

## **Pilot Projects**

As a way to organize priorities and to help the community undertake major projects in a manageable and measured way, the Master Implementation Plan identifies 8 key Pilot Projects. Based on a combination of the natural resource assessment and the community values and issues assessment, the Pilot Projects cover a range of environmental, aesthetic, management and sociocultural opportunities. All Pilot Projects were selected to be manageable, achievable, affordable, and good models for learning ecological techniques and demonstrating the benefits of implementing all the recommendations over time.

The 8 Pilot Projects include:

- #1: Improve Habitat and Restoring Forest (near Chatham Village)
- #2: Revegetate Open Land Using Natives (near Duquesne Incline)
- #3: Control Invasive Species (Mount Washington Park)
- #4: Define Views Using Natives (3 options)
- #5: Create a New View (Saddle overlook)
- #6: Establish a New Trail Link (two options)
- #7: Eliminate Hazards (two options)
- # 8: Improve Pedestrian Access (Duquesne Heights Greenway)

Section V: "Pilot Projects" describes each project, offers a timeline, some guidance on costs, a description of benefits and an indication of potential challenges.

## **Action Plan**

Section VI: "Action Plan" summarizes the activities for the community to initiate over the next two to ten years to make the "green infrastructure" of Mount Washington a reality. The Action Time Line lays out a view of these activities over the next few years.

The proposed effort includes adding to the current publicly owned green spaces and increasing the security of those green spaces in perpetuity. At the time of publication, the Mount Washington CDC is now proposing to unite all these green spaces into one park area. As a way of connecting the park effort with the existing Grand View State Scenic Byway, the CDC is now referring to the Emerald Link area, plus some additional sites, as "Grand View Scenic Byway Park." For this report, "Study Area" is used to designate the larger area covered by the natural resource assessment. "Emerald Link" is used to describe the original set of publicly owned green space that is part of the original scope of work for this project.

## SECTION I: OVERVIEW /BACKGROUND/CONCEPT

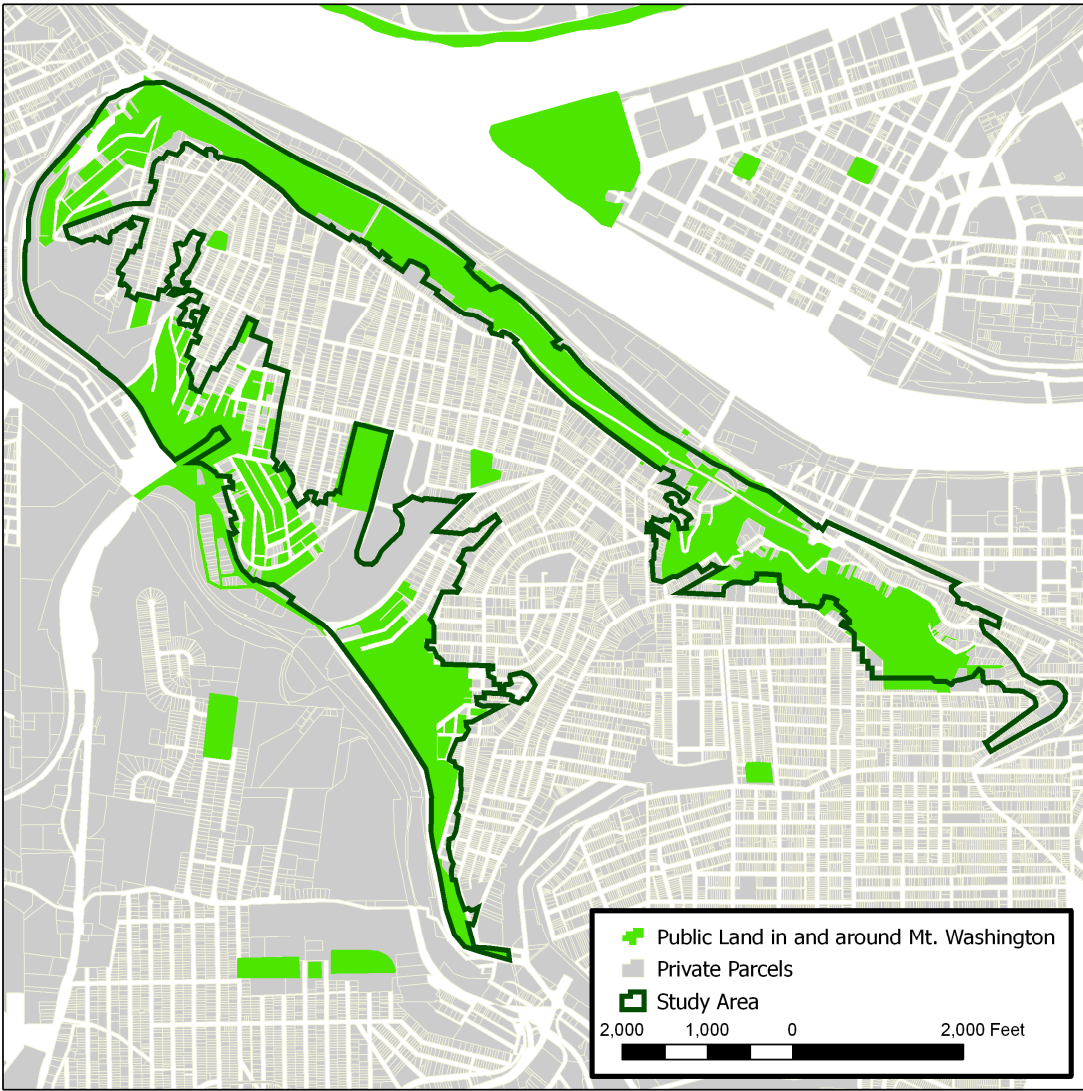
### History of the Project

The Mount Washington community has developed an “emerald” vision that connects key community green spaces to develop a comprehensive green infrastructure. This project is intended not only to enhance the community’s open spaces, but also to be a vital component of ongoing efforts to further environmental, recreational, economic and cultural goals of Mount Washington residents and the city as a whole.

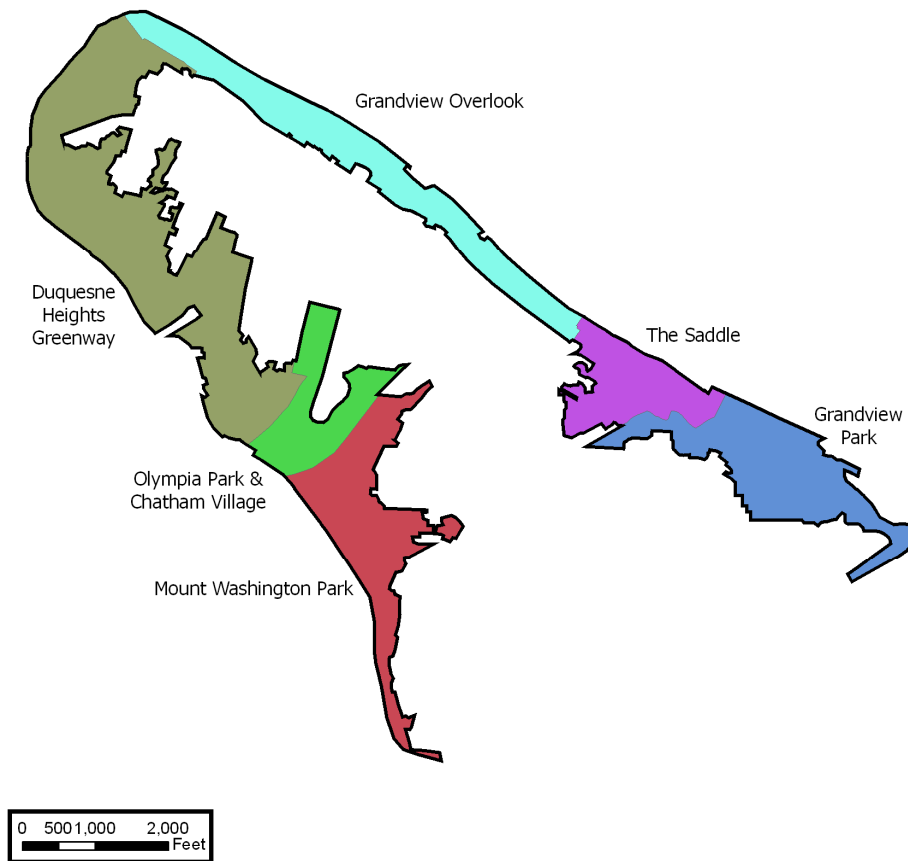
This effort was initiated in 1998 when community members and stakeholders began to recognize the importance of these green spaces to the quality of life of Pittsburghers and to the economic vitality of the region. Ironically, while these areas are increasingly recognized as important, they are also becoming endangered by neglect and ecological fragility. MWDCDC Open Space Task Force (OSTF) was the first to recognize and articulate that the high profile Grand View area (now designated as a Scenic Byway) was only part of a much larger asset – the entire continuous green space and hillsides around the mountain (see Map “Study Area and Grand View Scenic Byway”). OSTF members saw an opportunity to create a conservation area to be enjoyed by residents and tourists alike. A consultant was hired to begin to identify public property boundaries and to establish the potential connections between existing formal recreation areas and new trails and parks at the riverfront (see Figure 1. Public and Private Land Ownership). Taking the lead from Boston’s Emerald Necklace, the Mount Washington green space became known as the “Emerald Link.” Since then the concept has evolved from connecting existing green spaces to actively increasing protection of all green spaces to “Park” status. The proposed effort includes adding to the current publicly owned green spaces **and** increasing the security of those green spaces in perpetuity. Mount Washington CDC is now proposing to unite all of these green spaces into one park area. To connect the park effort with the existing Grand View State Scenic Byway, the CDC now refers to the “Emerald Link” area, plus some additional sites, as “Grand View Scenic Byway Park.” (City Council voted in December 2005 to designate all but the Saddle parcels as a park.) For this report the term “Study Area” will be used to designate the lands covered by this assessment. Specific segments of green space will be referred to by name as shown in Figure 2. Study Area with Segments.

The idea for a continuous “conserved” area took root when the Allegheny County Regional Asset District declined a proposal by the City of Pittsburgh to fund restoration of the Grandview Avenue Overlooks. It became clear to the community that, although Mount Washington’s vista points are a high profile attraction, the true amenity is the continuous 264 acres of undeveloped land that rings the Mount.

The support for the original linking concept has been widespread and sustained. Community members provide a strong base of support for the project. Various local and regional nonprofit organizations have also expressed their support and their interest in related efforts. Governmental agencies at the City, County and State level have also indicated preliminary support for the project.



**Figure 1. Public and Private Land Ownership**



**Figure 2. Study Area with Segments**

Progress to date has been substantial.

- In October, 2003, the Emerald Link project received an initial grant of \$50,000 from the Heinz Endowment to conduct preliminary research and define the initial scope of the project.
- In 2003 the Grand View Scenic Byway was designated by the Commonwealth of Pennsylvania.
- The MWDC presented the Emerald Link project and its status at its November, 2003, meeting. The MWDC Open Space Task Force, a committee of volunteers, has taken a leadership role in representing the public's interest in this project. The Task Force was instrumental in drafting and approving a mission statement for the project.
- After completion of the Scope Document, WPC and MWDC sought and were awarded further funding (\$150,000) from Heinz to complete this Master Implementation Plan (MIP).
- In 2004, the Heinz Endowments provided MWDC an additional grant to address items that needed immediate attention while the MIP was being developed.

## Concept, Vision and Model

The vision encompassed by this Master Implementation Plan goes far beyond the central concept of connecting half a dozen existing green spaces in the neighborhood. The model underlying this Master Implementation Plan is based on several fundamental premises:

- Green space is crucial to the economic, social, aesthetic, environmental and ecological vitality of the community.
- Green spaces serve a variety of functions that are essential to the community's wellbeing. In particular, green spaces:
  - connect segments of the community to each other;
  - connect the community to surrounding neighborhoods and the larger city;
  - offer alternative transportation options for pedestrians and bicycle riders;
  - provide aesthetic enhancement to the community including views, greenery, seasonal blooms, and pleasing textures and colors;
  - create locations conducive to contemplation and restoration as well as passive recreation;
  - provide sites for active sports, games and other energetic outdoor activities for children, families, friends and people and their pets, and sites for planned activities such as plays, movies, concerts or community celebrations;
  - offer casual meeting places for community residents who may cross paths or interact in the process of using the green space for one of its other functions.
- Green spaces also serve, equally importantly, a number of environmental and ecological functions that are vital to a community's livability and health including the following:
  - trees and other greenery provide stability for soils, slopes and heavily used open spaces;
  - trees, shrubs and other plants create oxygen and provide a cleansing buffer for air pollution of many types;
  - green spaces, particularly connected spaces, provide important mobility and habitat for a variety of wildlife including songbirds and other bird species, deer, small mammals, herps (reptiles and amphibians) of various types, and untold numbers of insects crucial to the web of life;
  - green spaces absorb water and help manage surface runoff from rainstorms, increasing groundwater and reducing erosion and other threats to hillside integrity;
  - trees and other greenery reduce temperature extremes and moderate both ground and air temperatures, a benefit that sometimes translates economically into a reduction in heating and cooling costs;
  - trees and other plants can provide a buffer from high winds.

All of these functions are valuable, even crucial, to the health and wellbeing of the community. All functions may not have the same weight in any particular location, however. Certain functions will take precedence in different communities based on the amount of existing green space, its current uses, other community resources and local preferences. Priorities may be assigned based on demographics, custom, unexpected opportunities, or even natural disasters that dictate action. Prioritization can be complicated since some functions may actually be potentially in conflict. For example, clearing hillsides to open up views may actually increase problems with hillside stability by reducing plant health and increasing erosion. In such a case a strategy needs to be devised to maintain the key functions with the greatest possible environmental integrity.

In sum, the model guiding this Master Implementation Plan makes several assertions—first, that it is important to have a system or network of green spaces of various types that comprise a “green infrastructure” to provide a set of valuable benefits to the community. Second, the model asserts that physically connecting the components of the green space system confers additional benefits, whether from the standpoint of value as wildlife habitat or human utilization and convenience. And finally, the model asserts that by helping residents envision the entire system, it is possible to mobilize support and achieve sustainable management of the green spaces. The model emphasizes connectivity, which directly generates a multiplier effect conferring multidimensional environmental (and potentially economic and social) benefits to the community and the surrounding area.

The six existing green spaces identified in this project already encompass a wide range of functions. Some are active recreation areas; some are largely undisturbed forest or meadowlands that provide habitat and support environmental functions; some are already developed with equipment or structures to facilitate community social interaction; some already provide special value such as the spectacular views of the city and rivers below Mount Washington and have become a major destination for visitors to the city.

The intent of the Master Implementation Plan, however, is not to force Mount Washington residents to choose among different types and uses of green space. Rather, the underlying concept is that a **system** of green spaces, offering the full range of functions and benefits outlined above, is the long-term goal for every community. The challenge is to devise a plan of action that allows all residents, and many visitors, all the options and values provided by different types of green space and open space, whether it is the opportunity to enjoy active outdoor sports; the option of walking to work or to reach public transit easily; the ability to move from one part of the neighborhood to another on pleasant green paths; the chance to enjoy some peace and quiet with nature; the assurances of hillside integrity and cleaner air and water; or the pleasure of watching wildlife. Ideally all residents should have access to every type of green space within a short walk of their homes. Such a system would ideally be developed in every location, with additional connections among them throughout the metropolitan area.

Practically, there is always a need to prioritize and organize implementation efforts in an order that reflects community capability and resources. The Master Implementation Plan is such a tool for organizing the efforts of the Mount Washington community to make a green infrastructure a reality.

## **The Values of Green Space**

### **Environmental Benefits**

Green space can have dramatic effects on people and the environment in a number of different ways. The following environmental benefits of green space have been well documented:

#### **Temperature and Wind Modification**

Plants can effectively reduce energy costs. Properly located plantings can reduce air conditioning needs by 30 percent and save 20 to 50 percent in heating energy.<sup>1</sup> Buffers can also help decrease hazardous road conditions by reducing wind speed, and sometimes snow accumulations, on highways. Windbreaks can also prevent wind erosion of soil for a distance of ten to twenty times

their height downwind. In addition, they act as filters, causing soil particles already in the air to fall out in the windbreak's protected zone.

In general, soil and vegetation can reduce summer temperatures in suburban or rural areas by up to 10 degrees. Temperatures in cities remain warmer due to asphalt, concrete, and metal.<sup>2</sup> Green spaces mitigate this "heat island" effect.

### **Water Management**

Plants are a strong line of defense against flooding, water pollution, and overloading of storm drains. Vegetation buffers and patches of natural plant growth help control flooding by holding some of the water that would otherwise flow into waterways. In addition to being an excellent tool for flood control, plants can also absorb many of the pollutants such as excessive nitrogen and phosphorus and toxic contaminants such as chemical pesticides that would otherwise enter larger waterways.<sup>3</sup> Because plants are able to absorb a vast amount of rainwater, they also aid the recharge of groundwater. As run-off moves through a well-vegetated area, the speed at which water flows is reduced allowing increased absorption of water into the soil, replenishing groundwater reserves, lowering the intensity of flooding in downstream areas, and reducing the amount of silt picked up and moved by the water.<sup>4</sup>

### **Slope Stability**

Green areas have been shown to help prevent erosion, runoff, and landslides from occurring, especially in areas with steep slopes, such as Pittsburgh. Additionally, it has been documented that clear cutting increases the frequency of mass soil movements from hillsides:

Loss of forest cover is believed to affect slope stability in two principal ways:

1. Root support due to interconnected root systems was lost after logging. Research indicated a time lag after clear cutting before landslide activity increased. The authors believe this was due to the increased deterioration of root systems with time. Other studies similarly showed that with increasing age and maturity, forest cover became more effective in preventing landslides.<sup>5</sup>
2. A denuded or stripped slope was likely to reach critical soil saturation earlier than a forested slope.... Therefore, during a large storm, it was predicted that these soils would reach a critical failure condition earlier than a forested slope would.<sup>5</sup>

### **Pollution Control**

Green plants produce oxygen, absorb carbon dioxide and absorb other air pollutants. Leafy plants can significantly reduce airborne pollutants.

- An 80-foot beech tree has been shown to remove daily carbon dioxide amounts equivalent to that produced by two single-family dwellings. Indirectly, trees also affect air quality through reducing energy use (most energy production creates air pollution). Trees also improve air quality by acting as collection sites for dust and other air particles. Leaf surfaces collect dust particulates on their leaf surfaces until washed to the ground during a rainstorm. Therefore, dust counts can be reduced by 75 percent downwind of urban plantings.<sup>6</sup>
- In 1991, trees in the City of Chicago, Illinois (11 percent tree cover) removed an estimated 17 tons of carbon monoxide, 93 tons of sulfur dioxide, 98 tons of nitrogen dioxide and 210 tons

of ozone. The value of this pollution removal was estimated at \$1 million per year.<sup>7</sup> Trees in a 525 acre area of Lincoln Park had an annual air pollution mitigation value equivalent to \$25,000 of conventional air pollution controls (Nowak and McPherson, 1993).

- Finally, trees reduce noise pollution by modifying humidity and climate, by absorbing sound, and by deflection and refraction (USEPA, 1995).<sup>8</sup>

## Ecological Benefits

Natural open space in urban areas function as refuges for animal and plant species, places for wildlife habitat and wilderness protection. They provide food, shelter and breeding habitat for animal species. They can provide critical habitat for rare species of plants in a rapidly developing, ever expanding urban matrix.

The number of animals and plant species in any location is a product of habitat structure and habitat size. Habitats with layered structure provide a variety of different niches for different birds in the forest. Larger contiguous forest areas often have a greater richness because of a greater number of different niches; therefore, these areas can support a greater density of individual animals. While small patches may not support large populations of animal species, they provide stopover points for migratory species on route to summer or winter ranges. The reduction in size and quality of open space can reduce the species habitat and thus cause changes in the species composition of an area, disrupting food webs and the flow of genetic material.

Connection is also important. Corridors between open space patches facilitate animal movement, dispersal and gene flow. Corridors between open spaces and rivers connect habitat patches in urban landscapes with larger, more natural areas in the region.

The conservation of animal and plant species and the protection of biodiversity are functions of maintaining open space.

## Health and Recreation Benefits

- Metropolitan areas with the highest acreage of parkland have shown the highest numbers of citizens biking or walking for daily transportation and/or recreation. The presence and amount of urban green space have been positively linked to increased physical activity.<sup>9</sup>
- Access to green space has been shown to help reduce stress, increase community pride, decrease health care costs, reduce anti-social and criminal behavior, and reduce incidents of

### VALUES OF GREEN SPACE

#### --Environmental Benefits:

- Wind buffers
- Flood and water management
- Slope stabilization
- Pollution control
- Temperature moderation

#### --Ecological Benefits

- Habitat
- Biological diversity

#### --Health and Recreation Benefits

#### --Social Capital

#### --Mental Health

#### --Crime

#### --Economic Impacts

- Increased property values
- Reduced maintenance costs



road rage. In Chicago, green spaces have been intentionally utilized for calming people stuck in traffic.

- A report by the Georgia Community Green Space Program Advisory Committee in 1999 found that, "...Opportunities for walking or jogging are important to many people. A recent survey of households in 212 metropolitan areas revealed overall participation rates for several activities related to green space: 40.4 percent of those surveyed walked for health, 32.8 percent pursued physical fitness/exercise, 14.9 percent bicycled and 12.4 percent ran or jogged. More than half the American public says it walks for pleasure and 47 million adult Americans identify themselves as bicyclists. The provision of safe paths to walk, jog or bicycle on is an important benefit that community green space can provide."<sup>10</sup>

## **Mental Health Benefits**

Contact with nature appears to ease mental fatigue and also has the ability to reduce aggression and violence in inner-city public housing residents. According to a study done by researchers at the University of Illinois, "There is growing empirical evidence of the attentionally restorative effects of natural settings, including wilderness areas, prairies, community parks, views of nature through windows, and rooms with interior plants..."<sup>11</sup>

Other recent studies have established that, "... the presence of trees and 'nearby nature' in human communities generates numerous psychosocial benefits. A series of studies (Kuo, 2003) has determined that having trees in public housing neighborhoods lowers levels of fear, contributes to less violent and aggressive behavior, encourages better neighbor relationships and better coping skills."<sup>12</sup>

## **Social Capital**

Physical characteristics of a neighborhood influence interaction among neighbors. Presence of trees, shrubs and grass is related to the amount that outdoor spaces are used and the amount of interaction that residents have with one another.<sup>13</sup> In addition, gardening or care of green space has been shown to develop individual participation in the community, strengthen families and help build neighborhood morale.

It has also been noted that, "...Local events, such as art or music festivals or events celebrating the local history, often take place in small neighborhood parks or town squares."<sup>14</sup>

## **Crime**

Contact with nature also appears to have the ability to reduce aggression and violence. According to R. Dean Tice, executive director of the National Recreation and Parks Association, "It is not surprising that the incidence of juvenile crime in many places directly corresponds to general decreases in national, state and local investment in recreation and parks..."<sup>15</sup>

Similarly, the American Planning Association found that, "When adjacent to residential areas, green spaces have been shown to create neighborhoods with fewer violent and property crimes and where neighbors tend to support and protect one another." Time spent in natural surroundings relieves mental fatigue, which in turn relieves inattentiveness, irritability, and impulsivity, recognized

by psychologists as precursors to violence. Green spaces also support frequent, casual contact among neighbors. This leads to the formation of neighborhood social ties, the building blocks of strong, secure neighborhoods where people tend to support, care about, and protect one another. "In order to make the best use of greenery and open space, it must be positively incorporated into a community's design...."<sup>16</sup>

## **Economic Impact**

### **Property Values**

Plants and green space have been shown to increase both the property value and real estate value of an area. Based on property values of condominiums in Boston, MA, it has been observed that, barring other anomalies, a property that is a shorter distance to an urban green space holds more value than one that is further away.<sup>17</sup>

According to the U.S. Forest Service, "...Urban trees are worth much more than their value of wood –25 times more than their country cousins in the forest—since city trees enhance the value of real estate."<sup>18</sup>

### **Maintenance Costs**

Green space can be a more economical use of land for a community than developed structures. In the City of Boulder, Colorado, "...the 1988 public cost for maintaining non-open space, such as developed acres, was estimated to be over \$2,500 per acre, and could be as high as \$3,200 per acre when utilities, flood control, transportation, and subsidiary governmental entities' costs are included. The cost for maintaining open space in the City was only \$75 per acre, or less than three percent the cost of non-open space."<sup>17</sup>

## **Community Process**

### **Community Involvement**

An extensive community involvement program has been conducted and will continue in the future. The public process has taken three forms:

- Community Forums (public meetings with a focus on a particular topic);
- Meetings of the Open Space Task Force, the MWCDC committee that focuses on open/green spaces and has been chartered with tracking this project;
- Newsletter articles in the monthly MWCDC newsletter View Point.

A log of meetings can be found in Appendix A.

Throughout the development of this MIP the MWCDC held continuous meetings with the Open Space Task Force and other committees within the CDC to inform and involve them in this process. A special community meeting was held in April of 2005 to gather more input into the current value and usage of each of the key green spaces as well as the community's vision for future use. Other various development issues and projects related to the Emerald Link concept have been presented to the community at our monthly meetings. Monthly reports on the work on this initiative were included in the MWCDC's monthly newsletter that has been mailed to all residents living in Mount Washington since September, 2005. Prior to that it was mailed to all 400 members.

An additional public meeting will be held late in 2005 to present the final version of the MIP.

During the MIP development process, several partnerships were formed to help initiate this project. The main partnership between WPC and MWCDC is detailed below, but others are mentioned through the body of this document.

### **Partnerships**

The Western Pennsylvania Conservancy (WPC) and the Mount Washington Community Development Corporation (MWCDC) have formed a partnership that provided the necessary combination of expertise and experience to transform the Mount Washington green space vision into a reality. Together they have produced this plan.

WPC is one of the oldest conservation and environmental organizations in the state. WPC provided the team of ecologists and naturalists along with the GIS mapping needed to do an assessment of the natural resources on Mount Washington. In addition, WPC provided the project management for the overall planning effort.

Mount Washington Community Development Corporation, a 501c(3) community based organization, founded in 1990, promotes the interests of Mount Washington and Duquesne Heights citizens, institutions, businesses and investors. Mount Washington Community Development Corporation's mission, as an organization of the Mount Washington/Duquesne Heights community, is to balance development, the area's unique natural and historic features, and the well being of the people who live, work and visit here.

MWCDC brings to this project its knowledge of the properties and people in the Study Area, its experience organizing effective public processes, its concern for the improvement and preservation of these lands and its advocacy for the comprehensive enhancement of the quality of life in Mount Washington.

### **Other Project Participants**

The success of this project will depend on the successful collaboration of many project stakeholders. The relationships among these parties have been evolving during the creation of this Master Implementation Plan and will continue to evolve as efforts move into the implementation phase.

The City of Pittsburgh owns the vast majority of the land in the project area, either as park land or as real estate. The project participants look forward to a positive collaboration with the City on this project.

The Allegheny Land Trust (ALT) is working in collaboration with the project team to devise and implement strategies to protect the land on Mount Washington. In the fall of 2005, ALT was awarded a grant from the Department of Conservation and natural Resources to support land acquisition on Mount Washington. The Allegheny Land Trust is a 501c(3) organization incorporated in 1993 to protect land of natural value in and adjacent to Allegheny County. ALT helps local people save local land that contributes to the scenic, recreational, educational, and environmental wealth of the community. ALT currently protects over 900 acres.