“PHYTO’S LANDSCAPE: A LANDSCAPE DESIGN STRATEGY FOR A GERMAN SHEPHERD RESCUE FACILITY”

A CREATIVE PROJECT

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BY

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Even though some days I felt like I was alone on an island of chaos, there was always a group of folks cheering me on – thank you all!
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CHAPTER I: Introduction

This is a three-part landscape design study that focuses on canine-centric landscape design, promotion of the ancient canine-human bond, and canine wastewater management to answer the following research question: What landscape architecture design principles can be applied to prototype a model German Shepherd Dog rescue facility that encourages canine behavior rehabilitation, promotes community engagement, and includes sustainable wastewater design?

In the field of landscape architecture, great attention is paid to designing spaces that positively contribute to the health, safety, and welfare of users and the public at-large. The smallest design details, such as the height or depth of a step in a public walkway can affect millions of users over the course of its lifetime. Design for canine users is relevant to a professional practice that is predominately concerned with design for humans, there are presently 74.1 million pet-owning households in the United States, a population that has grown 35% in the last decade, and includes 43.3 million household that have at least one dog.¹

A contradiction to the increase in pet ownership, is that many dogs are left alone while owners work. This situation leaves dogs to become bored, anxious, or even aggressive due to isolation and lack of training, socialization and exercise.²³ Aggression toward people, aggression toward animals, or other unwanted behavioral issues are the top three reasons cited for pet relinquishment.⁴ Animals housed in those facilities are often visibly stressed, and although they are physically cared for, relinquishment to a shelter environment is disorienting and generally emotionally traumatic for canines. Research

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indicates that animals and humans react to stress in similar ways.\textsuperscript{5} A life-changing event such as relinquishment could be a catalyst for post-traumatic stress disorder (PTSD) for pets.

Providing the most hospitable environment possible to a group of animals that have been abused or abandoned should be improved for the sake of the dog. However, for the sake of the economic sustainability of these animal housing facilities, it is understood that well-adjusted dogs get adopted, through which process the facility is allotted the funds and space to support more animals in need. Once adopted, a happy, well-socialized dog could make for happy, safe humans.

While some breeds cope better than others when introduced to a kennel environment, stressed dogs can become anti-social, leading to poor behavior or even euthanasia due to perceived aggressive behavior. German shepherd dogs (GSD) are a breed that frequently falls into this unfortunate category of adjustment. The GSD breed has a long history of being protectors and guardians, and it is unfortunate to see these handsome animals relinquished to shelters and rescues. Due to a multitude of factors, this intelligent, loyal, and hard-working breed is often unwittingly perceived as vicious or aggressive in the traditional densely populated shelter environment when in reality the GSD is likely exhibiting a response to stress. Unless relinquished to a rescue organization, oftentimes GSDs do not get an opportunity for adoption in a country that euthanizes about eight cats and dogs per minute due to pet overpopulation.\textsuperscript{6} Considering these circumstances, it is important that the GSDs be provided a stable, peaceful residence at a rescue facility until they are adopted into a new home. The next step is to create a rescue kennel environment, being called “Shepherd’s Peace GSD Rescue” (Shepherd’s Peace) within this study, that displays GSDs in the most positive light, by providing them an environment in which they may be calm and relaxed. Similar to therapeutic landscapes that provide specific opportunities to human suffers of PTSD, improved design considerations that create rehabilitative environments in rescue and shelter facilities could dramatically impact the quality

\textsuperscript{5} Jeffrey, Kluger, "Dog Interrupted," Time. March 9, 2015, 42.

of experiences for these temporary canine residents. And as it relates to the study of Landscape Architecture, adopting out well-adjusted, less anxious dogs back into a community directly contributes to the health, safety, and welfare of humans.

There are also notable environmental factors considered within the design scope of this project. Animal boarding facilities require an enormous amount of energy and water, and create large amounts of biological waste that includes pathogens, which can contaminate the environment and compromise the health of humans and other animals. Kennel environments consume large amounts of water through hydration of the animals, and cleaning the animals and housing units. Where a typical family of four uses approximately 400 gallons of water per day (gpd), it is estimated that four kenneled dogs use approximately 260 gpd. Meanwhile, outdated and overburdened municipal wastewater management systems are scrambling to meet demand, scoring a “D” letter grade in the 2013 American Society of Civil Engineers Report Card for Americas Infrastructure. The monetary cost and environmental impact of kennels may be diminished by linking these two systems together, through implementation of various water conservation strategies, most notably an onsite wastewater treatment program. Employment of an onsite wastewater mitigation system in concert with other water conservation strategies promotes environmental stewardship, minimizes facility energy costs, can provide an appreciable aesthetic element to a landscape, and lessens the burden on dated municipal sewer systems.

ASSUMPTIONS & DELIMITATIONS

In an effort to manage the content studied herein the following set of assumptions and delimitations have been employed. This study assumes that:

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10 | P a g e
• Topographic changes may be made to the site.

• Existing zoning designations can be renegotiated to accommodate a dog rescue facility.

• If requested, the Marion County Health Department would consider and approve the wastewater management recommendations included herein.\(^1\)

• That human:dog companion therapy benefits people who struggle with the effects of PTSD.

• That human:dog companion therapy benefits canines that struggle with the effects of PTSD.

• Dog park design recommendations established in the study, “Evaluation of off-leash dog parks in Texas and Florida: A study of use patterns, user satisfaction, and perception,” will also satisfy user expectations for this central Indiana project.\(^2\)

This creative project will not:

• Execute interior building design. Instead, use of existing building layout concepts and footprints from existing architectural design typologies will be incorporated into the landscape design.

• Include a planting plan.

• Provide design, construction, or future maintenance cost estimates.

• Address the effectiveness or humanity of canine training methods discussed herein.

• Analyze causes of PTSD in humans or canines.

• Claim to cure PTSD in humans or canines.

• Design therapeutic landscapes for humans suffering from PTSD.

**METHODODOLOGY**


This study utilizes numerous resources to develop design solutions to the research question. Historic imagery and articles, Sanborn Fire Insurance Maps, Baist Atlases, and some geospatial data have been examined to assemble a physical and cultural history of the site and adjacent neighborhood. Meanwhile, a present-day review of site and neighborhood conditions conducted through site visits, further geospatial data inspection, review of internet articles regarding the area, and analysis of demographic information harvested from Environmental Systems Research Institute, Inc.’s Esri Business Analyst Online application. These elements helped to provide a strong cultural profile that the design needs to address.

Chapter II presents and synthesizes the relevant data about canines, wastewater management, and therapeutic gardens to ensure that design directly answers concerns inferred by the research question. Information has been gleaned from scholarly articles, professional journal articles, and books authored by veterinarians, animal scientists and professional trainers regarding health, boarding, and training opportunities, as well as physical and mental attributes of GSDs, to assemble a list of best practices that directly inform a design strategy. A similar content analysis process in reviewing materials submitted by landscape architects, biologists, horticulturalists, and gardeners regarding wastewater treatment alternatives guides assessment of which treatment process(es) is(are) appropriate for this study’s application and site location.

Review of multiple case studies of exemplar design models of kennels and dog parks, which are found in Chapter III, provide assurance and that strategies included in the design solution may be realized. The amalgamation of this information is an outline of design goals and objectives that address needs of rescued GSDs through thoughtful and environmentally conscious landscape design, creating rehabilitative spaces in which they may live, train, and play while awaiting adoption at Shepherd’s Peace.

This study is concluded by sharing a detailed written and illustrative design solution in Chapter IV that aims to address needs of rescued GSDs through thoughtful and environmentally conscious landscape design and creating rehabilitative spaces in which rescued GSDs may live, train, and play while awaiting adoption. Finally, Chapter V is a review of the proposed design solution for the study site that discusses positive and negative attributes of the plan and future study or action recommendations beyond the scope of this inquiry.
This chapter begins with a review of the evolution of domestic canines and the GSD breed, followed by an investigation of the typical physiological and psychological constitution of GSDs to begin identifying what an appropriate landscape design is for them. Other relevant topics explored herein are the effects of stress on humans and canines, and how landscape design can help mitigate stress in a stressful environment. The chapter concludes with an exploration of wastewater management systems and their applicability to an urban animal housing facility.

A BRIEF HISTORY OF DOMESTIC DOGS

The domestic dog, *Canis lupus familiaris*, and humans have been evolving together for millennia. Through this long evolutionary process, it is believed that two things happened: dogs developed the ability to inhibit aggression toward humans, and humans learned to manage dog aggression. This means that both species now inherently are able to work together and read the other specie’s signals. Temple Grandin, PhD., associate professor at Colorado State University, animal scientist, and animal advocate, states that this is why “dogs *always* look at their owner’s faces for information, especially if they need help” (see Figure 1). The co-evolutionary process has caused dogs to be hyper-aware of the desires of their human companions. Dogs are in some ways very psychologically dependent on humans, as the dogs constantly look to humans for affirmation of behavior. It is commonly said in jest that dogs ‘train’ their owners to perform in certain ways that play to the

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Figure 1: Working canine looking to its handler for cues. (Image: Author)

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benefit of dog. For instance, the dog will repeatedly look at the jar of treats, then to the owner. Repeating the back and forth glances until the owner gives the dog a treat from the jar. In this case, the dog has “trained” the human to give the dog treats when the dog gives the signal, glancing stares. In reality, the dog and the human are unwittingly training each other all the time. Each animal’s actions and reactions reinforce the behavior of the other. From the dog’s perspective, “if the human is happy, I am happy,” and this evolutionary trait is part of what makes dogs such trainable animals.14

Understanding of the social hierarchy of canines is expanding as more academic evidence becomes available. Cesar Millan, a self-taught dog trainer, believes that dogs, as descendants from wolves, are pack animals, meaning that they are highly social creatures and will acclimate to join as members of the nearest pack. In some unusual cases, that means befriending exotic animals in zoos or the wild, or in most cases joining an established pack consisting of only humans or humans and dogs. Millan also believes that within each pack is a three-tier hierarchy: front, middle and rear. The ‘front’ tier is the leader who directs and protects the pack by searching for and providing the essentials to survival: food, shelter, and water. The ‘middle’ tier is composed of pack members who act as mediators to maintain the overall energy of the pack. The ‘rear’ tier is made up of the pack members who are the “most sensitive and their job is to alert the pack to danger.” Millan asserts that based on this philosophy, when humans bring dogs into their domestic pack, they must assert themselves as the pack leaders. Failure to do so can result in dogs that are confused or anxious about their pack status, which can lead to aggression.15

New evidence in wolf pack studies indicate that the pack format is not organized as was originally argued. L. David Mech, a Senior Scientist with the United State Geological Survey and Adjunct Professor at the University of Minnesota, has been studying the lives of wolves for nearly 60 years.16 After a 13 year study of wolves on Ellesmere Island, Northwest

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Territories, Canada, Mech concluded that “the typical wolf pack is a family, with the adult parents guiding the activities of the group in a division-of-labor system in which the female predominates primarily in such activities as pup care and defense and the male primarily during foraging and food-provisioning and the travels associated with them.” There are, of course, exceptions to the strict family dynamic when a dead wolf-parent may be replaced by a newcomer, etc. The concept of an alpha male and alpha female fighting other pack males and females for dominance over the pack is misguided. Mech argues that the alpha male and alpha female are the breeders of the pack – the parents. A diagram illustrating a combination of Millan and Mech’s hierarchical concepts are illustrated in Figure 2.

As dogs are decedents of wolves, Mech’s research helps make the case that dogs may need more of a “dog parent” rather than an Alpha-figure. Grandin postulates that dog owners should act as “parents” to their dogs, providing them food, and shelter, while teaching them proper dog manners and establishing limits. She notes that a poorly trained, ill-behaved dog can cause chaos like “an undisciplined, spoiled child gets crazy and out of control and takes over the house.”

The relationship with humans and their dogs continues to grow. 75% of dog owners consider their dogs as not just companions, but as members of the family. This notion is confirmed in the United States, as U.S. citizens spend over $34.4 billion on pets each year for products and services including food, veterinary care, doggie diapers, dog bakeries, automobiles with specialized features for dogs, doggie daycare, and pet insurance policies included as a part of corporate benefits packages.

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GERMAN SHEPHERD DOGS: Physical Profile & History

In this design study, German shepherd dogs are the breed of focus for the rescue facility. Similar to other commonly discriminated against breeds like pit bulls, akitas, rottweilers, and other “aggressive breed” dogs, they are judged based on preconceived notions of viciousness based on well-publicized events (like dog bites and fighting rings) that are most often precipitated by the owner’s ill-conceived training strategies rather than the genetics of any one breed. Founded in 1884, the American Kennel Club (AKC) is considered the American authority on canine breed standards. Their current mission indicates that the Club shall focus on promoting the sport of purebred dogs and advocating for purebred dogs as companions, perpetuating the advancement of canine health and well-being, and working “to protect the rights of all dog owners and promote responsible dog ownership.”

AKC’s Official Standard of the GSD begins with the appearance (see Figure 3), which should come across as being “noble... strong, agile, well muscled animal, alert and full of life.”

To support the air of strength and fitness, GSDs should not be “spindly,” but “substantial,” with smooth, curvaceous outlines rather than harsh, angular outlines. GSD temperament is a “distinct personality” that is “poised” and “confident,” with a facial expression that displays a “direct and fearless, but not hostile” attitude. “The ideal dog is a working animal with an

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22 Ibid.
incorruptible character combined with body and gait suitable for the arduous work that constitutes its primary purpose.”

The GSDs strength and disposition make it well-equipped “to serve in its capacity as companion, watchdog, blind leader, herding dog, or guardian, whichever the circumstances may demand.”

Physical attributes that the Standard uses to define the perfect GSD include standing 22-26” tall at the shoulder blades (depending on gender), possessing a “keen” expression, with “dark, almond shaped” eyes, and pointed ears that are “parallel to each other and perpendicular to the ground, with a “long and strong” muzzle and a “predominately black nose.”

The chest should be “deep” and “solid” but the rib area should not be “bulky” or “barrel-shaped;” the back need be straight; and the tail should be full and hang “in a slight curve like a saber.” And the coat and color of the GSD may not be too “soft, silky, long, wooly...” or white. And finally, the gait should be “outreaching, elastic, seemingly without effort, smooth, and rhythmic.”

In their very artful description, the AKC Official Standard asks breeders to create dogs that perform in two very specific ways: each dog must inherit a very strict visual aesthetic; while also adhering to a specific attentive and willing demeanor. However, the well-intended AKC has created an environment in which only perfection is rewarded. Imperfection is wholly discarded, and although there are plenty of forthright dog breeders, the practice of over-breeding and inbreeding in search of aesthetic perfection has led to genetic concerns for purebred dogs. A purebred pedigree analysis study, which included review of GSD bloodlines, concludes that the amount of inbreeding in purebred dogs has contributed to the “loss of variability and [a] high prevalence of recessive genetic disorders.” The scientists noted their concerns for purebred canine welfare and suggest implementation of international breeding, modification of breed standards, or other solutions to protect

23 Ibid.
24 Ibid.
25 Ibid.
26 Ibid.
the mental and physical health of purebreds. Some of the most common genetic disorders found in GSDs include hip dysplasia, allergies, susceptibility to bloat, and behavioral abnormalities that often display as aggression or nervousness.

In the AKC setting, more emphasis is put on physical features when breeding and mate selections are made, with little interest for emotional or behavioral issues. In the purebred non-competition settings, it is not common practice for breeders to follow-up with their clients, so breeders may unwittingly continue to breed emotionally unfit dogs because they are simply unaware that their litters have any problems.

Of course, not all commonly considered GSDs are purebred, competition show animals. Outside of the perfection of the AKC world, purebred GSDs are generally 24" tall, weigh 75-95 lbs., and live approximately 10-12 years. Anecdotal review of GSD-mix dogs can completely renegotiate basic statistics to reasonably include height ranges from 16-30," weight ranges of 40-120 lbs., and longevity beyond 13 years. It has also been observed that mix-breed dogs are also generally healthier and more emotionally stable creatures. Some theorize that enough evidence is present to indicate that because mix-breed dogs are not being mated for any single trait, like pointed ears or coat color, unsavory traits are usually bred out.

The breed was born in 1899 from the hand of Max Emil Friedrich von Stephanitz. He wanted to create a national breed that showed “attentiveness, unshockability, tractability, watchfulness, reliability, and incorruptibility together with


courage, fighting tenacity, and hardness.”33 Originally intended to work with humans on farms as both herder and sentry, the dogs needed to be “smart, athletic, and loyal to the bone.”34 Once established, the breed was recognized by the AKC in 1908. Von Stephanitz maintained high breeding standards, which kept the class to a modest size; however, by 1914 there were enough qualified dogs, that he recommended his new breed be appointed the official military dog of Germany.35 This commission leads further cultivation of GSDs into performing in a military and police capacity. Soon, the breed became known around the world as soldiers stationed in Europe during World War I came into contact with the breed. Lee Duncan, an American soldier, rescued two GSD puppies when he was stationed in France in 1918. He and other soldiers introduced GSDs to the rest of the world when they returned to their home countries with these smart and loyal dogs.36 Upon Duncan’s return to the United States, he began training his dogs, one of which would become the most famous dog in the world in his time, Hollywood legend Rin Tin Tin (see Figure 4).

True to the classic demeanor of the breed, Rin Tin Tin was active, loyal, trainable, and hard-working. Because GSDs have been bred to require employment, the general disservice and lack of direction by their owners leads to misbehavior on the part of the dog. Dr. Nicholas Dodman, professor of behavior pharmacology at Tufts University and expert in [domestic] animal behavior and psychology, notes that “unwanted behavior is the reason for the surrender of 20 to

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33 Ibid., 24.
34 Ibid., 24.
36 Ibid., 30-33.
30 percent [of dogs in shelters]."\(^{37}\) GSDs are often discarded unfairly, because they have been provided a situation in which they will almost inevitably fail if owners do not acknowledge their dog's need to be physically and mentally stimulated.

In recognition of GSD's general personality traits, this breed can have difficulty being adopted because of perceived 'aggressive behavior' while being housed in stressful kennel environments. It is easy to forget that GSDs have been bred to be guardians as well as workers. In a study that focused on human psychology, "people perceive the adoptability of dogs holistically," meaning that when a dog is observed being aggressive that dogs perceived adoptability is compromised, and the perceived adoptability of another dog of the same breed is now also reduced.\(^{38}\) Put simply, breeds are stereotyped, and the German shepherd dog's perceived violence hinders adoption. These misperceptions can be devastating considering that "it has been estimated that between 30 and 50% of dogs put to sleep meet their end in the nation's shelters or pounds."\(^{39}\)

**SENSORY PERCEPTION OF CANINES**

A recurrent landscape architectural design strategy is to create spaces that engage the senses. In humans, sensory engagement can affect our emotional experience of a place and evoke certain feelings or memories. Hearing wind chimes can remind one of a special trip to grandma's house, or the crisp autumn air laced with the sweetness of fallen leaves can remind one of Halloween. Although not exactly the same, humans and dogs perceive their environments in surprisingly similar ways. For example, a 2001 study published in *The Quarterly Review of Biology* states "that a change in habitat or in a significant environmental feature should stimulate play."\(^{40}\) The author's liken their prediction to the effect that fresh snow


has on dogs and humans... One can relate to the excitement of school children eager to play in the new snow on the first snow
day of the season. The study indicates the dogs react in much the same way to novelty in the environment. This implies that
a landscape design strategy should include dramatic elements that may be easily changed.

It is commonly known that a dog’s nose and ears are considerably more sensitive than a human’s. Anecdotes about
drug sniffing dogs finding controlled substances in jars of peanut butter or cans of paint are common, and “dog whistles” are
inaudible to human ears, but are an easily registered frequency by canine ears. In an article found in Association of Shelter
Veterinarians, Inc., “Guidelines for Standards of Care in Animal Shelters,” the authors, with their years of expertise in their
respective professional fields, also assume that “that noise levels that are uncomfortable to humans are even more
uncomfortable for animals. Many common features of animal shelters contribute to elevated noise levels, including: forced
air ventilation, barking dogs, non-porous building materials, use of power hoses, metal kennel gates, and metal food bowls.
“Excessive noise contributes to adverse behavioral and physiological responses,” therefore, site material considerations in
exterior hardscape and landscape should mitigate harsh sounds.41

Deborah L. Wells’ article, “A review of environmental enrichment for kenneled dogs, Canis familiaris,” uses her
degree studies in psychology and kennel dog welfare to recommend using scent to influence the behavior of dogs. She admits
that further exploration is needed, but her initial findings suggest that “‘calming’ odors, and lavender in particular, were
found to encourage behaviors more suggestive of relaxation in the dogs (e.g. decreased barking, increased resting), whilst
the ‘stimulating’ odours, especially peppermint, heightened the dogs’ activity, resulting in more movement.”42 Assuming that
a plant is not poisonous to dogs or humans, implementation of scent-stimulating plants into a planting plan of the proposed
site is recommended.

41 Sandra Newbury, Mary K. Blinn, Philip A. Bushby, Cynthia Barker Cox, Julie D. Dinnage, Brenda Griffin, Kate F. Hurley, Natalie
Isaza, Wes Jones, Lila Miller, Jeanette O’Quin, Gary J. Patronek, Martha Smith-Blackmore, Miranda Spinde, “Guidelines for Standards of Care
in Animal Shelters,” Shelter Standards Task Force, Association of Shelter Veterinarians, 2010, accessed February 1, 2015,

A less commonly understood canine sense is sight, and canine vision is very different from human vision because the types of cones and rods in the canine retina. For example, dogs do see color, but not as many colors as humans see. Most humans have trichromatic vision and see variations of reds, blues, and yellows. Dogs, however, are dichromatic, meaning they mostly see variations of blues and yellows (see Figures 5 and 6). The other colors that humans see that dogs do not (“green, yellow-green, yellow, orange, and red”), are perceived as blacks, whites, and grays to a dog.\textsuperscript{43} However, the relative color-blindness is offset by the ability to see in high contrast. So even though a dog may have difficulty seeing the difference between green and red, he may differentiate between a green or red ball because the shade of gray is darker for the red ball. The dog’s high-contrast, dichromatic sight allows for excellent night vision. Planting designs should include yellow and blue or possibly high contrast red and white or green and white color schemes to provide visual interest for the GSDs. However, ground plane colors should not contrast so much that canines could perceive them as holes instead of shadows, thereby causing distress when walking.

In association with their relative color blindness, dogs also do not have the same visual sharpness as humans and do not see close detail as well as humans. If a dog and a human are viewing the same object, the dog must be closer to the object to see it with the same clarity as the human.\textsuperscript{44} Also, GSDs are predisposed to myopia, or near-sightedness. One study revealed that 53% of the GSDs from a veterinary clinic population were near-sighted. The study also noted that only

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15% of GSDs in a guide dog program were near-sighted, concluding that GSDs that could not pass the intense testing process were naturally eliminated from the program.45

Canine sight is also distinct from a human’s in that their field of vision is much broader. Canine eye placement is located further around the side of the head than human eye placement, which is located on the front of the head. This allows for a broader field of vision of 240°, compared to a human’s 200° (see Figure 7).46 This generous field of vision allows the dogs to detect movement in the landscape. Canine eyes are engineered to be adept at identifying motion and shape, making them far more perceptive to moving objects than still ones. A 1936 study that tested the visual performance of police dogs, found that the dogs could detect moving objects over 800 m away. However, they could recognize the “same object, when stationary, at a distance of only 585 m or less.”47 Canine vision evolved genetically out of a need to hunt. Although a prey drive, or impulse to hunt, is present to various degrees in modern dogs, most pet owners can agree that dogs find quick movements utterly fascinating.48

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MENTAL PROFILE OF CANINES

In the wild, the life wolves lead in the wild may be simplified as: eat, mate, and survive... in the wild. We already know that dogs are descendants from wolves, and possess some “wolffy” behaviors. In a study conducted by Dr. Deborah Goodwin, a correlation has been made between the facial features of various dog breeds and their similarity to the facial features of wolves. A second set of study criteria compared how many common wolf behaviors each dog breed also commonly exhibited. Of the 15 wolf behaviors reviewed, GSDs displayed 11. In this study the GSD was the third most wolf-like dog (the Golden Retriever displayed 12/15 behaviors, and Siberian Husky displayed 15/15). However, regardless of all of their similarities, the most important difference between the two species is that dogs live within the human context. They have been bred to live and work for humans. Historically, they are outdoor creatures, but presently, most dogs spend most of their life indoors.

In the same way that parallels may be drawn from wolf to dog, likenesses may be drawn from dog to human, not only because we are both animals, but also because humans have bred dogs to be receptive to human concerns. Veterinarians are beginning to better understand the functionality of animal brains, and recognize that they operate much like human brains. Marc Bekoff, professor emeritus of ecology and evolutionary biology at University of Colorado, Boulder, states, “A dog is the same bunch of chemicals we are,” and “all mammals share the same structures in the limbic system for emotions.” When considering dogs as highly social animals, and specifically GSDs as a breed designed to work with and for humans, it is clear to see how spending too much time alone or in the absence of humans can have a detrimental effect on

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52 Ibid.

53 Ibid.
emotional health. Grandin affirms the sentiment by remarking, “For people, solitary confinement is one of the worst punishments you can put them through, and it’s no different for animals. Animals need friends and companions, and humans need to make sure they have them.”

Neuroscientist Jaak Panksepp, PhD., has been researching animal emotion for decades. In his textbook, *Affective Neuroscience*, he identifies the core emotional systems present in all mammals that support species survival and adaptability, calling them the “Blue Ribbon, Grade A” systems. The systems and their correlative functions are outlined in Figure 8:

<table>
<thead>
<tr>
<th>SYSTEM</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEEKING</td>
<td>promotes survival by making animals interested in exploring and becoming excited “when they are about to get what they desire.” This system fosters the search for food, water and shelter</td>
</tr>
<tr>
<td>RAGE</td>
<td>induced through frustration or physical inhibition, similar to FEAR</td>
</tr>
<tr>
<td>FEAR</td>
<td>likely an evolutionary invention that prompts animals to run when scared to impede pain or death</td>
</tr>
<tr>
<td>PANIC</td>
<td>usually expressed by “crying,” and is how (young) mammals activate others (their parents) to CARE for them</td>
</tr>
<tr>
<td>LUST</td>
<td>sex/reproduction</td>
</tr>
<tr>
<td>CARE</td>
<td>maternal responsibility;</td>
</tr>
<tr>
<td>PLAY</td>
<td>“vigorous and joyful social interaction” that promotes learning and establishes social relationships</td>
</tr>
</tbody>
</table>

Figure 8: Panksepp’s Blue Ribbon, Grade A” systems and functions.

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57 Ibid., 52-54.

58 Ibid., 280-81.
SEEKING, RAGE, FEAR and PANIC are thought to be emotions that mammals are born with, but LUST, CARE, and PLAY are “special-purpose socioemotional systems that are engaged at appropriate times in the lives of all mammals.”

Grandin uses Panksepp’s process of identifying emotion and emotional triggers as a guide to designing environments that promote the well-being of confined animals. Like Panksepp, Grandin focuses a lot of attention on the SEEKING emotion because it is such a strong motivator in all animals. She likens the feeling of SEEKING to the anticipation of a Christmas gift: The expectation that something very good is about to happen, something good is about to be found or received is the SEEKING system in action. She interprets SEEKING as “the positive emotions of wanting, looking forward to, or being curious about something.” This innate emotion also drives animals to be curious and seek new things. With regard to confined animals, it is imperative to activate the SEEKING system to maintain the welfare or happiness of the animals.

Lack of SEEKING can cause activation of RAGE. Panksepp notes that RAGE works in “opposition” to SEEKING. If an animal is kept from SEEKING, which it enjoys, it is being restricted, which causes frustration. Too much frustration leads to RAGE. For example, the ‘frustration to RAGE’ process manifests in the wild when an animal is captured by a predator. The frustration from being held captive turns to RAGE, and the RAGE allows for a burst of energy from which the animal hopes to break free from its predator. In the case of confined animals that are unable to explore or SEEK, frustration can easily lead to RAGE, or even FEAR or PANIC due to lack of mental stimulation and/or social interaction. Grandin’s model for maintaining the welfare of animals in human care is simple and direct: “Don’t stimulate RAGE, FEAR, and PANIC if you can help it, and do stimulate SEEKING and also PLAY.”

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59 Ibid., 52-54.


62 Ibid., 8.

63 Ibid., 23.
When applying Panksepp’s emotions framework to canine needs, Grandin acknowledges the importance of SEEKING and PLAY for dogs, noting that their wolf ancestry predisposes them to be curious, nomadic, social creatures. In their current evolution this means that their SEEKING and PLAY systems need to be activated. Long walks with their human companions allow a dog to explore and sniff to his canine heart’s content, while simultaneously bonding socially with his human. PLAY and learning new tricks (SEEKING) with humans also satisfies the social and psychological needs of the dog. Conversely, lack of human contact and play can cause PANIC in dogs. For dogs who are left alone while their humans are away at work for many hours each day, Grandin suggests using a large rotating stock of toys to help engage dogs while they are alone, taking dogs to doggy daycare, or leaving the dog with a neighbor.65

CAUSE AND EFFECT:

*When Emotional Needs Go Unmet*

Unlike humans, animals cannot speak in plain terms about the cause of their physical or mental upsets. Animals have been likened to human babies, though. Both have limited communication abilities, so observation is paramount to identifying when babies or animals are happy, sad, or scared.66 It is the responsibility of caretakers to monitor the behavior patterns of kennel animals to discern when and what types of interventions the animals need to be “happy.” However, like humans, environment can directly correlate to an individual’s stress level; and prolonged exposure to stress can have a detrimental impact on the individual’s health, affecting cardiovascular, digestive, immune, and other vital systems (see Figure 9).

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65 Ibid., 64.

When the environment does not support the emotional needs of animals, an animal’s stress and frustration generally manifests itself in a few regular ways. One of the first signs is emergence of stereotypes, or abnormal repetitive behaviors (ARB). ARBs are when an animal spends “hours a day” doing something that they would almost never do in the wild.

In her observation of pet, farm, laboratory, and zoo animals, University of Guelph behavioral biologist, Georgia Mason, established three categories of ARBs:

- “Pacing-type ARBs – pacing and other similar action, such as circuit swimming, where a bear of a seal swims the same circuit around its pool over and over again. Over 80 percent of stereotyping carnivores pace, either back and forth or in a figure-eight pattern.”
- “Oral ARBs – bar and fence chewing, obsessive object licking, tongue rolling, and so on,” which are common in grazing animals; however, German Shepherd dogs are commonly known to develop oral ARBs like excessive licking of body parts.
- “Other ARBs – rocking, repetitive jumping, and so on.”

Observation of whether an animal is stereotyping can be one tool to assess the overall emotional health of a captive animal. However, it should be noted that not all stereotypes that occur in confined animals means that the animal has poor

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68 Ibid., 15.

69 Ibid., 15-16.

70 Ibid., 16.
welfare, nor does it mean that lack of stereotyping means that the animal is emotionally satisfied. Grandin explains this idea by stating that presence of stereotyping could mean:

- “The animal is suffering now.
- The animal was suffering sometime in the past but isn’t suffering now...
- The animal’s current welfare may not be great, but the animal is in better shape than other animals in the same barren facility that aren’t stereotyping. A stereotyping animal in a bad environment may be soothing or stimulating itself, whereas the nonstereotyping animal may have just given up and become totally withdrawn and depressed. In a bad environment, the pacing animals have better welfare.”

POST-TRAUMATIC STRESS DISORDER: CANINES & HUMANS

In the human realm, it is commonly understood that high levels of stress can morph into a condition known as post-traumatic stress disorder (PTSD). When people encounter life-threatening or dramatic events in their life such as a car accident, death of a loved-one, or combat, they will naturally have a stress related reaction. What defines PTSD is when relief from those stress-related reactions does not begin to improve after three months. Presently, there is a lot of social awareness being raised for one of the largest populations in the United States suffering from PTSD, soldiers. The United States Veterans Administration (VA) estimates that 10-18% of veterans returning from conflict are being diagnosed with PTSD.

A common theme that distressed veterans and those who help them often describe is the feeling of being “out of control,” which can encourage or magnify other conditions such as depression, anxiety, substance abuse/self-medication.

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71 Ibid., 19-20.
In spite of all the variables that can prompt PTSD, such as age or experience, PTSD symptoms that manifest are categorized in the three ways outlined in Figure 10:

<table>
<thead>
<tr>
<th>SYMPTOM</th>
<th>EXPLANATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRUSION</td>
<td>“Flashbacks in the form of strong memories and nightmares that intrude, often unexpectedly, into current life.</td>
</tr>
<tr>
<td>AVOIDANCE</td>
<td>Avoidance of close emotion relationships with family, friends, and colleagues, as well as situations that could be reminders of the trauma. Common experiences include numbness, diminished emotions, and a sense of disassociation from everyday life. Feelings are difficult to discuss.</td>
</tr>
<tr>
<td>HYPERAROUSAL</td>
<td>An acute sense of alertness from a perception of being in constant danger. People experiencing hyperarousal can become irritable or explosive, even when not provoked. The may also have difficulty with concentration, memory, and impulse control, leading to a higher risk for violence against others and self.</td>
</tr>
</tbody>
</table>

For the 10-18% of veterans seeking treatment through the VA, the government agency estimates a $4-6.2 billion price tag for treatment over a two-year period. Treatment plans vary in objective and outcome. The most common VA treatments are medication and/or therapy. VA therapies include “Cognitive Processing Therapy,” where a patient work with therapists to retrain their current way of thinking in order to overcome negative thought processes; or “Prolonged Exposure Therapy,” in which patients talk to therapists about their traumatic event, and begin visiting safe, busy places, that feel unsafe with PTSD. Ultimately, patients, recondition themselves at their own pace to return to bustling environments.

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74 Ibid., 394.
75 Clare Cooper Marcus and Naomi A. Sachs, Therapeutic Landscapes: An Evidence-Based Approach to Designing Healing Gardens and Restorative Outdoor Spaces, (Hoboken, NJ: John Wiley & Sons, 2014), 207.
Outside of the VA, groups throughout the United States, often established as non-profit organizations, are supporting an alternative way to help vets with PTSD by providing canine therapy and service dog training programs. These programs can work adjacent to VA programs; however, the VA has not yet approved this type of animal therapy, and its current stance does not allow for clinical support or financial assistance for these programs.  

Just like their human counterparts, military canines who have experienced combat are also exhibiting the same clinical signs of PTSD: Hyperarousal; active avoidance of specific situations; changing rapport with their handler; and most often show performance failure, meaning the canine simply won’t perform its trained tasks. In 2012, Dr. Walter Burghardt, Jr., Veterinarian & Expert on Canine PTSD, discussed PTSD and military working dogs on the Talking Animals podcast. He stated that 2007 was when the military started formally identifying PTSD in combat dogs, and at the time of the interview more than 5% of deployed dogs were showing signs of PTSD. The treatment process for the dogs is analogous to some human treatment processes. The first-aid remedy is to take the dog from harm’s way. Remove him from the combat setting. The next step is to resume training, which may sound like a counter-intuitive action. However, desensitization and counter-conditioning are keystone elements to PTSD treatment in humans and canines, and “the most successful treatment regime” for treating military working dogs. The idea is to reintroduce the dog to his [undesired] environment, while his handler reinforced desired behavior. (And alternatively, does not praise undesired behaviors.)

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79 At least as far back as 2011, Veterans Dog Training Therapy Act bills have been brought to Congress with bi-partisan support, which request that the VA engage in a five-year pilot program to assess “the effectiveness of addressing post-deployment mental health and post-traumatic stress disorder symptoms through a therapeutic medium of training service dogs for veterans with disabilities.” As of July 22, 2015, the bill was forwarded by Subcommittee to Full Committee by Voice Vote. “114th Congress, H.R.359 - Veterans Dog Training Therapy Act,” United State Law Library of Congress, accessed March 17, 2016, https://www.congress.gov/bill/114th-congress/house-bill/359.


81 Ibid.

82 Ibid.
For combat dogs Burghhardt says the rehabilitative prescription is: environmental enrichment, play, work, and sometimes (short- or long-term) medication. In his scenario, handlers continue to “work” their dogs in non-combat related ways, which benefits the dog by maintaining the relationship with his handler, maintaining his working skills, and initiating the desensitization process. Burghhardt also notes that it is optimal to maintain the same handler, the same relative location/environment, and realistic training throughout the recovery process. Therefore, it may be inferred that those consistencies provide emotional stability to the dog, which further encourages his recovery. 83

It is not expected that every dog that enters the Rescue will suffer from severe PTSD; however, relinquishment in any form is a high-stress transition for all dogs. It is safe to assume that many dogs that arrive at a shelter or rescue facility have experienced or will experience emotional trauma in the process. A dog’s trauma may be derived from any number of sources: abuse prior to admission to the facility; distress from being separated from its family/pack in the relinquishment process; anxiety from being in a facility with so many other dogs; or suffer from being housed in a facility that is ill-equipped to provide for the mental needs of its animal residents. Rescue managers should aim to capitalize on any opportunity to encourage relief from that stress by making the process of relinquishment, duration of stay, and adoption process as pleasant, expeditious, and humane as possible for the dogs that have little or no control of their destiny in these scenarios.

INTERVENTION

Burhardt’s rehabilitation plan of environmental enrichment, play, and work can also work as a preventive plan for kenneled dog. Environmental enrichment, or simply “improving an animal’s surroundings” has been studied and used in zoological and clinical settings for decades. 84 By enriching the environment in which the dog lives, the dog will live a more fulfilled life. A major contributor to anxiety and frustration in all animals is the feeling of being out of control of one’s actions.

83 Ibid.

By giving dogs some control over part of their environment or providing various ways to engage with his environment a dog gains the needed sense of control over his actions which reduces anxiety and provides a healthy sense of confidence.

Enrichment comes in many forms, and can be as simple as providing new toys and puzzles or more time spent outdoors. Toys, which encourage dogs to solve a puzzle to get a treat for example, engage a dogs SEEKING emotion through a low-frustration activity. Simultaneously, PANIC and RAGE that an animal can feel when left alone from human contact is reduced, because the toy distracts the dog. Enrichment also comes from novelty. Like the “snow day” example, introducing new things into an environment can also engage SEEKING. Like humans, animals may become bored with the same environment or toy every day. Allowing for new elements in an environment can exercise SEEKING though inherent desires to investigate, be curious, and discover the world.

“When dogs are raised in barren and nonstimulating environments they are also more excitable,” meaning that if they are left in an environment that lacks interesting elements, then when something does happen, the dogs express their anxiety by barking and jumping nearly uncontrollably. This phenomenon can often be observed when a person walks into a kennel facility with many dogs that are likely not well exercised or unable to spend much quality time with humans. The dogs in the room can be calm and quiet, but as soon as a person walks into the room, the dogs erupt into a hysteric mass of excitement. This level of excitement may also be “vacuum behavior.” In Applied Dog Behavior and Training, Volume II, Etiology and Assessment of Behavior Problems, author Stephen R. Lindsay states that “Vacuum behavior occurs under conditions of close confinement in which various drive pressures (including aggression) may gradually build up and may be triggered by objects and stimuli other than normal ones. Such behavior occurs especially in situations where normal outlets and opportunities for appropriate drive-reducing activity are not present.” In even more extreme instances

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85 Ibid, 43.
syndrome may materialize, a condition in which captive dogs socially regress or become feral. In *Applied Dog Behavior and Training Volume I: Adaptation and Learning*, Lindsey indicates that this behavior is “particularly evident in German shepherds” and through institutionalization the dogs may dissocialize, becoming shy and fearful of strangers and even caretakers if they are not often handled. In a kennel scenario, it is imperative that the GSDs are able to receive as much interaction as possible with humans, dogs, and other animals so they do not become unmanageable, socially introverted creatures.

PLAY has been noted by both Panksepp and Burhardt as an integral part of canine life and is also crucial to the socialization process. Animal behaviorist, Patricia McConnell makes a clear delineation that dogs need more than toys to be healthy. They need both enrichment and socialization to humans and other animals. This naturally occurs during the PLAY process. Again, dogs, like people, have different personalities and do not always get along, so it is important not to arbitrarily put a group of dogs together. In a shelter setting dog-human socialization may be the quickest socialization goal to achieve facilitated through PLAY.

Work is also a requirement of healthy, well-socialized GSDs. It is conceived that worked or exercised dogs are happy dogs. Harrison Forbes, a military and police canine trainer with over 30 years of experience, explains, ...

energy management is really the basis of behavior management. When we forget that, we end up spending a lot of time putting Band-Aids on specific problems and not addressing the excess energy question that’s behind everything – digging, barking, jumping, destructiveness, and all the rest. Our dogs spend all day in solitary confinement, and then we wonder why they’re hyper when we come home.

Stephen R. Lindsey weighs in on this topic by noting,

Another common cause is excessive or inappropriate confinement or lack of daily stimulation. Dogs learn to become familiar with the environment by interaction with it. By sniffing, picking up things, scratching,

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89 Ibid., 66.


digging, and running about, dogs gradually become comfortable with the environment via habituation. With familiarity and habituation comes an increased sense of safety and progressive ability to relax.\textsuperscript{92}

In short, the dogs are bored, and not able to engage their SEEKING emotion.

In addition to the boredom, Stanley Coren, PhD., F.R.S.C. (Fellow Royal Society of Canada), ups the ante by ranking GSDs among the “brightest dogs in their obedience and working intelligence,” and supports this claim by stating this breed can understand a new command in less than five exposures, and “they obeyed the first command given by their handler around 95 percent of the time or better.”\textsuperscript{93} All of this information combined means, that not only are there bored dogs in the shelter but that they are highly intelligent, bored dogs, which would indicate that that their frustration level is increased with their high level of intelligence.

Grandin suggests that although frustration is a normal part of life, maintaining a low-frustration environment is critically important for dogs. As another component of the socialization process, dogs must also learn impulse control. Like humans, it is important to control emotions thus avoiding RAGE, which may manifest into fear or anxiety induced aggression. Grandin states that, “a safe dog is a dog that doesn’t fly off the handle when the neighbor boy sticks his hands in its face and screams in its ear.” Impulse control is most passively taught to dogs by rewarding desired behavior. Using positive reinforcement like treats or affectation to reward a dog that is asked to “stay” or “wait” is one of the most effective ways to teach impulse control. Informally, pet owners can exercise their dog’s impulse control by playing backyard games and teaching some basic commands, but employing some more advanced training programs can be a huge benefit to dogs by deterring aggression, teaching manners, and actively engaging SEEKING and PLAY.\textsuperscript{94}


\textsuperscript{94} Temple Grandin, and Catherine Johnson, Animals Make Us Human: Creating the Best Life for Animals. (Boston, MA: Houghton Mifflin Harcourt, 2009), 45-55.
The AKC Canine Good Citizen program is an excellent starting point for dogs and handlers. Essentially a basic
etiquette and obedience class for dogs and their owners, and is a commonly used program that lays the groundwork for
other more complicated Service, Support, or Therapy Dog training. The program teaches handlers how to instruct and direct
their dogs. The following is an abbreviation of the ten Canine Good Citizen testing scenarios:

**Test 1: Accepting a friendly stranger:** This test demonstrates that the dog will allow a friendly
stranger to approach it and speak to the handler in a natural, everyday situation.

**Test 2: Sitting politely for petting:** This test demonstrates that the dog will allow a friendly
stranger to touch it while it is out with its handler.

**Test 3: Appearance and grooming:** This practical test demonstrates that the dog will welcome
being groomed and examined and will permit someone, such as a veterinarian, groomer
or friend of the owner, to do so. It also demonstrates the owner’s care, concern and
sense of responsibility.

**Test 4: Out for a walk (walking on a loose lead):** This test demonstrates that the handler is
in control of the dog. The dog may be on either side of the handler. The dog’s position
should leave no doubt that the dog is attentive to the handler and is responding to the
handler’s movements and changes of direction.

**Test 5: Walking through a crowd:** This test demonstrates that the dog can move about politely
in pedestrian traffic and is under control in public places.

**Test 6: Sit and down on command and Staying in place:** This test demonstrates that the dog
has training, will respond to the handler’s commands to sit and down and will remain
in the place commanded by the handler (sit or down position, whichever the handler
prefers).

**Test 7: Coming when called:** This test demonstrates that the dog will come when called by the
handler.

**Test 8: Reaction to another dog:** This test demonstrates that the dog can behave politely
around other dogs.

**Test 9: Reaction to distraction:** This test demonstrates that the dog is confident at all times
when faced with common distracting situations. Examples of distractions include
dropping a chair, rolling a crate dolly past the dog, having a jogger run in front of the
dog, or dropping a crutch or cane.

**Test 10: Supervised separation:** This test demonstrates that a dog can be left with a trusted
person, if necessary, and will maintain training and good manners.95

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95 “Canine Good Citizen® Training & Testing,” American Kennel Club, accessed September 24, 2015, www.akc.org/dog-
owners/training/canine-good-citizen/training-testing/
When creating landscape solutions for the Rescue, the AKC Canine Good Citizen program also allows for great flexibility in design. Training space requirements are modest, and nearly any space greater than 200 sq. ft. feet per dog/handler team should provide ample working area.

Another program for consideration is the Schutzhund training method. Literally translated from German schutzhund means “protection dog,” and was originally devised in Europe as a way to test a GSDs breeding and trainability. In its present incarnation, this internationally recognized training sport teaches and tests in three phases: tracking, obedience, and protection. Perhaps not as well-known or understood as canine agility sports, Schutzhund is very popular among folks affiliated with the professional canine set, such as current or former military, police, search and rescue, etc. The dedication of training required for testing naturally encourages a deep bond between handler and dog. The whole training and testing system is about encouragement and confidence building, exercise, and teaching the dog to employ a calm demeanor. Resi Gerritsen and Ruud Haak, with nearly 40 years of experience as professional canine trainers, have beautifully described the training process:

All training begins with a bond between handler and dog. If that bond is lacking, the handler will find it impossible to work with the animal. Handler and dog must understand and know each other completely, which is only possible when they spent a lot of time together. The handler must first and foremost love his dog; the dog should never be seen as merely an object to train or work.96

The complex testing format is structured to increase in complexity as each handler-dog team improves their abilities. There is a Preliminary Trial, and three other Trials. During each Trial 1, 2, and 3, the team is tested on three Phases: A) Tracking, B) Obedience, and C) Protection. The Preliminary Trial is always conducted at the being of each Trial, and is a

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temperament test to evaluate the overall demeanor of the dog.\textsuperscript{97} For Phase A: Tracking, the dog is asked to follow a fresh track or path and find articles placed along track paths.\textsuperscript{98} Phase B, Obedience, consists of nine separate exercises that test the dog’s ability to execute commands like heel, sit, down, and retrieval while incorporating other variables of distraction or impediment, such as jumping hurdles (see Figure 11).\textsuperscript{99} Phase C, Protection, is the most intense, as it tests a dog’s “courage, power and control” while asking him to search, hold, defend against, or attack a decoy, (a designated helper/trainer).\textsuperscript{100} Because this Phase can include “bite work,” it is clearly advanced, and takes much training and skill to build up to this advanced level.

Due to its close ties with military and emergency services groups, a programmatic allocation for training and/or competition for this sport could be a partner in providing awareness for the German Shepherd Rescue as well as veteran and emergency personnel concerns. Training space requirements are large, requiring approximately 2 acres for a reasonable competition site, but could serve in other capacities during off-peak training and competition times.

In an attempt to find ways to understand and relate to the emotional hardships of rescued GSDs, many references have been made to the sameness of canine behavior and human behavior when stress is overwhelming. Clearly, human health holds a different kind of weight than canine health; however the similarity in their suffering is undeniable. As, humans and

\begin{flushend}
\textsuperscript{97} Ibid., Introduction.
\textsuperscript{98} Ibid., 5.
\textsuperscript{99} Ibid., 74-75.
\textsuperscript{100} Ibid., 141.
canines process their stress in very similar ways, including their reaction to ultra-high stress experiences, which can lead to PTSD in both species, an opportunity exists to service both populations through this study’s design and site programming.

Programming Shepherd’s Peace to include a canine therapy training program for veterans is not so implausible. Wags 4 Tags, a non-profit PTSD service dog program located in North Carolina, was founded by Ronnie Sadoski, himself a veteran who has suffered from anxiety and found profound emotional benefit from his GSD, Sadie. Located in a state that has the 3rd largest veteran population and highest pet euthanasia rate in the U.S., Wags 4 Tags combines their appreciation for military service with their compassion for shelter animals by providing veterans with highly trained companion, and emotional support dogs who have been rescued from kill shelters. The organization’s goals are clear: assist veterans making the transition into civilian life, while saving as many dogs as possible by giving them purpose.

These types of organizations come in many shapes and sizes. Some are sophisticated, generously-funded organizations, while others operate with a low-profile and modest budget. Many offer their services free of charge or for little cost to vets, and programs last an average of 3-6 months. Some even offer onsite living arrangements for vets traveling long distances or from out of state. Training spaces are as flexible and unique as the programs they support, and vary from private to public, quiet to bustling. Training equipment ranges from the obvious leash and collar, to wheelchairs, crutches, walkers or other mobility apparatuses in which dogs may need to acclimate. Other props like vacuum cleaners can become an imperative part of the training process, too, as they teach dogs stay calm and focused on the veterans and veteran’s needs regardless of environmental conditions.

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101 Ronnie Sadoski, “President, Wags 4 Tags,” telephone interview by author, September 24, 2015.

102 Understanding the difference between service, support, therapy, comfort, and companion animals is common. The Americans with Disabilities Act defines “service animals” as those who have been trained to perform specific tasks related to a person’s disability. Other designations “describe animals that provide comfort just by being with a person. Because they have not been trained to perform a specific job or task, they do not qualify as service animals under the ADA.” Further explanation may be found here: http://www.ada.gov/regs2010/service_animal_qa.html


104 Ibid.

The training program at Train a Dog Save a Warrior (TADSAW), another non-profit based out of Texas, includes a short one-on-one training sequence, followed by group training. The whole process is conducted over a 15-20 week period, with formal 45-minute training sessions scheduled twice per week. When the dog is able to sufficiently focus on the veteran in the one-on-one sequence, then the team is socialized by integrating their training session with other training teams. Often the social exercises work on the veteran’s ability to hold the dog’s attention from other distractions. The work intensifies for veteran and dog by having the team build their skills until they are able to successfully execute the same commands in new, distracting, vibrant environments like grocery stores. In the group setting the team dynamic really strengthens, as a competitive spirit grows between teams and augments the training process while each team works to outperform the others.\textsuperscript{106}

Currently, Wags 4 Tags borrows time at a 50,000 sq. ft. indoor training facility where a trainer teaches classes to an average of seven vet-canine student pairs. However, the organization is about to begin fundraising to build a facility on a four acre site centrally located within the state with easy access to nearby highways. Tentative plans include a Welcome Center, a 10-dog kennel, and an open air training pavilion. The Welcome Center will host training and canine-centric events like Wags 4 Tags fundraisers or AKC-sponsored tournaments. It will also include multiuse office spaces for the non-profit, and other affiliated partners like trainers, or social works, spaces in which to work. Ideally, additional office spaces will provide residence for a veterinarian or professional trainer who will volunteer time to care for the dogs on site, but be free to run a full practice from the site while paying a modest rent sum. The 30,000 sq. ft. training pavilion will be semi-contained by a 2’ perimeter wall and the ground plane covered with artificial turf.\textsuperscript{107}

\\textsuperscript{106} Bart Sherwood, “Program Director, TADSAW, Inc.,” telephone interview by author, October 13, 2015.

\textsuperscript{107} Ronnie Sadoski, “President, Wags 4 Tags,” telephone interview by author, September 24, 2015.
THERAPEUTIC LANDSCAPE PROGRAM DEVELOPMENT

This project is not engaging in a therapeutic design for humans with PTSD; however, insight and design direction can be gleaned from guidelines developed in this regard. Therapeutic landscapes, which are designed to provide specific rehabilitative opportunities to PTSD sufferers, are an obvious addition to PTSD service dog programs. In a 2013, a multidisciplinary team of authors with backgrounds in occupational therapy, landscape architecture, and facilities planning, created a conceptualized design strategy when creating landscapes for veterans with PTSD.\(^{108}\) Design should include activities that “support physical and psychological rehabilitation therapies, athletic training, reestablishment of close social connections similar to those experienced in previous military serve, and task-specific vocational activities such as service dog training and farming that rehabilitate or teach new skills for reentry into military service or civilian life.”\(^{109}\) The following is an adapted list of physical design guidelines established in *Therapeutic Landscapes: An Evidence-Based Approach to Designing Healing Gardens and Restorative Outdoor Space* that in many cases aligns with needs of traumatized canines.\(^ {110}\)

<table>
<thead>
<tr>
<th>GUIDELINE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sense of Control</td>
<td>Providing opportunities to regain control: choices of where to sit, ambulate &amp; look; who and what to interact with; including seating, plants &amp; water that can be touched, birds that can be fed, etc.</td>
</tr>
<tr>
<td>Accessibility</td>
<td>Fully accessible spaces, beyond ADA regulations to accommodate those learning to navigate with new mobility devices.</td>
</tr>
<tr>
<td>Intentionally Designed</td>
<td>Opportunities to engage in physical rehabilitation.</td>
</tr>
<tr>
<td>Physical Challenges</td>
<td>Take precautions to prevent ability to cause physical harm to self or others.</td>
</tr>
<tr>
<td>Physical &amp; Emotional Safety &amp; Security</td>
<td>Provide a space or choice of spaces that provide feelings of privacy, but not claustrophobia.</td>
</tr>
</tbody>
</table>


\(^{109}\) Ibid., 393.

Prevent UV Exposure, Glare, & Visual Distress
Include plenty of shaded areas; Incorporate materials that reduce glare and high contrast. Do not incorporate high contrast material on ground plane.

Attention to Positive & Negative Stimuli
Include plants that are pleasant to the sense: touch, small, taste.

Items of Familiarity/Homelike Environment
Incorporate native plants, and traditional/homelike design elements.

Place of Gathering/Places to Be Alone
Smaller places for contemplation or solitude. Large gathering spaces for group therapy; events; etc.

Places of Ritual & Reflection
Memorial spaces like firesides or reflecting pool areas; Space for ritual.

Places for Children
Necessary family spaces that are well sited to prevent irritation or distress to other patients.

Areas for Service Dogs
A space for exercise and interaction with support animals.

Smoking Areas
Included because of its ability to create a social bonding experiences.111

Figure 12: Outdoor Environment Design Recommendations for Veterans with PTSD.

WASTE & ENERGY USE

High-volume animal care facilities, including kennels, farms, or veterinary clinics use abundant amounts of water and create large amounts of waste in caring for the animals therein. As this investigation aims to further the discipline of landscape architecture, it would be remiss to not address water consumption and wastewater reuse systems. Aside from city municipal systems, other waste management methods include septic systems, aerobics systems, package plants, passive lagoons, composting, recirculating systems, and cesspools; but it is generally recommended to connect with municipal sewer systems to reduce construction costs and design complications.112 However, like municipalities across the United States, the City of Indianapolis and local utility provider Citizens Energy Group, are working diligently to update their systems and maintain the regional water supply. Of the six major infrastructure projects in which Citizens is currently engaged, all but

111 Ibid., 215-216.

one directly relates to water and sewer concerns that affect Marion County’s "drinking water, system reliability, and environmental protection." In 2015, as an effort to grow tax revenue for the infrastructure upgrades, the City of Indianapolis increased Storm Water User Fees for all county land-owners. And in early 2016, Citizens announced its plan to increase water rates approximately 30%, also citing infrastructure project funding needs. To reduce the impact on over-burdened city systems and contribute to the environmental and economic sustainability of the rescue, this section evaluates various on-site wastewater reclamation systems for implementation at a 48-dog canine boarding facility located within a dense urban setting.

There are multiple types of sewage disposal systems, but care should be taken in choosing the best application for each site. It is commonly considered that cost, maintenance, site conditions, and local regulations become the main dictators of system selection. However, environmental impact is a concern that continues to grow in its perceived importance by the public-at-large. So what are the environmental health and safety impacts of this type of organic waste? In a 2010 Villanova Environmental Law Journal article reviewing dog breeding facility regulation, law student Melissa Towsey reported that poor waste management practice “creates significant risks for disease transmission.” Confinement and stress of poor living conditions at questionable breeding facilities only encourages spread of diseases among the canines, some of which may be transmitted to humans. Further, improper management of waste can contaminate water and soils with

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118 Ibid., 177-178.
parasites, fungi, and/or worms; many of which are easily transmittable to animals and humans through accidental ingestion or contact with contaminated water or soil. The system chosen to support the rescue facility will need to incorporate the same stringent health and safety considerations, as human waste systems.

Composting is a horticulture technique that employs organic waste to produce nutrient rich fertilizer for cultivating lush flower and vegetable gardens. Due to the popularity of dog sledding around Fairbanks, Alaska, the local Soil and Water Conservation District embarked on a composting experiment to deal with the canine waste that was otherwise being sent to landfill. Using composting bins, the group mixed the waste together with sawdust and a bit of water. They monitored the temperature of the mix ensuring proper heating temperatures, and mixed the piles if the temperatures dropped too low to be productive. It took eight weeks for the pile to become suitable for flower garden use. Due to pathogen concerns, such as the presence of parasitic worms, this method is never suitable for edible garden use.

In agricultural settings, anaerobic biodigestion systems have been used to make good use of bovine and swine waste. In these systems, the organic waste is combined with water and stored in an anaerobic (lacking oxygen) environment. This facilitates a fermentation process in which microorganisms consume or digest the contents. During this process, pathogens, foul odors and other unwanted manure contents are converted to usable products, including: methane, wastewater, and fertilizer (see Figure 13). Methane off-gases are usually used for heating and cooking, and the remaining slurry of liquid and solids is used as fertilizer.

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119 Ibid., 17

A study conducted in Nigeria experimented with using dog waste in an anaerobic digestion system. The study takes place in a social environment in which dogs are common, but waste management practices are less than adequate. Bacteria and pathogens, including parasitic worms, are commonly found in canine waste, and therefore, present multiple human health concerns. Overall, the experiment was successful and yielded biogas, but due in part to the high nitrogen content of the waste, the quality and quantity of the biogas produced was not sufficient for sustained use. The study notes that “anaerobic digestion is a better option to composting in terms of pathogen handling and control.”

When considering alternative systems the *Time-Saver Standards for Landscape Architecture, 2nd ed.* states: “the most effective, economical, and environmentally safe method for disposing of wastewater is the slow filtration of the wastewater through soils.” Another canine-specific digester configuration has been reviewed in Dominique DeVito’s, *Green Dog, Good Dog: Reducing Your Best Friend’s Carbon Paw Print*, which recommends the brand-named Doggie Dooley. She contends that “it works like a septic system: you drop the waste and some enzymes into the contraption, and it takes care of the rest.” Effective for the casual dog owner, these tiny units would quickly be overwhelmed by even a small-scale kennel facility.

In the human sphere, “living machine” systems are becoming more popular as environmentally friendly systems, educational tools, and aesthetic site improvements (see Figure 14). Although there are a few different ways that man recreates the general process, this style of wastewater treatment employs biomimicry as the design catalyst for the system by employing the anaerobic digestion processes found naturally in hydrological environments. One common scenario is recreation the coastal wetland tide process. In nature, the water is cleaned when plants in tidal zones filter and feed upon

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122 Ibid., 126.


micronutrients found in the water. Aeration, or oxygenation, occurs as the water is pushed toward the coast during the changing tides, making it easier for the plants to consume the valuable micronutrients in the water that the plants need to survive. A constructed version of the coastal wetland process takes wastewater from the nearby facility (office, school, etc.) and pumps it through three to five separate planted cells. Each planted cell contains engineered soil to aerate the wastewater to ensure the plants’ micronutrient consumption. Following the journey through the planted cells, the water is then “polished,” which is the final filtration and disinfection stage of the operation. After polishing, the water can be used in non-potable applications like toilet flushing, irrigation, or water features. The entire process is sensor monitored to ensure the safety of the water for reuse. The important physical operations all occur at the subsurface level, while at the surface level the living machine appears to be a raised planting bed.

Similar to the living machine, another reasonable option is a subsurface flow constructed wetland system (see Figure 15). These gravel-based planting beds of native wetland plants quietly process wastewater just below the ground plane while providing a beautiful landscape and wildlife amenity. The gravel provides near perfect environment for the wetland...
plants to root, while the wastewater, which provides nutrients to microbes found on the gravel and roots, is gravity-fed through the beds. In spite of the large amount of space and annual plant maintenance regime of these systems, they are relatively low cost and ecologically sustainable.

![Cross Section](https://engineering.purdue.edu/~frankenb/NU-prowd/images/image09_06b.jpg)

**Figure 15:** Subsurface Flow Constructed Wetland System

To summarize the most notable elements explored in this chapter, GSDs need mental and physical engagement and they experience stress in virtually the same ways humans do. It has been explained in many different ways, such as Panksepp’s blue ribbon emotions (SEEKING, PLAY, FEAR, RAGE, and PANIC), Forbes’ energy management, Grandin’s impulse control, and Burkhardt’s environmental enrichment/play/work regimens; but the conclusion are the same: GSDs are large, smart dogs that have been bred to work. For them, the path to a fulfilled life is all about positive energy expenditure and mental engagement.

Landscape design’s role in the life of a rescued GSD is to positively stimulate the dogs. Controlling sights lines can provide dogs with interesting and ever-changing views by choosing plants with bloom colors that fall within a dog’s visual color range, or by incorporating mobile landscape elements like agility apparatus support SEEKING and PLAY. Conversely, using landscape to block views of antagonistic canine neighbors can reduce feelings of FEAR, RAGE, or PANIC. Therapeutic

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landscape design for GSDs is about creating opportunity areas that promote feelings of safety and calm while engaging in exercise, training, and play with humans. Trails and open multi-use spaces provide those opportunities.

Finally, with regard to wastewater management at the rescue facility, employment of a living machine or subsurface flow wetland systems would be an appropriate fit. Both systems operate in very similar ways, would require similar square footage to implement, and can provide a beautiful planting element to the design.

The next chapter uses a series of four precedent projects to study how specific elements of design have been implemented in real-world scenarios. Each precedent chosen for review has implemented unique design features expressly for canine users, or they have illustrated exemplary design directly related to the research questions herein.
When dog park design is discussed within the landscape architecture community it is generally viewed as program element within a larger design scheme, an appendix to a greater park or plaza scheme with conversation largely revolving around durability, maintenance, and cost of materials. The spaces are often designed in a generic fashion dictated by a checklist of requisite items: fenced open spaces for unleashed play, benches, shade cover, trash receptacles, parking, and some durable apparatus upon which dogs may climb or jump. Some successful exceptions include a thoughtfully designed canine kennel center for the Royal Society for the Prevention of Cruelty to Animals (RSPCA) in Australia and Cosmo Dog Park in Arizona. The biggest difference between the two is how each program has been executed. The RSPCA kennel design considers canines as the primary user, and Cosmo Park considers canine users as secondary human users. Peter Bickle, an architect and writer for Architecture Australia, reports use of a monochromatic black and white color palette used throughout the RSPCA facility, because they “work well in stimulating the dogs and preventing boredom, which could lead to antisocial behavior,” making it clear that the design is canine focused. Conversely, Landscape Architecture Magazine contributor, Rachel Hill, reports the success of Cosmo Park in suburban Phoenix. She writes, “A dog fountain in the shape of a hydrant, is surrounded by bricks inscribed with memorial messages from dog owners to their pets, tying residents to Cosmo Park. The paw print theme is carried through the park on the ground plane in the playground and along the walls of the amphitheater.” In this park, the design revolves around the human as the primary user. The canine visitors likely enjoy the water fountain, but are nonplused that the fountain takes the form of a giant red fire hydrant, that there are giant paw prints seen throughout the site, or that there is an amphitheater onsite. Depending on the acoustics, an amphitheater may

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even create unappreciated noise pollution for the dogs. Both designs are considered very successful, but the success metrics are incongruent because each site has a different audience and goals for design.

The following four case studies have been chosen and categorized for their exemplary status in various design archetypes applicable to this study: Adoption Facility Design with Energy Management Considerations, Adoption Facility Design with Canine Perception Considerations, Dog Park Design Survey, and Dog Park Design; and have primarily been reviewed through the lens of canine-centered design strategies first, followed by human and environmental concerns. Each archtype is outlined independently, with a design critique and analysis at the conclusion of this chapter.

ADOPTION FACILITY DESIGN WITH ENERGY MANAGEMENT CONSIDERATIONS

Overview:

Project Name: The Animal Foundation Dog Adoption Park

Land Use Type: Animal Care Facility

Location: Las Vegas, NV

Date Designed/Planned: unknown

Construction Completed: August, 2005

Construction Cost: $7,900,000

Size: 3.26 acres, building size: 18,700 sq. ft. (21,740 sq. m.)

Architect(s): Tate Snyder Kimsey Architects (lead)

Client/Developer: The Animal Foundation

Consultants: Battle McCarthy Consulting Engineers

& Landscape Architects (environmental building consultant)

WRG Design, Inc. (landscape architect)

Tradewinds Construction (contractor)

Lochsa Engineering and Surveying (civil engineer)

American Structural Engineers (structural engineer)

Harris Consulting Engineers, LLC

(mechanical, electrical, and plumbing engineer engineer)

Testmarc Commissioning Solutions (commissioning agent)

Managed By: The Animal Foundation

This LEED Platinum project is an incredible design exemplar that demonstrates the positive impact of thoughtful environmental design strategies. The Animal Foundation of Las Vegas had some specific design goals to create a pleasant space for the housed animals and potential adopters who visit the facility, while also employing environmentally sustainable design practices that maintain the welfare of the animals and reduce the consumption impact of the facility. In spite of the initial increased cost of the design, the Animal Foundation had the foresight and perseverance to require environmentally conservative design.

Context:

The adoption facility is located in an urban setting with adjacent neighbors that include a Las Vegas Fire Department training facility, a small shopping plaza, and an after-school learning center (see Figure 17). Nearby neighbors include single- and multi-family residences, along with an elementary school. Aside from the urban setting, the biggest environmental influence on the measurable environmental impact of the design is the harsh desert conditions of the Las Vegas region.

Leadership:

Involvement by the project partners in fundraising is notable with this example. The project was initiated by the Animal Foundation, a not-for-profit agency and designed by the firm of Tate Snyder Kimsey Architects. The personal connection and appreciation for the project also enabled the architect to help with the necessary fundraising efforts.
Budget:

The total cost for the built project was an intimidating $7.9 million. Even though many of the renewable energy components of the design were offset by grants from the local power utility and the United States Department of Energy ($490,000), the remainder of the cost was accounted for through fundraising. A pre-construction cost estimate predicted that the costs to build the project would be less expensive with the green interventions, and the “payback return” was expected to be less than five years.

Significance:

Among the many significant attributes to this design are the “where” and “how” of the project. The redeveloped city-owned parcel became the first location within the Las Vegas city limits to host such an environmentally innovative design. The project required a strong partnership with the city in order to develop new city codes and associated building methods to accommodate the green design strategies.

Program Development:

To accommodate the foundation’s project goals and budget restrictions, the design strategy implemented a two-part process that would first employ traditional non-renewable infrastructure, followed by implementation of renewable energy systems as funds became available. Green strategies include:

- passive energy use
- architectural design.
- limited onsite parking.
- native plant use.
- on-site wastewater treatment and reuse (see Figure 18),
- solar energy capture (see Figure 19),
- materials selection to reduce negative environmental impacts, and
- selection of an urban infill site.

Design:

The importance of water conservation in the arid Las Vegas climate is a mainstream topic for discussion. Knowing that they would need a large volume of water to care for the dogs every day, the Animal Foundation installed a Living Machine system that cleans wastewater on-site, prepping it for non-potable on-site reuse. The Animal Foundation produces an estimated 5,000-10,000 gallons per day (gpd) of wastewater. In this scenario, the wastewater is sent to a 22,000 gallon primary equalization tank, then pumped through a 20,000 gallon settling tank. After settling, the wastewater is pumped through the Living Machine system, and the treated effluent is disinfected and sent to a 30,000 gallon holding tank ready for reuse as wash-down water.

The canine living quarters designed for the site, called “bungalows,” use 81% less energy than standard kennel designs by using passive cooling and ventilation techniques, daylighting, and solar energy capture.
Scale:

There are 22 bungalows holding 10-12 units each, with each 12-unit bungalow measuring approximately 60’ x 50’.

This site can house about 250 dogs, with the accompanying wastewater management system to support the requisite onsite water consumption located on just over three acres of land.

Service:

Although the design is focused primarily on environmental benefits, the canine user was also considered. The bungalow structures allow individual indoor and outdoor spaces, an abundance of natural light, fresh air, and pleasant outdoor views to the dogs.

ADOPTION FACILITY DESIGN WITH CANINE PERCEPTION CONSIDERATIONS:

Overview:

<table>
<thead>
<tr>
<th>Project Name</th>
<th>RSPCA Redevelopment (Stage I)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Use Type</td>
<td>Dog Kennel Facility</td>
</tr>
<tr>
<td>Location</td>
<td>Burwood, Australia (suburban Melbourne)</td>
</tr>
<tr>
<td>Date Designed/Planned</td>
<td>unknown</td>
</tr>
<tr>
<td>Construction Completed</td>
<td>c. 2007</td>
</tr>
<tr>
<td>Construction Cost</td>
<td>unknown</td>
</tr>
<tr>
<td>Size</td>
<td>.72 ac.</td>
</tr>
<tr>
<td>Landscape Architect(s)</td>
<td>Site Office</td>
</tr>
<tr>
<td>Client/Developer</td>
<td>RSPCA Burwood, Australia</td>
</tr>
<tr>
<td>Consultants/Architects</td>
<td>NHArchitecture (architect)</td>
</tr>
<tr>
<td></td>
<td>Van Der Meer (structural engineer)</td>
</tr>
<tr>
<td></td>
<td>Lincoln Scott (services engineer)</td>
</tr>
<tr>
<td></td>
<td>CL Arms (hydraulics engineer)</td>
</tr>
<tr>
<td></td>
<td>Marshall Day (acoustics engineer)</td>
</tr>
<tr>
<td>Managed By</td>
<td>RSPCA</td>
</tr>
</tbody>
</table>

The Australia-based Royal Society for the Prevention of Cruelty to Animals (RSPCA) is a community-based charity organization focused on animal care and protection, and is traditionally associated with operation of animal shelters. The Burwood dog kennel site is one component of a larger RSPCA campus, located in a suburban area (see Figure 20).

Context:

Aerial images indicate the campus is bordered by two major roadways on the south and west, a large, park-like parcel on the east, and a large undeveloped area to the north.

Leadership:

The Melbourne-based firm, NHArchitecture, led the project, but employed many professional consultants including structural engineers, service engineers, hydraulic engineers, and acoustical engineers. Site acoustics is an important consideration, particularly for the benefit of off-site neighbors and on-site workers. That is why NHArchitecture attempted to mitigate the deafening noise of barking through the use of double-glazed windows.

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Significance:

The trend to design for animals has been growing in other places around the world, such as England and Australia, but is just now catching on in the United States. Attention to details such as ground plane design, color use, and acoustic factors are smart considerations for ensuring the welfare of the canines in residence at this facility.

Program Development:

The program for this project appears to have been developed, or at least outlined, by the client providing a list of very specific operational needs including, housing: wash and cleaning space, and visitation areas to the designers. All of which should accommodate human and canine behaviors.

Scale:

For a kennel, this is a very large site. This area of the RSPCA campus has 5 buildings each housing 20 kennel units. Each complex is approximately 6 m. x 40 m. (19.7 ft. x 131.2 ft.), with about 15 m.(49.2 ft.) between each structure for dog walking and exercise (see Figure 21).

Design:

A black and white color palette is a major design element throughout the site. Thin, smooth modern lines are used to keep a clean, sometimes sterile feel. The multi-story structures address concerns of urban density, but also screen
from one kennel unit to the next, allowing for “stimulating
vistas” for the tenant of each unit (see Figure 22). This
organization allows for unwanted visual interaction between
dogs that do not get along well.

Service:

This project has a strong focus on canine behavior,
boasting design elements aimed to keep the dogs happy,
comfortable, and calm during their residence. For example,
material patterns on the ground plane and use of black and
white cladding on the building give the dogs an “interesting
and stimulating vista,” by playing to a canine’s ability to see
his world in high-contrast. Also, use of a long ramp system
instead of stairs creates ease of access for aging or
disabled canines who may need to be housed in a second-
story kennel.

DOG PARK DESIGN SURVEY:

Overview:

Article:  “Evaluation of off-leash dog parks in Texas and Florida: A study of
use patterns, user satisfaction, and perception.”
Land Use Type:  Dog Parks
Locations:  Florida and Texas
Date Designed/Planned:  variable

131 Hyung-Sook Lee, “Evaluation of off-leash dog parks in Texas and Florida: A study of
Abstract:

“The growing importance of dogs in people’s lives and in high-density urban environments has increased demand for a place where people and their dogs can interact and exercise together. The recent increase in the number of off-leash dog parks across the country is evidence of these demands of dog owners. Evaluation of four dog parks in Texas and Florida was conducted to investigate use patterns of dog parks and user activities, to identify user satisfaction and perception, and to provide insights in developing effective dog parks. The results indicated that dog parks received considerable use and served a variety of groups and users were generally satisfied with dog parks. Dog parks were identified as the most frequented locations regarding the provision of outdoor exercise and socialization for their dogs and proximity to a dog park was positively related to frequency of use and satisfaction. A substantial number of respondents perceived the benefits of a dog park for the dogs’ physical well-being and for building a sense of community by providing the opportunity to socialize with neighbors. These research findings and design guidelines will help expand the knowledge base regarding parks and guide the future planning, design, and evaluation of dog parks.”

Context:

Almost half (39%) of American homes own at least one dog, and the number of dog parks is dramatically increasing to accommodate demand. Little academic research has been done on the benefits of these parks, but it is assumed the parks encourage responsible pet ownership, which benefits the mental and physical health of the dogs, while also encouraging human daily activity, which benefits human health. This academic article summarizes POEs of four parks located in the southern United States; one park in Florida and three parks in Texas, ranging in size from 1 to 15 acres. This review provides an overview of design successes and failures of these parks, which may inform design decisions at the Shepherd’s Peace facility and adjacent park site.
Each park has variable site context issues. Adjacent neighborhoods may either be connected or disconnected, or may only provide automobile access, and one utilizes a utility easement. All four parks employ separate off-leash spaces for large and small dogs and maintained 4-6’ tall fences for site security. All the sites include play spaces, seating, and play structures; three have permanent water play areas, and one has a designated walking trail. Additional amenities include doggie showers within the parks and traditional human park amenities such as picnic areas and restrooms outside the designated dog park areas.

Methods:

Behavior Mapping and Observations: Because of budget and time constraints, only 40 hours of study had been assigned to each park through systematic mapping that assesses “size and crowdedness,” and unsystematic site visits to casually observe the parks. Dog behaviors are not considered, although general observation indicated that younger dogs are more sociable and less likely to become aggressive.

The observation criteria were selected based on a pilot observation study. The final study data was collected at pre-determined peak hours of operation during summer months. Activities recorded included group acts such as talking with other dog park visitors, and individual acts like sitting alone while watching the dogs play.

Survey: Similar to the mapping and observation protocol, the survey was pre-tested for refinement prior to official distribution to the target recipients. Over three hundred surveys were completed (by both dog owners and those who do not own dogs) which represented approximately a 50% response rate. When reviewing the survey results as a complete set, participants were “likely to be between 25 and 54 years old, white, married, highly educated, with an annual household income between $60,000 and $120,000.”
Results:

**Behavior Mapping and Observations:** Most users are between 20 and 60 years of age, with only 6.2% of users under 18 years or over 60 years. Because of the extreme summer heat of the locations, it is unsurprising that peak hours of use are early morning by the 60+ group, and evening and weekends for the remainder of the users. Slow times are afternoons between 1 pm and 5 pm. Most users prefer to employ a stationary, observational posture while at the park, simply observing the dogs by sitting or standing and talking.

**Survey:** Respondents own an average of 1.2 dogs per dog owner, and most often provided affirmation that time at the dog park is the major exercise activity for their pet, with leash walking the second most popular option. Other categories of inquiry (frequency, access mode, travel time, stay length, park activities, and constraints) provide variable results.

Satisfaction with dog parks:

Satisfaction is measured on two 5-point scales (1 = “very unsatisfactory” to 5 = “very satisfactory”). Features for evaluated are size, location, site layout, safety, shade, seating, lighting and parking. Results vary depending on the site, although total results “show that the level of satisfaction tends to be highest with large, proximate, and well-equipped dog parks.”

Perception of dog parks:

Survey results indicate that dog parks have an overall positive perception and major positive influence regarding public safety, community interaction, [human] physical health, and feel that it is important for communities to include dog parks.
Discussion:

Survey analysis reveals that “is important to provide the amenities and design features which provide diverse experience and accommodate various activities of dogs and their owners.” The following Table 8 from the article, Dog park design guidelines, provides a firm base from which to start the design process and derive programming elements (directed mostly at human users), and illustrates that inclusion of a dog park at adjacent to the Shepherd’s Peace site should be considered a neighborhood amenity to area residents (see Figure 23):

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>DESIGN GUIDELINES</th>
</tr>
</thead>
</table>
| LOCATION & SIZE | • Locate a dog park within walking distance of potential dog users. Potential users within a four block radius should be able to walk to the park without crossing a major road.  
• Select the sites along street routes that are already popular as walking routes for dog owners.  
• Consider the population density of neighborhood, the number of dogs and owners, which are expected to use the park, and provide enough space to reduce crowdedness. |
| SITE LAYOUT | • Provide one main park entry, which gives a sense of arrival, and entry to the park.  
• When a dog park is built within an existing park, provide a separate entry for dog park users to avoid potential conflicts with other park users.  
• At the dog park entry, provide the park name sign so that people are able to readily recognize the dog park.  
• Where applicable, connect a dog park with the community trail system.  
• Locate the main entrance into the park near a crosswalk.  
• Provide separate fenced-in areas for small dogs and big dogs.  
• Provide direct access to each dog area from the parking lot.  
• Parks are to be designed with an emphasis on conjunctive use and multi-use recreation areas and facilities to efficiently utilize park resources. |
| ENTRANCE | • Provide a double-gated entry for security, however, the gate safety latch should be easy to open with one hand.  
• Provide separate gates for entry and exit. |
<table>
<thead>
<tr>
<th>PARKING</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Provide paved entrances with ledges for resting keys, coffee cups, etc. while opening gate.</td>
</tr>
<tr>
<td>• Provide a signage at the entrance informing users of safety regulations and park hours.</td>
</tr>
<tr>
<td>• Provide a bulletin board for sharing information and communicating among dog owners.</td>
</tr>
<tr>
<td>• Provide a separate entry for maintenance vehicles away from the main gate.</td>
</tr>
<tr>
<td>• Bike racks shall be provided near the park entrance where appropriate to allow bicycles to be parked and locked.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PARKING</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Adequate parking shall be provided to minimize parking problems on residential streets.</td>
</tr>
<tr>
<td>• Place parking areas close to the entrance for convenience.</td>
</tr>
<tr>
<td>• Include security lighting for the entrance and parking area.</td>
</tr>
<tr>
<td>• Provide accessible parking spaces, designated by signs and pavement marking entrances.</td>
</tr>
<tr>
<td>• Provide concrete sidewalks with ramp from parking areas to the entrance.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OPEN LAWN AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Provide 6' high fencing and shrubbery around the park to enclose and screen it from adjacent neighbors.</td>
</tr>
<tr>
<td>• Provide large contiguous turf areas for dog to play and fetch.</td>
</tr>
<tr>
<td>• Incorporate a very gradual slope and avoid any abrupt changes in grade.</td>
</tr>
<tr>
<td>• Adequate drainage shall be provided so that the lawn does not become a swamp in rainy weather.</td>
</tr>
<tr>
<td>• Provide concrete or decomposed granite pathways for walking inside the dog park where space allows.</td>
</tr>
<tr>
<td>• Place benches or seating areas with shade along the walking path where appropriate.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SITE FURNITURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Provide trees creating pleasing ambiance and summer shade.</td>
</tr>
<tr>
<td>• Provide shade structures.</td>
</tr>
<tr>
<td>• Benches shall be placed to maximize shade in the summer and sun in the winter.</td>
</tr>
<tr>
<td>• Place a number of single benches at some distance from active areas for non-socializing sitters.</td>
</tr>
<tr>
<td>• Provide light, movable seats so they can be moved to the desired location for sun, shade, or a comfortable conversational distance.</td>
</tr>
<tr>
<td>• Fixed seating should both enable right-angle conversation and offer activity-oriented seating opportunities.</td>
</tr>
</tbody>
</table>
- Provide multipurpose tables to support conversation and gathering.
- Set benches back from walking paths so that pedestrians do not disturb bench sitters.
- Tables and benches along the park perimeter allow non-dog park users watching dogs’ play.
- Provide waste bag dispensers and covered receptacles for dog waste bags.
- Drinking fountains shall be accessible by dogs and people.
- Restroom facilities shall be provided in heavily used dog parks.
- Provide lighting for night use and safety, as appropriate. Limiting glare impacts on nearby residential areas should be considered.
- Provide doggie shower to wash off dogs after playing in the park.
- Provide water play facilities such as a swimming pond, water fountain, and cool off showers.
- An agility course will enhance dog’s exercise

### PLANTING
- Plant trees to buffer the street frontage, to provide protection from wind and sun, and as a visual amenity to the park.
- Use native groundcover, shrubs and/or trees in order to reduce maintenance wherever possible and appropriate.

Figure 23:
"Table 8: Dog Park Design Guidelines." (Source: “Evaluation of off-leash dog parks in Texas and Florida: A study of use patterns, user satisfaction, and perception.”)

### DOG PARK DESIGN:

**Overview:**

<table>
<thead>
<tr>
<th>Project Name:</th>
<th>Cosmo Dog Park</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Use Type:</td>
<td>Public Park</td>
</tr>
<tr>
<td>Location:</td>
<td>Gilbert, Arizona (Phoenix suburb)</td>
</tr>
<tr>
<td>Date Designed/Planned:</td>
<td>unknown</td>
</tr>
<tr>
<td>Construction Completed:</td>
<td>July, 2006</td>
</tr>
<tr>
<td>Construction Cost:</td>
<td>$1.5 million paid by Town of Gilbert, Arizona</td>
</tr>
<tr>
<td>Size:</td>
<td>16 acres (2.5 acres dedicated to the dog park)</td>
</tr>
</tbody>
</table>

---

Cosmo Dog Park in Gilbert, Arizona, is one component of a three-park network born of a town initiative to convert proposed stormwater retention basins from a new state highway construction project into functional public spaces (see Figure 24). Although, the primary functionality of space is to mitigate stormwater runoff from a new Arizona Department of Transportation (ADOT) highway path; the programmatic focus of the space is that of a dog park, serving dogs and their owners. A tertiary program element uses the park to educate the public about stormwater management and its ecological impacts.

Context:

Located in a new sub-urban community, trails to connect Cosmo Park to the nearby Zanjero Park and Discovery Park are either planned or built. A local Phoenix-
based organization, Arizona Forward (f/k/a/ “Valley Forward”), is proposing a large metropolitan trail network with these parks and others throughout Phoenix and the surrounding suburbs, creating a green necklace connecting the city’s parks system.

Leadership:

The town of Gilbert proactively approached the Arizona Department of Transportation with the idea of taking a modest sized, undesirable parcel, which was a planned stormwater retention basin, and develop it into a usable public space (see Figure 25). J2 Engineering and Environmental Design, a local landscape architecture and engineering firm, had already been working with the ADOT on other retention basin projects in the area. The multidisciplinary firm was easily able to lead the design and construction phases of this project.

Budget:

The retention basin design was already in place when the Town of Gilbert entered the project narrative. With very little alteration to the existing basin design strategy, the dog park design could be formed around it. The plan stipulated that ADOT incur the cost for excavation and earthmoving, leaving Gilbert to spend only $1.5 million to complete the park.

Significance:

The park is located on land often considered unusable or unwanted as a public space. However, it has been reclaimed by the community by implementing this unique programming strategy.
Program Development:

Although specific program development strategies are unknown, the Town of Gilbert wanted to provide spaces that reflect community interests. Cosmo Park focuses on canine use, nearby Zanjero is equestrian themed, and neighboring Discovery Park provides more traditional human-focused park amenities (see Figure 26).

Design:

The most functional design element of the park is the storm water mitigation basin. Originally, the three-park cluster had been designed to temporarily hold stormwater runoff from the new highway construction during major storm events. Upon approval of the park element to the road construction plans, the stormwater retention basin needed only slight modification from its original design. The basins are sealed and impermeable, holding water from a perched aquifer for regular use. The water is filtered and utilized for irrigation and dog play (see Figure 27).

The park has all of the requisite design elements of a well-functioning dog park, which include: parking, trails, seating, shade, some trees, fencing separating large dog and small dog play areas, and bonus elements of training equipment and water features for canine use.
Scale:

The scale of the park seems quite reasonable. The entirety of the park measures 16 acres of which 2.5 acres are dedicated solely to the fenced off-leash area. The rendered design plan indicates a shade-providing tree canopy for about half of the site, but after nearly a decade, aerial photos indicate that many of the proposed tree plantings for most of the park either were not planted or did not survive. In arid climate such as Arizona, providing more protection to users from heat and sun is important. Without speculating reasons for the lack of planting, providing some sort of protection such as trees, man-made canopies, or photovoltaic shade canopies would likely be a welcomed addition to the park.

Service:

Well-located in a highly residential area with ample pedestrian access intended to service the citizens of Gilbert, the design is so successful that the park has become a regional weekend destination. Increased use often causes areas of Cosmo Park to be closed for turf restoration, and parking spaces can be difficult to find due to such a large number of users (both canine and human).

KEY CONCEPTS

These four precedent studies illustrate what successful canine design can look like. The LEED-certified Animal Adoption Foundation facility in Las Vegas is an outstanding showcase of energy efficient, environmentally responsive design in an urban context. The smart environmental design solutions provide the long-term cost savings with a modest environmental. The site design and layout works well to accommodate high volumes of visitors looking for new pets to adopt, but other than the small meeting rooms in each bungalow, there is little outdoor space to exercise or interact with the dogs. Other well-executed elements include the implementation of the man-made shade canopy via the solar array, and xeriscaping to manage landscaping and irrigation. Many of the design attributes found in the bungalow design are transferrable to
Indiana’s climate, therefore this LEED Platinum design is considered to be an appropriate architectural design solution for canine housing at Shepherd’s Peace.

Living Machine systems have been implemented at various scales, but their use at this animal adoption facility proves its worth in cleaning non-human wastewater in high-volumes. The system’s small footprint, minimal maintenance needs, and aesthetic value add to the versatility of this method of wastewater management. Although, lacking in outdoor canine amenities the architectural and wastewater management solutions align ideally with the design problem outlined for this study. The architectural footprint of the kennel design should be implemented in the design solution for Shepherd’s Peace, along with an appropriately scaled version of the living machine wastewater treatment scheme.

The RSPCA project displays the importance of canine sensory issues when configuring a design. The high-contrast use of color and materials textures on the ground plane play well to a dog’s genetic sight capabilities, while the pattern choices appeal to human aesthetic sensibilities. Incorporating a two-story kennel design addresses canine considerations by directing available canine sightlines helps to reduce stressful interactions between dogs that do not get along (see Figure 28). However, second-story tenants likely do not have views of the courtyards between each building, as the main circulation corridor sets each kennel back approximately 10’ from the window (see Figure 29).
Some construction elements serve the needs of the canines, while they employ passive architectural design techniques to reduce the energy load necessary to cool and light the structures. A Post-Occupancy Evaluation (POE) could quantify the effectiveness of the design with regard to environmental conservation measures, and, most importantly regarding this study, canine health and happiness. Observation of daily canine behavior and interactions, review of adoption rates, and analysis of aggressive incidents involving dogs could constitute a few of useful POE variables for the RSPCA kennel.

The “Evaluation of Off-Leash Parks” study provides a comprehensive set of guidelines for dog park design that satisfy human concerns and will be used as direct design decisions in this creative project, while Cosmo Park implements those guidelines and illustrates how “dead” spaces may be successfully activated as multi-use public amenities for a region. An overt dog theme is visible throughout the park, including elements such as a fire hydrant-shaped water fountain for the dogs and paw-shaped patios add a cuteness to the design, but lack originality that the park deserves for being such an innovative use of space (see Figure 30). Also, due to the park’s popularity, a reconfiguration of the current parking arrangement could improve the amenity.

The City of Gilbert was very proactive in their strategy to work with multiple agencies, including the State of Arizona and the local police department to create a successful park and detention basin. Their strategy of cooperation among agencies would be beneficial to the Shepherd’s Peace project, as input from stakeholders such as professional trainers, veterans, veterinarians, canine caretakers, and community members would be ideal to help drive design. Collaboration with the Gilbert Police Department K-9 Division in designing specific park elements to aid the department in
training of their canine officers broadens the impact of the design by inventing a greater diversity of users. Designing multi-
use areas keeps the space activated even during off-peak visitation times. Unfortunately, time prohibits implementation of
such a strategy for this project, but assimilating the other pieces of information from Chapters II and III drive the project
vision, goals, objectives, and proposed design in Chapter IV.
CHAPTER IV: Design Application

This chapter combines the rich information about GSDs and landscape design discussed in Chapters II and III to articulate a clear vision of design needs for the Shepherd’s Peace German Shepherd Rescue facility. Then by providing a contextual framework of the site a final design that responds to both research and site conditions is presented.

PROJECT VISION:

Address needs of rescued GSDs through thoughtful and environmentally conscious landscape design, creating rehabilitative spaces in which rescued GSDs may live, train, and play while awaiting adoption.

GOAL 1. Create an environment that promotes physical and/or mental recoveries and encourages adoptability of rescued GSDs.

Reduce FEAR, PANIC and RAGE:
- Promote physical and emotional safety and security
  - Employ familiar archetypal residential landscape design
  - Establish safe, native plant palette
- Impart a sense of control
  - Options for activities or paths
  - Furnish wayfinding devices
- Provide accessibility for all users
  - Strictly follow ADA guidelines
- Balance prospect and refuge
  - Allow for clear sightlines from an observation area adjacent to a wall or building
  - Provide ways to retreat from a space
- Prevent UV exposure/glare/visual distress
  - Provide ample shade/sun per seasonal needs
  - Consider blinding light, shadow, and contrast
- Use sound mitigating materials when available

Encourage SEEKING and PLAY:
- Create training spaces (low-frustration environments that exercise impulse control and provide enrichment through human contact and training)
  - Multiple Spaces are adjustable to vary in size and distraction levels to grow with training abilities of canine and human
    - Include stairs, ramps, doorways, corners/walls, variable ground-plane surfaces
  - Include dramatic elements that may be easily changed, such as seasonal plantings and mobile play apparatus.
- Establish trails network (encourage physical fitness, and exploration; and provide enrichment through human contact and training)
  - 10, 20, and 30 min. trail lengths
  - A quiet trail for intensive socialization treatment
    - Incorporate simple identification system and signage to indicate when trail is in use or available for special training sessions
- Allocate gathering spaces for informal socialization

GOAL 2. Encourage Community Engagement

Partner with veterans suffering from TBI/PTSD to co-op emotional healing opportunities for veterans and rescued GSDs.

- Provide on-site housing for veterans and rescue GSDs participating in the PTSD service dog program.
  - One, 10-bed housing facility, with an allowance for expansion based on program growth

Re-activate Site

- Create a neighborhood amenity through allocation of public recreation space
  - Dog park
    - Include large dog play enclosures (> 1 ac. ea.)
    - Include small dog play enclosures (1 ac. ea.)
    - Employ Guidelines included in Figure 25
  - Schutzhund Competition Grounds
  - Multi-acre open meadow space for community use or public events
- Facilitate awareness and/or fundraising through public events calendar which may include:
  - Dog training events
- Trials and Exposition for Police, Search and Rescue, Drug Enforcement, Military, etc.
- Fitness Walks with Dogs
- Green Pet Fair
- Canine Rescue Fair (hosting other organizations)
- Host Games and Competitions (i.e. Agility, Fly Ball, Schutzhund, etc.)
- Canine Movie Night
- Canine Picnic
- Dog Yoga
- Dog Meditation
- Dog Wellness Fair
- Dog Garden Classes
- Bake-off/Bake-Sale
- 5K Run/Walk
- Disadvantaged Youth Training Program
- Police Canine/Mounted Patrol Fundraising Collaborations
- Coordinate “Pooper Scooper Pledge” in coordination with local sewer district
- Celebrate World Memorial Pet Day
- Memorial Brick Paver Fundraising for walkways

GOAL 3. Employ environmentally advantageous design practices to support water quality and reduce stress on aging municipal infrastructure.

Utilize constructed wetland system to mitigate facility wastewater
- Machine size and gpd processing (current estimate: approx. 1,500 square-feet to process at least 1,540 gpd)

Incorporate bioretention basins and pervious paving surfaces to manage site stormwater runoff
SITE EXPLORATION

The proposed site for development of the Shepherd’s Peace GSD Rescue facility is commonly known as 3000 East Pleasant Run Parkway North Drive, located on the southeast side of Indianapolis, Indiana. The site is currently owned by Citizens Energy Group (“Citizens”), a public-owned utility company that serves Indianapolis metropolitan area. A survey of historic Baist Real Estate Atlases and Sanborn Fire Insurance Maps illustrates a straightforward history of the 29 acre site. In 1901, the site, along with adjacent land, was platted to become a suburban-Indianapolis residential community; however, those development plans never fully evolved (see Figure 31).133 In 1908, the platted neighborhood where the study parcel is located was named Canby Place.134 Meanwhile, adjacent to Canby Place, the utility company presently known as Citizens, began building their “state of the art” Prospect Street gas and coke plant (see Figure 32).135 The plant produced coke (a coal fuel product, primarily for steel mill and foundry use) and piped in natural


gas for Indianapolis. This created an iconic industrial skyline that included enormous gasometer storage tanks and towering brick smoke stacks.\textsuperscript{136,137} In 1909, the plant was fully operational and most of Canby Place was converted to vacant urban open space known as Canby Park.\textsuperscript{138} By 1929, Canby Park is renamed South Keystone Park Playground, while Pleasant Run Boulevard, which runs along the east and south borders of the site had been platted. It is Pleasant Run Boulevard that formally divides the utility plant from the undeveloped park area. Although some “desire path” (an informal path, usually representing the most direct route between destinations) may be seen from the 1941 aerial photograph (see Figure 33) of the site, indicating that development was perhaps in process, the site remained open public space.\textsuperscript{139}

The post-World War II industrial revolution then made its mark on this neighborhood. The blocks north and west of the site became fully developed with new post-war residential


housing, and in 1950, the future Shepherd’s Peace site was developed into the amazing Twin-Aire Drive-In movie theater (see Figures 34 and 35). Catering to the ever-growing car culture that had swept the nation in recent decades, this popular drive-in movie theater was an anomaly of its kind by providing two separate outdoor movie viewing screens. Unfortunately, the popularity of drive-in movie theaters faded. Twin-Aire was closed in 1993 and on-site structures were demolished in 1996.\textsuperscript{140} Soon thereafter the property was transferred to Citizens.

Since Citizens’ ownership, the site has remained mostly unchanged (see Figure 36). With exception of minimal landscape maintenance, this site has been left untouched. In 2007, Citizens discontinued their Prospect Street Plant coke operations across the street from the site. In the time since, Citizens has spent over $4 million slowly demolishing on-site structures, including the iconic gasometers. They have spent nearly $8 million on environmental study and remediation activities at the plant site. None of the environmental activities

at the plant site directly affect the Shepherd’s Peace study site. Citizens reports that the study site is Phase I of their three-phase redevelopment plan, designated as “Public Use” and ready for redevelopment (see Figure 37).\(^{141}\)

Ecologically, the site could be considered sterile. The parcel was likely infilled for the drive-in movie theaters so that the center of the site was at a lower grade than the east and west borders of the site, creating a modest-grade amphitheater, perfect for the drive-in application. Because of the man-made topography, the parcel has an amphitheater-like typology. Since the site is generally above-grade relative to adjacent parcels, flooding issues carry little concern in spite of the site’s proximity to the Pleasant Run waterway. The soil type for the site is listed as “Ua, Udorthents, cut and filled,” which the Marion County Soil and Water Conservation District describes as “altered by man’s activities” which makes them variable from location to location, making an onsite investigation necessary.\(^{142}\) Perhaps due to the extensive automobile use having left oil and fuel drippings behind, the site is designated as a brownfield; however, the exact reason for the designation is unknown.\(^{143}\) Therefore, it is assumed that the site will be properly remediated, likely using a soil-capping method per Federal Environmental Protection Agency and Indiana Department of Environmental Management recommendations ensuring the safety of human and canine users, while retaining site design adaptability.

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Socially, the site has been completely disconnected from its neighbors for decades. The neighborhood resident demographic is comprised mostly of low income white families, with 35% of households in the area owning dogs. Those who live in this historically blue-collar area report that they like to spend their free time watching television, going to the movies, reading, walking/hiking, attending sporting events, or going to the zoo.\textsuperscript{144} Although technically considered to be a part of the Fountain Square neighborhood of Indianapolis, the site is located well over a mile east of the highly-trafficked mercantile heart of Fountain Square (at the intersection of Prospect Street, Virginia Avenue, and Shelby Street). The commercial core of Fountain Square is currently enjoying a redevelopment boom, but those economic benefits have not yet been received by the blocks adjacent to the proposed Shepherd’s site. Nearby site neighbors are comprised of a few more renters than owners, all of whom are experiencing a 30% vacancy rate in their area.\textsuperscript{145} Not surprising, in a high-vacancy, low-income area such as this crime events are frequent.\textsuperscript{146} However, the site boasts adjacent connectivity assets, including access to the Pleasant Run Greenway and five IndyGo metropolitan transit bus stops. Other nearby connectivity assets include the major thoroughfares of English Avenue, Southeastern Avenue, and Prospect Street (see Figure 38). The site’s land use designation is “commercial,” with surrounding zoning designations ranging from “residential” to “commercial” to “light industrial.”\textsuperscript{147} This mix of zoning allows flexibility of future design scenarios.

Some of these facts may seem bleak; however, in a city that is currently short-handed on developable infill parcels, savvy urban planners and real estate developers will recognize that this site possesses a myriad of attributes that set the stage for a successful redevelopment. The Site Analysis seen in Figure 42 helps establish the next important steps when creating a plan for reactivation of the site and transforming it into a neighborhood amenity by indicating the key elements of the site or those that impact the site, which should be considered during the site design process.


\textsuperscript{145} Ibid.


Figure 38:
Site Analysis Diagram
DESIGN EXPLORATION

During the initial design process the following three schemes showed promise as real contenders to become the well-rounded, thoughtful designs to address project goals.

Gasometer Concept: This design considers industrial forms of the past with post-industrial values. A nod to the vanishing iconic skyline of the Prospect Street gas and coke facility neighboring the site, this strategy converts a blackened past into a space that boldly displays the benefits of environmental remediation with a wetland element that anchors the design (see Figure 39).
**Working-Class Oasis Concept**: This draft celebrates the strong, hardworking blue-collar roots of the neighborhood. The design interrupts the regular grid of the adjacent neighborhood to create various recreation areas, providing a place to play hard (see Figure 40).
**Junction Concept:** This plan takes its design cues from past and present transportation paths to create a wholly connected neighborhood amenity and layover for those traveling along Pleasant Run trail or traveling from nearby Fountain Square and Irvington (see Figure 41).

This stage in the design process helps to understand how elements of a design can work together or oppose each other. For example, the Junction Concept allows the rescue most of the street frontage access on the west end of Hoyt Ave., but pedestrian access is needed to access the public park by the residents living across the street. To remedy the public access issue in this scheme, an awkward path has been created to fit the need. The Working-Class Oasis concept moves the rescue to the south central part of the site in an effort to better shield residents from barking GSDs, but the idea falls flat when access to Pleasant Run Trail is visually disconnected and rescue place feels too limited. The Gasometer concept is rich.
with historical context, ample space for the rescue, and a generous stormwater wetland intervention. However, in its current configuration, the park spaces do not flow well together. Taking the pieces of concepts that work well, like locating the rescue at the western end of the site, having centrally located stormwater retention basins, and careful consideration of pedestrian connections all appear in the Master Plan.

MASTER PLAN

The Shepherd’s Peace project consists of two separate venues (see Figure 42). On the west end of the site is the semi-private German shepherd rescue facility which houses rescued GSDs until a permanent home may be found for them. Large design elements include an administration building, in-door canine housing, outdoor training or play areas, and a wastewater wetland system. Also within the rescue compound is a housing facility for long-term temporary stays for veterans while they work with rescued GSDs in a canine therapy and training program to help those who suffer from PTSD. The rescue venue is wrapped in a dense vegetated buffer that helps provide a sense of privacy, safety and serenity.

The east end of the site is a public park, which has been inaccessible to the community for nearly 70 years. With a large residential community located north of the site, the park features a variety of pathway choices for pedestrians and bicyclists to use while they explore the park. Plenty of open areas and a formal plaza are available to entertain large community events. And there is also a two acre dog park located on the south end of the site that is sophisticated and large enough to host canine-focused competition and exhibition events.
Figure 42: Master Plan
Upon arrival ample parking opportunities and wide 10’ circulation paths welcome to visitors of all abilities. Showy, native plantings add to the comfortable atmosphere while providing unique visual interest through all the seasons. Rescue administration offices and kennels are located to the north of the parking area. Administration offices have been separated from the kennel buildings in order to provide a space completely separate from the dogs to conduct business operations. Borrowing the dog bungalow architecture from the Animal Foundation Dog Adoption Park in Las Vegas, each of the four kennel buildings contains 12 indoor/outdoor canine suites. Windows and skylights provide natural light and views of nature for each tenant. Like the Las Vegas plans, the Shepherd’s Peace kennels are oriented to take advantage of seasonal winds and sun angles that support passive air filtration and photovoltaic solar energy collection systems.

Immediately upon entering the site, water conservation efforts are seen beginning with parking lot design (see Figure 43). Graded to capture stormwater runoff as close to its source as possible. Bioretention planting areas placed throughout both parking lots collect and hold runoff water so that it may naturally infiltrate into the ground. Plants in these areas not only serve as a welcoming aesthetic element to visitors, but also help to filter and clean pollutants from the runoff before returning it to groundwater. Ornamental Trees add to the welcoming effect of the landscape as well provide shade to comfort visitors and help reduce the Urban Heat Islands Effect, by shading pavement that makes our cities hotter in the summer by reflecting the sun’s heat.

Further north beyond the kennels are the outdoor dog runs. The courtyard between the kennels and runs is where the wastewater treatment living machine is located (see Figure 44). Its central location reduces engineering and construction
concerns by keeping the system close to the wastewater source and recycled water demand. There are two distinct planting areas for the system. The northern planting area, Planter #1, services the rescue in its current configuration; the Planter #2 may be implemented when the rescue is ready for program expansion and care up to 96 GSDs. The current amount of water use is 1,540 gpd (see Figure 45). In the interim, the space is used for seasonal plantings, providing interesting visual interest to the dogs and caretakers in every season.

The Shepherd’s Peace system (see Figure 46) takes wastewater from the kennels and pumps it through three separate planted cells in Planter #1. Each planted cell contains engineered soil that aerates the wastewater allowing the plants to consume the micronutrients from the wastewater. Finally, the water is “polished” which is the final filtration and disinfection stage of the operation. The entire process is sensor monitored to ensure the safety of the water for reuse. The important physical operations all occur at the subsurface level, while at the surface level the living machine appears to be a raised bed planting area.

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Beyond the living machine planters are where the dog runs are located. Each run (see Figure 47) has similar, yet unique, viewsheds and 2,240 square-feet of space for training and play, to engage SEEKING and PLAY emotions for the dogs. The large open space allows for staff and handlers to provide further encourage SEEKING and PLAY by creating novelty in the environment with an ever changing variety of training tools, agility apparatus, toys, and other props that can be moved in and out of each run and training area. The fenced dog runs are buffered with shade trees, ornamental trees and attractive flower beds. Each bed contains a unique palette that adds to the variety and differentiation between runs by using high contrast, monochromatic, or dichromatic panting schemes that cater to the visual abilities of canine eyes.
Veterans enrolled in the Shepherd’s Peace Canine PTSD Rehabilitation Program are encouraged to stay on-site for the duration of their training in housing located south of the parking area. The floorplan is borrowed from other celebrated designs of accessible group housing facilities created in partnership with The Green House Project (GHP). GHP helps local organizations design small group residential-style environments for long-term care veteran facilities. Although Shepherd’s Peace is not a long-term care facility, using a GHP-partnered plan displays an accurate idea of the architectural footprint needed to provide Shepherd’s Peace guests with accessible and welcoming spaces that encourage comfort, safety and
Here, the ten-bed flexible living space allows veterans and their GSD companion to comfortably stay during the duration of their training.

East of the kennels are two 1,600 square-foot fenced private training areas designed to further accommodate a range of focused one-on-one or small group training needs. East of the parking area is a 2,400 square-foot training building, strategically placed away from the kennels, dog runs, trails, and veteran housing facilities to limit distractions during the training process. As previously noted, introduction of distractions during training exercises is a part of the learning process, but it is easier to introduce more distractions than it is to remove them if they are the present. Isolating the training area allows for better control of the training environment and the ability to tailor the space to fit a variety of training needs. Ideally, daytime access is reserved for veterans in the PTSD canine training program, while evening access is reserved for new owners of recently adopted Shepherd’s Peace GSDs or community members for obedience and training classes.

The circulation paths throughout the kennel facility and the veterans housing area connect with a series of accessible trails located on the eastern side of the rescue site (see Figure 48). Each leg of the interconnected trail system ranges in length from .08-.15 mile, so that trainers, handlers and dogs may have a choice in the path and duration of their experience (see Figure 49). Trail intersections or near intersects anticipate meetings between passing training teams and provide interactive teaching moments for handlers and canines. Trails wind in

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and out of densely wooded and open meadow environments to provide variation in experiences, which aim to continue to provide novel environments for the dogs (and humans) to explore, therefore reducing boredom and engaging SEEKING and PLAY.

The tree-lined boulevard is a redesign of the streets adjacent to Shepherd’s Peace and its public park portion to the east. The boulevard stitches together the surrounding neighborhood to the study site, inviting visitors to explore their reclaimed community amenity. Residents have four opportunities on the north side of the site to safely cross Hoyt Avenue to access the park (see Figure 50). Visitors arriving via automobile are allotted parking access on the south side of the park with their entrance located off of East Pleasant Run Parkway North Drive. Like the rescue entrance, showy native plantings punctuate major park entrances, enticing visitors to enter, explore and play.

Two bisected off-leash dog play enclosures flank the parking area. Each set of enclosures follows the guidelines set forth in the “Evaluation of Off-Leash Dog Parks” investigation, such as convenient access to dog park amenities by driving...
visitors, separate play spaces for large dogs and small dogs, and ample seating with deciduous shade trees that provide shade in the summer while making the most of available sunshine in the winter.

To reduce the impact of site runoff on the municipal storm sewer system, vegetated bioretention basins have been placed adjacent to the dog play enclosures. Stocked with native plantings, the bioretention basins collect stormwater runoff, filtering pathogens from organic waste and other standard runoff contaminants. Another series of three bioretention areas run along the east/west circulation path on the northern part of the park (see Figure 51). They are designed to not only collect stormwater runoff from the park site, but also serve as a visual amenity for visitors.

The North and East Quads are quiet spaces to meander, meditate or hide from the hot summer sun. Meanwhile, the Event Meadow, Plaza, and Play Meadow allow for large community program activities or informal pick-up games. Between scheduled community events, the Picnic Pavilions are available to host gatherings of friends and family (see Figure 52). All of these spaces are connected by 8’ and 10’ wide circulation pathways that support pedestrian and wheeled traffic or rest and observation opportunities. Wayfinding elements and memorials have been located at intersections along the pervious brick-paved paths.
The Master Plan for Shepherd's Peace has many detailed components that support help to achieve the project goals to benefit canine well-being and reactivate of an underutilized public space to create a community amenity, all while incorporating environmentally sustainable design practices. To complete this design investigation, the Conclusion provides a review of project successes and future considerations, as well as direction for further study.
CHAPTER V: Conclusion

This study was assembled through careful review of GSD and canine behavior, therapeutic design, park design and environmentally sustainable design practices for animal facilities in an effort to improve the quality of life for rescued GSDs. Inclusion of environmentally sensitive water use and processing practices, passive architecture models, and stormwater management systems support site sustainability, while decisions regarding thoughtful layout and programmed activities support therapeutic and park design outcomes. Although many of the overarching goals may be implemented in the design of canine kennel facilities, finding relief through design for such a strong, smart, and sometimes misunderstood breed helps to ensure that these guidelines and strategies should be effective for smaller or less assertive breeds.

When considering the specific site chosen for this design study, the guidelines presented herein could be applied to any number of sites; however, the site used for the design of Shepherd’s Peace worked exceptionally well because of its size and location. Underutilized and located in a struggling neighborhood, the parcel is prime for design solutions that are equipped with strong programming aimed at reactivation the site and to catalyze a rejuvenation of the community.

The broad vision for this project has been to address needs of rescued GSDs through thoughtful and environmentally conscious landscape design, creating rehabilitative spaces in which rescued GSDs may live, train, and play while awaiting adoption. This was accomplished by providing many different spaces in which GSDs and their handlers may engage SEEKING and PLAY activities of their choice in a safe, welcoming environment. A sense of safety and calm is perpetuated by using a palette of canine-safe, plants commonly found in residential designs of the region. A variety of accessible work and play areas as well as multiple walking paths allow for a sense of control for handlers and GSDs by offering choices of activity, location and duration. Although there are open areas exposed for full sunlight, visual distress is reduced in most pathways and training areas by using many light colored pathways and plenty of shade trees. SEEKING and PLAY are encouraged by providing novelty in the environment through use of exciting seasonal plantings around kennels and between dog run areas.
Other social planning strategies are introduced to this creative project study process through an unwritten alliance between the GSDs, the veterans, and the community. The overall sentiment is that social capital is important in community design. The same has also been said of the importance of social capital in the rehabilitation process, indicating that rehabilitative success correlates to positive social support surrounding the veterans with PTSD. This design presented here imagines that a “help your neighbor” attitude is embraced by the adjacent community to support successful outcomes for veterans visiting the Shepherd’s Peace, while community members feel pride in having such honorable new neighbors. This concept is further illustrated in Figure 53. Facilitating awareness and/or fundraising through public events as a part of the design program has not been fully executed by creating a community event calendar; however, the importance of these activities is acknowledged in the landscape design with a large public plaza, and open meadows in which any of those events may be held.

Additional material studies to determine which and what types of products should be used in priority over others. Finding the right product can add additional benefits to the GSDs, reduce negative impacts on the environment, and provide user-friendly elements for human caretakers. Further, careful selection of details such as fences, for example installing a

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chain-link fence instead of an opaque steel fence with a unique design, could mean the difference between designing “just another park,” and providing a unique sense of place.

In another investigation, overall site design could be improved by collaborating and soliciting feedback from stakeholders. Regarding the public park design within this study, stakeholders can include local businesses, faith-based institutions, schools, parks departments, Citizens Energy Group, but arguably the most influential should be the community residents. Preliminary demographic research gives some general indication as to what folks in this community might like to see in a public park. Without collaborative meetings interviews or other interactions it is difficult to accurately decide what can be the most successful design solution for a group. Additionally, on the rescue side of the design, receiving real-time input and guidance from on-site caregivers, trainers, and veterans to help locate program elements and selection of some finite design elements would bring an obvious richness to the rescue design that may be presently lacking. Finally, as illustrated in the precedent study of the Cosmo Park project, cooperation with law enforcement, specialty canine trainers, or other interested parties could help to further activate the space during times of off-peak park use.

If a rescue facility is built using the guidelines herein, it is highly recommended that two POE studies be executed approximately one year after opening each facility: one to evaluate success of the rescue as it relates to GSD behavior concerns, and, if a public park is incorporated into the rescue design, then the second POE will assess the functionality of the public spaces and park design which would advance design methods and understanding. In the meantime, this project provides designers an outline to consider when trying to create emotionally advantageous site designs for GSDs.
BIBLIOGRAPHY


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GIS Data

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