

Proposal for the Restoration, Beautification, and Interpretation of the Cheshire Wetland.

Location: Cheshire Park Wetlands. Rio de Flag Reach 610-630 and west to Cooper Drive (see map).

Proposal from the Flagstaff Area Stream Team (FAST)

Mission Statement: The mission of the Flagstaff Area Stream Team (F.A.S.T.) is to identify opportunities for restoration, maintenance, and preservation of streams, wash corridors, and open channels within the city limits, and take an active role in achieving these goals.

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Area of Interest: The area to be covered extends from the Cheshire Dam to Fremont Blvd, and from Fremont Blvd west up the Rio to Peakview St. to Reach 640 and Cooper Drive (see map attached). The stretch below the dam to 610 in the canyon is mostly Museum of Northern Arizona property (MNA), where the flood plain is well vegetated with arroyo willow and ponderosa pine. We propose that it should remain as a sanctuary for wildlife without further development. However, MNA does maintain and use a short interpretive trail into the canyon.

The Cheshire Park Wetlands is part of the Rio de Flag Greenbelt.

Description of Area: West of the Cheshire Dam (also known as the Narrows Dam) is an important urban wetlands area, the only one within the city limits. The dam restricts water flow so a pool of water is maintained at present (June/July 2010) with a steep rock edge to the south, and a more gradual rocky slope to the north up to MNA property. To the west of the pool is a large area of willows (arroyo and coyote willow species), giving way to an open rocky area and the Cheshire Park. The Rio drainage into this area is a ditch with relatively steep slides, which starts just east of Fremont Blvd and continues west up to the crossing of the Rio and Cooper Drive. Some trees and shrubs are established along this stretch, but most of the drainage is without woody plants: it is hot and dry in summer with some dumping of branches, garbage, and ashes present. The fences lining the backs of properties are mostly prominent and unattractive.

Woody plants present along some parts of the Rio include ponderosa pine, aspen, narrowleaf cottonwood, arroyo and coyote willows. These are established up the bank of the Rio and between the bank and property fences.

Historical Perspective: Jesse Gregg bought land in what is now referred to as the Cheshire Estates in 1900 for growing hay, grain, and potatoes. In 1951 the ranch was sold to the C. C. Cheshire family who sold it for a subdivision in the 1960s. The meadow which is now Cheshire Estates had apparently a meandering stream running through it before settlement. It had several branches and at times flooded a large area. The dam

was constructed in the early 1950s as a fishing pond. The farm house, barn and sheds were removed in 2009. The area began development as Cheshire Estates in the 1960s and presumably the Rio was channelized into the current ditch before building began. This left poorly vegetated banks. Cheshire Park was dedicated to the City of Flagstaff in 1969. Houses along the Rio on Cooper Drive were constructed beginning in 1974. The ditch has become a dumping ground by some residents although cleaning episodes have improved the situation. Some stretches have been revegetated but others lack trees and shrubs and are in need of more vegetative cover.

History of “Cheshire Park Habitat Pond” Development: In 1996 a grant application from the City of Flagstaff to the Arizona Game and Fish Department, Urban Wildlife/Wildlife Habitat program. The proposal was for the “Cheshire Park Habitat Pond” to enhance about two acres of riparian area within the Rio de Flag floodplain and to promote the preservation and education value of an existing wildlife habitat. Negative impacts from trespassing, trash and general lack of public awareness about the importance of wildlife habitats threatened the beauty, integrity, and public value of this unique habitat type in Flagstaff. A map of the proposed site was drafted (11/26/1996, attached), and a proposal was approved by the City and submitted (11/27/1996).

A grant for \$11,700 was issued (4/13/1998) for the project from the State of Arizona to the City of Flagstaff. However, the grant was refunded to the State (11/28/2001) because of structural problems with the dam and concerns of adjacent property owners.

Our proposal is to build upon the original plan and to extend it. Adjacent property owners have changed, and those local residents who know of this renewed plan are in favor of it. Dam repair was completed by October, 2000, but insufficient precipitation prevented a test of the repairs. Apparently in June/July 2010 the dam holds water effectively to a depth of about 2 feet.

Actions to be taken. A phased approach will be adopted.

Phase I. Planting. After City approval of the proposal planting of trees will be conducted along the Rio from Fremont Blvd to Cooper Drive where it crosses the Rio. Careful attention will be devoted to keeping plantings away from the flow line of the channel. Trees will aid in erosion control and stabilization along the banks of the Rio. Gaps in areas to be planted are located where existing vegetation is adequate. Trees will also be planted to provide shade south and west of the bench at the viewing location adjacent to the pond. **Weeding.** Weeds will be removed adjacent to the FUTS trail to allow seeded decorative plants to spread (including flax, Penstemons, and Mexican Hat [*Ratibida* species] present in 2010). No additional seeds will be used in Phase I, but extra seeding may be used in later phases as needed. The toxic, dangerous, and exotic poison-hemlock (*Conium maculatum*), which is common around the FUTS trail, will be removed. **Trash removal.** Any trash remaining in the area, after a letter to residents has been circulated, will be removed by volunteers. **Watering.** A schedule of watering will be developed to ensure good growth of young plants until they are well established. **Propagation.** Trees and shrubs will be propagated from cuttings and seed, to be used for planting in 2012. Propagation techniques will follow those developed by Tom Whitham, Department of Biological Sciences, NAU, and Brad Blake, Manager of the NAU

Research Greenhouse. **Design.** The design of the bench and interpretive sign, and the content of the sign will be planned. This phase is expected to be completed in 2011.

Phase II. Planting. Planting of trees and shrubs is planned for around the urban wetland area. An effort will be made to deflect pedestrians onto the FUTS trail, off the path from the park to north of the pond. This will involve planting shrubs around the unofficial path so that they gradually fill in over the route. Shrubs will also be planted among the trees planted in the Phase I plan. **Weeding, Watering, Propagation.** To be continued as in Phase I. **Channel maintenance.** Maintenance of a positive flow channel through the wetland area into the pond will be undertaken, if possible, by the City in 2012, followed by any planting needed to cover disturbance away from the channel. **Bench and Interpretive Sign.** These items will be installed beside the FUTS trail overlooking the pond. Completion of Phase II is expected by the end of 2012.

Phase III. Planting. Dead plants will be replaced and pruning of trees will be maintained over the long term. Planting will be expanded as needed up the banks of the drainage onto flat areas either side of the Rio. Maintenance of plants with watering, weeding and fertilizer applications will continue as needed.

A. Plantings: The addition of woody plants to the present grassy slopes would enhance the Rio channel along the area of interest. Willows and cottonwoods will be free of charge as leftovers from NAU research projects, or propagated from cuttings by team members. Planting and maintenance will be spread over several years. The main tree species to be planted initially will be the narrow-leaf cottonwood, *Populus angustifolia*, a native riparian species in Arizona, and aspen, *Populus tremuloides*.

The riparian shrubs will include arroyo willow, *Salix lasiolepis*, and coyote willow, *Salix exiguae*, both of which are present along the Rio at the dam and near Fremont Blvd. The cottonwoods and willows provide good habitat for birds and are fed upon by many insects.

These trees and shrubs are suggested because they already exist in the drainage, and they have a proven record of good establishment, growth, and survival along the Rio. Also, they can be propagated readily from cuttings and we can obtain them free of charge.

Other shrubs will include wax currant, *Ribes cereum*, and golden currant, *Ribes aureum*, both attractive when flowering to bumblebees and to birds when berries ripen. Trees will be planted at 15-20 foot intervals and shrubs placed between them. They will be planted 10 feet and more from the center of the drainage and up the bank.

Riparian native herbaceous plants will be established from local seed or vegetative propagules where conditions permit, and as habitat is ameliorated by trees and shrubs. Herbaceous plants now present in the drainage, or close by, will be used: yellow monkeyflower, *Mimulus guttatus*; globe-mallow, *Sphaeralcea* species; *Lupinus* species; *Penstemon* species; columbines, *Aquilegia* species, *Iris missouriensis*, etc.

B. Interpretation and Education: The Flagstaff Urban Trail System (FUTS) skirts the Cheshire Park Wetlands providing views overlooking the dam pool and places to locate a bench and an interpretive sign. The sign will provide information on plants, animals, the drainage system, the value of the wetland and the importance of its preservation. The actual structure of the sign and its content will follow City recommendations.

We will prepare lists of plants and animals which will be made available to interested visitors on a web site. A bird list made by a resident of Cheshire Estates from 1975 to 2010 lists 72 species, without including great blue herons and mallard ducks seen on the pond and roadrunners observed on local roads. (An undated checklist of birds for the Rio de Flag by Debbie Brown lists 85 species). The area already supports many interesting plant and animal interactions, including pollination and insect herbivory, offering opportunities for study by local students.

The richness of the local bird fauna illustrates the potential for increasing biodiversity of the Rio corridor, and the educational potential provided by the many species and habitats present. The area could become a significant conservation site and an example of bioremediation and restoration for residents in the Flagstaff area.

In effect we will be establishing a new, fully-functional ecosystem, which replaces the original open meadow used for farming and grazing stock. This includes recycling of nutrients, self-propagation of species, and fully developed food webs from plants as primary producers, to herbivorous animals, to carnivores.

C. Involvement of local residents: We hope to interest residents along the drainage by circulating information about the project. Property owners might help with planting and watering plants. A letter, approved with this proposal by the City, will be delivered to residents along the Rio asking for their collaboration on a volunteer basis involving removal of trash, plantings, and watering. Also, signs at the dam, Fremont Blvd, Peakview Road, and Cooper Dr. will notify people of the restoration effort, and ask for their help with the protection of city property. Another sign on the unofficial trail between Cheshire Park and the north side of the pond will advise pedestrians to use the FUTS trail and to protect sensitive habitat.

Advantages of the plan to residents include the following.

- (i) Increased property values as vegetation develops.
- (ii) Shading and cooling of local habitat.
- (iii) Increased aesthetic appearance, by hiding fence-lines and adding greenery.
- (iv) Enhanced wildlife activity (particularly day-flying insect pollinators and birds), including use by migratory birds.
- (v) Stabilization to Rio banks to reduce erosion and silting in the channel.
- (vi) Psychological benefits of tranquil, cool, streamside vegetation are explained in the Friends of the Rio de Flag Newsletter, Fall 2009.

D. Channel Maintenance: The City of Flagstaff's Stormwater Management Department is required to provide for water flow through all reaches of the Rio. The Team proposes that the city crews, with proper care and supervision, will perform this work, in the area east of Fremont through the wetlands to the open water at the dam. Team members would be involved in any necessary revegetation work after the channel flow line is cleared. During this process we suggest that the pond area be extended westward to reduce invasive growth of riparian vegetation, and that a meandering channel be maintained as a positive flow channel for the free but slow passage of water. The amount of channel maintenance should be determined by city staff, but disturbance of vegetation should be minimized.

A small backwater area adjacent to the flow channel will be maintained which will contribute to plant and animal diversity (shown on Cheshire floodplain map to the south of the flow line).

West of Fremont Blvd. hand/chainsaw removal of woody growth in the channel will be needed.

All channel maintenance will comply with recommendations in the City “Stormwater Management Division Proposed Maintenance Guidelines for Open Channels – Regional Watercourses”.

- (i) Maintenance of hydraulic capacity of the watercourse.
- (ii) Preservation or introduction of vegetation to promote a natural environment.
- (iii) Cost effective maintenance practices.

Drainage management guidelines in this document include allowing low herbaceous vegetation, such as grasses, in the channel to reduce erosion, and cutting down of woody growth from the flow line and up the bank for 2-3 feet. We recommend that woody growth be cut by hand and chainsaw, without root removal, and that heavy equipment should not enter the drainage west of Fremont Blvd.

Costs: If a permit is granted in 2010 we anticipate that no costs will be incurred by the city this year. Plants will be gifted to the project by NAU through left-overs from research projects with Dr. Tom Whitham as the principal investigator, Department of Biological Sciences and the Merriam-Powell Center for Ecological Research. In subsequent years plants will be propagated by team members. Plantings by team members and others will be free of charge, and watering, fertilizer and rental of an auger will be covered by team members and perhaps residents of the area.

We hope that channel maintenance and dredging from 2011 will be covered by the city. Signage might be covered by a grant or perhaps by the city.

Specifications: The table provides some details on the area of concern. Dimensions are approximate.

Location	Dimensions	Number of trees/shrubs
Length of Rio from: Dam to crossing at Cooper drive	3,100 ft., 0.6 mile	
Dam to Fremont	670 ft.	68/120
Fremont to Peakview	1,740 ft.	180/250
Peakview to Cooper	680 ft.	68/120
Area of pond at dam	3,760 sq.ft., 0.09 acres	
Area of wetland	115,010 sq. ft., 2.64 acres	
Width of floodplain in Fremont-Peakview section	50 ft.	
Depth of ditch	7-10 ft.	
Width at base of ditch	25 ft	