Pottawattamie County Conservation
Natural Areas Management
Guiding Principles

Guiding principles must be discovered through regular, disciplined, and humble first-hand observations made by the land stewards responsible for managing the principle and irreplaceable natural assets of the aboriginal landscape protected at Hitchcock Nature Center and other areas.

These guiding principles differentiate the work of PCCB from how other ecologists may do their work. They are articulated here, however imperfectly, in order to provide a clear vision and a solid basis for our decisions on the ground. An unarticulated guide, no matter how well understood in the moment, will not outlive personnel changes, will lose its clarity over time, and cannot be provided for the education and endorsement of the constituencies we serve.

1. **The Laws of Nature govern all things, enabling the natural world and all its constituents (humans included) to thrive.**

- SUNLIGHT, ultimate source of all energy on earth. *All life forms require energy and all available sources of energy are ultimately derived from the sun.* Many of our natural areas currently suffer from a lack of sunlight, and much progress is witnessed when thinning of the timber and brush allows greater penetration of sunlight to the herbaceous layer. Observations suggest that obtaining 10% of ambient light is a salubrious target in woodland restoration; densely canopied unmanaged areas typically allow 1%.

- WATER, defining characteristic of ecosystems. *All life forms require water, and healthy ecosystems receive and utilize water as a life-giving resource.* Current conditions in many areas, including areas of soil compaction, impermeable surfaces, agricultural tiling, etc. are hydrophobic—shunning water.

- SOIL, the unique quality of the Loess Hills. *All land-based life forms derive nutrients from and contribute to healthy soil.* Current land use depletes organic matter in the soil. This is both a result of, and has contributed to, the decline of deep-rooted perennial plants. Without a well-developed capacity for water storage, the soils become susceptible to erosion and extreme thermal fluctuation. These impacts reverberate through relationships between all life forms (plants, invertebrates, fungi, birds, mammals, etc.) further degrading the entire ecosystem.

- OUR Natural Systems—*especially the remnant communities – consist of complex and irreplaceable relationships among complementary species sustained in dynamic balance.* The complexity of these systems contributes to their resilience while making them impossible for humans to replace. Like a human body, when too much damage is done to the ecosystem's component parts, the whole corporeal structure degrades catastrophically.

- *HUMANS, directly and indirectly, are dependent upon natural systems and those systems on us. Further, we have the power to alter them for better or worse. Thus, we have a responsibility to, and self-interest in, being good stewards of the natural world.* Traditional aboriginal cultures drew on natural resources while maintaining the health of natural landscapes. Contemporary society suffers ecological degradation because of cultural disengagement from 'nature.' We fail to recognize our dependence upon and our ability to degrade the natural

world. By establishing an intimate sense of place, we are more likely to understand our dependence upon healthy natural systems and their susceptibility to our degrading influences.

Summary: the hard currency sustaining natural systems is calculated in solar energy, water, and soil. Humans have been committed to an artificial accounting system that fails to factor many of the costs to and benefits from nature. In order to flourish, we must be cognizant of our responsibilities to the economics of both our human *and* natural systems; they are intimately and fundamentally tied. Accordingly, and as stewards of our planet, we must heed the ecological laws that govern nature's systems. Nature cannot be forced to follow our human economic model. We are becoming ever more deeply indebted to nature, and we are approaching a day of reckoning. When we violate the laws of nature, both the ecosystem and we ourselves suffer: *to heal one is to heal the other*.

2. **No two ecosystems are exactly alike. The tactics of stewardship, therefore, cannot be applied uniformly, regardless of apparent local similarities.** Every healthy part of the earth's surface, even very small and adjacent areas, share less than 75% species composition in common. The fecundity and sustainability of every such place, however, is contingent upon their relationship with human society. The native plants and animals in their communities will flourish when humans are attentive to the *local* place. They will languish if we are not. Humans, therefore, must be respectful of every square foot of native places that remain.

3. **Only the plants and animals native to the place can teach us how to sustain life in the place.** Our understanding of the ecology of the Loess Hills and all natural areas is quite nascent, so our theories must be flexible enough to adjust to our forensics based on empirical observations. There is no greater truth than that told by the native plants and animals – they have no ego and no agenda.

4. **The Seven Teachings of the Potawatomie, an aboriginal culture from which this county derived its name, provide guidance and insight into our relationship with the natural world. Living in the 'lap of Grandmother Earth…**

   - *we come to **LOVE** the native plants and animals.*
   - *we come to **RESPECT** the home of the native plants and animals.*
   - *teaches **TRUTHS** that no indoor person can provide with as much veracity or integrity.*
   - *we come to see that it is far more beautiful and complex than anything we could make, which nurtures **HUMILITY**.*
   - *acquaints us with the need to become **BRAVE**, to avoid complacency, but to risk new things.*
   - *teaches us to be **HONEST** with ourselves and all others because the outdoors is unkind to dissemblers.*
   - *provides us the **WISDOM** to train the next generation.'*

5. **Success is derived from hard work, a willingness to take risks, fostering good relationships, and seizing opportunities.** Employees are expected and empowered to be creative and decisive, to exercise initiative and accept responsibility, and to use their training, experience, and judgement in decision-making to carry out their leader's intent.

6. **Complex problems are only solved through a diverse and integrated collaboration of experienced and dedicated practitioners, local to the place.** There are no 'enemies.' Rather, we are all complicit in the problems, and all invested in healing our relationship to the place.

Over the long haul of life on this planet, it is the ecologists, and not the bookkeepers of business, who are the ultimate accountants.
- Stewart L. Udall

These Guiding Principles may be applied to very specific stewardship situations. The result can be a set of specific 'rubrics' by means of which we can make the right choices and execute our responsibilities well.

The following provides examples of employing the Guiding Principles in land management activities and decisions when…

…using herbicides:

Generally speaking, the use of herbicides is not desirable as it conflicts directly with the basic laws of the natural world. However, in some circumstances, it is the most practical tactic to be employed. That decision should be made after first considering the guiding principles (above) and the following guidelines:

1. Never use herbicides when an alternative is feasible. Understand and give consideration to the life history of the target species and its relationship to the natural constituents of the site. Example: Don't spray sweet clover that happens to be present when the target is crown vetch. Even though it is desirable to control sweet clover, restoration and/or preservation goals are better achieved when a biennial is treated mechanically because mechanical treatment is less injurious to the desirable non-target native species that would be affected by the herbicide.

2. Use herbicide prudently. Time the application and choose the herbicide so as to be as selective as possible for the target species.

3. Use the lowest dose, least toxic, and least persistent herbicide consistent with effective, selective control. Method of application (i.e. spot spraying with backpack sprayer vs. broadcast spraying) plays a role in this.

…thinning woodlands:

When thinning woodlands, the primary objective is to admit more sunlight. In order to do so, the stand density must be reduced to permit approximately 10% of ambient sunlight to reach the herbaceous vegetation. This requires cutting trees down, but it is not that simple. Discretion and judgement are required. The sawyer must be able to recognize the different species and determine which are desirable and which are not. Ultimately, consideration is given to species, size, growth form, position on the slope, relationship to nearby trees, etc. Over time, we have learned that thinning in heavily wooded areas must be done gradually, lest the remaining trees be exposed too quickly to the wind. We have also learned that it is important to avoid jackstrawing the cut material and to prevent material from accumulating at the base of 'leave' trees (desirable trees). Bucking up the cut material promotes more rapid decay and/or consumption by fire, and reduces the risk to personnel cutting brush in subsequent years and carrying out ignition on prescribed burns.

…obtaining income from the land:

Because our human-imposed artificial economy is not applicable to the natural world, financial concerns should not be the primary driver in decision-making. We should not cut hay only to provide income for our projects/operations, but rather, we should employ haying as a tactic to accomplish our management objectives (i.e. altering structure for grassland nesting birds, reducing flowering vigor of invasive species, etc.). Generating income to support our efforts is an important benefit that results from haying, but should be viewed as a windfall.