets had trees, local streams were often open and alive with native plants and animals, and a family could garden in their home's yard. Few neighborhood parks and other open spaces were set aside or constructed because often municipal governments had invested in major parks elsewhere in a city, residents were unwilling to shoulder the additional tax burden, and with so much greenspace nearby, parks did not seem like a pressing necessity.

In the decades after construction, however, the urban edge expanded outward, hundreds of thousands of trees were lost to street widening, the enclosing or channelizing of streams reduced biodiversity, and many single-family houses and yards were replaced by multi-family structures covering entire lots. The result was a dramatic de-greening of these neighborhoods even as investment shrank, employment opportunities dwindled, more affluent residents fled, and population densities soared. These districts have become much less livable and viable communities because of a shortage of pleasant, public greenspace where residents can escape from what is a hard, often grim landscape of buildings and streets. Much of Los Angeles, for example, was initially erected before 1960, resulting in a city poorly provided with green public spaces. The municipal standard is 2.0 acres of neighborhood parks for every 1,000 people but currently the city has only about 0.9 acres per 1,000 and the distribution is sharply inequitable. Many older areas fall well below the average while some include no park space at all.<sup>1</sup> Even the best city can turn out to be poorly provided with neighborhood parks when its largest park or two is discounted. Golden Gate Park's 1,000 plus acres, for example, cannot act as an everyday resource for most San

Franciscans because they do not live nearby. Since they must commute to the park, visits are only occasional and generally confined to weekends. Despite the park's beauty, ecological richness, and relatively central location, it cannot substitute for a neighborhood facility. Californians need greenspaces within walking distance of home. Ideally it should be one where they can read, relax, take their children, picnic, play games and athletics, and run dogs with family and friends.

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### **Sidebar – Big City Parks in California**

There is little expert agreement on exactly how much greenspace urban residents should have nearby and how distant it ought to be but in 1993, the United Kingdom Man and the Biosphere Committee's Urban Forum recommended every urban area have a minimum of 2 hectares (4.94 acres) of accessible greenspace within .5 kilometer (.31 mile or 546 yards) of each resident's home and also a minimum of 1 hectare (2.47 acres) per 1,000 population.<sup>2</sup> English Nature, a statutory body funded by the United Kingdom's Department of Environment, Transport and the Regions, commissioned a study of the guidelines which accepted the acreage per population parameter but reduced the distance requirement to 2 hectares within 280 meters (306 yards) of every neighborhood resident.<sup>3</sup>

The park acreage per 1,000 population within the boundaries of California's three largest cities is:

- Los Angeles – 4.2 acres when counting only the city's Department of Recreation

and Parks properties but 8.5 acres when including all governmental agency properties.

- San Diego – 27.9 acres when only the city's properties are counted but 30.8 acres when all agencies are included.
- San Francisco – 4.5 acres of city property but 10.3 acres for all agency holdings.<sup>4</sup>

These gross acreage rates suggest the cities are meeting the UK Man and Biosphere & English Nature standards but the numbers are deceptive because:

- Each city has a single park of over 1,000 acres – Griffith Park in Los Angeles, Balboa Park in San Diego, and Golden Gate Park in San Francisco.
- Much of the non-municipal property is also concentrated in similarly large, usually peripheral holdings like Topanga State Park in Los Angeles or The Presidio in San Francisco.

While these extensive parks serve many people, are ecologically important, and deserve continuing support, few city residents have everyday, neighborhood access to a park because they do not live within 300 yards of one.

The case-study collection furnishes everyone interested in improving the sustainability of densely populated urban areas with examples from the United States and beyond of recent, successful efforts involving parks and other community greenspaces. The development guidelines which follow provide a brief, matching manual on environmental considerations. They are provided for the resident questioning his or her neighborhood's lack of convenient greenspace, the advocate

seeking more parks, and the professional re-planning the older urban landscape. The emphasis here is on the *practical* adaptation and reuse of underutilized and abandoned city lands since they are usually most available in densely urban settings. The guidelines, for example, suggest possible improvements through simple but fundamental changes in public landscaping and street tree ordinances as well as building codes. The case studies, by contrast, sometimes focus on traditional approaches but others are more unconventional. Nevertheless, each has been a success. The first cases look at developing and reviving small parks, street trees, and community gardens while the later ones examine such relatively unusual undertakings as freeway parks, eco-roofs, and daylighted streams. In some instances the impetus for change came entirely from within the local community, in other cases a framework had been created previously by a non-profit organization and the locals were guided in their pursuit of greenspace. Of course, the authorities sometimes started the ball rolling. Whatever the origin, a characteristic of most successful efforts is cooperation between individuals and groups. Each case is based on an assumption that urban open space, no matter how large or small, clean or polluted, disregarded or appreciated influences the community and environment so is, in a word, a common resource to be cultivated and valued by all.

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### **Sidebar – Identifying All Your Resources**

When first setting out to create a greenspace, try to identify and tap into every

available resource. You will likely need as much help as you can obtain. Political support, funding, and expertise can be found among:

- Local non-profits with the same or a similar goal as your group.
  - Regional or national non-profit organizations, especially when there are no local ones.
  - Nearby colleges and universities, particularly if they have a program in landscape architecture, planning, or land-use issues.
  - Local homeowner or neighborhood associations
  - Your neighbors themselves
  - Local business organizations
  - Local businesses individually
  - City and county planning or park and recreation departments as well as any other public agencies involved in land use.
  - Public representatives on your city council or board of supervisors.
  - Non-profit foundations
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## **THE MANY BENEFITS OF PARKS**

Parks, street trees, community gardens, and other neighborhood greenery are more than aesthetic finishes or ornamental extravagances returning little or nothing for the investment. Their development stimulates private investment and the growth of

public wealth, promotes health, alters settlement, encourages social interaction, and reshapes the experience of daily life. Nineteenth and early-twentieth-century Americans invested mightily in large and small parks, parkways, street trees, and greenbelts because they understood the myriad social and economic benefits generated by nature in a neighborhood, a community, a city, and a region. At the beginning of the Twenty-First Century, we also understand how greenspaces contribute to the ecological health of our cities. It is time to once again press the agenda of park makers and advocates like Frederick Law Olmsted so that every urban Californian can live within walking distance of a park. As this report illustrates, many people have already taken up the challenge but before looking at their efforts, let's answer the question, "why greenspace?" by reviewing the economic, social, and ecological advantages provided by parks.

### Prosperity For All

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#### **Sidebar**

"Nationwide, easy access to parks and open space has become a new measure of community wealth – an important way to attract businesses and residents by guaranteeing both quality of life and economic health."

Steve Lerner and William Poole – *The Economic Benefits of Parks and Open Spaces*

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Urban parks and greenspaces provide numerous direct and indirect economic benefits for both nearby and distant city residents. Perhaps the most noticeable one comes in the form of increased property values. As early as 1856, the landscape architect and social reformer Frederick Law Olmsted began tracking property values around a park he had designed and was supervising, New York City's Central Park. He suspected nearby values would rise and his research proved him correct. By 1864, when the park was only half complete, it had induced a rapid rise in nearby property values, enriching the owners, and prompting the city's tax receipts to generate an annual revenue of approximately \$56,000 *above* the cost of the park. By 1873, the park's total price tag had risen to a monumental \$14 million yet it was now generating an extra \$5.24 million in municipal taxes annually. Central Park had not only increased the wealth of nearby property owners and easily paid for itself through property taxes, this greenspace was also generating so much municipal income the authorities could hold down the tax rate on properties all across the city. More streets could be paved, water reservoirs built, and sewers laid without raising taxes on most of the population because Central Park generated rather than consumed public and private wealth. Numerous studies since Olmsted, many more sophisticated than his, have confirmed his general findings about parks and property values and extended them to street trees, and other greenspaces as well.

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### **Sidebar – Parks and Residential Property Values**

Numerous recent investigations demonstrate that residents and property owners do not see parks as frivolous but place a high value on nearby open space, seek it out, and are willing to pay for it.

- A 1973 study in Columbus, Ohio found that over 7% of a house's selling price was related to its proximity to a park and the river.<sup>5</sup>
  - A 1974 Philadelphia study significantly and positively correlated property values to the proximity of Pennypack Park. The park accounted for 33% of land value at 40 feet, 9% at 1,000 feet, and 4.2% at 2,500 feet.<sup>6</sup>
  - A 1988 analysis of four Worcester, Massachusetts parks calculated that the parks produced nearly \$300,000 in annual benefits for the city while they only cost \$125,000 to operate.<sup>7</sup>
  - During the 1990s, San Francisco's Golden Gate Park raised nearby property values from \$500 million to \$1 billion and generated from \$5-10 million in annual property taxes.<sup>8</sup>
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Property values climb because residents, especially the middle classes, use their wealth to move near an attractively designed piece of urban nature. They seek out and compete for access to community greenspace, in the process driving up market prices. This locational contest is a major reason why property values decline in sterile urban areas even as they climb in the suburbs. The middle classes are fleeing the former for the latter. Their movement, however, suggests cities can use parks, street trees, and



other sorts of greenspace as a tool to reduce suburban and exurban flight. To maintain a city's middle-class tax base – something necessary for its fiscal health – the authorities must focus on what cities can do *better* than suburbs – provide residents with *walking* access to parks and other public gathering places. Walkability – pedestrian access to nearby private and public services and amenities – is a key to the survival and prosperity of urban residential neighborhoods. Suburbs emphasize large yards with widely spaced houses in extensive tracts, qualities older cities cannot duplicate, but these same features make it difficult for suburban residents to walk nearly anywhere except to see a neighbor. Athletics, outdoor games, walking the dog, and other activities requiring a large, open area are generally either carried out in the street or residents will drive an automobile somewhere. Home buyers frequently cite *nearby* natural open space, community recreation centers, and interesting little parks as among the top features they seek in a neighborhood. Cities should recognize and take advantage of these desires by developing greenspaces to attract and retain residents.

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### **Sidebar – The Advantages of Trees**

Trees on streets, in urban parks, and on other public and private lands promote the economic welfare of cities well above their costs because they provide a wide range of benefits. In particular, they raise property values, reduce the “heat island effect” that now raises summertime city temperatures by 6<sup>0</sup>-8<sup>0</sup> F over rural surroundings, decrease the costs of cleaning air pollution, and cut the need for stormwater retention systems.

- Studies in 1979 and 1988 found that trees contribute from 4% to 15% of a house's sale price and that a 6% tree cover distributed evenly across a developing landscape raised the value of the property by 30% over similar but treeless land.<sup>9</sup>
- A study in Chicago found that if the city planted 95,000 trees and maintained them for 30 years, they would save \$38 million or about \$402 per tree. The trees reduce air conditioning and heating costs by blocking summer sun and winter winds, and decrease pollution damage by scrubbing the air of ozone, sulfur dioxide, and other caustic pollutants.<sup>10</sup>
- Marlborough, Massachusetts's urban trees are estimated to reduce runoff by 711 cubic feet/acre during an average 2-year, 24-hour storm event (three inches of rain). When compared to the cost of storing that water, the trees are worth \$2,488/acre or \$35 million annually to the city. The trees also store Carbon Dioxide and release Oxygen into the atmosphere. Marlborough's forest is storing approximately 72,000 tons of carbon and withdrawing an additional 705 tons of carbon annually. Stored carbon is currently valued at approximately \$22/ton so each year's sequestered carbon is worth approximately \$15,000. The trees also remove several pollutants from the atmosphere (for example, Sulfur Dioxide, Ozone, and Carbon Monoxide) and this benefit is estimated to be worth \$29.06/acre for another savings of \$409,833 citywide.<sup>11</sup>
- American Forests, a non-profit citizen conservation organization, estimates that 27% of Atlanta, Georgia's land is covered by trees and that they are annually

worth \$15 million because they improve air quality. The same trees also have saved the city \$883 million by reducing its need to construct stormwater retention facilities. The organization suggests an increase in tree cover to 40% would raise the annual air quality benefit to \$22 million and save the city an additional \$358 million in stormwater retention costs.<sup>12</sup>

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Greenspace can also be used to revitalize neighborhoods which may be slipping toward lower incomes or are already there. These older neighborhoods tend to include many vacant lots and brownfield sites – locations which were vibrant businesses once but today are neglected and sometimes polluted. Over 20,000 residential structures were demolished in Philadelphia between 1970 and 1990, for instance, but nothing was rebuilt on four out of five. The city's planning commission estimates that the nearly 43,000 vacant parcels and abandoned or nearly abandoned properties cover 1,400 acres – an area 40% larger than San Francisco's Golden Gate Park – in the older urban neighborhoods.<sup>13</sup>

Planning authorities often try to revive these neighborhoods by directly stimulating business investment but they should also include plans to revitalize existing greenspaces and to develop new ones on open sites. The Trust for Public Lands has found that businesses looking to relocate often consider quality of life issues in a potential area and that little speaks to them of concern and high quality like vibrant parks and other greenspaces. Public investment in the maintenance of existing

greenspaces, it turns out, can be a greater economic stimulus than commercial tax credits.

At the same time, greenspaces can directly support and inspire the local residents. Food security is often an issue in struggling neighborhoods where families go to bed hungry three to ten days per month. Producing food in community gardens on vacant lands near the underfed makes sense. In addition, urban gardens are three to fifteen times as productive per acre as rural lands besides being more organic and sustainable because they consume part of the abundant urban waste stream. Urban food production can be profitable as well while providing jobs disproportionately for women, youth and the elderly.<sup>14</sup> According to Paul Grogan, former President for Local Initiative Support Coalition, a New York City community development group, “Low-income neighborhoods are principally residential neighborhoods where the economics have gotten weak because of depopulation and disinvestment. . . The key to restoring their economic vitality,” he writes, “is restoring the residential vitality. The residents of such communities regard quality open space – parks, ballfields, and gardens – as vital to the health of their community.”<sup>15</sup> Following Los Angeles’s civil unrest in 1965 and 1992, residents in the affected areas were polled for their views on improving neighborhoods. They agreed with Grogan’s assessment. On both occasions they listed more parks and recreational opportunities as high priorities for upgrading the community. If these desires continue to be unmet, such communities may remain economically inadequate, undesirable, and fail to become the permanent homes from which residents can build vigorous, flourishing communities.

The handful of parks built in these older neighborhoods are now heavily utilized, often to the point of deterioration. Underfunding is a common problem but these facilities are also being loved to death because there are too few alternatives. Too many users are coming from too large an area to enjoy parks and recreation grounds because none exist closer to them. In addition to the public expense of extra maintenance, too few parks means users usually must pay to travel to a park. Whether by public transport or personal automobile, there are fare or fuel costs and the public and private expense of mitigating the transport mode's environmental pollution. Carbon Dioxide, Ozone, and other pollutants are introduced into the atmosphere while tire dust and oil settle on roadways to become non-point pollutants when carried along in stormwaters later. More parks promise greater convenience, lower private and public costs, and a cleaner environment.

### Ecological Blessings

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#### **Sidebar**

"Nature pervades the city, forging bonds between the city and the air, earth, water, and living organisms within and around it. In themselves, the forces of nature are neither benign nor hostile to humankind. Acknowledged and harnessed, they represent a powerful resource for shaping a beneficial urban habitat; ignored or subverted, they magnify problems that have plagued cities for centuries, such as floods and

landslides, poisoned air and water.” – Anne Whiston Spirn, *The Granite Garden: Urban Nature and Human Design*

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Even the densest, most developed urban settings are intimately linked into larger ecosystems. Parks, street trees, green alleys, rooftop and community gardens, and a variety of other small and large urban greenspaces provide a host of ecological benefits by smoothly bonding a city to the larger natural environment. These advantages are detailed more fully in the Development Guidelines but in brief involve a city’s air, water, soil, vegetation, and wildlife.

Trees and other greenery counteract the “heat island effect”– the tendency for cities to be 6<sup>0</sup>-8<sup>0</sup> F warmer than the surrounding countryside – and so reduce the likelihood that ozone levels, which climb rapidly with air temperature, will exceed health standards. Cooler air also means fewer air conditioners running so less electricity must be generated. Since most electricity is produced by burning fossil fuels, less Carbon Dioxide, a greenhouse gas, will be released into the atmosphere. In addition, the trees and shrubs decrease the amount of atmospheric Carbon Dioxide by consuming it as they grow.

Greenspace also reduces peak stream flows thereby diminishing the likelihood of flooding and water pollution. When it is raining or snow is melting, the vegetation and soil absorb and hold water but later much of it is slowly released when skies are clear. The rainwater and snow melt absorbed by the soil infiltrates deeper into the ground to

recharge local aquifers. These are often tapped for ground water but they also may support organisms far from the point of infiltration. If the ground is covered with a solid asphalt parking lot or a building that surface is impermeable to precipitation. Unable to infiltrate the earth, the stormwaters flow overland, picking up pollutants and fouling streams, lakes, bays, and ultimately the ocean.

Finally, urban greenspaces are not only themselves alive, they can support a range of other native plants and animal species if they are thoughtfully designed. Regrettably, many landscaped parks and recreation grounds reduce biodiversity because the ornamental species selected are ecologically inappropriate. The majority of plants came originally not from the locale but from biomes elsewhere in the world. They were selected for park use because of their ability to satisfy aesthetic concerns about shape, color, texture, and size. Little emphasis was placed on an exotic ornamental's capacity to support desirable native animals of other native plants. As a result, many traditional parks support few if any native species but are often outstanding at nurturing unwanted or undesirable species like pigeons and rats. Greenspaces can be both ecologically and socially beneficial when the ornamental vegetation is composed of native rather than exotic species. Aesthetically appropriate natives satisfy the desire of park users for a traditional looking landscape even as they contribute to greater sustainability. Not only will these plants likely use less water, they will also provide habitat for native insects, birds, and mammals. The visual and social effect will remain the same but the positive ecological impact is enormous.

## Strong Communities

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### **Sidebar**

“Urban trees are living, breathing organisms with which people feel a strong relationship, and in our planning and management we should not think of them just as air conditioners, providers of shade, and ornaments in the urban system.”

John F. Dwyer, Herbert W. Schroeder, and Paul H. Gobster – “The Deep Significance of Urban Trees and Forests”

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In addition to the economic and ecologic value of greenspaces, they improve everyday life by contributing to mental well being and by helping to create and maintain community. Psychological studies show that urban nature evokes strong feelings and this response suggests that the average person is more likely attached to nature emotionally than rationally. Subjects prefer natural scenes like parks with trees and shrubs to fully urban ones and they respond positively to streets where trees have been planted. Strictly urban views aggravate negative feelings like anger, aggression and sadness but natural ones relax people, reduce stress, and increase feelings of affection, playfulness, and friendliness. People garden, visit parks, and enjoy strolling under street trees because they deliver an emotional reaction unavailable in other urban



environments. They want the positive feelings nature evokes and the safe, clean and nurturing quality of life associated with it. Parks and other greenspaces bestow a sense of belonging, of being part of a place and a community by contributing to neighborhood aesthetics, providing opportunities for nature education, fostering a neighborhood image or identity, and boosting morale and pride. These “softer” values are likely driving many of the economic ones associated with urban nature since the polls show that urban residents feel greenspace is critical to a satisfactory quality of life. It is, in fact, second only to low crime with safe streets.

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#### **Sidebar – “Roots in the Neighborhood”**

In April 1987, Jonathan Steigler, the Forestry and Environmental Services Coordinator for Robbinsdale, Minnesota, planned a special event for the local Arbor Day and Arbor Month Celebration. Called “I Helped Plant Sochacki Park,” the program drew 300 volunteers who came to the 37-acre park on four different Saturdays to plant 5,000 trees. “I wanted to introduce people to the park and involve as many kids as possible,” says Steigler. “It gives them ‘roots’ when they return to check on ‘their trees.’”<sup>16</sup>

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In addition to creating individual psychological connections to community, greenspaces link neighbors by bringing them and their families into physical contact with each other. Parks and recreation facilities bind people together by providing a

neighborhood's young people with attractive places to play, exercise, and interact with friends. Many communities revolve around their children and are based on mutual knowledge, appreciation and concern about them. In older areas without these facilities, the alternative is often the street, which has long been recognized as a poor alternative. This understanding was recently reinforced in the Trust for Public Land's report on their "Green Cities Initiative." They found that crime rates drop if adequate parks and recreation activities are available in older neighborhoods. A safe neighborhood brings people out and into contact with each other. A community garden requires cooperation and partnership so it enhances a local sense of community even as it provides food, exercise, and a sense of accomplishment. Community is also fostered when urban green programs, such as community gardens and tree planting projects, are combined with job training efforts. Neighborhood employment increases, skills are gained, and the environment improves. Finally, neighborhood parks and recreation grounds promote community by providing a convenient and attractive public place where neighbors, like their children, can meet and interact. This community building does not need to be mediated by such technologies as motor vehicles or computers. It links people based on a shared locale and fosters a sense of belonging and concern about the place and each other.

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### **Sidebar – Parks and Crime**

People sometimes fear the creation of parks and other greenspace because they

believe these areas become the settings for crimes and for criminals to gather. Recent findings, however, show that crime drops when adequate parks and recreational activities are available in older, urban neighborhoods.

- After the Philadelphia police helped neighborhood volunteers clean up vacant lots and plant gardens, crime in the precinct dropped 90 percent.
- When basketball courts and other recreation facilities are kept open until 2AM during Phoenix summers, police calls reporting juvenile crime drop by as much as 55 percent in the city. Compared to the cost of police officers and their equipment or private security measures, midnight recreation is a bargain. With over 170,000 participants, the cost is sixty cents per youth. The Office of Juvenile Justice and Delinquency Prevention estimates that the cost of keeping one teenager in detention for a year is now about \$30,000.

Nevertheless, urban parks and recreation programs are deeply in crisis. Many cities have inadequate funds for parks and the neighborhoods with the greatest needs often receive the fewest resources. Local governments might turn to the primary federal source for park funds, the Land and Water Conservation Fund, but it is poorly funded and money is spent primarily and inequitably on peripheral lands in rural areas and suburbs with less than 16 percent going to older urban areas.<sup>17</sup>

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## THE CASES

The following examples are an introduction to the range of efforts being made to

bring greenspace into densely populated, under served urban neighborhoods. They represent a mixture of public and private efforts with funding, materials, and labor coming from a variety of sources. In *Urban Parks and Open Space*, Christopher B. Leinberger and Gayle Berens divide recent efforts into three basic groups which also apply here: public sector, public-private co-venture, and market-oriented civic models.<sup>18</sup> No one of these models works best in all situations so anyone setting out to develop or redevelop greenspace should investigate the support of local public agencies and potential private partners before committing themselves to any particular approach.

The first model is a traditional, public agency approach. The project is initiated by an individual, neighborhood, business, politician, the agency itself, or another one somewhere in government but the design, funding, construction, and management of the completed facility are generally under the parks department. You and your neighbors, for instance, might band together to convince the city to use its own funds to purchase a nearby vacant lot or abandoned industrial site in order to transform it into a park. You could cooperate with local businesses and government representatives and would undoubtedly spend time working with planning and parks departments. Among the case studies, Beaver Hills House Park is a good example.

In the second model, the end result is much the same as with the first but the money to develop a new facility or redevelop an existing one is raised partly or completely by the private sector. Relying on this method, a “friends of” group might assemble funds through donations by individuals, local neighborhood improvement associations, businesses, chambers of commerce, or charitable foundations but a public

agency would retain ownership and responsibility for the project. Once completed the public agency handles management but the private sector may continue to raise funds for special projects or set up concessions generating secondary revenue streams. The Friends of the Urban Forest in San Francisco are a good case-study of this approach. They obtain funding and work with local groups to plant street trees but the city retains ultimate responsibility for the trees and their management.

The third approach is the most novel, being a partnership between public and private sectors for both development and management. It relies on a non-profit development corporation or business improvement district (BID) to generate and manage dedicated taxes and private donations. This approach brings private-sector responsiveness and accountability to the improvement and management of public greenspace but because it is new, does not have the proven track record of the first two methods. The park at Post Office Square in Boston is a recent example of this approach.

Nearly all the cases in this booklet are recent projects with the majority confined to the 1990s and 2000s. The first cases focus on relatively conventional approaches like the creation or revitalization of small parks, street trees and community gardens. Parks under four acres are addressed primarily because it is small properties that are most often available in older neighborhoods. A densely populated urban area with a variety of small parks, street trees, and community gardens will be a pleasant and supportive neighborhood but many non-traditional opportunities are bypassed when greenspace is limited to these conventional locations alone. The second set of cases

illustrate some novel approaches being used in many cities. People looked twice at their neighborhood to discover that parking structures could be more than storage facilities, rooftops more than protection from the elements, and streams more than concrete channels or pipes for the rapid removal of runoff. All the examples, no matter how radical they may seem, have been successful in a neighborhood and can be a part of yours too.

## **CONVENTIONAL GREENSPACES**

### **New Small Parks**

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#### **Sidebar – Community-Managed Open Space in Chicago**

“While news of NeighborSpace successes often recounts the number of parcels or acres of open land saved, behind each plot of land is the story of people and what the land means to them and to their community.”

Christopher R. Hill – *NeighborSpace: 1998 Annual Report*

However much a community group or local agency may want new greenspace, it is often difficult if not impossible to find sufficient public funding for the purchase, development, and maintenance of park property. Park and recreation departments are often straining simply to maintain their current assets. To support the creation and preservation of *community* rather than agency managed open spaces, the City of Chicago, the Chicago Park Department, and the Forest Preserve District of Cook

County formed NeighborSpace, a not-for-profit corporation, in 1996. This organization is based on the proposition that community gardens, pocket parks, small natural areas, and isolated river edges can be effectively maintained and managed by local block clubs, organizations, businesses, or other groups composed of people living and working nearby but also a recognition that residents often lose their volunteer-created parks and gardens to development if they do not have permanent site ownership. NeighborSpace was organized to own and insure community-managed greenspaces within the city of Chicago. As of December 31, 1998, the corporation owned 15 sites, leased 3 others, and was acquiring 34 more. Priority is given to city-owned, tax delinquent, and donated land and river edges dedicated to open space. Because of its purpose, NeighborSpace can obtain a city-owned lot that has been certified environmentally safe for \$1 for as long as there is a local entity committed to the day-to-day maintenance of the site as a park or garden. Most of the corporation's funding comes from the three forming partners but it also can accept gifts and grants from individuals and institutions.

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#### The Mount Hope Playground – New York

Every large city in the U.S. contains vacant lots. Some supported residences once but others are brownfields – former commercial or industrial sites. They are most often still private property but many are public land seized for non-payment of taxes. In New York City alone, an estimated 15,000 vacant properties are owned by the city.

Mount Hope Playground developed on such a lot.

Located in the South Bronx, approximately 2,000 children live in the Mount Hope Neighborhood. Until recently the nearest playground was many blocks away so children either played in their apartments or on the dangerous sidewalks and streets because their families could not afford to take or send them elsewhere. The median annual family income in the neighborhood is low – approximately \$6,000. During the summer months, when there is no school lunch program, the Mount Hope Organization (MHO) – a multiracial community outreach group which had organized to tackle issues like crime and cleanliness – distributes food to hungry children.

MHO had identified the vacant lot in their midst as a potential playground site but on their own had not gained access to the land nor obtained any development funds. When they began collaborating with the Mayor's office and the Trust for Public Land (TPL), the situation improved. MHO was able to have the property transferred from the city's real estate department to its parks department so that the site could become a neighborhood amenity developed and managed by the community while the city retained ownership and liability. Once transferred, TPL obtained a development grant from the Metropolitan Life Foundation, making the project a four-sided partnership between a non-profit environmental group, government, a corporate funder, and a thriving community group.

In the beginning the lot, which had been created when two old buildings had burned, was a garbage-strewn, weed-choked haven for rats. MHO coordinated local volunteers and the city to clear the site, design the playground and greenspace (with



plenty of input from the children), and then construct its features. Today the Mount Hope Playground includes play structures, flowerbeds, trees, and picnic tables. It is enclosed on three sides by buildings and the fourth is fenced and gated. The gatekeeper, a dedicated volunteer who lives nearby, opens and locks the playground daily and with other community members, maintains a watchful eye on the site as it is heavily used by the neighborhood children.

The entire cost of designing and building the site was \$200,000. MHO and TPL are raising money for continuing maintenance and repairs while the former has committed to maintain the space in partnership with the parks department. According to one of the residents, Diane Marine, “These children feel they own this place. These same children helped make the playground from the beginning. They live right in these buildings, and they all worked when we cleared the rubbish off our land.”<sup>19</sup>

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### **Sidebar – Enduring the “Long Haul”**

Betty Turner, a working mother with an apartment at the rear of the Mount Hope Playground, chaired the playground committee through the more than two years of planning and work it took to create the site. “It’s been a long haul but worth it,” she says, “the hardest part was waiting – for the funding and construction to start. The kids were impatient. ‘It’s coming. It’s coming.’ we would tell them.”<sup>20</sup>

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### Ecology Park – Toronto

Ecology Park, located in the Annex neighborhood of Toronto, Ontario is a popular and professionally admired demonstration project of the Pollution Probe Foundation (PPF), a non-profit Canadian Environmental Organization. Situated on what was once an abandoned lot, the PPF developed the site for two reasons: to create a public greenspace in a park-poor area and to demonstrate the potential for natural landscaping in an urban environment. The park's design challenges the conventional approach to small facilities with an ecologically sound landscape, one that provides typical recreational opportunities yet does not need large amounts of water, energy, pesticides, and fertilizers.

The park is a property owned by the municipal government but left vacant when the construction of an adjacent subway station was completed. When PPF moved into the adjacent "Ecology House" in 1980, they began to investigate the possibility of transforming the site. They initially approached the responsible bureaucracies but when they found them unresponsive, switched in 1984 to a successful political effort including a campaign to build resident and business community support and to obtain the backing of the area's elected representatives. In May 1985 PPF leased the site for \$1 per year with the stipulations that the lease could be cancelled upon one month's notice and that they obtain liability insurance for the property.

A volunteer steering committee with the part-time assistance of a handful of PPF staffers guided the planning and development of the site. Contrary to expectations, the evolution of the plan followed no clear process and continuously mutated. In the end it was intended to address a variety of social and environmental problems in downtown

Toronto and to appeal to the broadest range of potential funders. Most neighborhood constituencies got involved voluntarily with the construction of the park. Businesses, clubs, and organizations donated cash, goods and services, more than 120 occasional workers provided labor, and a technical advisory committee provided professional ecological and landscape design expertise. The final cost of the project is uncertain because nearly all expenses were covered voluntarily. The fund-raising budget written in 1985 exceeded \$200,000 but no detailed records were kept for the entire effort because none were required. The lesson, writes environmentalist David Gordon, is that “goods and services were presented free of charge because the project had widespread support, was well conceived and organized, and the need. . . was widely recognized. . . . [I]t is important to remember that the main barrier [to a project] is not financial. Although the apparent costs may at first seem excessive, these costs will be covered by the public and private sectors if the necessary community and political support is nurtured first.”<sup>21</sup>

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### **Sidebar – Ecology Park’s Objectives**

The park is intended to demonstrate an ecological approach to urban landscaping. To guide the park’s design process, the Steering Committee developed these objectives:

- To broaden public awareness of environmentally sound alternatives to conventional urban landscaping. The alternatives:
  - are resource efficient in terms of water and energy requirements

- do not invite use of toxic pesticides or chemical fertilizers
- help to abate air pollution, control storm water surges, and reduce soil erosion
- are cost effective
- supplement food supplies
- contribute to the heating and cooling of adjacent buildings
- have aesthetic and social value
- are based on natural or wilderness planting principles
- To heighten the urban dweller's sense of connection to the natural environment.
- To increase the involvement of nonprofit organizations, community volunteers, and donors of commercial goods and services in the creation and operation of parks as an alternative to sole dependence on government agencies for park services.
- To expand the opportunities for people without personal greenspace, especially the physically disabled, the aged, and apartment dwellers, to visit and help maintain an urban park.
- To augment the amount of park space, beneficial vegetation, and landscape diversity in areas of dense residential, institutional, and commercial use.
- To improve the recreational use and aesthetic appearance of vacant urban land.
- To advance the state of the art in urban ecology by monitoring plant species' performance in a polluted environment, energy and water savings related to low-maintenance horticulture, and other measurable aspects of the demonstration

park.<sup>22</sup>

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### Grand Hope Park – Los Angeles

Grand Hope Park is located in a redeveloped block in the downtown area known as South Park. Owned by the city's Community Redevelopment Agency (CRA), the 2.5 acre park shares its site with the Fashion Institute of Design and Merchandising plus the Renaissance Tower apartments. The school and residential building, along with other nearby apartment and office buildings, form Grand Hope Park, Inc. This Business Improvement District (BID) is a non-profit organization that finances and runs the park under a 50-year leasing agreement with the CRA. The city hopes the park will spur further redevelopment in the district and act as a model for the private management of public facilities.

The site was set aside for a park in the 1970s but little was done until the late 1980s when landscape architect Lawrence Halprin was engaged to design the grounds. Construction began during 1989 as the CRA provided \$3 million from funds paid by nearby project developers for transferable development rights assigned away from the park and three building sites. Delayed by the bankruptcy of the park's builder in 1992, financial problems at the Renaissance Tower, and a controversy over a fence surrounding the site, the park quietly opened in 1994. Office workers and residents from nearby buildings enjoy the new park every day of the week.

Besides Halprin, the park's design was influenced by three visual artists, four

composers, and two poets. The 53-foot clock tower and series of cascading fountains create a harmonious blending of artificial and natural sounds that ring throughout the site. Bronze statues in the shapes of coyotes, a hawk, and a snake grace the park's grassy knolls. And, a colorful playground provides recreational opportunities for the children from nearby residences while an amphitheater furnishes a setting for numerous entertainments.

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### **Sidebar – BIDs, PEDs and SPDs: Financing New and Revitalized Parks**

Many cities are unable to adequately fund their parks and playgrounds leaving their facilities to slowly deteriorate and collapse. A recently developed solution to this chronic underfunding is a variation on the “business improvement district” or BID, a self-imposed arrangement where property owners and businesses finance and manage basic or extra services in a specified area to augment economic activity and security. A BID variant, the “park enhancement district” or PED, is spatially more focused but nonetheless organizes and taxes local property owners for funds to manage a nearby facility. Assessments are levied by formula and appear as separate lines on tax statements. The revenues, collected by the local government, are spent by a not-for-profit district management board.

BIDs and PEDs are not without their critics, however, who are concerned about issues of civil rights and equity. For example, a lawsuit has been filed by twelve homeless residents in Los Angeles against three security firms and the property owners

in four BIDs. The complaint alleges a systematic campaign to drive the homeless off public property in violation of their civil liberties. The plaintiffs claim they have been roughed up, interrogated, and falsely imprisoned by private security guards and are seeking an injunction to stop these activities. Nevertheless, most BIDs and PEDs function without complaints yet questions linger about the fairness of a financing solution that does not share resources with nearby neighborhoods. “What will happen to the parks where people lack the financial resources or the capacity to organize themselves this way?” asks Linda Davidoff of New York City’s Parks Council.<sup>23</sup> The parks in these areas may deteriorate and suffer from further problems. Clearly, the creation of a BID or PED should be weighed carefully in advance.

An alternative to the municipal department or park-by-park approach is the special park district or SPD. Unlike BIDs and PEDs, SPDs are autonomous government units with the capacity to tax district residents for the creation and upkeep of parks. With some dating back to the beginning of the Twentieth Century, there are now hundreds of SPDs in about two dozen states. Some are quite small while others, such as the San Francisco Bay Area’s East Bay Regional Parks District, sprawl across several counties.

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## **Revitalized Small Parks**

### Carrie Street Park – Schenectady

At the beginning of summer 1994, Carrie Street Park in Schenectady, New York

was rundown from years of neglect. This 2-acre neighborhood park in the city's North End District had steadily deteriorated as budget cuts reduced grounds maintenance to a minimum. The recreational equipment was in no better shape since much of it was missing or outdated, not having been replaced since the park was built in the late 1960s. Unfortunately, shrinking city budgets often impact small parks the most because they have a smaller constituency than a large one. "Carrie Street Park was no exception, " says Schenectady Parks and Recreation Department Director William Seber, "which was a shame because a lot of children live in the area."<sup>24</sup>

Unwilling to accept the park's condition but mindful of the budgetary issues, the North End Homeowners Association teamed with the Committee for the Preservation of Schenectady City Parks to approach PSG Corporation about sharing the equipment and maintenance costs. The business was considered a potential partner because they operated the city's wastewater complex located less than a mile from the park. Accepting the offer, the partners were able to provide funds for replacement swing sets, see-saws, and other unserviceable equipment while usable pieces were renovated and repainted. Parks and Recreation personnel and neighborhood volunteers installed the new equipment, repaired the basketball court, refurbished the baseball diamond, and fertilized and trimmed the grounds.

By the end of summer, the project was complete and the park was heavily used again. Many neighborhood children and parents discovered Carrie Street Park for the first time because of their neighbors' involvement and excitement. And, the park should continue in good repair because local PSG employees took on the responsibility for



continuing grounds maintenance like seeding, mowing, edging, and trimming.

### Beaver Hills House Park – Edmonton

Located in the heart of downtown Edmonton, Alberta, 1.3-acre Beaver Hills House Park is surrounded by busy roads, high rises, and shops. Created in 1980 as a naturalistic “oasis of green,” the design incorporated four-meter-high, grassy berms, plantings which blocked the streetscape and created intimate areas, rockwork walls with integrated benches, ornamental lighting, and a pond, stream, and waterfall. Unfortunately, the site was soon suffering from criminal and other illegitimate activities which worsened until a series of minor re-designs, programming, and police patrols were initiated. Nevertheless, the undesirable occurrences continued so a full-scale redevelopment was begun in 1991.

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### **Sidebar – The Redevelopment Objectives for Beaver Hills House Park**

When planning and designing began, three objectives were set out to guide the park’s revitalization:

- To make the park safer;
- To make the park *feel* safer so that people would re-establish active ownership of the space; and,
- To improve the performance/display areas within the park so that users would be more inclined to use the park for concerts, festival activities and other special events.<sup>25</sup>

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Various designs were presented at public open-house sessions and meetings with downtown agencies and interest groups. Public reaction was mixed, ranging from “leave the park alone” to “do more,” but changes that would increase visibility, such as lowering the berms and opening up the entrances, were supported by downtown interest groups and agencies. Components like an enhanced amphitheater, better lighting and an outdoor café, which were aimed at attracting more users to the park, received general support. Changes intended to restrict users – fencing, gating, and a police kiosk – garnered little support. These public opinion and stakeholder views guided much of the re-design but budgeting was the largest factor controlling the final outcome.

The lowering of the berms was the most obvious change to the site. They were scaled down to the sidewalk level and the walls along berms were removed or shortened. The grade changes necessitated the relocation of vegetation and utilities so the former were altered to improve visibility throughout the park – some were removed, others trimmed – and the lighting system was repositioned and expanded to illuminate previously dark areas. The entrances were also widened to provide space for performers and to make the entrances/exits obvious while walkways were rearranged to give pedestrians long, clear views ahead and behind.

After the park’s redevelopment was completed in 1993, illegal activity decreased and the number of legitimate park users climbed substantially. This improvement is

clearly a response to the park's revitalized, more safety-sensitive design but the increased emphasis on programming in the new and existing open spaces has undoubtedly helped attract visitors too.

### Hawthorne Park – Kansas City

Like many other small, midtown parks, Kansas City, Missouri's 2.5-acre Hawthorne Park was in need of renovation at the beginning of the 1990s. Situated in a steadily gentrifying neighborhood, the park occupies a full block bordered by commercial and institutional firms and single-family residences yet was rundown and underutilized. Kansas City's leaders, however, did not want a simple makeover but decided Hawthorne Park would become a special place – a facility to address the broadest possible range of physically and developmentally disabled children as well as many traditional park users.

Renovation leaders envisioned a park that would promote interactive play between children with and without disabilities but since there were no prototypes for such a design, the Board of Parks and Recreation Commissioners held an international competition. None of the more than 60 responses, however, was satisfactory. Even the winning design provided few details for the final plan. Nevertheless, the disappointing results prompted the park staff to include some previously unconsidered voices in the next planning steps – health professionals and child rehabilitation experts. “This decision to bring in therapeutic experts,” writes planning and design consultant Terry Jill Lassar, “was probably the most important one in ensuring the success of the park.”<sup>26</sup>

Their intimate knowledge of disabled children helped generate new approaches to accessible design.

In addition to the health professionals, the park staff included representatives from nearby public agencies, private businesses and two homeowners associations in the planning process. More than the others, these residential groups deflected the renovation from its initial trajectory. In the officials' enthusiasm for a new, inclusive and geographically far reaching design, they forgot Hawthorne is also a *neighborhood* park. The nearby residents were in favor of the renovation but they wanted to continue to use the park too. They persuaded the parks department to retain the existing tennis courts and to develop an "adult garden" in the re-design where there would be traditional landscaping, sitting areas, and game tables for family outings.

In 1994, construction began with a focus on the children's areas, the restrooms and a new parking area to accommodate the many new users that were expected to drive to this unique greenspace. The many custom-designed and off-the-shelf play features were selected for their ability to help children of varying abilities maximize their experience of the physical surroundings while playing with other children. In contrast to some people's fears, the playground is not boring to able-bodied children. Both they and disabled children use Hawthorne Park extensively.

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### **Sidebar – Too Expensive for Your Town?**

Hawthorne Park was revitalized into a fully accessible park with public funds –

Kansas City has a half-cent sales tax dedicated to capital improvements – and private donations, especially from neighborhood businesses. Although the novel renovation was costly – an estimated \$1.1 million – new projects modeled on it will likely be less expensive, predicts Kansas City Parks and Recreation Commissioner Sheila Kemper-Dietrich, because the cost of the specialized equipment will decline as demand for fully accessible playgrounds grows.<sup>27</sup>

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## **Street Trees**

### Trees for Tucson – Tucson

In the low, dry deserts of southern Arizona, one wing of Tucson Clean and Beautiful (TCB), Trees for Tucson (TFT), has been laboring to green the public spaces of this Arizona city. A non-profit organization dedicated to encouraging and facilitating tree planting in the metropolitan area, they use desert\_adapted trees such as mesquite, palo verde, sweet acacia and desert willow. “Trees help beautify the community,” notes their web page, “as well as conserve energy by shading buildings, provide habitat for wildlife, absorb pollutants and control erosion and wind.”<sup>28</sup> Motivated by the American Forestry Association’s Global ReLeaf initiative, TFT has been spearheaded by Joan Lionetti, TCB’s executive director, since its inception.

An active member of many environmental committees for local governments, Lionetti began TFT by inviting numerous community leaders to a meeting in May 1989. She knew that the program would need high-level political backing if it was going to

capture attention and garner support so before the meeting she approached the mayor. Lionetti convinced Mayor Tom Volgy by emphasizing the large role Tucsonians would play in the effort. “Government can’t solve environmental problems,” he says, “without the cooperation of individuals.”<sup>29</sup> If the public was going to be at the core of this effort then Mayor Volgy was on board. With official support in hand, Lionetti enthusiastically began her May meeting with an excellent turnout of more than 45 local leaders. In short order, numerous volunteers picked up the burden and planned a kickoff week for October. They produced brochures and posters plus they created a database of volunteers and tree-planting sites. Armed with a slide show, volunteers made speeches to local businesses, institutions, civic and conservation groups. Retailers donated tree certificates refundable at participating nurseries. To raise public awareness even further, Congressman Morris Udall, the mayor, and a county supervisor were named honorary co-chairs. Over 2,500 Tucsonians participated in the week-long events with planting ceremonies hosted by a wide range of organizations at a variety of locations including churches, temples, schools, military facilities, municipal buildings, streets, and businesses.

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### **Sidebar – Getting the Word Out**

According to author, photojournalist, and forest advocate Nancy A. Dawe, two elements are essential to the success of all tree programs involving citizen action: “fundraising – through grants, foundations, private and corporate donations – and media

attention. You can't get your message across if no one knows about it. . . To address this need for communication, many citizen tree programs have newsletters; some have public service announcements on radio and television. Feature articles, editorials, op-ed essays, and letters to the editor appear in many city and town newspapers. Occasionally, there are features in major magazines, and, in the case of Andy Lipkis, founder and director of TreePeople in Los Angeles, an appearance on the Johnny Carson Show as Lipkis was striving – successfully – to get 1 million seedling trees planted before the 1984 Olympics.”<sup>30</sup>

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Only the second major tree planting effort in Tucson's history, TFT's goal is to replace the rapidly dwindling urban forest planted at the end of the Nineteenth and the start of the Twentieth Centuries and to increase the city's leaf canopy by 30%. Partnered with Tucson Electric Power, TFT has planted over 18,000 trees through their numerous programs and plans to continue until they hit 500,000.

#### Friends of the Urban Forest – San Francisco

Friends of the Urban Forest (FUF) began on Arbor Day, 1981 with five volunteers planting trees in San Francisco's Noe Valley. The organization had coalesced to plant street trees and promote a healthy urban forest following municipal budget cuts prompted by the passage of California's Proposition 13. With growing financial support from individuals, state and city government, corporations, and foundations, the pace of

planting has picked up from its earliest days. Their 10,000<sup>th</sup> tree was planted in 1991, after ten years of service, but their 20,000<sup>th</sup> came in 1996, after planting over 2,500 trees in that year alone. To date, they've planted approximately 30,000, over 25% of San Francisco's street trees.

FUF emphasizes community involvement in the planting and caring for trees. They assist any neighborhood group that wishes to plant a minimum of 35 street trees by acting as consultants on the project and by offering technical, financial and practical assistance. The interested group must initiate the effort, participate in the planning and planting process, pay about half FUF's costs, and at least one resident must agree to maintain each newly planted tree. Experience has taught FUF that the participation and commitment of the local residents greatly enhances the long-term success of a planting. Community pride and sense of control also grow as neighbors meet, often for the first time, to work together on their shared environment. When a project is complete, says Cheryl Kollin, a program manager, "We celebrate the completion . . . with a potluck lunch, a time for everyone to come together, admire their work, and acknowledge the project organizers and FUF volunteers."<sup>31</sup>

Over the years, FUF has expanded their efforts beyond planting to include maintenance programs, a summer youth program, neighborhood tree tours, education programs – including award-winning publications and a classroom curriculum – and an annual award given to an individual or group who promotes San Francisco's urban forest in an important way.



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### **Sidebar – A Rule Against Street Trees?**

Tree Atlanta's Executive Director, Marcia Bansley, was able to get the Georgia Department of Transportation (DOT) to change a longstanding guideline that was ruling out many downtown trees. "It said no tree could be planted within thirty feet of a state route, but this was based on high-speed roads," she observes. "We felt it was being applied incorrectly to downtown streets, prohibiting developers from planting near rights-of-way." Bansley assembled the relevant information and experts and went to see the DOT commission. They agreed to rescind the restriction.<sup>32</sup>

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### **Sidebar – Food from the Cities**

Hundreds of millions farm in cities around the world. Nine out of ten of the families with access to land in Nairobi are food producers and two thirds of the families in Maputo and Greater Moscow. Calcutta's urban farmers produce more than one third of the fish and vegetables consumed in the city. Many other cities, from Shanghai to Bamako, are self-sufficient in vegetables. Forty percent of the jobs in Chinese cities are agricultural. Fifty thousand Berliners rent land to produce crops – with more than 14,000 on a waiting list – while 16 million urban American Families grow vegetables. In most of these cities, abundant and easily available urban wastes are used as organic fertilizers so a double benefit is reaped.<sup>33</sup>

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## **Community Gardens**

### A Neighborhood Garden – Alexandria

In summer 1995, David Wagoner began to notice the vacant, weedy and sometimes trashed lots in his Alexandria, Virginia neighborhood. He wondered who owned them and what were the plans for them because he had recently become an avid vegetable gardener and had outgrown his available backyard space. The empty lots, he thought, could be garden plots for him and his neighbors. As it turned out, an ideal lot was only a short walk down the block and a few phone calls revealed it was available as a garden. Unfortunately, he was too busy to pursue the project at the time.

During winter he resolved to break ground the upcoming spring but also decided he would have to enlist his neighbors if there was going to be a community garden. The lot he had in mind was not completely abandoned but used occasionally as a dog run and play area – applications incompatible with a garden – so he knew he would have to meet with his neighbors to win them over to a project which would force some of them to go elsewhere. At first going door to door and then on to the neighborhood civic association, he won the support of the majority. “At this stage,” he writes, “I already felt like success had been met, for me personally, because I was getting a sense of my community. What nice people I wouldn’t have known without the excuse of knocking on doors to ask about a community garden! What a rich local history that I could have never imagined without being told the stories by neighborhood ‘elders’ and other long time residents.”<sup>34</sup> Wagoner even discovered the lot had previously been used as a

vegetable garden.

Fifteen plots were laid out on the site but only ten householders appeared at the groundbreaking, fewer than Wagoner had expected. Nonetheless, no one was dismayed because it was still an encouraging turnout. Jumping into the work, it was a tough first season of cultivation because the clay soil was difficult to work. They had to add amendments and labor mightily for results but the harvest was satisfying. People took home tomatoes, peppers, corn, and many other crops, a sense of group satisfaction and community grew among them, and Wagoner discovered he became more aware of nature. “Being out in the garden put me in touch with the neighbors,” he observes,<sup>35</sup> and every bit as importantly, it revealed the fact that we were gardening within an ecological community. Now I keep in mind the idea that the community garden is part of our whole living community.”<sup>35</sup>

Sadly, the gardeners had to shift their plots at the outset to the 1997 season because a housing development was proposed for part of the land. It is a common setback for community gardens, many of which are on private property, but Wagoner and his neighbors are working to keep community gardening alive in the area. However, even if they cannot, Wagoner feels they will have benefitted because, “the seeds of community value have been replanted, and their harvest will continue.”<sup>36</sup>

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### **Sidebar – A Variety of Gardens**

Community gardens come in many styles and serve many purposes. Some

feature vegetables while others emphasize flowers. Still others are dedicated to local children or have some special theme like ethnicity, religion, or art. The extensive garden at the Carmelitos Public Housing Development in Long Beach teaches young people landscaping, nursery and food production skills. A joint effort of the UC Cooperative Extension Common Ground Garden Program and LA County's Community Development Commission, the organic vegetables are tended then sold at intermittent farmers markets. To the north, San Francisco's Fresh Start Farms employs homeless families to raise vegetables for fine restaurants in the city while prisoners in the county jail's Garden Project grow produce given to local food programs for the destitute.

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#### Warrington Community Garden – Philadelphia

Like many cities with older neighborhoods, Philadelphia has unmaintained vacant land where buildings once stood. Disinvestment, growing unemployment, disinterest, and changing demographics have buffeted these areas, leaving unplanned and unbudgeted vacant land. However, the Pennsylvania Horticultural Society has toiled to help green these empty spaces through one of the most ambitious community gardening programs in the U.S. The society is best known for its horticultural publications, public education programs, and especially its Philadelphia Flower Show but it also runs Philadelphia Green, the nation's largest private beautification effort. With a staff of 45 and an annual budget of \$3 million, some of its programs are aimed at traditional greenspaces, for example parkways and parks, but the majority focus on

communities desperate for greening plus jobs, retail outlets, housing, medical facilities, and schooling. Philadelphia Green provides technical assistance and some materials to help residents implement community gardens, street tree plantings and other sorts of neighborhood greening projects. West Philadelphia's Warrington Community Garden, in a struggling, working-class neighborhood pock marked by vacant lots, is an example of their assistance.

During the 1970s, residents of the neighborhood began tending small gardens on a one-acre, privately owned parcel. The owner was amenable, even encouraging, and ultimately offered to give the land to the gardeners in the mid-1980s. Unfortunately they had no legal vehicle to accept the donation. In 1986, Philadelphia Green helped Warrington and other local gardens create the Neighborhood Gardens Association (NGA), a land trust, to ensure that community gardens received long-term protection. To date, NGA has purchased 21 gardens. Nevertheless, the NGA appeared too late for the Warrington garden because the property was sold and then sold again to a developer who requested permits for new townhouses on the property. The local residents fought the development asking why their garden had to be destroyed when there were many untended, trash-filled vacant lots nearby. They were successful in this struggle but recognized that a similar situation could arise again shortly if they did not acquire title to the land. Fortunately, NGA began negotiating with the owner and raised \$20,000 from foundations while the gardeners themselves raised \$15,000. With these funds, NGA was able to purchase the land and is now holding it in perpetuity for the gardeners. They cannot be thrown out of their garden now. With this solid foundation,

the Warrington gardeners have since gone on to expand the garden and create a revenue-generating tree nursery which brings money into the neighborhood and provides an opportunity for young people to learn valuable skills for productive lives.

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### **Sidebar – Farms In Buffalo?**

Commercial farming is re-entering older urban areas along with community gardens. An 18-acre brownfield site in Buffalo, New York, the remnants of a contaminated steel mill, have been transformed into a \$15 million, 736,000-square-foot hydroponic tomato farm with 175 permanent employees. Construction began in September 1997 after oil-soaked soils were removed and within one year the farm was producing about 125,000 pounds of tomatoes daily.<sup>37</sup>

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## **NOVEL GREENSPACES**

In addition to the traditional greenspaces presented above, a city holds many additional opportunities for greening. School and library grounds, abandoned canals, railroad lines, flood zones, utility easements, parking lots, alleys, roofs, and a variety of other publicly and privately owned spaces can be greened and contribute to the sustainability of a neighborhood and city. A few of the more commonly found spaces in older neighborhoods are introduced below but no space should be dismissed as

ungreenable simply because it is not explored here.

### **Schools Gardens**

Recently, California recommended that every school in the state develop a garden where students will acquire a better understanding about food and nutrition. The Los Angeles Unified School District, for example, has opened approximately 225 gardens and hopes, if funding is found, to begin another 690 in the near future. Ventura County schools, by contrast, are well ahead of much of the state because of a private trust set up in 1993. The county currently has gardens in 109 schools, almost 60% of the total, and plans have been developed for the remainder. The trust, a gift of a local resident who wanted to educate the public about the importance of agriculture, has trained about 450 teachers at all grade levels and provided each with mini-grants of up to \$1,000 for materials and supplies. Also supported by the parents and schools themselves, Ventura's gardens have taken a variety of forms with a diversity of emphases. At some elementary schools the focus is exclusively on foods but others have branched out into additional areas of study. One, for instance, developed beds which grow species from different terrestrial biomes, thus expanding the garden into a biogeography lesson. Another section is planted with butterfly-attracting species so that students can study insect life cycles. One middle school has created a terraced garden including a pond. Environmental issues are its focus with students learning about the impact of pesticides on insect pollinators and growing native species to plant on nearby coastal sand dunes. "When they take these down to damaged dunes and plant them, "

says Alison Maires, an eighth-grade science teacher, “its really powerful.”<sup>38</sup> The students at a high school are using their garden to learn about landscape design and to grow produce to sell at a nearby farmer’s market. A second high school is serving its garden’s food in the cafeteria and, in a wonderful show of sustainability, composting the cafeteria’s wastes for use in the garden.

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### **Sidebar – Gardens for the College Bound**

In 1992, the “hip-hop entrepreneurs” of Food from the ‘Hood turned a weedy, quarter-acre lot at South Central Los Angeles’s Crenshaw High School into a lucrative organic garden which in part feeds needy neighbors and whose profits go to a college fund for the young gardeners. In 1994 they introduced their first salad dressing.

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### **Butterfly Gardens**

Shortly after Gwendolyn Alley moved to Chrisman Avenue in midtown Ventura, California in Fall 1997, she became annoyed by the trash, derelict automobiles, and illicit activities in a nearby vacant lot. She would look out her window, she recalls, “to see prostitution, drug dealing and homeless people defecating in the trees. ...Yet amid this urban blight, there were all these Monarch butterflies.” These fluttering beauties were visitors from the nearby Eucalyptus trees which serve as winter habitat for the Monarchs on their annual migration north and south along the West Coast.



In response, Alley and the Midtown Ventura Community Council obtained state grants, donated materials, and neighborhood volunteers to transform the quarter-acre blot into a wildlife garden called Midtown Monarch Paradise Park. “Its an attempt to create a paradise for native wildlife in the city,” says Alley. The Council and Alley have received two grants (\$500 and \$800) from the California State Parks Foundation which has funded over 140 similar projects in the state since 1997. Most grants are for less than \$2,000 but it can go a long way if a volunteer group is careful to look for support and resources within the local community. The Council approached close-by businesses which donated the use of a skip loader for grading and landscaping, compost, and plants at wholesale prices, plus pizza and soda for the volunteer workers. The lot has gone from being forsaken to a blooming garden attracting Monarchs, other butterflies, and birds. The greenspace lacks swings and picnic tables but it is a place enjoyed by the neighborhood nonetheless. “It was an eyesore,” observes Erika Pringsheim, the California State Parks Foundation’s Director of Earth Day Programs, “now it’s a beauty.”<sup>39</sup>

### **Architectural Surfaces**

Freeways, garages, office buildings, and other created spaces can be draped with greenery. A small greenspace can be developed atop many existing structures if the planner is sensitive to slope and load limits. Alternatively, a large greenspace, even up to many acres, can be established if it is planned when the structure is being designed.

## Roadway Covers – Freeway Park – Seattle

Reclaiming highway rights-of-way increases greenspace but Seattle, Washington's Freeway Park is an unusually creative and inspirational example of this approach. When 12-lane, below-grade, Interstate 5 was completed in 1965-66, it severed downtown from its nearby high-density residential and institutional neighborhoods to the east. Moreover, the freeway had a blighting effect on the areas along its margins. Shortly after the freeway was completed, a civic group, Forward Thrust, succeeded in having a park bond issue passed which included landscaping for I-5 downtown. At first, officials planned a simple beautification effort along the freeway's banks but then they decided to hire Lawrence Halprin's landscape architectural firm. Working with the Seattle Parks Department, a local developer, and several other county, state, and federal agencies, they decided to not simply plant the freeway's sides but to vault it with parkland to either side and on top. Freeway Park became a 5.4-acre bridge across the interstate, re-connecting downtown to its former neighborhoods.

The park is an attractive escape despite sitting above a busy roadway. There are the signature fountains of a Halprin design, thick plantings, and a variety of places where children can play, parents sit and chat, and downtown workers stroll. Opened in 1976, the greenspace is jointly owned by the parks department and the developer of an adjacent high-rise building. The appeal of the area grew once the park opened. New residences and offices rose to the east and west plus a 2-acre park extension was constructed over the freeway to connect the existing park to a new convention center to the north. Since the 1980s, Freeway Park has spurred similar greenspaces in La

Cañada-Flintridge, California, Boston, Massachusetts, and Richmond, Virginia.

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### **Sidebar – Greening a NIMBY – Riverbank State Park**

A greenspace can be created upon nearly any structure if it is integrated into the plan early in the development process. The entire 28-acre Riverbank State Park in New York City's West Harlem sits atop the North River Water Pollution Treatment Facility. The addition of a much needed park during the early planning stages transformed the unwanted but necessary edifice – a water treatment plant – into a heavily used resource – a community park and recreation complex complete with several swimming pools, numerous athletic courts, a track and field, community garden and greenhouse, skating rink, cultural center, multi-use athletics building, and restaurant with outdoor terrace. Owned and operated by the state, Riverbank attracts nearly 4 million visitors annually.

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### **Underground Parking Structures – Post Office Square – Boston**

In 1954, Boston, Massachusetts's Post Office Square was converted from a cobblestoned plaza criss-crossed by trolleys into a privately operated, four-story parking garage. Downtown was losing business to suburban retailers and the authorities hoped to draw shoppers back by creating a low-fee parking area. By the 1970s, the squat, spartan, concrete structure was a trash-strewn, unmaintained but profitable blight on the neighborhood. Some nearby high-rises even moved their entrances to other streets

because the garage was so ugly.

In 1981, a local developer opened a new hotel across the street from the garage. He was satisfied with everything except the parking structure. At the hotel's opening, he turned to Mayor Kevin White and declared, "Mister Mayor, that garage has got to go."<sup>40</sup> The mayor agreed but it would take six years to gain control of the property because the garage's owner held a lease from the city. To start the process of change rolling, the local business community formed an organization, the Friends of Post Office Square, to plan a subterranean parking structure with a greenspace on top and to negotiate with the garage's owner. By the time the Friends and the owner had hammered out an understanding, private financing for the new facility was secured. The final agreement provided a fixed return for the investors plus a one-time and annual property tax payment of \$1 million to the city. In addition, Boston pays nothing for the park's operation, all net cash after debt service goes to a fund for other city parks, and when all debt and equity are repaid, the city regains ownership of the project.

The park design committee was composed of professionals, local businessmen, and community members from nearby and citywide. They reviewed the status of small urban parks in many cities, some with garages below, and selected a handful to visit. Their final guidelines proposed an area half green and half hard surfaces. Food service, abundant seating, and a water display were desirable with the mood being a mixture of formal and casual, cultivating a lively, active ambiance.

The 1.7-acre park and underground garage was completed in 1992 for a total cost of \$75 million. Both the expanded garage and new park are heavily used with

thousands passing through on most days. The park is always colorful, since it includes more than 100 plant species, and with the café open year-round, the space attracts users in every season. Like nearly all new and renovated parks, Post Office Square is security sensitive. No exterior walls or mid-size vegetation blocks sight lines so it is easy to see across the square – there are no secluded nooks.

Post Office Square is a creative, attractive alternative to the traditional for park makers, one that has been employed in San Francisco, Pittsburgh, Hong Kong, and several other cities. It brings much needed greenspace to one of the most crowded sections of Boston but the approach should only be proposed under specific conditions. The economics are complex so both density and the demand for parking must be high since the garage must pay for itself and the greenspace. Low demand could easily undermine success. Post Office Square is busy yet it has only been able to cover its own costs; there have been no extra funds for other parks.

### Eco-roofs – Linz, Austria

Eco-roofs are common in numerous European cities, especially in Germany and the Netherlands. Many now promote them and a few even require eco-roofs on new construction, with the industrial city of Linz, Austria having one of the most comprehensive programs. Since the city began requiring new structures to compensate for the loss of any greenspace covered by construction, the rule has prompted builders to create eco-roofs. In some instances, the design has been “extensive,” where the soil is thin and covers the entire roof, little if any irrigation is supplied, and the palette of

plants is small, generally low-growing, and the condition for them is stressful. These “greenroofs” generally require little maintenance and can be installed on a building whose roof slopes up to 30°. In the remainder of cases, the design has been “intensive,” where the soil is deep, irrigation is provided to reduce vegetation stress, and the choice of plants is large. These “rooftop gardens” look much like a traditional raised-bed garden, but sit atop a building. Unlike extensive greenroofs, they are relatively high maintenance and need a level surface but can also produce food, shade, and a diverse habitat.

Since the 1980s, Linz has also subsidized the creation of eco-roofs by covering 35% of the installation costs. (They have spent approximately \$3 million on the subsidy.) These two programs have been successful, leading to an estimated 300 eco-roofs scattered throughout the city including hospitals, schools, hotels, a concert hall, and even a gas station. Linz’s eco-roofs promote biodiversity by actively bringing vegetation back into urban areas and by supporting birds, butterflies, and other animals.

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### **Sidebar – The Advantages of a Eco-roof**

Both intensive roof gardens and extensive greenroofs provide numerous advantages (and a handful of disadvantages) over traditional roofs. Depending on the approach, the former can be:

- protection from UV rays, which extends the life of a roof
- cool the urban environment, i.e., reduce the urban heat-island effect

- sequester carbon dioxide
- provide habitat
- insulate the building and so reduce its heating and cooling costs
- stimulate visual interest and be an attractive, comfortable setting for leisure.

Although the initial cost of an eco-roof will be higher than a traditional one, it will more than pay for itself by lasting longer and reducing energy costs. The roof on nearly any building, whether commercial, industrial, institutional, or residential, can be greened. If a building does not currently have one, the owner should seek the advice of a building professional before proceeding.

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### **Sidebar – Shared Streets**

The Dutch have pioneered an alternative to the typical car-centered neighborhood street – the *woonerf* or “Shared Street” (also known as “Home Zones” in the United Kingdom). In Holland, as in most countries, cars have priority over slower moving traffic on most thoroughfares. A Shared Street, by contrast, is narrow, thickly planted with trees, and curved by brick and stone features to encourage all traffic, including motor vehicles and bicycles, to travel slowly – in practice no faster than a pedestrian. The result is a calm, green street friendly to the adults and children in a neighborhood. First appearing in the 1970s, today there are an estimated 6,000 *woonerven* (plural for *woonerf*) in the Netherlands. They are also popular in Denmark

and Germany, gaining support in the United Kingdom, and being applied selectively in the United States.

## **Alleys**

Alleys are often associated with stray cats and poor quality living since many are little more than utilitarian routes enclosed by dingy facades, redolent with garbage, and littered with trash. “Like rust creeping through the paint of a car, alleys in decay scar the bodywork of an otherwise attractive cityscape.”<sup>41</sup> They can be, however, an appealing, pedestrian-oriented green and recreation space. The City Council of Medford, Oregon created the Medford Urban Renewal Agency (MURA) in 1988 in response to blighted conditions downtown. The problems, ones common to many older urban neighborhoods, ranged from decaying infrastructure and declining property values to poor development patterns. MURA works in partnership with local resident and business committees to plan and implement projects attracting “aesthetically pleasing, job-producing private investments that will improve and stabilize property values and protect the area’s historic places and values.”<sup>42</sup>

Among many projects, MURA and the community will pedestrianize the alleys. They recognize that pedestrians are a sign of a healthy downtown so three projects address walkability. Two are aimed at improving streets but the third they hope will rekindle the value of alleys. The agency is installing cobblestone pavers in alleys, consolidating and enclosing trash receptacles, encouraging building owners to upgrade their alley entrances, and adding planter boxes and planting trees. These



improvements are paid for through Tax Increment Financing (TIF), a common urban renewal tool. TIF uses the increased property tax revenues generated by private and public improvements to fund further improvements.

### **Stream Daylighting**

Strawberry Creek bursts into the fresh daylight from a broken culvert in Berkeley, California. Until a few years ago, however, it was fully contained and buried 20 feet underground. Now Strawberry Creek Park is an elongate, 4-acre streamside greenspace in a neighborhood of bungalows and apartments not far from San Francisco Bay. It was one of the earliest projects in what has become a citywide creek restoration effort targeting the portion of the creek stretching from UC-Berkeley, where it runs in the open, to the old City Hall.

From 1974, when the city acquired the site from the Santa Fe Railroad, until 1982, it remained an abandoned, unattractive right-of-way. Then the city's landscape architect, Douglas Wolfe, decided to transform the site into a neighborhood park focused on the buried creek. The director of public works and the parks superintendent disagreed, thinking the exposed water would only attract litter and rats while tempting children to drink the water. Nevertheless, citizen support was strong – with over 70 supporters appearing at one hearing – so the parks commission voted unanimously to daylight the creek.

Wolfe still had to fight for adequate funding for the recovery, a struggle he nearly lost, but in the end the creek restoration itself accounted for only 10% of the park's

\$650,000 cost. In this case, Wolfe reveals, the tight budget actually contributed to the park's streamside character. Broken concrete from a nearby demolition became riprap protection for some stretches of stream bank, steps leading down to the water, and stepping stones in the creek itself. The removed fill was molded into hillocks and mounds with vegetation-filled swales in between to collect, hold, and carry runoff to the creek – a natural alternative to concrete basins and underground drains. Willows, cottonwoods, and sycamores grow along the creek with redwoods, pines, and oaks above. According to Wolfe, creeks should be restored to functioning wildlife habitats. "Its not as complicated as people think," he says. "It's a matter of reversing a process."<sup>43</sup>

## **Environmental Art**

Nearly all urban parks are works of art. They express a relationship to nature as understood through landscape architecture. Other art media, however, can offer alternatives for comprehending our connections to the natural environment and can therefore help foster sustainability in novel ways. These projects can be large, covering several acres, or quite small and intimate. Buster Simpson's *Exchanger Fountain* in Anaheim, California is an example of the latter, which despite its size, brings environmental issues back into a city where people are often indifferent to the natural phenomena on which they depend.

*Exchanger Fountain* is a wheelchair-accessible drinking fountain adjacent to a willow, surrounded by a low, ovular fence. The fountain's gray water irrigates the willow

while cooling the fountain and was inspired by historical accounts of the city. The fountain's dish, which mimics the sort of farming disc used when the city had an agrarian economy, is inscribed: "Santa Ana your water nurtures and your hot winds cool. The water kissing your lips is an offering." Mounted on a leaning tufa column, the dish's graywater saturates the absorbent stone as it drains down a deep groove on the column's back. Evaporation cools the stone mass and the water supply line, making a drink refreshing, especially during a southern California summer. The remaining graywater enters the tree pit, watering the willow. The plant recalls Anaheim's first enclosure – the living fence of willow posts that encircled the community in 1856. This low, native willow is now an anomaly in a streetscape dominated by tall, exotic palm trees. Nevertheless, the artist trusts, "people are conscious of the offering they make: cooling the next person's drink and nurturing the willow. Reflected in the fountain is the water 'kissing your lips,' and the interdependence of us all."<sup>44</sup>

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### **Sidebar – Diversity and Design**

Most public parks and greenspaces draw on Anglo-American aesthetics but they need not. Landscape design can tap into a variety of ethnic aesthetics. ARTScorpLA is a Los Angeles public arts organization working with low-income communities to transform abandoned or derelict sites into gathering and learning places. Their current site, La Tierra de la Culebra (The Land of the Serpent), was a vacant, 2 ½ acre, debris-filled lot in Highland Park. Community youth, under the direction of artist Tricia Ward,

created a cultural art park around a 450-foot serpent – a Latino symbol of fertility and growth – out of rubble, stone, and piqué tiles. The park, which includes outdoor murals, is both a safe haven and a learning center for disadvantaged and under-served youths. During after-school programs, teens are tutored and spend time working on such art and community projects as murals and art spaces as well as flower and vegetable gardens.

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### **ADDITIONAL SOURCES OF INFORMATION, EXPERTISE, AND ASSISTANCE**

The following offer inspiration and suggestions on how to start a community garden, a school garden, a street tree program, or any number of other greening efforts in your community. These sources are some of the best known and most experienced guides to creating green community spaces. While a particular publication or World Wide Website may not contain immediately useful information, it may suggest further actions or direct you to additional sources. Furthermore, you should check with your local library and on the World Wide Web.

#### **Readings:**

Hashem Akbari, et al., eds. 1992. *Cooling Our Communities: A Guidebook on Tree Planting and Light-Colored Surfacing*. Washington DC: U.S. Environmental Protection Agency.

This is a guide to why, how, and where you should plant trees and refinish

surfaces in lighter colors for a cooler environment.

Alexander Garvin, Gayle Berens, et al. 1997. *Urban Parks and Open Space*. Washington, DC: The Urban Land Institute.

A generously illustrated selection of case studies about recently created or re-designed parks and other community greenspaces in American cities.

David Gordon, ed. 1990. *Green Cities: Ecologically Sound Approaches to Urban Space*. New York: Black Rose Books.

A collection of thoughtful studies on how people in many urban settings have made their cities more environmentally healthy and pleasant.

Patricia Hynes. 1996. *A Patch of Eden: America's Inner City Gardeners*. White River Junction, Vermont: Chelsea Green Publishing.

A loving and insightful look at successful community garden projects in Harlem, North Philadelphia, Chicago, and San Francisco.

Gary Moll and Sara Ebenreck, eds. 1989. *Shading Our Cities: A Resource Guide For Urban and Community Forests*. Washington, DC: Island Press.

An older but still useful manual on how to create and maintain trees on streets, in parks, and in other urban areas.

Jac Smit, Annu Ratta and Joe Nasr. 1996. *Urban Agriculture: Food, Jobs, and Sustainable Cities, Publication Series for Habitat II, Volume One*. New York: United Nations Development Program.

A United Nations overview of the social, economic and ecological benefits of growing urban food while creating jobs in cities.

### **World Wide Web Sites**

American Community Gardening Association: [www.communitygarden.org](http://www.communitygarden.org)

An organization of professionals, volunteers, and supporters of community gardens. The site includes information on the organization, its support for new gardens, conferences, insurance program, information database, and publications plus links to related websites.

American Forests: [www.americanforests.org](http://www.americanforests.org)

This association's mission is to improve the environment with trees and forests. Founded in 1875, American Forests supports urban forestry and re-greening campaigns through multiple programs, publications, software, and a policy center. Their site includes a wealth of information on urban forests and links to many other related sites.

California Department of Education – Nutrition, Education and Training Program:  
[http://www.cde.ca.gov/cyfsbranch/cnfddiv/nets/g\\_1.htm](http://www.cde.ca.gov/cyfsbranch/cnfddiv/nets/g_1.htm)

This California Department of Education website provides an overview of the California School Garden program plus links to many useful resources including publications, resource organizations, financial assistance, and supplies.

Friends of the Urban Forest: [www.fuf.net](http://www.fuf.net)

According to their website, the Friends are dedicated to the belief that “trees are a critical element of a livable urban environment.” They offer financial, technical, and practical assistance to individuals and groups who want to plant and maintain trees in San Francisco.

Pennsylvania Horticultural Society: [www.libertynet.org/phs](http://www.libertynet.org/phs)

The Pennsylvania Horticultural Society is devoted to improving the quality of life and creating a sense of community through horticulture. They have a through-the-mail lending library, produce a number of publications, and support public-landscape and community-garden projects in the Philadelphia area.

The Trust for Public Land: [www.tpl.org](http://www.tpl.org)

This organization is committed to protecting land for human enjoyment and well-being. They have legal and real-estate experts who help individuals, public agencies, and community groups to create urban greenspaces and preserve historic lands. Their site offers links to their extensive programs, publications, case studies, and information on site financing.

Tucson Clean & Beautiful, Inc.: [www.ci.tucson.az.us/tcb](http://www.ci.tucson.az.us/tcb)

This site includes information on waste reduction, park adoption, urban forestry (Trees for Tucson), and memorial parks in Tucson, Arizona.

Urban Parks On-Line: <http://www.pps.org/urbanparks/>

This site offers ideas, information, and models on urban parks. They provide information on their publications, discussion list, and bibliographies as well as other services and technical assistance.

## **DEVELOPMENT GUIDELINES**

### **INTRODUCTION**

Many urban residents have little or no access to open space. While open spaces offer valuable amenities to the urban dweller, most Los Angeles residents are dramatically underserved, with no public open spaces available within miles. Development of an open space system in highly urbanized areas poses a substantial challenge, especially where no undisturbed natural lands exist, and the only potential open space areas are privately owned vacant lots. This publication provides guidelines to meet the challenge of developing an open space network in highly urbanized areas. The goal of these guidelines is to provide practical recommendations for the development of an open space system that is environmentally sustainable and



maximizes social and environmental benefits to the community and the natural world.

Several kinds of open space are beneficial in the urban landscape and some definitions are necessary. The term “open space” may refer to land that has active recreational facilities such as soccer fields, swings, and picnic tables. These lands are distinct from areas that are undeveloped earth, plants, and water. The latter can be identified as “greenspace,” and are the primary subject of these guidelines. Greenspaces can further be identified as “natural greenspace,” which is predominantly naturalistic and unstructured, and more manicured parks with mowed turf and trimmed trees.

The challenge of greenspace development in highly urbanized areas is that no remnants of the region’s native vegetation remain. In Mediterranean climates such as California, this problem is compounded because the native vegetation does not spontaneously re-establish in backyards and vacant lots following disturbance. City development completely obliterates the native habitats.

The ecological and social benefits of greenspace have been recognized and promoted since the urbanization associated with the Industrial Revolution. The development of the great urban parks of New York, Chicago, Boston, and San Francisco reflect the belief in the beneficial qualities of greenspace access to city dwellers. These benefits are discussed in more detail in the accompanying case study book but are discussed briefly here as well. The benefits of natural greenspace can be classified as either ecological or social, although the two categories do overlap.

The social benefits of urban greenspace have been long discussed in the context

of urban park creation. Parks and other greenspaces provide areas for passive and active recreation, which contributes to the mental and physical health of city residents. This benefit has been recognized since the intense urbanization of the industrial revolution. More recent research has established the value of unstructured play in natural greenspace to the healthy development of children. Adequate greenspace offers economic benefits in the form of increased property values in surrounding properties.

The public may have some ambivalence toward the provision of unstructured greenspace in highly urban areas. Residents often express concerns about public safety, crime, and risk to private properties adjacent to greenspaces. These perceptions must be addressed by planners and can largely be eliminated through careful site design, regular maintenance, and local community involvement.

The ecological benefits of urban greenspace include increased biodiversity, ameliorated temperatures, reduction in particulate air pollution, and decreased and cleaner run-off. These benefits can be achieved through designing greenspaces for multiple benefits and uses.

## **TYPES OF GREENSPACE**

The challenge of developing a greenspace network in highly urbanized areas is particularly daunting because of the lack of large open parcels of land. It is therefore imperative for a greenspace plan to incorporate improvements to existing land without direct ownership as well as acquiring title to specific sites. Improvements that can be

made systematically provide a network of “systemic” greenspace improvements while sites put into public ownership are “specific” greenspace improvements.

Systemic greenspace improvements include such public policy issues as landscaping, building and lot design, and parking lots. By promoting more sustainable and ecologically sound approaches to the design and maintenance of such features throughout an area the overall quality and quantity of green natural features is increased to great environmental benefit. These improvements can be encouraged with design ordinances and occur in a piecemeal fashion as an area is redeveloped.

Specific greenspace improvements involve the acquisition of sites and their management as greenspace or changing management of properties already in public ownership. Specific greenspaces include nature parks, city medians, alleys, public gardens, and other similar properties held specifically as open space. Specific greenspace projects can be designed and implemented in a much more focused manner than systemic improvements.

## **Systemic Greenspace**

Systemic improvements in greenspace quality can be achieved through several mechanisms that do not require the fee acquisition of parcels. These approaches are largely ordinance-based and include landscaping, street trees, and stormwater management. Other systemic improvements result from public education and include such wildlife enhancements as bird boxes and other “backyard habitat” improvements.

## Landscaping Ordinances

Local jurisdictions may exert control over the character of the urban environment by implementing landscape ordinances. Because highly urbanized areas are almost completely in private ownership, the systemic improvement of the interstitial greenspaces is through enforceable guidelines that direct landscaping.

Because of the diffuse and gradual implementation of landscaping ordinances, the goals that can be achieved are those that have a cumulative and additive impact on an environmental problem. These goals include:

- Reduced and cleaner stormwater runoff,
- Reduced overall water consumption,
- Ameliorated urban heat island effect,
- Reduced residential and commercial cooling costs, and
- Improved air quality.

Mediterranean climates such as California experience serious difficulties with stormwater quantity and quality. The long dry summer period results in an accumulation of pollutants in the city environment that are flushed into the ocean with the first rain. The majority of such pollutants come from “non-point sources,” meaning they are created and deposited throughout the urban fabric and not caused by localized polluters. The intensity of stormwater flushes is increased by the amount of the land surface that is covered by impervious surfaces. In highly urbanized areas, up to 60% of the rainfall directly becomes stormwater runoff. Systemic greenspace improvements offer several mechanisms to decrease and cleanse stormwater runoff. The first is to

increase the permeability of the urban land surface by minimizing pavement area, utilizing permeable pavements, and establishing healthy vegetation. Vegetation is especially useful in reducing soil compaction so that water is able to infiltrate easily. Vegetation also quickly takes up water through its roots, reducing the amount of stormwater. The second systemic greenspace improvement to address stormwater involves “biomass injection,” in which stormwater is directed to a greenspace prior to entering the storm drain system. The greenspace allows water infiltration and cleans the water before the excess flows into the drain system. Such designs are especially effective for parking lots. A final method of stormwater control requires the multiple use design of public lands used for water control and is discussed below.

Landscape ordinances can provide for the reduction of water consumption through direct irrigation control ordinances and requirements and incentives for drought tolerant vegetation.

Climatologists have long recognized that urban areas have higher overall temperatures than their surrounding suburban, rural, and wild areas. This “urban heat island” can result in 4–8° hotter temperatures than would exist without urbanization. The mechanisms of this increase are increased thermal mass, high thermal mass of building materials, altered air circulation, and decreased evapotranspiration from plants. Evapotranspiration is the process by which plants release water into the air, which has a cooling effect. The increased temperatures of the urban heat island in turn decreases air quality by promoting the formation of photochemical smog, and increases cooling costs in both residential and commercial structures. Provision of sufficient shade

through a landscaping ordinance has the potential to reduce the peak power consumption in Los Angeles residential neighborhoods by 44%, according to a 1987 study. The increased density and urbanization since that time may mean that the potential savings may now be much greater.

Increased tree and shrub cover encouraged by a landscaping ordinance also provides air quality benefits. Vegetation can intercept and filter atmospheric particulate pollution. In a German study, roads with street trees showed lower levels of particulate pollution. Urban landscaping also helps to remove carbon from the atmosphere. For example, a study in Oakland, California reported carbon sequestration of 13 tons/acre for residential areas, 0.5 tons/acre for commercial land, and 0.7 tons/acre for transportation corridors. However, some plants can produce chemicals that contribute to the production of photochemical smog, so choice of species in landscaping is important.

The scope and applicability of landscaping ordinances must be determined by governing jurisdictions. Certain restrictions would be difficult to impose on private property, and to be successful must carefully weigh public benefit and private property rights. To achieve the greenspace benefits above, the ordinance should include the following:

- Regulation of irrigation and other water management controls. One method is through the installation of separate landscape water meters and offering incentives for low usage.
- Limits on lawn area. Lawns are not water efficient and offer few of the benefits of

trees and shrubs. Their use should be limited to a fraction of the landscaped area.

- Drought tolerant landscaping. Water usage can be limited by requiring the use of drought tolerant plants in landscaping. In California, many native plants are drought tolerant, so their use is especially appropriate and has additional benefits for wildlife.
- Establishment of community forest plans. Many communities have identified community forest areas and appointed local community forest boards. The community forest board serves two purposes, to promote the planting of appropriate trees and shrubs, and to establish procedures to permit removal of vegetation. Comprehensive community forest plans allow for the reasonable removal of trees under limited circumstances but have the overall effect of increasing tree and shrub cover.
- Identification of highly invasive species. While not often an issue in highly urbanized areas, invasive species pose a danger on the urban-wildland interface. The use of invasive, nonindigenous plants in the landscape should be strictly limited to reduce the effect on adjacent native vegetation.
- Limitation on vegetation removal. Landscape ordinances can establish interdictions on the removal of native trees and other identified exceptional landscape features.
- Requirement of an approved landscaping plan for new construction.

## Street Tree Ordinances

Street trees provide many of the same greenspace amenities as does landscaping as a whole. They provide shade, absorb carbon dioxide and produce oxygen, reduce particulate pollution, ameliorate urban heat island effects, buffer residences from street noise, and occasionally provide wildlife habitat. Because street trees are typically planted on the publicly owned property of street rights-of-way, local jurisdictions can exert considerable control over their character. Although “city strips” along streets and roads are extremely narrow, their total area is great and a well designed and implemented street tree program can drastically improve the quality of greenspace in highly urbanized areas.

The characteristics desirable in a street tree vary depending on the land use adjacent to the tree. In commercial areas, merchants object to large, dense trees that may block signs from view. One often sees the result of this in the radical trimming of trees in commercial zones. In contrast, large-canopy trees in residential areas are often highly desired; residences on shady, tree-lined streets may command higher property values. In addition, trees in commercial areas must withstand more severe stresses from soil compaction and lack of water. Residential areas usually have a larger area of unpaved ground surrounding the tree as well as less foot traffic.

One important aspect of street trees that could be greatly improved in highly urbanized areas is their value as wildlife habitat. Many trees commonly used in urban areas are either low value wildlife habitat or promote nuisance species. For example, two of the most common street trees in Los Angeles, palms (*Washingtonia* spp.), and fig



trees (*Ficus* spp.) are of little wildlife value. In contrast, several local species of trees attract butterflies and are more useful to native wildlife. These trees include sycamores (*Plantanus racemosa*), oaks (*Quercus agrifolia*), alders (*Alnus rhombifolia*), toyon (*Heteromeles arbutifolia*), and willows (*Salix* spp.). The use of these native species at appropriate locations — especially on less traveled roads — within an overall street tree program would raise the quality of wildlife habitat throughout the urban fabric. In addition, once established, native species are much more tolerant of the variable Mediterranean climate, including long drought periods.

California sycamores grow to a large size and are known for their broad, spreading branches. They are deciduous and are therefore appropriate for southern exposures, shading structures in the summer while allowing sunlight during the winter. They possess large hand-shaped leaves that attract the showy Western Tiger Swallowtail butterfly. Coast Live Oaks (*Quercus agrifolia*) are evergreen trees that provide dense shade. Individuals can grow to a large size but can be trained to grow as street trees. They have very low water use and do not tolerate turf around their trunks. However, they are extremely attractive to native wildlife. Willows (*Salix* spp.) are appropriate for wetter sites and can tolerate constant water. They must be trained as street trees. Left untrained they produce a thicket that makes a good buffer between residential and other land uses. The choice of tree species may also include species that are productive food sources, transforming a street or alley into an orchard.

Street tree ordinances should regulate acceptable trimming practices for trees. Much of the trimming conducted by gardeners and unlicensed arborists is bad for the

tree and shortens its life. As a rule, much of the tree trimming in southern California cities is unnecessary. Clear policies to meet international arboricultural trimming standards and mechanisms for enforcement should be incorporated into street tree policies.

### Permeability and Stormwater Runoff

In the Mediterranean-type climate of California, stormwater runoff is a major source of pollution to waterways and the ocean. Methods of improving the quality of stormwater runoff have the collateral advantage of improving the greenspace character of neighborhoods. The problem of polluted runoff derives from two processes. First, urban areas are much less permeable to rainwater than natural sites. Much of the water that falls as precipitation on undeveloped natural land infiltrates the soil and does not become stormwater runoff. For example, in the Malibu Creek watershed in southern California, which is mostly rural, only 30% of rainfall becomes stormwater runoff. In contrast, in the highly urbanized Ballona Creek watershed, 60% of rainfall becomes stormwater runoff. So the first way in which stormwater can be managed is to increase the permeability of the urban area to rainfall.

The second problem with stormwater runoff, beyond its quantity, is the amount of pollutants that are washed off the impervious surfaces of urban development and carried into waterways and the ocean. Pollutants can be reduced in two complementary ways. First is to educate the public about the disposal of products into stormdrains. These efforts encourage residents to dispose of household wastes, motor oil, and other

pollutants appropriately, keeping them out of the storm drain system. While not improving greenspace per se, such education programs do serve to educate the public about their connection with a regional ecology, especially through “Drains to Ocean” stencils on stormdrains. The second approach to stormwater pollutants is to install mechanical means to clean the stormwater before it is discharged into the stormdrain system. Some of these methods provide greenspace improvements while others do not. Mechanical methods such as trash screens and racks installed in catch basins or the diversion of runoff to water treatment facilities during low-flow periods improve stormwater quality alone. Two other methods provide stormwater cleansing and collateral greenspace benefits: “biomass injection” and constructed wetlands.

The following methods for increasing urban permeability and managing stormwater runoff could be implemented through building codes by municipalities, and changing management of some publicly held properties.

**Permeability Improvements.** Building codes and design standards can improve the permeability of urban areas. Implemented incrementally and systematically, the following design improvements will decrease stormwater runoff:

- Hollywood-style driveways. Driveways constructed in this manner have two paved tracks, decreasing the total paved area from completely paved driveways.
- Permeable pavement, pavers, or other porous materials for sidewalks, driveways, alleys, and other surfaces. Permeable pavers that allow the growth of grass have been used effectively for fire lanes, and they could be incorporated

into designs wherever vehicular access is needed infrequently. They could be used especially effectively in alleys. Decomposed granite has been used for some sidewalks in Pasadena. While the permeable granite was installed to allow trees to survive, its successful use shows that all accessibility and performance standards can be met by nontraditional surfaces.

- Parking lots. Building codes could require that a certain portion of parking lots be designed as open space. For example, areas of bumper overhang can be kept as greenspace rather than paved, and a certain percentage tree cover mandated.

**Stormwater Cleansing.** Aside from the mechanical engineering improvements to catch basins, two important techniques can cleanse stormwater: biomass injection and constructed wetlands. Biomass injection is the practice of allowing stormwater to filter through a vegetated area prior to draining excess water into the stormdrain system. By “injecting” the stormwater into the biomass of greenspace, the water is cleaned and some additional percolation is possible. Vegetation can slow the flow of water, allow some pollutants to settle out, and allow for percolation into the soil. Parking lots are ideal candidates to be designed for biomass injection. The cost of lost parking is offset by gains in stormwater quality and the ability to minimize other engineered solutions to stormwater management. Some cities are already requiring stormwater filtration traps in parking lots.

## **SITE-SPECIFIC GREENSPACES**

Public or non-profit ownership of property allows greater flexibility to design and manage them as greenspaces. While improvements to privately owned properties through combinations of regulation and incentives have the potential to modify the greatest total area, properties managed by the public or in the public interest can provide higher-quality greenspaces and form the basis of a publicly accessible greenspace network. Such areas may be managed as natural sites with an emphasis on the provision of native trees, shrubs, and flowers, as community gardens and on providing food and agricultural opportunities to residents, or as active recreation sites with an emphasis on structured recreation such as softball and soccer. In highly urbanized areas, the potential greenspaces are generally too small for active recreation. Active recreation areas also have the lowest natural value both to native plants and wildlife and as education sites.

One of the great challenges of providing a natural greenspace network in highly urbanized areas is the general perception that the small natural areas that could be created are of little or no conservation value and are a waste of effort and resources. To the contrary, small urban natural greenspaces can maintain a significant diversity of native birds, butterflies, plants, and insects. Because ecological value is often least appreciated for small urban greenspaces, their benefits and limitations are discussed here.

Small (<2 acres) urban greenspaces can play important roles in the regional maintenance of biological diversity as well as provide for public exposure to natural

features and processes. Small urban natural areas can be thought of as habitat isolates in a hostile matrix. The combination of small size and isolation means that they will not support species that require large individual ranges or cannot travel through the urban matrix. This generally limits the target species for small urban open spaces to species that can fly — birds, butterflies, dragonflies, etc. — or that are already urban tolerant — skunks, raccoons, and occasionally coyotes. Plants are limited to those that can tolerate suboptimal conditions such as frequent trampling, and high pollutant loads. Even within these limitations, small urban greenspaces can and do support much higher biological diversity than their surroundings and can even be used as temporary stopovers by migratory birds.

Birds are the most conspicuous wildlife elements that may use small urban greenspaces. The species that will use these fragments in southern California include: 1) native and exotic urban tolerant species, 2) native edge species, 3) migrating species, and 4) birds of prey. Urban tolerant species are those that are already found in urban areas absent management for native habitats. They are similar in urban areas throughout the world — non-native Rock Dove (pigeon), House Sparrow, European Starling, and the native Mourning Dove. Several other native species are tolerant of urban areas if sufficient food resources are provided — Anna's Hummingbird, Black Phoebe, Scrub Jay, Northern Mockingbird, and American Crow. In small native habitats, certain native species that are tolerant of habitat edges join the urban tolerant species. These may include Spotted Towhee, Bushtit, Song Sparrow, and Lesser Goldfinch.

A third set of species may utilize small urban habitats on an occasional basis. These include winter residents and migrants. Winter residents like White-crowned Sparrows and Yellow-rumped Warblers can spend several months in southern California habitats during the winter, while migrants can use small, urban habitats temporarily on their trips north and south. For instance, such rarities as Prothonotary Warbler and American Redstart have been observed as winter migrants in downtown Los Angeles. Birders call the small oases of green in urban landscapes “migrant traps” because they are the only places that migrating songbirds can stop to rest.

A final category of birds that is found in small urban greenspaces is raptors, or birds of prey. Birds of prey deserve special mention, because not only are they aesthetic and educational resources, they serve to control pest populations like rats. Red-tailed Hawks, Great Horned Owls, Barn Owls, and even the rare Peregrine Falcon survive in urban areas and provide free pest control services. Nesting platforms and boxes can encourage these species. In addition, other raptors are found in southern California cities during the winter, including Cooper’s Hawk and occasionally Merlin.

Like birds, a distinct subset of butterflies thrives in urban areas. These species are good fliers and can find appropriate habitat throughout the urban matrix if it is provided. If appropriate plants are provided, virtually any small urban greenspace can have breeding populations of up to 20 butterfly species. These include showy large species like the Anise Swallowtail, Western Tiger Swallowtail, and Monarch. Because of their mobility, many other winged insects can be supported by quite small greenspaces. For example, 1,400 insect species were recorded from a single 50 by

200 foot urban lot in New York City. Insect diversity is important because these species fulfill valuable ecosystem functions, such as pollination, decomposition, soil aeration, and nutrient cycling.

Clearly, small urban greenspaces are not nature reserves in the same way that larger parcels are. Nevertheless, they have a crucial part to play in conservation. Provision of natural habitat, no matter how small, in barren urban landscapes fulfills important conservation functions. The most important role is probably as migratory bird stopover sites. Another potential value is the conservation of last examples of small remnant habitats. In highly urbanized areas, remnant habitats are unlikely to persist, but such a possibility exists. Urban greenspaces are critically important for educational purposes, to allow urban dwellers to have experience in natural greenspaces. Psychologists have documented the benefits of unstructured play areas for young children.

## **Parks**

Several factors should guide the choice of acquisition sites for urban greenspaces. While biological constraints predominate in the choice of larger reserves in non-urban settings, they are less important for those in highly urbanized areas, with a few exceptions. This is because connectivity is a desired goal for large reserves, while the target species for small urban reserves are mobile. The exceptions to this rule would be for small reserves close (< 1 mile) to existing wild areas or along natural corridors such as rivers. Aside from these exceptions, the only guideline offered by



biological concerns would be that small open spaces are distributed evenly throughout densely urbanized landscapes. Such a mosaic of small, close open spaces will make the landscape more permeable to wildlife movement, and serve the community well.

In highly urbanized areas, public access is a critical factor in determining the number, size, and configuration of parks. Scientific studies of public use of open spaces provide some insight into the creation of a park system. One result of such studies is that small “leftover” parcels of land are important to children for play and are used by youth and adults for socializing. Small vacant parcels like these are generally vegetated by spontaneous assemblages of plants and are rarely included in official surveys of open space and even more rarely considered for public acquisition. In the borough of Greenwich, London, a survey showed that small, unnamed patches of land were as well known and used as were nearby public open spaces. These studies reinforce the conclusion that greenspaces in highly urbanized areas can and should include small parcels without structured recreational components.

The location and number of greenspaces is the critical consideration in determining public access. In open space planning efforts in England, planners often pursue the goal that all residents have “reasonable access” to wildlife habitats, even in highly urbanized areas. Their efforts identify “urban deserts,” which are areas where residents are more than 1 km (0.62 mi) from accessible wildlife habitats. Other conservation strategies identify “areas of deficiency,” “areas of nature deprivation,” and “areas lacking in natural habitats.”

The parameters that make an open space accessible to urban residents remain

under research. While certain urban greenspaces may be in conservation ownership and the public has the legal right of access, various physical and social factors limit the degree to which the public is willing to exercise those rights. The physical constraints that limit accessibility are distance from home, barriers such as large roads, and the differential mobility of particular demographic groups such as the elderly and children. Social factors that limit accessibility of greenspaces in highly urban areas include the fear of crime and perceptions that natural areas are inherently risky.

### **Physical Constraints**

The most common method of determining public access to open spaces is to identify the amount of time that residents are willing to spend getting to an open space and translating that time into a distance. Both times and distances have been researched for various groups, including children. While providing a good baseline for defining a greenspace “catchment” — the area that a greenspace serves — straight-line distances are complicated by barriers such as busy roads, railway lines, or housing developments, and by constraints such as grade that limit the ability of certain groups (wheelchair users, mothers with strollers, etc.). In quantitative studies of park catchment area, consideration of barriers and constraints results in an average 50% reduction in catchment area. Based on these considerations, British open space planners have recommended that catchment areas for the smallest parks be calculated as a straight-line distance of 280 m (0.17 mi). While this is a good goal for highly urbanized areas developed in the more sprawling manner of American cities, for the most urban areas, it is likely out of reach.

## **Social Constraints**

Social constraints on greenspace access include range behavior exhibited by children, fear of crime, and other perceptions that hinder usage.

Many researchers agree that access to a diversity of environments — including natural greenspaces — is important to children's health and well-being. Repeated studies of the home range of boys and girls over the last 20 years have yielded several interesting results. First, boys have larger areas than girls within which they are allowed to range — alone, with permission, and when accompanied by older children. Second, the area in which children are allowed to range has decreased from the 1970s to the 1990s. Such limitations on range are important because visitor and observational studies show that children and adolescents make up 30–60% of all natural greenspace users in urban areas, reflecting 2–5 times their incidence in the population. Therefore, children should be considered in design criteria for natural greenspaces.

Fear of crime is a second social factor limiting use of natural greenspaces. However, site design and maintenance can minimize these fears. Designing small urban greenspaces so that they have sightlines through them is one approach to minimize fears. Such design presents no difficulty in highly urbanized areas where the sites available for reclamation as greenspaces are quite small. While bright night lighting is often cited as reducing crime, the relationship has not proven itself in scientific studies. Overly lit spaces give pedestrians a false sense of security, which often leads them to take unadvisable risks. Excessive night lighting also reduces the ecological value of open spaces (see box). Residents also associate crime with commercial

activity, such as street vendors, which should be excluded from greenspaces.

Based on the factors discussed above, and published studies, guidelines for accessible natural greenspace in the form of parks in highly urban areas follow. These guidelines should inform provision of greenspace within currently urbanized areas.

- Every urban resident should be provided with: a small open space (<5 acres) within 1/4 mile from home, a significant (25–50 acre) open space within 1 mile from home, a large (50–250 acre) open space within 3 miles from home, and a regional (250+ acre) open space within 7 miles from home.
  - No minimum size limit should be imposed on potential small open spaces, and open space acquisition should begin with detailed street-by-street surveys of all available parcels.
  - Natural greenspaces should be developed with a minimum of nonpermeable surfaces, and kept free of commercial activity.
  - Native trees and shrubs should be used for natural greenspaces, including oaks, sycamores, alders, and willows, all of which make excellent landscape trees.
  - Landscaping should provide horizontal and vertical complexity for wildlife and unstructured children's play.
  - Where feasible, hydrologic features such as streams should be reincorporated into the topography to provide both wildlife habitat and exploration areas for children.
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## **Sidebar – Light Pollution**

As the night sky and its millions of stars have been gradually replaced by the dull glow of the city for the majority of Americans, many have never even seen the Milky Way. Those who grow up in the city are astounded and awestruck upon seeing the unpolluted night sky when they first cast an upward gaze outside the reach of city lights. Anyone who has contemplated the human place in the universe under a starlit sky recognizes that its loss is a significant degradation of the environment.

Light pollution also has significant biological effects. Evidence suggests that unmated mockingbirds sing longer at night in lighted versus unlighted areas. Other research shows that songbirds sing significantly earlier in the morning in artificially lit parks. A recent study in Sacramento showed that crows roost in areas with high nighttime lighting levels, and others have hypothesized that artificial lighting allows crows to avoid predation from owls. Crows are a native species, but they are also aggressive, and artificially increased population levels can be detrimental to other native bird species. Artificial night lighting affects the behavior of nocturnal frogs, reducing their visual acuity. Artificial lights attract nocturnal moths that are subjected to increased predation there.

The major obstacle to implementation of improved lighting design is the public perception that bright lights equate with safety from crime. The scientific evidence is not clear whether increased night lighted results in decreased crime. Because night lighting is so common in the night environment, especially in urban areas, it is no longer a cue for residents or the police to observe lighted areas. Night lighting serves mainly to

illuminate illegal activities rather than to discourage them. Several school districts around the country have experimented with a “dark campus” approach to reduce vandalism. At several schools where all lights are extinguished at night, vandalism has decreased. Clearly, appropriate night lighting is needed at intersections and along pedestrian walkways. However, extensive use of “security lighting” results in a nighttime environment that is illuminated for criminals, and gives a social cue that an area is high in crime.

Many local jurisdictions across the country have implemented or are implementing light pollution ordinances. Precise engineering standards have been developed to define and regulate light pollution, whether its source is inside or outside a home. Reducing night lighting, both for municipal streetlights and on private property, can provide considerable financial savings and significant environmental benefit. Incorporation of appropriate night lighting is essential in the development of a sustainable city.

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## **Water Management Areas**

Some highly urbanized regions have systems of stormwater detention basins and other stormwater control areas. Usually these sites are periodically cleared of vegetation, landscaped with vegetation with little wildlife value, or covered with concrete. Stormwater control areas are ideal for multiple use designs that integrate wildlife and recreational values to provide public open space amenities. When

considered together, publicly owned stormwater control properties — detention basins, channels and their rights-of-way — represent a significant area that can be managed for greenspace qualities.

Stormwater detention basins, also called “sumps,” have the water management purpose of collecting and slowing runoff from urban areas, and allowing percolation of water into the ground. Detention basins often spontaneously develop wetland vegetation and function as small wetlands. However, jurisdictions often see vegetation as an impediment to the function of the basin, which it is not. Detention basins can incorporate vegetation into the design, which provides several additional benefits. Plants absorb and transpire water, decreasing overall runoff. Vegetated soils are more permeable to runoff, especially if burrowing mammals such as pocket gophers are allowed to persist as well. As discussed above, contaminants in stormwater runoff are trapped in vegetation, providing greater cleansing value than a bare detention basin. Of course, vegetated detention basins are no substitute for native wetland habitats, and should not be constructed in natural areas. Nevertheless, within highly urbanized habitats, vegetated detention basins offer definite greenspace values.

Virtually all natural drainages in highly urbanized areas have been either filled or channelized. In developing a greenspace network for highly urbanized areas, drainage channels offer some of the few opportunities for linear connectivity through the urban fabric. This connectivity is mostly a benefit to the human residents seeking pedestrian routes away from cars. A number of programs could improve these areas as accessible greenspaces for residents and as habitats for wildlife. Where possible, channels should

be left with sandy bottoms to allow the planting, or natural development of riparian vegetation such as willows (*Salix* sp.) and mulefat (*Baccharis salicifolia*). Channel banks should include as little nonpermeable surface as possible and be planted with appropriate trees, such as California Sycamores (*Plantanus racemosa*). Along larger channels, such as the Los Angeles River, adjacent open spaces should be acquired and integrated into a comprehensive restoration project that allows for reestablishment of a seasonal flooding regime with water management, recreational, and wildlife benefits.

Development of an open space network in highly urban areas is a special challenge. However, the potential benefits are great in terms of improving the environment of cities. Systemic and site-specific strategies must be employed. The key is to remember that small is beautiful, greenspaces can be fit in around the edges, in vacant lots and in forgotten corners. With reasonable public involvement and support, the potential still remains to transform even the densest urban neighborhood into a more sustainable and livable environment.



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<sup>1</sup> The Department of City Planning for Los Angeles describes a neighborhood park as “an open space facility within walking distance from residential areas, usually of 4-5 acres.” It is distinct from a community park – 10 acres or more – or an even larger regional park.

<sup>2</sup> C. Harrison, J. Burgess, A. Millward, and G. Dawe, *Accessible Natural Greenspace in Towns and Cities: A Review of Appropriate Size and Distance Criteria*, Research Report Number 153, (London: English Nature, 1995), p. 2.

<sup>3</sup> C. Harrison, J. Burgess, A. Millward, and G. Dawe, *Accessible*, pp. 34-37. The distance is determined using a straight line. It is not a measurement on foot.

<sup>4</sup> Peter Harnik, *Inside City Parks* (Washington, DC: The Urban Land Institute in Conjunction with the Trust for Public Land, forthcoming in April 2000), pp. TBA.

<sup>5</sup> Alexander Garvin and Gayle Berens, et al., *Urban Parks and Open Space* (Washington, DC: ULI – The Urban Land Institute, 1997), p. 28.

<sup>6</sup> Alexander Garvin and Gayle Berens, et al., *Urban Parks*, p. 28.

<sup>7</sup> Peter Neal, “Green Values” *Landscape Design* (February 1994), p. 37.

<sup>8</sup> Steve Lerner and William Poole, *The Economic Benefits of Parks and Open Spaces: How Land Conservation Helps Communities Grow Smart and Protect the Bottom Line* (San Francisco: The Trust For Public Land, 1999), p. 13.

<sup>9</sup> Peter Neal, “Green”, p. 37.

<sup>10</sup> Mark Wexler, “Money Does Grow On Trees – And So Does Better Health and Happiness” *National Wildlife* 36(3, 1998), p. 70.

<sup>11</sup> “Urban Ecological Analysis Report: Marlborough, Massachusetts” at

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[www.americanforests.org/ufc/uea/marlboro/marlbrpt.html#ExecutiveSummary](http://www.americanforests.org/ufc/uea/marlboro/marlbrpt.html#ExecutiveSummary)

<sup>12</sup> Steve Lerner and William Poole, *The Economic Benefits*, p. 38.

<sup>13</sup> Alexander Garvin and Gayle Berens, et al., *Urban Parks*, p. 160.

<sup>14</sup> Jac Smit, "Farm the City" *Our Planet* 8(4, 1996), p. 24.

<sup>15</sup> Steve Lerner and William Poole, *The Economic Benefits*, p. 21.

<sup>16</sup> Gary Moll and Sara Ebenreck, Eds. *Shading Our Cities: A Resource Guide for Urban and Community Forests*, Introduction by R. Neil Sampson, Foreword by F. Dale Robertson (Washington, Island Press, 1989), p. 231.

<sup>17</sup> "Healing America's Cities: How Urban Parks Can Make Cities Safe and Healthy" at [www.igc.org/tpl/newsroom/reports/healing.html](http://www.igc.org/tpl/newsroom/reports/healing.html)

<sup>18</sup> For more on the strengths and weaknesses of each model, see Christopher B. Leinberger and Gayle Berens, "Executive Summary: Creating Better Parks and Urban Open Space" In Alexander Garvin and Gayle Berens, et al., *Urban Parks*.

<sup>19</sup> "Hope and Peace: Urban Playgrounds That Offer Both" at [www.igc.org/tpl/legacy<98/hopepeac.html](http://www.igc.org/tpl/legacy<98/hopepeac.html)

<sup>20</sup> "Hope and Peace"

<sup>21</sup> David Gordon, Ed., *Green Cities: Ecologically Sound Approaches to Urban Space* (Montreal: Black Rose Books, 1990), pp. 211-212.

<sup>22</sup> David Gordon, Ed., *Green Cities*, pp. 193-194.

<sup>23</sup> Phyllis Meyers, "BIDs, PEDs, and Special Districts: Paying for Parks" *Urban Land* 56(12, 1997), p. 19.

<sup>24</sup> Heather Hepler, "Treez in The 'Hood: A Look at City Parks" *American City and County* 110(2, 1995), p. 27.

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- <sup>25</sup> Rod Keith and Frank Gasparik, "Beaver Hills House Park, Edmonton: A Safe, Green Oasis in a Sea of Concrete" *Plan Canada* 36(2, 1996), p. 25.
- <sup>26</sup> Alexander Garvin and Gayle Berens, et al., *Urban Parks*, p. 110.
- <sup>27</sup> Alexander Garvin and Gayle Berens, et al., *Urban Parks*, p. 114.
- <sup>28</sup> "Trees for Tucson" at <http://www.ci.tucson.az.us/tcb/tcbtothp.htm>
- <sup>29</sup> Karen Fedor, "Three of The Best ReLeaf Projects We Know" *American Forests* 96(3-4, 1990), p. 42.
- <sup>30</sup> Gary Moll and Sara Ebenreck, *Shading*, pp. 230-231.
- <sup>31</sup> Gary Moll and Sara Ebenreck, *Shading*, p. 232.
- <sup>32</sup> Gary Moll and Sara Ebenreck, *Shading*, p. 234.
- <sup>33</sup> Jac Smit, "Farm", p. 23.
- <sup>34</sup> David Wagoner, "The Making of a Community Garden" at [www.alexearthday.org/stories/arenv30.htm](http://www.alexearthday.org/stories/arenv30.htm)
- <sup>35</sup> David Wagoner, "The Making"
- <sup>36</sup> David Wagoner, "The Making"
- <sup>37</sup> Karen-Lee Ryan, "Toxic Turnabouts" at [www.planning.org/pubs/dec98.htm](http://www.planning.org/pubs/dec98.htm)
- <sup>38</sup> Emily Green, "Edible Schoolyards" *Los Angeles Times*, February 23, 2000.
- <sup>39</sup> "Once-Blighted Area Gives Way to Garden" *Ventura County Star*, Ventura, California, March 20, 2000.
- <sup>40</sup> Alexander Garvin and Gayle Berens, et al., *Urban Parks*, p. 148.
- <sup>41</sup> MURA project number 6 description at [www.projecta.com/wip/Murasite/proj6](http://www.projecta.com/wip/Murasite/proj6)
- <sup>42</sup> MURA vision at: [www.projecta.com/wip/Murasite/vision](http://www.projecta.com/wip/Murasite/vision)
- <sup>43</sup> Kevin Powell, "The Free Creek Movement" *Landscape Architecture* 81(1, 1991), p.

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<sup>44</sup> Buster Simpson, "Buster Simpson" In *Sculpting with the Environment: A Natural Dialogue*, Bailey Oakes, Ed. (New York: Van Nostrand Reinhold, 1995), p. 124.