Lilleskogen Park Restoration
City of Scandia






SRF Consulting Group, Inc.

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ENGINEERS | PLANNERS | DESIGNERS

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SRF No. 00706315

TO: CITY OF SCANDIA
PARKS AND RECREATION COMMITTEE

FROM: Ken Grieshaber, SRF Consulting Group, Inc.
Jason Husveth, Critical Connections Ecological Services, Inc.

DATE: March 18, 2008

SUBJECT: LILLESKOGEN PARK RESTORATION PLAN

The restoration and development of Lilleskogen Park will enable residents of Scandia to have a park facility that can be better utilized by many different user groups. These groups include school children who may use the park as an educational and interpretive resource, and seniors and young families who desire to have a safe and accessible walking trail system to use in close proximity to where they live.

The following background information and recommendations are provided to assist the City with developing an approach to restoration of the vegetation resources within the park as well as implementing new site improvements. Also included are preliminary cost estimates and a phasing plan which can be utilized by the City to begin to solicit funding sources and strategize an implementation and management restoration plan for the park.

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BACKGROUND INFORMATION AND RECOMMENDATIONS

I. SITE HISTORY

Pre-settlement Vegetation of Lilleskogen Park:

Critical Connections Ecological Services (CCES) ecologists referenced Francis J. Marschner's map (Marschner 1930) of the Original Vegetation of Minnesota to determine the general natural vegetation types present within the vicinity of the Lilleskogen Park site at the time of European Settlement (circa 1850). Marschner's map is of a coarse scale and resolution, and estimates the native vegetation of the county based on land surveyor notes taken at every half section during the original land survey of Minnesota. These data points were interpolated by Marschner to create general maps of pre-settlement vegetation types on a state-wide scale. However, the Original Vegetation maps are useful in that they provide a reliable estimate of natural vegetation and natural community types that existed prior to European settlement and landscape conversion to agriculture and other land uses.

The pre-settlement vegetation of the Lilleskogen Park site was likely a mix of Mesic Oak Forest and Oak Woodland and Brushland, with small inclusions of Prairie, Wet Prairie, and Wet Meadow at the time of European settlement. The park site lies within a landscape mapped as Big Woods Forest by Marschner's map (see **Figure 1**, **Appendix A**). In addition, a surveyor's bearing tree was located *within* the Lilleskogen Park site. This tree was recorded as a Paper Birch (*Betula papyrifera*) of 10-inch diameter by the original land surveyors in the 1850's. The surveyors' notes describe the vegetation type around the bearing tree as "thicket, brush, and underbrush", indicating that the vegetation of the immediate vicinity of the bearing tree (including the Lilleskogen Park site) was likely Oak Woodland and Brushland (rather that Big Woods or Hardwood Forest).

Soils of Lilleskogen Park:

The soils of Lilleskogen Park were determined using the Soil Survey of Washington County, Minnesota (USDA-SCS, 1980). According to the county soil survey, soil types within the park include: Santiago Silt Loam, 2 to 6 percent slopes; Ronneby Fine Sandy Loam; Freeon Silt Loam, 1 to 4 percent slopes; Kingsley Sandy Loam, 2 to 6 percent slopes; Demontreville Loamy Fine Sand, 2 to 6 percent slopes; and Cathro Muck (an organic wetland soil). A map of the soil types of Lilleskogen Park is provided as **Figure 2** of this report (**Appendix A**). Soil types have a pronounced influence on pre-settlement vegetation and drainage patterns, land use history, and suitable restoration and management goals for future management of the park. The project ecologists referenced soils information to determine suitable restoration goals and target communities to be restored and managed at Lilleskogen Park. Complete soil series descriptions are provided in **Appendix B** of this report.

Review of Historic Aerial Photographs:

Critical Connections Ecological Services obtained historic aerial photographs of the Lilleskogen Park site and adjacent landscapes from the Borchert Map Library, University of Minnesota, Minneapolis. Available historic aerial photographs from 1938, 1953, 1957, 1968, 1973, 1978, and 1991 were obtained and digitally scanned at high resolution. These photographs were analyzed by CCES ecologist to determine land use and vegetation trends of the site and surrounding landscape over the past century. Historic aerial photographs are provided in **Appendix C** of this report.

The following is a summary of CCES's analysis of each historic aerial photograph from 1938, 1953, 1957, 1968, 1973, 1978, and 1991.

1938: In 1938, the Lilleskogen Park site was dominated by herbaceous land cover types. The land cover was most likely active pasture land. The wetlands on the property appear to have little impact from artificial drainage systems. A main road (likely Scandia Trail) bisected the north end of the site from east to west. This historic road bed can still be found on site in 2008. A small copse of oak trees was present on the site, north of the Scandia Trail road alignment. At least some of these oaks remain on the site in 2008.

1953: Between 1938 and 1953, Scandia Trail was realigned to its present day (2008) alignment, connecting Oakhill Road and Olinda Trail with a widened and curvilinear improved road bed at the north end of the Lilleskogen Park site. In the 1953 photo, portions of the former east/west road alignment still exist. Several of the oaks trees that were present on the 1938 photograph were removed for the construction of the new Scandia Trail road alignment. However, approximately 10 to 12 large oak trees remain on the Lilleskogen Park site (and adjacent land to the east). The 1953 aerial photograph shows evidence of installation of a large drainage ditch on the south west edge of the site, draining the main wetland to the south. This ditch remains intact in 2008. The vegetation of the park site remained dominated by herbaceous agricultural cover types in 1953, most likely managed as active pasture land for cattle grazing. Few trees or shrubs can be seen, with the exception of the oak trees previously mentioned.

1957: In the four years between 1953 and 1957, little change in the landscape of the park site can be detected on the 1957 aerial photograph. The site remains in a herbaceous-dominated agriculturally managed cover type, with the large ditch system still in place. The former road bed to Scandia Trail is still highly visible in 1957, and it is assumed that it is still being maintained and used at this time.

1968: The 1968 aerial photograph is of somewhat lower quality than the previous photographs. However, several changes to the site's landscape can be observed. The vegetation of the site begins to shift from herbaceous dominated pasture land to a mix of herbaceous wetlands and uplands as well as tree and shrub dominated areas. The drainage ditch appears to be more prevalent in the 1968 aerial photograph, and it is possible that the ditch was expanded, deepened, and/or improved in the 11 years since the 1957 aerial photograph. Areas of the site that formerly contained scattered oaks (such as

the northwest and northeast corners of the site) are dominated by trees and shrubs in 1968. There is photographic evidence that two rows of pine trees were planted along the western edge of the site, sometime between 1957 and 1968. Many of these pine trees remain on site in 2008. These major shifts in vegetation types and aerial photography signatures suggest that the land use of the site may have changed dramatically in the time between 1957 and 1968. The change may have been a result of a transition from an active agricultural use (such as active grazing) to more passive agricultural or fallow uses, including tree plantings, forestry, and wildlife plantings.

1973: The 1973 aerial photographs continues to show a transition of vegetation and land cover types from a historically herbaceous dominated land cover to an increasingly tree-dominated land cover type. Conifer plantings detected in the 1968 aerial photograph continue to mature and spread in the 1973 aerial photograph. Deciduous trees (including the original native oaks) continue to expand in their coverage as well. Sometime between 1968 and 1973, the center of the large wetland was excavated, as is evident by the open water area in the 1973 aerial photograph (and evidence on the site in 2008).

1978: The 1978 aerial photographs continues to show a transition of vegetation and land cover types from a historically herbaceous dominated land cover to an increasingly tree-dominated land cover type. Conifer plantings detected in the 1968 and 1973 aerial photographs continue to mature and spread in the 1978 aerial photograph. Furthermore, additional conifer plantings are detected since the 1973 aerial photograph. Deciduous trees (including the original native oaks) continue to expand in their coverage as well. The center of the large wetland remains ponded and excavated in 1978. Only portions of the ditch system can be detected through the tree cover, but the ditch remains intact in 1978.

1991: The 1991 aerial photograph is a color satellite image of moderate quality and resolution. However, the 1991 aerial photographs shows much of the upland portion of the Lilleskogen Park site dominated in planted coniferous tree species (depicted in dark red), with the remaining upland areas dominated by deciduous tree and shrub species (depicted in dark brown). The herbaceous wetland areas are dominated by reed canary grass (a white aerial photo signature). The ditch system cannot be discerned through the coniferous and deciduous tree canopy in 1991, but it is presumed to be present (as it is present and continues to function in 2008).

II. ECOLOGICAL ASSESSMENT OF EXISTING CONDITIONS

Lilleskogen Park is a 9 acre semi-natural passive recreational park within Township 32N Range20W SW1/4 of Section 14, City of Scandia, Washington County, Minnesota. Critical Connections Ecological Services, Inc. (CCES) and SRF Consulting Group, Inc. (SRF) were retained by the City of Scandia to evaluate the existing ecological and environmental conditions of the park property, develop a park master plan, and develop restoration and management recommendations, approaches, and cost estimates to improve the park's natural qualities.

CCES ecologists conducted baseline ecological assessments of the property in December 2007 and January 2008. The field assessments focused on existing vegetation (native, exotic, and introduced species), natural community remnants, semi-natural vegetation associations, as well as soils, topography, hydrology, and past land use practices. Only limited ecological information could be ascertained from field assessments due to the fact that field surveys were conducted outside of the growing season, and under the cover of 6 to 12 inches of snow.

A) Existing Vegetation and Natural Communities (Winter 2008):

The vegetation of Lilleskogen Park is currently dominated by altered and disturbed vegetation and/or degraded natural community remnants. The uplands of the park are comprised of planted conifer stands (predominantly red pine and white pine), mixed coniferous/deciduous woodlands (comprised of planted pine and spruce, elm, oak, box elder), oak/aspen deciduous woodlands (dominated by red oak, northern pin oak, white oak, and quaking aspen), and managed herbaceous areas maintained for parking and access. The wetlands and lowland areas of the park are comprised of disturbed lowland hardwood forest (consisting of American elm, box elder, green ash, and willow) and herbaceous wetlands dominated by reed canary grass (an invasive wetland forage grass). Existing conditions are depicted in **Figure 3, Appendix A**.

B) Invasive Plant Species:

The most problematic invasive plant species observed within the park include reed canary grass (*Phalaris arundinacea*), common buckthorn (*Rhamnus cathartica*), glossy buckthorn (*Rhamnus frangula*), and Tartarian honeysuckle (*Lonicera tatarica*). Many of the predominant native deciduous tree species are also aggressive colonizers of disturbed landscapes, including: quaking aspen (*Populus tremuloides*), box elder (*Acer negundo*), American elm (*Ulmus americana*), and black willow (*Salix nigra*). These native deciduous trees species should be managed and controlled to achieve short and long term ecological and aesthetic goals for the park's natural landscapes.

C) Other Invasive Species:

Based on field observations, there is evidence of disturbance from introduced invasive earthworm species. Introduced earthworms consume large quantities of forest leaf litter each year. This decomposing organic material is important to native forest soil development, native wildflower persistence, and forest regeneration. Forest soils affected by introduced earthworms contain little organic material, little accumulated leaf litter, and have a decreased ability to retain soil moisture and soil nutrients. Forest soils that are depleted by earthworm herbivory lack the soil moisture, soil nutrients, soil structure, and mycorhizae to support diverse native herbaceous layers (i.e. grasses, sedges, and wildflowers) typical of native forest communities.

Currently, there is no known treatment to remove introduced earthworms from affected forest sites. If earthworms are a persistent problem within Lilleskogen Park's upland forests, forest restoration and management strategies will be limited in scope and effectiveness.

A species list of all vascular plants observed during winter field surveys is provided as **Table 1** in **Appendix D** of this report. Furthermore, field notes regarding the tree and shrub species present on the site (species, age, health) are provided as **Table 2** in Appendix D.

III. RESTORATION AND MANAGEMENT RECOMMENDATIONS:

Critical Connections Ecological Services developed ecological restoration and management recommendations based on the existing conditions and concept site plan created by SRF. These restoration and management recommendations focus of ecological and aesthetic priorities, while working within the existing framework on vegetation that has established within the park over half a century or more. While the restoration and management goals and approaches seek to improve the overall ecological quality of most of the park, they do not seek to restore the park to high quality examples of natural communities that may have been on the site at the time of European settlement (circa 1850). Rather, the goals and approaches seek to prioritize management goals to work within reasonable budgets and timelines to achieve attainable environmental goals that improve the overall ecological, recreational, and aesthetic qualities of the park. Proposed restoration and management goals and target conditions are depicted in **Figure 4** (**Appendix A**).

A) Wetlands and Site Hydrology:

The park plan recommends partial hydrologic restoration of wetland systems within the park by installing a water control structure within the ditch system. SRF proposes the invert elevation of a weir structure would be at 1027.5 feet above sea level. CCES has defined restoration wetland zones that coincide with a normal water elevation of 1027.5, and consist of open water, mixed emergent marsh, and wet meadow native wetland communities. Final determination of this weir elevation will have to be made after field survey verification of the surrounding topography and drainage ways to ensure it will have no impacts on adjacent properties.

Prior to installation of water control structures, reed canary grass should be aggressively treated with herbicide and managed with prescribed fire. Reed canary grass would be treated and managed with appropriate herbicides approved for use within wetland systems (i.e. Rodeo Glyphosate herbicide). Follow herbicide treatments with prescribed burning prior to flooding and reseeding wetland restoration areas.

Woody native and exotic species that are encroaching within the wetland fringe should be removed and managed to promote native herbaceous wetland vegetation re-establishment. In addition, the City should remove and chemically treat aspen, elm, box elder, willow, and glossy buckthorn that are encroaching into saturated herbaceous wetland areas.

Following removal and treatment of invasive woody species and re-establishment of natural wetland hydrology, the City should re-vegetate wetlands with appropriate native species seed mixes. Wetland plant communities appropriate to the site include mixed emergent marsh (inundated wetland center), and wet/sedge meadow (saturated and temporarily flooded wetland edges). Wetland seed mixes should be augmented to include high native wildflower concentrations to meet the aesthetic goals of the park plan. Native plant plugs could be used in lieu of (or in addition to) native seed mixes. However, planting of native plant plugs will be considerably more expensive than seeding.

B) Coniferous Woodlands and Mixed Coniferous/Deciduous Forests:

To begin restoration of coniferous woodlands and mixed coniferous/deciduous forests, the City should remove invasive shrub species from these woodlands, including common and glossy buckthorn and Tartarian honeysuckle. Invasive shrub stumps should be treated with herbicide immediately after cutting and removal, to reduce or eliminate re-sprouting or re-establishment of invasive shrubs.

Further assessment of the impact of invasive earthworms on forest herbaceous layer is recommended. Future restoration seeding and plantings should seek to re-establish earthworm tolerant native species within impacted woodland herbaceous layers, such as Pennsylvania sedge (Carex pensylvanica), common wood sedge (Carex blanda), or other tolerant species. Forest and woodland areas with bare or eroding soils can be mulched with weed-free native leaf litter, coniferous needle litter, or wood chips, to mitigate for earthworm impacts and help with forest organic soil horizon re-establishment. Only after earthworm impacts to forest soils are adequately assessed and mitigated for, can less tolerant native herbaceous species be re-introduced.

This restoration approach recommends maintaining coniferous forest and woodland canopy trees as they occur on the site. Some planted or naturalized coniferous trees can be selectively removed from conifer stands to improve park aesthetics, safety, or function with little negative ecological impact. However, given limited budgets and resources, a wholesale removal of conifer trees from naturalized woodlands and plantings in the park is not recommended.

C) Oak/Aspen Woodlands:

The oak/aspen woodland remnants at the north end of the site represent the best remaining opportunity to restore and manage existing natural community remnants within Lilleskogen Park. Invasive shrub species, such as buckthorn and

honeysuckle, should be removed and chemically treated. Quaking aspen should be selectively removed (and treated) to reduce competition on existing oak trees. Prescribed burning would serve as a beneficial restoration and management tool to control exotic species seedlings, and promote native species regeneration. Native herbaceous species typical of oak woodlands should be reseeded into the oak woodland remnants after initial restoration tasks have been completed.

D) Degraded Lowland Hardwood Forest:

Degraded lowland hardwood forests within the park should be managed to improve the overall quality of these lowland habitats. Invasive shrubs and herbs should be removed and chemically treated. Invasive native tree species, such as aspen, box elder, green ash, and willow, should be selectively thinned and chemically treated to reduce re-sprouting. More desirable and ecologically appropriate native trees, shrubs, grasses, sedges, and wildflowers should be inter-seeded and/or planted within restored, thinned, or managed lowland forest areas.

IV. SHORT-TERM RESTORATION AND MANAGEMENT PLAN (3 YEARS)

Critical Connections Ecological Services has prepared the following short-term restoration and management plan for Lilleskogen Park. This plan focuses on ecological improvements to the existing natural habitats and semi-natural vegetation areas within the park. Furthermore, this plan incorporates restoration priorities identified by the project ecologists, SRF park designers, and the City's Parks and Recreation committee.

YEAR 1 RESTORATION AND MANAGEMENT TASKS:

1. Remove and treat invasive shrub species, including Common buckthorn, Glossy buckthorn, Tartarian honeysuckle, and Prickly ash from woodlands and wetland edges. Cut shrubs in late fall (November) and treat stumps with appropriate herbicides, such as Glyphosate or Garlon. Cut shrubs can be hauled to piles and burned, or chipped, or left in place. Selectively remove and chemically treat Quaking aspen trees and other undesirable native tree species along wetland edges and within wetland soil spoils areas.

2. Chemically treat Reed canary grass monotypes within wetlands and woodland edges in late August or September, prior to winter dormancy. Treat Reed canary grass with an appropriate herbicide approved for use in wetlands, such as Rodeo (Glyphosate). Treat reed canary grass prior to hydrologic restoration of wetland.

3. Plan and implement a prescribed burn in late fall (October or early November) following herbicide treatment. Burning Reed canary grass monotypes should occur following chemical treatment. Burning wetlands should also occur prior to hydrologic restoration of wetland. The oak woodland habitats should also be burned to control invasive shrub seedlings and to foster native species germination and regeneration. Soil should be lightly disced after burning.

4. Obtain necessary federal, state, and local permits from regulatory agencies to install water control structure(s). Refine the design of water control structure to ensure desired hydrologic restoration goals and avoid flooding of adjacent properties.

5. Monitor response of invasive shrubs and Reed canary grass to initial treatments. Monitor response of native species to herbicide treatments, and adjust methods, timing, and rates of herbicide application to avoid unintended damage to desirable native species.

YEAR 2 RESTORATION AND MANAGEMENT TASKS:

1. Treat re-sprouts of invasive shrub species in spring and summer with Glyphosate based herbicides. Monitor invasive shrub seedling germination and hand-pull seedlings or treat with herbicide. Re-treat Quaking aspen and undesirable native tree species re-sprouts. Avoid unintended herbicide application to desirable native trees, shrubs, and wildflowers (forbs). Where herbicide drift or overspray cannot be avoided, use manual removal methods.

2. Treat Reed canary grass monotypes a second time in late August or September of the second year. Treat reed canary grass with an appropriate herbicide approved for use in wetlands. Second year treatments should be implemented prior to hydrologic restoration of wetlands.

3. Install water control structure(s) at the south end of the large wetland basin in fall or winter of second year. Allow wetland hydrology to re-establish over the winter of year two, prior to reseeding wetland with native species mixes.

4. Monitor response of invasive shrubs and Reed canary grass to second-year herbicide treatments. Monitor response of native species to herbicide treatments, and adjust methods, timing, and rates of herbicide application to avoid unintended damage to desirable native species. Monitor the re-establishment of wetland hydrology following the installation of water control structure.

YEAR 3 RESTORATION AND MANAGEMENT TASKS:

1. Design and order native species mixes for wetland and upland habitats on the site in early winter of third year. Tailor native species mixes to include lower diversity assemblages of resilient native species that can compete with altered landscape conditions and invasive species.

2. Monitor the reestablishment of wetland hydrology within restored wetlands. Allow hydrologic zones to re-establish prior to seeding. If necessary, treat Reed canary grass with Rodeo prior to native seeding, to reduce Reed canary grass cover and abundance, and increase the success of native wetland seeding. Allow for herbicide to dissipate (four weeks after application) prior to native seeding.

3. After discing soil, broadcast dormant native seed mixes within prescribed upland and wetland restoration habitats in the late winter or early spring of the third year. Do not seed areas where invasive species are still dominant, prevalent, or problematic, as additional herbicide treatments and management will likely be necessary in these areas. Monitor the germination and establishment of native species within seeded areas throughout the growing season. Avoid herbicide applications within newly seeded restoration areas.

4. Treat re-sprouts of invasive shrub species in spring and summer with Glyphosate based herbicides. Monitor invasive shrub seedling germination and hand-pull seedlings or treat with herbicide. Avoid unintended herbicide application to desirable native trees, shrubs, and wildflowers (forbs). Use manual removal methods where herbicide drift or overspray is an issue.

5. Monitor the response of invasive and native species to the implementation of restoration and management tasks over the third growing season. Monitor the restored wetland's hydrologic regime. Adjust future restoration and management approach(es) to incorporate monitoring observations and data.

6. Develop a long-term restoration and management approach, timeline, and budgets based on the results of implementing the three year plan. Refine restoration and management goals and objectives. Incorporate monitoring information into an adaptive restoration and management approach.

V. PROPOSED PARK AND RECREATION IMPROVEMENTS

The primary site improvement proposed for the park would be the development of a six foot wide looped bituminous trail system which will begin at a new off street parking lot located along the south side of the park along Oak Hill Road. See **Figure 5, Appendix A**. A six foot wide trail will accommodate low volume pedestrian traffic within the park. To meet minimal accessibility requirements, no segment of trail or boardwalk should be less than five feet in width to accommodate wheel chair use.

A small timber picnic shelter and orientation kiosk north of the parking lot helps define the main entry in to the park and provides the opportunity to create a picnic and small group gathering area within the existing red pine grove.

The trail system consists of a larger loop trail around the outside perimeter of the park and contains several small boardwalk crossings and a larger boardwalk crossing and overlook on the north side of the park. The alignment of the overall trail system allows for visitors to interact with a variety of woodland and wetland vegetation associations. A mid-loop trail provides access to an outdoor classroom and play area as well as a trail spur connection to Olinda Trail. Other spur trail connections are proposed to connect to the school access road near the northwest corner of the park and to Oak Hill Court which connects to a senior housing complex south of the park.

An 8 to 10-space parking lot with handicap parking is located on the south side of the park off of Oak Hill Road. Consideration should be given to incorporating permeable paving in the parking lot, if shared funding can be secured from the Watershed District. A security light is also proposed for the parking lot. Additional security lighting within the park along the trail could be implemented if desired by the City.

Adjacent to the parking lot is a 5,000 square foot native plant butterfly garden which highlights the main entrance to the park (see **Figure 6, Appendix A**). Wood chip trails allow visitors to experience the garden and view interpretive signage. A 2,500 square foot wildflower garden highlights the northwest corner of the park and this location could also include the installation of a second park identification sign because of its highly visible location from Scandia Trail and Oak Hill Road. The south and west facing orientation for both garden areas as well as a well drained soil medium should allow for both garden areas to sustain themselves with some initial watering and weeding during the first two growing seasons. Tilling and soil amendments should be done as necessary to loosen soils after verifying existing conditions at the time of plant installation.

An orientation kiosk provides general information about the site restoration work being undertaken in the park and also identifies interpretive nodes throughout the park which identify other woodland and wetland vegetation restoration efforts occurring along the trails system.

In order to raise the water levels in the larger wetland complex, a ditch block control structure is located at the south outlet of the wetland where a short boardwalk crossing is located. This will allow for an approximately one foot depth of water to be added to the large wetland complex and improve the quality of the wetland vegetation which currently is predominately invasive reed canary grass. The spoil piles which exist within the wetland complex are proposed to remain to support additional wildlife habitat, support native plant material and help provide screening from the adjacent roadway. Consideration was given to removal of these spoils but after further discussion with the Parks Committee it was determined they could be easily integrated with the overall restoration plan for the park and reduce excavation and earthwork costs for the project.

VI. PHASING IMPLEMENTATION PLAN

In order to begin implementing site improvements for the park, a phased implementation plan has been established to allow for smaller increments of funding to be secured for the project and to allow all for improvements to be completed in a logical sequence.

In order to make the park immediately more usable for residents, Phase 1 improvements include site grading for installation of the trail system and parking lot as well as the trail boardwalk crossings. This phase would also include installation of a water control structure on the south side of the wetland complex. Phase 2 improvements include beginning invasive vegetation removals and restoration of the wetland and woodland vegetation areas. Phase 3 improvements include installation of the picnic shelter, orientation kiosk, butterfly garden, and interpretive signage.
As funding resources are encumbered, some of the proposed site improvements identified in Phases 2 and 3 could be completed in Phase 1 if funding is secured for this scope of work.

VII. COST ESTIMATE

The itemized cost estimate in **Appendix E** outlines a breakdown of costs associated with all site improvements proposed for the park. It should be noted these costs are based on 2008 construction estimates and any site improvements that would occur after 2008 should allow for an additional 5 percent inflation rate for every year of construction beyond 2008. The cost estimate has also been formatted in to identifying proposed phase one, phase two, and phase three improvements for the park. The estimate also includes a 10 percent contingency for any unknown site conditions encountered during construction and costs associated with additional site survey, geotechnical investigation, and the preparation of construction drawings and specifications that may be needed prior to construction.

It should also be noted these estimates are based on private contractor bids and opportunities may exist for other non for profit groups or volunteer organizations to complete some of the work identified in the estimate to further reduce costs. Involving groups such as the Tree Trust for constructing boardwalks and using volunteer organizations to assist with planting and invasive vegetation removals could also dramatically decrease overall costs for the project.

VIII. GRANT FUNDING OPPORTUNITIES

Several grant opportunities are available for funding various site improvements in the park and some require securing matching local funds to award them for project. The following grant opportunities should be considered to be applied for by the City to fund site improvements for the park:

MnDNR Environmental and Conservation Partnerships Grant Program

i. Eligible projects: *Habitat Enhancement projects include:* restoration of native plant communities; reforestation; protection of wetlands; and abatement of soil erosion. Plantings must consist only of native species.
ii. *Ineligible activities include:* curriculum development; construction of trails, buildings, and boardwalks; project administration, overhead, and indirect costs.
iii. Application request deadline: January 31, 2008
iv. Application deadline: March 31, 2008
v. Requires 50 percent local non-state match, which can be:
    1. cash
    2. volunteer labor
    3. in-kind contributions of materials, equipment and services

vi. Maximum grant of $20,000
vii. Grants are awarded on a reimbursement basis. The recipient must incur and pay expenses before they can be reimbursed on a 50 percent basis by the State.
viii. Projects may commence fall 2008 or later, and must be complete by December 31, 2010.
ix. Info available at http://www.dnr.state.mn.us/grants/habitat/env_cons_part.html

b. **MnDNR Local Trail Connections Program**: To promote relatively short trail connections between where people live and desirable locations, not to develop significant new trails.
i. Eligible projects: Land acquisition and trail development. Projects must result in a trail linkage that is immediately available for use by the general public.
ii. Application deadline: annually on February 28.
iii. Minimum grant - $5,000. Maximum grant - $100,000.
iv. 50 percent "cash match" required
v. Info available at http://www.dnr.state.mn.us/grants/recreation/trails_local.html

c. Federal Recreational Trail program
i. Eligible Projects: Motorized and non-motorized trail projects; maintenance/restoration of existing recreational trails; development/ rehabilitation of recreational trail linkages, including trail side and trail head facilities; environmental awareness and safety education programs relating to the use of recreational trails; and redesign/relocation of trails to benefit/minimize the impact to the natural environment.
ii. Application deadline: annually on February 28.
iii. Minimum $1,000; maximum $150,000.
iv. 50 percent match required
v. Info available at http://www.dnr.state.mn.us/grants/recreation/trails_federal.html

d. Establish a "Friends of Lilleskogen" group of volunteers
i. Donations help fund the restoration project and long-term management efforts
ii. Under direction, volunteers provide labor for invasive removal efforts
iii. Under direction, volunteers provide labor for seeding and planting efforts
iv. Gardener volunteers manage establishment of new plantings by weeding and watering
v. Volunteers provide long-term management efforts