Part Three
Park Management Concerns

Water Delivery Considerations

The goal of the restoration effort is to re-create native wetland and riparian habitats that are, to the maximum extent practicable, self-sustaining. The depth to the water table, however, requires that water continue to be applied to the park to maintain the moist soil conditions necessary for the desired plant communities. Currently, the timing of water deliveries limits restoration efforts. Following are descriptions of the likely future conditions if water deliveries are limited to the fall and winter months.

Aquatic Ecosystems: Riverine areas of this region were historically characterized by a mosaic of aquatic and wetland habitats. If water is available only in the fall and winter, the park's aquatic ecosystems will continue to be dominated by invertebrates because fish and amphibian populations in the park cannot survive due to drying of the ponds in spring/summer. Aquatic vegetation in the form of algae or wetland plants, like southern cattail (*Typha domingensis*), could be present in the wet season, but the cool temperatures of fall/winter may preclude heavy growth. If some wetland/aquatic plants do become established, they would probably return year after year as the seed bank becomes established.

Upland/Riparian Ecosystems: Without water during the spring and summer, little additional riparian vegetation can be established. Current conditions favor deep-rooted trees and shrubs that can get their roots to the water table. Revegetation efforts will have to be limited largely to upland species that depend on summer rain only. The amount of organic material in the soil of the wetland ponds will increase as plants grow and die in response to the filling and drying of the ponds. Currently, the dominant plant species in the pond areas are early successional species. This will change as the plant community matures, but changing soil conditions, particularly associated with accumulation of salts, may influence the rate of maturation and types of plant communities that develop.

Water Table Changes: The proposed lining of the Riverside Canal is likely to affect the vegetation closest to the canal that is dependent on the relatively shallow water table made possible by seepage from the canal. Because lining the canal will reduce recharge to the shallow alluvial aquifer, the salinity of the ground water may

increase. The lowering of the water table and potential diminution in ground water quality will affect the viability of all of the shrubs and trees in the park that have deep root systems.

Desired Future Condition

As stipulated in the agreement between CERM/UTEP and the city of El Paso, management of the park is to focus on restoring and enhancing valuable wetland and riparian habitat along the Rio Grande while providing public recreation and educational opportunities. The latter concern, that of developing the park to facilitate public access for appropriate recreation and educational purposes, was addressed through the development of a master plan for the park's development, as shown in Figure Two. Portions of this plan are currently being implemented.

Park development plans are contingent on the establishment of a viable and robust riverine environment. Thus, restoration work is of paramount importance. The overarching goal for the biological management of Rio Bosque Wetlands Park is to re-create the mosaic of habitats characteristic of the Rio Grande and its floodplain in presettlement days. A variety of habitat types is achievable within a 372-acre park, because within arid ecosystems, the transition from obligate wetland species through riparian floodplain species to upland species can occur within a distance of only a few hundred feet. By restoring native plant communities, habitat will be provided for native animal communities like birds, fish, small mammals, amphibians, and reptiles.

American Crow
Corvus brachyrhynchos

Based on variations in soil type, water flow patterns, pond configurations, and the patterns of existing or emerging stands of late seral vegetation, a map was created of the distribution of aquatic and terrestrial habitats practically achievable in Rio Bosque Wetlands Park. This map, shown in Figure One, displays the distribution of habitats that this management plan seeks to promote. Specific goals and recommendations that follow provide guidance for achieving this desired future condition. The map of potential habitat distribution is conceptual and is not intended to be an exact blueprint to which the park's vegetation communities must conform. Ultimately, site-specific environmental conditions will dictate which communities develop where within the park.

General Restoration Considerations

Water availability and water quality are ecosystem factors that will have profound effects on the various habitats within the park. Water quantity issues include draw-down rates and whether water will be available during the summer months. When a year-round body of water is present, then total dissolved solids (TDS) and levels of dissolved oxygen become important factors that should be monitored and controlled to ensure the survivability of aquatic animals and plants.

An ecosystem factor that should be analyzed is 'patch' size. Salinity and water availability may dictate the size and composition of vegetated areas, but plans must also consider the needs of the animals that would utilize such habitat. The size and distribution of habitat patches within the park will influence the animal community the park supports. Wet conditions and improved habitat have already attracted large numbers of migrating waterfowl. Over time, it may be possible to establish sufficient habitat to support populations of fish, amphibians, reptiles, and birds within the park year-round. Questions that must be answered include: What animals are expected to be associated with a particular plant community? How many animals could a 'patch' of given size support? Are the animals migratory or year-round residents?

The impact of the park's animal populations on its plant communities also needs to be considered. Currently, the park has a well-established population of black-tailed jackrabbits, desert cottontails, spotted ground squirrels and gophers, and attracts muskrat and beaver when the channels and wetland cells are flooded. Many of these species will have a significant influence on the composition and structure of the plant communities that are present.

Yellow-billed Cuckoo
Coccyzus americanus

Particular attention should be given to ecosystem factors that affect habitat for species of special concern. For example, restored habitat within Rio Bosque Wetlands Park has the potential to attract and support such riparian-obligate birds as Yellow-billed Cuckoo and Southwestern Willow Flycatcher (*Empidonax traillii* ssp. *extimus*). Critical to achieving this goal is adequate water. Not only is water necessary to establish and maintain the desired riparian plant communities, but the aquatic ecosystem must be healthy enough to support the lifecycles of the insects that are food for these birds.

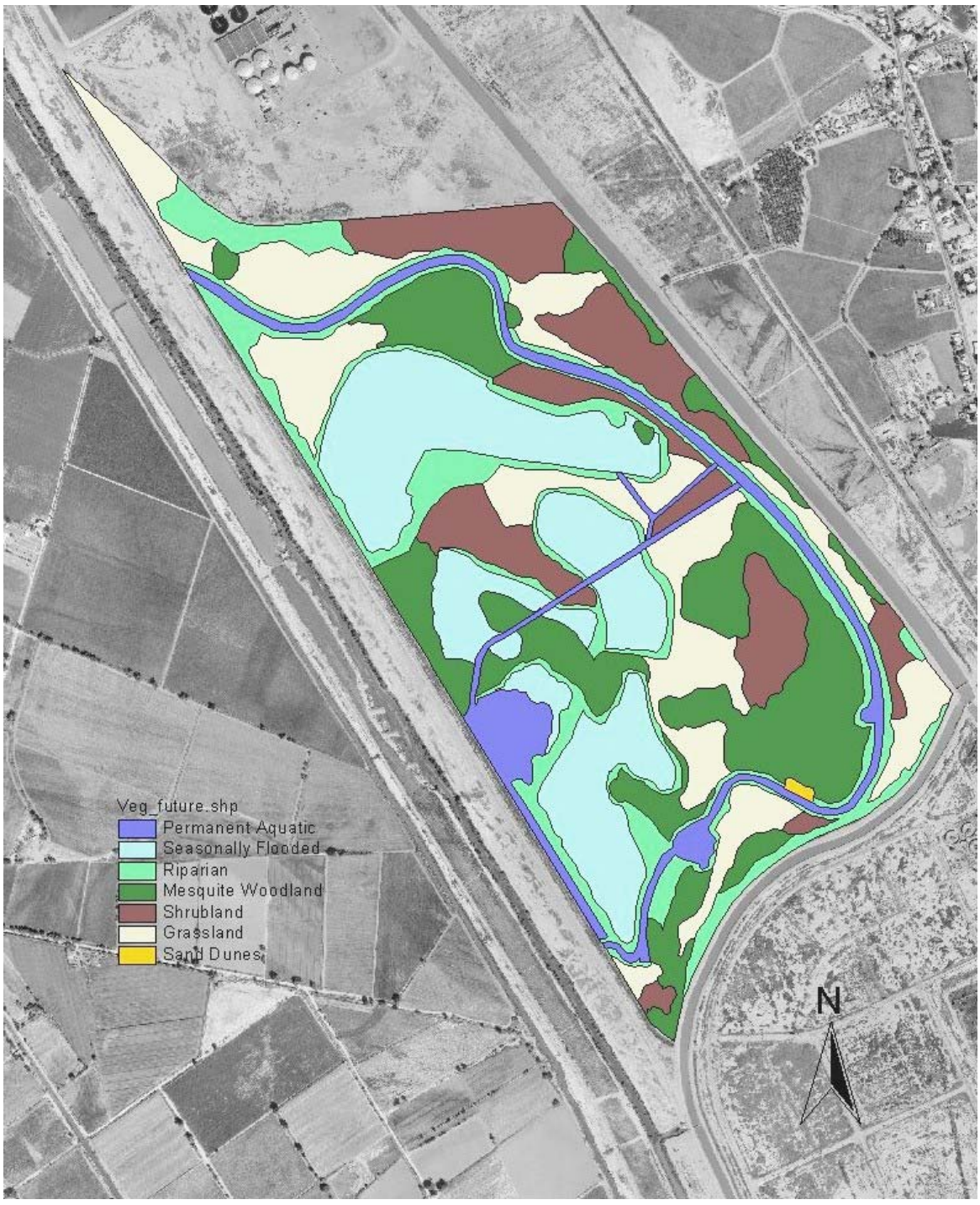

Figure 1: Future Vegetation of Rio Bosque Wetlands Park

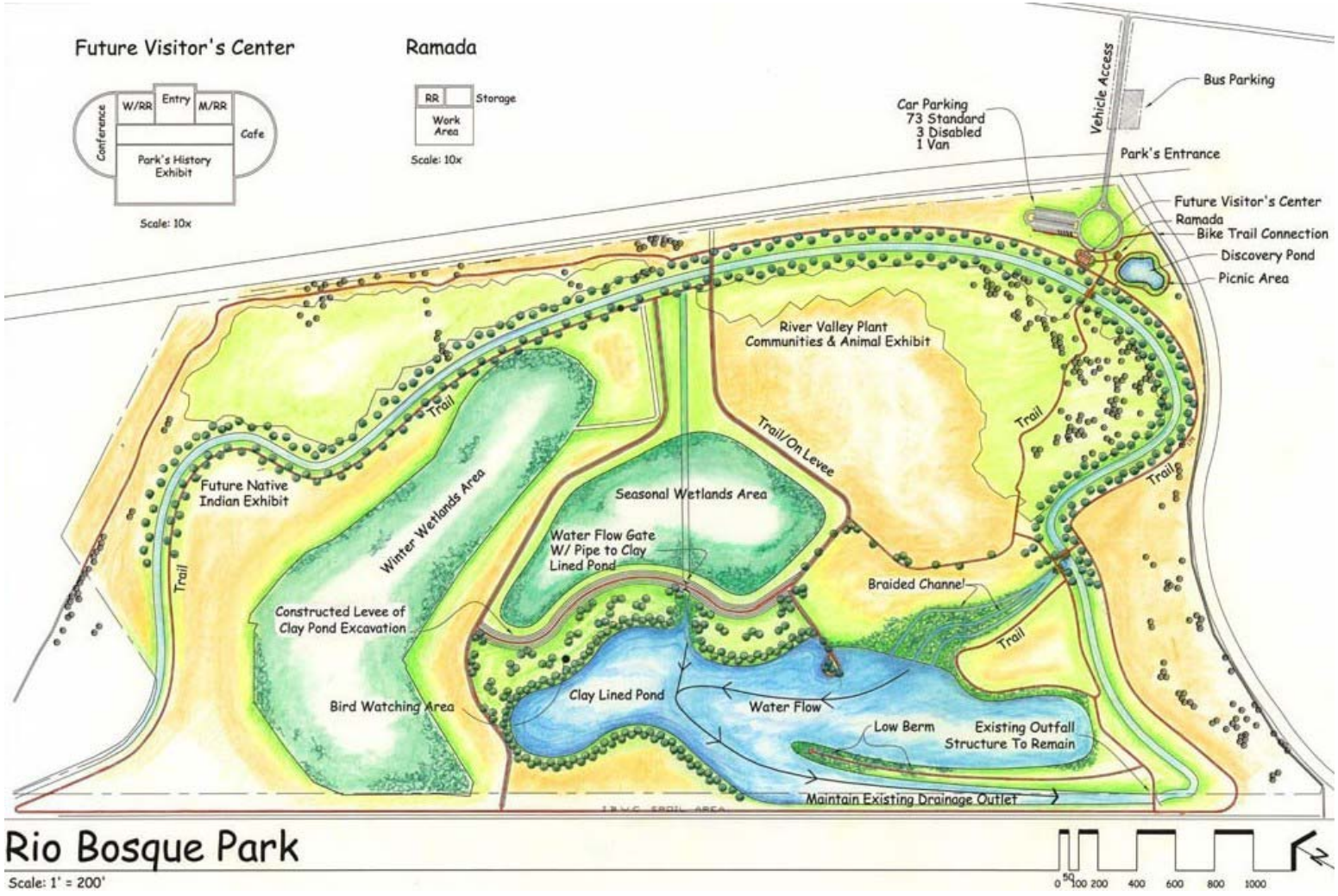

Figure 2: Rio Bosque Wetlands Park Development Plan

Design prepared by Michael Williams, R.L.A.; approved by the City of El Paso Parks Advisory Board May 6, 2002