

Guidance for Establishment & Management of Prairie and Woodland Areas

Quarry Estates, Ames Iowa

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1. Long-Term Maintenance:

- This section is listed first to underscore the essential nature of planning for long-term management of the prairie, wetland and woodland areas. Activities directed at keeping all natural areas in good condition should be considered on *the same level of importance as planning for lawn care and snow removal*. Furthermore, routine maintenance of established natural areas, performed by knowledgeable and experienced staff, will not only keep the needed labor and inputs to a minimum, it will also be less costly per acre than lawn management and result in a considerably more ecologically desirable setting.
- All natural areas should receive, at a minimum, annual assessment by an ecologist experienced in management of such areas. This includes inspection of all relevant landscapes for environmental (weeds or tree seedlings, drought effects etc.) and mechanical (mowing damage, herbicide overspray, vandalism) issues. Areas in need of repair or restoration should be addressed promptly. Additional comments:
 - An annual sweep to remove shrub and tree seedlings should be expected. This can be in the form of prescribed fire or mechanical removal by hand.
 - A healthy prairie area will have few new weeds but surrounding unmanaged areas may serve as a seed source.
 - Introduction of trees near prairie areas should be seen as increasing prairie management needs due to increased need to remove seedling trees.
- All prairie and woodland understory areas should be mowed annually if a prescribed fire has not been administered.
 - Generally mowing is done late spring to allow winter cover to remain in place for animal benefit and leave a more interesting landscape during the dormant season.
 - Prescribed fire is usually done on a three-year rotation, in early spring. This activity in particular should only be performed by experienced crews with National Wildfire Coordinating Group (NWCG) training and all relevant insurance policies and permits.
- After periods of unusually dry or wet weather some reduction of desirable prairie species may occur. In such cases the annual inspection should especially include recommendations that address any significant areas of bare or sparsely populated ground. These areas should be re-seeded with appropriate seed mix rather than allowed to become weedy and leading to larger problems.

2. Prairie and Woodland Understory Establishment:

Site Preparation: ongoing July – October 2015

- Existing tree assessment:
 - Road and lot line markers should be installed on the east end of the site.
 - Careful evaluation of existing trees relative to future construction should follow lot line delineation with emphasis on preservation of select hackberries and oaks. There are numerous walnut trees also; some of these are good size and should be left standing where feasible.
 - Weedy maples (box elder and silver/soft maple), mulberry and honeysuckle should be removed. These species re-seed prolifically, leading to increased annual maintenance.
 - Remove by cutting and treating the stumps with glyphosate or triclopyr
 - No use of Tordon should be allowed onsite
 - Consider leaving larger stumps for signage, art installation.
 - Some trees large enough for sculpture carving
 - If not left for use mounting signs or seating, cut low to ground
 - Do not grind out stumps – more soil disturbance, resulting shallow soil cover is not suitable for deep-rooted species
- Existing lawn grass and hayfield to be converted to prairie and woodland understory:
 - Mow in normal cycle until herbicide treatment begins
 - Warm months of 2015 should be used to kill unwanted vegetation
 - July: spray with glyphosate (grass) and aminopyralid (areas with clover, alfalfa, bird's foot trefoil)
 - Repeated inspections and additional treatments as green-up occurs (approx. August – October)
 - No tilling or soil disturbance
 - *Seed will go directly onto killed grass so no erosion control needed*
- Areas on south edge of Quarry Estates that are contiguous with Ada Hayden Heritage Park property:
 - Discussions should be held with City and County stakeholders to coordinate establishment and management of this interface
 - *Recommend eliminating all lawn grass between the two properties and managing southern border as continuous native landscape with Ada Hayden northern property*
 - This will dramatically reduce management issues stemming from cool season grass border between properties
 - This will significantly broaden the natural area aspect
 - Woody sections just south of Quarry Estates property can be improved as part of tree and old home site clean-up on east end
 - Emphasis on cedar and honeysuckle removal
 - If left in current condition these areas will be weed producers, leading to increased management needs on QE areas

Prairie Establishment- Outlying Areas:

Early winter 2015

- all areas with treated vegetation should be seeded by hand-broadcasting
- areas on outer edges, especially those adjacent to Ada Hayden Heritage Park property, to be seeded with seed mix originating from Doolittle State Preserve
- areas closer to walkways to be seeded with a high density mix of somewhat shorter species, emphasizing flowering species with a wide range of blooming times

- areas under trees on east end to be seeded with a savanna species mix, again emphasizing showy species but maintaining diversity and high plant density

Spring – Fall 2016

- Seeded areas monitored approximately every two weeks for weed growth
 - if weed growth is sufficient to cause significant shade on desirable seedlings: weed or mow
 - weeding to be done by hand in areas not too dense with weeds
 - if necessary spot mow or use mechanical trimmer on weedy areas.
 - This sets back weeds and favors growth of native species, but *does reduce flowering and lead to a less attractive stand during establishment.*
 - Desirable to maximize flower display to improve public and new landowner reception, therefore hand weeding is preferred where possible
 - Monitor for alfalfa, bird's foot trefoil, quackgrass, brome etc. and treat with herbicide as needed
- Areas that have been damaged or not developing as expected should be evaluated and re-seeded
 - Care to be taken to use species that germinate readily during any warm season seeding
- Continued monitoring and removal of maple seedlings, honeysuckle, cedars, mulberry etc.

Spring – Fall 2017

- Early spring mowing of all seeded areas
- Continued iterative maintenance: monitor for weeds and damage, treat as needed

Spring – Fall 2018

- Possible spring burn, depending on stand establishment. Coordinate with Ada Hayden HP staff. Mow site if not burned.
- Continued iterative maintenance: monitor for weeds and damage, treat as needed

Prairie Establishment in Internal Areas:

- These areas to have somewhat shorter vegetation than the outlying border areas, with greater emphasis on showy flowering species
- To be seeded as soon as possible after heavy equipment is off the areas
- *Speed of establishment very dependent on keeping weeds from setting seed during construction phase (see “3. Site-wide Management During Construction”)*

Wetland/Drainage Areas Vegetation:

- Recommend that native species be utilized to the largest degree possible
 - Many engineered hardscapes have been tried in recent years, few are attractive
 - Focus on infiltration via native species
 - Weeds virtually always establish in drainage-bottom hard surfaces, unattractively.
 - Use of correct native species solves both drainage and weed issues
- Species with a broad moisture tolerance will be selected
 - Often wetland species area used in these areas – can't make it through dry summer spells, weeds move in when the wetland species die out
- Having vegetation (vs. impervious surfaces) on a broad range of moisture regimes across this site will lead to better habitat establishment because many animal species require a variety of habitats thru growing season

3. Site-wide Management during construction:

It is important to understand the impact of letting a weedy stand of vegetation develop during construction:

- In traditional post-construction landscaping either sod or lawn grass seed is established.
 - Sod and seeded lawns can be managed for weeds by use of broad-leaf herbicides (and the weed-smothering effect of sod).
 - *Establishing a natural prairie landscape post-construction is considerably different:*
 - Broad-leaf herbicides will damage prairie species along with the weedy species, and there is no sod to smother weed seeds.
 - Furthermore, the weed seeds will contaminate the border areas being prepared for seeding fall 2015.
 - For these reasons it is strongly recommended that weeds in the areas to be developed are kept well under control, to a larger degree than with typical construction, with mowing or spraying treatments as construction goes on. *Not following thru with this recommendation will lead to a longer (unattractive) establishment period and considerably more management labor expense.*

4. Public Outreach and Education:

- People who are not familiar with native landscapes (or have seen failed attempts at establishing such areas) are often put off by what can be a weedy appearance when compared to traditional park-like landscaping.
 - This is especially true during establishment years, and even more so during establishment on weedy sites.
 - Again, emphasis on benefits of preventing weeds from setting seed during construction phase
 - There will always be some people that prefer a traditional high maintenance, controlled landscape, but with education and exposure to healthy natural landscapes many people will enthusiastically embrace a more natural appearance and the benefits offered.
- To help people have accurate and realistic interpretations of these natural areas the following outreach and education is recommended:
 - Education:
 - Signage onsite, both temporary explanations during establishment and more permanent once the site is well underway. This should include QR codes for access to websites with broader information than that immediately available onsite.
 - Especially useful to point out the natural landscape as historic, and in scarce supply
 - Today many people are interested in milkweeds for butterfly gardens, this is great but useful to argue many less showy species benefit from a broad prairie matrix – not just butterflies
 - *emphasis on habitat establishment is generally well received*
 - phrasing like “During establishment of prairies, first year they sleep, second year they creep, third year they leap” conveys need for patience
 - Hold onsite meetings advertised to both the public and new homeowners to provide opportunity for questions and comments.
 - Once established, scheduled walking tours around the natural areas with knowledgeable ecologist
 - Provide website and other social media with current information updates and access to deeper explanations

- *Consider interviewing previous landowners* for oral history of site, historic perspective on century farm as part of education signage. Old photos could be useful for website development.
- Borders:
 - Research has shown that a paved edge, fencing, signage etc. silently send a *message that the landscaping is designed and intentional*, not just a case of someone not bothering to mow or otherwise maintain the area
 - Recommend that the *internal prairie areas between parallel lots be delineated by spaced boulders*
 - Zero maintenance “fencing”
 - Spacing can be fairly broad
 - Brings in the “glacial erratic” story to the historic landscapes educational piece
 - Allows some seating for watching
 - Lawnmowers kept from cutting into prairie areas to turn etc.
 - Heavy enough to prevent creative re-location

5. Coordination with Lawn Care Providers:

Typically lawn care companies do not understand prairie management and often don’t appreciate prairie vegetation. This commonly leads to issues with herbicide overspray during dandelion treatments, mowing damage and other issues. Any contract with a lawn care provider should include specific language to address potential damage and significant financial penalties when such occurs. Note, minor penalties can be seen as cheaper than taking time to mow carefully.

Placement of boulders near lawn-prairie interfaces is one of the most effective methods of preventing mowing damage, and requires much less maintenance than fencing.

6. Trees to be planted:

- Use only native species, *this feeds into the native landscapes story for this subdivision and aids habitat establishment.*
- Planting trees in prairie areas will lead to ongoing increased management needs for seedling removal
- Recommend adding Bur oak, White oak, swamp white oak, hazelnut, eastern wahoo, service berry to list
 - Other species to be recommended for specific locations
- Some comments on current tree list:
 - Avoid invasive species or those that re-seed profusely (leading to increased management needs):
 - *Amur maple should be actively avoided:*
 - <http://www.dnr.state.mn.us/invasives/terrestrialplants/woody/amurmaple.html>
 - <http://dnr.wi.gov/topic/Invasives/fact/AmurMaple.html>
 - Flowering pear: includes the very invasive Bradford pear:
 - <http://mdc.mo.gov/newsroom/avoid-invasive-trees-such-bradford-pear-landscape-plantings>
 - <http://caseytrees.org/blog/invasive-tree-week-bradford-pear/>
 - Maples:
 - Tartarian maple: Not as invasive as Amur maple but not native to our area
 - Sugar maple:
 - we are west of its range. This species struggles here unless very well sited.
 - <http://maple.dnr.cornell.edu/pubs/trees.htm>
 - http://www.na.fs.fed.us/pubs/silvics_manual/volume_2/acer/saccharum.htm
 - Black Maple: does much better in our area than sugar maple.

- http://www.na.fs.fed.us/pubs/silvics_manual/volume_2/acer/nigrum.htm
- Lindens:
 - Littleleaf linden:
 - *native to Europe*: <http://www.plantmaps.com/nrm/tilia-cordata-small-leaved-lime-little-leaf-linden-native-range-map.php>
 - American Linden is native, preferred:
http://www.na.fs.fed.us/pubs/silvics_manual/volume_2/tilia/americana.htm
- Crabapples: showy for short period then very prone to losing leaves and unattractive look
- Ginko: native to China

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