A HUMANE LANDSCAPE: RECONNECTING PEOPLE AND ANIMALS THROUGH LANDSCAPE DESIGN FOR AN ANIMAL SHELTER

by

DA ZHANG

(Under the Direction of Sungkyung Lee)

ABSTRACT

Pet overpopulation has long been stressing the shelters and undermining the bonds between people and animals. At the same time, a lot of animal shelter landscapes are in fair or poor conditions due to little attention being paid during shelter design and daily maintenance. This thesis reviews literature of interrelationships between animals, humans and the environment, develops an animal shelter landscape concept, generates guidelines from case studies, and applies them into a landscape redesign for an animal shelter in Athens, GA. The main purpose of this thesis is to explore new opportunities for landscape architecture, spread awareness of animal welfare issues, and reconnect animals with people in the animal shelter landscape.

INDEX WORDS: landscape architecture, animal shelter landscape, interrelationships of humans, animals and environment

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CHAPTER 1

INTRODUCTION

With the meteoric improvement of our physical living conditions, the pursuit of mental richness is also growing rapidly. Keeping a pet, for instance, is a very common way to enrich one's life and bring more joyful moments to his/her stressful days of work. Having a pet around is known to be tremendously beneficial to our mental, physical and social health: we can play with them, talk to them, take them for a walk every day, or use them as a trustful companion for children, elderly or handicapped people (Cutt, Giles-Corti, and Knuiman 2008; Curtis 1984; Poynter 1981; Walsh 2009). However, some new pet owners don't realize the consistent amount of time and money needed to keep a pet and they become reluctant or unable to care for them. In most cases, having done nothing wrong, these poor animals are brought to animal shelters or even abandoned on the street. Stray animals on the street may cause car accidents, attack people or carry diseases, to say nothing of the suffering they endure, while "luckier" animals sent to shelters have very little chance to be adopted and have to be euthanized due to limited space and financial challenges present at animal shelters.

In order to solve the assortment of problems caused by pet overpopulation

and stray animals, a systematic approach is needed: public education, animal birth control, fund raising, advertising for adoptable pets, etc. Since we landscape architects have the ability and potential to solve various problems regarding wildlife, community, mental and physical health, or issues regarding homeless people, there will surely be possibilities for us to address, to some extent, some of these issues through our professional methods. So far, very little research has been done regarding animal shelter landscapes, or a landscape that is designed for interaction between abandoned animals and people. To tentatively explore this field, this thesis will examine the existing conditions at Athens-Clarke County Animal Control, identify landscape problems and areas of improvement, redesign a landscape plan for the outdoor area, and propose a dog park nearby. The goals are to propose better shelter experience for both volunteers and animals, to provide a better workplace for staff members, to integrate education programs for children and adults, to increase the adoption rate, and seek a consistent and comprehensive interaction between humans, animals and environment. Certainly, though a mere landscape will not be able to solve all the problems between human and animals, the aim is to promote debate regarding human-pet relationships and related opportunities in landscape design, and explore what landscape architects can do in such a relatively new and challenging field.

1.1 Research Purpose

The first and foremost purpose of this thesis is to propose a landscape design that gives a second chance for people and abandoned animals to reconnect. In addition, this landscape design will provide more interaction opportunities among people, places and abandoned animals, not just either two of them. Along with this landscape there might be some indirect benefits such as evoking public awareness of and, love and empathy for abandoned pets. It may also serve as a community setting where people can gather, relax and socialize. Several other problems could be relieved such as reducing the number of stray animals by integrating public education programs, enhancing adoption rates by enabling more visibility and participation in shelters or alleviating the stress of existing animal shelters by attracting more volunteer work and funding.

The ultimate goal of this thesis is to call attention to these issues so more people in our profession will start trying to pursue optimal relationships among people, animals and space. Hopefully by proposing more carefully designed and managed landscapes, we can make considerable contributions to the overall well being of humans, animals and the environment.

1.2 Site: Athens-Clarke County Animal Control

Athens-Clarke County Animal Control is an animal shelter located in Athens, Georgia. It has several divisions. The division that is going to be discussed here only shelters dogs, while there is another cat shelter division close by. This site is selected because of the fact that, compared to dogs, cats are more comfortable staying indoors. Dogs, however, more easily interact with people in the outdoor environment, which enables more opportunities for landscape design. For the same reason, the term “animal” as used in this thesis while discussing the relationships with humans and the environment will mostly refer to dogs.

The facility currently shelters 30 to 40 dogs, and takes in approximately 2000 dogs each year. In the year 2010, the shelter had 600 adoptions and euthanized 8% of their dogs; the others were temporarily kept in foster families. The shelter is at 45 Beaverdam Road Extension, which is a medium traffic road 4.5 miles east of downtown. The one-story shelter building is surrounded by trees and grass, which minimizes outside noise. However, the silence can be broken by all kinds of dog barks at any time. The building has 30 kennels to isolate the dogs from each other. Each of the kennels has an inside area that is divided by privacy panels, as well as a semi-outside area which is covered and private (Figure 1.1). With this arrangement, dogs can choose to stay either inside the building or on the “porch”, from which they can see what is happening outside and be seen by people like

adopters or volunteers (Figure 1.2).

Figure 1.1 Dog kennels and semi-outside area (Photo by author)

Figure 1.2 Looking out from the “porch” (Photo by author)

There are already some landscape features like shrubs and gravel paving around the building, and some individual dog runs surrounded by wire fences to keep the dogs inside the property. Gravel, shrubs and fences make the three major components of the physical landscape inside the dog walking area (Figure 1.3 and 1.4). From the east side of the main building, a path extends towards a small storage house. These are the only two buildings of the shelter. In addition to the areas fenced around the buildings, there is also some space in front of the

building that is not enclosed, and is mostly used for public parking. The staff parking is located behind the building, connected to a separate driveway that leads to the public road (Figure 1.5).

Figure 1.3 Looking at the shelter from the public parking lot (Photo by author)

Figure 1.4 Gravel, shrubs and fences

Figure 1.5 Looking at the storage from the staff parking

1.3 Thesis Approach

Literature review and site observations will be used to collect and analyze information useful to generate theoretical principals for the landscape redesign of the animal shelter. Topics range from the history of humane societies to current pet overpopulation, from pet adoption studies to volunteer experience, and from dog walking studies to dog park design. The research will disclose the surprising lack of consistent connection between pets and their owners, and collect information from aspects of animals, humans and the environment that help to envision a landscape which promotes the reconnection among them. Furthermore, case studies regarding dog parks and animal shelters will be discussed to further help generate a series of design guidelines for this particular landscape. These design guidelines will be applied in the design process of the animal shelter landscape, and there will be further discussion about how the guidelines are met in the actual landscape design of the shelter (Figure 1.6).

Observations of site conditions such as context, problems and potentials, people–animal interaction in the shelters and animal behavior analysis will also be used to inspire design details and management recommendations for the landscape. The observations will be conducted during regular volunteer activities (about three hours a week for 6 weeks) in person at two different animal shelters. Training in basic animal knowledge will be taken before volunteering at the

shelters. The work in the shelters will include second chance volunteering, pet grooming, dog walking and cleaning, which will be discussed later in more detail.

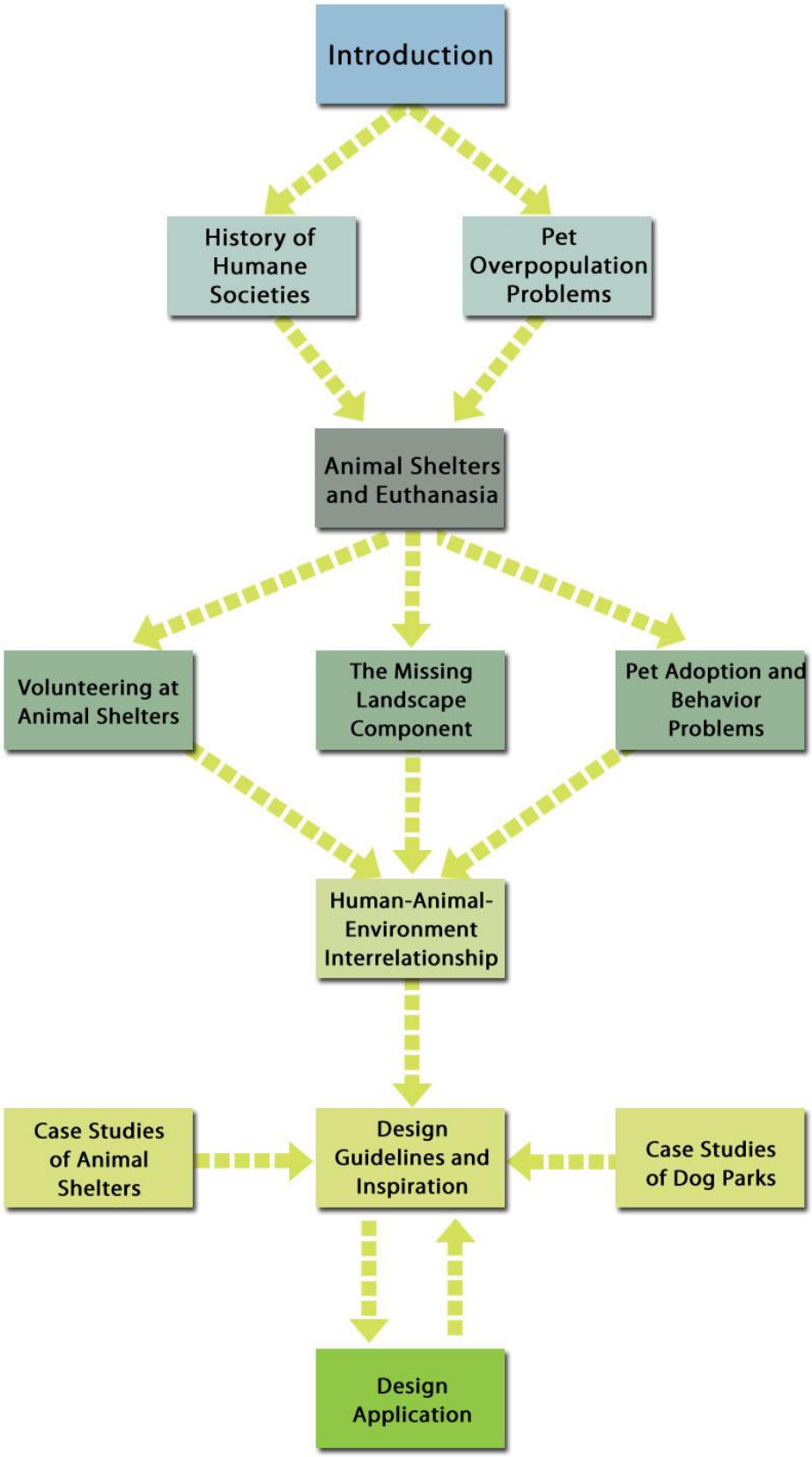


Figure 1.6 Diagram of Thesis Approach

CHAPTER 2

ANIMAL SHELTERS AND THE FORGOTTEN SPACE

2.1 The History of Humane Activities in the U.S.

"At his best, man is the noblest of all animals; separated from law and justice he is the worst."

—— Aristotle

The first organized humane movement in the United States was initiated by a New Yorker named Henry Bergh. He did not particularly care about the animals themselves, but he did care a great deal about justice (Poynter 1981). The will to protect animals from suffering gained a lot of attention because of a widespread reaction to human misery, not just the animals' (Poynter 1981).

Dogs have been beloved companions to humans since the beginning of civilization (Beck 1973). They are known for their consistent loyalty, reliable protectiveness, and strong sense of companionship. However, what they got in return from humans was not always fair. In the 1860s, the way the city of New York handled stray dogs was extremely cruel and relentless. The stray dogs were caught and rounded up along the waterfront of the East River by the city

dogcatchers. Hundreds of dogs were tied up nearby, despite their barking, trembling with fear, and lunging at their chains trying to escape. Then these dogs were thrown quickly into a large crate, which was sealed up and attached to the arm of a crane that picked it up and swung it out over the river (Figure 2.1). “As the dogs yelped and clambered over one another, the crate was lowered into the water and left there for some minutes. Then it was raised, carrying a sodden mass of drowned dogs” (Curtis 1984). Sometimes a few animals in the crate could still be struggling and choking, thus they were drowned into the river again, with no movement at all when the crate was raised for the second time. What is worse is that there were always people lined up to watch the “show”, cheering louder and louder as more and more dogs were slaughtered. Of course, beside the people who enjoyed the sight, there were a few who felt sorry for the animals, but most of them chose to ignore it as though it did not happen. All the wet, dead animals were loaded onto a wagon and transported away at the end, and all these would be repeated every day in the city (Curtis 1984).

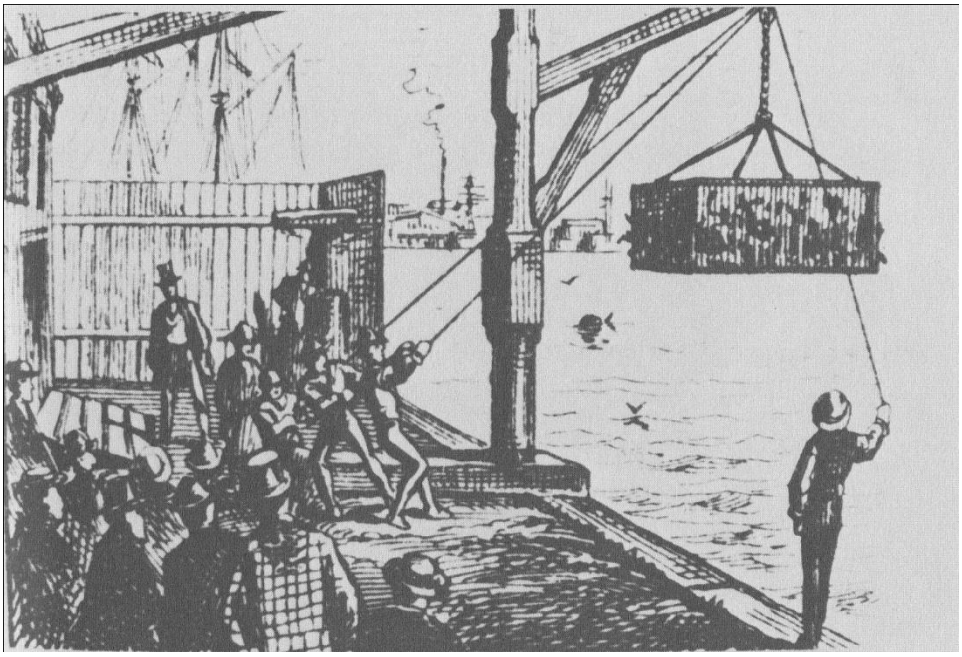


Figure 2.1 Drowning Strays at the Ney York City dog pound, *The Animal Shelter (E.P. Dutton 1984)*

Being drowned to death was not the worst practice at that time. In other cities of the United States, stray dogs were killed by more direct methods such as being chained up and clubbed to death. Even dogs that did live with their owners were usually not much better off. They were routinely starved, neglected, beat, or otherwise mistreated by their owners. Other animals such as horses were also abused mercilessly while being forced to carry heavy loads even in blazing heat (Figure 2.2). “Monstrous cruelty to animals of all kinds was the norm” (Curtis 1984).

Figure 2.2 Men brutally beating a horse, *Picture Collection, Branch Libraries, the New York Public Library*

Henry Bergh (Figure 2.3), who had witnessed too much of this misery, finally stood out as one of the first persons to protest. Bergh realized he had an extremely difficult job ahead, for in order to help animals, it would be necessary to change people's attitudes — which is not an easy task. He believed that there were two things urgently needed at once: a law that would give animals legal protection against cruel treatment, and an organization that would not only enforce the law but would also promote public education, so that people would begin to recognize the cruelty all around them and stop participating in it. Fortunately, there were enough sensitive New Yorkers who agreed with him, and

offered him money and support. In 1866, Henry Bergh wrote a “Declaration of the Rights of Animals” and was able to collect enough signatures on it to persuade the state legislators in Albany, that the people of New York felt that a strong anticruelty law for animals was needed (Curtis 1984). At the same time, the charter of Bergh’s American Society for the Prevention of Cruelty to Animals (ASPCA), the first humane organization in the United States, was approved by the New York legislature (Poynter 1981). Besides becoming the society’s president, Henry Bergh became its hardest working fund-raiser, organizer, promoter, and enforcer of the new humane law.

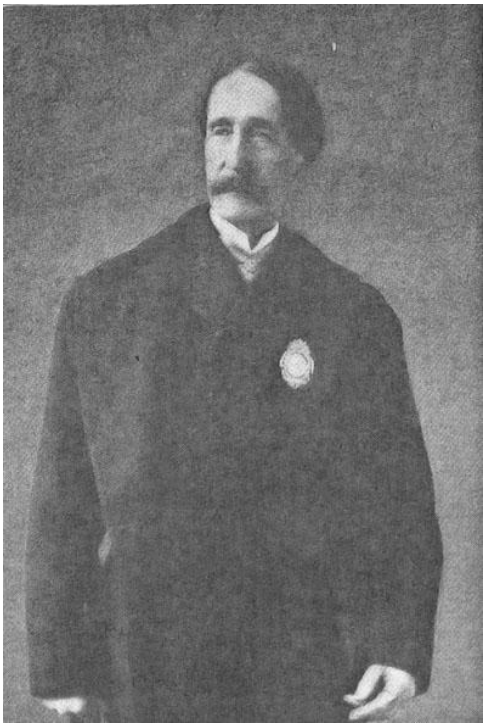


Figure 2.3 Henry Bergh, *The Humane Movement in the United States, 1910-1922 (Columbia University 1924)*

Following Bergh's example, other humane organizations were formed in some cities. In 1868, a group of leading Philadelphians, led by Colonel M. Richards Muckle, formed the Pennsylvania Society for the Prevention of Cruelty to Animals (SPCA), the second humane society in the United States. That same year, across the continent, a banker named James Sloan Hutchinson founded the San Francisco SPCA. Both of these organizations are still very active. Also, in the frontier town of Portland, Oregon, a group of businessmen, aroused by Thomas Lamb Eliot, a Unitarian minister, formed an organization to promote the humane treatment of animals "and all living things". It became the Oregon Humane Society and SPCA, and is still in existence. During its early years, it extended protection to abused children, orphans, prisoners, and the poor, as well as to animals. By the year of 1877, eleven years after Henry Bergh's organization was founded, there were twenty-seven humane societies, scattered from New Hampshire all the way to California.

Another notable humane pioneer was George T. Angell, a successful Boston lawyer who had been similarly appalled by the widespread mistreatment of animals. Being the president of The American Humane Education Society, he was the first to develop the full possibilities of humane education and wrote and spoke almost constantly in its behalf. His organization was dedicated to the distribution of humane literature and the diffusion of humane ideals. He was consistent in his

efforts and never neglected an opportunity to help animals and to spread humane education (Coleman 1924).

By the year 1910, it was reported by the American Humane Association that six hundred and fifty-nine humane societies had been founded (Shultz 1924). There was, however, still a lot of work that need to be done. Of these, one hundred and two were dead and ninety-five were noted as inactive, no reports having been received from them. Besides, even in states that could boast an imposing list of anti-cruelty societies, there were many counties left untouched. At a conference of the Federated Humane Societies of Pennsylvania held in 1919, only eight counties were represented. No humane work at all was carried on in the fifty-seven other counties of the state, according to the Western Pennsylvania Humane Society's 45th Annual Report (Shultz 1924). It was not difficult to understand the general disregard of animal rights, however, in view of the very general lack of sympathy for the unfortunate members of human society itself. "Years of leavening were required before the spirit of mercy could make itself felt sufficiently to right the wrongs of those who could not wage their own fight for recognition" (Coleman 1924).

2.2 Contemporary Shelters and Stray Animals

Pet Overpopulation and Abandoned lives

Today, though the number of humane societies has grown considerably, the total number of abandoned animals is still dangerously high. According to People for the Ethical Treatment of Animals (PETA), the largest animal rights organization in the world, about fifty thousand cats and dogs are born every day in the United States alone. It is estimated that between 6 and 8 million stray and unwanted animals are taken into animal shelters each year. There are currently about 163 million pet cats and dogs in the U.S., thus about one out of every 20 ends up in a shelter. Based on American Humane Association's information, the causes of pet overpopulation are "Irresponsible Breeding", "Choosing Not to Adopt", and "Disposable Pets".

Most of the pets are given up due to irresponsible ownerships. "Despite increased public awareness over the past 40 years about the need to spay and neuter pets, 35 percent of pet owners in the U.S. still choose not to do so" (American Humane Association). Many people who choose not to spay intentionally breed their pets for profit or for what they consider to be an interesting experience. There are also others who choose to ignore these facts, believing that their pets are totally under their control.

Another reason for pet overpopulation is that not enough people are choosing to adopt from a shelter. People usually think there are not enough homes for all the shelter animals, in reality there are plenty of homes but, instead of adopting pets from animal shelters, they get pets from breeders and other resources. Seventeen million Americans acquire a new pet each year -- that is more than double the number of all shelter animals. Sadly, according to American Humane Association, only 3.5 million people, or about 20 percent, choose to adopt their new pet. The other 80 percent choose to buy their pets from breeders, pet stores, or other convenient sources such as friends or neighbors.

Lastly, rather than being treated as living creatures, pets are commonly considered to be “disposable objects”. The majority of stray animals taken to shelters are without any identification, and most are never reclaimed by their owners. From the data published by American Humane Association, the average owner reclaim rate for stray dogs is less than 50 percent and for cats is less than 10 percent. While there are often understandable reasons for an owner to relinquish a pet, hundreds of thousands of pets are abandoned each year simply because the owner failed to consider the time and financial requirements to properly train and care for them.

With so many pet animals abandoned by their owners, some of them end up on the streets and become strays. Strays animals are known to cause a series of

problems for our living environments: a pet out on its own may cause an accident if it runs out into the road, which could result in injury to itself or others. Also, dogs and cats like to hunt and may wander into someone's property to worry pets and livestock. They can cause litter on the street, may carry diseases and may attack people or kill other wildlife if not under proper control. According to recent studies, the biggest problem caused by stray animals is the rate at which they are capable of breeding. In seven years, one breeding pair of cats, which can breed twice a year, can have up to 420,000 offspring. Furthermore, because food is difficult to come by, many of these strays die painful deaths from diseases or starvation.

Animals in the Shelter – Live, or Die?

Even for the animals that are directly sent to animal shelters or found and brought back by animal control officers, life is not easy either. As required by regulations in most of the shelters, there is a waiting period – usually one to two weeks – during which no healthy animal can be adopted or destroyed. After that, if they are not reclaimed and the shelter is too crowded to keep them, they will be euthanized in order to give space for new incoming animals. It is estimated that animal shelters care for 6-8 million dogs and cats every year in the United States, and about 3 million to 4 million dogs and cats are euthanized in animal shelters for lack of shelter space or funds. While various humane organizations strive to

create a world in which every adoptable pet finds a home, many animal shelters continue to struggle with overcrowding and low adoption rate, and they often have no choice but to euthanize (Figure 2.4 and 2.5). Some private shelters may claim that they are “no-kill shelters”, but the fact is that since they are privately owned, they are able to choose what kind of animals to take in – usually young pets that are more easy readily adopted – thus they will not be overcrowded by those less adoptable animals.

Figure 2.4 Massive euthanasia due to pet overpopulation 1, *Dog Behaviour, Evolution, and Cognition* (*Oxford University Press 2007*)

Figure 2.5 Massive euthanasia due to pet overpopulation 2,
The Animal Shelter (E.P. Dutton 1984)

Beyond the fact that a lot of animals will be put to sleep in shelters, the stressful shelter environment itself causes problems to the fortunate survivors. There are many reasons for separating from a companion but the same reasons could cause problems for the prospective adopters as well. “The most frequently reported behavioral problem causing relinquishment was aggression, followed by the tendency to escape and hyperactivity. After adoption, owners reported more than one behavioral problem in their dog, such as fear and hyperactivity, and we cannot exclude that the shelter environment contributed to the emergence of these unwanted behaviors” (Miklósi 2007). The unwanted behavior problem developed in the enclosed, stressful kennels will cause trouble to the pets’ new adopters, giving them no choice but to return them back to the shelter. At this time, these animals are very likely to be put to sleep.

Pet Adoption

One of the most direct ways to help save lives and solve all these problems is to adopt a pet from a shelter. Being adopted seems to be a happy ending for an abandoned animal, but as mentioned above, sometimes it is still not guaranteed. According to a study, 18.8% of adopted dogs were returned to the shelter, and about 50% of them were subsequently euthanized (Patronek, Glickman, and Moyer 1995). In addition, Salman et al. (1998) reported 46.4% of relinquishments were due to undesirable behavior; and Wells and Hepper (2000) reported that up to 89.7% of returns were due to dogs' misbehavior. The primary reason for returning a dog to the shelter has been reported to be behavior problems (Wells and Hepper 2000; Mondelli et al. 2004; Shore 2005). Dogs relinquished for behavior problems were very likely to have come from a shelter environment (Salman et al. 2000).

Another important reason of high return rate after adoption is the lack of caregiver knowledge about basic dog care and behavior (New et al. 2000; Scarlet et al. 1999). Misconceptions about dogs' behavior are likely to leave owners unprepared for normal canine behavior and limit their ability to distinguish between normal and problem behavior:18%of owners were not aware of behavioral differences between breeds, 43% of owners did not know that female dogs experience estrous twice per year, and 53% of people surrendering their

dogs believed that animals misbehave out of spite (Salman et al. 1998)

To better address pet overpopulation issues, adopting older dogs in addition to puppies is also necessary. Traditional methods of population control, such as spay-neuter programs, have only been partially effective in reducing the number of dogs euthanized annually (Luescher and Medlock 2009). Many more people are contributing to the pet overpopulation problem by failing to keep their pet dogs than by allowing their pets to breed (Patronek and Glickman 1994), resulting in a population of adolescent and adult dogs in shelters (Salman et al. 1998). Therefore, getting people to adopt shelter dogs instead of obtaining a puppy is going to be an essential part of a program to reduce overpopulation (Moulton, Wright, and Rindy 1991). Research indicates that great potentials do exist for reduction of the number of dogs euthanized each year by increasing public demand for dogs over one year of age (Patronek and Glickman 1994).

Volunteering at Shelters

In light of the continuing difficulty animal shelters face in financing and staffing, volunteers are an ideal and valuable resource. For people who love animals but cannot directly adopt a pet themselves, it is possible for them to make equal or even bigger contributions by devoting their time. There are a lot of tasks needed in shelters that community members are probably not aware of (Kirkwood 1999).

It should come as no surprise to most Americans, who think of an animal shelter as a warehouse for strays (Kirkwood 1999), that volunteers are responsible for mundane tasks such as cleaning litter boxes. In reality, however, there is much more to be done than just scooping litter. Volunteers engage in a myriad of activities such as socializing puppies, fundraising, providing foster homes, and community and educational outreach (Neumann 2010). All kinds of work are invaluable to the shelters, and they can directly or indirectly save hundreds of lives.

Among various kinds of work volunteers can do for the shelter, socializing and petting the abandoned animals is probably one of the most valuable jobs in terms of saving lives. The most direct way to save shelter animals is to help them getting adopted. It has been reported that the behavior of a dog is much more important to a potential adopter than the dog's physical appearance (Wells and Hepper 1992). However, social isolation and spatial restriction in the kennels can adversely affect dogs (Hubrecht, Serpell, and Poole 1992; Marston and Bennett 2003). Staying an extended time at a shelter may undermine the behavior of dogs in a way that makes them less attractive to potential adopters: they become less interested in their surroundings, and choose to spend more time in the very back of their kennel (Wells, Graham, and Hepper 2002). At that point, these dogs are very likely to be put to sleep because few people want to adopt them. Conversely,

human contact has been shown to be an effective enrichment for dogs housed in kennels (Hennessy et al. 2002). Furthermore, training dogs improves their behavior and thus makes them more attractive to a potential adopter; training also provides a more predictable and controllable and thus less stressful environment (Veissier 2007). The resulting reduction of stress in the shelter and following adoption may reduce the incidence of behavior problems (Hennessy et al. 2001). Better behavior towards other animals also provides more chances to get adopted. In Luescher and Medlock's study, "Although information on a dog's attitude towards children, other dogs and cats was only available in some cases and must be deemed unreliable, provision of such information could have influenced a potential adopter's perception of a dog… being labeled as being good with dogs had indeed a significant impact on adoptability" (Luescher and Medlock 2009).

Volunteers working at animal shelters also get numerous benefits themselves. First, based on the information provided by Athens Area Humane Society, it is an excellent opportunity to work in a highly recognized and well-respected animal welfare organization that protects the community as well as the animals. There are opportunities to learn about animals through direct volunteer work and though a variety of educational opportunities, or explore new career opportunities while developing new skills or polish old ones. They can also receive support and feedback from a professional staff in the shelters, and have chances to meet new

friends who share the same interests. Finally, spending time with companion pets has long been proven to be therapeutic: it reduces blood pressure, Cholesterol levels, stress levels and feeling of loneliness, according to American Humane Association.

2.3 The Missing Landscape Component

It has been almost one hundred and fifty years since the first humane movement emerged in the United States. Having been combating animal cruelty and pet overpopulation for so long, humane organizations and shelters continually strive to increase adoption rates and save more lives. As already discussed in this chapter, socializing and rehabilitating animals in the shelter, which is commonly conducted by volunteers, can facilitate this process, and reduce pet returns after adoption.

However, though an important medium for socializing pets (mainly dogs), fostering adoption and improving staff working conditions, the quality of a shelter's outdoor environment is usually poor. The shelter environment should increase the possibility for shelter animals to get a second chance to join a human family (Miklósi 2007). By allowing volunteers to exercise animals and let them play with people outside, instead of staying in the kennels all day long, there would be a lot more chances to socialize and rehabilitate these abandoned animals, increasing

their opportunities to get adopted. All of these require a lot of time spent in the outdoor space for the volunteers or staff. However, despite the fact that plenty of research has been done into the reciprocal benefits between volunteers and animal shelters, there is very little attention paid to the volunteer's own working experience and the visitor experience at the shelters. In fact, according to case studies (to be discussed later) and the author's own observations while volunteering at a dog shelter, the outdoor space of an animal shelter is usually forgotten. For example, even the Leadership in Energy and Environmental Design (LEED) Silver project Tompkins County SPCA, which opened in 2004, has inadequate outdoor space design (Figure 2.6).

Figure 2.6 Limited outdoor space design at Tompkins County SPCA, leedcasestudies.usgbc.org

For other shelters, plants and seating are randomly placed, fences and spaces are not carefully arranged for aesthetic and functional need, circulation and paths are not well thought out, and wear and erosion is common in some areas. Not very much attention is given to the landscape design while the architects are drawing the site plans for animal shelters. Of course, budget might be one of the major reasons for the lack of landscape features in the shelters. The author believes there is surely a way to design a landscape for an animal shelter that balances expense with appearance and function, since there are already plenty of high-quality, low-budget designs around us. Plus, according to Gillette (2004), “with dog park mania sweeping the country, landscape architects will play an important role in incorporating dog parks into pre-existing recreational areas, especially in cities.” With landscape architects having been increasingly involved in the design of dog parks for our four-legged friends, it would not be a bad idea to consider the animal shelter landscape as a special case sort of dog park, one which benefits not only dogs, but also the volunteers, future adopters and shelter staff.

CHAPTER 3

IMPROVING ANIMAL SHELTER'S OUTDOOR ENVIRONMENT

3.1 The Interrelationships

There have been abundant studies on the benefits of human-animal interactions, animal-environment relationships, and human-environment connections, but little research has been done regarding the integration of all these three elements and the relationship system under an animal shelter landscape context. In order to explore the possibilities of combining these three links together, this thesis takes the following three indispensable steps: understand the three links (human-animal, animal-environment, and human-environment) in the animal shelter context; identify the connecting concepts of these three links; and discuss the implications to landscape design (Figure 3.1).

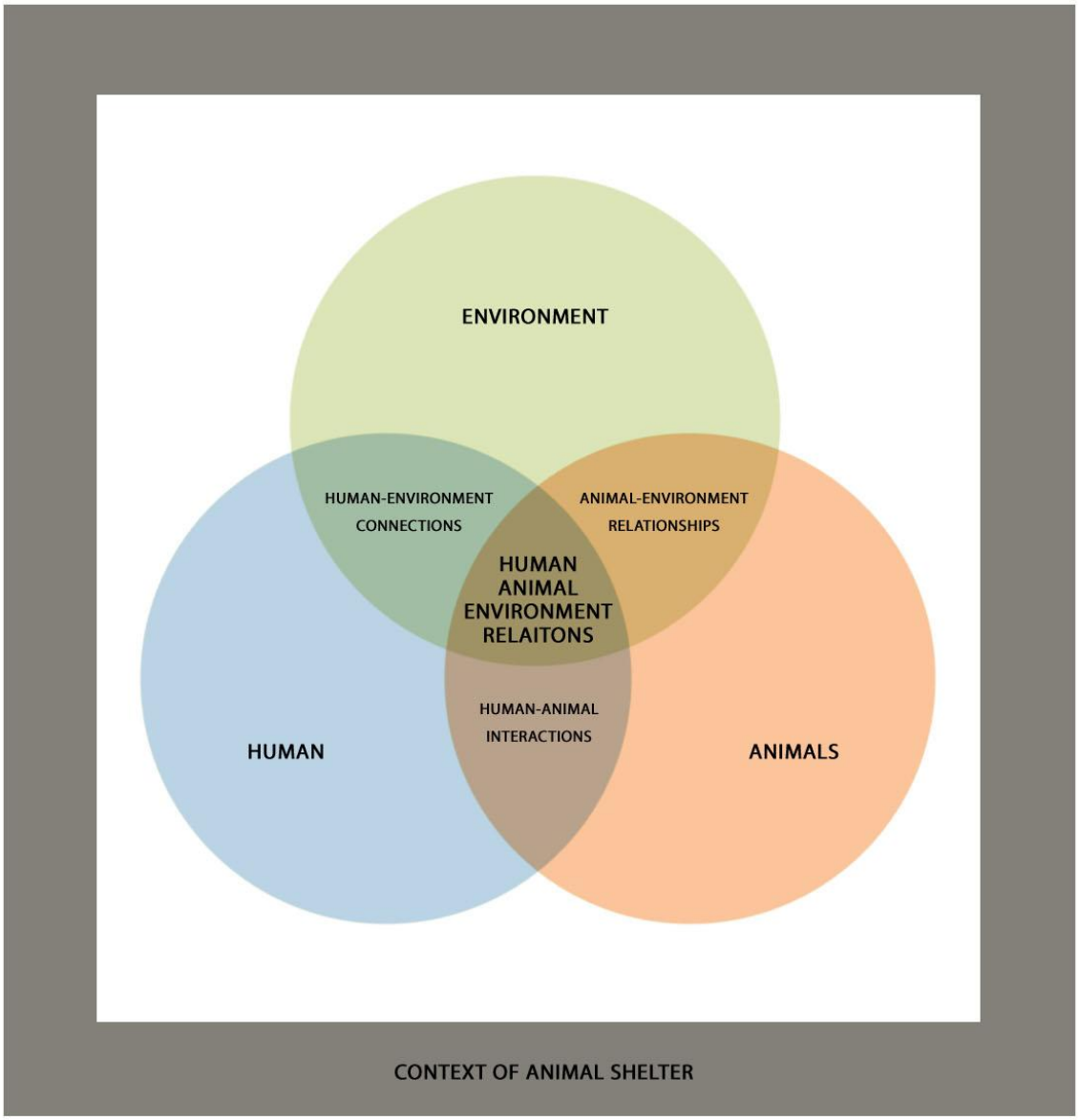


Figure 3.1 The interrelationship concept

Understanding the Three Links

Human-Animal Interactions

It has been more than a century since the first humane movement took place. In that time, studies and discussions about human-animal interactions have attracted increasing attention. The linkage between humans and dogs are embodied and strengthened by the reciprocal benefits to both of them. As formerly stated in chapter two, human-dog interactions, such as petting, walking and socializing, have been proven effective in helping to reduce behavior problems of dogs in the animal shelter, thus increasing their chance to survive and find a good adopter (Hennessy et al. 2001; Hennessy et al. 2002; Veissier 2007). Besides the help people bring to animals during interaction, even more benefits are gained by people themselves. Animal-assisted therapy (AAT) is a type of therapy that involves an animal with specific characteristics becoming a fundamental part of a person's treatment, as explained by the American Humane Association. Also another similar concept is Animal-assisted activity (AAA). AAA often refers to programs where animals simply visit with a population (i.e., the elderly) with no stated therapeutic goals other than companionship (Hatch 2007). AAT and AAA programs can help humans in a variety of ways, including but not limited to helping patients recover in hospitals, encouraging the physically disabled to perform tasks that strengthen speech and motor skills. providing

support for those facing emotional difficulties, encouraging children to read, and raising the spirits of the terminally ill (Hatch 2007). The role of animals in AAT and AAA programs can be diverse, depending on the level of engagement, including a full-time trained animal with an individual, temporary companion animals visiting facilities, mascot animals residing mostly in hospitals, and others in some residential centers or working farms that are considered “part of the living environment”(Cantanzaro 2003).

In addition to the therapeutic aspects, human-dog interactions such as dog walking also keep people healthy. Owners who walk with their dogs experience improved physical, mental and emotional health (Allen 1997). Benefits include lower systolic blood pressure and blood cholesterol levels (Anderson, Reid, and Jennings 1992), lower levels of mental stress (DeMello 1999), better survival rates after a heart attack (Friedmann et al. 1980), less feelings of depression and loneliness (Garrity et al. 1989), and higher level of self-esteem (Albert and Bulcroft 1988).

Walking with a dog is impacted by a series of factors, namely social, physical and policy-related environmental factors (Cutt et al. 2007). The evidence to date demonstrates that dogs play an important role in establishing a supportive social environment both for dog owners and other members of the community (Cutt et al. 2007). Walking with a dog has been proven to be a key source of motivation and

social support for dog owners (Ball et al. 2001), and can even enrich social capital and sense of community through increased social interactions (Wood and Giles-Corti 2005). Social interaction between people is increased by walking with a dog because dogs can act as a catalyst for strangers to start a conversation (McNicholas and Collis 2000; Cutt et al. 2007). Besides social factors, there is also scientific evidence supporting the importance of the physical environment or outdoor space on dog walking. A number of urban planning reports key features of the physical environment that are hypothesized to be supportive to dog ownership and dog walking (Cutt et al. 2007). Accessibility to public open space where dogs are permitted both on and off leash is one feature of the physical environment that could have a crucial influence on people's ability to walk with their dog (Cutt et al. 2007). Lastly, the third factor that affects dog walking in public is the policy environment. "Creating supportive policy is an effective way of promoting healthy behavior to the larger community because all those exposed to the legislation, regulations, or local laws are affected" (Cutt et al. 2007). Enacting zoning and land use codes to facilitate more walkable neighborhoods is a good way to increase physical activity (Frank and Engelke 2001).

Animal-Environment Relationships

In addition to animals' rich connections with humans, they also have various relationships with the surrounding environment. For example, chapter two has

stated that the kennel environment is very likely to have negative impacts on dogs' behavior (Salman et al. 2000). It is well established that a number of abnormal behavioral patterns can occur in both farm and zoo animals in confined environments particularly if the animal is isolated (Broom and Johnson 1993). On one hand, we live in societies where pet dogs are often left alone for prolonged periods of time (Young 2003). The environment in which they are left alone is mostly enclosed homes or backyards. This can result in behavior problems such as anxiety, considered a major issue in pet dogs and can possibly lead to their relinquishment and euthanasia (Katcher and Beck 1983). On the other hand, when dogs are abandoned and sent to shelters, the even more confined kennel environment will cause additional behavioral problems to them, making them even less desirable (Miklósi 2007; Salman et al. 2000). For example, one of the biggest problems in dog shelters is barking, which is caused by the stressful environment of housing large numbers of dogs within auditory, olfactory and visual contact of one another (Young 2003). The barking problem also undermines dogs' own adoptability since potential adopters prefer dogs at the front of the cage, interested in people, and not barking (Wells and Hepper 1992).

Plenty of research indicates the detrimental effects of confined environment, other studies identified elements of the environment that influence the behavior of the dog in a more desired way. Siwaka et al. (2002) found that in a home-cage

environment, aged animals showed significantly less activity than young dogs. However, aged dogs show no similar reductions in activity during the open-field test. In the open fields, the dogs must respond to the change in the environment, and the novelty of the situation could arouse the dogs and lead to increases in activity that mask many age-associated changes (Siwaka et al. 2002). Moreover, Kobelt et al. (2007) conducted a study of the relationships between Labrador Retrievers' behavior and a suburban backyard environment. They found that the amount of time dogs spent walking or running around could be affected by the relationship between area and foliage: larger yards usually have more foliage, and the amount of foliage is related to the time dogs spent running through and exploring it. Although not examined in their study, they also suggested that yards that are more complex and have more foliage attract other wild animals such as birds, which make the dogs more active in the yard environment. They concluded that the total activity in dogs was also increased by the presence of foliage, which can serve as a valuable source of environmental enrichment. "If more than 1% of the yard had foliage, the dogs would spend time exploring through it, digging in the soil and rubbing themselves against the foliage" (Kobelt et al. 2007).

Furthermore, there is generally more stimulation for dogs in larger outdoor enclosures than in small confined spaces. It was observed that dogs in larger outdoor enclosures were less interested in available non-environmental objects

(such as toys) than dogs in smaller or indoor enclosures (Hetts et al. 1992). Thus the various outdoor environments have better effect than toys to keep dogs occupied. In addition, the visual accessibility to streets from the backyard, the availability of bones to chew, and the presence of human will provide considerable stimulation to keep the dogs occupied, instead of being inactive and starting to build up frustration and isolation fear (Kobelt et al. 2007). Moving the animals around the shelter also helps to prevent them from becoming attached to a certain space, which can lead to a more difficult time adapting to a new home when adopted (Schlaffer and Bonacci 2003). With the dog's active involvement, the space itself also gets animated and may attract more activities relating to people.

Human-Environment Connections

Since the dawn of civilization, a series of complex connections between humans and their environment have been formed. A wealth of research and discussions have emerged regarding the beneficial aspects of this subtle relationship. There is no denying the importance of the nearby natural environment to human well-being. It has been suggested that "people's preference for greens and blues is because of the prevalence of these colors in environments conducive to survival for us historically as a species: unlike reds or yellows, blue and green are long wavelength low arousal colors known to relieve muscle tension and produce pleasurable moods" (Nicholson-Lord 2003). Even by

simply viewing nature, through a window or even in a painting, people can receive a therapeutic effect (Ulrich et al. 1991; Kuo and Sullivan 2001). Increasing evidences has been generated that engagement with green spaces and nature affects human well-being, categorized according to three levels of engagement: viewing natural environments; being in the presence of nearby green space or nature; and active participation and involvement in nature such as walking (Pretty et al. 2005).

Furthermore, contact with the environment can possibly even change people's consciousness and values. The works of landscape architecture are considered to be "cultural products with distinct forms and experiences", and they can "evoke attitudes and feelings through space, sequence, and form" (Meyer 2008). In Cosgrove's book, *Social Formation and Symbolic Landscape,* he argues that cultural products such as works of landscape architecture can change human consciousness as well as modes of production (Cosgrove 1998). Meyer (2008) further states that "while I do not believe design can change society, I do believe it can alter an individual's consciousness and perhaps assist in restructuring her priorities and values".

People who live in urban environments also express a great desire for contact with nature, attractive environments, places for recreation and play, and a sense of community identity (Matsuoka and Kaplan 2008). A nice space created by

landscape architects can play a role in building sustained public support for the environment, just like literature and art, images and narratives (Meyer 2008). With consistent support provided by citizens, we will be able to create a lot more and better spaces, benefiting our human selves and repaying the environment for its generous contribution.

The Connecting Concepts

Having discussed each of the three links among humans, animals and the environment, it becomes evident what opportunities could be created inside the space around an animal shelter. Also several connections have unveiled themselves during the review of these relationships. For example, having the company of a dog offers a good motivation and sense of security for dog owners walking in public spaces, and their presence and interactions also animate the space itself. Moreover, viewing and engaging the landscape will produce pleasurable moods and reduce mental stress, while interacting with pet dogs in these landscapes also provide therapeutic effects (Animal Assisted Therapy or Animal Assisted Activity) that reduce any sense of loneliness and enhance self-esteem. Additionally, a landscape with more natural features will provide stimulation to dogs, enabling them to release energy and reduce behavioral problems through playing with the owners, while their existence also triggers

social interactions between people. On this occasion, the public may then express full support for public spaces due to the good experience, which will encourage more and better spaces to be built. As a result, the previous animal shelter landscape concept in Figure 3.1 has expanded, and a series of beneficial interrelationships are linked together, comprehensively improving the relations of humans, animals, and the environment from lack of interaction, awareness and complexity (Figure 3.2).

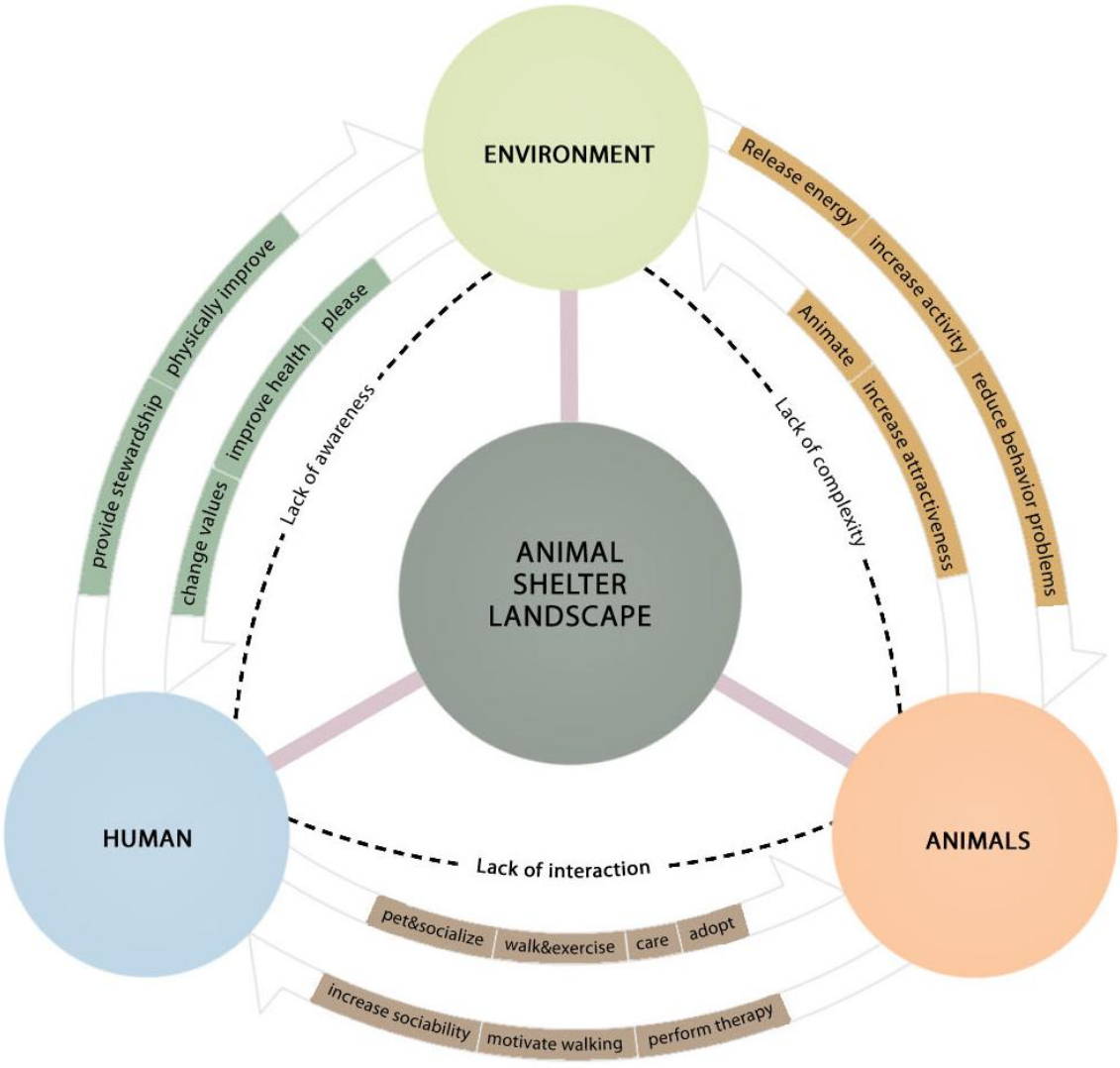


Figure 3.2 The interrelationship concept expanded

At the animal shelter, these beneficial relationships enrich the working and playing environment for the users, increase adoptability for the shelter animals, and improve experience for volunteers and visitors. Furthermore, a better working environment will result in a more positive mood and greater efficiency among shelter staff members, and a stronger sense of place. It is also feasible that a good looking shelter benefits educational and fund-raising activities. Increased adoptability will certainly lead to more adoptions and reduce euthanasia of pets, thus building a stronger bond between people and pets. Improved volunteer experience could lead to better mood at the shelter, making it more attractive to visitors, new volunteers and returning volunteers, and facilitating humane education (Figure 3.3).

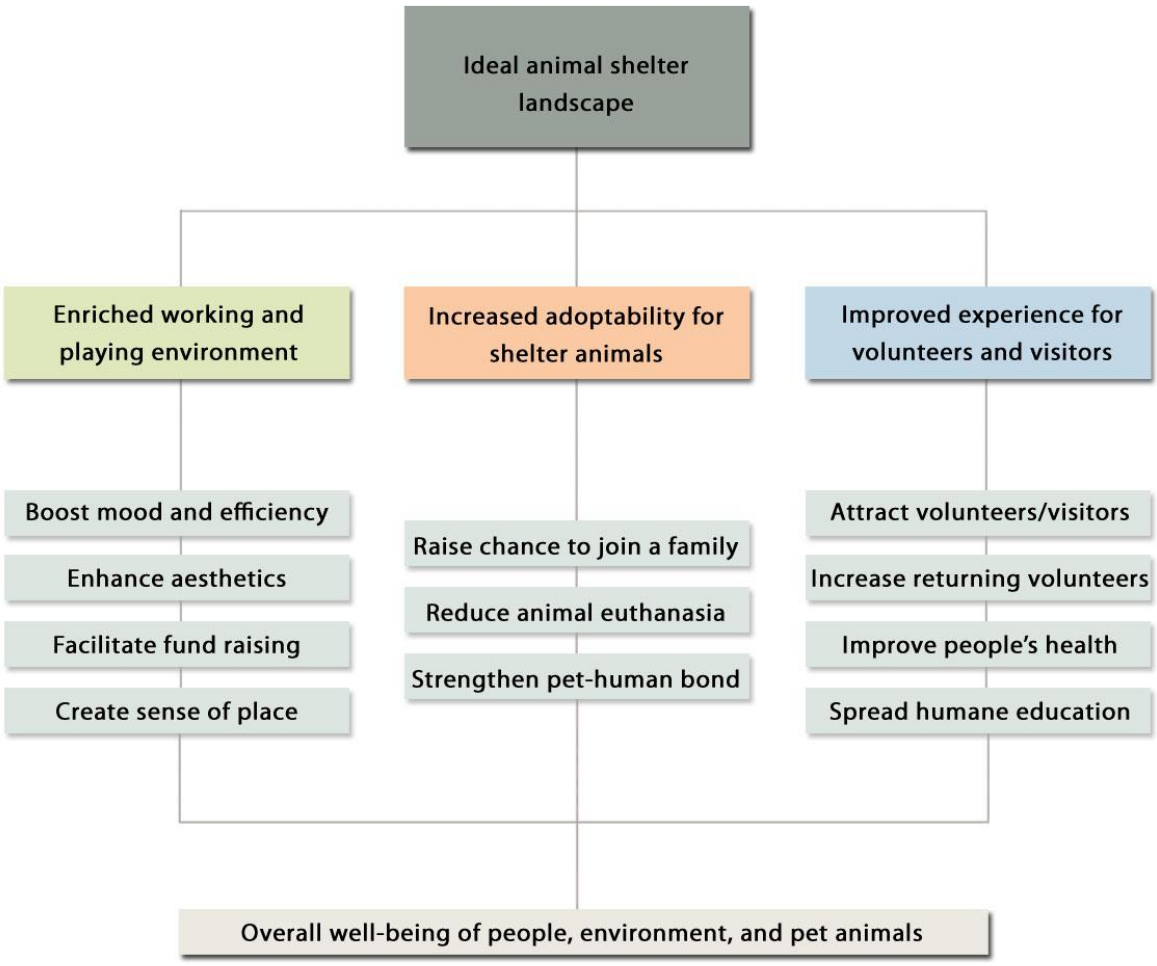


Figure 3.3 The possible outcomes of an ideal animal shelter landscape

Application to Animal Shelter Landscape Design

In order to support the interrelationships among people, dogs and space, a physical landscape designed with the goal to facilitate these interactions must be applied. The goal has three facets: a comfortable natural space to connect people with nature, a pet-friendly setting to serve the dogs' needs, and a series of features and designs to provide more and better interaction opportunities between people and people and people and dogs.

A comfortable natural space should include more green space for people to look at and walk through, buffers to reduce noise, better appearance of the structures than the existing ones, and tree canopy sufficient to provide shade in the summer. A balanced mix of public and semi-private spaces that support both social interactions of people and one-on-one dog-people contact should also be explored. Pet-friendly features that ensure the safety of dogs, availability of spaces for relieving themselves and durable, easy to clean ground paving should also be used. Dog drinking fountains and waste collecting stations should also be placed in proper locations. Lastly, special designs that promote interactions between people and dogs will also be considered. Besides humane education signs, some interactive playing structures and rest areas are needed as well. More details will be discussed in the following case studies and design guidelines.

3.2 Case Studies

Case studies include two dog parks and two animal shelter sites. There will be a discussion of their successful and unsuccessful features, as well as the implications to the Athens-Clarke County Animal Control landscape design. The two dog parks that will be discussed are Cattail Dog Park in The Woodlands, Texas and Millie Bush Dog Park in Houston, Texas. The two animal shelter cases are Tompkins County SPCA in Ithaca, New York and Humane Society Silicon Valley (HSSV) Animal Community Center in Milpitas, California.

Dog Parks

Though owning a pet dog is considerably popular in the U.S., the needs of dogs and their owners are constantly being compromised by high-density urban settings, environmental concerns, and government regulations (Lee, Shepley, and Huang 2009) . There are plenty of regulations and ordinances that control dogs in parks by requiring the use of leashes and, sometimes access to public open space is completely deprived from dogs. Recently, dog owners have become more organized to plead for spaces where people and dogs can socialize and exercise. As a result, the number of public dog parks is growing rapidly around the US (Gillette 2004; Cramer 2005). This thesis studies dog parks because they are the most popular landscapes that are designed to promote dogs' life quality, not just human's. The features in the dog parks are likely to be helpful to enhance

dogs' experience in the shelters. There are approximately 700 off-leash dog parks in the U.S., and many existing parks are considering adding dog park components (Burkett 2006). A good dog park design should have a designated off-leash area – a safe, controlled environment for dogs to play, socialize and exercise with other dogs, and that provides people an opportunity to interact with neighbors having similar interests.

Cattail Dog Park

The first case study is the Cattail Dog Park, located in The Woodlands, Texas. This dog park was chosen because it is in a relatively natural setting similar to the Athens-Clarke County Animal Control. As the first dog park built in The Woodlands, Cattail Dog Park was dedicated in 2004 as part of the 12.7-acre Cattail community park built within a golf course community. Managed by the Community Associations of the Woodlands Parks and Recreation Department, it is connected to the community trail system, and is surrounded by a number of single family residences and preserved natural areas. Even though the park is in a residential area, it is not closely connected to any neighborhoods. According to a survey done by Lee, Shepley, and Huang (2009), only 10.5% of the users access the park on foot, while the majority (88.2%) of people go there by car. It is suggested that the residents living closer to a dog park use it more frequently and perceive it as more beneficial to their physical health, property value, and social

interaction with neighbors (Lee, Shepley, and Huang 2009).

The Cattail Dog Park contains one fenced big dog play area with double-gated entry, one small dog area, one cool-off station, one shade structure and several benches and dog play apparatus. The big dog area has plenty of space – about one acre of off-leash, free run lawn area. Unfortunately, due to relatively heavy use, moderate erosion is present in the central areas and around the popular seating, paths and amenities. The small dog area looks relative confined (about 0.1 acre), compared to the 1-acre big dog area (Figure 3.4).

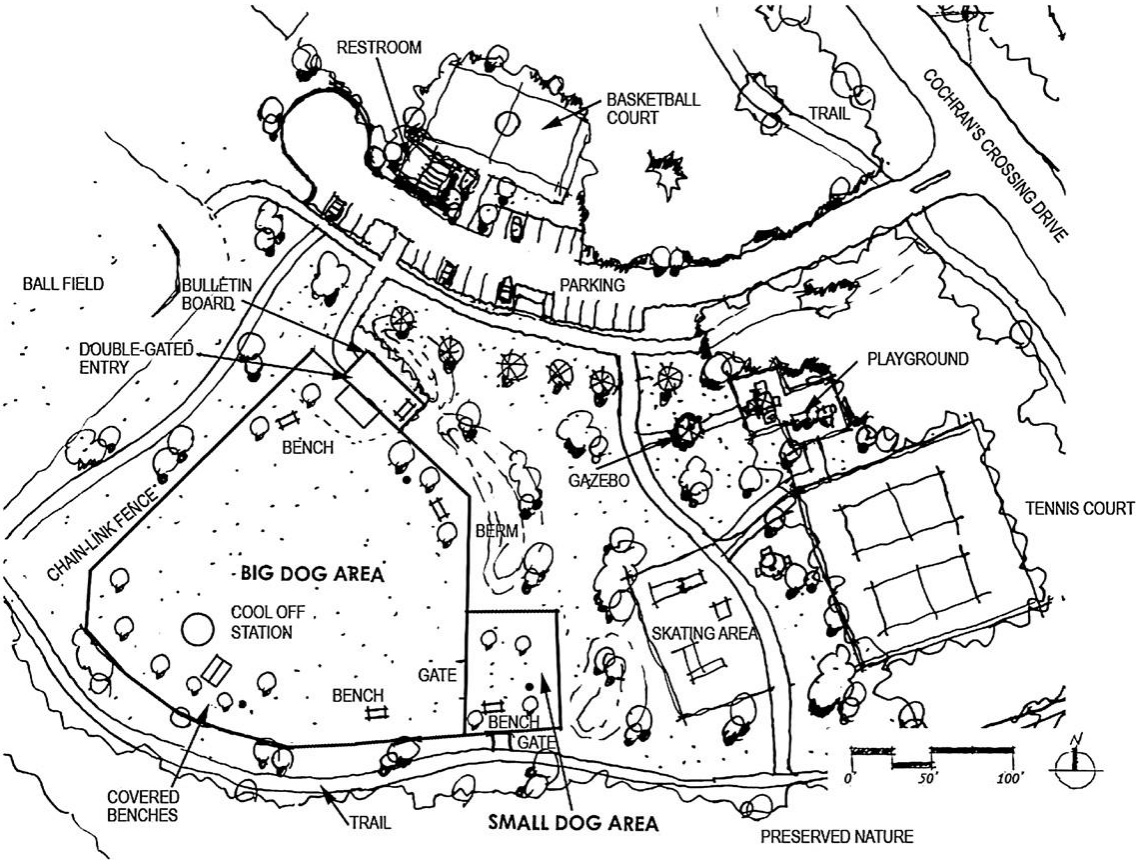


Figure 3.4 Cattail Dog Park plan, *(Lee, Shepley, and Huang 2009)*

The benches are scattered around the perimeter, offering a view of the central area while seated. Shade is scarce in the fenced area; no large tree canopy is available and only two benches are under the pavilion. Also, water is only accessible near the pavilion, in a baby pool lined with pea gravel and stone edging. Considering the extremely high temperature of summer in Texas, these cooling structures may not be sufficient for a dog park. Other amenities such as restrooms and children playground are close by, along with sports fields such as skating park, trails and baseball fields.

In sum, the Cattail Dog Park is a very “standard” dog park: it has every basic feature a dog park should have. The especially attractive aspects of Cattail Dog Park are the natural surrounding setting and various nearby amenities. Nevertheless, more shade structure, easier water access, and more durable ground surface is needed in the park. In the design of Athens animal shelter landscape, shade and water access is also very important, being in a southern region. Areas that will be designed for heavy use should be covered with more durable materials instead of natural grass.

Millie Bush Dog Park

The second dog park case, the Millie Bush Dog Park, is located in Houston, Texas. Opened in December 2003, it is the first dog park in the Harris County park system, and the first dog park in the city of Houston. The park occupies an

expansive area of 15 acres, and is part of the 7800-acre George Bush Park, accessed only by vehicles. It has a large asphalt parking lot, which provides parking spaces for 100 vehicles. Millie Bush Dog Park is named after the dog of former President George Bush, and was ranked the nation's best dog park by *Dog Fancy* magazine in 2005. This park is selected as a case study in order to discuss the successful components that make it one of the best dog parks nationwide, as well as some possible improvements to inform the Athens animal shelter landscape design.

Being far away from everything, Millie Bush Dog Park can only be accessed by car. However, this does not, at all, prevent this dog park from being popular. The 15-acre, securely fenced, double-gated area provides dogs an ideal place to play and run free. The small dogs are separated from the large dogs, in their own double-gated area of approximately 0.9 acres. Within the spacious dog run area, there is also a 0.19-mile granite trail for walking (Figure 3.5). The expansive space greatly encourages people and their dogs to be more physically active.

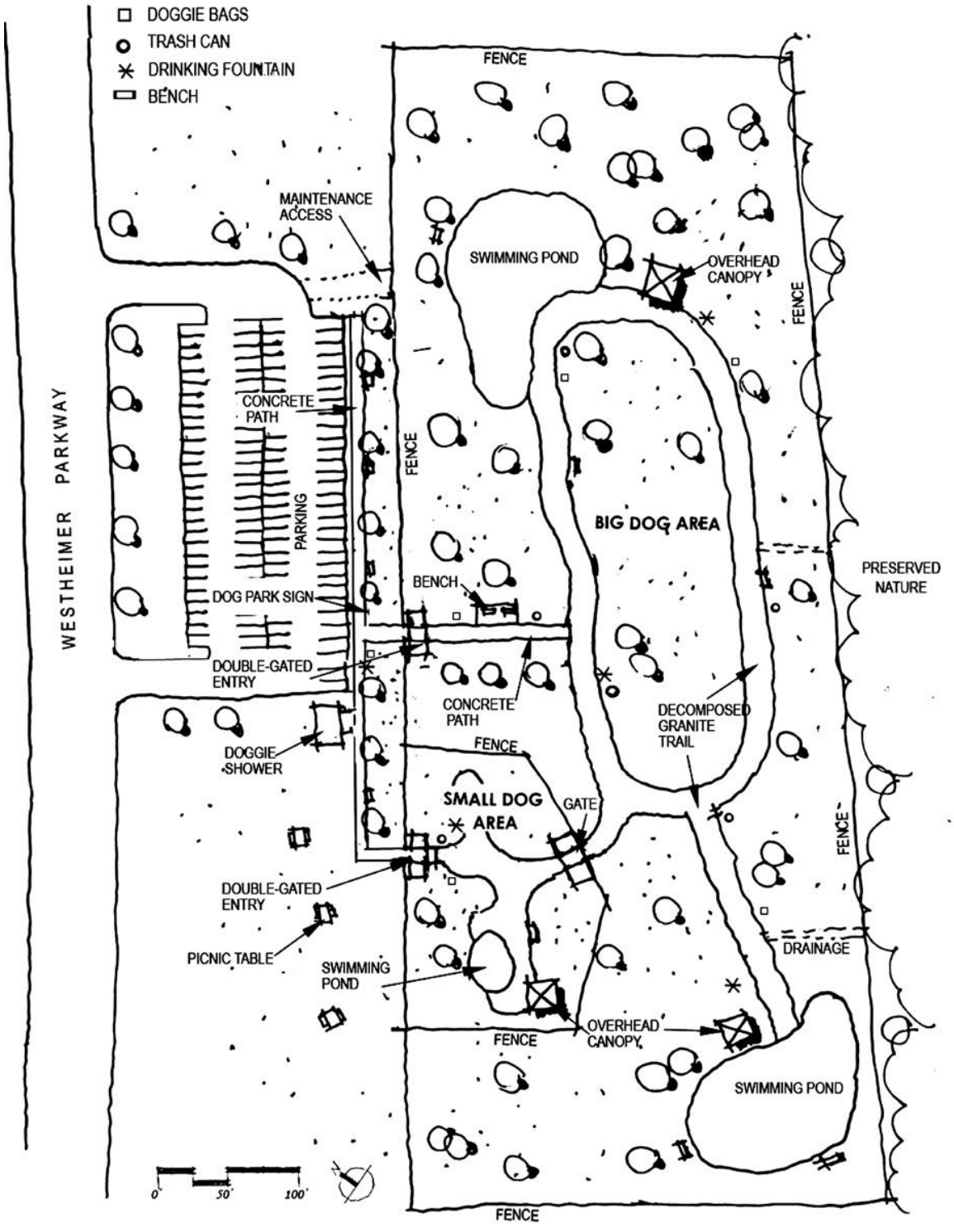


Figure 3.5 Millie Bush Dog Park plan, *(Lee, Shepley, and Huang 2009)*

Beyond generous size, another important feature of this successful park is water accessibility. It has three concrete-edged water ponds (two in the big dog area and one for the small dogs), providing a wonderful relief for the dogs in the hot Houston summers. The three ponds also serve as water detention ponds to hold excessive flood water during major rainstorms. Plus, plenty of fire hydrant-like water sources and several nice dog shower stations make it very convenient to give dogs a bath. After prolonged heavy use of the land and water, however, one drawback of this easy water access revealed itself: some places get very muddy, especially when it is raining.

There are also some trees and man-made canopies available in the park. The trees are still immature and dispersed, not yet able to provide cover for the users. The three shade structures are located near each of the water ponds, covering several backless benches. In light of the popularity of the park and the local weather, the shaded area is still not sufficient. The survey of Lee, Shepley, and Huang (2009) shows that shade and seating in this dog park received relatively low ratings by the users.

Other amenities such as trash cans, water fountains and waste disposal bags are conveniently located in the park. There are also some picnic tables and benches available just outside the fences. Restrooms, however, are not available nearby. Night lighting is not provided either. The absence of these features might

be a budget issue, but it may also be that the park operators want to limit the time dog owners spend in the parks to reduce maintenance.

In conclusion, the Millie Bush Dog Park is a highly successful dog park with plenty of space, water resource and amenities. There are also a sufficient number of parking spaces, further promising park users a convenient experience. Despite the location of the site being inconvenient, the park still attracts hundreds of users on a daily basis and people drive over an hour to use the park. The limitations are still mainly about shade, seating and erosion. In the design of the animal shelter landscape, comfortable seating under sufficient shade is indispensible - it allows people to better interact with dogs for a longer period of time. Waste disposal bag supply and trash cans should be provided in the shelter landscape as well. Water access is also a powerful attraction for dogs and their owners, but getting wet might not be feasible for shelter dogs unless they are given a bath by volunteers afterwards. Lastly, erosion can be reduced by designating areas of heavy use and the use of alternative ground covers rather than grass.

Animal Shelters

When retrofitting or building a new animal shelter, people's primary goal is usually to improve the quality of the indoor environment: more room space, better temperature control, and more fresh air and natural light. However, as explained in the above chapters, the outdoor environment is as important as indoors in

terms of improving the well-being of both humans and animals. The next two case studies will discuss two recently built animal shelters and their outdoor environment designs, as well as how they can inform the Athens animal shelter landscape redesign. The two animal shelters that will be studied are the Tompkins County Society for the Prevention of Cruelty to Animals (SPCA) adoption center and Humane Society Silicon Valley (HSSV) Animal Community Center.

Tompkins County Society for the Prevention of Cruelty to Animals (SPCA)

The new Tompkins County SPCA adoption center opened in August 2004, located in Ithaca, New York. The new 9900-ft^2 adoption building is connected to the existing animal intake and evaluation building by a bridge (Figure 3.6). The new building received a LEED Silver rating, and is the first shelter in the nation to achieve such a high eco-friendly rating. It contains many sustainable design features such as a geothermal heat pump, energy-saving fixtures, recycled local materials, a stormwater detention pond and so on. Different from conventional shelters, where animals are often warehoused in open, steel cages in long runs, animals in Tompkins SPCA are put in individual rooms or larger group spaces in a home-like setting with play structures and other amenities (Figure 3.7). Having met the credits to receive LEED Silver rating, the indoor environment quality is more than sufficient to contribute to the comfort of both animals and people.

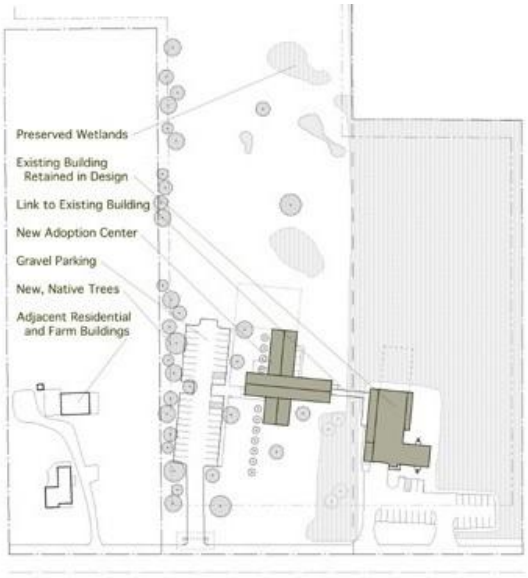


Figure 3.6 Site plan of Tompkins SPCA, *USGBC LEED case studies, leedcasestudies.usgbc.org*

Figure 3.7 Tompkins SPCA's cat room, ARQ Architects, arqarchitects.com

For the outdoor landscaping, native trees and grasses exclusively are planted around the building to ensure that no permanent irrigation system is needed. Stormwater runoff from the impervious surfaces is channeled through a series of swales into a filtration trench and detention pond to allow infiltration. The development footprint is significantly reduced in order to maximize open space. However, very little open space is designed for animals and people to use and play (Figure 3.8). The outdoor space is consisted of very few elements rather than grass and trees. Furthermore, although going green is beneficial to our environment, LEED credits do not address aesthetic issues - the landscape

design does not have to be visually pleasing to achieve credits. As a result, there is little aesthetic value in the outdoor space, and few areas for people and shelter animals to play and socialize besides a small semi-outdoor yard (Figure 3.9).

Figure 3.8 The outdoor space of Tompkins SPCA adoption center, ARQ Architects, www.arqarchitects.com

Figure 3.9 The semi-outdoor yard of Tompkins SPCA adoption center, ARQ Architects, arqarchitects.com

At the side entrance of the new adoption center, there is an interesting feature: the Memorial & Tribute Brick Walkway - a place where people can buy a small or large brick on the ground and have their names engraved on it (Figure 3.10). Though this method is used a lot in other places, it is a good way to add interest to animal shelters, raise funds, and connect more people to the space.

Figure 3.10 The Memorial & Tribute Brick Walkway, *Tompkins SPCA official website, www.spcaonline.com*

In summary, this LEED Silver animal shelter is a good example for sustainable shelter design and high indoor environment quality. Thanks to energy-efficient design, a lot of maintenance fees and utility costs can also be saved, especially considering that shelters are usually limited in budget. By reusing the existing building on the site, the project's development footprint and impact on its site are significantly reduced. Bioswales and detention ponds are also integrated to allow onsite stormwater infiltration. Plus, the landscape consists entirely of native species of trees and grasses, which require no ongoing irrigation and fertilization. This low maintenance aspect is important to consider while designing animal shelter landscapes. The brick walkway where each brick can be sold is also a good model of increasing attractiveness and connections of people to the shelter, as well as raising fund. However, the outdoor space is lack of activity, and not very visually attractive by now.

Humane Society Silicon Valley (HSSV) Animal Community Center

The last case study is the Humane Society Silicon Valley Animal Community Center located in Milpitas, California. There has been an increasing number of high-quality animal shelters built in California, and the HSSV Animal Community Center is an outstanding one of them. Opened in April 2009, this 48,000-ft^2 facility became the first animal center in the U.S. to receive a LEED Gold certification.

The Animal Community Center includes an entry plaza for community events, a medical center, a dog park, boarding, training and grooming services, an education center, a community room, a pet store, and a pet-friendly café (Figure 3.11). The cage-less habitats with beds and toys simulate home environments, which can reduce animal stress and behavioral problems created by traditional shelter designs, according to the HSSV. The center can accommodate about 10,000 dog, cat and rabbit adoptions a year. While kept in the Animal Community Center, dogs go outside several times a day, reducing the need for staff to clean the kennels; cats live together in large homey rooms; and rabbits stay in comfortable "rabbitats". These facilities are built to not only offer more rooms for more stray animals, but also provide them a beneficial, home-like environment, as well as improving the bond between people and animals.

Figure 3.11 Aerial photo of HSSV Animal Community Center

In addition to an ideal indoor environment, the Animal Community Center also addresses environmental issues by incorporating sustainable design strategies. The green building features include a solar system generating 30 to 40 percent of the center's energy needs, an efficient kennel-cleansing system to reduce water use, reflective roof materials to reduce energy costs, on-site bio-swales to filter stormwater runoff, and synthetic turf and native plants in the dog park to lower the demand for irrigation, etc. These strategies not only reduce impact on the environment, but save funds for the humane organization. For the solar

installation alone, HSSV expects it to save up to 50,000 dollars in energy costs in the 2011 fiscal year. In light of the high cost of electricity and water in animal shelters, this environmentally friendly facility allows more money spent on animal well-being instead of paying for utilities.

The HSSV Animal Community Center is also integrated with a 0.7-acre dog park (voted best dog park in 2010 by Mercury News) and several other outdoor play areas. The dog park includes standard features such as separated play areas for small and large dogs, double-entry gates, clean-up stations, shade structures, benches and picnic tables, and abundant parking spaces close to the park. In addition, the dog park is mostly covered with synthetic turf, which significantly reduces irrigation and creates a durable, permeable, and visually pleasing space for playing. Besides, other landscape components such as the carefully planted shrubs and trees, fresh water play pools, and the contoured rolling hill topography greatly enhance the aesthetic value of the park (Figure 3.12). The park also holds exclusive community events (Figure 3.13) like “Doggie Ice Cream Socials”, to create a social environment where dogs and their owners can socialize and meet new, like-minded, friends. The dog park is for members only, which requires the dog to be spayed, vaccinated and friendly. This is very helpful to promote animal well-being and ensure the safety of the park, but might slightly limit the number of users.

Figure 3.12 Visually pleasing and durable dog park, *HSSV official website, hssv.convio.net*

Figure 3.13 Community events in HSSV Animal Community Center, *HSSV official website, hssv.convio.net*

In short, HSSV Animal Community Center is an inspiring model of humane care, community involvement and sustainable design for animal shelters nationwide. The peaceful, home-like indoor environment reduces stress and noise; the green design practices ensure environmental responsibility and long term cost savings; and the carefully designed outdoor space greatly enhances the well-being of both people and animals, as well as the bond between them. Although building a facility like this is certainly not economically feasible for Athens-Clarke County Animal Control, several practices will still be applicable to the redesign of the landscape, such as the materials used, the arrangement of the dog park, the educational components, and the diversity of the landscape features. Some management strategies are also worth considering, like the member-only dog park entry and periodic community events.

The question must be asked: since living in shelters is getting more comfortable, does good shelter design and environment make the owners give up their pet more easily? Or does it urge people to make rush decisions to adopt a pet, which might increase the possibilities for future pet relinquishment? In the author's opinion, the answer to these questions can be found in the education component. A good animal shelter will educate potential adopters in responsible ownership, and make sure they have the knowledge, time and budget to keep a pet for a prolonged period of time.

3.3 Design Guidelines for Animal Shelter Landscape

In order to propose a landscape that promotes the interactions among people, animals and the environment, a series of physical design principles should be developed. Having discussed the problems in the shelters, the beneficial human-animal-space interrelationships, and the pros and cons of the four case studies, three categories of design guidelines are generated as follows:

Design for human-animal interactions

- Design a legible circulation system that encourages dog walking
- Provide semi-private spaces for one-on-one playing
- Provide playground equipment for dog training and playing, and organize them as a system that unifies walking, playing and resting
- Conceive a series of innovative detail designs that promotes interaction between people and dog; especially consider the leashed status of shelter dogs
- Designate a bathing area for volunteers to bathe dogs
- Add signs about basic pet training tips, dog behavior and humane education

Design for animal-environment relationships

- Provide various sizes and shapes of dog runs for large and small dogs
- Use durable surface materials for heavy-use areas
- Designate a gravel area for dogs to relieve themselves, as well as providing multiple waste disposal stations
- Use shrubs to reduce visibility between dogs inside and out of the kennels, thus help reduce the frequency of barking
- Avoid poisonous plants
- Avoid loose materials for ground surface
- Provide post structures for dogs to mark territory
- Provide a pond for dogs to cool down

Design for human-environment connections

- Create a unique and inviting entrance and parking lot
- Use vegetation to soften the edge of hard structures such as walls and fences
- Use shrubs to separate spaces and guide movement through spaces
- Provide shade for seating areas
- Plant native groundcover and shrubs in a natural style

- Provide outdoor space for volunteers to sit, relax and socialize
- Provide outdoor space for staff to sit and have a lunch break
- Provide outdoor space for small community events
- Build front door walkway with bricks displaying donors' names

CHAPTER 4

DESIGN APPLICATION

4.1 Site Analysis

Location and surrounding context

Athens-Clarke County Animal Control is located outside the perimeter highway of Athens, and is 4.5 miles from downtown (Figure 4.1). Because of noise concerns, it was built in a forested area, relatively far away from commercial districts or residential areas. This makes it almost impossible for pedestrians to access, so all the staff, visitors and volunteers drive to the shelter. However, traffic moves fast on Beaverdam Road Extension, the building hides behind trees and a parking lot, and the sign is not very visible, making it hard for passersby to notice.

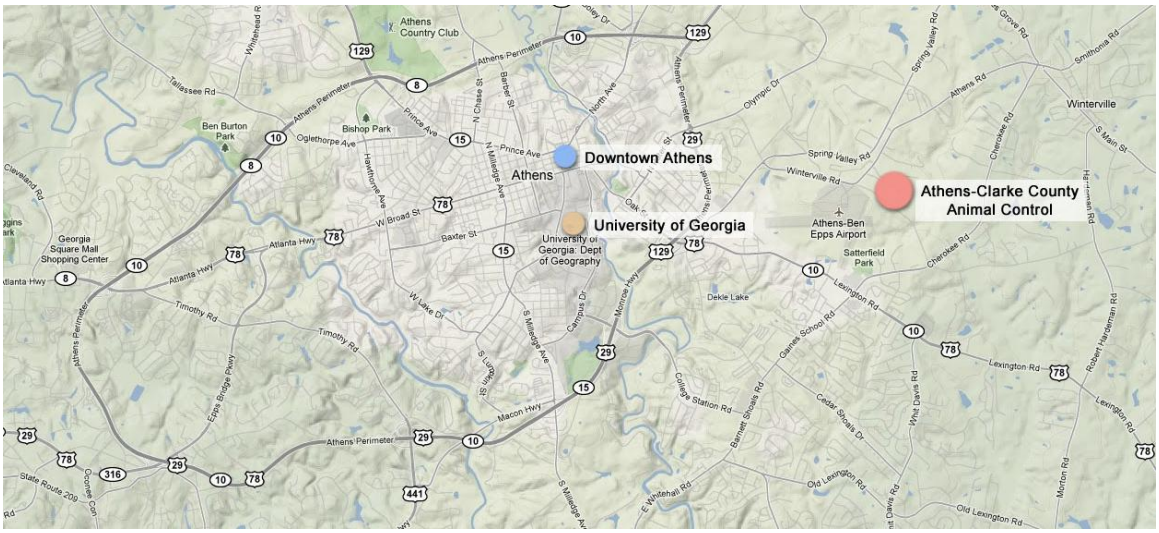


Figure 4.1 Location of Athens-Clarke County Animal Control

There are a few unrelated facilities and buildings near the shelter. To the southeast are the Northeast Georgia Police Academy and Athens-Clarke County Cat Shelter. The cat shelter used to be occupied by Athens Area Humane Society, but it was moved to Oconee County. To the northwest of the shelter are the Shiloh Baptist Church and Athens Ben Epps Airport, and there are a few residences to the north, across a wooded area (Figure 4.2). Being surrounded by trees and away from other buildings, there is little need to consider the noise influence on neighbors.

Figure 4.2 Surrounding context of Athens-Clarke County Animal Control

Existing condition inventory

Through several visits and volunteering, observational studies were conducted on the site. The general existing features were recorded to generate

an inventory map (Figure 4.3). The site is in a wooded area, covers about 1.1 acres of land with one main building, one storage structure, a fenced yard and a “Y” shaped driveway connecting the road to both the staff vehicle entrance and the guest parking lot. An asphalt parking lot is 75 feet off the road, joined to a smaller gravel surface. Including both asphalt and gravel lots, there are about 26 parking spaces with one designated for a handicapped visitor. To enter the fenced area, visitors and volunteers must walk into the hall, sign in and walk out another door of the hall. The offices are on the east side of the building, and have several doors opening to staff parking and green space in the back.

The dog kennels are surrounded by a covered concrete sidewalk, which is also bordered by a gravel surface and Creeping Juniper. There are four separate dog runs with benches along the perimeter of the fences, and one small dog run near the storage area. Because the shelter requires minimizing interaction between dogs, only one dog per dog run is allowed.

There are two picnic tables on the east side, but the wood is weathered and no picnic activities were observed. The one bench that is outside the dog run is put in a random spot on the lawn, and is also rarely used. In addition, a trailer is left on the east side of the back yard, along with a dumpster and chain link fencing, creating a very unappealing scene.

Figure 4.3 Existing condition inventory

Circulation

The existing vehicular circulation is concise and legible. From the entrance, the driveway divides into two branches: one leads to the gated staff vehicle entrance, the other connects to the visitor parking lot. Pedestrian circulation, however, has more uncertainty. Visitors may move through the hall to get inside the fences, walk along the dog kennels, take one dog out, and continue walking around the kennels to the more open area in the back. They may also walk into the dog runs, or go through the staff parking to the east side. However, the route is obstructed by parked staff trucks, and moving through the yard from west to east, it becomes more ambiguous (Figure 4.4).

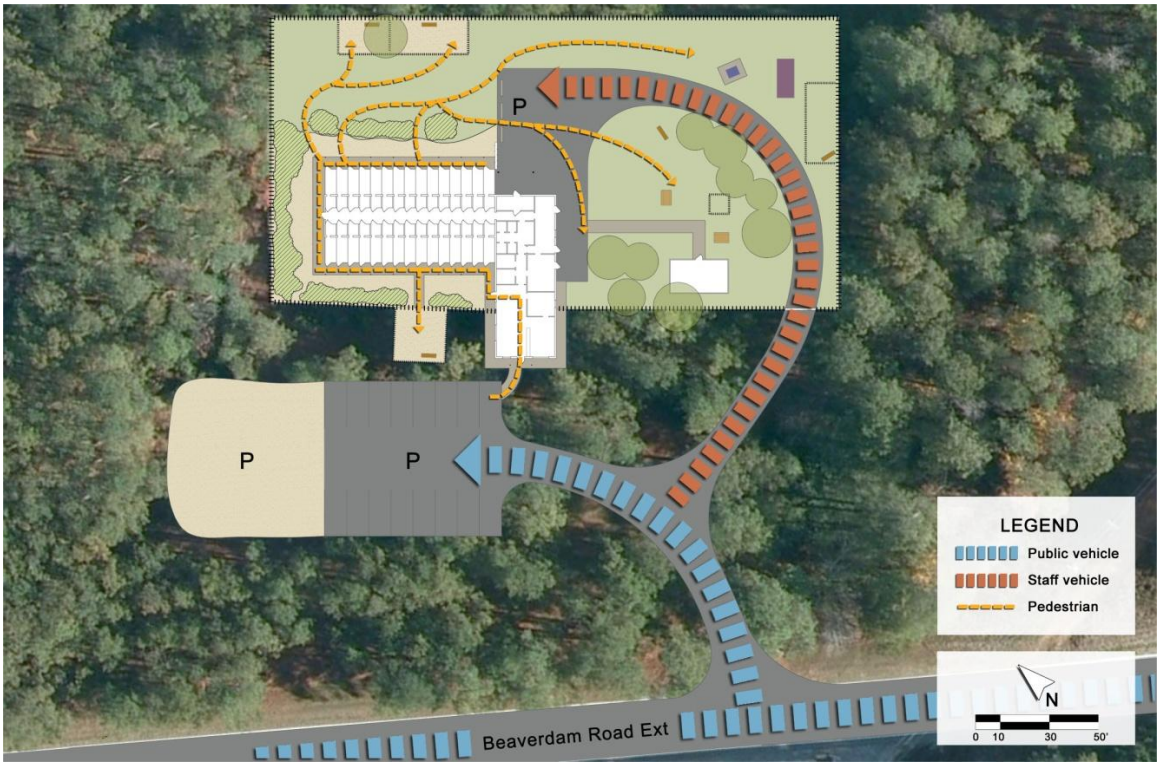


Figure 4.4 Vehicular and pedestrian circulation

Drainage and erosion

The site is on a gentle slope declining from west to east. In the map below (Figure 4.5), the contour interval is 2 feet, thus there is a 10-feet elevation change from west to east across a 230-foot distance, resulting in a slope percentage of 4%. Consequently, the stormwater runoff is generally slow, with most of the water infiltrating the ground. In the area around the staff parking, however, there are small, steep slopes that have little vegetative cover. These slopes cause fast runoff and little infiltration during a major rainstorm, soaking the impervious parking lot for a prolonged period of time. In addition, during heavy rain events, stormwater around the dog kennels flows toward the building, drops under a trench and is channeled into a drain. In order to reduce contaminants and slow down water runoff into the drain that eventually leads to the rivers, more pervious surfaces and bioswales around the building should be considered for the redesign.

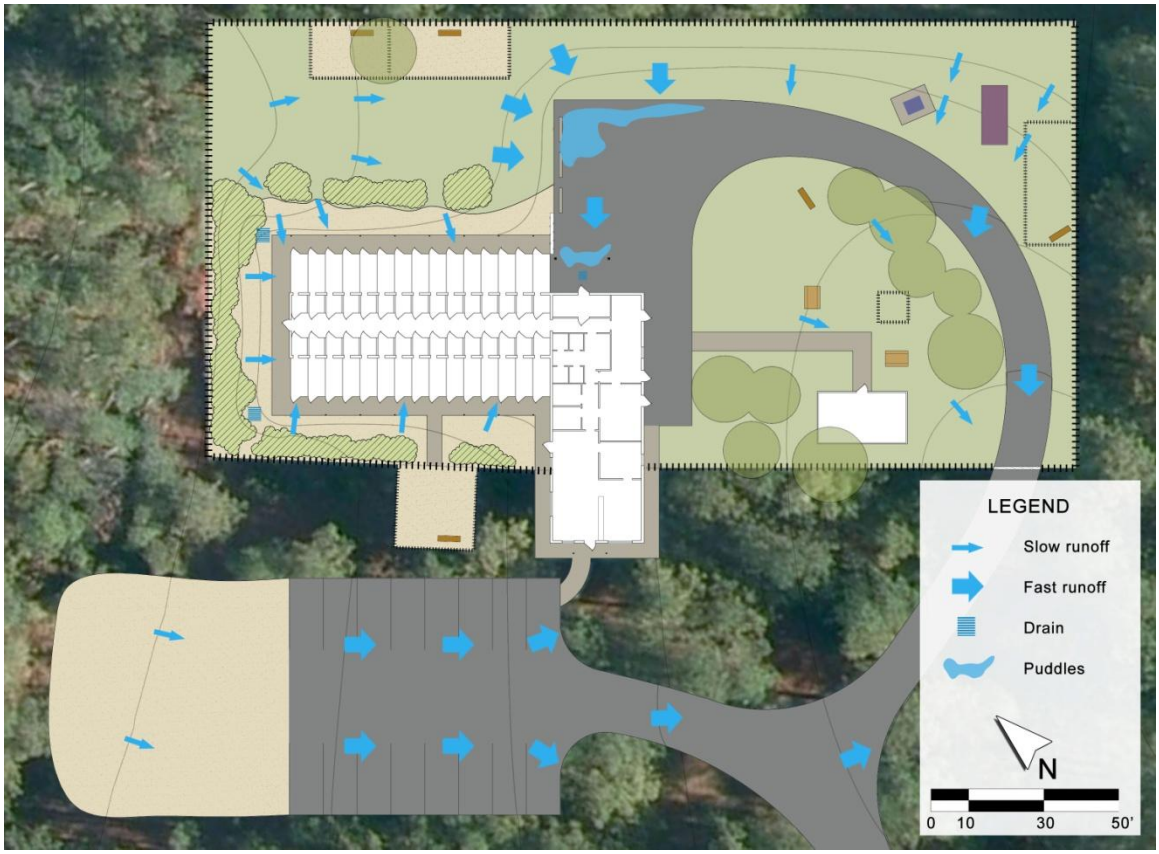


Figure 4.5 Drainage patterns during a rainstorm

The shelter has about 10,000 visitors and 3,000 volunteers a year, and most of them walk the dogs around the site and play with them. This high usage has a deadly impact on the turf of the back yard, resulting in severe erosion during each storm event (Figure 4.6), especially on steep slopes around the staff parking (Figure 4.7). The dog run on the east side is also over-used and has little vegetation on the surface. These eroded surfaces should be replaced by more durable materials such as gravel or synthetic grass. Hopefully, the erosion patterns suggest areas that people use the most, as well as places that are not so popular.

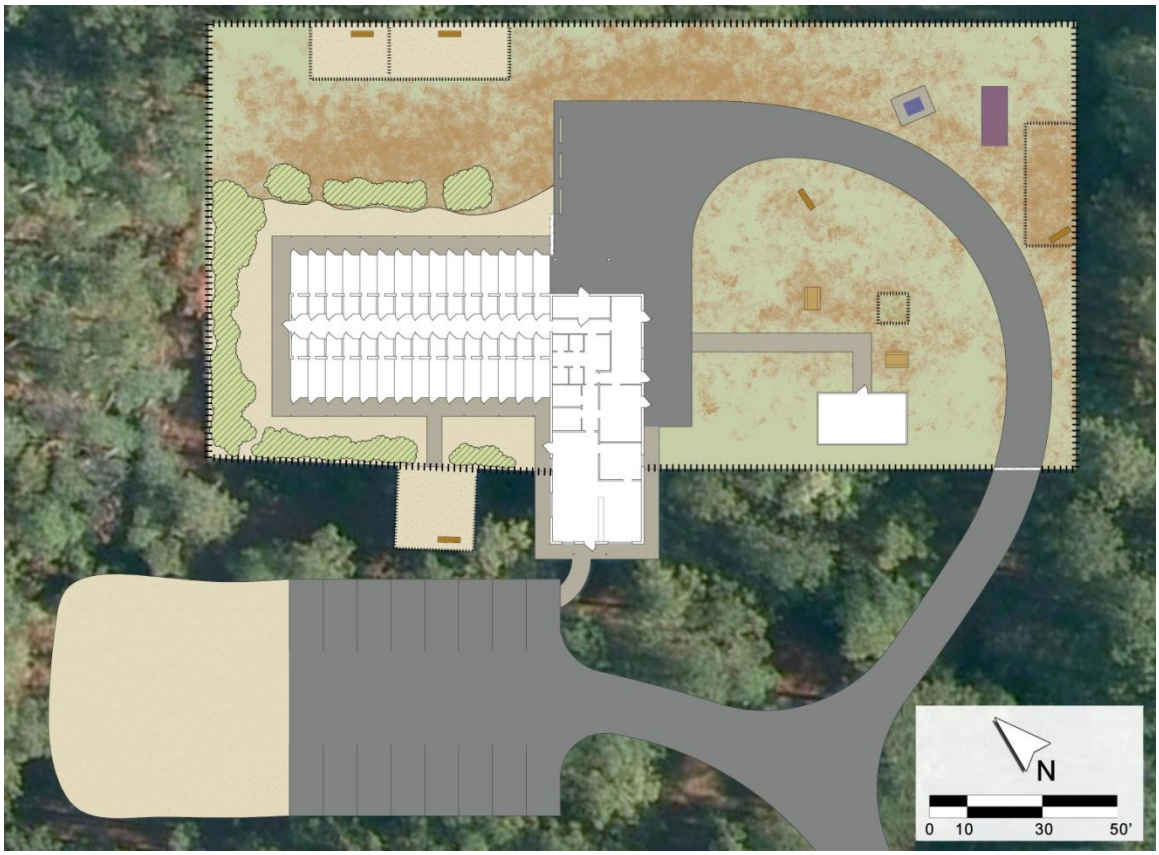


Figure 4.6 Erosion patterns

Figure 4.7 Erosion in the heavily used area, photo by author

Behavior and sociability

People's environmental behavior was observed on site and recorded by photos. Four 20-minute observations were conducted, both on weekdays and weekends, in the morning and afternoon. According to the record, more people come to the shelter on Fridays and weekends than weekdays, and more people visit in the afternoon than in the morning. Nevertheless, the ways people use the space are the same: chatting, dog walking, playing with dogs, and sitting and watching. Thus, all four observation records were compiled together and generalized in a behavior map (Figure 4.8). Chatting and playing with dogs usually happen along the building or on the back lawn (Figure 4.9), while sitting is often observed in the dog run or on the east side lawn, and dog walking goes from the kennels all the way to the east end of the fence (Figure 4.10).

Figure 4.8 Behavior types and locations

Figure 4.9 Activities on the back lawn, photo by author

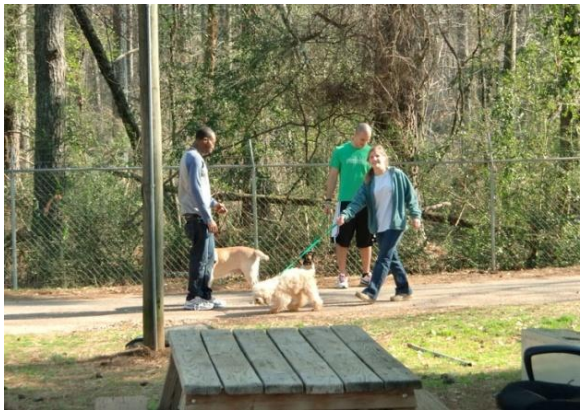


Figure 4.10 Activities at the east end, photo by author

According to the behavior map, the level of sociability can be identified in these activity areas. High sociability areas are where chatting takes place or that have the most variety of activities. Sitting in the dog run or walking on the east side describe a low level of social interactions (Figure 4.11). In general, the lawn in the back yard is the highest in sociability, and the level of sociability decreases as one moves eastward. When redesigning the space, the west side can be used for public active play and socializing, while the east side can serve as private or passive activity area.

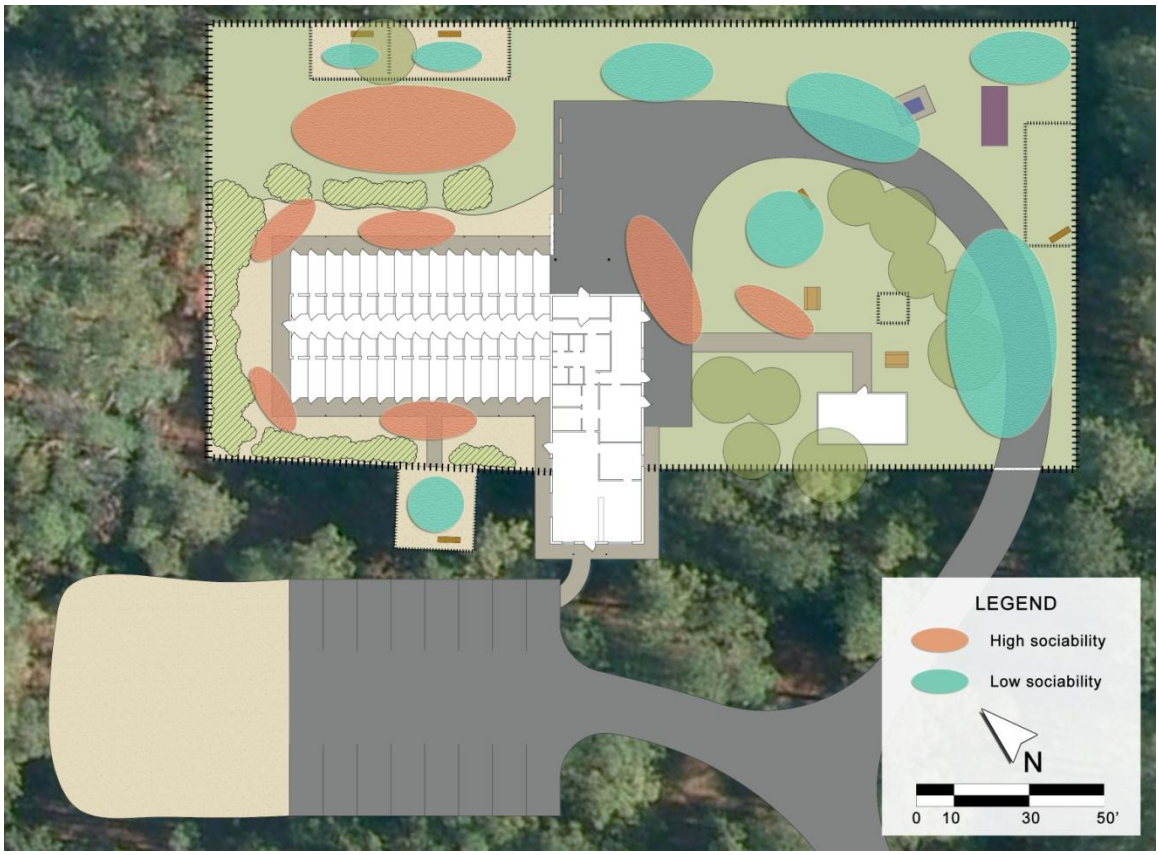


Figure 4.11 Sociability of spaces

4.2 Animal Shelter Landscape Design

By using the three categories of guidelines generated in chapter 3, a design that improves interactions between people and dogs begins to evolve. The information gathered from the above site inventory and analysis, along with problem identifications and solutions, is then applied to further refine the physical design. Finally, to solve existing site problems and promote the relationship among people, animals and space, a master plan of the Athens Clarke County Animal Control outdoor landscape is generated.

Master Plan (Figure 4.12)

The design consists five major components: a pedestrian walkway, the fenced off-leash dog runs, the lawn playground, the “dog ramble”, and the outdoor patio (Figure 4.13). By relocating the staff parking and the dumpster, the meandering but legible walkway is able to go through and connect the west and east side of the fenced area. This walkway provides guidance for visitors walking shelter dogs, encouraging them to fully explore the site. All important areas and features such as dog runs, lawn playground, pool and bathing area, the “dog ramble”, dog memorial and the outdoor patio are connected by the pedestrian thoroughfare. In addition, some dog training equipment, including rolling ramps, crawl tunnels and an agility walk are placed along the walkway to further enrich the walking

experience and interaction with dogs. With this pedestrian walkway providing primary circulation, and other secondary paths to support it, the overall accessibility of the landscape is improved, making it more legible, functional and interesting (Figure 4.14).

Figure 4.12 Master Plan

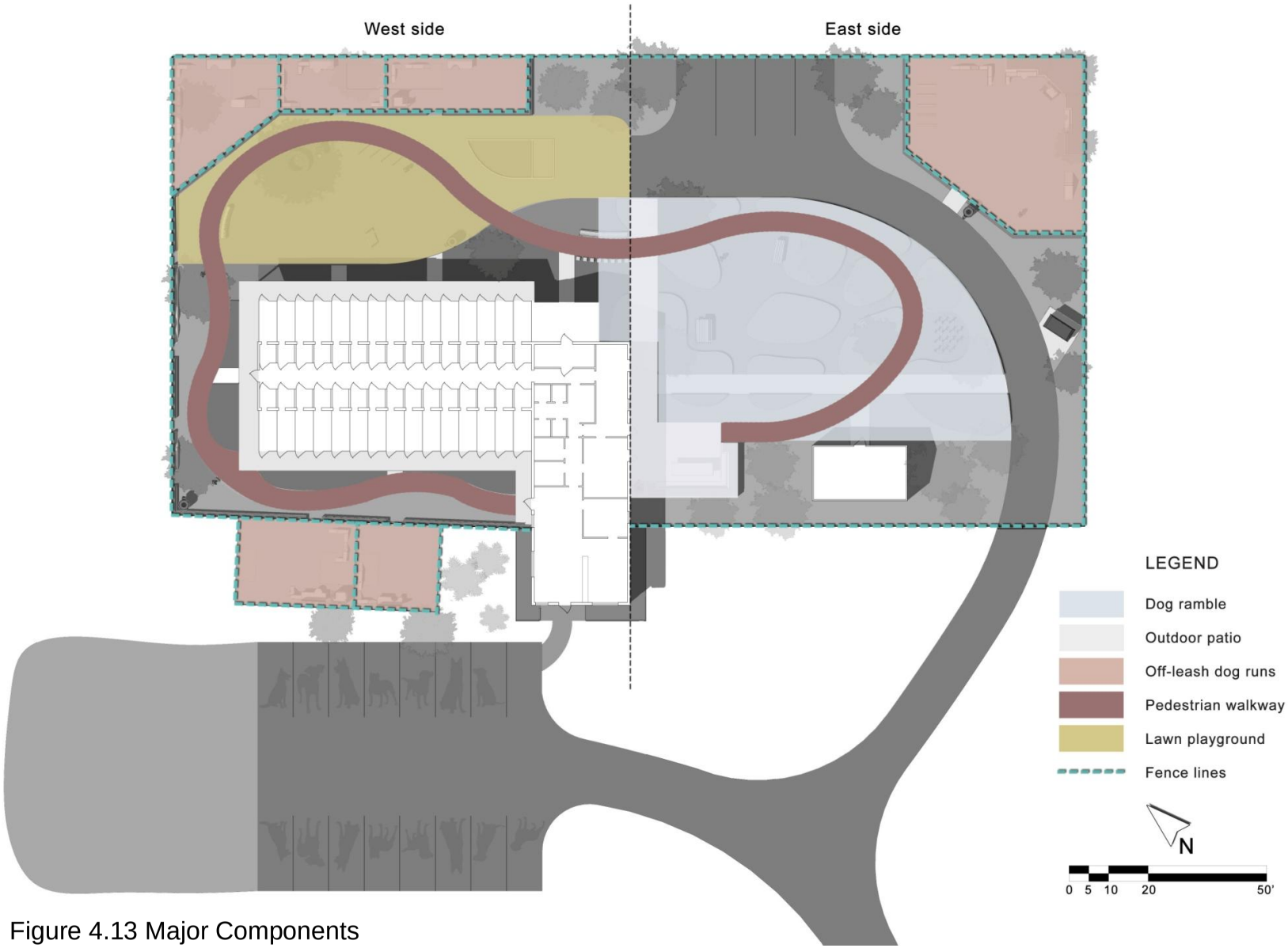


Figure 4.13 Major Components

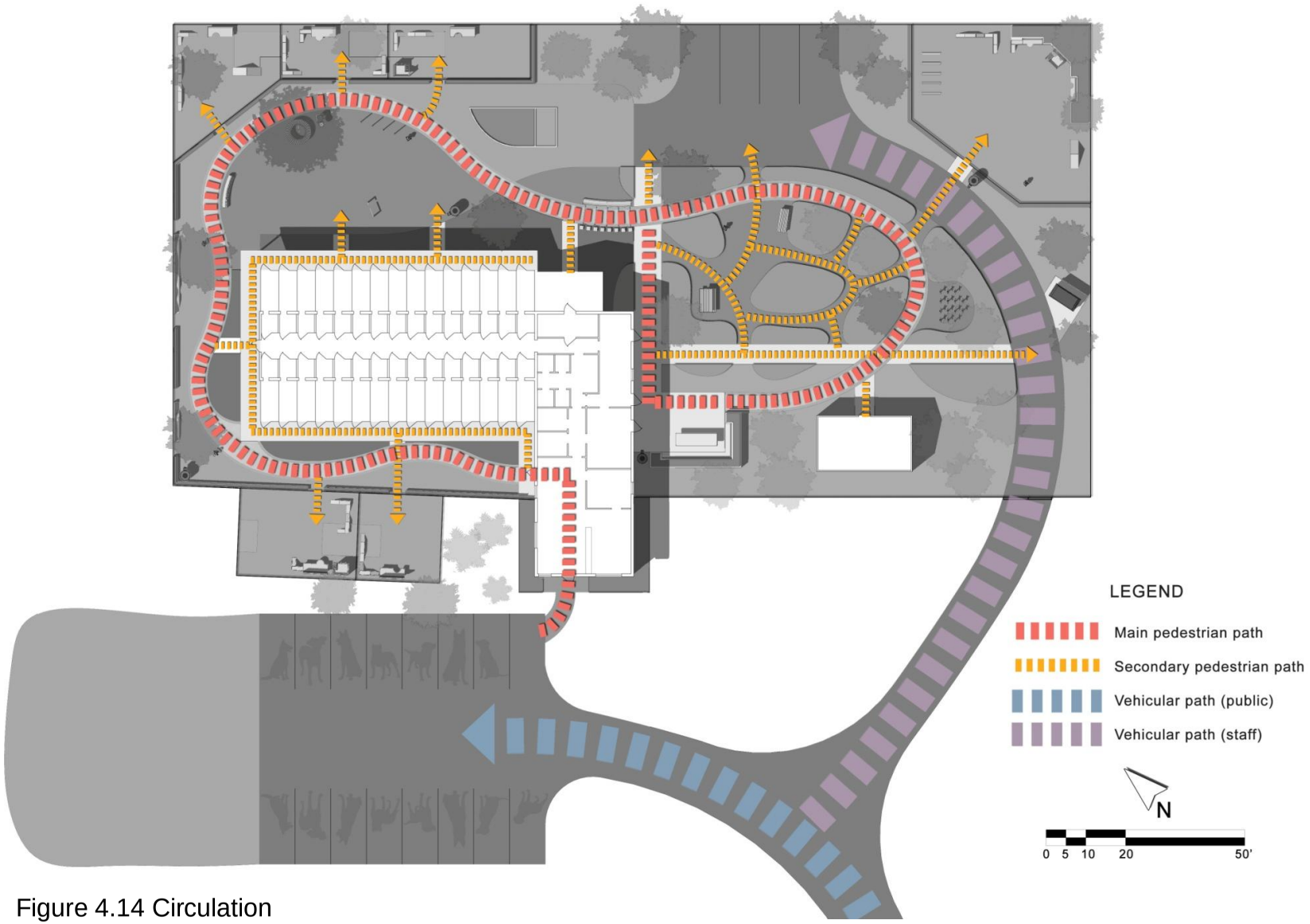


Figure 4.14 Circulation

Another important part of the shelter landscape is the collection of off-leash dog runs. The existing four dog runs along the perimeter are redesigned, and two new dog runs (upper left and lower left corner) are added next to them in order to make full use of the margin spaces and provide space for more one-on-one interaction between people and dogs. Rather than keeping the pure gravel surface, small areas of natural grass and shade trees are added in the dog runs. Additional outdoor equipment systems combining dog play, dog house and seating are placed in the dog runs, not only enabling a more enriching experience for the dogs, besides sitting and watching, but uniting the six dog runs as a recognizable and memorable system, too.

The playground at the back of the shelter building serves as the most active play area. The large area of synthetic grass withstands heavy use and allows water to infiltrate, thus eliminating erosion and muddy, dirty look. The synthetic lawn also requires minimal maintenance, and will stay good looking and usable all year round. A deciduous native tree is planted at the edge of the lawn, along with tree benches, a water fountain and other leashed-dog play equipment. Across the walkway are the pool and bathing area, where dogs can enjoy a refreshing swim on hot days and be bathed by the volunteers. Additionally, dense shrubs are planted along the lawn and dog kennels to help reduce barking (by limiting the visibility of other dogs), and by providing a barrier to dampen noises.

On the east side, the dog ramble is also a fundamental part of the shelter outdoor landscape. In contrast to the west side, the observed existing recreation activities on the east side are more passive. Reinforcing this feeling, the natural groves of meadow plants and paths between them form a comfortable, relaxing space. The labyrinth-like paths are designed to encourage rambling and wandering around, but are not so complicated as to confuse the walkers. The meadow forms are also arranged to create gathering spaces besides paths: a picnic table and a bench provide the option of having a rest and watching people and dogs walk by. In addition to all the playing structures, a memorial space is designed to remind people of the fact they are visiting a shelter. This small dog memorial is placed on the far-east edge, in order to commemorate the dogs that have been put to sleep and stimulate deep rethinking about our ownership with pets.

Next to the building and the dog ramble is the outdoor patio. By extending the existing concrete surface along the building, a patio space with table, bench and surrounding planters is created for volunteer or staff gatherings. The patio also connects north to the staff parking and extends east to the dumpster, keeping the staff maintenance work straightforward and convenient. There are also other unique features along the building, such as a memorial walkway at the front door, paved with donors' bricks; guest parking spaces that have dog silhouettes; boards

hanging along the fences with information on humane education, newly adopted dogs and animal behavior tips; and trash cans attached with waste bag dispensers to facilitate the dog waste clean-up.

The proposed landscape also reduces its impact on the environment by utilizing pervious materials instead of impervious surfaces where possible (Figure 4.15). The pervious materials used in the landscape include gravel, permeable bricks, synthetic lawn and native shrubs and herbs. These materials cover 75.9% of the fenced area, allowing most of the rain water to penetrate into the ground instead of contributing to the surface runoff. Besides the water pond, the impervious concrete and asphalt materials make up the rest (23.4%) of the surface area, the runoff will be collected by the nearby bioswales or vegetated areas (considering the budget, the parking lots will remain asphalt surface instead of reconstructing with pervious concrete). With these materials and methods integrated, the stormwater during a rain event will mostly infiltrate on site, thus contributing little to the sewage system and reducing the impact on the environment.

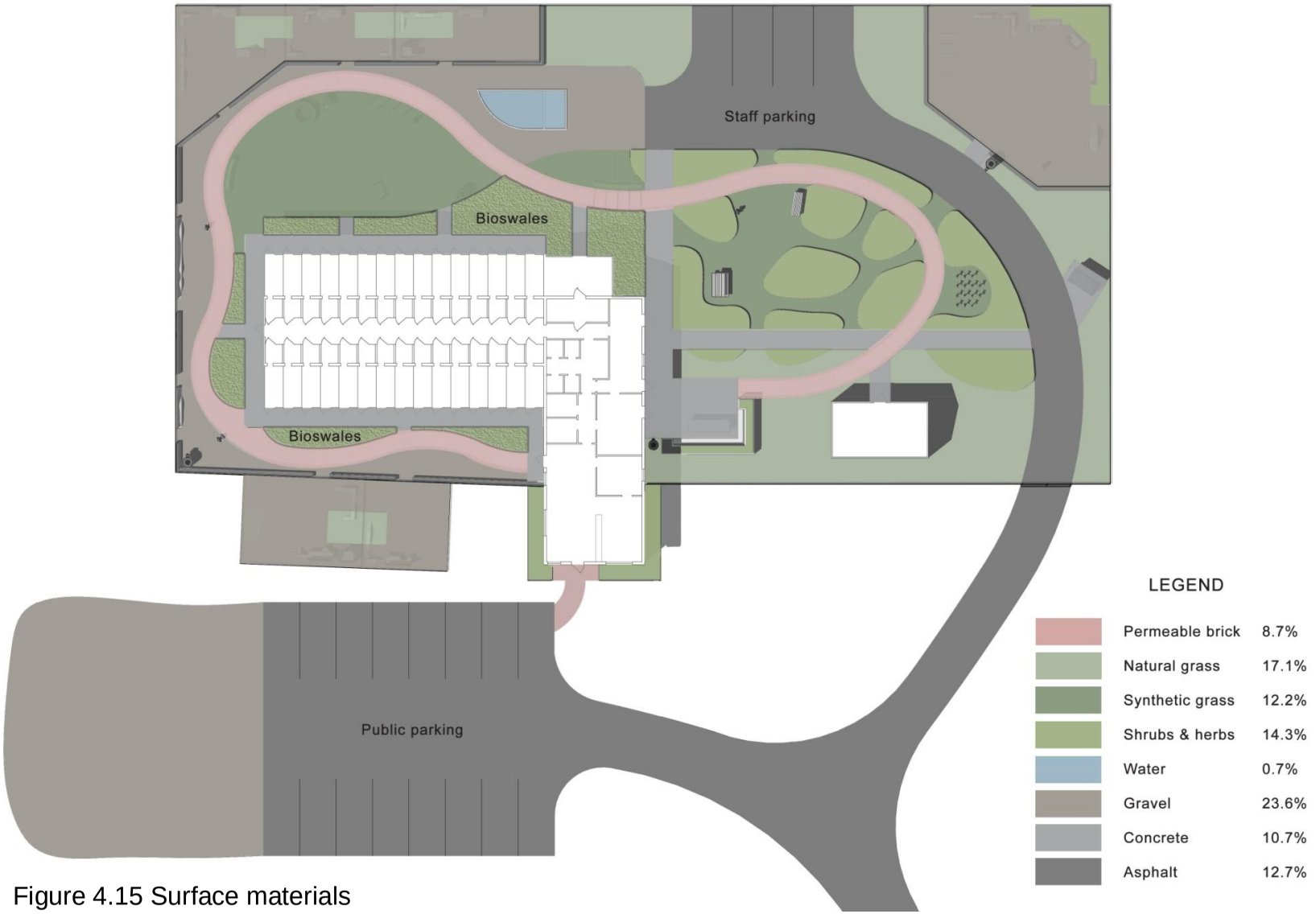


Figure 4.15 Surface materials

Interrelationships of humans, animals and the environment (Figure 4.16)

In this landscape that aims to promote the interrelationships between humans, animals and the environment, various areas of activities are incorporated to fulfill this goal. The areas are divided into three categories according to each link of the interrelationships: human-environment connections, animal-environment relationships, and human-animal interactions. The concept of the animal shelter landscape is embodied in the design of physical spaces and activities under these three categories.

For human and environment connections, several eco-friendly and natural spaces are integrated into the shelter landscape. These areas include the bioswales planted with natural grass, sedges and forbs that can deal with the contaminants from the bathing area and in the dog urines; the planters along the fence that soften the edge and relieve its unwelcoming look; the synthetic lawn area and the large deciduous tree that provide aesthetically pleasing space and comfortable shade; the dog ramble and surrounding area that have naturally planted native meadows, native trees and natural grass lawns. These areas provide people a good opportunity to enjoy the beauty of nature while sitting or walking around. Also, the dog silhouette parking lot, memorial walkway and outdoor patio provide unique and memorable experiences of parking, donating and socializing, thus changing their value to the shelter environment as well.

For animal and environment relationships, a water pond and various sizes of off-leash dog runs are arranged along the fence. A collection of dog playground equipment can also serve as a catalyst to increase dogs' involvement with the space and enrich their playing experience. Their activity also animates the space itself. In heavy-use areas, synthetic grass is used as ground surface to stand the impact of play and avoid muddy, dirty playgrounds for the animals. Because dogs would like to relieve themselves along the perimeter, the areas near the fence are paved with gravel to let the urine drain quickly, reducing the smell and possible stains. Plastic fire hydrants are also placed around the site for dogs to mark territory. Finally, the dog ramble and deciduous trees which drop foliage encourage dogs to walk around and explore the area, greatly enriching their environment's attractiveness, in addition to the dog runs and other utilitarian equipment.

For human and animal interactions, various spaces and a circulation system that connects them are designed to encourage dog walking and exercise. The pedestrian path brings people and their dogs through the site, from dog kennels to dog runs, from lawn playground to water pond and bathing area, and from dog ramble to the outdoor patio. The boards hanging along the fence also provide information about dog behavior and care and training tips. Considering the shelter's need to keep dogs leashed unless in the dog runs, several unique pieces

of dog play equipment are specially designed for use by leashed dogs (more details will be discussed later in the enlargement plans).Together with the pedestrian path, dog runs and the playground equipment, the human activities of dog walking, playing and relaxing are unified as a whole system. This system of interacting with dogs can function as a series of therapeutic activities, unintentionally reducing stress and improving people’s mental health.

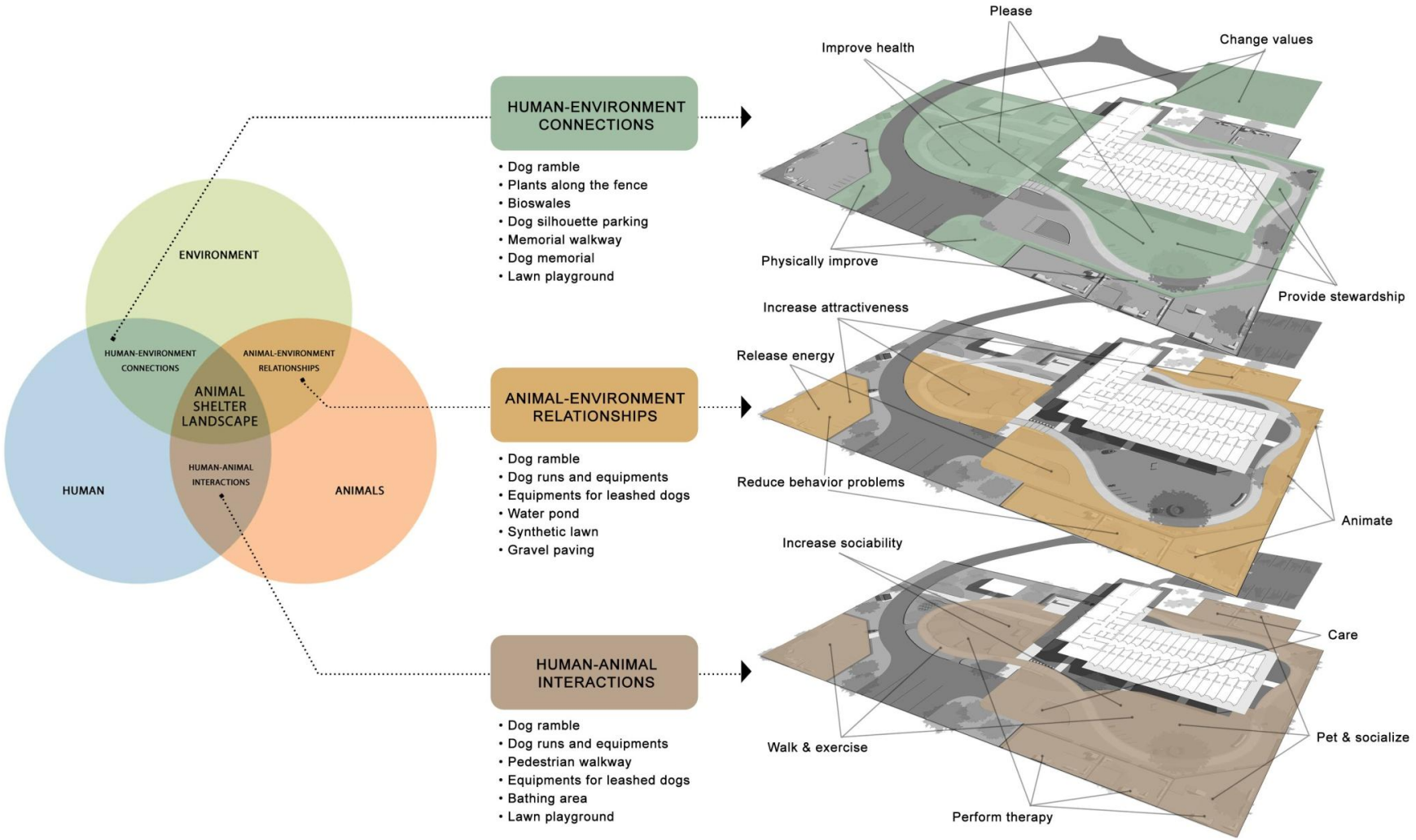
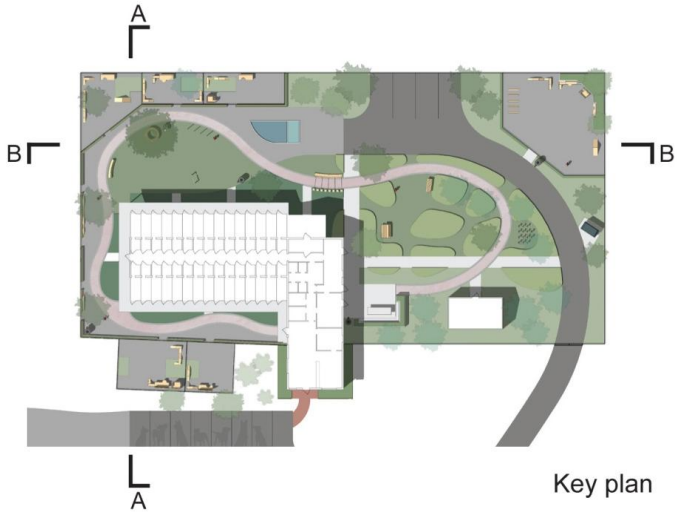


Figure 4.16 The interrelationships in the shelter landscape

Perspectives and enlargements

In order to illustrate the design in a more intuitive way, rendered section perspectives (Figure 4.17) and two bird eye views (Figure 4.18 and Figure 4.19) were generated. Furthermore, since the design includes a number of detailed elements that cannot be seen in the master plan, three enlargement plans and correlative perspective views are added to show these specific ideas and better support the design.



Key plan

Section perspective A-A

Section perspective B-B

Figure 4.17 Section perspectives

Figure 4.18 Bird eye view 1

Figure 4.19 Bird eye view 2

Enlargement one: the entrance area (Figure 4.20 and Figure 4.21)

The original concrete walkway connecting the parking lot to the front door is reconstructed with bricks that are printed with donors' names. This memorial walkway will encourage people to donate as well as adding to the identity of the shelter. The sidewalk around the front of the building is turned into planters (Figure 4.20, Bird eye view of the entrance area), which also extend along the foot of the fence and soften the hard edges. These planters are raised one foot to keep dogs' urine out from the plants. The line of planters along the fence are intermittently replaced by the rolling dog walk ramps, which add more flavor to the dog walking experience (Figure 4.21, Perspective 1). In addition, the fence is also decorated with boards that display humane education information, dog behavior tips and adoption news. Where the first board starts, dog leashes and collars are weaved into and hung on the fence to further improve the sense of place (Figure 4.21, Perspective 2). Perspective 2 also shows the bioswales that collect and infiltrate rain water from the roof and surrounding area.

Enlargement two: the lawn playground area (Figure 4.22 and Figure 4.23)

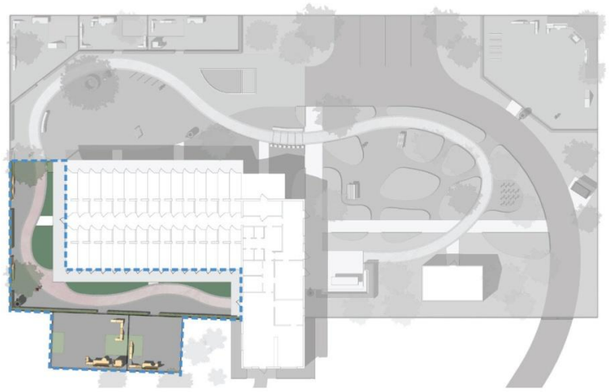
In the lawn playground area, a large deciduous tree and a tree bench is put in the corner to provide shaded seating (Figure 4.22, Bird eye view of the lawn playground area). A double water fountain next to the tree bench brings relieving

potable water to both people and dogs after active play. The equipment in the dog runs is designed to promote human-dog interactions: various kinds of dog walk ramps are connected to each other and to the dog houses or dog benches. These dog benches are designed for dogs to interact more closely with people on both the convex and concave side (Figure 4.23). The playground equipment on the synthetic lawn is specially designed for leashed dogs, such as the dog crawl tunnel that has a cut slot to let the leash go through, the dog jump that also has a cut for those leashed dogs that choose to go under, and the weave poles that will not tangle the leash while playing. Next to the stairs on the pedestrian path are a slide and an agility walk, which also enhance the walking and playing experience (Figure 4.23). Close by, the water pond is divided into two parts to distinguish water play and dog bathing, and is placed in the corner to prevent disturbance to other areas (Figure 4.22 Enlargement plan 2 and Bird eye view of the lawn playground area).

Enlargement three: the dog ramble area (Figure 4.24 and Figure 4.25)

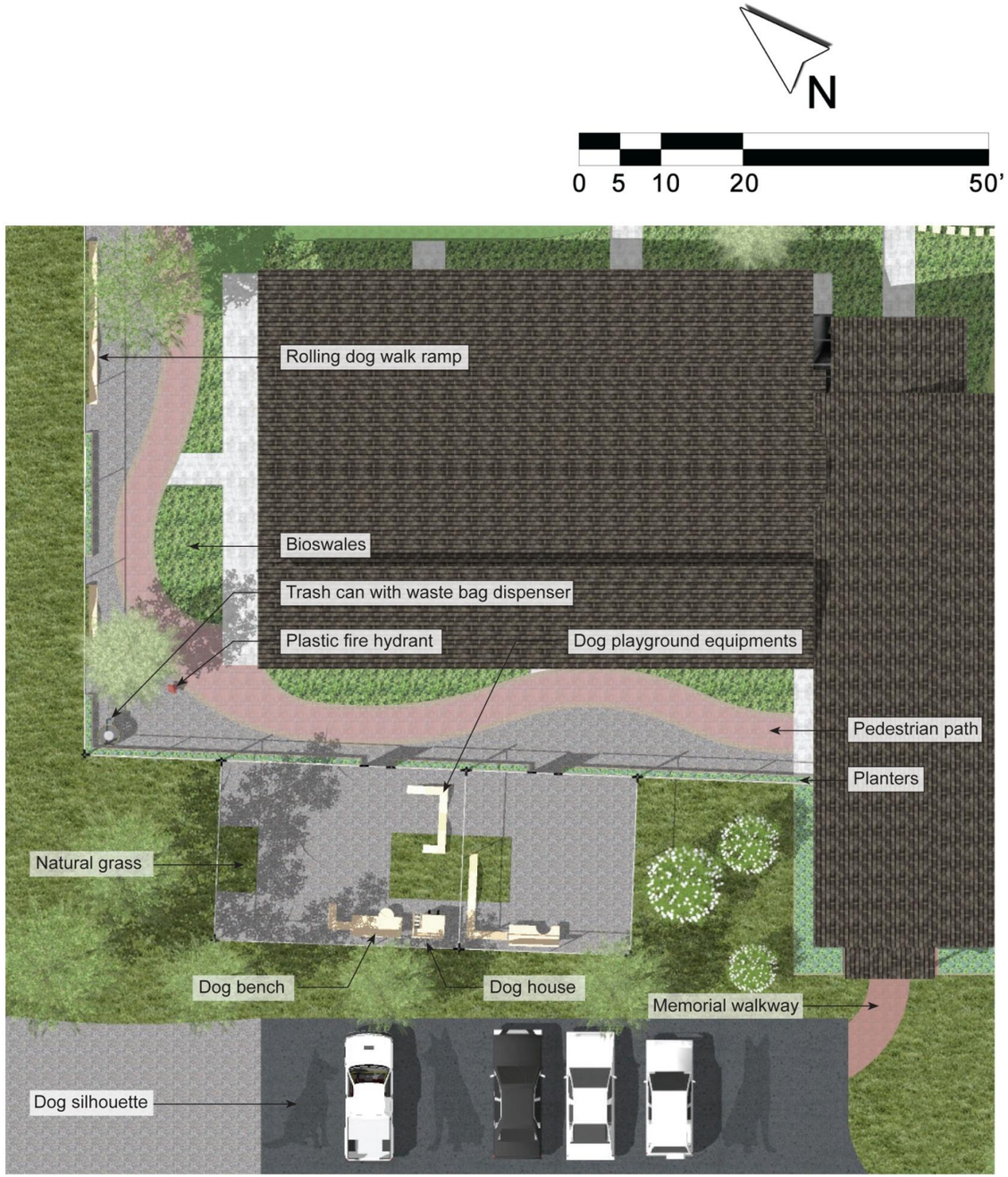
In contrast to the active lawn playground area, the dog ramble area is designed to encourage passive activities such as rambling, sitting, talking and watching (Figure 4.24). There is a picnic table and a bench in the dog ramble, offering another spot to rest, chat and eat while surrounded by beautiful native

meadows (Figure 4.25, Perspective 1). The patio next to the building is designed to create a semi-public space for volunteers to gather and socialize, and for staff to have small outdoor meetings or have a lunch break (Figure 4.25, Perspective 2). In the small memorial area, several crosses with dog collars are placed together to symbolically commemorate dogs that have been put to sleep due to failed dog-human bonds (Figure 4.25, Perspective 3). This place serves as a kind reminder for people to more carefully consider their responsibilities with pets either when they are getting a pet or giving up one. Lastly, the largest dog run is put in the upper right corner of this area to attract more people to this side. More equipment is placed in this dog run, as well as two dog benches and a planter with some shrubs and trees to make the space more visually pleasing and comfortable (Figure 4.25, Perspective 4).



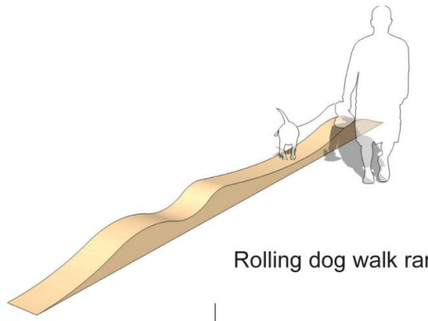
Key plan

Bird eye view of the entrance area

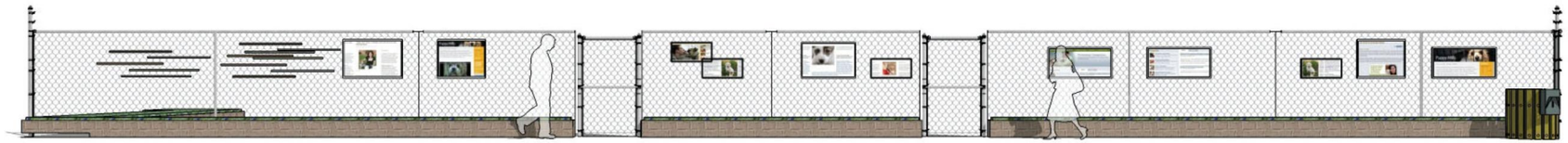


Enlargement plan 1: the entrance area

Figure 4.20 Enlargement 1: the entrance area A



Rolling dog walk ramp



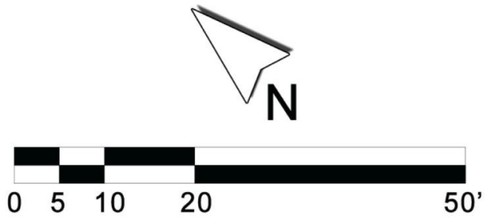
Boards with humane education and pet adoption information

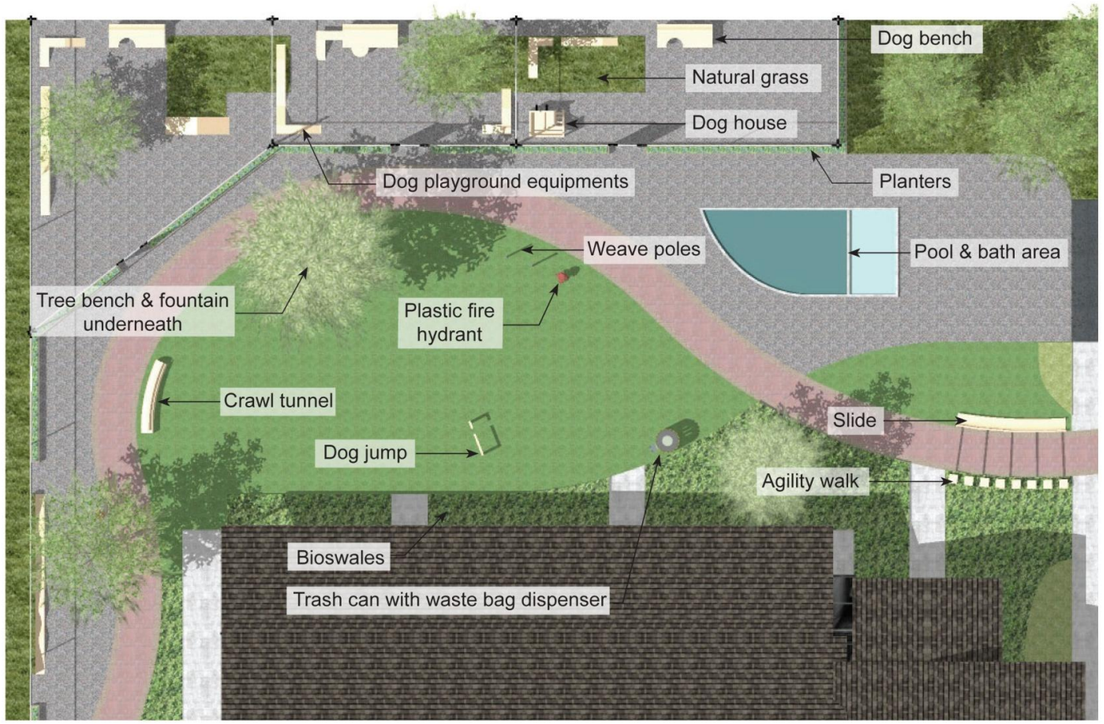
Perspective 1: The rolling dog walk ramps

Perspective key plan

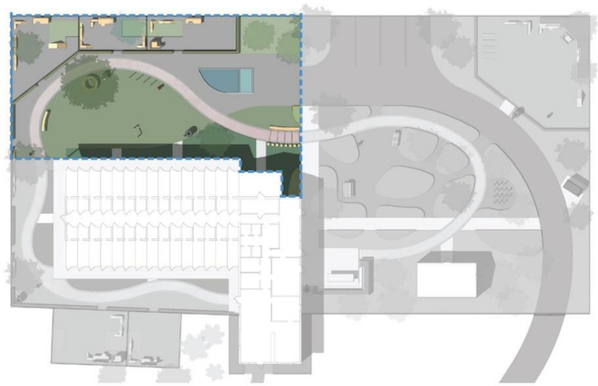
Perspective 2: The pedestrian walkway (dog leashes and boards on the fence, bioswales around the kennels)

Figure 4.21 Enlargement 1: the entrance area B





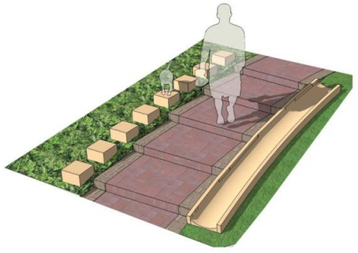
Enlargement plan 2: the lawn playground area



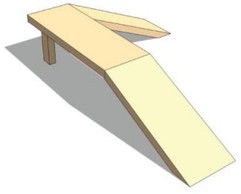
Key plan

Bird eye view of the lawn playground area

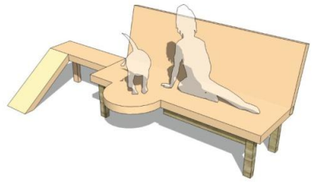
Figure 4.22 Enlargement 2: the lawn playground area A



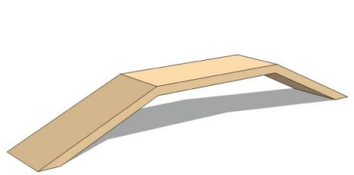
Agility walk and slide



Dog ramp A

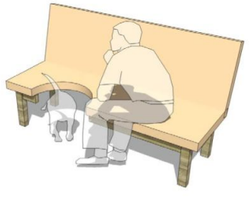


Dog bench A

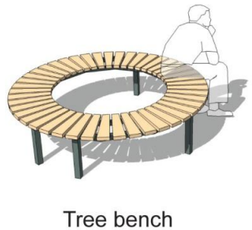


Dog ramp B

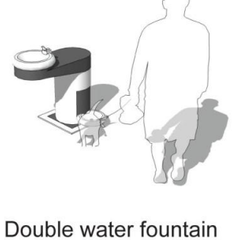
Dog house



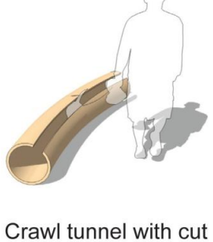
Dog bench B



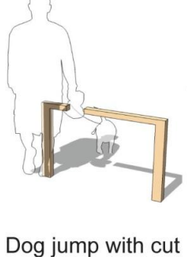
Tree bench



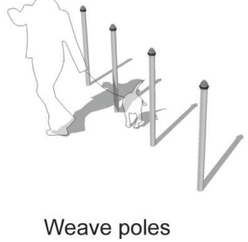
Double water fountain



Crawl tunnel with cut

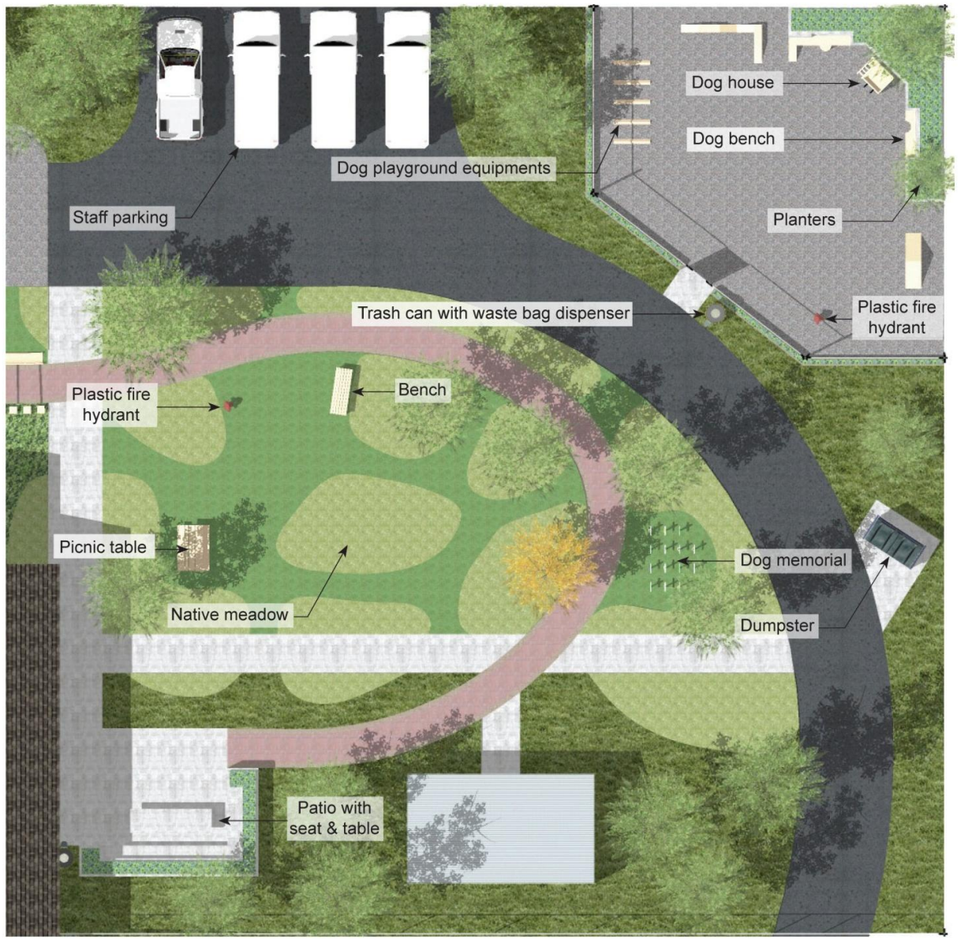


Dog jump with cut



Weave poles

Figure 4.23 Enlargement 2: the lawn playground area B



Enlargement plan 3: the dog ramble area

Key plan

Bird eye view of the dog ramble area

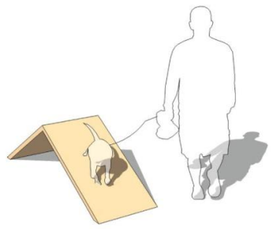
Figure 4.24 Enlargement 3: the dog ramble area A

Perspective 1: the dog ramble

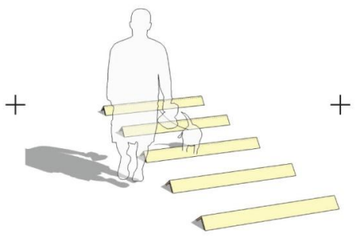
Perspective 2: the outdoor patio

Perspective 3: the dog memorial

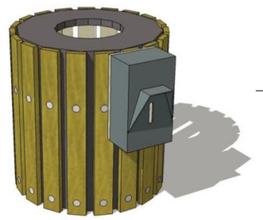
Perspective key plan



Dog ramp C



Dog hurdles



Trash can with dog waste bag dispenser

Perspective 4: the large dog run

Figure 4.25 Enlargement 3: the dog ramble area B

4.3 Dog Park Design

In addition to the animal shelter landscape design, this thesis takes one step further to envision a dog park next to the shelter. Existing dog parks in Athens, GA are located mainly in the south area, while Sandy Creek Dog Park, the only dog park in the north, is inconveniently located (Figure 4.26). Proposing a dog park at this animal shelter location will give people living in the north a convenient choice, and the noise will not bring disturbance since it is near the airport and few people live nearby. On the other hand, adding a dog park next to the animal shelter is very likely to attract more visitors, volunteers and adopters, thus increasing the public awareness of the need to save abandoned animals. Plus, the dog park will further extend the concept of human-animal-environment interrelationships, completing a landscape system that not only brings joy, but also saves lives.

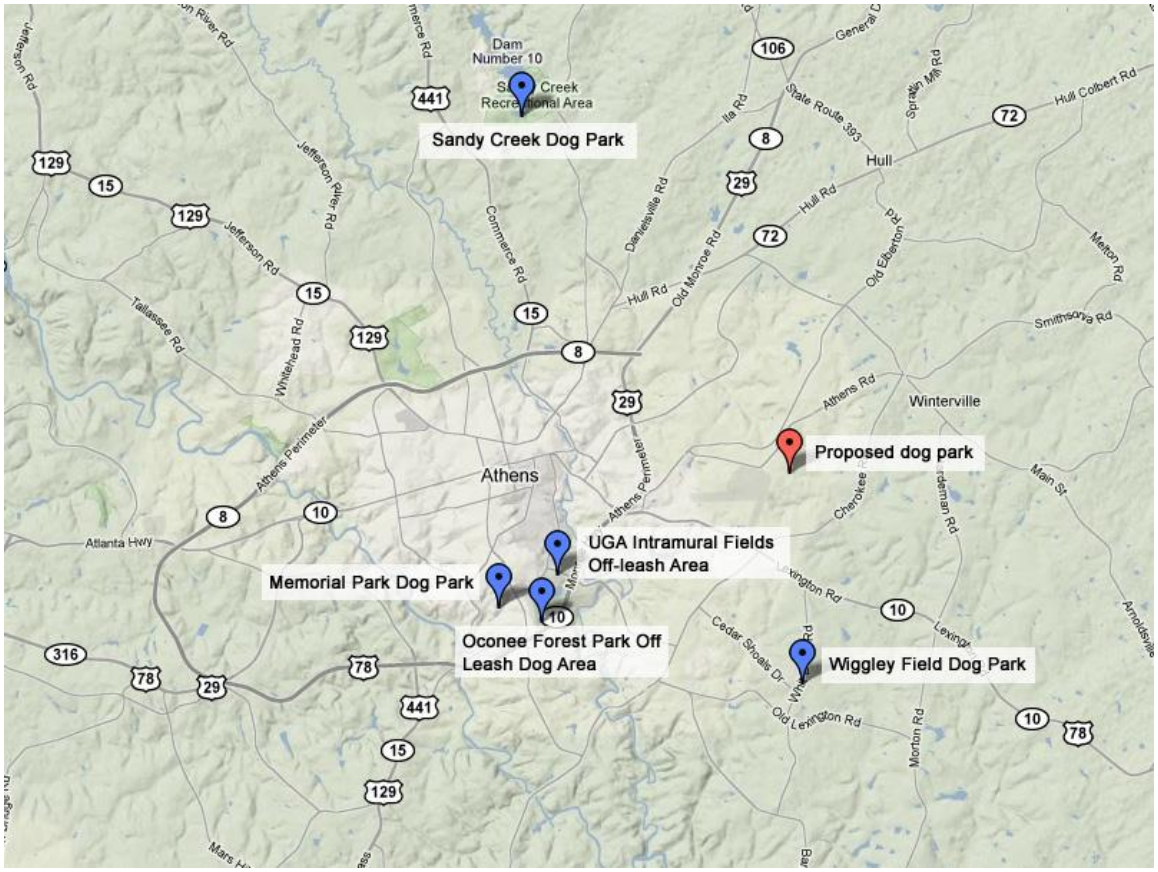


Figure 4.26 Existing dog park locations in Athens, GA

A master plan (Figure 4.27) and a bird eye view (Figure 4.28) represent the design ideas. The dog park includes the successful components in the case studies such as large leash-free area, separated small dog area, double-gated entry, maintenance entrance, water access, and plenty of parking spaces. The unsuccessful aspects in the case studies are avoided by providing plenty of shade structures or shade trees, using durable surface materials such as tanbark to avoid erosion, and providing enough seating and picnic tables for people to comfortably watch the dogs play. In addition, the benches are placed in an “L”

shape to encourage park users' conversation while watching the dogs play, and other park amenities such as playground equipment and a restroom with dog waste composters are conveniently placed. Being located in a forested area, the park also includes a trail for people and their dogs to explore the woods. The idea is to not only design a park enjoyable to dogs, but for their owners as well.

The dog park design also considers the connection to the animal shelter landscape. In terms of design language, the same organic shapes are used in the dog park as the dog ramble in the shelter, but are designed with different materials such as tanbark, sand and water. A similar, legible pedestrian thoroughfare is designed to guide people throughout the site. As for the physical connections, the dog park's parking lots and sidewalk are joined together with the animal shelter, allowing people to easily switch from one visit to another. The gravel lots can be used both by the dog park or the shelter, which adds the total parking to over 80 spaces. Part of the dog park also shares the fence line with the shelter landscape, saving some cost while enabling people to have interesting views from both directions, as well as encouraging people to go from the dog park to the shelter and vice versa. However, in order to prevent potential disease infection, 3-feet high barrier boards are added along the shared fence to limit interactions between dogs in the shelter and the park.

Figure 4.27 Dog park master plan

Figure 4.28 Bird eye view of the dog park and animal shelter

CHAPTER 5

CONCLUSION

As a relatively new approach to exploring the innumerable possibilities of landscape architecture, this thesis started by identifying existing problems in pet-human bonds and animal shelter landscapes, then researched the interrelationships among humans, animals and the environment as well as relevant case studies, and finally proposed a landscape design application for an animal shelter and envisioned an adjacent dog park. In each of these three steps, the thesis started from different directions when discussing the current issues, but all these discussions became focused on one core concept: reconnecting people and animals in the landscape. During this process, several conclusions are summarized as follows:

In the problem identification chapter, background information is provided to show some humane pioneers' early awareness of preventing cruelty to animals. However, there are still vast populations who are not aware of the long-term responsibilities it takes to raise a pet. As a result, millions of dogs and cats end up in animal shelters in the U.S. each year. Due to the lack of space in the shelters and increasing number of pets being abandoned, half of the animals taken into

the shelters are euthanized. But heart-breaking, massive euthanasia is not the only tragedy happening to the shelter animals: the living ones are also suffering from the stressful shelter environment and lack of human care and love. Many of these animals start developing problematic behaviors or becoming withdrawn, making them even less adoptable. Fortunately, there is research indicating that human contact provided by shelter volunteers or visitors can help reduce behavior problems in shelter animals, but the shelter environment has not been well-researched, and is usually less welcoming and less visually pleasing, especially the outdoor area. From the perspective of landscape architecture, improving the outdoor environment to make it more enjoyable and memorable for people is a fundamental part of its mission. When it comes to the animal shelter landscape, a good design may also help save lives.

When designing an animal shelter landscape, usual considerations may not be sufficient, because one more component is added to the common people-space relationships --- the animals. Thus the next chapter researched on the concept of interrelationships among people, animals and the environment by understanding the three links of each two components, discussing the connecting ideas, and applying them to the design concepts. The research indicated that there were all kinds of reciprocal benefits in each of the human-animal, animal-environment, human-environment links, and the thesis further envisioned

that together they will form an ideal system in which people, animals and the environment connected with inter-beneficial relationships. After discussing how the animal shelter landscape functions, four case studies including two dog parks and two animal shelters were conducted. Successful features in these cases were studied while less successful ones were also identified to provide guidance to successful shelter landscape design, such as water access, shade structures, durable surfaces, low maintenance and so on. In addition, the thesis also claims the animal shelter landscape can be educational, encouraging and inspiring; a theory which is applied to the physical design in the design chapter.

After developing the concepts of animal shelter landscapes and generating design guidelines from case studies, the thesis went into the design phase using these concepts and guidelines. A series of site analysis including location and context, general existing condition, drainage and erosion, circulation and behavior observations were conducted for a thorough understanding of the site. The site analysis revealed important opportunities and constraints such as the usage and activity potentials in different parts of the site, illegible circulation and heavy erosion in some areas, etc. This information suggested in the analysis enabled the author to make use of valuable existing features and resolve site problems in addition to merely applying the concept and guidelines into a site.

Following the analysis is the design process during which the author applied the interrelationship concepts to physical design. The concepts consisted of three components: human-environment connections, animal-environment relationships and human-animal interactions. For human and environment connections, eco-friendly and natural spaces are integrated into the landscape including bioswales that deal with dog urine and stormwater runoff, the planters along the fence and synthetic lawn that provide aesthetically pleasing and durable space, the dog ramble that is planted with native meadows and native trees. Also, the unique dog silhouette parking lot, memorial walkway, and dog leashes and boards on the fence provide memorable experiences for the visitors and create further sense of place. For animal and environment relationships, a water pond and a series of off-leash dog runs are provided for shelter dogs to release their energy. A collection of dog playground equipment also enhances dogs' involvement with the space. Moreover, gravel areas around the perimeter are designed for dogs to patrol along and relieve themselves. The dog ramble and deciduous trees enrich attractiveness of the environment for dogs. For human and animal interactions, various spaces and a circulation system are designed to stimulate dog walking and exercising such as the fully-equipped dog runs, the lawn playground, and the natural dog ramble. The author was able to design a series of innovative detail design approaches that meet the specific needs of the animal shelter dogs.

Several unique pieces of play equipment such as the crawl tunnel and dog jump, are specially designed for leashed-dog play, addressing the need to keep dogs leashed in the shelter without compromising the fun of playing.

Moreover, each of these concepts is individually translated into physical features that create spaces and activities which support the three relationships, and these physical features are mixed together into the site. As a result, one single concept can be seen in various areas, or one area of the site may address multiple concepts. For example, the human-animal interactions are embodied all over the site, including the pedestrian walkway and dog ramble that encourage dog walking, the dog runs and lawn playground with equipment that stimulates playing and training, and the information boards on the fence that display dog behavior and training tips to facilitate the interactions. Further, the organic shaped, naturally planted dog ramble area can serve as a small labyrinth for dogs to explore, while the native meadow and deciduous trees provide people a pleasant feeling and strengthened sense of place, addressing both the concepts of animal-environment and human-environment relationships.

Considering that the locations of existing dog parks in Athens, GA are not very convenient for the residents around the northeast area, the author took one step further and designed a dog park next to the shelter. The idea was not to limit the dog-friendly design to the shelter, but expand it into a public dog park to let

more dogs and their owners enjoy the benefits of human-pet-environment interrelationships. The dog park includes the successful components in the case studies such as large leash-free area, separated small dog area and water access. Plenty of shade and durable surface materials are provided to better meet the need of park users. The park also includes a trail in the woods for people and their dogs to explore. Furthermore, the dog park design considered connections with the animal shelter landscape: a similar pedestrian circulation and organic shapes are used in the dog park as the shelter landscape, and physical connections such as the joined parking and sidewalk allow people to easily switch from the park and the shelter. Besides, the dog park also shares part of the fence line with the shelter, which saves some materials and provide views both in and out, reminding people that this place is a complex of “dogs’ place”.

Since this thesis is exploring a relatively untouched field of opportunities in landscape architecture, some design approaches are experimental and a lot of further research needs to be done. The author also limited the discussion to dogs only, not being able to address other pet animals that are also suffering from the lack of people’s attention, care and love. Certainly, all those complicated problems related to pet overpopulation, stray animals and animal euthanasia cannot be resolved at one time, not to mention to be resolved by this one research project. However, the author holds to the belief that with more and more attention drawn to

shelter landscapes and shelter animals, we can better spread humane education around the world, more deeply explore the potentials of landscape architecture, and more quickly approach the optimal relationships between humans, animals and the environment.

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