



## **Phalen Wetland Park:**

### **The Kind of Wetland You Could Take Home to Your Mother**

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#### **THE CONTEXT**

The neighborhood around southern Lake Phalen in St. Paul, Minnesota is a clean, mowed-up-to-the-foundation neat, blue-collar neighborhood. Many of its residents have lived there for 50 or 60 years. All of its residents share a growing concern over the nearly abandoned Phalen Shopping Center and nearby dilapidated apartment complexes and housing. The apartment buildings look uncared for and seem to draw disruptive tenants and piles of refuse. The Phalen Shopping Center has become an eyesore because of low tenancy and fading maintenance of the grounds. With this in mind it seems impossible that such a neighborhood could be convinced that something as "messy" as a wetland could provide a revitalizing neighborhood amenity. The Phalen Wetland Park, first proposed in 1986, did receive such neighborhood support. Groups which represented the neighborhood took initiative from the, then, far fetched proposal. Collaborating with the City of St. Paul, the Minnesota Department of Natural Resources and the University of Minnesota Department of Landscape Architecture, the Northeast Neighborhood Development Commission (NENDC) brought the proposal from imagination to reality, with support from the Legislative Commission on Minnesota Resources. The park is scheduled to begin construction in 1996.

#### **THE SITE**

In 1986 the proposed wetland amenity park was schematically designed, the specifics to be resolved at a later date. Support for the proposal was provided by the McKnight Foundation. Site analysis at this time found that the neighborhood is part of the Phalen Chain of Lakes, a popular migration route to nesting and foraging grounds from the Mississippi flyway and rookeries. The schematic design included major interventions, such as removing the Phalen Shopping Center and replacing the pond which was filled to build it. The initial acreage of the project was approximately 25 to 30 acres. The proposed site began with a thirteen acre parcel south of Lake Phalen between Johnson Parkway, Maryland Avenue, and Clarence Street. In a wide swath the park moved south on both sides of Johnson parkway to meet the reclaimed pond-under-the-mall and culminated to the southeast with stormwater cleaning gardens. The groups involved with this initial proposal decided that the best way to enable support for such a large urban amenity project was to create several phases which could be designed and constructed over several years.

The first phase was initiated in June of 1995. This design phase included only the 13 acre city-owned parcel south of Lake Phalen, between Johnson

Parkway, Maryland Avenue, and Clarence Street. The parcel was bisected by a 30 ft. high railroad berm running north-south, 100 ft. wide at the base and 30 ft. wide at the top, built circa 1870. Soil borings indicated that the site was probably a peat or sedge bog before and after the bisection by the railroad. The railroad, of course, was followed by urbanization, and the bog was increasingly filled. At the time of project initiation, the west half of the site was a mowed bowl of turf grass across the parkway from, and 2 to 8 ft. below the surface of, Lake Phalen. Two clumps of 70 ft. Cottonwood trees (*Populus deltoides*) and a small "remnant" Oak (*Quercus sp.*) and Basswood (*Tilia americana*) knoll remained near the railroad berm. The sides of the berm were unmowed and forested with buckthorn (*Rhamnus catharticus*), boxelder (*Acer negundo*), black locust (*Robinia pseudoacacia*), Staghorn sumac (*Rhus typhina*), and wild raspberry (*Ribes sp.*). The lowest part of the turf bowl was retained as a small intermittent wetland. Cattails (*Typha sp.*) dominated the small area too wet to mow, but a species of rush (*Scirpus sp.*) thrived there as well. Fat spruce (*Picea pungens*) and several apple trees (*Malus sp.*) and Catalpa speciosa trees had been haphazardly planted throughout the mown turf by the city. The neighborhood was strongly attached to the magnificent cottonwoods, the knoll, and to the cattail wetland in the middle of the lawn.

The wetlands on the east side of the berm underwent similar changes with the urbanization of the area. At one point in time it included a perfectly round dredged pond, which was later filled for building. At the time of project initiation the east side was overgrown to the property lines of adjacent residents. It included a shallow permanent pond, several permanently wet pockets, a forest resembling a floodplain forest with permanently saturated soil, and a raised utility easement, complete with a storm water inlet, running west from Clarence Street to the railroad berm. The wet areas contained a lot of reed canary grass (*Phalaris arundinacea*), but also had some lake sedge (*Carex lacustris*), some arrowhead plant (*Sagittaria sp.*), an annual herbaceous layer and some black walnut (*Juglans nigra*) trees in the "floodplain" forest, and neo-tropical migrant warblers en-route to wintering habitat. The east side was also home to several shopping carts, an old couch, some abandoned clothing, and more than one party's worth of beer cans. One of the adjacent properties was the uncared for, problematic six-building apartment complex about which the neighborhood was so concerned.

## **THE INTERVENTION: THE NEAT WETLAND**

### **GOALS**

The 1986 Wetland Amenity Park had several goals which were carried over to the 1995 Wetland Park design. The primary goals were to provide suitable foraging and nesting areas for some of the birds who use the Mississippi flyway, to provide a wetland amenity which can teach and enhance the Phalen area, and to re-create some semblance of the pre-development hydrologic regime. More specific goals were developed as the design process proceeded.

The first design and construction phase of the park was considered

particularly important because the continuation of the second design phase was and is dependent on its ecological and social success. A large part of the social success depends on neighborhood perception. The goals of the ecological reclamation were framed by the crucial goal that the park be accepted and appreciated by the neighborhood and by visitors to the Lake Phalen area. Acceptance of the wetland was perceived by the design team as a matter of creating unmistakable human intention by framing the "messy" parts of the park with "neat" borders (Nassauer 1995). This carefully framed first phase would lay the path for the second phase to be driven more by ecological goals than neighborhood evaluation.

## **THE DESIGN**

The collaborative design and advisory team felt it was necessary to preserve some of the existing elements of the site. The "floodplain" forest would be preserved for its habitat value and the oak - linden knoll for its remnant ecosystem value. The cottonwood trees and the small western wetland would be preserved because of the neighborhood's attachment to them. The 30 ft. railroad berm would be preserved because it is owned by the Washington County Rail Authority. These preservation priorities along with the neighborhood perception goals drove the final design of the 13 acre wetland park, completed in early 1996.

The east and west halves of the park will each feature one shallow permanently open water pool, created by regrading. The soil from regrading will be used on-site to create earthen ramps for visitors to climb to the top of the railroad berm and overlook the wetlands. The groundwater level varies from 3 to 6 feet below the surface. The east pool will primarily be fed by groundwater and stormwater runoff. The west pool will be fed both by groundwater and by an outlet from Lake Phalen. This approximates the pre-development hydrologic regime, though it is uncertain whether the pre-development bogs received water directly from the lake or from groundwater. The outlet from Lake Phalen will also serve to bring to the surface, or daylight, water from the storm sewer for the length of the park in the form of a stream. The stream will return to the storm sewer where the park ends at Maryland Avenue. The stream, though not present pre-development, recalls a nearby stream which was filled in by development, and also represents the promise of the continuation of the project to the shopping center.

The west half of the site is the first part of the park experienced by visitors. It is intentionally designed in more familiar urban language, using its neat frame as evidence of human intention and care. The "neat frame" consists of mowed turf, a circular boardwalk to get close to the water, a path to get to the top of the berm, and a large area to monitor re-vegetation success in the across water availability zones, from saturated to dry prairie conditions. Inside the frame the "messy" wetland and oak - linden remnant can exist, protected from human foot traffic and related impacts. The oak - linden knoll is protected on one side by the railroad berm. Visitors can look into it from a path on the berm, but not enter. The knoll is framed on the other side by upland grasses and forbs which dissolve into wet

meadow and emergent vegetation as the ground surface slopes into the stream and pool. The entire area between the knoll and the water is inaccessible to humans. On this inaccessible side of the pool, emergent vegetation is intended to create protected nesting pools for ducks. The human-accessible area, the "neat frame", is on the opposite side of the pool and stream.

The reed canary grass on the east half of the site will be removed chemically before regrading. Chemical treatment was recommended for a full summer and again in the following spring. After regrading, a forest buffer will be planted between the open water and a cul-de-sac development next to the site. The forest is intended to buffer residents from visitors, and vice-versa, as well as provide potential habitat for wood ducks. A wetland shrub carr, and bands of vegetation corresponding to water tolerance will be planted and will include native emergent, wet meadow, mesic, and upland vegetation. The "floodplain" forest will be left undisturbed. The City of St. Paul will request proposals for construction and re-vegetating the park. Construction documents will be produced by city engineers. Information regarding funding for the construction of the park is not yet available.

From the design description, several specific goals become apparent: 1) directing public use to maximize experience but minimize impacts to the reclaimed landscape, 2) choosing sustainable native plant communities to match the hydrology, 3) providing specific types of animal habitats, and 4) providing distinct areas for the opportunity of monitoring vegetative success over time.

Ultimately the success of the design will be determined by the positive perception and acceptance of the park by the neighborhood and other visitors. The positive perception can only be helped by the establishment of a healthy system. Perception will be determined by feedback from the community and by the amount of support for continuing the second phase of design. However, it is important to note that a degree of this perception is a function of the educational success of the park. Currently, the overwhelming notion of a beautiful wetland is one filled with cattails. It is hoped that the design will begin to change this perception through education and careful design, such as the "neat frame" concept (Nassauer 1995).

The ecologic success of the park will be determined by the ability of the planted and naturally recolonizing vegetation to survive and propagate over the years. The ecological monitoring zones will be the test-plots, not only to monitor the colonization and establishment of plants, but to help determine what site-specific conditions may be helping or hindering plant survival. Grasses, sedges and forbs in the monitoring test-plot will be planted over a wide topographic range of potentially successful water availability zones. The zones are intended for formal scientific monitoring, though no model has been chosen at this time. The expectation is that the plants will thrive in the zone for which they are most suited. Plants outside of the test-plots will be monitored informally. One important aspect of this general monitoring will be to periodically inspect for invasions of exotic species, especially reedcanary grass and buckthorn. Information from test-plot monitoring will also potentially be used to suggest further refinement of plantings. Opportunities to monitor animal recolonization

and use are also present on the site, especially as community-involvement projects.

## **THE CRITIQUE**

Several issues emerge from the discussion and description of the Phalen Wetland Park. First, the wetlands being created have permanent open water with its associated ring of emergent vegetation, even though the site was historically a wet meadow or bog. Wet meadow and bog communities have suffered enormous losses in the area -- approximately 99% in the Ramsey-Washington Watershed district (RWMD 1993). In contrast, open water wetlands have increased by approximately 100% (RWMD 1993). This discrepancy exists across the U.S., in general ephemeral wetland loss is mitigated by the creation of open water wetlands (Galatowitsch and van der Valk 1996). The Phalen project may be eventually be able to address greater wetland diversity as the project develops. Since the implied intention of the first phase of the project is to educate the community about wetlands, the creation of wet meadow or bog communities may be more amenable in the second phase. It is unknown if more intensive community education about wetland diversity may have allowed greater freedom in the choices of the wetland communities for the first phase of the park.

The second issue is related to the creation of a stream where there was not one previously. The stream is essentially a daylighted storm sewer, however it will be perceived by visitors as a stream. It will begin to act like a stream, eroding and depositing sediment, meandering and overflowing. It is important that the city engineers take these dynamics in to consideration in stream design, rather than planning it as a stormwater ditch. Revegetation will be particularly challenging with fluctuating hydrology. It is unknown if adequate models exist to successfully revegetate these kinds of habitats. Using riparian communities as references may be useful when developing specific planting plans. Both the form and function of a stream will need to be carefully considered for an effective restoration of this corridor.

Thirdly, actions to increase visibility into remnant lowland forests could alter their composition and function. The design calls for the vegetation on the sides of the railroad berm to be removed so visitors can peer into the canopy of the forest and into the activities of any birds which might be there. This may have the impact of reducing refuge effects for birds. The wet forest is snuggled against the east side of the berm. The vegetation on the side of the berm helps shade the saturated soils, keeping the soils from drying by the sun, and discouraging sun-loving invasive exotic plants from invading its delicate balance. Removing this berm-side vegetation could potentially degrade the forest which was intended to be saved.

Fourth, and finally, some aspects of restoration success cannot be fully evaluated until a plant list has been compiled for the design. Plant zones, such as "emergent", "wet meadow", "mesic prairie", and "upland" were indicated, giving some direction for plant choices. This plant list should include preferred tree, shrub, grass and forb species for each of the hydrologic zones delineated in the

plan. Because the construction of the park will be contracted to a private construction company, part of the integrity of the design could easily be lost because of this deficiency.

While these challenges may limit optimal restoration in phase I, the implementation of phase I should serve to create more restoration opportunities in future phases of the project. With careful monitoring, maintenance of the "neat frames", and continued commitment of the city and community, phase I of this project will meet the primary goals to provide suitable foraging and nesting areas for some of the birds who use the Mississippi flyway, to provide a wetland amenity which can teach and enhance the Phalen area, and to re-create some semblance of the pre-development hydrologic regime.

## **REFERENCES**

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